Boston Children's Hospital

DRAFT PROJECT IMPACT REPORT / DRAFT ENVIRONMENTAL IMPACT REPORT

EEA# 14964

Submitted to:

Boston Redevelopment Authority

One City Hall Square, Boston, Massachusetts 02201

Executive Office of Energy and Environmental Affairs

MEPA Office, 100 Cambridge Street, Suite 900, Boston, Massachusetts 02114

Submitted by:

Boston Children's Hospital

300 Longwood Avenue, Boston, Massachusetts 02115

Prepared by:

Epsilon Associates, Inc.

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In Association with:

Bard, Rao + Athanas Consulting Engineers, LLC · Elkus Manfredi Architects · Goulston & Storrs
Haley & Aldrich, Inc. · McNamara/Salvia, Inc. · Redgate Real Estate Advisors, LLC
Shepley Bulfinch · Turner Construction · Vanasse Hangen Brustlin

JUNE 2013

Epsilon
ASSOCIATES INC.

Draft Project Impact Report/

Draft Environmental Impact Report

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BOSTON CHILDREN'S HOSPITAL

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Chapter 1.0

General Information

1.0 GENERAL INFORMATION

1.1 Introduction

The Children's Hospital Corporation and its affiliated entities[1] known collectively as Boston Children's Hospital (Children's or BCH or the Hospital) is the nation's premier pediatric medical center with a commitment to being a worldwide leader in the advancement of children's health. Boston Children's Hospital is the #1 ranked pediatric hospital nationwide according to the 2012-13 edition of Best Children's Hospitals by U.S. News & World Report. Children's is ranked in the top four of every evaluated specialty. Since the magazine began ranking hospitals over 20 years ago, Children's has continuously been ranked as one of the top pediatric hospitals in the country.

Founded in 1869 as a 20-bed hospital for children, Children's has grown significantly and has a legacy of firsts that have improved the practice of pediatric care across the world. Children's is a 395-bed[2] comprehensive center for pediatric and adolescent health care guided by values of excellence, sensitivity, leadership and community. These core attributes run throughout the Hospital's four interwoven missions: providing the best clinical care to children, researching new cures for diseases, training the next generation of pediatric caregivers, and improving the health and well being of children with a special emphasis on making Boston a better place for families to live, work, and play.

Boston Children's Hospital is located in Boston (with satellite facilities in Waltham, Lexington, Weymouth and Peabody), with most of the campus located in the Longwood Medical and Academic Area (LMA). Figure 1-1 shows Children's Core Campus in the LMA.

Children's continuing growth in patient volume and employment, as well as a focus on high-level tertiary and quaternary care, have exacerbated constraints that already exist on Children's campus, including the need for single-bed rooms, administration and support space, space for families, parking, a consistent and regular supply of electricity and heat, and improved circulation throughout its campus. In order for Boston Children's Hospital to continue delivering the award winning care, research and teaching on which it has built its reputation and address its growth in patients and employees, it is imperative that Children's increases its clinical care space on its Core Campus, as well as increases its office and administrative space both on and off campus.

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[1] Affiliated entities include The Children's Medical Center Corporation, Fenmore Realty Corporation, Longwood Research Institute, Inc., 333 Limited Partnership, CHB Properties, Inc. and Longwood Corporation.

[2] 384 beds are located in Boston and 11 beds are located at Children's facility in Waltham, Massachusetts.

Boston Children's Hospital

Epsilon

Figure 1-1
Boston Children's Hospital Core Campus in the LMA

In addition to the existing physical constraints, the financial side of health care continues to be a challenge for the Hospital and its patients. Boston Children's Hospital continues to make a concerted effort to provide exceptional care to its growing patient population and provide the most up-to-date medical technologies and methods, while managing costs. Like its partners in state and federal government, Children's strongly believes that reducing unnecessary use of services throughout its system will have the highest impact in cost reduction. Therefore, Children's is working collaboratively with its primary care partners to develop care protocols, patient education materials, and accessible subspecialty consultative guidance (i.e., in advance of making a referral) to better manage patient care and reduce unnecessary referrals. Boston Children's Hospital continues to actively pursue redesigns of its systems of operations and infrastructure consistent with its objectives of improving quality care while reducing costs, and its mission of driving innovation in pediatric care delivery.

To help address these objectives and constraints, Children's proposes in this Draft Project Impact Report/Draft Environmental Impact Report (DPIR/DEIR) three Projects, collectively the 2013 IMP Amendment Projects.

1. The new Boston Children's Clinical Building (BCCB) with approximately 445,000[3] square feet (sf) (approximately 403,311 sf net new) will include clinical and clinical support spaces on the Core Campus, as well as green and gathering spaces. The BCCB will be connected to the existing buildings on the Core Campus on its lower outpatient, support and surgical levels. In addition, the BCCB will connect an upper clinical floor (floor 9) with Main South over the Farley/Bader Pavilion.

   Children's will develop a Central Utility Plant (CUP) in the sub-basement of the BCCB that will include a 1,200 kilowatt (kW) gas-fired reciprocating engine and waste heat boiler (together a combined heat and power (CHP) unit) and two 30 thousand pound per hour (kpph) dual-fuel fire tube boilers. In addition, electrically-operated chiller units will be placed in the sub-basement of the BCCB and will be sized to reliably provide 100% of the chilled water needs for the BCCB.

2. The Patient and Family Parking Garage Addition will add a new level of parking containing 86 new spaces (76 net new spaces due to the elimination of 10 spaces in connection with the BCCB) to the existing garage.

3 All references to "sf" for Boston buildings have been calculated in accordance with the definition of "Floor Area, Gross" under Article 2A of the Boston Zoning Code.

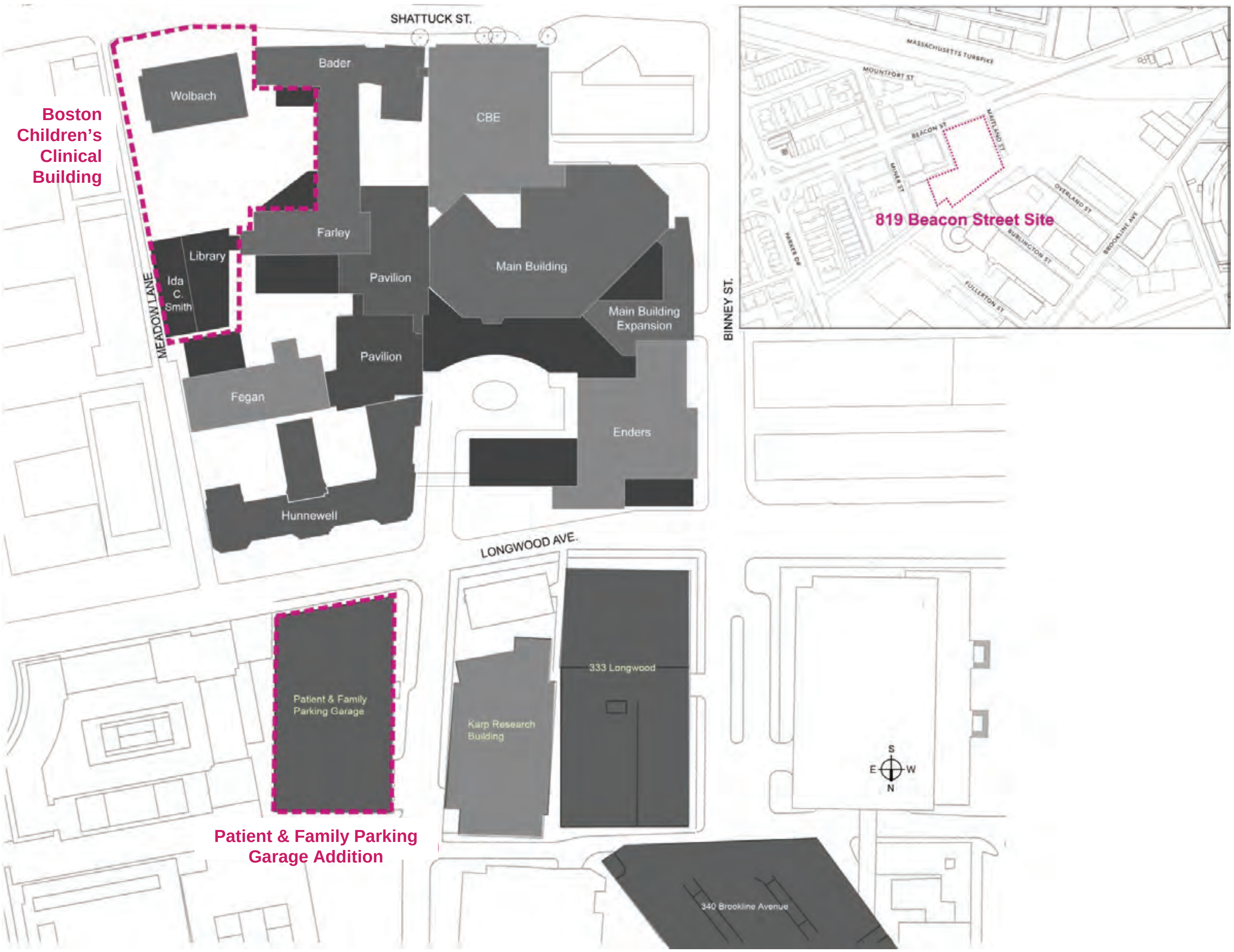
3. An office building at 819 Beacon Street will include approximately 202,950 sf of office space, 9,480 sf of ground floor retail space and approximately 496 parking spaces within a new garage (including 249 replacement spaces and 247 net new spaces of which 158 spaces will support the office space within 819 Beacon Street and of which 89 spaces will be available to support the needs of Children's employees working in the LMA). The 819 Beacon Street Project is located in the Audubon Circle neighborhood.

Figure 1-2 shows the location of the proposed Projects. The BCCB and the Patient and Family Parking Garage are in the existing "I" Overlay District. The 819 Beacon Street Project is proposed to be added to the "I" Overlay District by Map Amendment. Children's also continues to undertake on-going campus improvement and maintenance projects and general operational improvements to circulation across Children's campus. Since the Core Campus is bisected by Longwood Avenue, Children's has identified and is assessing potential opportunities to improve at grade traffic and pedestrian circulation at the Longwood Avenue/Blackfan Circle intersection. MASCO and Children's also continue to explore expansion of an elevated pedestrian pathway network throughout the LMA in the interests of LMA-wide efficiency and safety, including across Longwood Avenue, which would allow for valet operations at the Patient and Family Parking Garage.

1.2 Review Process

On October 12, 2012, Children's submitted an Institutional Master Plan Notification Form/Project Notification Form (IMPNF/PNF) to further amend the 2008 Institutional Master Plan (IMP), as amended by the 2010 IMP Amendment, by adding three new Projects, the 2013 IMP Amendment Projects, and to initiate review of these Projects. The BCCB and the 819 Beacon Street Projects are subject to Article 80B Large Project Review and the Patient and Family Parking Garage Addition is subject to Article 80E Small Project Review. In addition, an Environmental Notification Form (ENF) was submitted to the Executive Office of Energy and Environmental Affairs, Massachusetts Environmental Policy Act (MEPA) Office on October 15, 2012. This DPIR/DEIR is in response to the Scoping Determination issued by the BRA on November 27, 2012 and the Certificate issued by the Secretary of Energy and Environmental Affairs on November 21, 2012. A copy of the BRA's Scoping Determination and comments received on the IMPNF/PNF and the Certificate and comment letters on the ENF are included in Chapter 10.

Upon approval of this filing in accordance with Article 80B of the Code (with respect to the BCCB and 819 Beacon Street) and Small Project Review in accordance with Article 80E of the Code (with respect to the Patient and Family Parking Garage Addition) and the simultaneous filing of the 2013 IMP Amendment in accordance with Article 80D of the Code and a proposed map amendment to include the 819 Beacon Street Project within the "I" Overlay District, Children's will establish the relevant zoning approvals to authorize the development of the 2013 IMP Amendment Projects subject to the Article 80 processes for the Project.



Boston Children's Hospital

Shepley Bulfinch

ELKUS MANFREDI ARCHITECTS

Figure 1-2

Locations of Proposed Projects

1.3 Public Benefits

Boston Children's Hospital's community mission is to enhance the health and well-being of the children and families it serves and to affect systemic change to achieve health improvements for children in Boston and beyond. This section provides a summary of some of the Public Benefits provided by Boston Children's Hospital. A more detailed description of these efforts can be found in the Office of Child Advocacy's Annual Report, spotlight in Appendix A or on the Hospital's website at childrenshospital.org/community.

The neighborhoods of Boston benefit most from Children's deep commitment to community health. The Hospital invested nearly $21.5 million in FY11 to support Boston children and families, of which:

- **Safety Net.** More than $16.7 million ensured the "safety net" for access to care for Boston children, including free care, unreimbursed costs for children insured by Medicaid, and services that are not readily available elsewhere.

- **Community Service.** Another $4.7 million was allocated to programs that address the most pressing health needs of Boston children and families. Children's focuses its resources and investments in programs that will improve child health in Boston and achieve broader systemic change in the areas of asthma, mental health, obesity and child development.

Investment in Boston Children and Families FY11	
	FY11 actual
Safety Net	$16.7 M
Community Service	$4.7 M

In addition to direct expenditures by Children's in support of Boston children and families, Children's recognizes that strong partnerships with City agencies and initiatives are critical to addressing health and also non-health issues that have an impact on community health. Thus, the Hospital makes supplementary direct cash contributions or grants to support key City of Boston agencies and initiatives which help to make Boston a healthier place for children and families, in addition to making cash contributions to the City Assessor annually as general revenue. In FY11, Children's made cash contributions to support the City's general fund as well as those city agencies and initiatives in which the Hospital has developed deep, lasting partnerships.

Everything Children's does in fulfilling its community mission is based on how it can best utilize its expertise, resources and partnerships to address the most critical health issues families face today. Its mission revolves around keeping Boston children healthy through wellness and prevention efforts, ensuring that children have access to needed health care services and partnering with others to address non-health issues such as violence, workforce development and education. In all these endeavors, Children's seeks input from its key partners to ensure that the Hospital's priorities are aligned with those of the City of Boston, the Boston Public Health Commission, the Boston Public Schools and other city agencies.

1.3.1 Safety Net

Children's is the leading provider of health care to low-income and uninsured children in Massachusetts, and is the safety net provider for Boston's children. More than half of all Boston children hospitalized come to Children's, and nearly one-third of Children's outpatients come from Boston and neighboring municipalities. The Hospital's safety net is both financial and programmatic, ensuring that care is available to patients regardless of their ability to pay and that needed care is accessible.

- It is financial in that the Hospital provides free care, subsidizes care for Medicaid patients, and incurs bad debt for patient families who cannot or do not pay for the care they receive.

- It is programmatic in that the Hospital offers vital, subsidized services that either are unavailable elsewhere or are available in very limited capacity and support to important components of the City's health care delivery system. Children's is affiliated with 11 Boston community health centers including its own Martha Eliot Health Center, which in total provided primary care and support to an estimated 33,000 Boston children and their families (see Section 1.3.3 on Community Health Centers).

1.3.2 Community Service

1.3.2.1 Supporting Programs to Address Core Health Issues and Achieve Systemic Change

Children's needs assessment process both identifies community health priorities and informs the Hospital to help prioritize and determine the best ways to utilize its resources and partnerships to bring about change. Children's also works to ensure that the Hospital's community health priorities are in alignment with its key partners, the City of Boston and the Boston Public Health Commission (BPHC).

A handful of core health issues remain at the top of the list of both local health needs and areas where there is the greatest community need including asthma, obesity, mental health and child development. These are also areas in which Children's has significant clinical expertise, strong partnerships and the resources to make an impact.

Children's has developed a strategy to improve child health outcomes by investing Hospital financial and human resources in a portfolio of programs addressing these core issues. Following are descriptions of the programs.

Asthma

Since 2005, the Community Asthma Initiative (CAI) has helped to improve the health and lives of 800 Boston children with asthma. Through a comprehensive and community-oriented program, CAI provides case-management and home visits, offers education to caregivers and providers, distributes asthma control supplies, connects families to resources, as well as increases access through advocacy. As the data shows, CAI has improved health outcomes for children and proven to be cost-effective. As a result, CAI has evolved into a model that has the potential to reach every child with asthma in Massachusetts. CAI and the Asthma Regional Council developed a business case for its approach to pediatric asthma management. This "Business Case" was instrumental in convincing legislators of the benefits of such an approach and to provide funding for a MassHealth demonstration project that will provide case management to children with asthma. As a result of CAI's success using a nurse case management model, the Boston Public Health Commission invited CAI to participate in the Boston Home Visiting Collaborative to provide guidance in developing standards for home visiting programs. Finally, CAI has received funding to provide technical assistance to Alabama to replicate the CAI model in that state.

In FY11, CAI was able to show that the program reduced the percentage of patients who have had any asthma-related emergency department visits by 81% and any emergency department visits by 62%. In addition, the program was able to show a 41% decrease in the percentage of children who have had any missed school days and a 46% decrease in the percentage of parents/caregivers who have had any missed work days.

Mental Health

Children's Hospital Neighborhood Partnerships (CHNP) is the community mental health program in the Department of Psychiatry at Boston Children's Hospital. Established in 2002, CHNP places Children's clinicians in 15 Boston area schools and five community health centers to provide a comprehensive array of mental health services to children and adolescents where they live and learn. CHNP's goals are to: 1) increase access to mental health services for children in underserved communities; 2) promote children's social-emotional development; 3) build the sustainable mental health capacity of partner schools and community health centers; and 4) achieve high satisfaction with services provided among all key stakeholders. CHNP has proven successful in helping schools develop their capacity to address the mental health needs of students. It has also evolved into a model that can help schools across the city and state build the internal capacity to proactively address behavioral health issues. CHNP was asked to serve as the main partner for the

Boston Public Schools in the development of a district wide behavioral health model that will pilot many of the bill's elements and will serve as a model for school districts across the country.

CHNP has shown that the program can effectively decrease wait times for crisis (immediate intervention by the school-based CHNP team versus approximately 90 minutes of wait time for outside clinicians) and routine clinical services (10 days compared with 42 days in outpatient setting). Nearly 1,800 students in partner schools were provided with prevention and early intervention services. Over 290 teachers participated in professional development workshops, and 756 families participated in parent workshops and community events.

Obesity

Every year, over 900 Boston children are referred by health care center providers to participate in the Fitness in the City Program (FIC), Children's community-based approach to address obesity. FIC supports 11 Boston community health centers, including Martha Eliot Health Center, to provide their pediatric patients with case-management support as well as nutrition education and physical activity programs. FIC has demonstrated that it is an effective model to help children reduce or maintain their Body Mass Index and make the behavioral changes needed to maintain a healthier weight. The program also shows potential for building community capacity using a public health approach to achieve systemic change. FIC also believes that its approach will become an important part of pediatric medical homes as the model is an effective way to deliver coordinated, patient centered and culturally competent services to address obesity.

The majority of children (57%) participating in FIC have been able to decrease their Body Mass Index after one year in the program. Children participating in the program also report spending less time watching TV on weekends and decreasing their soda/juice intake after 12 weeks in the program.

Child Development

The Advocating Success for Kids Program (ASK) provides access to needed services for families with children experiencing school-functioning problems and learning delays. ASK focuses on providing services to diverse, urban populations in community-based pediatric practices—Children's Hospital Primary Care Clinic (CHPCC) and three Boston community health centers (CHCs). Not only does ASK provide developmental evaluation and patient advocacy services to families, it does so in a timely way, through a one-stop-shopping model that empowers parents to advocate on behalf of their children within the school system. Finally, ASK provides an important opportunity to train psychology and developmental medicine fellows about providing community-based, culturally competent care.

Last year, 356 children were served by the ASK Program, which has been able to ensure that 87% of referred patients completed their scheduled appointments at community health centers.

1.3.2.2 Addressing Social Determinants of Health

"The influence of place on health is related to other major influences on health and life expectancy such as income and education."[4]

Recognizing the link between social issues and health issues, Children's collaborates with community partners to respond to three of the most pressing social determinants of health facing Boston residents: education level, income, and violence.

Education and Schools

Children's recognizes that access to a safe and supportive educational environment is vital to a child's academic success and to ensuring future economic mobility and opportunity. Children's partners closely with the Boston Public Schools to support and strengthen the system, as a whole as well as to work directly in school settings to reach students and help families overcome barriers that may prevent their children from functioning well in school. Children's supports programs such as Thrive in 5, Smart from the Start and Countdown to Kindergarten. In addition, the Hospital provides direct services through initiatives such as the Children's Hospital Neighborhood Partnerships Program and the Advocacy Success for Kids Program. (See Appendix A for more detail.)

Income

Children's recognizes that one of the most significant ways to address poverty in the local neighborhoods is to provide employment and career development opportunities to local Boston residents. This approach has the double advantage of ensuring a diverse and culturally competent workforce. The Hospital addresses workforce development through a network of strong community partnerships, spanning across a continuum of activities. Partners include Sociedad Latina, the Fenway Community Development Corporation and Jewish Vocational Services. Section 1.3.5 includes more detailed information about Workforce Development and Training.

Violence and Violence Prevention

Exposure to violence, both directly and indirectly, has a profound impact on the physical and emotional health of those affected—the effects of which can negatively influence other aspects of their lives, including work and school. Children's plays a key role in helping Boston children and families cope with the impact of violence in their lives and working

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4 Williams, David R. and Marks, James. *Community Development Efforts Offer A Major Opportunity To Advance Americans' Health.* HealthAffairs. http://content.healthaffairs.org/content/30/11/2052.full#aff-1#aff-1

with communities to help prevent it, including the Jamaica Plain Violence Intervention and Prevention Collaborative (JPVIP), a partnership with 15 local organizations including the Hospital's own Martha Eliot Health Center in Jamaica Plain. Additionally, the JPVIP model will be replicated by the Boston Public Health Commission, with Children's support, at two additional community health centers. (See Appendix A for more detail.)

1.3.3 Supporting the City's Infrastructure

Children's is also committed to, and directs resources to build capacity within the existing infrastructure of care for Boston children and families. This means partnering with and supporting two key community groups—the Boston Public Health Commission (BPHC) and Boston community health centers.

Boston Public Health Commission

Children's has been a longtime partner with the BPHC, working together on pressing health issues and supporting efforts to help children, adolescents and young adults, including:

- A Children's-initiated, first-of-its-kind study to assess the needs of young children in Boston; the study will include phone interviews, a review of public health data on children's issues and a literature review of program best practices;
- Participation in the BPHC's Tobacco-Free Hospital Initiative and Sugar-sweetened Beverage Learning Network, in addition to the formation of an internal Health Hospital Workgroup to analyze and make recommendations for Hospital policies promoting a healthy environment for patients, families, and staff; and
- Provision of financial support and expertise to the BPHC to support the City's NeighborCare initiative, an effort encouraging Boston residents to receive primary care at community health centers.

Community Health Centers

Community health centers are key partners in Children's efforts to 1) build community capacity to deliver high quality pediatric care and services; 2) address critical health needs for children, youth and families; 3) improve quality initiatives within community health centers to track areas such as asthma care, immunization rates, obesity and child development; and 4) improve access and coordination of care through advocacy efforts.

Children's provides financial and programmatic support to 11 Boston community health centers: Bowdoin Street, Brookside, Dimock, Joseph Smith, Roxbury Comprehensive, South Cove, South End, Southern Jamaica Plain, Upham's Corner, Whittier Street and the Hospital's own Martha Eliot.

These health centers provide primary care and support, including medical, dental, and mental health services, to an estimated 33,000 Boston children and their families, particularly the uninsured and underinsured.

Children's support enables these health centers to augment current services or provide new services that are in great demand, yet not always readily available. The health centers are able to reach hundreds of children per year with case management support, nutrition and fitness education, psychiatric and developmental consultation and other services.

1.3.4 Contributing to the Vibrancy of Boston

Children's feels an important obligation to help improve the City of Boston and is active in a number of local and state civic organizations, including: Boston Alliance for Community Health; Greater Boston Chamber of Commerce; Massachusetts Taxpayers Foundation; Mass Inc.; and A Better City.

1.3.5 Workforce Development and Training

Children's takes its roles as an employer and civic leader seriously and seeks to advance these roles through comprehensive workforce development efforts. One of the Hospital's fundamental goals in this area is providing community members with opportunities to explore health careers, and as a pediatric hospital, particularly focus on local youth.

1.3.5.1 Workforce Development Programs Specifically Designed to Meet the Needs of Boston Youth

The Hospital provides a number of job opportunities for Boston high school students through its Community Opportunities Advancement at Children's Hospital (COACH) program. In the summer of 2012, 59 Boston teenagers were employed in various departments throughout the Hospital. In the Student Career Opportunity Outreach Program (SCOOP), three Boston youth were provided jobs that introduced them to the health care field. In addition to summer jobs, Children's Human Resources Department also partners with Sociedad Latina, a Mission Hill youth-serving agency, on an after-school partnership with Sociedad's Health Careers for Youth Program. Last year, three youth participated in this program. The following provides additional details on some of the career-focused programs for youth:

- The COACH program provides summer employment opportunities to enable youth to explore health careers, to build a pipeline of diverse, qualified professionals for the healthcare field, and to give youth a safe and meaningful way to spend the summer. In addition to hands-on work experience, the program includes a series of weekly professional development workshops. Topics include goal setting and motivation, communication skills, leadership skills, and public speaking. The interns also attend guest lectures at which current employees from different areas of the Hospital talk to the interns about their position at BCH, their career path, education, and other topics. In 2012, the Hospital invited local colleges to meet with COACH interns and speak about their respective schools—especially healthcare related programs—the universities in general, and the undergraduate application process. These presentations were followed by a fair to allow students to speak with the school representatives.

- Each year, SCOOP inspires 200-250 high school students to enter nursing through field trips to the Hospital, direct nurse-to-student education, shadowing, career advice, and summer internships. Along the way, SCOOP helps dispel many of the myths about nursing, and offers students hands-on opportunities to work in health care. During the 2012-2013 school year, SCOOP sponsored 10 summer interns and hosted 10 visits. SCOOP nurses have worked with the Madison Park High School and Health Careers Academy. Since 2003, 81 students have participated in SCOOP summer internships, and many of them have remained in health care: 16 are enrolled in nursing programs, three have completed nursing school, and four are current Hospital employees.

1.3.5.2 Adult Workforce Development Training Programs

Since 2004, the Hospital has also partnered with Year Up, an intensive year-long training program that provides urban young adults with a unique combination of technical and professional skills, college credits, and paid corporate apprenticeships. Children's has consistently provided paid information technology and technical support internships to over 40 program participants. This partnership has been positive for both organizations, as evidenced by the fact that the Hospital has received a "Year Up Champion Award" and a Hospital employee received a "Year Up Supervisor's Award." Furthermore, the Hospital has hired approximately 20 Year Up graduates, either as contract or permanent employees.

The Hospital also maintains partnerships with more than 30 Schools of Nursing, providing nursing students with clinical experiences in a variety of pediatric settings. In cooperation with Boston College and other organizations, the Hospital developed the area's first master's level program for pediatric clinical nurse specialists. Nurses at Children's are particularly active in teaching colleagues and community members. Many of the opportunities for teaching colleagues and community members are based at schools, and include programming for administrators, teachers, students, and school nurses on a wide variety of topics—everything from child development, to allergies in children, to family participation in care. The Hospital provides ongoing educational support to Massachusetts school nurses through regular evening programming and school nurse professional development days. Hospital nurses also offer training in CPR and first aid for community members.

Children's also seeks to recruit, and then train and promote, local adults who are interested in health careers. Partnerships that foster career growth, both to community residents and Children's incumbent staff have grown significantly in the past few years with specific efforts focused on being an employer of choice, increasing the diversity of the Hospital's workforce, and developing career pipelines for areas of shortage or emerging need.

One of the Hospital's most valued workforce development partnerships has been with the Boston Healthcare Research and Training Institute (Training Institute) and now Healthcare Training Institute (HTI) in collaboration with Jewish Vocational Services (JVS). This ten-year partnership has provided significant opportunities for entry-level workers and neighborhood residents to pursue successful careers in the health care industry. The Hospital currently offers GED, ESOL, Citizenship, Pre-College preparatory programs and the Bridge to College program, and, with HTI, has produced 20 recent incumbent worker graduates with more to follow in the next two years, moving individuals into Nursing and Allied Health professions with higher family sustaining wages. Children's has also created and completed certification programs in Central Processing and Distribution and a college-level nine-credit certificate program with the Massachusetts College of Pharmacy and Health Sciences (MCPHS) that has produced both wage gains and further academic credentials to prepare participants for an increasingly regulated industry. Tuition advancement, arranged with participating colleges and universities, is provided to these students so that one of their barriers to success is removed—that of financial commitment up front for tuition to attend college. Scholarships have also been continued to support these and other students. More than 60% of the participants in these combined programs are Boston residents.

1.3.5.3 Recruiting Programs

Community partnerships with the Fenway Community Development Corporation, YMCA International, and YMCA Training, Inc. have successfully facilitated community adult hires into several areas including phlebotomy, ophthalmology, and patient safety and quality. This partnership between Children's and its neighbors has enjoyed success with these internship models with placement rates of graduates ranging from 66-75%.

1.3.5.4 Tuition Advancement

Children's investment in tuition advancement has also been cited and published as a best practice by the National Fund for Workforce Solutions, with the Hospital having received the "Business Leadership Award" by JVS, the "Employer Of The Year, Honorable Mention" by the MA Workforce Solutions Group, and a citation from the Governor's Office for Englishworks for the Hospital's long-standing commitment to ESOL programming. The Hospital has been recently awarded another data research grant from the Boston Private Industry Council and SkillWorks.

1.3.6 Employment

As of 2013, approximately 18,000 people work at Children's and at its facilities throughout greater Boston, which includes more than 9,100 "associated personnel" who work, study, or volunteer at Children's.

Children's has approximately 8,900 employees paid directly from the Hospital, of whom approximately 31% reside in Boston.

The construction of the proposed Projects will contribute directly to the local economy by creating approximately 2,200 construction jobs as a result of the BCCB, approximately 50 construction jobs as a result of the Patient and Family Parking Garage Addition and approximately 193 construction jobs as a result of the 819 Beacon Street Project. For each applicable Project, a Boston Residents Construction Plan will be submitted in accordance with the Boston Jobs Policy. The Plan will provide that Children's will make reasonable good-faith efforts to have at least 50 percent of the total construction worker hours be by Boston residents, at least 25 percent of the total construction worker hours be by minorities, and at least 10 percent of the total construction worker hours be by women.

1.3.7 Voluntary Cash Payments to the City of Boston

In addition to the monetary value of Safety Net and Community Services rendered by Children's as discussed above, Boston Children's Hospital makes cash payments to the City consisting of both cash payments to support specific City programs, as discussed above, and annual voluntary cash payments to the assessing department for the City's general fund which have been made by Children's since 1994.

1.3.8 Linkage

In connection with the 2013 IMP Amendment Projects, Boston Children's Hospital will make a housing linkage contribution to the Neighborhood Housing Trust and a jobs linkage contribution to the Neighborhood Jobs Trust as applicable for development greater than the 100,000 sf exemption under Article 80.

1.3.9 BCCB Urban Design Benefits

The BCCB provides numerous public benefits including the following:

- Creating or enhancing approximately 33,800 sf of accessible green and gathering spaces within the building and the Core Campus, including at-grade gardens, interior gardens, sanctuary space and roof terrace gardens that will provide all-season, easily accessible spaces for patients, families and staff allowing a wide range of activity to occur in support of the healing process

- Incorporating roof gardens, internal gardens and common spaces at major visible corners, invigorating views from Francis Street and Longwood Avenue;

- Contributing to a more pedestrian environment and enlivening the streetscape along Shattuck Street with on-grade green and gathering spaces inside and outside of the BCCB; and

- Creating a setback from Shattuck Street allowing for improved landscaping, paving, and lighting.

1.3.10 819 Beacon Street Urban Design Benefits

The 819 Beacon Street Project provides numerous benefits including the following:

- Replacing a surface parking lot with a new building that will fill in a "missing tooth" along Beacon Street and provide a transition between new and old buildings in the area;

- Enhancing and enlivening the streetscape along Beacon and Maitland Streets including ground floor retail space;

- Improving sidewalks along Beacon and Maitland Streets including new paving, planting and lighting;

- Providing a designated route for and integration of the City of Boston's proposed multi-use path along the south side of the property both before and after the implementation of the Urban Ring;

- Providing an easement for the proposed Urban Ring along the south side of the property; and

- Accommodating a future bus lane on Maitland Street within the boundary of the 819 Beacon Street Project site.

1.4 Consistency with Zoning

It is contemplated that zoning parameters for the proposed 2013 IMP Amendment Projects will be established in the proposed IMP Amendment for Children's submitted concurrently with this DPIR/DEIR, which will include parameters for use, height and floor-area-ratio and may include certain other bulk and dimensional matters.

1.5 Legal Information

1.5.1 Legal Judgements Adverse to the Proposed Projects

Children's is unaware of any legal judgments or actions pending with respect to the Project sites.

1.5.2 History of Tax Arrears on Property

Children's does not have a history of tax arrears on any property owned within the City of Boston.

1.5.3 Evidence of Site Control/Nature of Public Easements

The sites are owned by Children's and its affiliated entities.

1.6 Public Participation

Boston Children's Hospital is committed to an open and inclusive public process, and as the DPIR/DEIR process progresses, Children's will continue to seek input from community representatives, neighbors and stakeholders, as well as public and elected officials.

Children's has met and will continue to meet with community representatives from the following organizations: Audubon Circle Neighborhood Association, Community Alliance of Mission Hill, Fenway Civic Association, Fenway Community Development Corporation, MASCO, Mission Hill Neighborhood Housing Services, and Sociedad Latina. The BCCB and the Patient and Family Parking Garage Addition as well as the 819 Beacon Street Project were also presented at the LMA Forum.

In addition, BCH has met with or will meet with City of Boston agencies and departments, including the Assessor's Department, Boston Civic Design Commission, Boston Landmarks Commission, Boston Public Health Commission, Boston Redevelopment Authority, Boston Transportation Department, Mayor's Office of Neighborhood Services, and the Office of Jobs and Community Services.

Children's has also met with local City and State elected officials and their staffs, including City Council President Stephen Murphy, City Councilor John Connolly, City Councilor Matt O'Malley, City Councilor Ayanna Pressley, City Councilor Michael Ross, State Representative Gloria Fox, State Representative Michael Moran, State Representative Jeffrey Sanchez, State Representative Martin Walsh, State Senator Sonia Chang-Diaz, and State Senator William Brownsberger.

As a result of the extensive community process to date, the Projects have evolved and their designs have been modified in response to public comment. Changes to the BCCB include a reduction in height as well as setback of the mechanical equipment. Changes to 819 Beacon Street include a reduction in height and a realignment of the massing. Additional detail regarding the BCCB and 819 Beacon Street Project evolution is included in Section 6.1.1 and Section 2.3.5.3 respectively.

Children's will continue to meet with the LMA Forum, the Task Force and other interested parties as the review process progresses.

1.7 Development Team

Proposed Projects:	2013 IMP Amendment Projects including: Boston Children's Clinical Building Patient and Family Parking Garage Addition 819 Beacon Street
Address/Location:	300 Longwood Avenue 819 Beacon Street
Proponent:	Boston Children's Hospital 300 Longwood Avenue Boston, MA 02115 (617) 355-6000 Charles Weinstein, Esq., Vice President Real Estate, Planning and Development Paula Quan, Executive Director of Capital Planning and Design, Facilities Management
Development Consultant:	Redgate Real Estate Advisors, LLC 100 Franklin Street, 9th Floor Boston, MA 02110 (617) 904-7013 Lisa Serafin
Architects:	Shepley Bulfinch 2 Seaport Lane Boston, MA 02210 (617) 423-1700 Uma Ramanathan Cathleen Lange Andre Kamili Elkus Manfredi Architects 300 A Street Boston, MA 02210 (617) 426-1300 Sam Norod Alvin Hung

Environmental Consultants:	Epsilon Associates, Inc. 3 Clock Tower Place, Suite 250 Maynard, MA 01754 (978) 897-7100 Cindy Schlessinger Geoff Starsiak Doug Kelleher
Legal Counsel:	Goulston & Storrs 400 Atlantic Avenue Boston, MA 02110-3333 (617) 482-1776 Marilyn Sticklor, Esq. Darren Baird, Esq. Kevin J. Renna, Esq.
Transportation Consultants/Civil Engineers:	VHB/Vanasse Hangen Brustlin 99 High Street Boston, MA 02110 (617) 728-7777 Sean Manning, PE, PTOE Ellen Donohoe Howard Moshier
MEP Engineer:	Bard, Rao + Athanas Consulting Engineers, LLC 311 Arsenal Street Watertown, MA 02472 (617) 254-0016 Stephen Carroll
Geotechnical Consultant:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Boston, MA 02129 (617) 886-7400 Mark Haley
Structural Engineer:	McNamara/Salvia, Inc. 160 Federal Street, 5th Floor Boston, MA 02110 (617) 737-0040 Joe Salvia

Construction Manager:	Turner Construction 2 Seaport Lane, Suite 200 Boston, MA 02210 (617) 247-6400 Michael Gallivan Bob McGee

Chapter 2.0

Proposed IMP Projects / Alternative Analysis

2.0 PROPOSED IMP PROJECTS / ALTERNATIVES ANALYSIS

2.1 Recent and Anticipated Future Trends

2.1.1 Patients

At its facilities in Boston and throughout the region, Children's in 2012 had over 580,000 outpatient visits, a number that is rising at a level of nearly 23,000 visits a year, as more and more children are seen on a lower cost outpatient basis. Approximately 25,000 children are seen as inpatients and observation cases annually. In addition, the Hospital's emergency department receives over 58,000 visits from patients each year. Approximately 15 percent of these children are admitted as inpatients. Approximately 47 percent of Children's patients seen in the emergency department are residents of Boston. Increasingly, the expectation is that Children's will serve as the hub of tertiary and quaternary care, with less serious illnesses and injuries staying in the community for treatment, and the more complex conditions coming to Boston for care. Outpatient care at non-LMA facilities has increased from 16.3 percent of all outpatient care in 2005 to 29 percent in 2011. This increase in outpatient care outside of the LMA and the patient growth reinforces the focus of the Core Campus on high-level tertiary and quaternary care which requires significant space for high tech equipment and appropriate spaces for patients and families. However, the Hospital is currently at capacity for inpatient activity, averaging 82 percent average daily occupancy, which is essentially full. The desired design occupancy of a hospital is 80 percent; this occupancy percentage allows for flexibility to accommodate the ups and downs of patient arrival. In addition, existing double-bed rooms require conversion to single-bed rooms. Single-bed rooms have a significant beneficial impact on infection control as described in more detail in Section 2.1.3.

2.1.2 Employees

As of 2013, approximately 18,000 people work at Children's and at its facilities throughout greater Boston, which includes more than 9,100 "associated personnel" who work, study, or volunteer at Children's.

Children's has approximately 8,900 employees paid directly from the Hospital, of whom approximately 31% reside in Boston.

This growth is attributable to several factors, including, but not limited to, the success in securing grant funds, new research and clinical facilities, increased research activity, higher acuity patients and resultant need for higher staff-to-patient ratios, and increased regulatory requirements.

2.1.3 Facilities

Since its inception, Children's has continuously adjusted with the changes in healthcare, requiring updates to its facilities in order to meet the medical needs of the community. Many of the facility issues facing Children's today have existed since the Hospital first opened. Although the Hospital's previous expansions have created much needed new clinical and research space in the past few years, the campus continues to experience limitations such as insufficient bed capacity, constrained space for families and restricted patient and family parking facilities. Children's needs to address the emerging trends of pediatric care, including:

- Providing necessary space related to pediatric care such as larger rooms and support space to accommodate the patient and one or more parents or relatives, as well as more space in waiting rooms and exam rooms, and updating facilities and equipment, such as chairs and patient lifts, to accommodate bariatric patients.

- Providing space for higher acuity inpatient patients who generally require more procedures, longer hospital stays, and more testing and imaging. These patients also often require higher staff-to-patient ratios and more space within patient rooms for advanced medical equipment as well as for visitors, since children with higher acuity levels generally have more family staying with them and more visitors.

- Moving towards single and critical-care capable rooms which allow hospitals to provide the highest quality care, respond quickly to external factors and provide sufficient space to host state-of-the-art medical technology. Research has demonstrated that single-bed rooms lower hospital-induced infections, reduce medical errors associated with room transfers, reduce noise, improve patient confidentiality, facilitate social support by families, and improve staff communication with patients.

- Providing space and infrastructure to allow for new image-guided procedures and minimally invasive surgeries which require larger procedure rooms, more support space, and more electrical power and cooling capacity for this advanced equipment.

- Adjusting the patient care model through the organization of Centers of Excellence. For example, Children's and its Cardiovascular Program (CVP) are preparing to embark on a new approach to managing care and resources that will support its continued growth regionally, nationally and internationally, and the world class care that has earned the CVP the #1 ranking from U.S. News and World Report. The CVP at Children's will serve as a pilot for creating a novel organization within the Hospital. By moving accountability closer to the point of care delivery, the CVP intends to create a patient-centered care model that accelerates innovations in care delivery and reduces costs, while increasing efficiency. Children's is looking for opportunities to replicate this model in the future.

Children's parking facilities also continue to be a challenge. Higher patient and visitor demand related to increased patient volumes and higher acuity patients has created a demand for parking on the Core Campus. Valet service at the Main Entrance is heavily used, especially when patients and families cannot find parking in the Patient and Family Parking Garage or when, due to patient or family needs, Longwood Avenue cannot be comfortably crossed. Children's also aggressively manages its parking supply, especially in the Patient and Family Parking Garage, to make sure that only persons going to Children's use the garage facilities. In addition, Children's is moving administrative and office space off-campus to the extent possible to allow for patient centered on-campus growth.

To address these trends, Children's proposes three Projects, collectively the 2013 IMP Amendment Projects. The three Projects are detailed in Table 2-1, shown in Figure 2-1 and explained in detail in this chapter.

Table 2-1 Proposed Projects

Project Element	Approximate Dimension
Boston Children's Clinical Building	
Gross Floor Area (as determined by the Boston Zoning Code)	445,000 sf
Floors (below/above grade)	Occupiable or partially occupiable floors—two floors below grade/ten floors above grade Mechanical floors—two floors below grade/two floors above grade
Height to top of highest occupiable floor as measured from grade (as determined by the Boston Zoning Code)	161 feet[1]
Uses: Clinical use Clinical support	 354,700 sf 87,800sf
Demolition (three buildings, portions of two others)	41,689 sf
Net New Building Area	403,311 sf
Patient and Family Parking Garage Addition	
Gross Floor Area (as determined by the Boston Zoning Code)	29,370 (including 86 above-grade parking spaces)
Height to top of the highest point of the roof beams of a flat roof as measured from grade (as determined by the Boston Zoning Code, inclusive of above-grade parking spaces)	79'-8"[2]
Parking	86 new spaces on one new level (76 net new spaces due to the elimination of 10 spaces in connection with construction of the BCCB)

1 Height is 145 feet from grade to the top of the highest clinical use, 161 feet from grade to the top of the highest occupiable story (only a 6,000 sf sanctuary is above the highest clinical use) and 175 feet from grade to the top of the mechanical floors (which are more than 1/3 of the roof area).

2 Height is 99.5 feet to the top of the mechanical penthouse (which is less than 1/3 of the roof area).

Table 2-1 Proposed Projects (Continued)

Project Element	Approximate Dimension
819 Beacon Street	
Project Site	70,148[3]
Gross Floor Area (as determined by the Boston Zoning Code, inclusive of above-grade parking spaces)	412,404 sf (including 496 above-grade parking spaces)
Floors (above grade)	8 stories
Height to top of highest occupiable floor as measured from grade (as determined by the Boston Zoning Code)	116 feet[4]
Uses: Office Retail Parking	 202,950 sf 9,480 sf 199,974 sf
Parking	247 net new spaces included within 496 space parking garage on six levels

2.2 Boston Children's Clinical Building

2.2.1 Area Context

The BCCB site is located on the Children's Core Campus adjacent to Meadow Lane and Shattuck Street. A description of the metes and bounds is included in Appendix B. The surrounding LMA, dominated by hospitals, research, and education space, is densely built with buildings ranging in height from two stories to more than 13 stories.

2.2.2 Project Description

Due to higher patient acuity, the demand for single-bed patient rooms, the need for critical care capable beds, and improved technology, Children's needs to replace semi-private inpatient beds and expand surgery, clinic, and clinical support spaces. To fulfill these needs, Children's proposes the new BCCB on a portion of its Core Campus (see Figure 2-2). The BCCB provides additional space to convert all the remaining semi-private patient rooms to private rooms and to create potential new rooms—allowing up to 180 beds; to help provide space on the Core Campus for a new Neonatal Intensive Care Unit facility; to right size clinical support space; to provide diagnostic and treatment expansion space for uses such as radiology and surgery; to expand patient-family amenities; and to improve circulation and access. In order to create an integrated campus experience for patients and

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3 This number assumes the discontinuance of a portion of Munson Street.

4 Height is 116 feet from grade to the top of the highest occupiable story and 132 feet from grade to the top of the mechanical floor (which is less than 1/3 of the roof area).

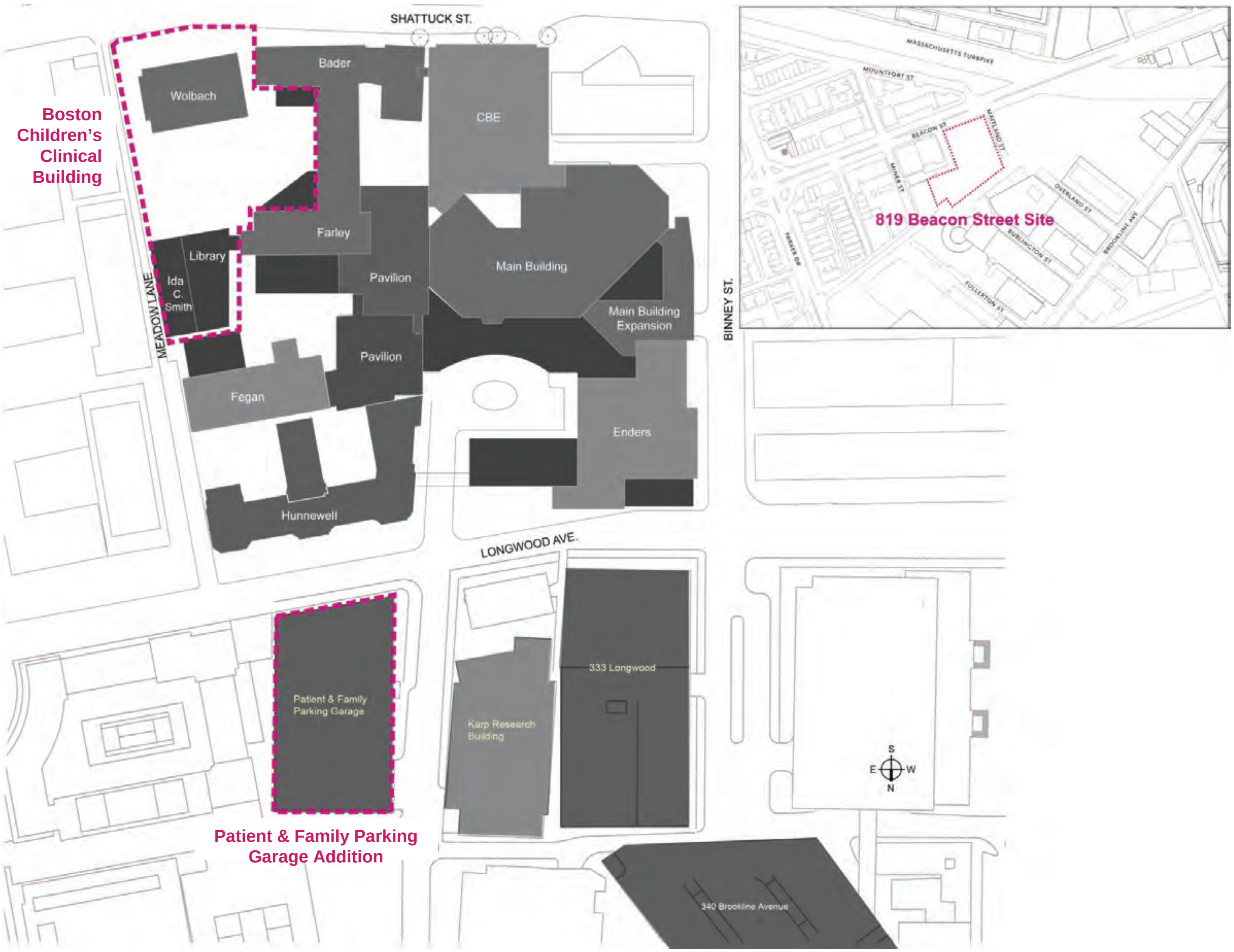

Figure 2-1
Projects' Sites

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Figure 2-2

Boston Children's Clinical Building Site staff, the BCCB will be connected to existing buildings on the Core Campus on its lower outpatient, support and surgical levels, providing convenient access and circulation for patients, families and employees. In addition, the BCCB will connect an upper clinical floor (Level 9) with Main South over the Farley/Bader Pavilion (see Figures 2-3 and 2-4). The BCCB will be an expansion of the interconnected buildings at the Core Campus; patients and families will enter the Hospital at the Main Entrance and access the BCCB using circulation paths through existing buildings.

The BCCB will expand Children's Core Campus with approximately 445,000 sf of space (approximately 403,311 sf of net new space) to be located on the site currently occupied by portions of Bader East and Farley, the Prouty Garden, the Wolbach Building, the Library and the Ida C. Smith building (see Figure 2-5). The BCCB is proposed to be located on the sole remaining site within the portion of the Core Campus south of Longwood Avenue capable of accommodating a 445,000 square foot expansion that will readily allow internal integration with other existing patient-care buildings on the Core Campus, will possess a 40,000 square foot footprint of suitable size for Children's programmatic needs, and will result in minimal disruption to Children's existing patient-care and research functions located south of Longwood Avenue. Figure 2-6 provides a perspective of the BCCB from Shattuck Street. Figure 2-7 is a proposed campus plan and ground floor plan.

The BCCB will provide Children's with the opportunity to, among other things, re-prioritize the use of green and gathering spaces for patients and family members by replacing current green space in the Prouty Garden with a variety of visible and accessible green and gathering spaces that are available during all seasons and to a variety of users. To determine how the Prouty Garden is currently used, Children's conducted an observational survey of use and users in 2012. The survey found that the Prouty Garden was mainly used by staff members (87% of all users), and only minimally by patients and families (13% of all users).

The proposed BCCB will create more patient and family-focused green and gathering spaces by providing more diversity in types and uses as shown on Figure 2-8. A true healing environment will benefit the user according to his or her own needs. The green and gathering spaces, both exterior and interior, will serve staff, patients and families year-round, bringing light, nature, and places for respite and activity into the clinical environment, even during Boston's winter months. The program and amenities on each green and gathering space have been carefully planned to interact with a diverse population of patients and families. In addition, with the increasing higher acuity patient population, the proposed green and gathering spaces will be designed to accommodate the patient population by providing protected areas that are connected visually to the outdoor open spaces, as well as spaces that can be accessed from patient floors. The green and gathering spaces also act as a wayfinding system for the campus. They highlight public areas and main circulation routes that lead to many destinations on campus. Overall, they will enhance the experience of patients, families and staff visiting the BCCB and the campus.

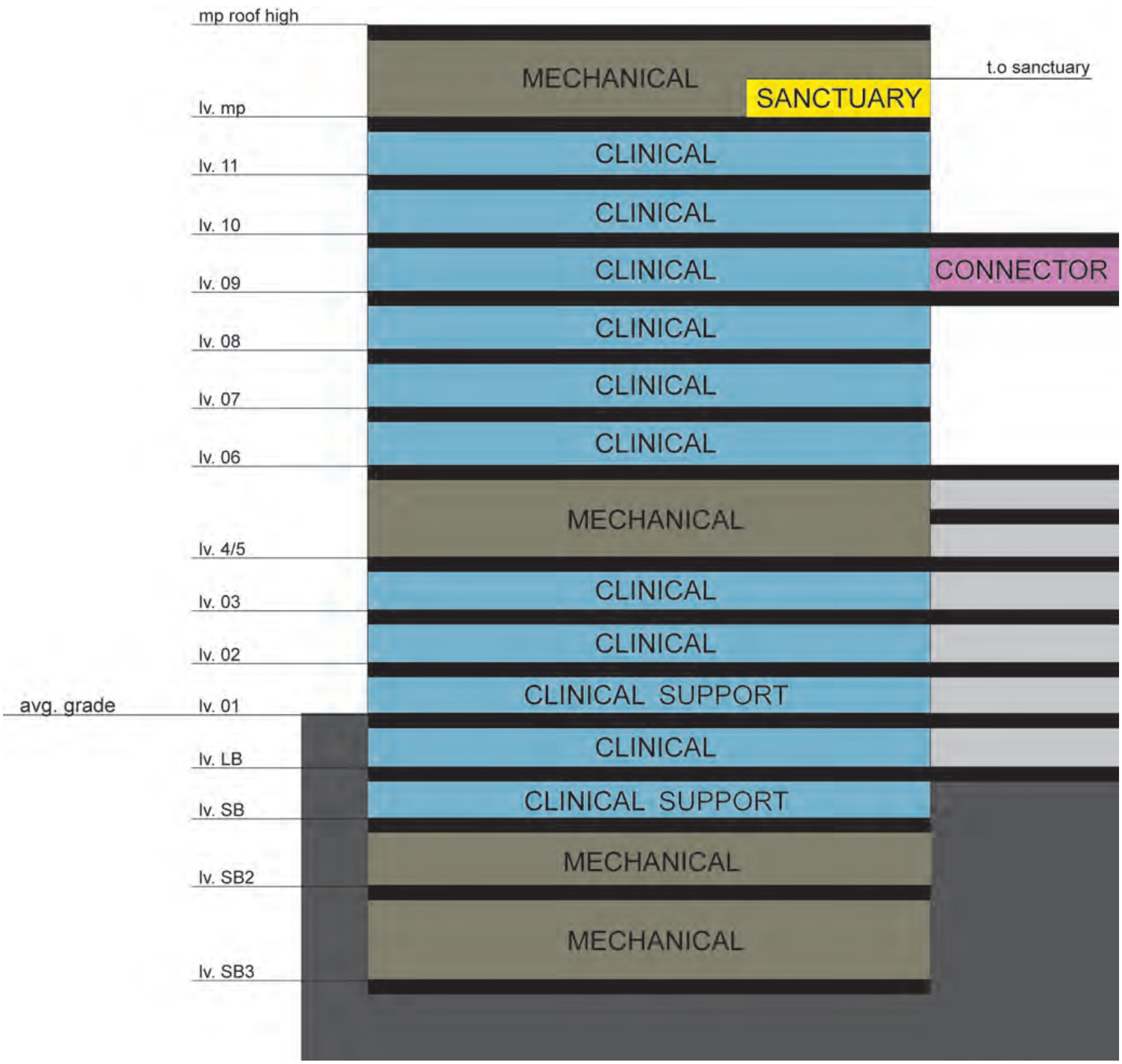

Figure 2-3
Boston Children's Clinical Building Section

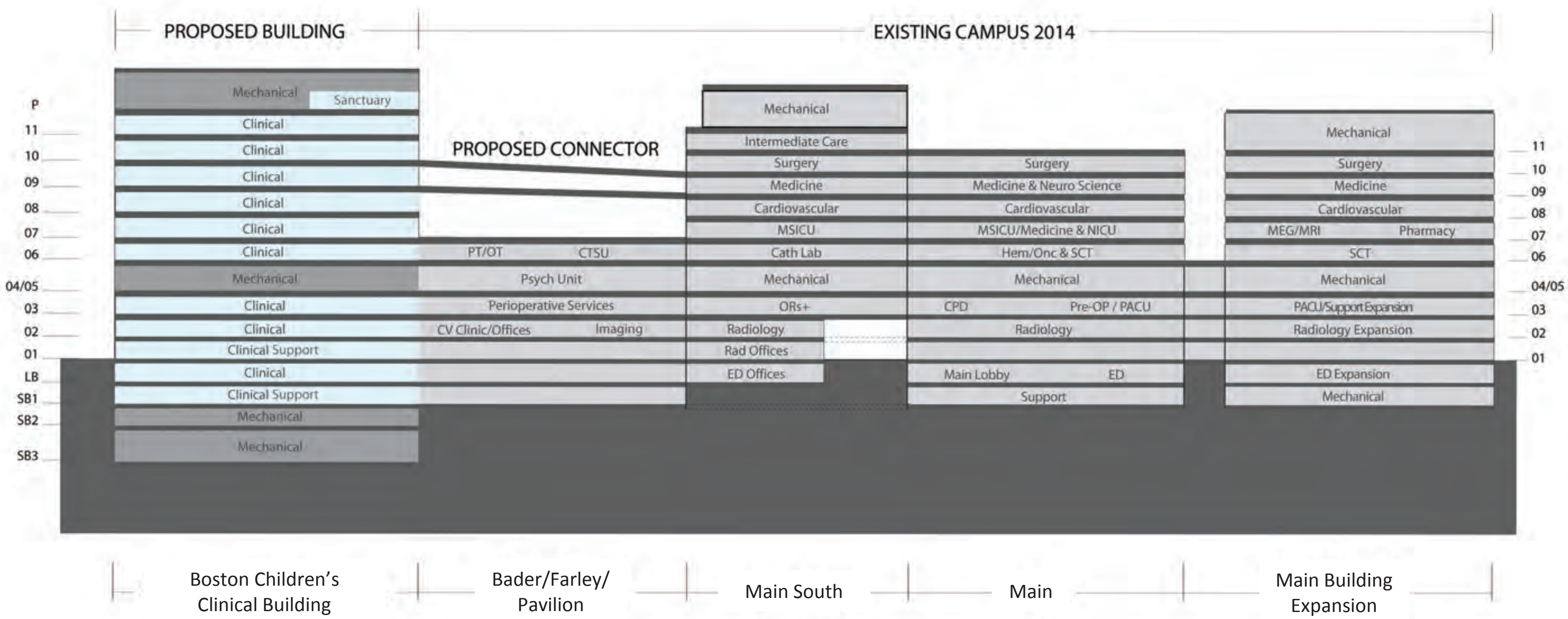

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Figure 2-4
Campus Section

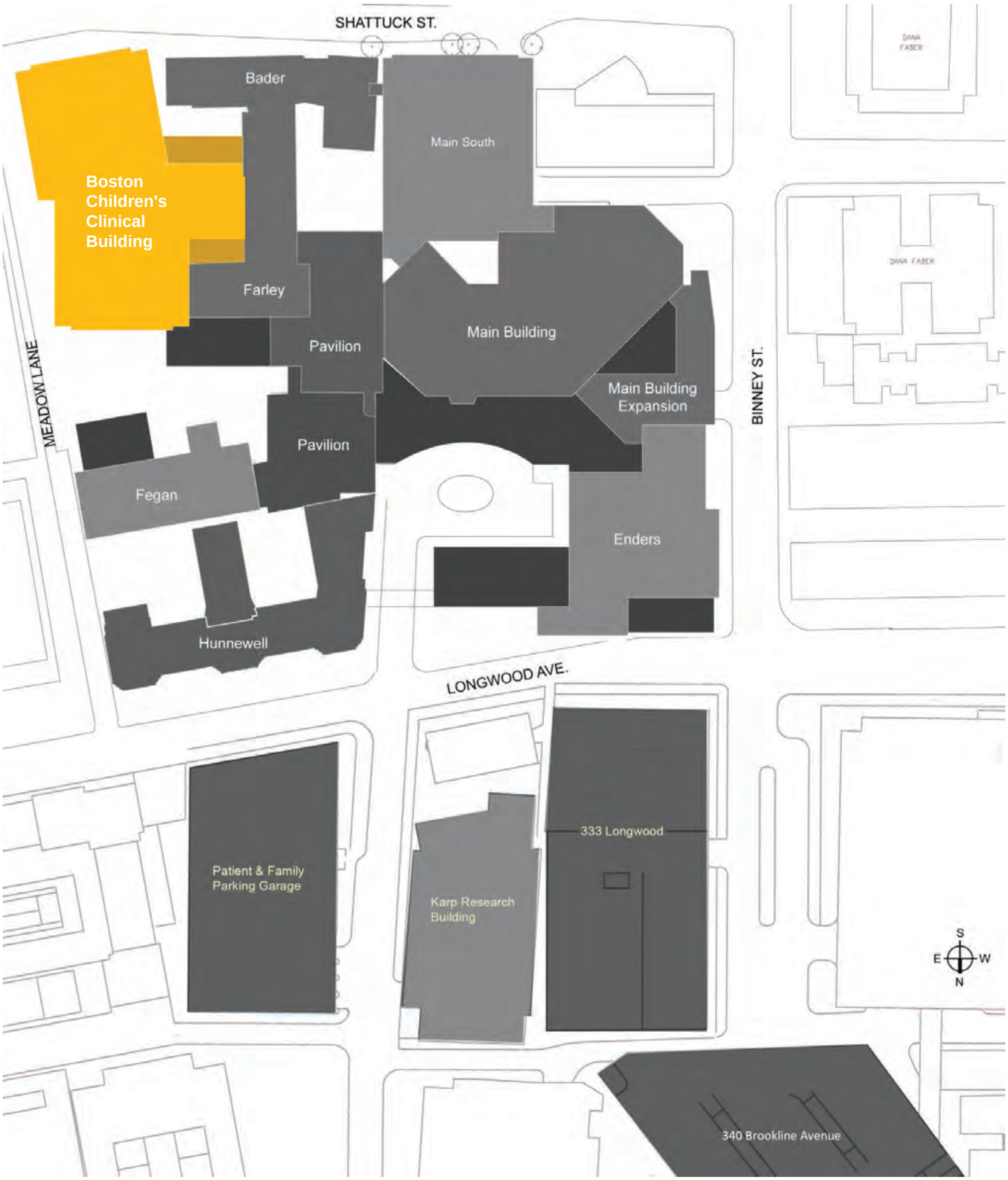

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Figure 2-5
Boston Children's Clinical Building Site Plan

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Figure 2-6

Proposed Boston Children's Clinical Building - View from Shattuck Street

BCCB Space Use Legend

- Clinical Space
- Staff Green Space
- Public Ammenities
- Staff Multi Purpose Area
- Loading Dock

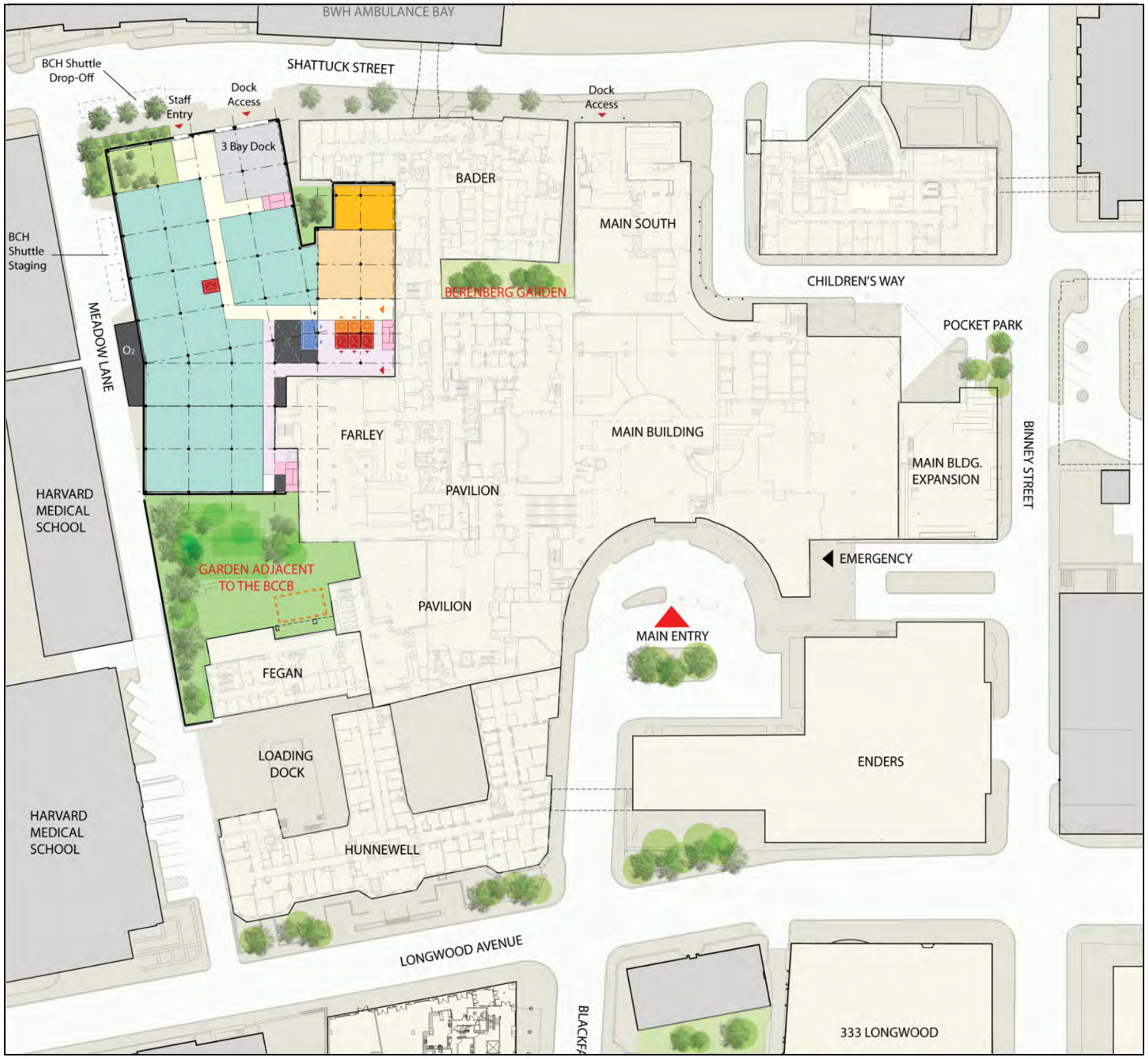

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Figure 2-7
Campus Plan

Specifically, construction of the BCCB will include approximately 33,800 sf of new or enhanced green and gathering spaces around and as a part of the building. There is an additional 5,400 sf of green space that is not accessible; 2,400 sf of which provides views of green space and the remainder provides a reduction in impervious surface. At-grade gardens, interior gardens, sanctuary space and roof terrace gardens will provide all-season, easily accessible green and gathering spaces for patients, families and staff allowing a wide range of activity to occur in support of the healing process. The green and gathering spaces associated with the BCCB include the following spaces as shown on Figure 2-8.

- Berenberg Garden Expansion: The existing at-grade garden space will be expanded from approximately 1,270 sf to 2,500 sf. The space will provide views to the exterior from a corridor connecting the Main Building with the proposed BCCB, and will provide accessibility for staff and visitors from a lower level of the BCCB to the outdoors. As a small, very quiet, enclosed space, the Garden will provide a meditation space, a calm and contemplative space in a hospital setting. The space will be removed from other distracting activities such as eating and playing. It will serve both as a place of respite and as a wayfinding element, connecting the BCCB with the remainder of the Core Campus, and will be part of an enclosed series of small garden rooms that encourage contemplation and reflection.
- Bader Garden: A new 800 sf indoor/outdoor space will be created between the BCCB and existing Bader Building, and will include an enclosed atrium space with a connecting outdoor garden primarily intended for active use by staff and for Hospital gatherings. Mental or emotional stress or anxiety can be relieved through spaces that encourage participation and reflection. Quiet spaces with white noise and water elements, such as what is being considered for the Bader Garden, can also aid the staff. The space is intended to allow the staff to rejuvenate and enjoy the contributions they make in the care of children the world over.
- Garden Adjacent to the BCCB: The enhanced Garden Adjacent to the BCCB will be the BCH signature green space providing an on-grade, open air environment for patients, family members and staff. Anchoring the series of green spaces planned for numerous levels of the BCCB, the Garden will offer opportunities for relaxation, play and healing defined by natural materials, textural contrast and seasonal interest. The existing playground space will be expanded from approximately 7,570 sf to 11,500 sf, of garden space connected to the Core Campus, including the BCCB, making it more accessible to patients and families. The space will allow for exploration and an inviting sense of mystery, while also providing quiet respite areas for families and staff. Areas of the garden will have a stimulating environment—both physically and mentally—for patients, and will be designed to provide a rich sensory experience. Vibrant whimsical spaces for children of all ages may include a tree house, canopy walk, interactive light play, sound components, reclaimed wood and seating.

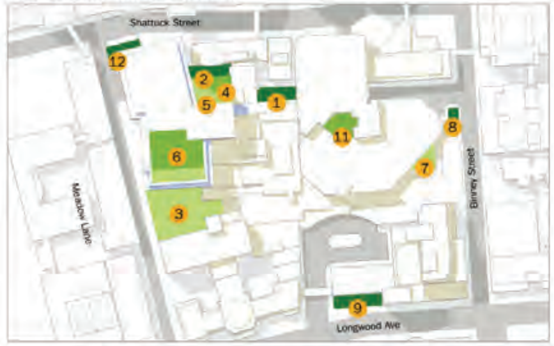
Proposed BCCB Green Spaces Location & Size

BCCB Green Spaces Accessibility & Usability Goals

All Seasons	●	Winter garden provides all season use for patient & family.
Variety of Garden Types	●	Promote different uses and provide users with options.
Direct Access From Patient Floor	●	Some of the green spaces plan to be directly accessed from patient floor providing ease of use.
Centrally Located & Distributed on Campus	●	Multiple locations throughout campus provide opportunity for more us.
Zones of Privacy	●	Ability to be used separately for family patient staff.
Integration of Patient & Family Amenities	●	The new spaces provide the potential to increase multiple amenities / program (end of life, meditation, etc).

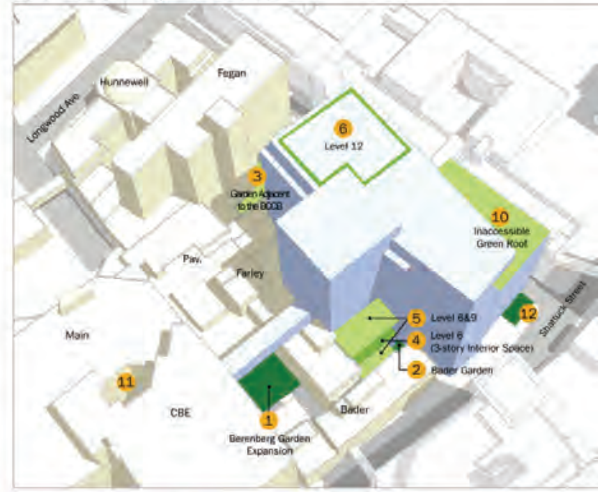
	Goal	Feasibility
●	Meet	Good
●	Neutral	Moderate
●	Does Not Meet	Poor

Plan View of Gardens Location



Key	Name	Type	Access from Patient Floor	Existing SF	New or Enhanced SF	
	Prouty Garden		✗	23,220 sf		
1	Berenberg Garden Expansion		✗	1,270 sf	2,500 sf	
2	Bader Garden		✓		800 sf	
3	Garden Adjacent to the BCCB (Include Play Gym Spaces)		✗	7,570 sf	11,500 sf	
4	BCCB Level 6 Wintergarden		✓		3,000 sf	
5	BCCB Level 6 & 9 Roof Garden		✓		5,200 sf	
6	BCCB Level 12 (sanctuary interior space)		✓		6,000 sf	
7	Binney Courtyard (exterior roof terrace)		✓		800 sf	
8	Binney Pocket Park		✗		400 sf	
9	Perlmutter Garden		✗	800 sf	800 sf	
12	Shattuck St. Green Space		✗		1,000 sf	
13	Patient Unit Green Space		✓		1,800 sf	
				32,860 sf	33,800 sf	+940 sf
10	BCCB Penthouse Inaccessible Green Roof		✗		3,000 sf	
11	Main Building Level 6 Inaccessible Green Roof		✗		2,400 sf	

Aerial View Showing Final Build Out



At Grade Garden | Indoor Garden | Roof Terrace

Boston Children's Hospital

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Figure 2-8

Proposed Boston Children's Clinical Building – Proposed Gardens

- BCCB Level 6 – Wintergarden: The three level interior healing garden will provide patients with a new 3,000 sf all-season, sheltered open space, and will be a primary focal point for three new inpatient floors with views from patient rooms into the healing garden. Visible from the new public elevators, the winter garden will be accessible for patients and their families, as well as for staff. The garden's accessible location and enclosure will encourage its use, even for patients on stretchers or wheelchairs, during all seasons. A monitoring device concealed in the tree canopies will permit telemetry cardiac patients to continue to be monitored in the garden when exercising outdoors. The garden will be a testament to the evidence that hospital rooms that overlook trees can ease recovery for patients. Patients able to see nature are often able to be released from the hospital faster, have fewer complications, and require less pain medication than other patients.
- Roof Garden and Binney Courtyard: The 5,200 sf roof garden on levels 6 and 9 of the BCCB, located above the winter garden, will be an exterior space, visible and accessible from the new public elevator lobby (similar location to the winter garden) at Level 9. The location along the connector to Main South will increase visibility and use of the roof garden by patients, families and staff. The garden will provide an unexpected outdoor space with similar elements to the enclosed winter garden below it. The 800 sf Binney Courtyard is a small exterior roof terrace on the roof of the new Main Building Expansion.
- BCCB Level 12 Sanctuary: The 6,000 sf Sanctuary will provide an interior contemplative space located at the northwest corner of the new BCCB with separate public and patient access. It will be light-filled and will provide extensive views of the Fens and downtown Boston, as well as views that may extend to the Harbor Islands. The Sanctuary is envisioned to be a quiet space, conducive to meditation and the alleviation of stress with the ability to soothe, calm and rejuvenate or restore one's mental and emotional health. It will be designed to be a place of retreat, respite, and tranquility for employees, visitors and patients with a series of garden rooms connected by paths. The Sanctuary will provide a spiritual retreat and meditation space for patients and their families, a place of rest and quiet in the middle of a large, busy hospital.
- Binney Pocket Park: The 400 sf Binney Pocket Park is a small on-grade green space, open and accessible from Binney Street, primarily accommodating staff breaks.
- Perlmutter Garden: The 800 sf Perlmutter Garden is a small roof terrace for use by the research staff. The space will continue to be used as a dog walk.
- Shattuck Street Green Space: The 1,000 sf indoor/outdoor green space is located adjacent to the staff entry and away from patient and public circulation, providing a respite for staff. It is envisioned as a quiet space, conducive to meditation and alleviation of stress from the daily care giving process.

- Patient Unit Green Space: The 1,800 sf space with southern exposure will be located in the patient care unit and will serve as a respite for family members. A quiet space with immediate access to patient rooms, it will provide views toward the Harvard Medical School Quadrangle.

- BCCB Penthouse Green Roof: A 3,000 sf green roof on the roof of Level 11, inaccessible except for maintenance, is a benefit gained from the set-back above the clinical floors at the mechanical level. The green roof enhances the massing at the southeast corner at Shattuck Street and the views from the Harvard Medical School Quadrangle and Francis Street.

- Main Building Level 6 Roof Garden: The 2,400 sf inaccessible roof garden provides views of a green space.

Central Utility Plant

In connection with construction of the BCCB, Children's will develop a CUP in the sub-basement of the BCCB that will include a 1,200 kilowatt (kW) gas-fired reciprocating engine and waste heat boiler (together a CHP unit) and two 30 thousand pound per hour (kpph) dual-fuel fire tube boilers. In addition, electrically operated chiller units will be placed in the sub-basement of the BCCB and will be sized to reliably provide 100% of the chilled water needs for the BCCB.

CHP is the simultaneous production of electrical or mechanical energy (power) and useful thermal energy from a single energy source. By capturing and using heat energy from an effluent stream that otherwise would be discharged to the environment, CHP systems can operate at efficiencies that are not achieved when heat and power are produced through separate processes.

In view of current concerns about the costs and consequences of fossil fuel consumption, a CHP unit can present a very economically and environmentally responsible solution. Traditional power plants operate with efficiencies around 35%, while CHP allows for efficiencies of up to approximately 80% due to the capture and use of the engine-generators' waste heat.

The CHP unit will provide a portion of the electrical energy needs of the BCCB with the majority being purchased from the grid. All electricity will be purchased from the grid when the CHP unit is out of service for maintenance. The CHP unit will simultaneously provide a portion of the hot water and steam needs of the BCCB. The boilers will supplement the thermal output of the CHP unit so that 100% of the BCCB's thermal demands, which vary with ambient conditions and time of day, will be met at all times. The CUP will contain sufficient redundancy so that, in the event of outage of one boiler or the CHP unit, thermal demands are reliably met.

Extended Utility Plant System

Children's is currently considering various alternative configuration options to potentially serve other properties within the LMA, two of which are described more specifically below. The primary facilities for these two alternatives would also be located in the sub-basement of the BCCB and would be an expansion of the BCCB's CUP (which expansion would not become operative for several years). However, evaluation of these potential expansion options is ongoing. Therefore, the CUP serving the BCCB only, as described above, is the proposed option at this time for purposes of the DPIR/DEIR.

These alternatives would alter and expand the CUP, but not for several years.

Longwood Medical Energy Collaborative South Loop: This alternative would be a joint-institutional project with the Longwood Medical Energy Collaborative[5] (LME), and would provide 100% of the thermal needs to the entirety of Children's Core Campus and the campuses of Brigham and Women's Hospital (BWH) and Harvard Medical School (HMS), in an area in the southern part of the LMA (the SL Option), starting in 2021 when the Children's current utility contract (the RUC) with the Medical Area Total Energy Plant (MATEP) expires. In the SL Option, Children's would install the CUP for the BCCB as proposed, except that the boilers would be larger (85 kpph). Prior to the expiration of the RUC, the larger boilers would be equipped to operate efficiently at a lower capacity to serve the BCCB only. Additional chillers would be situated in a below-ground chiller vault (rather than the BCCB roof) that would be constructed on property owned by Harvard Medical School as shown on Figure 2-9 (the HMS Chiller Vault). Children's, HMS and LME are presently negotiating, and expect to finalize, a Memorandum of Agreement with regard to the HMS Chiller Vault in the event that the parties move forward with the SL Option. In the second phase of the SL Option, two 7.5 MW combustion turbine-based CHP units would be added. Additionally, the two 85 kpph boilers would be modified to operate, at the expiration of the RUC, at the higher capacity needed for the SL Option.

At completion, the CUP at BCCB would provide approximately 16.2 MW of electrical generation for Children's, BWH and HMS, and would provide approximately fifty percent (50%) of the electrical distribution needs of those institutions, with the balance of those

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5 Longwood Medical Energy Collaborative, Inc. (f/k/a Harvard Medical Collaborative, Inc.) is a Joint Institution affiliate which supports the charitable, scientific and educational purposes of its six members: including Beth Israel Deaconess Medical Center, Brigham and Women's Hospital, Boston Children's Hospital, Dana-Farber Cancer Institute, Harvard Medical School and Joslin Diabetes Center. Its primary focus is to plan and coordinate energy initiatives to ensure that these charitable institutions have ongoing access to reliable, cost-competitive, efficient long-term supplies of electricity, steam and chilled water to allow them to fulfill their patient care, teaching, research and community benefits missions.

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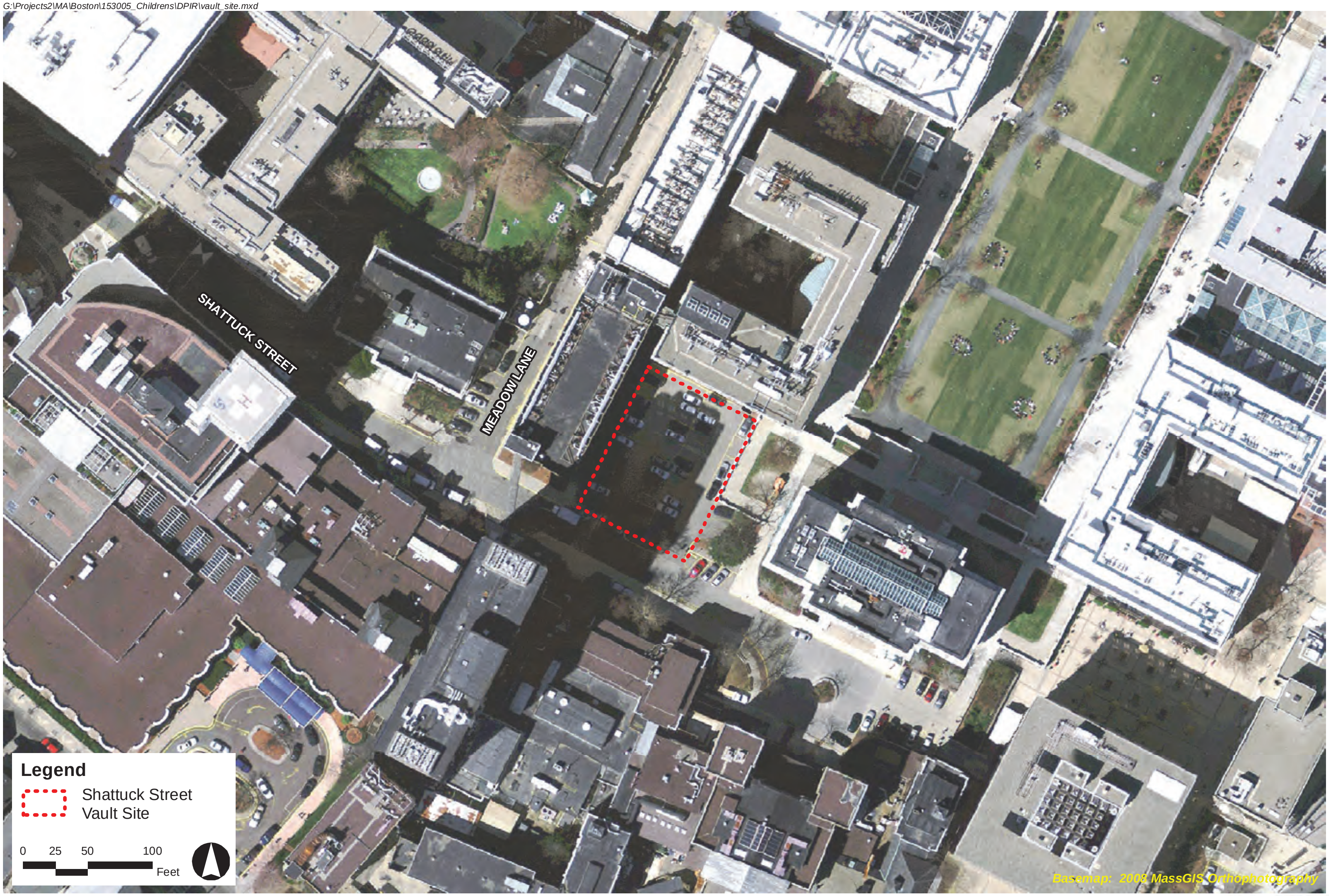


Boston Children's Hospital

Epsilon

Figure 2-9
Shattuck Street Vault Site

needs being purchased from the grid. In addition to the distribution assets contemplated for inclusion in the BCCB and the HMS Chiller Vault, the SL Option would also include boilers, chillers and a CHP unit currently being planned for BWH's Brigham Building for the Future (BBF).

Children's Core Campus: This alternative would provide 100% of the thermal needs and a portion of the electrical energy needs for not only the BCCB, but the entirety of Children's Core Campus, commencing on the expiration of the RUC. In this alternative, the cogeneration equipment would be installed in the BCCB in two separate phases. The first phase would be the currently proposed CUP as described above. The second phase would be permitted and constructed prior to the expiration of the RUC and would include two 75 kpph watertube boilers and a single 7.5 MW combustion turbine-based CHP unit (turbine and 75 kpph waste heat boiler) in the sub-basement of the BCCB, as well as additional chiller units being installed in the sub-basements of the BCCB that will be sized to reliability provide 100% of the chilled water needs for the Core Campus.

2.2.3 Addressing Current and Future Needs

Children's seeks to improve the patient and family experience, while also improving its ability to provide the best quality care to its patients. Specific needs addressed by the BCCB include:

- Improved Rooms – Even with the opening of Main South in June 2005 and the associated shifts of inpatient services in the Main Building and the construction of the Main Building Expansion at Binney Street, Children's still has a need for additional single-bed patient rooms to be converted from two-bed rooms into single-bed rooms. As mentioned above, single-bed rooms have a significant beneficial impact on infection control. In addition, some existing rooms require updating and/or increased size to address Americans with Disabilities Act (ADA) requirements.

- Sufficient Space For Families -- While Children's currently provides a wide array of support spaces for families—the Children's library, Center for Families, laundry, dormitory space for ICU patient families, the Chapel—the Hospital recognizes that with patient acuity levels rising now and in the future, there will be a need to provide even more quiet and contemplative spaces that allow seriously ill patients and their families a respite from the rigors of intensive or extended medical treatment, including indoor and outdoor green and gathering spaces that may be used during all seasons of the year.

- Neonatal Intensive Care Unit (NICU) on the Core Campus – The existing NICU was opened in 1988 and is in need of an update to accommodate new state-of-the-art equipment. The current layout of the NICU is predominantly an open bay configuration that limits patient and family privacy. A new NICU located on the

Core Campus with private rooms will provide a more private space for families, more space for state-of-the-art equipment, and better lighting and sound attenuation for the patient population. Children's is eager to update its NICU and incorporate the many advances resulting from research done on NICU environments into a new state-of-the-art NICU. Although a specific location for the NICU has not been determined, the BCCB will allow for the construction of the NICU elsewhere on the Core Campus.

The proposed BCCB will meet or alleviate the needs described above, including new single-bed patient rooms to allow for existing two-bed rooms to be converted to single-bed rooms, new and expanded surgery support, green and gathering spaces (such as roof gardens, indoor and outdoor gardens, play space, as well as contemplative quiet spaces) for patients and families, and additional space to implement Centers of Excellence. The construction of the BCCB will also help to provide space on the Core Campus for a new NICU.

As previously described, the BCCB will be integrated into existing buildings on the Core Campus through a connection on its lower clinical and support levels, providing convenient access and circulation for patients, families and employees. In addition, the BCCB will connect an upper clinical floor (Level 9) with Main South over the Farley Bader Pavilion.

Supporting Children's mission to provide the most advanced pediatric healthcare and its commitment to search for new and improved treatment for children, the location and size of the building and its footprint are dictated by the following four inter-related factors:

- The programmatic need to locate expansion of diagnostic and treatment space for uses such as radiology and surgery in a 2nd and 3rd floor location contiguous and connected to the existing emergency room, surgery and radiology spaces currently located at the Hospital.

- The need to expand and "right-size" outdated surgery facilities to accommodate state-of-the-art equipment for new image-guided procedures and minimally invasive surgeries, which require larger procedure rooms and more support space, as well as the need to "right-size" imaging services which require sedation and greater support space in a pediatric care setting and which must be located in proximity to the surgery facilities.

- The need to convert the remaining beds which are in semi-private rooms to private patient facilities by creating private patient rooms and the need to add additional beds to meet the demand for treatment of higher acuity patients including intensive care beds. At the upper inpatient levels, the 40,000 square foot size of a floor is required in order to accommodate two 15 bed units on a 30-bed floor inclusive of the facility support components, such as vertical circulation and mechanical, engineering and plumbing (MEP) needs.

- The structural need at the lower levels to have a 40,000 square foot footprint in order to structurally support the 40,000 square foot upper levels, as well as to provide sufficient space at the 2nd and 3rd floors to meet the clinical programmatic needs.

As previously noted, current best known practices include all-private patient rooms that are acuity adaptable, and same-handed designed with decentralized nursing and storage for supplies and medications. Modern patient units need to accommodate High Tech with High Touch, ranging from robust technologies to connection with nature (views and landscaped balconies). Patients need control over lighting, temperature, privacy, food, and information; inclusion of family as part of the care team; and, to the extent achievable, a non-institutional setting. Based on studies of patient and nursing satisfaction, many nursing and patient care functions are decentralized to the bedside. Each of the above factors has implications on the patient room module which has the greatest impact on the amount of gross square feet per bed followed by the amount of patient unit support space.

Children's is also promoting team-based care and fostering teamwork in the hospital environment. In addition to the team-based care requiring support from physicians, administrators and technical staff, and in addition to patient care, needs to support research and education, thereby requiring appropriate support space such as offices and learning spaces.

The types and acuity of the patients to be accommodated, required staffing ratios, operational processes and procedures, site constraints, and market dynamics influence decisions on the size of the patient room, nursing unit support space, and family and staff support space to be provided on a particular unit. The inpatient floors in the pediatric environment are typically larger than in other hospitals because of the need for additional support space per bed. The patient unit components, as described below, have informed the prototypical patient unit and the required footprint size of the proposed BCCB.

Patient room module: Code-compliant private patient rooms must include patient care space along with accommodations for a family member or visitor. Combined toilet/shower rooms must provide wheelchair accessible facilities with the ability to use the room as a shower, if required. Children's family-centric private patient rooms include an expanded area for family and visitors, and slightly more space around the patient bed. The entrance vestibule provides a charting area for the care provider.

Patient unit support space: Each zone has a care provider station with decentralized charting stations for each patient room. Alcoves for linen, medication, and emergency response carts are also included. A large team work/multipurpose room is provided for each zone as well. Point-of-care laboratory and respiratory care satellites are programmed along with space for the administrative communication center, team conference room, and staff lounge/break room.

Common staff support space: Additional support spaces, such as office space, staff lockers, and conference/classroom and on-call facilities, are all provided in a central location off of the patient care floor.

Common family/visitor amenities: A small family/visitor lounge with male and female bathrooms is provided on each patient care floor with additional amenities, including a family consultation/meeting room, family kitchenette, and an education/business center.

The above components result in individual private rooms of approximately 340 square feet and in a patient unit that requires approximately 1,350 gross square feet per bed. The staff coverage ratios help determine the appropriate size of a patient unit. At Children's, physician coverage is 15 to 18 patients per physician. Since a single 15 to 18 bed unit on a floor will not meet Children's needs for sufficient private patient rooms, the design of the inpatient floors at the BCCB combines two 15 bed units on a 30 bed floor resulting in 40,000 square foot footprint, inclusive of the facility support components such as vertical circulation and MEP needs.

2.2.4 Consistency with State and Local Plans and Policies

2.2.4.1 Executive Order No. 385 – Planning for Growth

Executive Order No. 385, "Planning for Growth" (EO 385) signed in 1996, explicitly seeks to promote sustainable economic development in the Commonwealth of Massachusetts. The development of the BCCB will meet the dual objectives of EO 385 by constructing a new building in a developed area with adequate infrastructure and which does not result in avoidable loss of environmental quality and resources. The Project includes a combined heat and power facility that is more efficient than off-site electric and on-site heat generation. The site's location in a dense urban environment with access to public transportation will minimize the Project's impact on the Commonwealth's natural resources, including air and water.

The Project site is developed and is located in a dense urban area and will rely on existing infrastructure. The Project will not result in any adverse impacts on any endangered or threatened natural resources.

2.2.4.2 Commonwealth Sustainable Development Principles

The Commonwealth Sustainable Development Principles released by Governor Deval Patrick's administration provide 10 principles that promote smart growth strategies, equitable development, and investments that will improve the economic and environmental conditions in the Commonwealth. The BCCB will be consistent with these principles as it will be located in a dense urban environment with existing infrastructure, will be a Leadership in Energy and Environmental Design (LEED) certifiable building, will include a CHP unit, will create jobs, and will create new open spaces for employees, patients and visitors to the Hospital.

2.2.4.3 MetroFuture

The MetroFuture plan is the regional plan produced by the Metropolitan Area Planning Council (MAPC). The plan sets up a vision for the region in regard to land use and development. The plan provides 65 goals in six categories: Sustainable Growth Patterns, Housing Choices, Community Vitality, Prosperity, Getting Around, and Energy, Air, Water and Wildlife. The Project is consistent with many of these goals by building on previously developed land in a dense urban area, being located proximate to public transportation, and developing a LEED certifiable Project. Boston Children's Hospital also furthers many MetroFuture goals with their workforce development programs and other public benefits, as described in Section 1.3.

2.2.4.4 LMA Interim Guidelines

In 2002, the BRA and the Office of Jobs and Community Services (OJCS), in conjunction with the Boston Transportation Department (BTD), initiated a master planning process for the LMA. In 2003, the BRA adopted a set of Interim Guidelines to inform the BRA's considerations while reviewing proposed projects pursuant to Article 80 of the Boston Zoning Code.

The Interim Guidelines establish a set of design principles and criteria for projects and IMPs in the LMA. These guidelines describe the physical assets of the LMA, outline dimensional objectives (including height zones and setbacks), and describe public benefits that can be provided by project proponents and institutions in order to achieve project heights that are greater than the base heights specified in the Guidelines.

The BCCB is generally consistent with the Interim Guidelines adopted by the BRA for the LMA. The BCCB fundamentally meets the over-arching purposes and spirit of the guidelines and provides exceptional public benefits to allow the proposed height. A more detailed discussion of the compliance with the LMA Interim Guidelines is included in the 2013 Institutional Master Plan Amendment.

2.2.4.5 Fenway Urban Village Plan

The Fenway Urban Village Plan is a resident-created vision for the Fenway neighborhood prepared by the Fenway Community Development Corporation. The Plan includes five components for which the Plan includes a number of goals.

1. A sufficient and varied housing supply

2. Excellent access to public transportation and curbs on vehicular traffic

3. Community-building facilities such as a community center

4. A healthy business community serving local residents and visitors alike, while providing employment opportunities

5. Easy access to open space and a responsible level of impact upon the environment

The BCCB Project will create new employment opportunities for local residents, while continuing to allow Children's to meet its mission and serve the community. Children's is the primary health care provider for many children in the Fenway neighborhood, and will continue to provide this service. The Children's comprehensive transportation demand management program will continue to be implemented to minimize automobile use by employees. The BCCB will also be LEED certifiable, and will meet the aggressive energy reduction requirements of the 2012 International Energy Conservation Code (IECC 2012) anticipated to be implemented before construction of the BCCB. As shown in Chapter 9, the BCCB Project will reduce greenhouse gas emissions from a building built to the State Building Code by 15%.

2.2.5 Boston Children's Clinical Building Alternatives

The BCCB Project is the culmination of a six year effort to analyze alternatives for possible locations for an expansion of the clinical facilities on the Boston Children's Core Campus with a suitably located and sized footprint, as described in Section 2.2.3. Siting the proposed 445,000 sf BCCB has involved analyses of numerous Boston Children's Hospital's Core Campus building sites, each with multiple options generated by their unique locations. The focus has been on the Core Campus as the proposed uses need to be proximate to the existing clinical and research facilities in order to maximize the efficiency of care. Initially, Children's explored all possible locations on the Core Campus to ascertain suitability, including sites both north and south of Longwood Avenue. As discussed below, this analysis led to the conclusion that the proposed site is the only feasible site option for a building the scope and size of the BCCB which will meet Children's programmatic needs. Described below are various alternative options explored by Children's. Figure 2-10 shows the location of the alternatives studied. Chapter 7 also includes the detailed alternatives

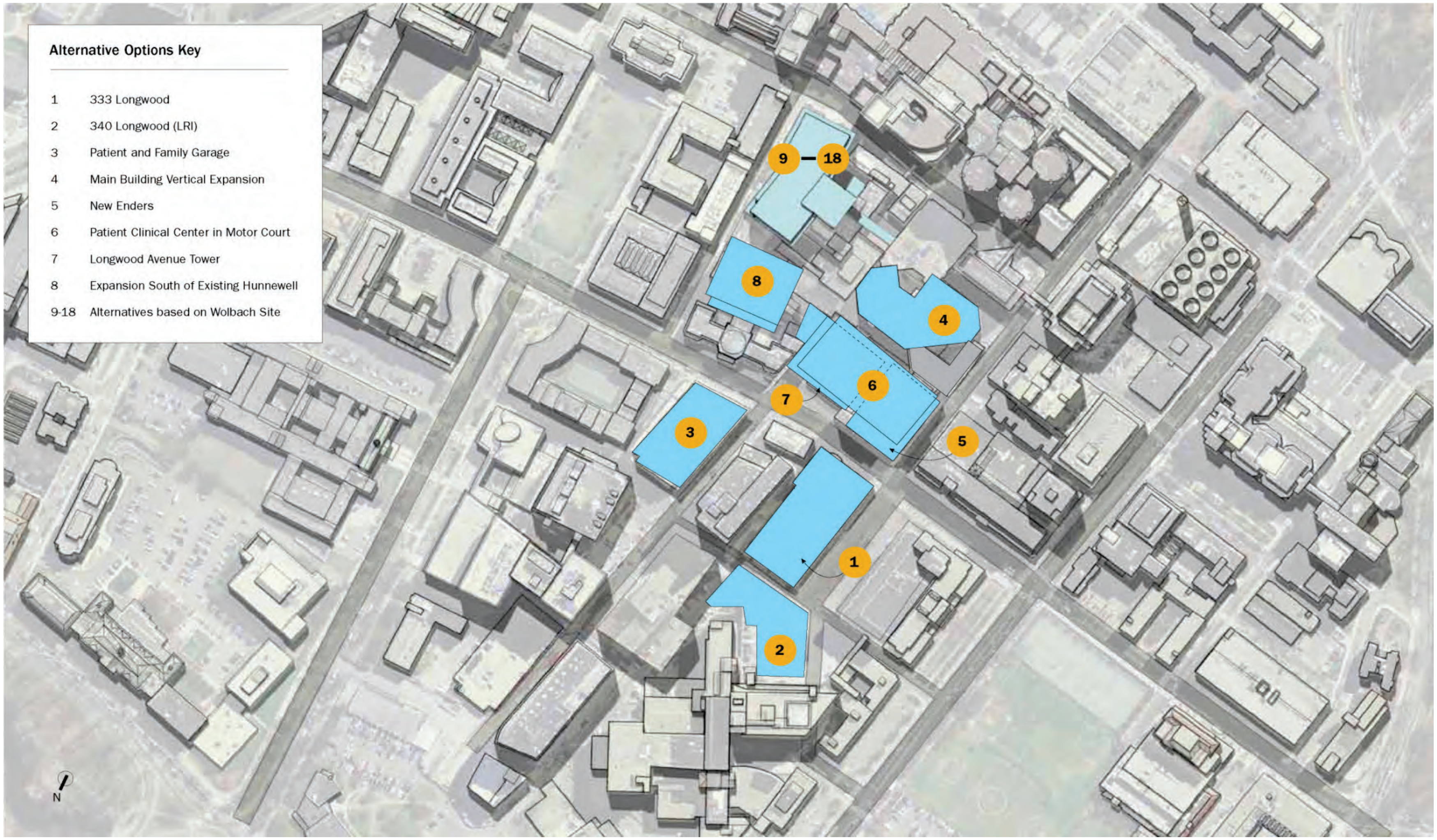


Figure 2-10
Alternative Options Key Plan

analysis described below as well as graphics associated with the alternatives. In addition, Chapter 7 includes additional alternatives related to the feasibility of retaining the Wolbach Building.

2.2.5.1 No Build Alternative

The No Build Alternative would limit Children's ability to address its current and future needs. As mentioned in Section 2.1.1, the focus of the Core Campus is increasingly on high-level tertiary and quaternary care, while outpatient care is increasingly provided for in non-LMA facilities, limiting the number of patients that make trips to the LMA. The high-level tertiary and quaternary care, however, requires significant space for high tech equipment and appropriate spaces for patients and families. These space needs can not be met within the existing buildings due to the limitations of the older designs that do not meet the current needs of modern hospitals. To maximize efficiency of care, clinical space must be easily accessible by patients and employees (i.e., new space must be located on or adjacent to the existing clinical facilities). There is currently limited space available within the LMA to construct new buildings, and every effort was made to identify the appropriate location for the BCCB.

If the BCCB is not built none of the health care and public benefits associated with the proposed Project would occur.

2.2.5.2 Zoning Alternative

Since zoning is established by the existing Institutional Master Plan which reflects the existence of the current improvements, there is no Project alternative consistent with zoning which would be permitted without an amendment of the Institutional Master Plan. The BCCB site is located on the Children's Core Campus which is part of the Children's Hospital Boston Institutional Master Plan area, and therefore the Institutional Master Plan Amendment filed concurrently with this DPIR/DEIR, and once approved by the Boston Zoning Commission, will define the zoning dimensions and uses allowed for the BCCB site.

2.2.5.3 Alternatives Based on Other Sites within the Campus

Consideration of Alternatives North of Longwood Avenue

Alternatives 1-3: Clinical Building on Sites North of Longwood Avenue (333 Longwood Avenue, the Longwood Research Institute Site (340 Longwood Avenue) or the Patient and Family Garage Site)

The analyses included the study of a clinical building at the various locations north of Longwood Avenue owned by Children's: 333 Longwood Avenue, the Longwood Research Institute Site (340 Brookline Avenue), and the Patient and Family Garage site. These sites are all located north of Longwood Avenue. Under the configuration of the Children's Core Campus, all the inpatient clinical uses and facilities are located south of Longwood Avenue.

Clinical facilities such as surgery and radiology south of Longwood cannot be duplicated north of Longwood and Inpatient clinical uses located north of Longwood Avenue would not have direct or immediate access to critical facilities such as certain testing and special care. All the sites north of Longwood Avenue are too remote for clinical program expansion because clinical services must be integrated with existing facilities south of Longwood Avenue. Accordingly, all the sites north of Longwood Avenue have been rejected as the site of expansion of surgery, radiology or inpatient clinical facilities. Figures 7-3 through 7-5 in the Historic Resources section provide diagrams of the alternatives.

These alternatives do not meet the programmatic needs of Boston Children's Hospital and required connections and therefore are not feasible and would not result in the health care and other public benefits provided by the BCCB.

Consideration of Alternatives South of Longwood Avenue

Alternative 4: Main Building Vertical Expansion

This alternative studied erecting an expansion above the existing Main Building. In addition to the construction challenges throughout the entire construction period involved in construction of a vertical addition to an existing structure, this alternative would require shutting down an entire floor of existing patient beds through-out the construction period. This two-story alternative would not have resulted in sufficient total space to meet the programmatic needs due to a building height limitation, would not have resulted in a sufficiently large floor plate (since the maximum floor plate would be approximately 31,600 square feet) and is inconsistent with Children's current on-going operational needs for inpatient care, which require a floor plate of 40,000 square feet. Shutting down an entire floor of existing patient beds throughout the construction period is not operationally feasible. Figure 7-6 provides a diagram of the alternative.

A variation of this alternative had been considered by Children's in depth in 2008 prior to construction of the Main Building Expansion at Binney Street, and was rejected for even the smaller expansion (ultimately constructed at Binney Street, which began the conversion of semi-private rooms to private patient rooms by converting semi-private rooms to 44 private patient rooms) due to these logistical difficulties.

The Main Building Vertical Addition was studied previously in regard to environmental impacts through Article 80 of the Boston Zoning Code. The impacts from the addition related to transportation and infrastructure would be less than the proposed BCCB as the Main Building Vertical Addition was substantially smaller than the BCCB. However, it was not operationally feasible, did not meet the programmatic needs of the Hospital and would not provide the health care and public benefits associated with the BCCB.

Alternative 5: Clinical Building on Existing Enders Building Site

This alternative studied construction at the Enders Building site. With respect to the Enders Building site in particular, the Enders Building is used for ongoing research purposes and cannot be decanted during the construction period without prior construction of a new research facility in which to house these important research functions, which is not feasible from a timing or an economic perspective. Further, the demolition of the Enders Building would not provide for coherent connections between the surgery and radiology expansion space and existing facilities on the Children's Core Campus or yield sufficient floor area to support Children's inpatient needs (as it would only result in a floor plate measuring approximately 20,000 square feet). Additionally, this alternative is inconsistent with maintaining patient access at the Main Entrance during construction. Figure 7-7 provides a diagram of the alternative.

The site would allow for a building that would be smaller than what is necessary to meet Children's programmatic needs and does not provide the necessary connections to the existing Hospital and is therefore infeasible and would not result in the healthcare or other public benefits associated with the BCCB.

Alternative 6: Clinical Building (Patient Care Clinical Tower) in Motor Court, including replacement of existing Enders Building

This alternative studied construction in the existing motor court extending from the current Main Entrance drive to Blackfan Street, including the Enders Building site. The path of motor vehicle access would be accommodated beneath the new facility.

As is the case in Alternative 5, the Enders Building is used for ongoing research purposes and cannot be decanted during the construction period without prior construction of a new research facility in which to house these important research functions, which is not feasible from a timing or an economic perspective. Further, this alternative would not provide for coherent connections between the surgery and radiology expansion space and existing facilities on the Children's Core Campus or yield sufficient floor area to support Children's inpatient needs (as it would only result in a floor plate measuring approximately 30,000 square feet which would only support 22 beds per floor). Additionally, this alternative is inconsistent with maintaining patient access at the Main Entrance during construction. Figure 7-8 includes a diagram of the alternative.

The site would allow for a building that would not provide the necessary connections and would be smaller than what is necessary to meet Children's programmatic needs and is therefore not feasible and would not result in the healthcare or other public benefits associated with the BCCB.

Alternative 7: Clinical Building (Longwood Avenue Tower) in Motor Court, retaining existing Enders Building

This alternative studied construction in the existing motor court extending from the face of the existing Enders Building to and over the west wing of the existing Hunnewell Building. The path of motor vehicle access would be accommodated beneath the new facility.

Although this alternative retains the Enders Building, this alternative involves demolition of the existing Perlmutter building, a new main lobby on Longwood Avenue, bridge connection to the existing Main Building, and expansion up to the face of and over the Hunnewell Building, which may impact the Hunnewell Building. Since this building will not be contiguous to existing inpatient areas of the Core Campus, it would need bridge connections to the Main Building and would be disconnected from the emergency department and other clinical support areas. Additionally, this alternative is inconsistent with maintaining patient access at the Main Entrance during construction. Figure 7-9 includes a diagram of the alternative.

The site would allow for a building that would not provide the necessary connections and would not meet Children's programmatic needs and is therefore not feasible and would not result in the healthcare or other public benefits associated with the BCCB.

Alternative 8: Clinical Building south of the existing Hunnewell Building, including the replacement of the existing Fegan Building

This alternative studied construction at the existing Fegan Building site. Since the Fegan Building, which is currently undergoing a phased renovation, is the primary facility used for out-patient services, the Fegan Building cannot be decanted during the construction period without prior construction of a new out-patient facility, which is not feasible from a timing or an economic perspective. This alternative would not tie into the floor to floor connections with the adjacent existing buildings, most specifically the surgery and radiology floors and, accordingly, designing an efficient and effective floor plate was not possible at this site. Additionally, this alternative is inconsistent with maintaining patient access at the Main Entrance during construction. Figure 7-10 includes a diagram of the alternative.

Similar to the alternatives described above, the site would allow for a building that would not meet Children's programmatic needs and provide the necessary connections to the existing Hospital and is therefore not feasible and would not result in the healthcare or other public benefits associated with the BCCB.

2.2.5.4 Alternatives Based On the Wolbach Site

In addition to the alternatives considered and rejected for the reasons discussed above, Children's has evaluated multiple alternative development scenarios to ascertain the feasibility of retaining the Wolbach Building, either in whole or in part. Specifically, the renovation and retention of the existing structure in totality, the retention of only the Wolbach façade portico were all considered.

As discussed in detail in Section 7.1.5.3, these alternatives yielded a building which does not meet Children's clinical programmatic needs, and which, in combination with greater construction costs and inability to provide support facilities, make these reuse alternatives programmatically and economically infeasible and/or some of the alternatives would not result in meaningful preservation or good urban design. In addition, the loss of square footage in the sub-basements of the BCCB in many of the alternatives, among other things, would constrain Children's options for developing a combined heat and power unit within the BCCB.

The alternatives have a variety of impacts on the Wolbach Building, from preserving the building entirely, to preservation of a façade of the building.

With the exception of the impacts related to the Wolbach Building, the environmental impacts of these alternatives will be similar to the impacts of the proposed BCCB. However, these alternatives do not meet the programmatic needs of the Hospital and therefore are not feasible and will not result in the healthcare or public benefits resulting from the BCCB. In addition, the options for a CHP will be constrained and, in some instances not feasible, in many of the alternatives, which would undermine the benefits that would otherwise be obtained from the increased efficiency of a CHP system and the resulting reduction in greenhouse gas impacts.

2.2.5.5 Conclusion

Each of the alternatives listed above would significantly impact the proposed BCCB program, with the options that involve the retention of the Wolbach building having the greatest impacts including limiting the ability to service the building with loading dock access and the ability for the building to contain a CHP facility. The alternatives studied across Longwood Avenue from the Main Building would set the program space too far from the existing clinical facilities, impacting the efficiency of care. Buildings on the north side of the campus would result in significant impacts to the Main Entrance, would require prior construction of significant research space to provide for decanting or additional bed space to allow closure of bed space during construction, and would not be able to meet the space requirements necessary for the proposed program. The proposed site is the sole location within the Boston Children's Hospital Core Campus south of Longwood Avenue which can be physically integrated with Children's existing clinical facilities and can accommodate a sufficiently large footprint to meet its clinical programmatic needs and needs for inpatient care.

2.2.6 Anticipated Permits and Approvals

Table 2-2 provides a preliminary list of permits and approvals from governmental agencies that are expected to be required for the proposed BCCB based on currently available information. It is possible that only some of these permits or actions will be required, or that additional permits or actions will be required.

Table 2-2 Anticipated Permits and Approvals for the BCCB

AGENCY	APPROVAL
City of Boston	
Boston Redevelopment Authority	Article 80B Large Project Review Article 80D Institutional Master Plan Review Design Review
Boston Civic Design Commission	Schematic Plan Design Review
Boston Landmarks Commission	Demolition Delay Review
Boston Water and Sewer Commission	Site Plan Review/Water and Sewer Connection Permits (if applicable)/Construction Dewatering Permit (if required)
Public Improvement Commission	Specific Repairs/Earth Retention (if required)
Boston Transportation Department	Construction Management Plan/Transportation Access Plan Agreement
Boston Public Works Department	Curb Cut Permit(s) (if required)
Public Safety Commission/Joint Committee on Licenses	Flammable Storage License (if required)
Boston Inspectional Services Department	Demolition/Building Permits
Boston Zoning Commission	Institutional Master Plan Amendment Approval
State	
Executive Office of Energy and Environmental Affairs – Massachusetts Environmental Policy Act	Review in accordance with MEPA regulations
Department of Public Health	Determination of Need Plan Review
Department of Environmental Protection Division of Water Pollution Control	Sewer extension/connection permit(s) (if applicable)
Department of Environmental Protection Division of Air Quality	Fossil Fuel Utilization Approval (if required)
Massachusetts Historical Commission	Review in accordance with MHC regulations
Massachusetts Water Resources Authority	Sewer Use Discharge Permit Construction Dewatering Permit (if required)

Table 2-2 Anticipated Permits and Approvals for the BCCB (Continued)

AGENCY	APPROVAL
Federal	
Federal Aviation Administration	Determination of No Hazard to Air Navigation (if required for cranes)
Environmental Protection Agency	NPDES Permits (if required)
Specifically Applicable to Combined Heat and Power Plant Facility	
City of Boston	
Public Improvement Commission	Discontinuance/license for subsurface area (if required for Longwood Avenue subsurface)
Public Safety Commission/Joint Committee on Licenses	Flammable Storage License (if required)
State	
Department of Environmental Protection Division of Air Quality	Either (i) Establish a 50% Emissions Cap for NOx per 710 CMR 7.02 (11); or (ii) Obtain Restricted Emissions Status per 310 CMR 7.02 (9) Environmental Results Program – 310 CMR 7.26(30)-(37) Boilers – 310 CMR 7.26(43) Reciprocating Engine
Federal	
Environmental Protection Agency	Federal Clean Air Act, administered through MassDEP and implemented through state permits

2.2.7 Schedule

Construction of the BCCB is expected to begin in 2014 with completion in 2017.

2.3 819 Beacon Street

2.3.1 Area Context

The 819 Beacon Street site is located in the Audubon Circle neighborhood of Boston. To the southwest and west of the site are mostly residential with some office and retail spaces in buildings ranging from four to six stories. To the south of the site are commercial buildings. To the east is a large parking lot and the site of the Fenway Center project. To the north is the Massachusetts Turnpike and the Boston University campus.

2.3.2 Project Description

To further its mission of providing the best clinical care to children, and to continue its role as provider of tertiary and quaternary care on its Core Campus, Children's is prioritizing its LMA space for direct patient needs. Children's is proposing to redevelop its property at 819

Beacon Street as a location for office and administrative space that is currently located on Children's Core Campus, is located in nearby leased space or is anticipated to be needed for average annual growth. Office space at 819 Beacon Street will be located close enough to the Core Campus, however, to foster necessary interaction with the patients and clinicians.

The 819 Beacon Street Project will include approximately 202,950 sf of office space, 9,480 sf of retail space creating an active presence along Beacon Street and approximately 496 structured parking spaces (199,974 sf) in an eight story structure. Please see Figure 2-11 for a perspective of the 819 Beacon Street Project from Beacon Street. Figure 2-12 provides a Section of the 819 Beacon Street Project.

Of the 496 spaces, 158 will support the uses within the 819 Beacon Street Project, 249 will be replacement spaces for those currently located on the existing surface lot, and approximately 89 will be available to support the needs of Children's employees working on the Core Campus. Although Children's has an extremely robust transportation demand management program, including bicycle and public transit subsidies, the Hospital recognizes that there are those who must drive to work due to work schedules that are not conducive to public transportation schedules or other personal commitments, and it is important to the Hospital to accommodate those professionals. Parking space utilization is discussed in more detail in Chapter 3 of this DPIR/DEIR.

The garage will be accessed from the lower elevation of the site on Miner and Maitland streets adjacent to the existing CSX right-of-way. There is no parking entry directly from Beacon Street. The garage will be partially contained beneath the office structure and will not be visible along the Beacon Street facade.

The Project will accommodate both the City's multi-use path and the regional circumferential Urban Ring project. Until the Urban Ring is developed (at the location of the CSX right-of-way), the multi-use path will be located primarily on the right of way and partially on the 819 Beacon Street property (as shown on Figure 2-13). When the Urban Ring is implemented, the multi-use path will be moved into a designated colonnade area at the southern edge of the garage. The 819 Beacon Street Project has also been designed to accommodate an additional bus lane on Maitland Street if, and at such time, as the City advances that project. A survey is included in Appendix B.

2.3.3 Addressing Current and Future Needs

As Children's clinical needs have grown in recent years, there has been a resulting pressure to limit or reduce the administrative space that has historically been located at the Core Campus. To date, Children's has managed its growth through a strategy of relocating non-core administrative functions to locations off of its Core Campus, primarily in leased space.

Boston Children's Hospital

Shepley Bulfinch

ELKUS | MANFREDI
ARCHITECTS

Figure 2-11
819 Beacon Street – View on Beacon Street Looking East

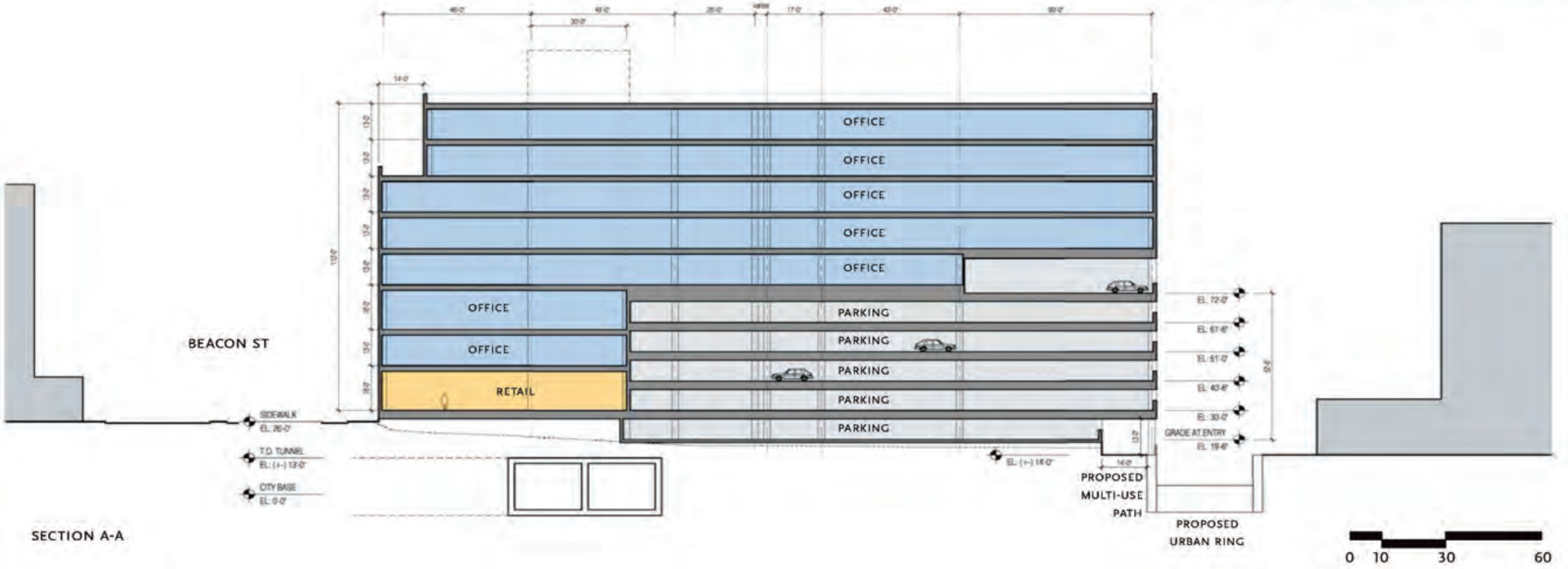


Figure 2-12
819 Beacon Street – Section

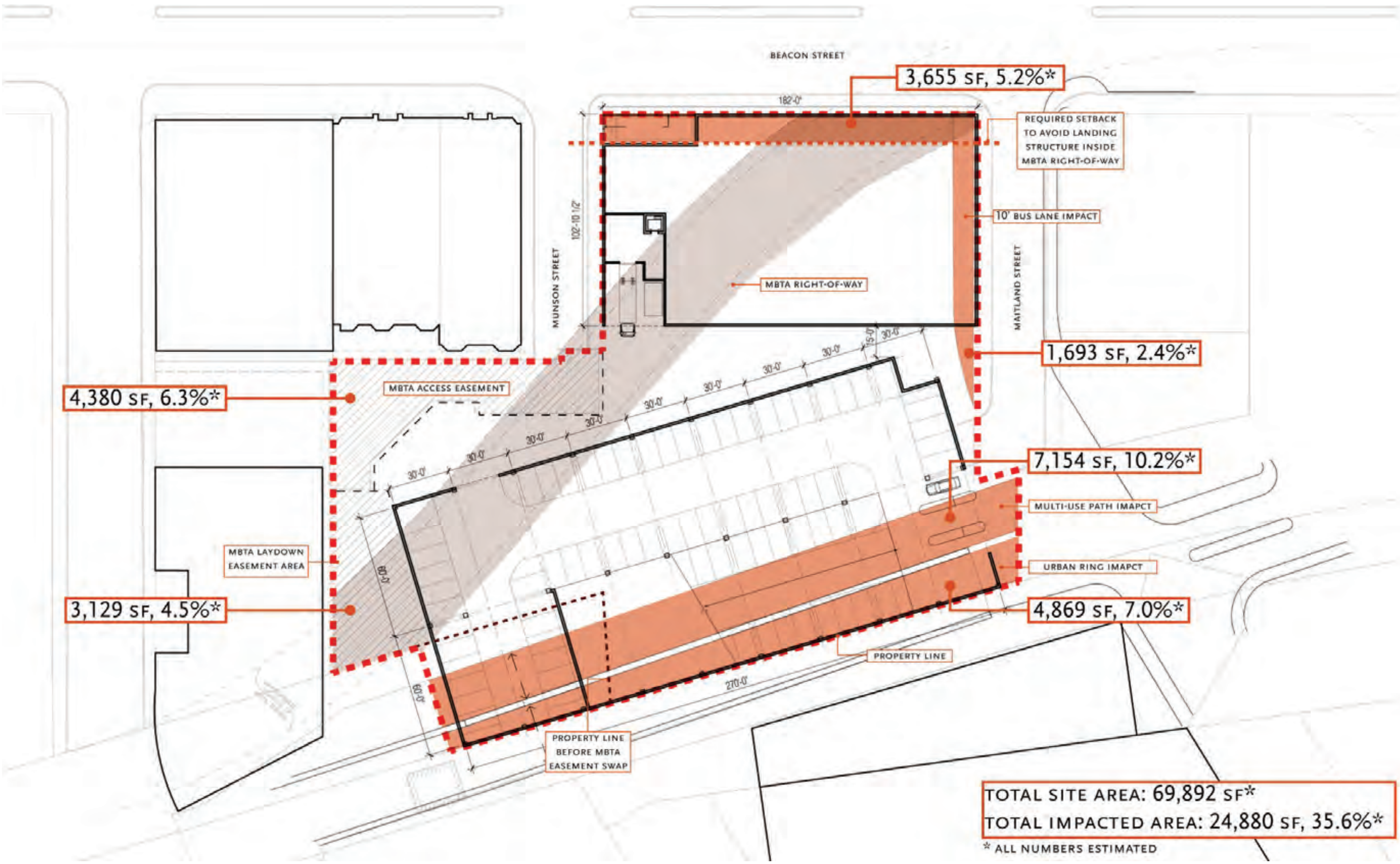


Figure 2-13
819 Beacon Street – Impacts of Existing and Proposed Easements on Site Developability

Three factors are converging to make the accommodation of administrative functions an even more pressing issue for the Hospital. First, the proposed BCCB will result in the displacement of approximately 50,000 sf of administrative space currently located at the Core Campus. Second, a number of Children's leases for administrative space in third-party facilities will expire over the next few years. Finally, Children's natural rate of growth in recent years has resulted in an additional administrative space requirement of approximately 19,000 sf annually.

While Children's will likely always require leased space to meet its administrative needs, owned space will enable Children's to manage its administrative space in a rational way by providing the flexibility to make investments in the property, co-locate related functions, develop appropriate space layouts and operate the space consistent with institutional practices.

An important factor in the location of administrative space is its functional relationship to the Core Campus. Although some functions, such as human resources, back office, and marketing that do not need to be near patients and clinicians, do not require a proximate physical relationship to the Core Campus, others, such as clinical research space, have a closer relationship to the day to day operations, and employees need to be available for meetings and other functions that occur at the Core Campus. Through its office space management policies in recent years, the Hospital has been able to decant the functions for which proximity to the Core Campus is less important, leaving at the Core Campus those activities that have a direct relationship to Core Campus functions. Therefore, as the Hospital seeks to further decant, the location of the new administrative space is particularly important as it must facilitate the continued relationship between the administrative and clinical functions.

The 819 Beacon Street Project will enable Children's LMA medical facilities to meet increasing clinical needs and to implement Centers for Excellence on its Core Campus by allowing expansion and decanting of some of the Hospital's existing administrative services to 819 Beacon Street.

In addition to the need for administrative space, parking for families and patients at the Core Campus continues to be a challenge. Children's offers its patients, visitors, physicians, and employees a multitude of options for parking. Children's currently controls approximately 3,542 off-street parking spaces either by ownership or through leases from other institutions or organizations—approximately 2,400 are located within the LMA. Of the 3,542 spaces, 1,047 spaces are available for public use by Children's patients and visitors and are located on the Core Campus and 2,495 are employee parking spaces, approximately 1,353 of which are located on the Core Campus or in close proximity to the Core Campus within the LMA. Children's on-campus parking ratio is approximately 1.03 spaces per 1,000 gross square feet of floor area for its facilities in the LMA.

The Patient and Family Parking Garage consistently fills to capacity on weekdays, and Children's takes proactive measures to screen vehicles entering the garage to ensure they are affiliated with the Hospital. Vehicles which cannot find parking at the Patient and Family Parking Garage often rely on valet services at the Main Entrance which, in turn, creates a congested situation at the Main Entrance and more vehicle traffic. Employee parking in the LMA and the limited parking options outside of the LMA also have an impact on the availability of parking for patients and families.

BCH must continually evaluate its parking supply to ensure that an adequate amount of parking spaces is made available for its growing patient demands. Of the 2,495 employee parking spaces, only 1,353 (or about 54 percent) are located on or in close proximity to the Core Campus within the LMA. The most common solution to maintaining an adequate patient parking supply is to relocate employee parking outside of the LMA, as it is very difficult to secure new parking opportunities within the LMA for employees. The Hospital's extensive employee transportation demand management program includes a number of strategies aimed at addressing the constrained parking situation, including measures to reduce single-occupancy vehicle trips to the campus with aggressive public transportation subsidies, moving employee parking to off-campus, remote locations that are serviced by shuttles, walking and bicycling initiatives through participation in MASCO's Commuteworks, and other initiatives and incentives. However, even with these measures in place, there is a current deficit of parking spaces to support future BCH patient, visitor and staff demands.

As described previously, new parking at 819 Beacon Street will provide 158 spaces for employees working in that facility and will increase by 89 spaces the number of spaces available to employees working in the LMA, thus further contributing to BCH's goal of relocating employee parking outside of the LMA, allowing for more spaces in the LMA to be used for patients and visitors. Children's will continue to target BCH employees who come from the north or Storrow Drive for parking at this facility since they are already traveling in the area. These employees will then be shuttled to the LMA so that there will be an overall reduction in traffic in the LMA.

It is anticipated that most, if not all, of the parking spaces at 819 Beacon Street will be made available in the evenings and on weekends to support the Red Sox and other retail and entertainment uses in the Kenmore/Fenway area. The daytime uses of office and employee parking proposed for 819 Beacon Street are compatible with the evening and weekend parking demand associated with Red Sox, retail and entertainment uses. In addition, the increased supply in a single facility will help offset the loss of parking anticipated to occur as Fenway area lots are redeveloped for residential or other uses that are not as conducive to space sharing.

2.3.4 Consistency with State and Local Plans and Policies

2.3.4.1 Executive Order No. 385 – Planning for Growth

Executive Order No. 385, "Planning for Growth" (EO 385) signed in 1996, explicitly seeks to promote sustainable economic development in the Commonwealth of Massachusetts. The development of 819 Beacon Street will meet the dual objectives of EO 385 by constructing a new, LEED certifiable building in a developed area with adequate infrastructure and which does not result in avoidable loss of environmental quality and resources. Children's is considering a green roof for 819 Beacon Street which will decrease some of the storm runoff from the roof and the inclusion of a rainwater harvesting system to collect stormwater runoff. The site's location in a dense urban environment with access to public transportation will minimize the building's impact on the Commonwealth's natural resources, including air and water.

2.3.4.2 Commonwealth Sustainable Development Principles

The Commonwealth Sustainable Development Principles released by Governor Deval Patrick's administration provide 10 principles that promote smart growth strategies, equitable development, and investments that will improve the economic and environmental conditions in the Commonwealth. The 819 Beacon Street Project will be consistent with these principles as it will be located in a dense urban environment with existing infrastructure, will be a LEED certifiable building, will include strategies to decrease stormwater runoff, and will create jobs. The 819 Beacon Street Project will also improve the pedestrian environment by including new retail spaces and an improved streetscape in place of the existing surface parking lot. The design also takes into consideration a number of transportation related plans, including the BRA's multi-use pedestrian path and the Urban Ring project.

2.3.4.3 MetroFuture

The MetroFuture plan is the regional plan produced by the MAPC. The plan sets up a vision for the region in regard to land use and development. The plan provides 65 goals in six categories: Sustainable Growth Patterns, Housing Choices, Community Vitality, Prosperity, Getting Around, and Energy, Air, Water and Wildlife. The development is consistent with many of these goals by building on previously developed land in a dense urban area, being located proximate to public transportation, and developing a LEED certifiable project. Boston Children's Hospital also furthers many MetroFuture goals with their workforce development programs and other public benefits, as described in Section 1.3.

2.3.4.4 Fenway Urban Village Plan

As mentioned in Section 2.2.3.5, the Fenway Urban Village Plan is a resident-created vision for the Fenway neighborhood prepared by the Fenway Community Development Corporation with five components for which the plan includes a number of goals.

The 819 Beacon Street Project will meet some of the goals of this plan by improving the streetscape along Beacon Street and providing new ground floor retail on an area that is currently used as a surface parking lot. The new parking garage on the site is anticipated to collect drivers who would be driving through the Fenway Neighborhood to the LMA, limiting vehicles on these roads. The Project supports access to public transportation and reduced vehicular traffic by accommodating portions of several regional public transportation initiatives on the 819 property including the Urban Ring, the Maitland Street redesign and the multi-use path which will provide infrastructure support for the Yawkey MBTA commuter rail station. The building will also include bicycle racks and accommodations to encourage the use of alternative modes of transportation.

The 819 Beacon Street Project also supports a healthy business community serving local residents and visitors while providing employment opportunities by expanding employment opportunities at the hospital and by providing space for neighborhood retail establishments at the base of the building at 819 Beacon Street. The Project also supports the goal of easy access to open space through the accommodation of the multi-use path which connects open space, pedestrian corridors and transportation and retail nodes

Finally, the 819 Beacon Street Project will be designed in a manner to minimize its impact on the environment. The 819 Beacon Street Project will be LEED certifiable, as required by Article 37 of the Boston Zoning Code and will meet the anticipated aggressive energy reduction requirements of IECC 2012. As shown in Chapter 9, the 819 Beacon Street Project will reduce greenhouse gas emissions from a building built to the State Building Code by 10%.

2.3.4.5 Consistency with Urban Ring Planning

As mentioned in Section 2.3.2, the Project site abuts the area proposed for the Urban Ring Project right-of-way. The design of the building has taken this right-of-way into account in order not to preclude the Urban Ring from using this right-of-way in the future.

2.3.5 819 Beacon Street Project Alternatives

2.3.5.1 No Build Alternative

The No Build Alternative would limit Children's ability to meet its growing need for administrative space. As mentioned in Section 2.3.3, Children's has a growing need for administration space of approximately 19,000 sf annually, and the BCCB will displace approximately 50,000 sf of administration space. While Children's will likely always require leased space to meet its administrative needs, owned space will enable Children's to manage its administrative space in a rational way by providing the flexibility to make investments in the property, co-locate related functions, develop appropriate space layouts and operate the space consistent with institutional practices. Without construction of the 819 Beacon Street Project, Children's will have limited options for building its own administration space and will have to depend more on leased space. In some instances, leasing space will be less efficient as related functions may not be able to be located proximate to each other. In addition, currently leased space or other off campus owned space, such as Brookline Place, will likely also be necessary to accommodate Children's growing need for administrative space.

If the 819 Beacon Street Project is not built, construction of additional space by Children's or others is likely to meet the growing space needs of the LMA institutions. The impacts associated with these developments will eventually be similar to the impacts of the 819 Beacon Street Project, but without the benefit of the redevelopment of the surface parking lot and associated streetscape improvements at 819 Beacon Street.

2.3.5.2 Zoning Alternative

The underlying zoning of 819 Beacon Street is established by zoning for the Audubon Circle Neighborhood District (in part in the Local Convenience Subdistrict and in part in a Multi-Family Residential Subdistrict). Office and parking use require zoning relief. Permitted height is 45 feet and FAR is 2.0, and in a PDA in this area the permitted height is 120′ (65′ within 125′ of the street line of Beacon Street) and FAR is 4.0. Zoning relief will be achieved through inclusion of this site in the Institutional Master Plan. In addition, the continued use of the site as an open air parking lot for 249 vehicles is allowed as permitted under Zoning Board of Appeal Decision No. BZC-6224 (1983), Decision No. BZC-10.137 (1987), Decision No. BZC-28707 (2008) and Decision No. BZC-31677 (granting approval expiring March 15, 2015) (2012), as such Decisions may be reissued and/or extended. The 819 Beacon Street Project site is currently a surface parking lot for 249 vehicles. As discussed below, the site is constrained by the existence of the subsurface MBTA tunnel and other encroachments necessary for regional transportation improvements. There is no construction option consistent with zoning that meets Children's needs and could be economically and functionally feasible.

2.3.5.3 Alternatives

Children's purchased 819 Beacon Street with the intent of decanting its administrative functions and has been considering development on the site since 2005. The 819 Beacon Street Project is bounded by Beacon Street to the north, CSX easement to the south, Maitland Street to the east and Munson Street to the west. An existing MBTA subsurface easement which is actively used by the Green Line D Branch occurs from the southwest to the northeast diagonally across the site. The subsurface tunnel necessitates that all structures on this site, including parking, be located above grade. In addition, there is a 14-foot drop in grade between the Beacon Street edge and the southern edge of the site.

Parking Garage Behind the Building with Office Building in Front

Initial design concepts for the site developed between 2005 and 2009 envisioned including the program in two separate structures. The office building along Beacon Street was thought of as having a standard rectangular office floorplate of 20,000 to 25,000 sf rising to a height of eight to ten stories to accommodate the office program. A parking garage with an efficient and functional parking plate could also be located on the site in a separate structure behind the office building where the grade drop would have diminished its appearance from Beacon Street. From an urban design perspective, massing alternatives for the garage that would not detract from the office building or provide significant additional view impacts from Beacon Street, may have allowed for a nine level garage with as many as 816 parking spaces. Due to higher heights, the environmental and transportation impacts of the alternatives described in this section would have been equal to or greater than those of the currently proposed 819 Beacon Street Project.

IMPNF/PNF Alternative

In the Fall of 2009, Children's became aware of several potential transit related projects that are proposed to abut and, in some instances, occupy space on the 819 Beacon Street site including, without limitation, the proposed future alignments of MassDOT's Urban Ring, an additional bus lane on Maitland Street and the BRA's multi-use pedestrian path, as shown in Figure 2-13. These transportation projects, combined with the additional easements required by the MBTA to maintain access to the subsurface tunnel, potentially impact over one-third of the surface area of the site.

Children's supports the public transportation goals that are enabled by these encroachments. However, these encroachments no longer allow for separate buildings that could meet the needs of the Hospital. The team has worked to design a building that meets its program needs within these constraints.

Multiple studies for options concerning vehicular site entry and circulation, building footprint and parking garage layouts were studied and considered. These studies included access to the site via Munson and Maitland streets, as well as vehicular travel within and traversing the site. The Hospital attempted to find a design solution that would keep the parking garage behind the office building separated by an expansion joint or a physical space of some dimension. However, these concepts proved to be inefficient with regard to size of building footprints, parking garage circulation and the intersection of the garage structural grid with the retaining walls of the Urban Ring and impact to the multi-use path.

As proposed in the IMPNF/PNF, the design and massing of the 819 Beacon Street Project has evolved into a single building, with a portion of the parking garage integrated below a portion of the office building. The design ensures that the Beacon Street façade is faced with retail space on the ground floor and office space above, creating an active street presence along Beacon Street.

The 819 Beacon Street Project described in the IMPNF/PNF was ten stories and the floorplates were in the shape of an imperfect rectangle, with the parking garage integrated into the rectangle. The parking garage was proposed to include 526 parking spaces.

The environmental and transportation impacts of the alternatives would be equal to or greater than the proposed 819 Beacon Street Project. The greater number of parking spaces and the 10 story height may have resulted in greater wind and shadow impacts.

Proposed Project

The 819 Beacon Street Project has evolved from the IMPNF/PNF in response to comments from the BRA, BCDC and community. The height of the building has been reduced by two stories to eight stories in total. The office space, which was previously located solely along Beacon Street, has been oriented along Maitland Street as well as along the southern edge of the site (along the CSX right-of-way and proposed multi-use path), resulting in elongated U-shaped floor plates. In addition, levels seven and eight have been set back 14 feet from Beacon Street, further diminishing its impact to the Beacon Street neighborhood and creating a predominant height line that directly relates to the Fenway Center development, Building 1 across Maitland Street. The number of parking spaces has also been reduced to 496, a decrease of 30 spaces.

Due to lower height, stepbacks and fewer parking spaces, the environmental and transportation impacts of the proposed Project are less than those from the IMPNF/PNF project and the two building alternatives previously considered.

2.3.6 Anticipated Permits and Approvals

Table 2-3 provides a preliminary list of permits and approvals from governmental agencies that are expected to be required for the proposed 819 Beacon Street Project based on currently available information. It is possible that only some of these permits or actions will be required, or that additional permits or actions will be required.

Table 2-3 Anticipated Permits and Approvals for 819 Beacon Street

AGENCY	APPROVAL
City of Boston	
Boston Redevelopment Authority	Article 80B Large Project Review Article 80D Institutional Master Plan Review Recommendation to BZC of Map Amendment Increasing IMP Overlay District to include 819 Beacon Street/ Design Review
Boston Zoning Commission	Institutional Master Plan Amendment Approval Map Amendment Increasing IMP Overlay District to include 819 Beacon Street
Boston Civic Design Commission	Schematic Plan Design Review
Boston Water and Sewer Commission	Site Plan Review/Water and Sewer Connection Permits (if applicable)/ Construction Dewatering Permit (if required)
Public Improvement Commission	Specific Repairs/Earth Retention (if required) Discontinuance of Rights of Public in Munson Street (a Private Way Open to Public Use)
Boston Transportation Department	Construction Management Plan/Transportation Access Plan Agreement
Boston Public Works Department	Curb Cut Permit(s)
Public Safety Commission/Joint Committee on Licenses	Garage Permit/Flammable Storage License
Boston Inspectional Services Department	Building Permits
State	
Executive Office of Energy and Environmental Affairs – Massachusetts Environmental Policy Act	Review in accordance with MEPA regulations
Department of Environmental Protection Division of Water Pollution Control	Sewer extension/connection permit(s) (if applicable)
Department of Environmental Protection Division of Air Quality	Fossil Fuel Utilization Approval (if required)
Massachusetts Historical Commission	Review in accordance with MHC regulations
Massachusetts Water Resources Authority	Sewer Use Discharge Permit Construction Dewatering Permit (if required)
Federal	
Federal Aviation Administration	Determination of No Hazard to Air Navigation (if required for cranes)
Environmental Protection Agency	NPDES Permits (if required)

2.3.7 Schedule

Construction of 819 Beacon Street is expected to begin in 2016 with completion in 2019.

2.4 Patient and Family Parking Garage Addition

2.4.1 Project Description

The proposed Children's Patient and Family Parking Garage Addition includes one level of 86 parking spaces (76 net new due to the elimination of 10 parking spaces in connection with the BCCB) on top of the existing garage structure (see Figure 2-14). The exterior of the added level will be closely matched to the existing garage to create a seamless addition. Figure 2-14 shows elevations of the proposed addition. Although the Patient and Family Parking Garage Addition is subject only to Small Project Review, it has been included in the Project Description and the discussion of impacts where appropriate as it is part of the 2013 IMP Amendment Projects subject to MEPA review.

2.4.2 Consistency with the LMA Interim Guidelines

The Patient and Family Parking Garage Addition is generally consistent with the Interim Guidelines adopted by the BRA for the LMA. The Patient and Family Parking Garage Addition fundamentally meets the over-arching purposes and spirit of the guidelines including those for height and setback.

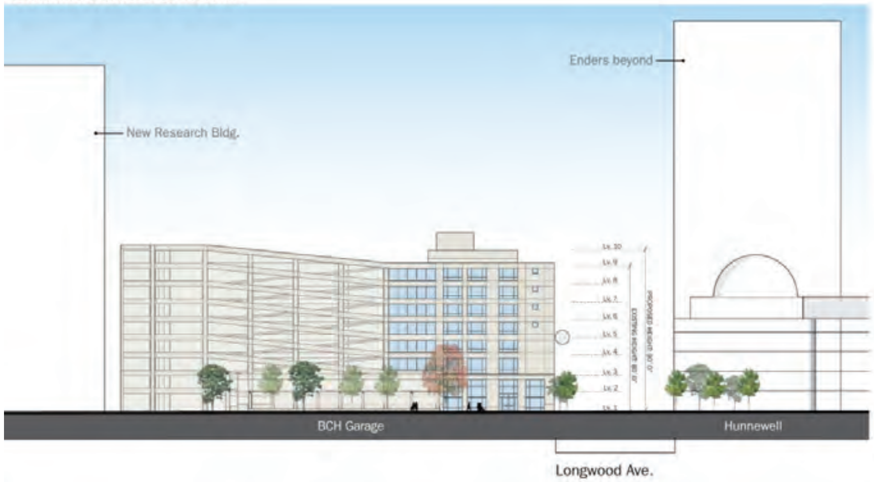
2.4.3 Anticipated Permits and Approvals

Table 2-4 provides a preliminary list of permits and approvals from governmental agencies that are expected to be required for the proposed Patient and Family Parking Garage Addition based on currently available information. It is possible that only some of these permits or actions will be required, or that additional permits or actions will be required.

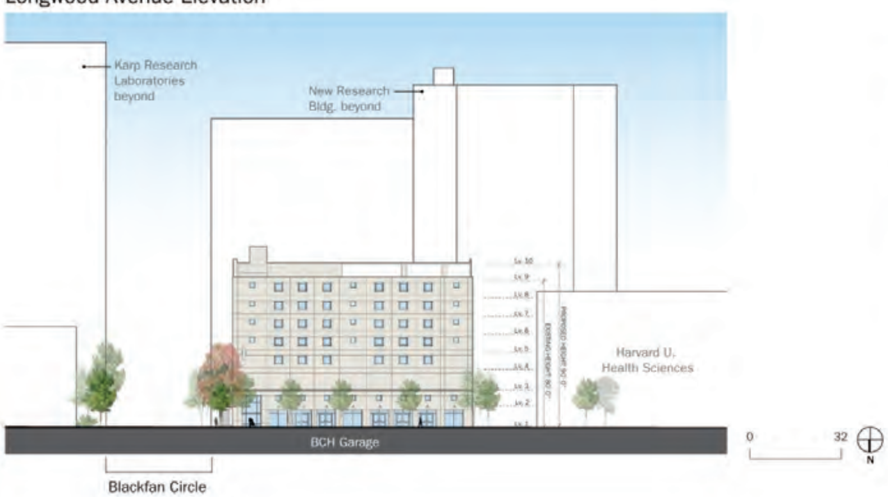
Table 2-4 Anticipated Permits and Approvals

AGENCY	APPROVAL
City of Boston	
Boston Redevelopment Authority	Article 80E Small Project Review Article 80D Institutional Master Plan Review Design Review
Boston Civic Design Commission	Schematic Plan Design Review
Boston Transportation Department	Construction Management Plan/Transportation Access Plan Agreement
Public Safety Commission/Joint Committee on Licenses	Garage Permit/Flammable Storage License
Boston Inspectional Services Department	Building Permits
Boston Zoning Commission	Institutional Master Plan Amendment Approval

Blackfan Circle Elevation



Longwood Avenue Elevation



Site Plan

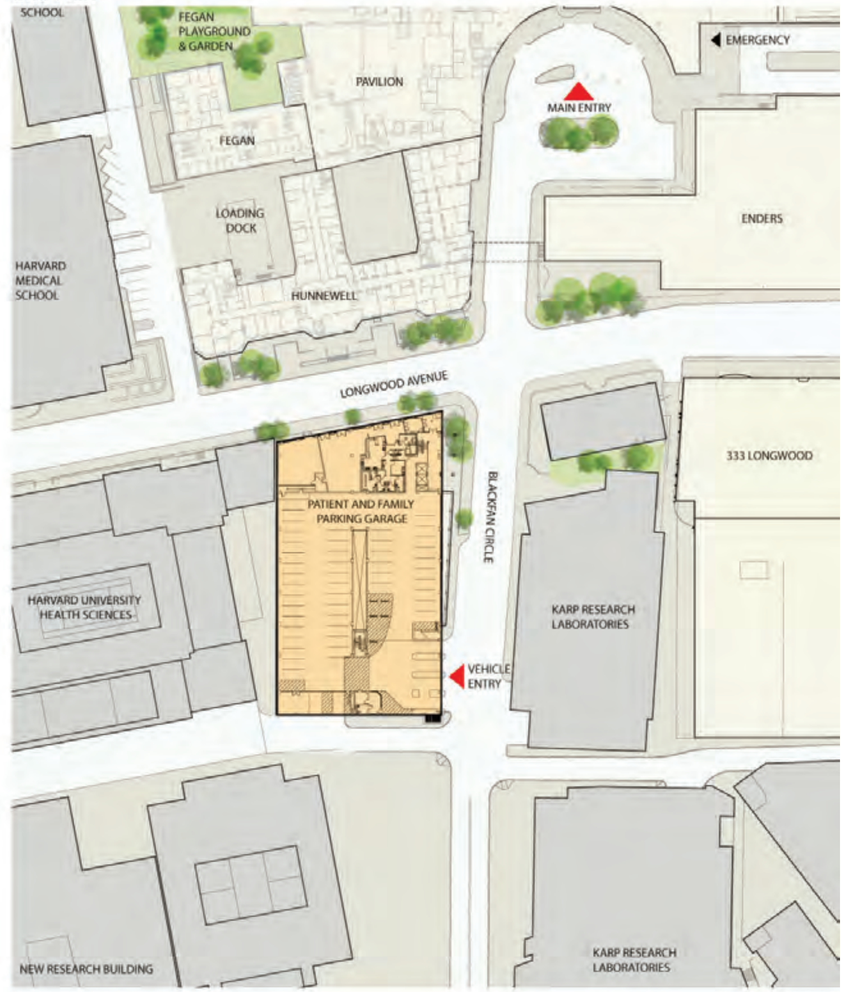


Figure 2-14

Patient and Family Parking Garage Addition – Elevations and Site Plan

2.4.4 Schedule

The construction of the additional level of parking on the Patient and Family Parking Garage is anticipated to commence in the first quarter of 2014 and anticipated to be completed within 12 months.

Chapter 3.0

Transportation Access Plan (BCH Main Campus)

3.0 TRANSPORTATION ACCESS PLAN (BCH MAIN CAMPUS)

3.1 Introduction

This chapter presents an evaluation and summary of existing and future transportation infrastructure and operations for Boston Children's Hospital's Main Campus. This transportation study has been developed in order to understand and mitigate the transportation impacts of Projects that are proposed on the Main Campus, and to develop appropriate transportation infrastructure improvements to the LMA. This study specifically quantifies the anticipated transportation impacts of the proposed BCCB and nearby Patient and Family Parking Garage Addition.

A separate transportation study has also been prepared for the proposed 819 Beacon Street (see Chapter 4). This study specifically addresses the Scoping Determination that was issued by the Boston Redevelopment Authority after their review of the IMPNF/PNF, dated October 2012. The study also addresses the Certificate that was issued by MEPA after submittal of the ENF in October 2012.

The Transportation Access Plan includes an analysis of the following:

- Vehicle traffic on study area roadways and intersections;
- Parking conditions;
- Loading and service activities;
- Pedestrian and bicycle operations;
- Helicopter activities; and
- Public transportation and private shuttle bus services.

In addition, this chapter quantifies and assesses the transportation impacts that are expected at Children's under future conditions, with the BCCB and other smaller campus improvement projects that are proposed during the term of the IMP (as described in Chapter 2, Proposed Projects).

The purposes of these analyses are to:

- Define and quantify existing transportation conditions in the Project study area as defined by the Boston Transportation Department and MEPA;

- Estimate the transportation impacts that will be generated under future conditions based on anticipated patient and employment growth, on-campus parking utilization, and with completion of the proposed Children's IMP Projects on its Main Campus;

- Develop a set of mitigation strategies and improvement measures which will help to lessen the transportation effects of future growth and to provide improvements to the transportation infrastructure in the LMA; and

- Demonstrate that these transportation mitigation efforts will exceed the requirements of the LMA Interim Guidelines and will serve as exceptional public benefits as they relate to transportation issues.

The sections below provide an overview of the BCCB and other IMP Projects proposed for the Main Campus, and a summary of findings of the transportation analysis, including anticipated impacts, proposed mitigation and transportation improvement actions, a discussion of the study methodology, and a description of the study area. Subsequent sections provide detailed discussions of existing and future conditions expected both with and without the proposed Main Campus IMP Projects. The final section of the chapter presents a detailed summary of transportation mitigation and improvement actions that Children's is committed to implementing in connection with its proposed Projects.

3.1.1 Project Overview

Due to higher patient acuity, the demand for single-bed patient rooms, the need for critical care capable beds, and improved technology, Children's needs to replace all remaining semi-private inpatient beds, and expand surgery, clinic, and clinical support spaces. To fulfill these needs, Children's is proposing the BCCB on its Main Campus. The BCCB provides immediate additional space to convert all the remaining semi-private patient rooms to private rooms; create a new Neonatal Intensive Care Unit facility elsewhere on the Core Campus; right size clinical support space; expand patient-family amenities; and improve circulation and access.

The BCCB will expand Children's Core Campus with approximately 445,000 sf of space (approximately 403,311 sf of net new space) to be located on the site currently occupied by the Prouty Garden, Bader East and Farley, the Wolbach Building, the Library and the Ida C. Smith Building (Figure 2-5). The Project also includes the elimination of 10 surface parking spaces located adjacent to the Wolbach Building.

In order to create an integrated campus experience for patients and staff, the BCCB will be connected to the Core Campus on its lower outpatient, support and surgical levels. In addition, a bridge will connect an upper inpatient floor (floor 9) with the existing Main Building South.

Children's also proposes to construct an additional level at its existing Patient and Family Garage, which will include the addition of 86 new patient parking spaces (or 76 net new spaces to the Main Campus taking into consideration the loss of 10 parking spaces required to support the construction of the BCCB). It is referenced herein as these new parking spaces are intended to support future BCH patient and visitor growth that can be directly attributed to the future approval and construction of the BCCB.

3.1.2 Summary of Findings & Transportation Mitigation

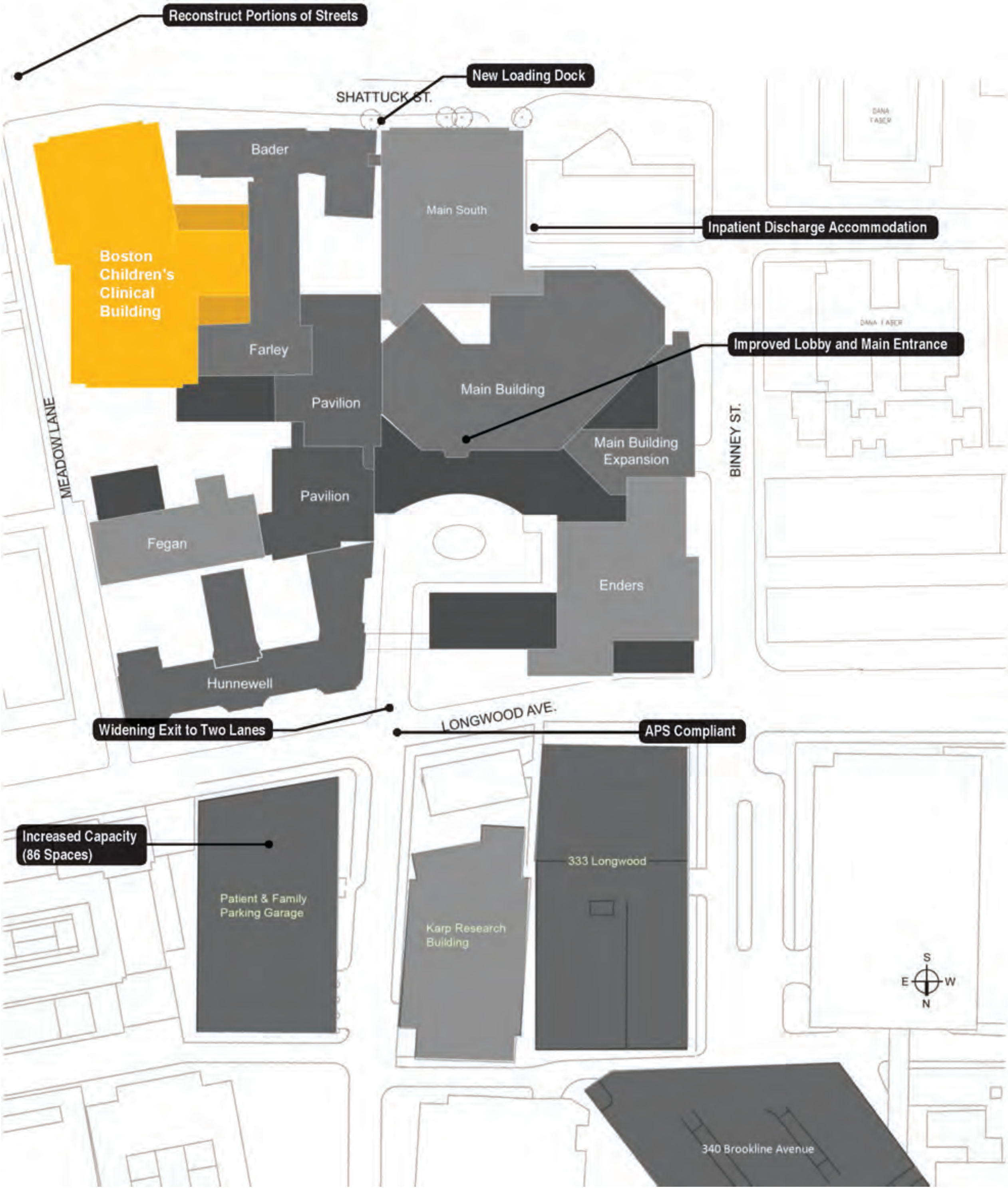
The additional traffic generated by the BCCB will create minimal incremental impact to the surrounding transportation infrastructure. To offset these minimal new trips and in continuation of its ongoing efforts to improve transportation in and around the LMA, Children's is committed to providing transportation improvements and mitigation actions to improve transportation for patients, visitors, and employees traveling to the LMA. Key actions are shown in Figure 3-1 and described below.

- Children's will renovate its lobby and Main Entrance to allow for more efficient processing of patient and visitor traffic. Drop-off areas will be reconfigured to provide for more efficient loading and unloading, a defined area for chair cars and oversized vehicles will be created, and a dedicated exit path will be put in place for these larger vehicles to Binney Street that does not conflict with exiting patient vehicles towards Longwood Avenue.

- Inpatient discharges will be accommodated at Children's Way (off of Shattuck Street). These families typically require more time to load their vehicle, in particular for those children that have been infirmed at Children's for an extended period of time. Accommodating these families at Children's Way will help to support more efficient vehicle flow at the Main Entrance.

- The existing BCH Main Entrance driveway will be widened to provide for a three-lane cross-section. This will allow for two approach lanes exiting towards the Longwood Avenue/Blackfan Circle/BCH Main Entrance intersection (an exclusive left-turn lane and a shared through/right-turn lane). This will help to better manage the queues of exiting traffic.

- The Longwood Avenue/Blackfan Circle/BCH Main Entrance intersection will be modified into a compliant accessible pedestrian signal (APS) with compliant pedestrian push buttons.



Boston Children's Hospital

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Figure 3-1
BCCB Transportation Mitigation

- The new BCCB loading dock will be located off of Shattuck Street, and is intended to reduce materials management activities at other BCH locations, in particular the main loading facility near the intersection of Binney Street and Jimmy Fund Way. As currently planned, the BCCB will be served by three bays, two dedicated to the removal of soiled linens and a second intended to house a compactor for the building.

- The capacity of the Patient and Family Parking Garage will be increased by 86 parking spaces to provide an opportunity for more families to self-park directly. The increase will be 76 net new spaces on campus taking into consideration the elimination of the 10-space Wolbach parking lot.

- In total, only 165 new parking spaces will be developed to support the future BCCB, including 76 net new spaces within the LMA (as described previously), plus an additional 89 new spaces in the proposed 819 Beacon Street Project. New parking spaces at 819 Beacon Street that are intended to support the BCCB will allow Children's to relocate existing BCH employees who park within the LMA to this new location, providing increased available parking on-site for patients.

- Total parking to be constructed in the LMA to support the BCCB will be provided at a rate of only 0.19 spaces per 1,000 sf of space developed. This amount of new proposed parking falls well below the 0.75 space per 1,000 sf threshold as defined by the LMA Interim Guidelines. Including the 89 spaces allocated at 819 Beacon Street for the Main Campus, total new parking supporting Children's LMA campus will be provided at a rate of 0.41 spaces per 1,000 sf of space developed.

- Children's will reconstruct portions of Shattuck Street and Meadow Lane adjacent to the BCCB site.

- Children's will increase its bicycle storage capacity on-site to comply with the City of Boston Bicycle Guidelines.

- Children's will continue to proactively manage its drop-off and valet parking operation at its Main Entrance as a means to reduce traffic activity on area streets, particularly along Longwood Avenue.

- Children's is committed to implementing Transportation Demand Management (TDM) measures to encourage the use of alternative modes of transportation, including offering a 50 percent transit subsidy to its staff and physicians. In addition, Children's will continue to expand its proactive TDM measures to its employees to encourage the use of transit and other alternative forms of transportation.

3.1.2.1 Parking Summary

The construction of the BCCB will require taking the existing Wolbach parking lot out of service (10 spaces). Children's also proposes to construct an additional level to its existing Patient and Family Parking Garage, which will include the addition of 86 new patient parking spaces (or 76 net new spaces to the Main Campus taking into consideration the loss of 10 parking spaces required to support the construction of the BCCB). Further, BCH will allocate up to 89 new parking spaces within its proposed 819 Beacon Street Project to support LMA parking needs (see Chapter 4). New parking spaces at 819 Beacon Street that are intended to support the BCCB will allow Children's to relocate existing BCH employees who park within the LMA to this new location, providing increased available parking on-site for patients. Total parking to be constructed to support the BCCB will be provided at a rate of only 0.41 spaces per 1,000 sf of space developed in the LMA. The parking demands associated with the BCCB are expected to be accommodated within this future parking supply.

Children's currently has a parking management plan that provides valet services at the Main Building and screens patients at the Patient and Family Parking Garage to ensure sufficient visitor parking. In addition, Children's provides an extensive TDM plan for employees to encourage alternative modes of transportation to the campus. As part of this plan, Children's has introduced a parking rate structure that makes it advantageous for employees to park outside of the LMA and utilize shuttles to reach its Main Campus.

3.1.2.2 Traffic Impacts

A detailed traffic analysis, including intersection level of service (LOS), was conducted at 15 intersections during the morning and evening peak commuter hours. This analysis was conducted for current conditions (using traffic data from 2012) and for future conditions. The future conditions are quantified for the year 2022 and consider background growth, growth attributable to other projects, and traffic estimates associated with the BCCB. The results of the analysis indicate that there will be no substantial changes in LOS in the study area as a result of the BCCB.

3.1.2.3 Pedestrian Access

There will be new pedestrian traffic attributed to the BCCB. It is expected that the additional pedestrians will be accommodated by the existing sidewalks and crosswalks in the area, including BCH's plan to renovate its Main Lobby and drop-off area. There will be no material changes to exterior pedestrian circulation as a result of the BCCB. Pedestrian access is shown in Figure 3-2.

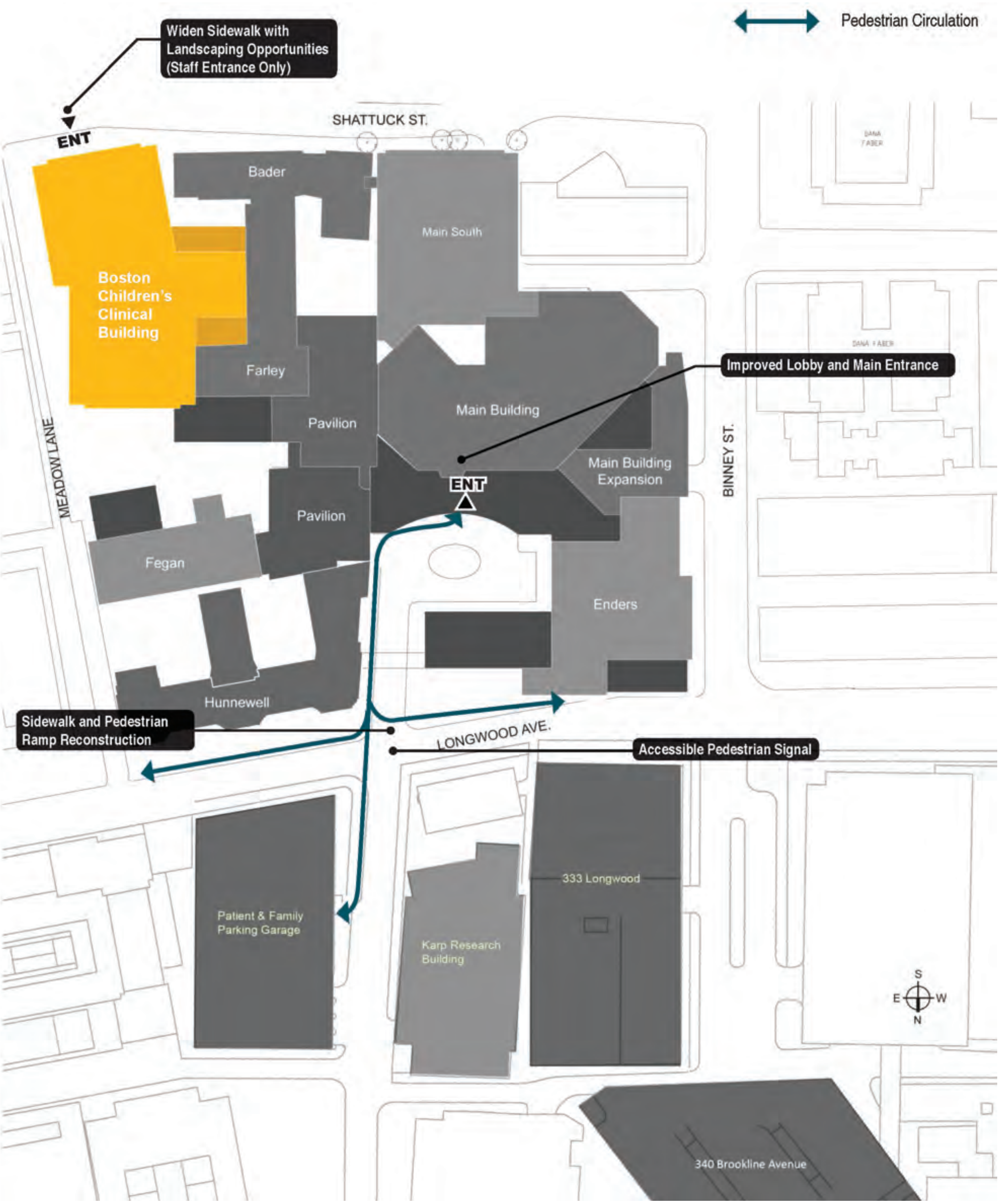

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Figure 3-2
Proposed BCCB Pedestrian Access

3.1.2.4 Valet Operations and Passenger Pick-Up/Drop-Off

BCH's primary patient and visitor parking is currently located at the Patient and Family Parking Garage across Longwood Avenue from the Main Entrance, although some patients also choose to park in the nearby 333 Longwood Avenue Garage as well. As a result, patients and visitors must cross the busy intersection of Longwood Avenue/Blackfan Circle during all weather conditions to access the Hospital. Children's provides valet parking services at the Main Entrance to ameliorate this inconvenient campus parking condition and in an effort to improve safety. Also, patients of Children's are often brought in strollers or need to be carried, thus making valet operations and close proximity parking a necessity. Valet staff move the vehicles from the Main Entrance across Longwood Avenue to the Karp Garage on Blackfan Circle. In the future, inpatient discharges will be accommodated at Children's Way (off of Shattuck Street). These families typically require more time to load their vehicle, in particular for those children that have been infirmed at Children's for an extended period of time. Accommodating these families at Children's Way will help to support more efficient vehicle flow at the Main Entrance.

On average, the Hospital valets approximately 400 vehicles daily. During peak hours, there can be a considerable delay in parking and retrieving vehicles due to high demand (up to 80 vehicles per hour) resulting in congestion at the Main Entrance and in waiting time for patients and visitors.

3.1.2.5 Loading and Service

The Hospital's loading and service activities are handled at several dedicated service facilities at its Main Campus. Children's operates off-street loading areas, including its primary loading facility which is connected to the Main Building and accessed via Binney Street near Children's Way, at the Hunnewell Building via Meadow Lane, at the Enders Building from Binney Street, and at an additional area located at 333 Longwood Avenue. In addition, some deliveries and contractors arriving by van or passenger vehicle arrive at the Main Entrance. For this reason, the five designated valet spaces at the Main Entrance are occasionally used by short-term vendor and delivery parking at the Main Entrance. These spaces are managed by the valet operator.

3.1.2.6 Transportation Demand Management

Children's is committed to continuing to offer a wide array of TDM incentives as a means to reduce single occupant driving, and increase use of alternative forms of transportation to access the workplace. Children's actively supports efforts to reduce auto use for employees traveling to the Hospital.

Many actions to support this goal are actively employed by Children's today, including the following:

- Providing an Employee Transportation Advisor;
- Membership in the Medical Academic and Scientific Community Organization, Inc.'s (MASCO) CommuteWorks TMA;
- Full support of MASCO's other on-going transportation initiatives;
- 50 percent transit pass subsidy for employees;
- Carpool assistance and incentives;
- Emergency ride home;
- Bicycling/walking incentives and amenities;
- Location-priced parking (i.e., offering competitive-rate parking on-campus and subsidized parking off-campus);
- Telecommuting and compressed workweeks, when feasible; and
- Promotional efforts.

Children's is committed to maintaining its employee transit subsidy of 50 percent in connection with the construction of the BCCB. Children's will also continue to promote and improve its TDM program to benefit its employees and reduce traffic impacts to roadways and parking facilities within the LMA and nearby neighborhoods.

3.1.2.7 Public Transportation

The Children's Projects are projected to have only a minor incremental impact on transit operations in the area by 2022. The analysis assumed that future Children's employees, patients, and visitors will have access to the many public transportation services offered by the Massachusetts Bay Transit Authority (MBTA), as well as the array of private shuttle and TDM services that are offered in the LMA through MASCO. The analysis indicates that by 2022, some existing public transportation services will be operating at or above capacity during peak periods if services are not expanded to meet expected passenger demands.

Because there are so many public transportation options that provide service to and from the LMA, no single service appears to be unduly affected by anticipated increases in activities because of the BCCB under future conditions. Consequently, Children's transit trips are expected to affect the transit system only minimally under future conditions.

3.1.3 Methodology

The transportation analysis presented in this chapter conforms to the BTD "Transportation Access Plans Guidelines" and uses standard methodologies such as Institute of Transportation Engineers (ITE) trip generation and local travel characteristics as defined in *Access Boston 2000-2010*.

The study was conducted in two distinct stages. The first stage (Existing Condition) involved a survey and compilation of existing transportation conditions within the study area (defined below) including:

- An inventory of the transportation infrastructure within the defined Project study area;
- Geometric and operational characteristics of study area roadways and intersections;
- Existing traffic control at study area intersections (i.e., traffic signalization, stop signs, one-way streets, etc.);
- Area off-street and on-street parking supply;
- Pedestrian activity along study area roadways, and at study area intersections;
- Bicycle activity and accommodations;
- Public transportation options within the study area, including bus, trolley, commuter rail, and private shuttle bus options; and
- Existing parking operations currently on site.

In the second stage of the study (Evaluation of Long-Term Transportation Impacts), future transportation conditions were projected within the study area. The future No-Build Condition includes an assessment of future transportation including background growth on area roadways and intersections, planned transportation infrastructure improvements, and growth related to other proposed projects within the study area (without consideration of 819 Beacon Street). The future Build Condition assesses the No-Build Condition plus 819 Beacon Street. Roadway, pedestrian, and transit capacity for morning and evening peak commuter periods were studied and are summarized for the following conditions:

- 2012 Existing Condition;
- 2022 No-Build Condition; and
- 2022 Build Condition.

Specific travel demand forecasts for the BCCB were assessed along with future transportation demands due to background traffic growth and traffic growth from other planned or approved projects within the study area. The year 2022 was selected as the horizon year for the purposes of quantifying and assessing future transportation impacts generated by the Project.

This section also quantifies the proposed mitigation and improvement actions (presented previously) to address Project-related pedestrian, parking, traffic, and public transportation impacts that have been identified. The proposed improvement actions serve as the basis for the forthcoming preparation of a Transportation Access Plan Agreement (TAPA) to be developed and executed by Children's and BTD.

3.1.4 Study Area

The Children's Main Campus is located primarily along Longwood Avenue in the LMA with its Main Entrance at the intersection of Blackfan Circle. The campus is loosely bound by Longwood Avenue, Binney Street, Shattuck Street, and Meadow Lane. Children's also owns and operates the Patient and Family and Karp parking garages on Blackfan Circle across from the Hospital's Main Entrance. Lastly, Children's owns buildings on the corner of Longwood Avenue and the Riverway which house their human resources department and laboratory space. In addition to Longwood Avenue, arterials serving the area include Brookline Avenue, the Riverway, the Fenway, Park Drive, Boylston Street, and Huntington Avenue.

The Project study area includes 15 intersections. These intersections, illustrated in Figure 3-3, are listed below.

1. Brookline Avenue/Longwood Avenue
2. Brookline Avenue/Jimmy Fund Way/Deaconess Road
3. Brookline Avenue/Francis Street
4. Brookline Avenue/Riverway
5. Longwood Avenue/MASCO Driveway/Pilgrim Road
6. Longwood Avenue/Riverway
7. Binney Street/Francis Street
8. Binney Street/Shattuck Street
9. Binney Street/ Jimmy Fund Way/Children's Way
10. Binney Street/Longwood Avenue
11. Longwood Avenue/Blackfan Circle
12. Longwood Avenue/Avenue Louis Pasteur
13. Avenue Louis Pasteur/Blackfan Street
14. Longwood Avenue/Palace Road
15. Longwood Avenue/Huntington Avenue

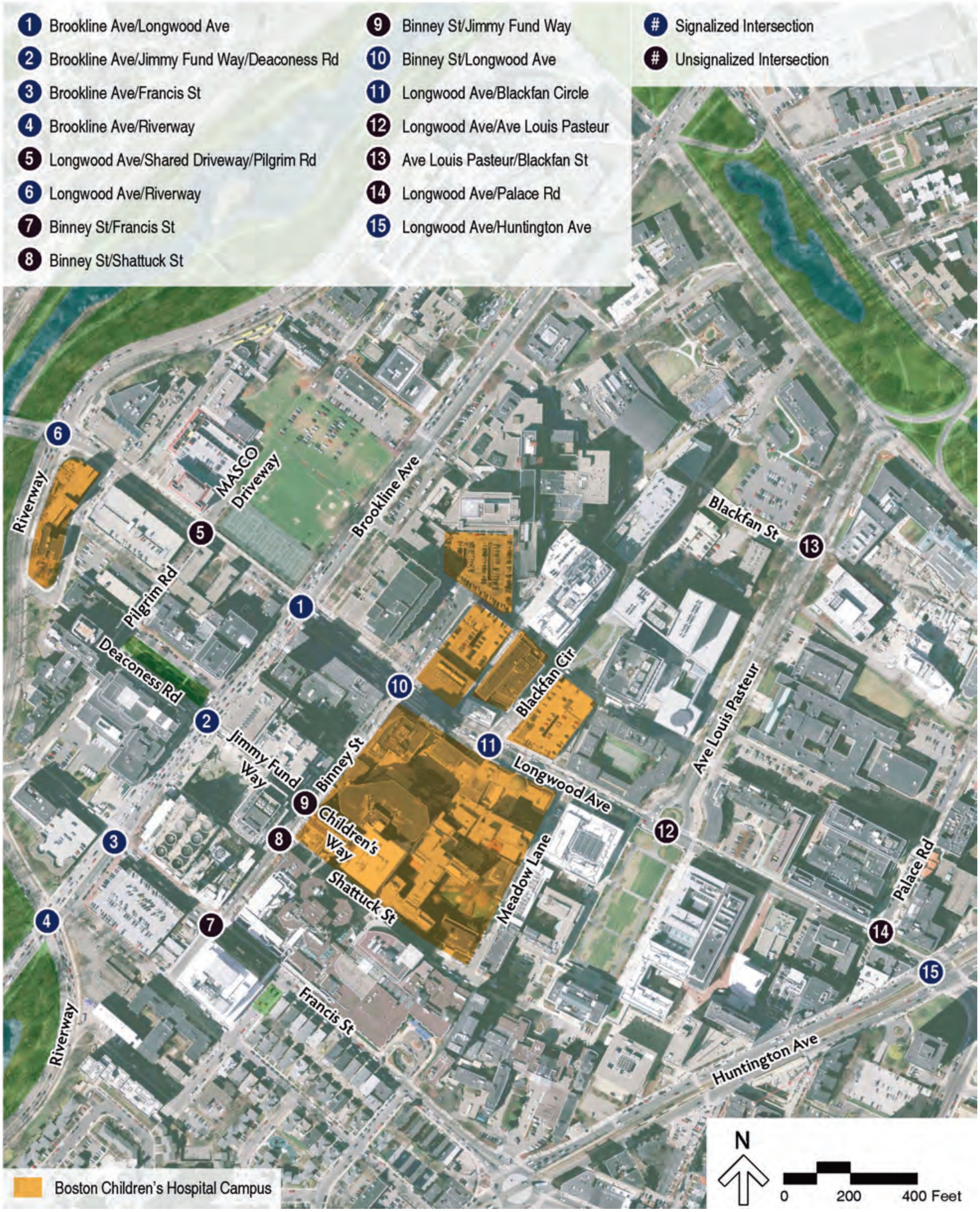

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Figure 3-3
LMA Study Area Roadways and Intersections

These study area intersections were evaluated in detail using standard traffic engineering analysis techniques following BTD guidelines to identify incremental impacts of future traffic growth and site-generated traffic.

3.2 Existing Conditions

Existing transportation conditions in the study area, including roadway geometry, traffic control at study area intersections, peak hour traffic and pedestrian flows, transit availability, parking supply and utilization, and loading and service activities are described within this section of the Transportation Access Plan Component. The initial parts of this section specifically describe existing access characteristics of the Children's campus. Subsequent sections describe and quantify transportation characteristics of the entire study area as required by the BRA within their Scoping Determination for the DPIR.

3.2.1 Summary of Existing Children's Transportation Infrastructure and Services

At its facilities in Boston and throughout the region, Children's in 2012 had over 580,000 outpatient visits, a number that is rising at a level of nearly 23,000 visits a year, as more and more children are seen on a lower cost outpatient basis. Approximately 25,000 children are seen as inpatients and observation cases annually. In addition, the Hospital's emergency department receives over 58,000 visits from patients each year. Approximately 15 percent of these children are admitted as inpatients. Approximately 47 percent of Children's patients seen in the emergency department are residents of Boston.

As of 2013, approximately 18,000 people work at Children's and at its facilities throughout greater Boston, which includes more than 9,100 "associated personnel" who work, study, or volunteer at Children's.

Children's has 8,900 employees who are paid directly from the Hospital, of which approximately 31 percent reside in Boston.

To serve their patients and staff, Children's has developed an extensive transportation infrastructure for safe and efficient access to and from its LMA campus. The existing Children's campus transportation infrastructure includes:

- A dedicated, off-street drop-off/pick-up area at its Main Entrance;
- Available on-campus self parking for patients and visitors;
- Available on-campus valet parking for patients and visitors;
- Limited on-campus and off-campus parking for Children's employees;
- An extensive TDM program for its employees to encourage commuting to work by transit and other alternative forms of transportation;

- Covered and secured bicycle parking;
- A campus shuttle bus system serving employees and patients;
- Ambulance activity in two dedicated areas; and
- Four loading and service areas.

Figure 3-4 identifies the specific locations of these various services on the Children's LMA campus. Each of these services is described in detail in the following sections.

3.2.1.1 Children's Parking System

Children's offers its patients, visitors, physicians, and employees a multitude of options for parking. Children's currently controls approximately 3,542 off-street parking spaces either by ownership or through leases from others. Of the 3,542 spaces, 1,047 spaces are available for public use by Children's patients and visitors, and 2,495 parking spaces are subscribed to staff and physicians. About 1,353 of these employee parking spaces are located on the Main Campus or in close proximity to the Main Campus within the LMA.

In addition to spaces within the LMA, Children's uses an additional 1,142 spaces for employees in remote parking facilities outside of the LMA. Off-site spaces that are used by employees require shuttle services to the Main Campus by dedicated Children's and/or MASCO-operated shuttle services. Figure 3-5 identifies the locations of these parking facilities while Table 3-1 provides a summary of existing Children's parking facilities.

Table 3-1 BCH Existing Parking Space Inventory (DECEMBER 2012)

Parking Facility	Current Number of Parking Spaces			Lease Expiration Date
On Campus / LMA	Total	Patient/Visitor	Employee/Physician	
Patient and Family Garage (O)	643	643	0	
Karp Research Facility (O)	300	224	76	
333 Longwood (O)	410	180	230	
375 Longwood (L)	240	0	240	Renewed Annually
Simmons College (L)	325	0	325	2023
Emmanuel (L)	78	0	78	Renewed Annually
Center for Life Sciences (1) (L)	64	0	64	2023
340 Brookline Avenue Garage*	330	0	330	
Wolbach (O)	10	0	10	
Total On-Campus/Adjacent Parking Spaces	**2,400**	**1,047**	**1,353**	

Table 3-1 BCH Existing Parking Space Inventory (DECEMBER 2012) (Continued)

Parking Facility	Current Number of Parking Spaces			Lease Expiration Date
Off-Campus Parking	Total	Patient/Visitor	Employee/Physician	
Renaissance Park (L)	500	0	500	2012
819 Beacon Street (O)	249	0	249	
Ipswich Street	42	0	42	Renewed Annually
Kenmore	38	0	38	Renewed Annually
1249 Boylston/Swan Lot	48	0	48	Renewed Annually
1295 Garage (L)	64	0	64	2013
1295 Deck (L)	13	0	13	2013
Chestnut Hill (L)	21	0	21	Renewed Annually
Landmark Center	167**	0	167	2019
Total Off-Campus Parking Spaces	**1,142**	**0**	**1,142**	
Existing Grand Total Children's Parking Spaces	**3,542**	**1,047**	**2,495**	

(O) = Owned by Boston Children's Hospital.
(L) = Leased by Boston Children's Hospital.
* These spaces will be eliminated in the future and replaced with 330 spaces in the future Longwood Research Institute (LRI)
** As part of BCH's lease at Landmark Center, BCH has the right to control up to 167 parking spaces.

Over the past several years, Children's has had the opportunity to make only modest incremental increases to its on-campus parking supply in the LMA. The Karp Family Research Laboratories added 300 new parking spaces to Children's on-campus parking system supply over 10 years ago (in 2001). However, Children's has continued to see demands on the existing supply intensify due to both higher patient and visitor demand—related to increased patient volumes and higher acuity patients. Because patients are children, they are always accompanied by a parent or guardian which translates to parking spaces that are occupied for longer periods of time during the day and that turnover less frequently than at a more traditional hospital campus. Children's has pursued a number of strategies to address the constrained parking situation, including TDM measures to reduce single-occupancy vehicle trips to the campus, moving employees to off-campus locations, remote parking, and shuttles. However, there is a current deficit of parking spaces for patient, visitor, and staff demands. Children's continues to investigate ways to accommodate its projected patient demands at the Main Campus.

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Figure 3-4
Existing Campus Transportation Infrastructure

	Facility/Location Name	Utilized Spaces
1	Patient and Family Garage	643
2	Karp Research Facility Garage	300
3	333 Longwood Garage	410
4	MASCO Garage	240
5	Emmanuel Deck	78
6	Wolbach Lot	10
7	Renaissance Park Garage	500
8	819 Beacon Street Lot	249
9	Ipswich Street Lot	42
10	1295 Boylston Garage	64
11	1295 Boylston Deck	13
12	Chestnut Hill Lot	21
13	340 Brookline Avenue	330
14	Center for Life Sciences	64
15	Simmons College Garage	325
16	Kenmore Lot	38
17	1249 Boylston /Swan Lot	48
18	Landmark Center	167
	Total	**3,542**

Parking Owned by Children's Hospital

Parking Leased by Children's Hospital

Boston Children's Hospital

N

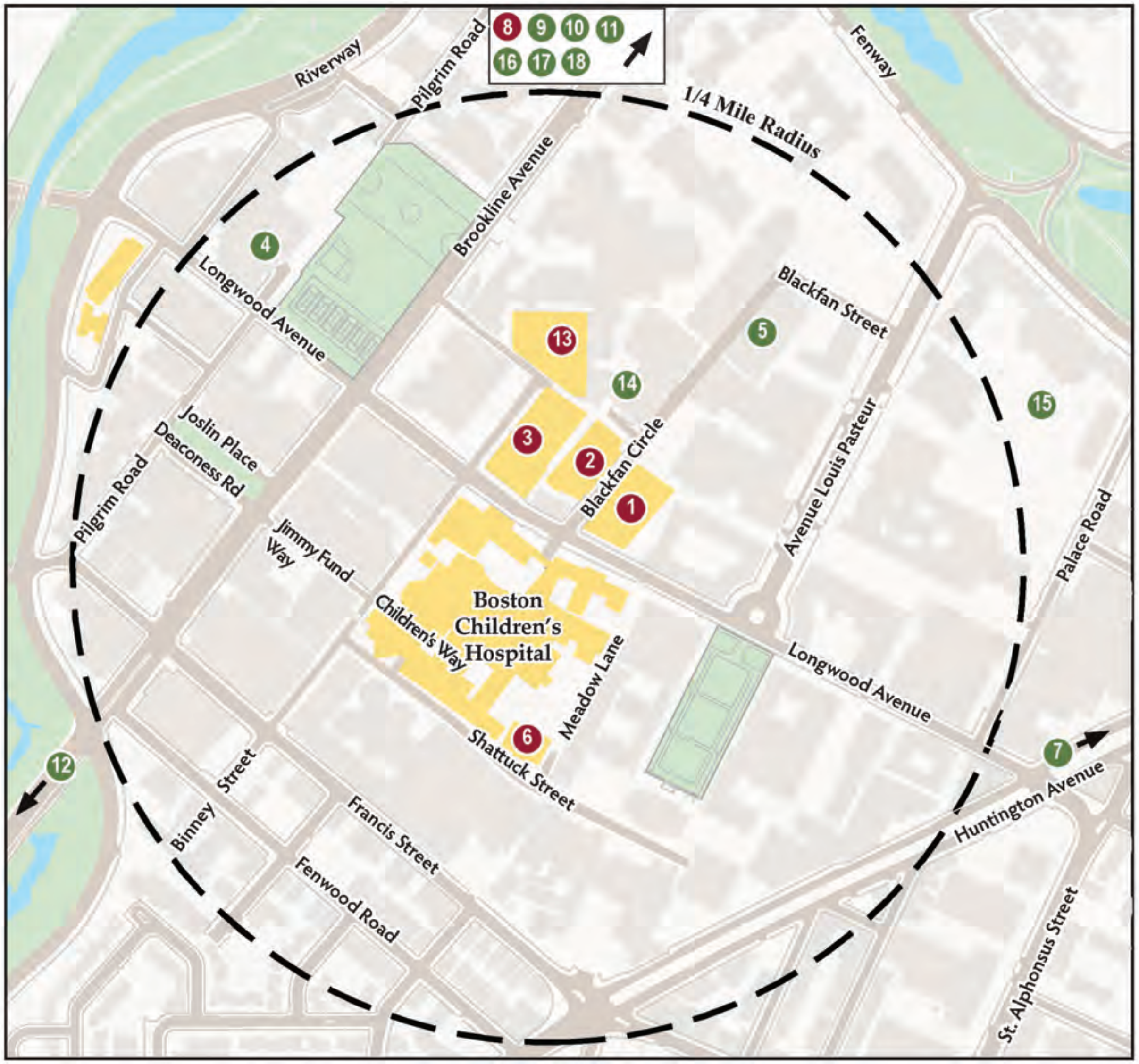

Figure 3-5
Children's Owned and Leased Parking

Employee Parking Management

Of Children's 2,495 employee parking spaces, 1,353 spaces (54 percent) are located in the LMA and 1,142 spaces (46 percent) are at remote, off-site locations. Only 646 employee spaces are provided at Children's owned facilities in the LMA, as the rest of those spaces are reserved for patients and visitors. Shuttle buses operated by MASCO or Children's connect the remote parking locations to the Main Campus.

All on-site and nearby employee parking spaces are priced competitively with other area facilities in the LMA. To limit congestion in the LMA, Children's subsidizes the cost of off-site parking, giving employees a 50 percent discount compared to those who park on campus.

Patient/Visitor Parking Management

Patients and visitors driving to the Main Campus have several options including a pick-up/drop-off area, self-parking and valet parking.

The primary pick-up/drop-off area is located at Children's Main Entrance on Longwood Avenue. Patient and visitor self-parking is located at the Patient and Family Parking Garage on the corner of Blackfan Circle and Longwood Avenue. Children's offers a special discounted parking rate for patients at the Patient and Family Parking Garage: a maximum of $9. Patients must have their garage ticket validated at one of six convenient locations within the Hospital to receive the discounted rate. The Patient and Family Parking Garage is open 24 hours a day, 7 days a week. Patients and visitors also utilize the nearby 333 Longwood Public Parking Garage, located on Binney Street, which is owned by Children's Hospital.

Children's provides valet parking services for patients and visitors of the Hospital, a necessity due to patients of Children's often being brought in strollers or needing to be carried. All valet drop-off and pick-up activity occurs at the Hospital's Main Entrance. The valet staff then move the vehicles to the Karp Research Facility Garage or the Patient and Family Parking Garage on Blackfan Street. Valet parking is available for an additional $4 fee above the parking garage fee; however, this fee is waived for vehicles with handicapped plates/placards. Valet parking is available 24 hours a day, 7 days a week. On average, the Hospital valets approximately 400 vehicles daily. During peak hours, there can be a considerable delay in parking and retrieving vehicles due to high demand (up to 80 vehicles per hour).

3.2.1.2 Children's Employee Transportation Demand Management Program

Children's seeks to minimize the impact of traffic on surrounding neighborhoods, while ensuring that families and employees can also conveniently access the campus. To work towards this goal, BCH utilizes a variety of TDM strategies as described below.

- **CommuteWorks TMA.** Both for transportation and health benefits, the Hospital encourages biking, walking, running, or rollerblading to work. Toward this end, Children's is an active member of the CommuteWorks Transportation Management Association, which is operated by MASCO. CommuteWorks offers an array of ongoing programs (discussed further below) designed to encourage employees to choose alternative options for commuting. Children's monitors CommuteWorks programs, posts and distributes announcements, holds promotional events for employees to encourage alternative modes of transportation such as the Bike Week Commuter Challenge, and provides transit schedules and other information to facilitate alternative transportation.

- **Transit pass subsidies.** Children's employees regularly purchase monthly T-passes and choose public transportation as their primary mode to work. To encourage employees to do so, the Hospital provides a 50 percent subsidy in the cost of T and commuter-rail passes for employees. The cost of passes is deducted on a pre-tax basis, resulting in an additional cost savings to employees. The Hospital also implemented a new program, called "Three for Free", to promote the use of public transportation rather than driving. Employees who give up their parking spots for three months will receive a free T or commuter rail pass for that period.

- **Carpool assistance.** Ridematching services are provided to employees through MASCO's CommuteWorks. Preferential parking is provided for carpools registered with CommuteWorks. Carpools of three or more are guaranteed parking at nearby garages, while two-person carpools are guaranteed spaces at remote MASCO lots.

- **Emergency Ride Home.** CommuteWorks provides an Emergency Ride Home program which covers the cost of taxi or car rental vouchers up to five times a year (per person) for commuters who need to get home quickly due to personal emergencies, but who do not commute by car.

- **Bicycling/walking incentives and amenities.** Children's participates in CommuteWorks' Commute Fit Program that provides rewards to employees who bicycle, walk, or rollerblade to work, based on the miles they log. Children's also provides a secure bike cage for employees.

- **Location-priced parking.** Children's recognizes that there are still employees who will need or want to drive to work, but Children's strives to control congestion in the LMA by encouraging staff members to carpool and to park off-site. To discourage parking on campus, Children's subsidizes the cost of off-site parking, giving those employees a reduced rate compared to those who park on campus.

- **Telecommuting and compressed workweeks.** Children's has an informal policy of encouraging telecommuting and compressed workweeks for employees.

- **Promotional efforts.** Children's promotes alternative transportation through a variety of newsletters, information kiosks, websites, e-mail, and special events.

- **Personalized commuting assistance.** Through CommuteWorks', Children's offers assistance for employees needing help identifying a new commute pattern/mode(s).

- **Zipcar membership.** Through CommuteWorks', Children's employees are eligible for a reduced Zipcar membership. There are currently 12 Zipcars located throughout the LMA, including five in Brigham Circle, two in Longwood Towers, two at the 375 Longwood Garage, two at Landmark Center, and one at Simmons College.

- **Employee transportation advisor.** Children's employs an Employee Transportation Advisor (ETA) who provides information and implements TDM measures at Children's, assisted by MASCO's CommuteWorks TMA.

- **Shuttle bus services**. Both Children's and MASCO operate shuttle services in the LMA. Shuttle transportation is vital to Children's strategy related to public transportation and off-site parking. Children's operates three shuttles between campus and off-campus parking lots, as well as three shuttles between campus and commuter rail stations as discussed in more detail in Section 3.2.1.3. MASCO runs ten bus routes that provide service within one-half mile of the Children's campus.

Children's will continue to promote and improve its TDM program to benefit its employees and reduce traffic impacts to roadways and parking facilities within the LMA and nearby neighborhoods.

3.2.1.3 Children's Shuttle Bus System

Children's operates six distinct shuttle bus routes that connect the Main Campus to parking areas and commuter rail stations outside the LMA as described below.

- The Children's Beacon Street Lot Shuttle operates between the Main Campus and the 819 Beacon Street parking lot. The shuttle is used by employees traveling between these two locations. The shuttle runs approximately every 10 to 15 minutes from 5:00 a.m. to 11:40 p.m (Monday through Friday). This shuttle is an on demand shuttle and there are two shuttles on the route. During busy periods the shuttles run continuously, and during slow periods, each shuttle is waiting on either end of the route for passengers and then departs at the same time. The shuttle stops at 20 Overland Street and the Landmark Center in support of the employees at these locations.

- The Children's Renaissance Parking Shuttle operates between the Main Campus and the Renaissance Garage. The shuttle is used by employees traveling between these two locations. The shuttle runs approximately every 10-15 minutes from 5:00 a.m. to 11:40 p.m. (Monday through Friday). This shuttle is an on demand shuttle and there are two shuttles on the route. During busy periods the shuttles run continuously, and during slow periods, each shuttle is waiting on either end of the route for passengers and then departs at the same time. There are no other stops on this route.

- The Children's 1295/Landmark Shuttle operates between the Main Campus, 1 Autumn Street, Landmark Center and 1295 Boylston Street. The shuttle is used by employees traveling between these four locations. The shuttle runs every 15 minutes from 7:00 a.m. to 6:00 p.m. (Monday through Friday). There are no other stops on this route.

- The Children's 1295 Boylston/Ruggles Express Shuttle operates between Ruggles Station and Children's satellite offices at 1295 Boylston Street with a stop at the Landmark Center. The shuttle is used by employees traveling from the commuter rail, bus, and subway hub at Ruggles and the Landmark Center and 1295 Boylston Street. The shuttle runs approximately every 30 minutes from 6:30 a.m. to 8:40 a.m. and 4:00 p.m. to 6:10 p.m.

- The Children's North Station Shuttle operates between North Station, Beth Israel Deaconess Medical Center's (BIDMC) East and West Campuses, and Dana-Farber Cancer Institute (DFCI)/Boston Children's Hospital. The shuttle is a cooperative service between the three hospitals to provide employees with transportation between the hospitals and the commuter rail at North Station. Each of the three hospitals supplies a van and pays a share of the cost. To utilize this shuttle, employees must be registered due to limited capacity. The shuttle runs every 10 to 15 minutes from 6:00 a.m. to 9:30 a.m. and 2:45 p.m. to 6:15 p.m.

The pick-up and drop-off location for all BCH Main Campus shuttles is on Children's Way at the South Main Entrance.

3.2.1.4 Children's Ambulance Operations

Ambulances primarily access the Emergency Department from Binney Street where they are provided with three dedicated, off-street ambulance bays. Children's also handles transfer ambulance activity via its rear entrance along Children's Way (off of Binney Street and Shattuck Street).

The main ambulance bays handle approximately 100 vehicles per week. On average, there are three to six transport team ambulance runs per day that utilize the rear entrance to access the ambulance garage.

3.2.1.5 Children's Loading and Service Operations

The Hospital's loading and service activities are handled at several dedicated off-street service facilities at its Main Campus, as indicated previously in Figure 3-4 and as described below.

- Boston Children's Hospital Main Building loading dock – accessed via Binney Street, this loading dock is utilized from 4:30 a.m. to 4:00 p.m. Delivery types include linens, bottled medical gas, Federal Express and UPS packages, and Cardinal Value Link supplies. It is estimated that this dock serves 30 to 40 trucks per day.

- Karp Family Research Laboratories loading dock – accessed via Blackfan Circle, this loading dock is utilized from 6:30 a.m. to 4:00 p.m. Deliveries include research supplies, compactor pick-ups, Bertucci's Restaurant supplies, and Federal Express and UPS packages. It is estimated that the dock serves 20 to 25 trucks per day, half of which park on-street instead of in the dock for convenience.

- Enders Pediatric Research Laboratories loading dock – accessed via Binney Street, this loading dock is utilized from 7:30 a.m. to 4:00 p.m. Deliveries include research supplies, compactor pick-ups, contractor activities, and Federal Express and UPS packages. It is estimated that this dock serves 10 to 15 trucks per day.

- Hunnewell loading dock – accessed via Meadow Lane, this loading dock is utilized from 7:00 a.m. to 4:00 p.m. Deliveries include food services supplies, maintenance supplies, 2nd Cardinal delivery, contractor activities, compactor and dumpster pickups, and lobby deliveries for Au Bon Pain Restaurant. It is estimated that this dock serves approximately 60 trucks per day.

In addition, some deliveries and contractors arriving by van or passenger vehicle arrive at the Main Entrance. For this reason, the five designated valet spaces are occasionally used by short-term vendor and delivery parking at the Main Entrance. These spaces are managed by the valet operators. Table 3-2 shows a summary of loading and service operations.

Table 3-2 Children's Daily Loading and Service Operations (June 2007)

	Number of Loading and Service Operations
Children's Hospital Main Building	30-40
Karp Family Research Laboratories	20-25
Enders Pediatric Research Laboratories	10-15
Hunnewell Loading Dock	60
TOTAL	**120-140**

As shown in Table 3-2, Children's receives between 120 and 140 deliveries to their loading docks daily. The majority of loading activity is at the Boston Children's Hospital Main Building. An on-site loading manager actively oversees all scheduling and operations.

3.2.1.6 Children's Bicycle Accommodations

Children's encourages employees to bicycle to work. Currently, Children's maintains approximately 600 bicycle spaces throughout its LMA campus. These racks serve employees and visitors. Additional racks will be provided with the opening of the Main Building Expansion on Binney Street which is currently under construction (and expected to be completed and opened in the third quarter of 2013). Existing and future bicycle parking locations are shown in Figures 3-6 and 3-7.

Additionally, the City of Boston recently initiated its Hubway bicycle sharing program. Hubway maintains several bicycle sharing stations in close proximity to the Children's campus. Sharing stations are located at the intersection of Longwood Avenue and Binney Street, and at the intersection of Longwood Avenue and Avenue Louis Pasteur.

3.2.2 Study Area Intersections

The study area, previously illustrated in Figure 3-3, includes 15 intersections which provide a basis for determining to what extent, if any, Project traffic is likely to affect the wider transportation network. These intersections are described below, including general physical characteristics, geometric conditions, pedestrian facilities and traffic control measures.

1. **Brookline Avenue/Longwood Avenue**

   The intersection of Longwood Avenue and Brookline Avenue is a four-legged signalized intersection with an exclusive pedestrian phase. The Longwood Avenue northbound approach accommodates an exclusive left-turn lane, a through lane, and an exclusive right-turn lane. The Longwood Avenue southbound approach provides an exclusive left-turn lane, and a shared through/right-turn lane. The Brookline Avenue eastbound and westbound approaches each provide an exclusive left-turn lane, a through lane and a shared through/right-turn lane. There is no on-street parking or loading permitted along any of the approaches; however, loading and delivery vehicles occasionally stop along both sides of Brookline Avenue south of Longwood Avenue. Sidewalks and crosswalks are provided at all four intersection approaches.

Existing Bicycle Storage	Spaces
1 Patient & Family Garage	322
2 Enders Building, Longwood Avenue	16
3 Shattuck Street	64
4 340 Brookline Avenue	120
5 57 Binney Street	48
6 Ambulance Way	36
Total	606

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Figure 3-6
Existing Bike Storage

	Future Bicycle Storage	Spaces
1	Patient & Family Garage	366
2	Enders Building, Longwood Avenue	40
3	Shattuck Street	80
4	340 Brookline Avenue	120
5	333 Longwood Avenue	20
6	One Autumn Street	7
7	20 Brookline Avenue	12
8	295 Boylston Garage	4
9	819 Beacon Street	70
10	Center for Life Sciences Boston	100
11	Simmons College	56
	Total	**875**

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Figure 3-7
Future Bike Storage

2. Brookline Avenue/Jimmy Fund Way/Deaconess Road

The intersection of Brookline Avenue/Jimmy Fund Way/Deaconess Road is a four-legged intersection that operates under four-phase traffic signal control, including an exclusive pedestrian phase when the push-button is activated. The Brookline Avenue westbound approach is a two-lane approach, one through and one through/left-turn lane onto Jimmy Fund Way. The Brookline Avenue eastbound approach provides two general-purpose travel lanes. Deaconess Road is one-way in the southbound direction functioning with a left only lane and a through/right lane. Jimmy Fund Way is a two lane approach with a left and right only as Deaconess Road is one-way southbound. An MBTA bus stop is located at the eastbound approach on Brookline Avenue serving Routes 60 and 65. An additional MBTA bus stop is located at the Brookline Avenue westbound approach which also serves bus routes 60 and 65, and various LMA shuttles. Metered parking is provided along the north and south sides of Brookline Avenue west of the intersection, and on the east side of Deaconess Road. Crosswalks are provided along all intersection approaches.

3. Brookline Avenue/Francis Street

The intersection of Francis Street and Brookline Avenue is a four-legged intersection that operates under four-phase traffic signal control, including a westbound lead phase and an exclusive pedestrian phase. The Francis Street northbound approach provides two lanes, one for left-turns, and one for through/right-turns. The Francis Street southbound approach provides a single general-purpose travel lane. The Brookline Avenue eastbound approach provides three general lanes during the peak hours due to a peak hour parking restriction. As a result, eastbound Brookline Avenue operates with a shared left/through lane, a through lane, and the parking lane operates as a defacto right-turn lane onto Francis Street. The Brookline Avenue westbound approach provides an exclusive left-turn lane, an exclusive through lane, and a shared through/right-turn lane. MBTA bus stops are located on Brookline Avenue on both eastbound and westbound departures from the intersection. The traffic signal's actuated pedestrian phase provides for exclusive pedestrian movement at the intersection. Sidewalks and crosswalks are provided at all four intersection approaches.

4. Brookline Avenue/Riverway

The intersection of Brookline Avenue/Riverway is a four-legged intersection that operates under four-phase traffic signal control, including a westbound lead phase and an exclusive pedestrian phase. The Riverway provides two lanes on each approach. In the southbound direction, there is a combined right/through lane and a through only lane with no left permitted onto Brookline Avenue. In the northbound direction, a left/through and an exclusive right are provided. Brookline Avenue provides three lanes on each approach, one exclusive left-turn lane, one exclusive through lane, and one shared through/right-turn lane. There is no on-street parking permitted along any of the approaches. The traffic signal's pedestrian phase provides for exclusive pedestrian movement at the intersection. Sidewalks are provided along both sides of Brookline Avenue and along the north side of the Riverway. Unpaved paths follow the Riverway on its south side. Crosswalks are provided across all four intersection approaches.

5. Longwood Avenue/MASCO Driveway/Pilgrim Road

The intersection of Longwood Avenue/MASCO Driveway/Pilgrim Road is a four-legged unsignalized intersection. The west leg, Pilgrim Road, is one-way westbound under existing conditions, but will be made two-way under future conditions. Longwood Avenue is two lanes, one through and one left-turn lane, in both the north and southbound directions. The shared Winsor/MASCO Driveway has a single lane approach that is stop controlled in the westbound direction. Crosswalks are located at each leg of the intersection. In the future this intersection may be signalized and was therefore analyzed this way in the future traffic analysis conditions.

6. Longwood Avenue/Riverway

The intersection of Longwood Avenue/Riverway is a four-legged intersection that operates under three-phase traffic signal control. In addition to phases for all Riverway traffic and for all Longwood Avenue traffic, a phase allows for protected left-turns from Riverway eastbound and right-turns from Longwood Avenue southbound with concurrent pedestrian movements across both Longwood Avenue legs, the east Riverway leg, and diagonally across the intersection from the northeast corner to the southwest corner. The Longwood Avenue northbound approach provides an exclusive left-turn lane and a shared through/right-turn lane. The Longwood Avenue southbound approach provides a shared left-turn/through lane and an exclusive right-turn lane. The Riverway eastbound approach provides an exclusive left-turn lane, a through lane, and a shared through/right-turn lane. The Riverway westbound approach provides two through lanes (left-turns from this approach are prohibited) and an exclusive right-turn lane. There is no on-street parking permitted along any of the intersection approaches. Sidewalks are provided along all intersection approaches except along the north side of the Riverway (adjacent to the Emerald Necklace).

7. Binney Street/Francis Street

The intersection of Francis Street and Binney Street is a four-legged intersection controlled by stop signs on both Binney Street approaches. Each of the four approaches provides a single general purpose travel lane. No parking is allowed on any approach, and a shuttle bus/MBTA bus stop is provided on the departure lane for the southbound direction. A loading dock that serves the adjacent MATEP facility is located on the north side of Francis Street just west of the intersection. Sidewalks and crosswalks are provided at all four intersection approaches.

8. Binney Street/Shattuck Street

The intersection of Binney Street and Shattuck Street is a three-legged, unsignalized intersection. Binney Street provides a general-purpose travel lane on the east and west approaches. Traveling northbound, Shattuck Street provides a general-purpose travel lane on the northbound approach. A driveway accessing loading docks is located on Shattuck Street just south of the intersection. Sidewalks are provided along all intersection approaches and a crosswalk is provided across Shattuck Street.

9. Binney Street/ Jimmy Fund Way/Children's Way

The intersection of Binney Street and Jimmy Fund Way is a four-legged, unsignalized intersection with stop-sign control on all four approaches. Binney Street provides a general-purpose travel lane on the east and west approaches. The east leg is currently one-way in the westbound direction due to the construction of the 57 Binney Street building, but was studied as a two-way roadway. Traveling northbound, Children's Way provides one general-purpose travel lane. The southbound Jimmy Fund Way also provides one general-purpose travel lane. Sidewalks and crosswalks are provided along all intersection approaches.

10. Longwood Avenue/Binney Street

The intersection of Longwood Avenue and Binney Street is a four-legged, signalized intersection that operates under three-phase traffic signal control, including an exclusive pedestrian phase. The Longwood Avenue northbound approach provides two general-purpose travel lanes. The southbound approach provides exclusive left- and right-turn lanes and a single through lane. The Binney Street eastbound approach has a single general-purpose lane while the westbound approach provides a shared left-turn/through lane and exclusive right-turn lane. Sidewalks and crosswalks are provided at all four intersection approaches. On-street parking is not permitted at any of the approaches; however, there is an MBTA bus stop located at the northbound approach in front of 333 Longwood Avenue which services bus routes 8, 47, CT2, CT3, and 10.

11. Longwood Avenue/Blackfan Circle/Boston Children's Hospital Entrance

This four-legged intersection operates under three-phase traffic signal control, including an exclusive pedestrian phase. Longwood Avenue provides a shared right/through lane and a left-turn lane in the north and southbound directions. Boston Children's Hospital entrance eastbound provides a single general-purpose lane. Traveling westbound, Blackfan Circle provides an exclusive right-turn lane and a shared through/left-turn lane. Sidewalks and crosswalks are provided along all four intersection approaches. There is a bus stop on the west side of Longwood Avenue south of the intersection which provides service to bus routes CT2, 47, 8, and 19.

12. Longwood Avenue/Avenue Louis Pasteur

The intersection of Longwood Avenue and Avenue Louis Pasteur is a three-legged, unsignalized intersection with stop-sign control on the Avenue Louis Pasteur approach. Longwood Avenue southbound provides a through and a shared left-turn/through lane. Traveling northbound, Longwood Avenue provides one shared through/right-turn lane. The Avenue Louis Pasteur approach (westbound) provides exclusive left- and right-turn lanes on the north side of the traffic island (known as Oscar Tugo Circle). Sidewalks and crosswalks are provided along all three intersection approaches. Parking is not provided near this intersection. An MBTA bus stop is located at the Avenue Louis Pasteur approach serving bus routes 8, 19, 47, and the CT2 and various shuttle services.

13. Avenue Louis Pasteur/Blackfan Street

The intersection of Avenue Louis Pasteur and Blackfan Street is a three-legged, unsignalized intersection, with stop control on the Blackfan Street eastbound approach. The Avenue Louis Pasteur northbound and southbound approaches provide two general-purpose travel lanes. The Blackfan Street eastbound approach has a single general-purpose lane. Sidewalks are provided at all intersection approaches. On-street parking is not permitted at any of the approaches. An MBTA bus stop is located just east of the intersection on either side of Avenue Louis Pasteur servicing MBTA bus routes CT3, 8, 19 and 47 and several shuttle bus routes.

14. Longwood Avenue/Palace Road

The intersection of Longwood Avenue and Palace Road is a three-legged, unsignalized intersection. Longwood Avenue southbound provides a through and a shared left-turn/through lane. The Longwood Avenue northbound approach provides a general-purpose lane. Palace Road provides one-way eastbound access away from Longwood Avenue. Across the street from Palace Road is a gated entrance to the 'Palace Lot.' Sidewalks are provided at all three approaches and a crosswalk is provided across Palace Road.

15. Longwood Avenue/Huntington Avenue

The intersection of Longwood Avenue and Huntington Avenue is a four-legged intersection that operates under three-phase traffic signal control, which includes a lead phase for Huntington Avenue east and westbound left turns. The Huntington Avenue eastbound and westbound approaches provide an exclusive left-turn lane, a through lane, and a shared through/right-turn lane. Pedestrian movements are concurrent with traffic movements. Pedestrians can cross Longwood Avenue during the Huntington Avenue through movement, while pedestrians crossing Huntington Avenue must do so in two phases. They can cross the departure lanes during the Huntington left-turn movement and the approaches during the Longwood through movement. The MBTA's Green Line (E Branch) also operates within the median of Huntington Avenue. Longwood Avenue provides one general-purpose lane northbound. Southbound, it provides two general-purpose travel lanes. Parking is provided on the east side of the Longwood Avenue northbound approach. A bus stop is located on the westbound approach of Huntington Avenue, just east of Longwood Avenue which services MBTA bus routes 39 and CT2. Sidewalks and crosswalks are provided along all four intersection approaches.

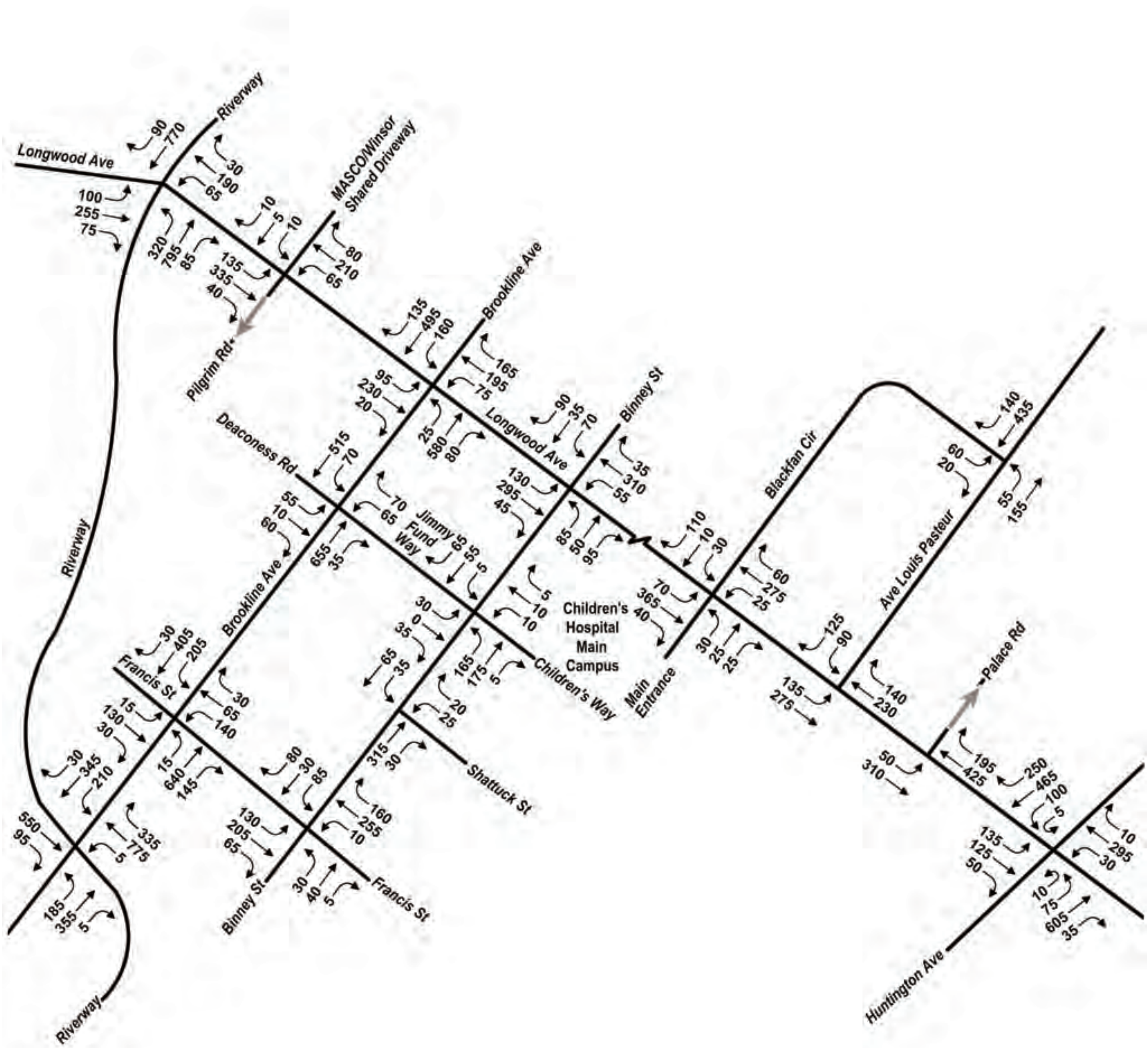
3.2.3 Study Area Roadway and Intersection Conditions

An extensive transportation data collection program was conducted which included conducting peak hour turning movement counts (TMCs) from 7:00-9:00 a.m. and 4:00-6:00 p.m. at the fifteen existing study area intersections in May 2012. The intersection TMCs were used to establish traffic networks for the Existing (2012) Condition. From the TMCs, the study area's traffic peak hours were determined to be 7:15 to 8:15 a.m. and 4:45 to 5:45 p.m. for the morning and evening peaks, respectively.

Existing (2012) peak hour traffic volumes are shown in Figures 3-8 and 3-9 for the a.m. and p.m. peaks, respectively. Detailed traffic count data sheets are provided in Appendix C.

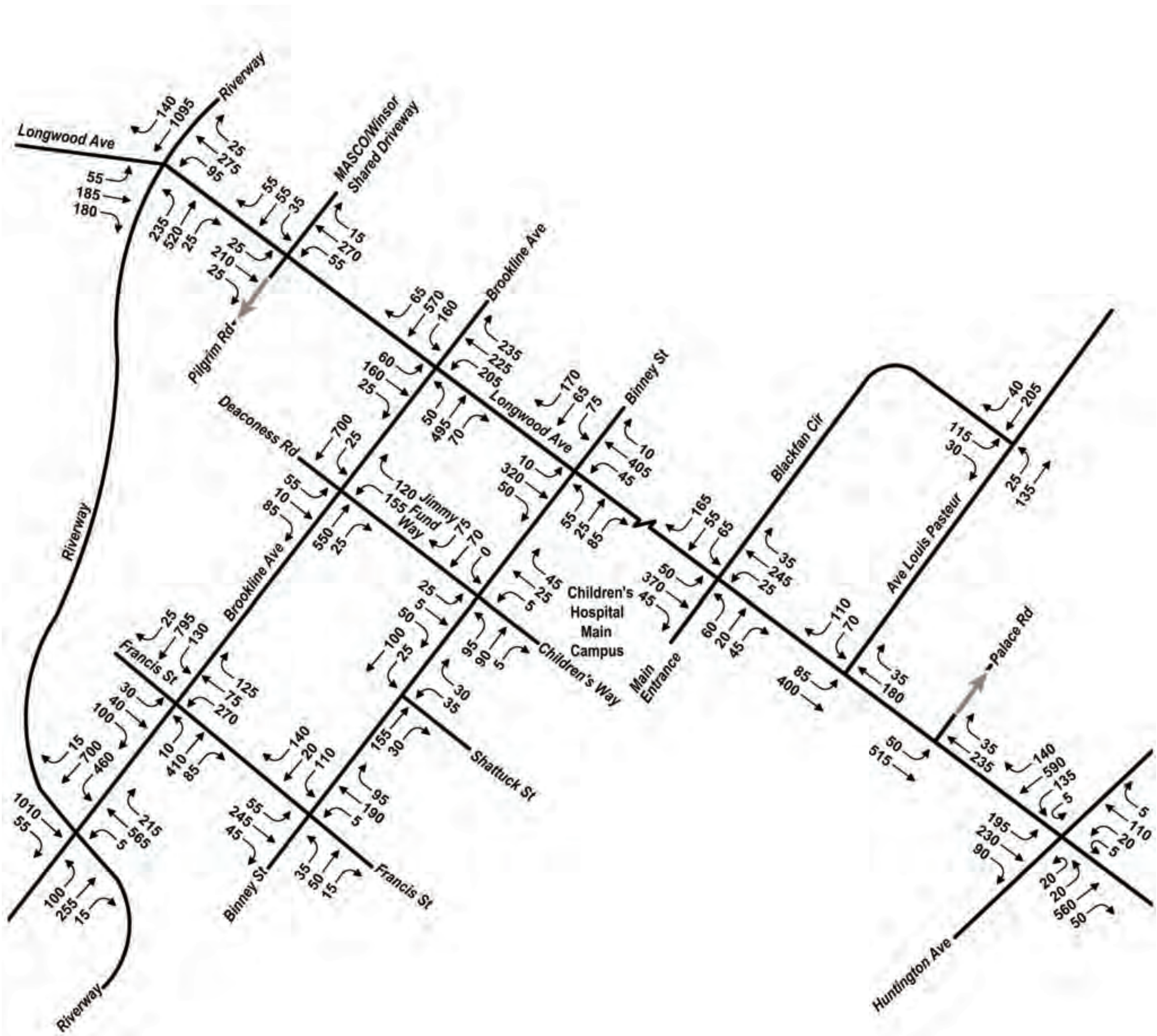
3.2.4 Crash Analysis

Accident data was investigated for the study area. Data was obtained from the Massachusetts Department of Transportation (MassDOT) Highway Division for the most recent three-year period available (2008 through 2010) for the intersections within the study area. As part of this analysis, MassDOT's crash rate at each of the intersections was calculated in order to compare against the district average. The 2010 MassDOT average crash rates for signalized and unsignalized intersections for District 6 (the MassDOT district designation for Boston) are 0.77 and 0.57 crashes per million entering vehicles, respectively. Crash results are summarized in Table 3-3. Detailed accident data are presented in Appendix C.



Note: Binney Street volumes adjusted to reflect two-way operations.

Figure 3-8
2012 Existing Condition Morning Peak Hour (7:15-8:15 AM) Traffic Volumes



Note: Binney Street volumes adjusted to reflect two-way operations.

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Figure 3-9
2012 Existing Condition Evening Peak Hour (4:45-5:45 PM) Traffic Volumes

Table 3-3 Vehicular Crash Summary (2008 - 2010)

Location	Crash Rate (crashes per million entering vehicles)	Prominent Type of Collision
Brookline/ Riverway	1.09	Angle, rear end
Brookline/ Francis	0.20	Angle
Brookline/ Deaconess/ Jimmy Fund Way	0.10	Sideswipe
Brookline/ Longwood	0.47	Rear end
Longwood/ Riverway	0.61	Angle
Longwood/ Pilgrim	0.11	Unknown
Longwood/ Binney	0.12	Rear end
Longwood/ Blackfan	0.14	Rear end
Longwood/ Avenue Louis Pasteur	0.46	Angle
Longwood/ Palace	0.39	Rear end, sideswipe
Longwood/ Huntington	0.34	Angle, rear end
Binney/ Francis	0.16	Unknown
Binney/ Jimmy Fund Way	0.00	
Binney/ Shattuck	0.00	
Avenue Louis Pasteur/ Blackfan	0.00	

Source: MassDOT.

Of the reported accidents, most (52 percent) occurred during a weekday outside of the traditional peak hours of 7:00-9:00 a.m. and 4:00-6:00 p.m. The majority of the reported incidents occurred during dry pavement conditions. The severity ranged from personal injury to exclusively property damage. No fatalities were indicated by the data.

The only intersection over the District average is Brookline Avenue at the Riverway. This signalized intersection experienced 45 vehicle crashes during the three-year period. Of the 45 vehicle crashes, 43 percent were angle type collisions and 20 percent were rear-end collisions. The average crash rate for the analysis period is 1.09.

3.2.5 Area-wide Parking

This section identifies the parking supply and demand relationship for the study area, including both off-street and on-street parking. Several off-street parking facilities, and a relatively small amount of on-street parking spaces, are located within the study area.

3.2.5.1 Off-Street Parking Facilities

Non-Children's affiliated off-street parking areas within a quarter-mile of the BCCB are provided in Table 3-4 and are shown in Figure 3-10. In total, there are 8,682 spaces provided in these facilities in addition to the on-campus spaces listed previously. Mid-day, there is generally little available parking at these facilities. This supply is further reduced by the number of spaces reserved for specific institutions or specific users within those institutions. Most of the hospital-controlled spaces are for each institution's employees, patients and visitors. Many LMA institutions maintain long waiting lists of employees seeking reserved off-street parking.

Table 3-4 Existing Off-Street Parking Supply (December 2012)

Facility/Location Name	Spaces
BIDMC East Campus	604
Emmanuel College Parking	404
HMS/New Research Building	561
Boston Latin School	158
MASCO/375 Longwood Avenue Garage	750
BIDMC/Carl J. Shapiro Clinical Center Garage	737
333 Longwood Avenue Garage	495
BWH 221 Longwood Lot	15
MCPHS Fennell Garage	96
BIDMC/Pilgrim Road Garage	750
Longwood Galleria Garage	103
HMS/Quad Garage	508
DFCI/Yawkey Center Garage	715
Various HMS lots on Longwood Ave and Shattuck St	90
BWH/ASB II Garage	247
BWH/15 Francis Street Lot	57
BIDMC/Lowery Garage	294
Servicenter Garage	643
BWH/MMHC Site (Interim Lot)	82
Mission Park Garage	1,373
Total	**8,682**

3.2.5.2 On-Street Parking

The majority of the area has no available on-street parking. There are some metered parking spots to the northwest near the BIDMC West Campus and southeast on Huntington Avenue. There is also residential parking to the south of Children's along Fenwood and Francis Streets. On-street parking regulations nearby in the LMA are illustrated in Figure 3-11.

	Facility/Location Name	Spaces
1	BIDMC East Campus	604
2	Emmanuel College Deck	404
3	HMS/New Research Building	561
4	Boston Latin School Lots	158
5	MASCO/375 Longwood Avenue Garage	750
6	BIDMC/Carl J. Shapiro Clinical Center Garage	737
7	BWH 221 Longwood Lot	15
8	MCPHS Fennell Garage	96
9	BIDMC/Pilgrim Road Garage	750
10	Longwood Galleria Garage	103
11	HMS/Quad Garage	508
12	DFCI/Yawkey Center Garage	460
13	DFCI/Smith Building Garage	715
14	Various HMS lots on Longwood Avenue and Shattuck Street	90
15	BWH/ASB II Garage	247
16	BWH/15 Francis Street Lot	57
17	BIDMC/Lowery Garage	294
18	Servicenter Garage	643
19	BWH/MMHC Site (Interim Lot)	82
20	Mission Park Garage	1,373
	Total	**8,682**

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Figure 3-10
Summary of Nearby Off-Street Parking Facilities

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Figure 3-11
On-Street Parking Regulations

3.2.6 Pedestrians and Bicycles

As shown in Figure 3-12, pedestrian facilities in the study area include sidewalks that vary in width from six feet to 19 feet wide, crosswalks at all major intersections, and access ramps for the disabled. The high level of pedestrian activity in the area has prompted changes in traffic signal design and operation in recent years to include exclusive pedestrian phasing, and nearly all area signalized intersections are now equipped with pedestrian push-buttons. MASCO and its member institutions have a program of continuing to study and re-evaluate pedestrian needs in the area. For Children's employees that walk to work, Children's provides incentives through the Commute Fit program as commuters build up their mileage. Primary pedestrian flow paths for the Children's campus are depicted in Figure 3-13.

Pedestrian intersection crossing volumes were conducted concurrently with traffic volume counts. Peak hour results are presented in Figures 3-14 and 3-15. Major pedestrian crossing locations are highlighted and summarized in the following bullets.

- As shown, the intersections of Brookline Avenue/Longwood Avenue, Longwood Avenue/Binney Street, and Longwood Avenue/Blackfan Circle process approximately 1,000 pedestrian crossings during the morning and evening peak hours.

- The greatest number of pedestrians were observed crossing parallel to Longwood Avenue at the Brookline Avenue at Longwood Avenue intersection. During the evening peak period, approximately 1,000 pedestrians crossed Brookline Avenue.

- The intersection adjacent to the Children's Main Entrance processes approximately 900 pedestrians during the morning peak hour and 1,350 pedestrians during the evening peak hour.

In addition, the LMA is an area that proactively supports bicycling as a commuting option to work. Peak hour bicycling activity in the LMA is presented in Figures 3-16 and 3-17.

3.2.7 Existing LMA Transportation Infrastructure

Children's is well served by public transportation, including MBTA bus routes, MASCO shuttle routes, MBTA subways, and MBTA commuter rail lines as shown in Figure 3-18 and described In further detail below. Note that it is possible to transfer between different routes and modes to travel from an origin to a destination.

Crosswalks

Average Sidewalk Width (in feet)

Boston Children's Hospital

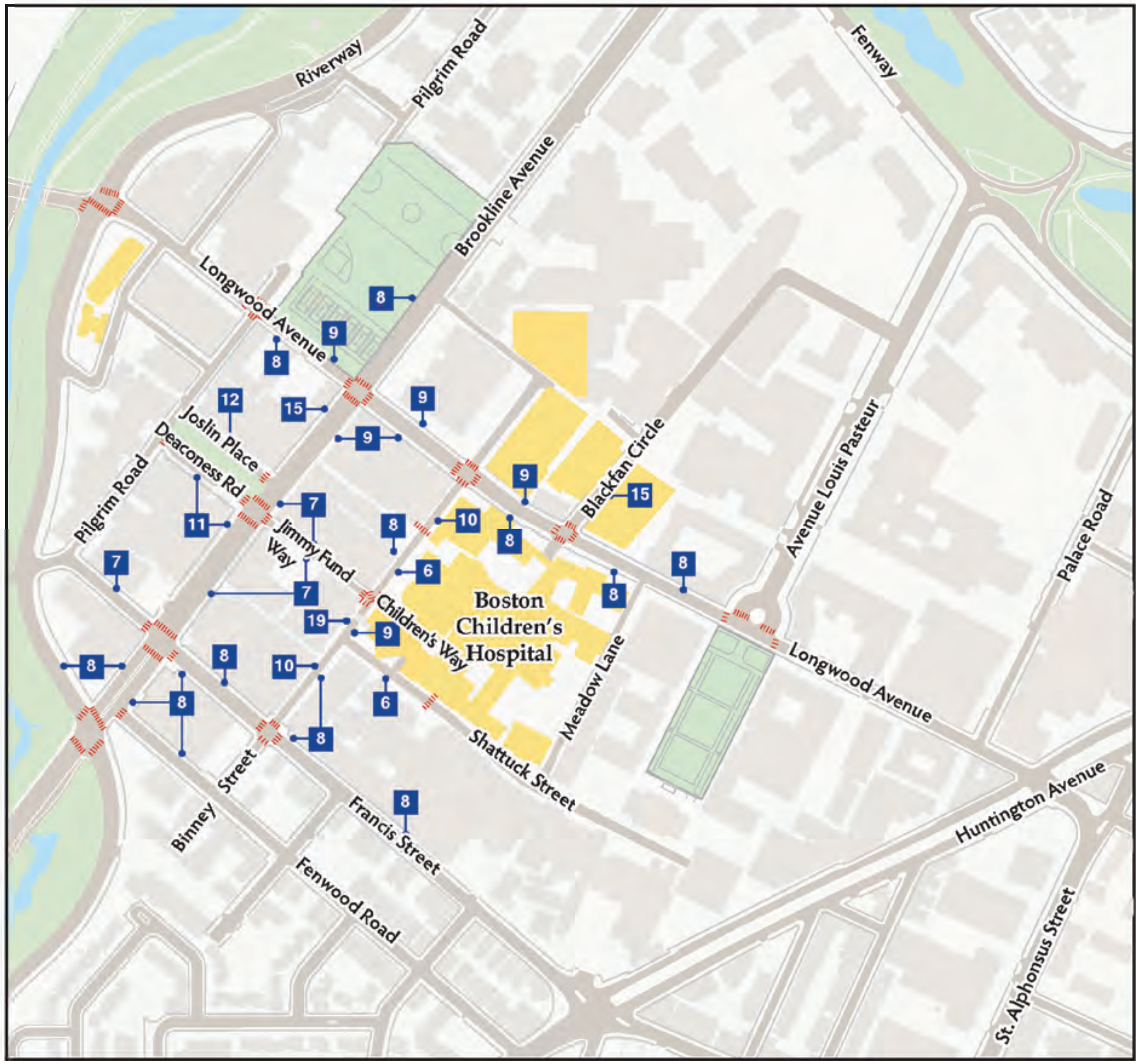

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Figure 3-12
Sidewalk and Crosswalk Inventory

Boston Children's Hospital

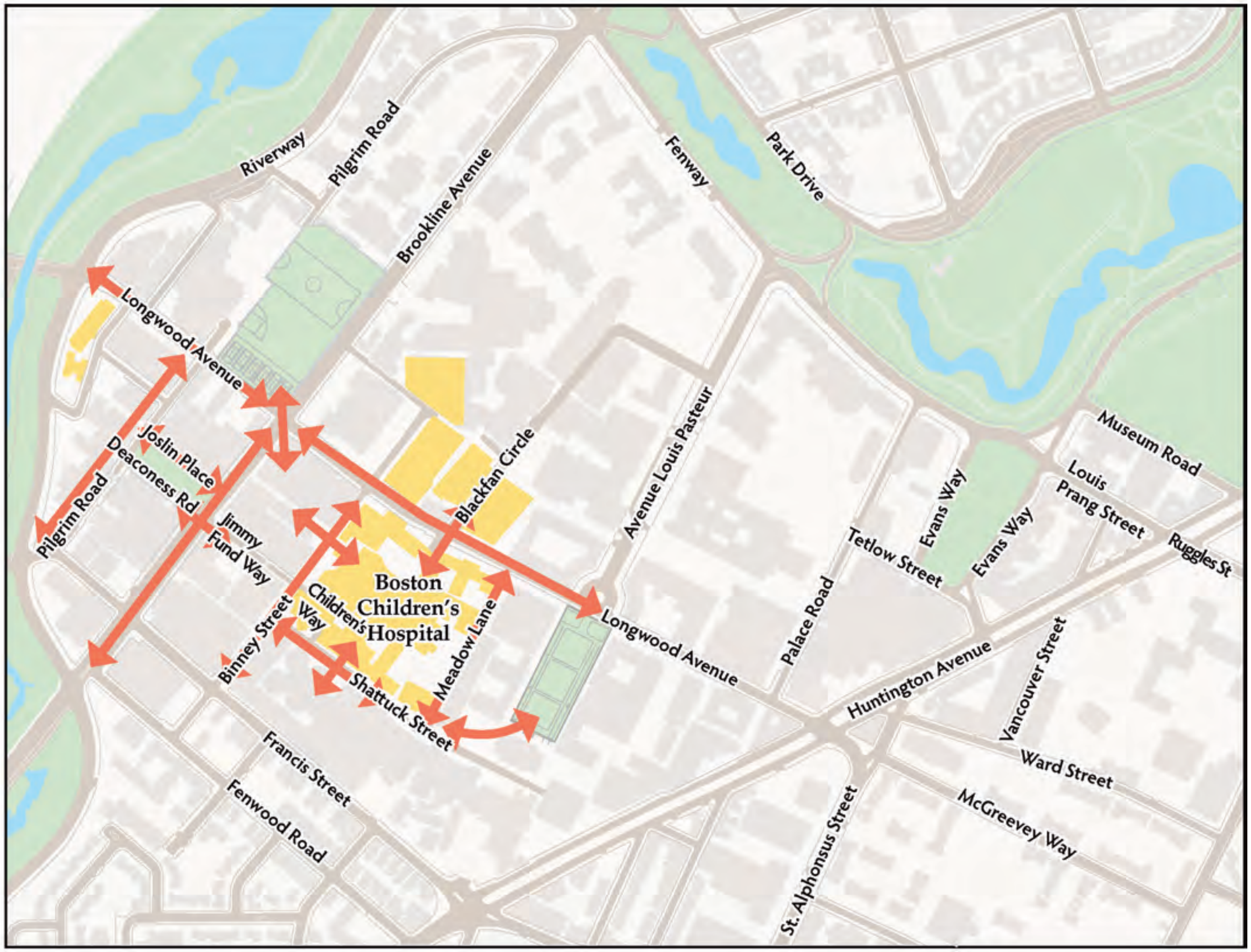

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Figure 3-13
Primary Pedestrian Circulation Routes

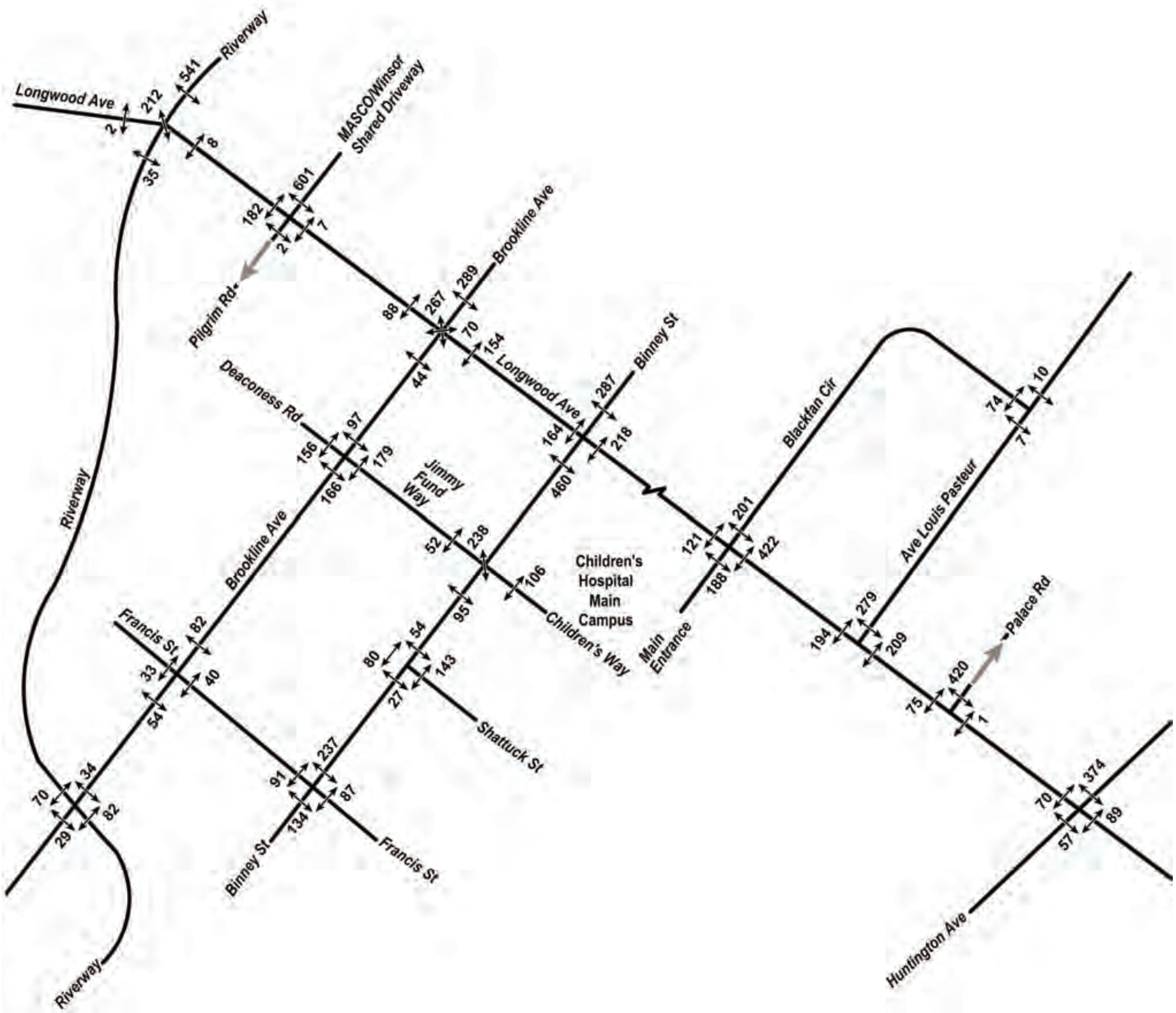

Figure 3-14
2012 Existing Condition Morning Peak Hour (7:15-8:15 AM) Pedestrian Volumes

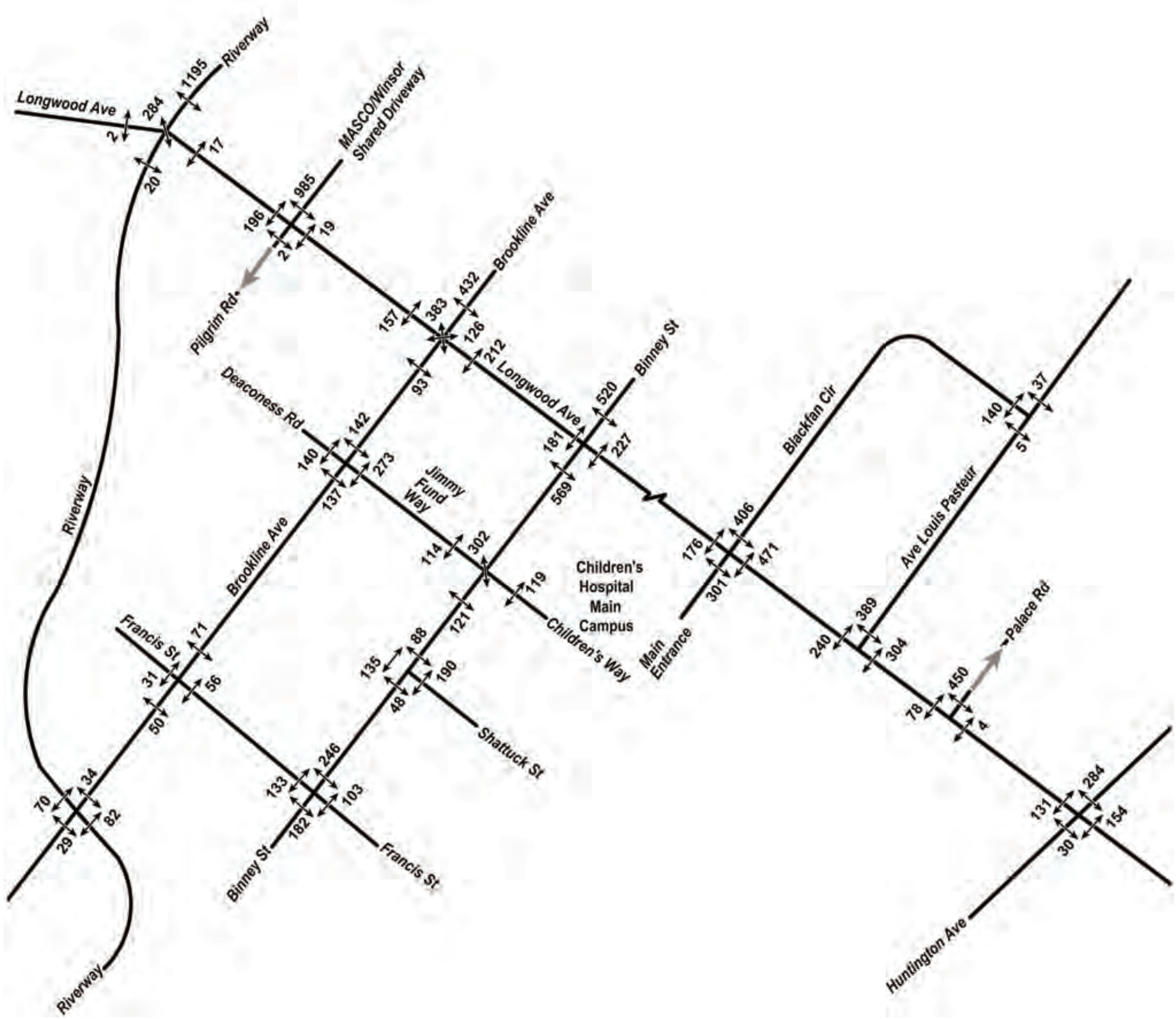

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Figure 3-15

2012 Existing Condition Evening Peak Hour (4:45-5:45 PM) Pedestrian Volumes

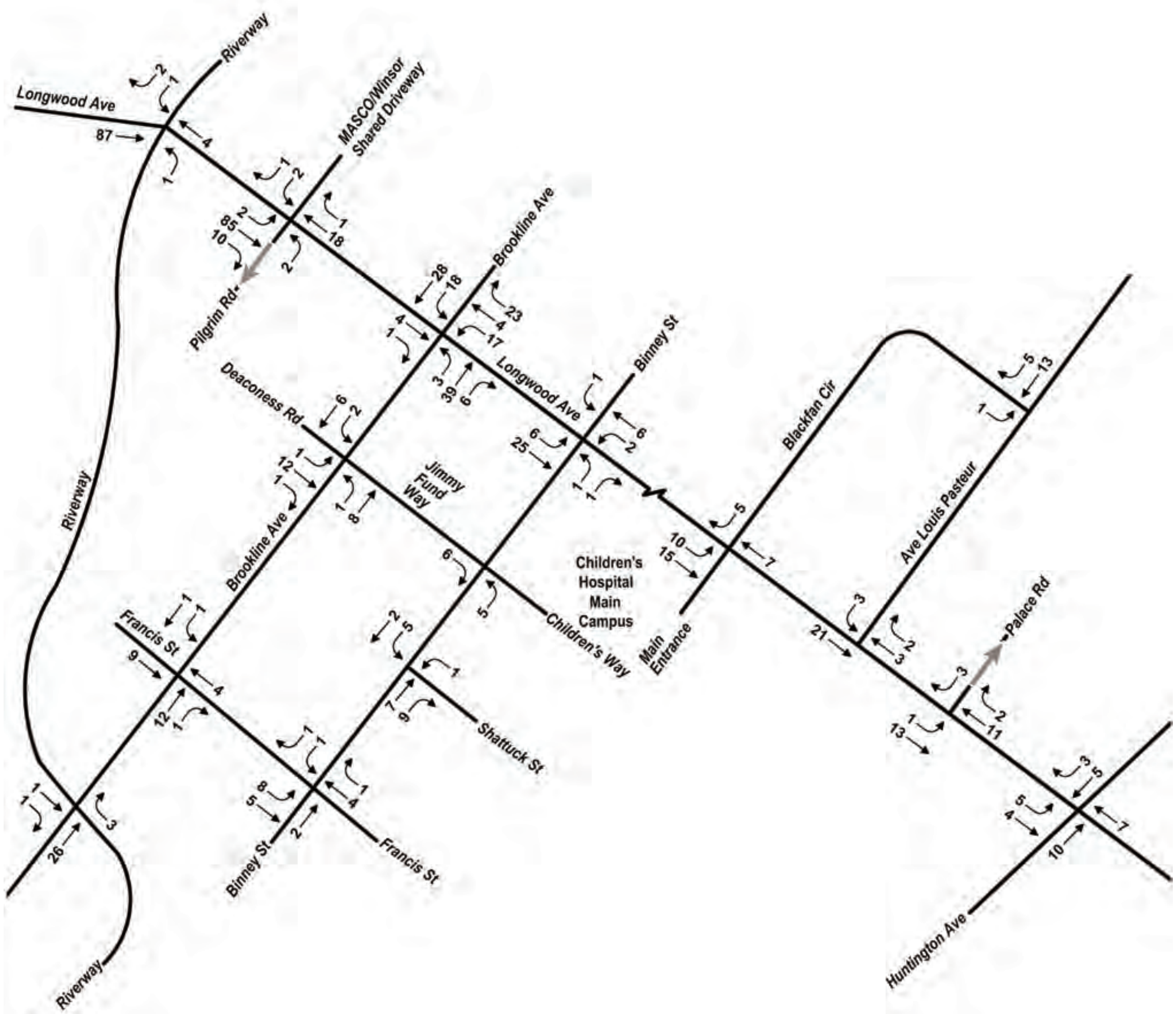

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Figure 3-16

2012 Existing Condition Morning Peak Hour (7:15-8:15 AM) Bicycle Volumes

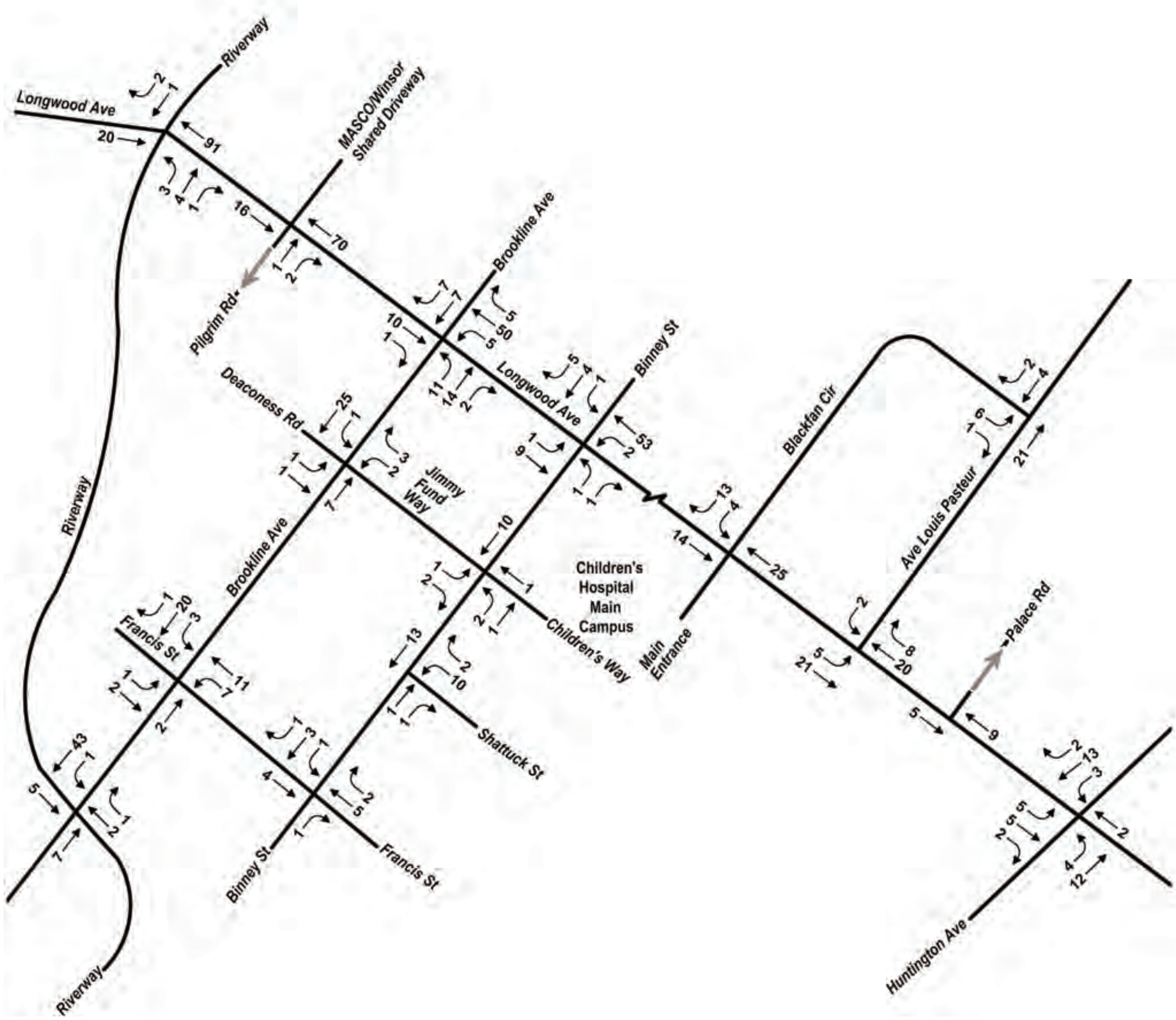

Figure 3-17

2012 Existing Condition Evening Peak Hour (4:45-5:45 PM) Bicycle Volumes

Boston Children's Hospital

Source: Base Map - Boston Water and Sewer Commission

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Figure 3-18
Public Transportation

3.2.7.1 MBTA Bus Route Service

In the LMA, nine bus routes provide service on Brookline, Longwood, and Huntington Avenues with five of the bus routes including CT2, CT3, 8, 19, and 47 having a Children's stop. The Children's stops are at the intersection of Longwood Avenue and Blackfan Circle for buses traveling southbound on Longwood Avenue, and at the intersection of Longwood Avenue and Binney Street for buses traveling northbound on Longwood Avenue. The routes are described in more detail below.

- **Crosstown 2 (CT2)** operates between Sullivan Square Station on the Orange Line and Ruggles Station on the Orange Line. CT2 makes a stop on Longwood Avenue.

- **Crosstown 3 (CT3)** operates between Brookline Avenue at BIDMC East Campus and Andrew Square Station on the Red Line in Dorchester. CT3 makes a stop on Longwood Avenue.

- **Route 8** operates between Kenmore Square and UMass Boston, with high-frequency service between Kenmore Square and the Ruggles Street MBTA Orange Line/Commuter Rail Station during peak commuter periods. This route stops on Longwood Avenue.

- **Route 19** runs between Fields Corner Station on the Red Line and Kenmore Station on the Green Line. During peak hours, this route stops at Ruggles Station on the Orange Line and on Brookline Avenue. During the midday, this route only provides service between Fields Corner and Ruggles Station.

- **Route 39** provides service between the Forest Hills Station on the Orange Line and Back Bay Station on the Orange Line. This route makes stops on Huntington Avenue at Brigham Circle and at Longwood Avenue.

- **Route 47** provides service between Central Square Station on the Red Line and Broadway Station on the Red Line via Ruggles Station on the Orange Line. This route stops on Longwood Avenue.

- **Route 60** provides service between Chestnut Hill in Newton and Kenmore Square via Brookline Village Station on the Green Line D Branch. This route stops on Brookline Avenue.

- **Route 65** provides service between Brighton Center and Kenmore Square via Washington Street Station on the Green Line B Branch, Washington Square Station on the Green Line C Branch, and Brookline Village Station on the Green Line D Branch. The route stops on Brookline Avenue.

- **Route 66** provides service between Harvard Square in Cambridge and Dudley Square. This route stops at Brigham Circle.

3.2.7.2 MASCO Shuttle Services

In addition to MBTA bus routes, MASCO operates nine shuttle routes that provide service within one-half mile of the Children's campus as described below.

- **Harvard Medical School M2 Shuttle** connects the LMA to Harvard University in Cambridge, with interim stops along Massachusetts Avenue in Cambridge, Central Square, MIT, and Vanderbilt Hall. Several stops along Massachusetts Avenue and within the LMA may be made by request only. This shuttle is operated by MASCO for Harvard University and operates on approximately 10-minute headways during peak hours and approximately 30 to 60-minute headways the rest of the day. The service runs weekdays, from 6:40 a.m. to 11:30 p.m., and Saturdays during the school year only from 8:00 a.m. to 10:30 p.m. with 60-minute headways.

- **The Landmark – Longwood Shuttle** provides service between Landmark Center and the Harvard School of Public Health with an interim stop at Vanderbilt Hall. The shuttle operates weekdays between 9:00 a.m. and 5:21 p.m. with 20-minute headways.

- **Crosstown Garage Park and Ride Shuttle** connects the LMA and the Crosstown Garage on Massachusetts Avenue. Stops include Brigham Circle, 75 Francis Street, Bank of America, BIDMC Shapiro Building, BIDMC East Campus, Vanderbilt Hall, Harvard COOP, and Joslin Park. It operates on 10-minute headways during the peak hours and 35-minute headways during the midday service. The service runs Monday to Friday from 5:30 a.m. to 10:20 a.m. (to the LMA), 10:35 a.m. to 2:12 p.m. (both directions), and 2:20 p.m. to 8:55 p.m. (to Crosstown Garage).

- **Centre Street/Wentworth Park and Ride Shuttle** connects the LMA and the Centre Street and Wentworth Lot with interim stops at Brigham Circle, 75 Francis Street, Bank of America, BIDMC Shapiro Building, BIDMC East Campus, Children's Hospital, Vanderbilt Hall, Harvard COOP, and Joslin Park. It operates on 10-minute headways during the peak hours and 25-minute headways during the midday service. The service runs Monday to Friday from 5:30 a.m. to 10:00 a.m. (to the LMA), 10:15 a.m. to 2:12 p.m. (both directions), and 2:20 p.m. to 8:55 p.m. (to the Wentworth Lot).

- **M6 Chestnut Hill Shuttle** connects the LMA with the MASCO Mishkan/Tefila Parking Lot in Chestnut Hill (Newton), making interim stops at 850 Boylston, 110 Francis Street, Brigham & Women's Hospital, Dana-Farber Cancer Institute, Children's Hospital, BIDMC Shapiro Building, Shattuck Bus Shelter, and Jimmy Find Way. It operates on approximately 5- to 10-minute headways during morning peak hours and 15-minute headways during evening peak hours. The shuttle runs Monday to Friday from 5:40 a.m. to 9:30 a.m. (to the LMA) and from 2:30 p.m. to 8:30 p.m. (to Chestnut Hill). There is no midday service.

- **JFK/UMass Shuttle** connects the LMA and the JFK/UMass Station with interim stops at Vanderbilt Hall, Harvard COOP, Joslin Park, and 75 Francis Street. Additional flag/request stops include Andrew Square on the MBTA's Red Line, Wentworth Institute of Technology, Simmons College, 610 Huntington Avenue, and Brigham Circle. This shuttle operates approximately every 15 minutes in the morning peak period and approximately every 15-20 minutes in the evening. The JFK/UMass Shuttle runs Monday to Friday from 6:00 a.m. to 9:30 a.m. (to the LMA) and from 3:20 p.m. to 8:05 p.m. (to JFK/UMass). There is no midday service.

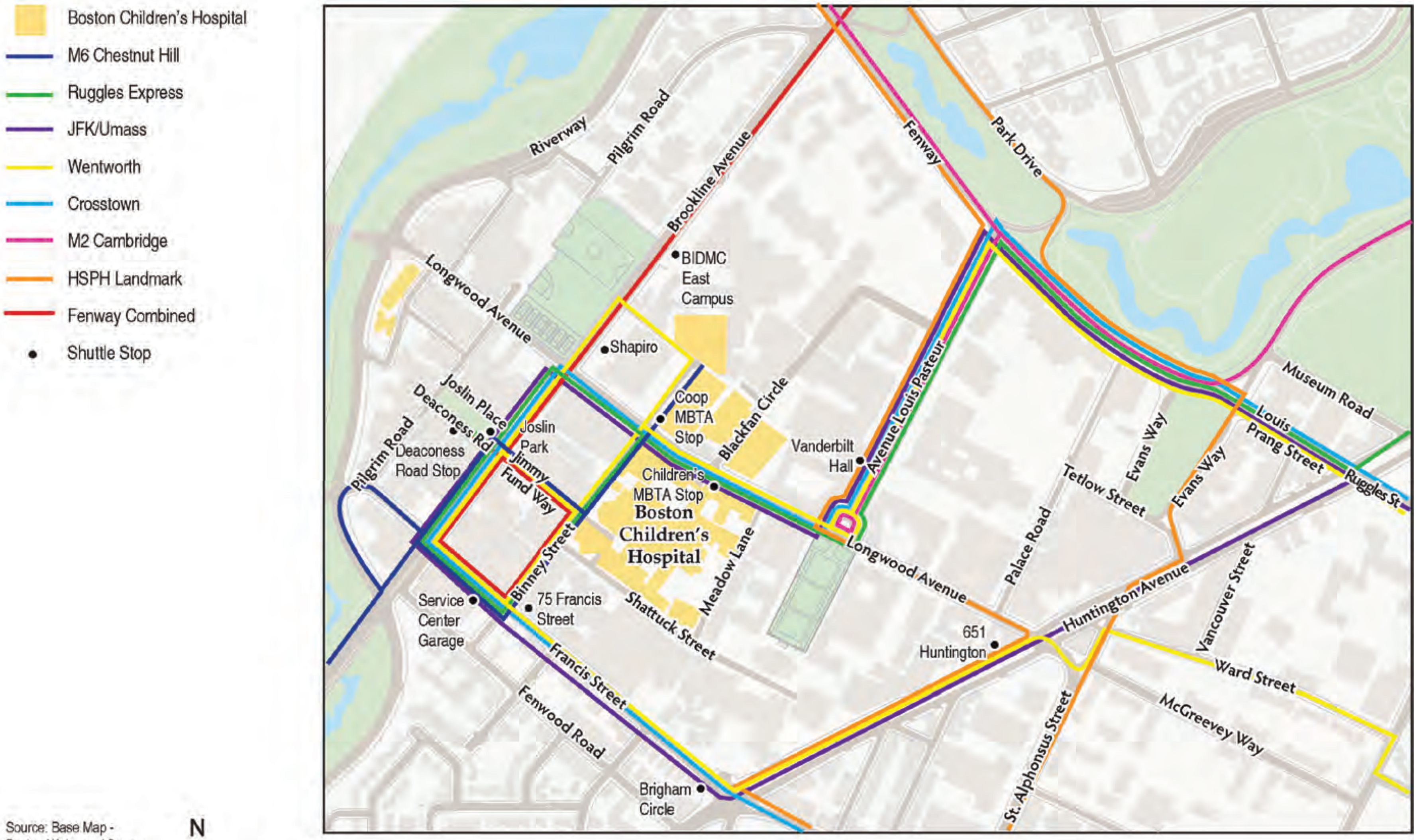
- **Fenway Park and Ride Shuttle** connects the LMA with MASCO's leased parking at the Kenmore lot, Landsdowne garage, Ipswich garage, and Fenway garage. It makes interim stops at Harvard Vanguard, BIDMC East Campus, Joslin Park, 75 Francis Street, Binney Street, Deaconess Road, BIDMC Shapiro Building, D'Angelo's, Brookline and Yawkey, and Children's Hospital. It operates on 10-minute or less headways during peak hours. The shuttle runs Monday to Friday from 5:30 a.m. to 10:00 a.m. (to the LMA) and from 2:30 p.m. to 9:30 p.m. (to Fenway lots). Midday service is provided on this route in combination with the Ruggles Express Shuttle from 10:15 a.m. to 2:12 p.m. (both directions) with 25-minute headways.

- **Ruggles Express Shuttle** provides service between the MBTA's Ruggles Station and the LMA throughout the day with interim stops at Simmons College (flag/request stop), Vanderbilt Hall, Harvard COOP, Joslin Park, Francis Street, Children's Hospital, and BIDMC West Campus, on 8-minute headways during peak hours. At Ruggles Station, passengers can connect to the Orange Line subway and the Needham, Franklin, Attleboro/Providence and Stoughton Commuter Rail Lines, in addition to other buses. The shuttle runs Monday to Friday from 5:30 a.m. to 9:50 a.m. (to the LMA) and 2:30 p.m. to 8:45 p.m. (to Ruggles). Midday service is provided to this route in combination with the Fenway Park and Ride Shuttle from 10:15 a.m. to 2:12 p.m. (both directions) with 25-minute headways.

Figure 3-19 depicts the major MASCO shuttle routes serving the LMA.

3.2.7.3 MBTA Subway Services

Children's Main Campus in the LMA is well served by public transportation. The Hospital is located between the Heath Street (E) Branch and the Riverside (D) Branch of the MBTA Green Line, and is also served by several branches of the MBTA's Commuter Rail system, as described below:



Source: Base Map - Boston Water and Sewer Commission

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Figure 3-19
MASCO Shuttle Bus Service

- **Green Line D Branch** – The D (or Riverside) Branch of the Green Line light rail subway line runs on a dedicated right-of-way from Riverside Station in Newton through multiple stations in Newton, Brookline, and Boston before turning north along the Riverway and joining the main below-grade Green Line east of Fenway Station. The main line continues through the Back Bay, Government Center, and North Station to its terminus at Lechmere Station. The LMA is served by the line's Longwood and Brookline Village stops, both located west of the Muddy River. Passengers traveling to Children's would either walk half a mile from the Longwood stop, or transfer to any of three local buses (60, 65 and 66) at Brookline Village.

- **Green Line E Branch** – The E (or Heath Street) Branch of the Green Line light rail subway line originates at Heath Street Station and runs east at grade within the median of Huntington Avenue. South of Massachusetts Avenue, the line descends below grade to serve Symphony and Prudential stations before joining the main Green Line (described previously in the D Branch section) at Copley. Children's is served by the line's Brigham Circle and Longwood stops. Passengers traveling to Children's from either of these stops would walk approximately a quarter of a mile.

- **Orange Line** – The Orange Line heavy rail subway line runs from Oak Grove Station in Malden through Medford, Charlestown, downtown Boston, the South End, and Roxbury, before reaching Forest Hills Station in Jamaica Plain. The Orange Line connects with the Green Line and with all northern commuter rail lines at North Station, with the Green Line at Haymarket, with the Blue Line at State Street, and with the Red Line at Downtown Crossing. Orange Line passengers traveling to Children's would either walk approximately two-thirds of a mile from Roxbury Crossing Station or walk approximately three quarters of a mile, or take the MASCO Ruggles Express shuttle service, from Ruggles Station. Children's provides shuttle service to the Renaissance Park, which is also used for access to Ruggles Station.

- **Framingham/Worcester Commuter Rail Line** – This commuter rail line runs from Boston's western suburbs, making stops in Natick, Wellesley, and Newton. Approximately half of the daily trains originate or terminate at Worcester; the other half originate or terminate at Framingham. The line makes Boston stops at Yawkey Station, Back Bay Station, and South Station. The LMA is served by the line's Yawkey Station, located east of Fenway Park, approximately two-thirds of a mile from the LMA.

- **Needham Commuter Rail Line** – This commuter rail line serves the Boston suburb of Needham, making four stops there, before serving the Boston neighborhoods of West Roxbury, Roslindale, and Jamaica Plain en route to its downtown terminus at South Station. Needham Line passengers traveling to Children's would walk or take a shuttle from Ruggles Station.

- **Franklin Commuter Rail Line** – This commuter rail line serves suburbs southwest of Boston including Franklin, Norwood, and Dedham en route to its downtown terminus at South Station. Franklin Line passengers traveling to Children's would walk or take a shuttle from Ruggles Station.

- **Attleboro/Providence Commuter Rail Line** – This commuter rail line serves communities south of Boston including Providence (RI), Attleboro, and Sharon en route to its downtown terminus at South Station. The Attleboro Line merges with the Franklin Line at Readville Station in the Hyde Park neighborhood of Boston. Attleboro Line passengers traveling to Children's would walk or take a shuttle from Ruggles Station.

- **Stoughton Commuter Rail Line** – This commuter rail line serves southern suburbs of Boston including Stoughton and Canton en route to its downtown terminus at South Station. The Stoughton Line merges with the Attleboro Line at Canton Junction Station. Attleboro Line passengers traveling to Children's would walk or take a shuttle from Ruggles Station.

3.2.8 Helicopter Operations

Children's cooperatively owns a helicopter pad with Brigham and Women's Hospital within the LMA. Boston MedFlight is responsible for the majority of helicopter operations in the LMA. MedFlight transports trauma patients who require immediate emergency care services to surrounding institutions with Emergency Departments. The LMA typically receives about three missions per day—or around 1,000 missions per year.

Flight routes recommended by the Federal Aviation Administration (FAA) suggest that pilots should utilize the Emerald Necklace, Avenue Louis Pasteur, or Brookline Avenue to access LMA helipads. "No Fly Zones" have also been specifically designated in the area to direct helicopter missions away from residential areas to the greatest extent possible as a means to reduce unnecessary noise generation in these areas. Specific routes that are actually utilized are subject to the discretion of the MedFlight pilot to ensure that safe conditions are maintained during the flight.

3.3 Evaluation of Long-Term Transportation Impacts

This section describes the future transportation infrastructure in the LMA including the impacts of this proposed Project. Included is a summary of area transportation infrastructure improvements that are currently planned, are under design, or are under construction by area institutions/developers, the City of Boston, Commonwealth of Massachusetts, MBTA, and MASCO. Also in this section is a detailed summary of the development of both the future 2022 No-Build and 2022 Build Conditions, including a detailed analysis of morning and evening peak hour traffic activity and operations, parking supply and demands, loading and service accommodations, future pedestrian and bicycle demands, future transit demands. The development and evaluation of the 2022 No-Build and Build Conditions has been conducted to help identify additional roadway, pedestrian, and transit improvements that may be needed to mitigate identified transportation impacts generated by future Children's campus growth and the Children's IMP Projects.

3.3.1 Area Transportation Improvements

The LMA is an area of the City with a concentration of both pedestrian and vehicular traffic, as well as a multitude of reconstruction projects. As such, there are many transportation infrastructure initiatives that are currently being put in place in connection with other nearby development projects by the City of Boston, Commonwealth of Massachusetts, the MBTA, and MASCO.

3.3.1.1 Area Developments

There are currently eleven approved or planned development projects that are expected to have an influence on future year peak hour traffic volumes on study area roadways and intersections. Except where specifically noted, their anticipated transportation impacts have been included within the analyses of the 2022 No-Build Condition. A description of each approved or planned project is provided below.

- **Fenway Triangle – Mixed-Use Project** is a two building, mixed use project located between Brookline Avenue and Boylston Street, just east of Kilmarnock Street in the Fenway neighborhood. The project includes 290 residential units, 225,000 sf of office space and 165,000 sf of retail space. Parking for both buildings will be accommodated in a single, 575-space underground garage.

- **Boston Children's Hospital Main Building Expansion** at 57 Binney Street is an approximately 82,750 sf expansion of Children's Main Building. This Building will include inpatient beds in addition to new hospital and emergency care space. No new parking is included in the project. The building is currently under construction, with a completion date of summer 2013.

- **Massachusetts Mental Health Center Redevelopment** is a four building, 633,960 sf project. The first phase of the development, the Binney Street Building and Fenwood Inn (approximately 77,540 sf) has been constructed and is occupied. Subsequent phases include the 197,750 sf Residential Building and the 358,670 sf Brigham and Women's Building. Construction completion is anticipated to be in 2021. The Brigham and Women's Building will include a 406-space underground parking garage.

- **Longwood Research Institute (LRI)** (formerly known as the Longwood North Research Center) is a 440,000 sf state-of-the-art research and laboratory facility that is planned to include 330 underground parking spaces. Construction of the LRI by

Children's is expected to commence in the forthcoming few years—although a specific date of commencement is not known. For this study, occupation in 2022 has been assumed.

- **Longwood Center**, previously permitted as the Joslin Diabetes Center Expansion, includes a 350,000 sf life science building with ground floor retail space. Parking will be provided for approximately 290 vehicles. This project is currently in construction, with an expected completion date of fall 2014.

- **Landmark Center North** is an addition project totaling 308,337 sf at the Landmark Center. The project includes built-in flexibility for both office and laboratory use to be built over the existing garage of the existing Landmark Center. No new parking is proposed on site.

- **Winsor School Campus Projects** includes a two phased development on the Winsor School LMA campus. Phase 1 of the redevelopment includes the construction of the 110,000 sf Center for Performing Arts and Wellness on the site of the existing gymnasium along Pilgrim Road. This phase will also include a temporary, 101 parking space surface lot at the corner of Longwood and Brookline avenues. Phase 2 will include the privately developed Longwood Avenue Project, a 300,000 sf mixed-use building built on the location of the temporary parking lot. The building will contain a 225-space, below-grade parking facility in addition to the construction of a single level, 148-space below-grade parking garage for use by Winsor School.

- **Brigham Green Parking and Enhancement Project** includes the construction of a 400-space underground garage (249 net new parking spaces) in front of the existing Peter Bent Building at 15 Francis Street. This parking garage will be connected internally to the BWH campus at the existing patient drop-off located at 45 Francis Street to reduce traffic on Francis Street. This construction will allow for landscaped open space above the parking facility. This project is currently under construction with anticipated completion in 2014.

- **Brigham and Women's Hospital** proposes to develop a new 360,000 sf building for research/wet-laboratory purposes and 355 below-grade parking spaces on Parcel C, 45 Avenue Louis Pasteur, of the Emmanuel College Endowment Campus. BWH has entered a long-term ground lease with Emmanuel College in order to enable development of the project. The new building will include basic 'wet type' science labs on ten floors for biomedical research, an auditorium with 250 seats, a small cafeteria, some outpatient clinical services and a below grade parking garage.

- **Emmanuel College Campus Development Plan** proposes construction of the following projects: (1) Cardinal Cushing Library Expansion involves the demolition of approximately 17,800 sf of the existing 51,800 sf Cardinal Cushing Library building and an addition of approximately 76,000 sf, resulting in a net increase of approximately 58,200 sf. In addition to new classrooms, faculty offices and meeting spaces, the new portion of the building will contain a 300+ seat auditorium that will replace an existing smaller auditorium; and (2) New Julie Hall is a 275,000 sf residence hall to be built on the site of the existing Julie Hall and just north of the Jean Yawkey Center. The ground level of the new residence hall will provide space for student dining areas as well as meeting space for student organizations and academic, student life and outreach activities. Additional meeting space will be provided on the second floor, while the remainder of the upper floors will contain approximately 720 student beds in a variety of room formats. The 720 beds will replace 220 existing beds in the existing Julie Hall and another 100 beds that are leased from neighboring institutions for Emmanuel students. In total, New Julie Hall will accommodate 400 net new beds on the Emmanuel College Academic Campus.

- **Wentworth Institute of Technology Institutional Master Plan** includes four projects: 46,000 sf Student Center, new student residence, 40,000 sf academic addition and a 400-space parking structure. It is anticipated that this project will not have any noticeable impact on future peak hour traffic activity within the LMA and is therefore not included in the No-Build peak hour traffic networks.

3.3.1.2 Development-Related Improvements

Over the next several years, many important transportation improvement and mitigation actions are planned to be put in place to support transportation access to and from the LMA. This section lists those improvements that are expected to be constructed and fully operational in connection with other area development projects under the 2022 No-Build and 2022 Build Conditions.

- BIDMC Binney Connector includes the creation of a two-way access open to public travel between the BIDMC East Campus main entrance on Brookline Avenue and Binney Street. These improvements will be put in place in connection with the Children's Longwood Research Institute.

- Pilgrim Road Corridor Improvements includes the modification of Pilgrim Road into a two-way street between Longwood Avenue and Joslin Place in connection with the Longwood Center project. This improvement will help reduce traffic volume at the Brookline Avenue/Deaconess Road intersection.

- The intersection of Longwood Avenue at Pilgrim Road will be further enhanced with the construction of the Winsor School's Longwood Avenue Building project located at the corner of Longwood Avenue and the Shared Winsor-MASCO Driveway. The intersection will be signalized as part of the project. Additionally, a second general purpose lane exiting the Shared Driveway will be constructed to help better manage volume exiting this project site and the adjacent MASCO Garage.

- Longwood Avenue/Brookline Avenue Improvements includes the modification of the existing corner radius at the northwest and northeast corners of this intersection to help provide for more efficient turning movements by trucks. This action will help to improve traffic flow efficiency and pedestrian safety at the intersection. A part of these improvements is planned as part of the Longwood Center and Winsor School projects.

3.3.1.3 MASCO Initiatives

Children's is a proactive member of MASCO, the area's leader in developing and promoting transportation and pedestrian improvements for the LMA. In 2011, MASCO developed a vision plan for the LMA based on the needs of its constituents and their clientele. The plan provides short-term and long-term goals for the area that have already begun to be implemented. MASCO's objectives are to sustain and grow the delivery of high-quality education, patient care, and research activities. The following section summarizes major MASCO initiatives in the LMA that are aimed at providing a diverse and comprehensive array of alternative transportation services and programs for LMA employees.

- Pedestrian safety studies have been conducted over the past several years to better understand the flow of the thousands of pedestrians that travel to and from the LMA every day. These studies included analyzing pedestrian crosswalks with/without police details. Concurrent verses exclusive pedestrian crossings have also been studied at the LMA signalized intersections.

- Consolidated service/loading for the institutions has been studied over the past two years. The data collected is being used to understand how the institutions can consolidate certain deliveries and minimize truck traffic within the LMA.

- The curb radii at a limited number of intersections have been studied over the past two years. These analyses show whether or not it would be beneficial to the pedestrians, vehicles, and bicyclists using the LMA roadways and physically possible to increase these radii.

- MASCO's main focus over the past couple of years has been to implement a bus lane and/or bike lane within the LMA roadway network. Analysis of the roadways has been ongoing to determine the feasibility of different alternatives.

3.3.1.4 City/State-Sponsored Traffic Improvements

The City of Boston and the Commonwealth of Massachusetts propose several mitigation programs that will positively impact the LMA, each of which is in the process of implementation. These improvements are described below.

Army Corps of Engineers Muddy River Project

The Muddy River runs from the Charles River to Olmsted Park through the LMA. Several times over the past two decades, the river has overflowed its banks and caused damage to area homes, businesses, schools, hospitals, and the MBTA. As a result, the Army Corps of Engineers have planned a two-phase project to provide flood control while implementing environmental improvements. Phase 1 is to daylight the river from Riverway to Avenue Louis Pasteur. This phase includes the reconstruction of the Sears Rotary, which is described by intersection in Section 4.2.1. Phase 2 of the project is dredging the river, removing invasive plants along the banks, and planting new plants to restore the river's historical feel. The Muddy River project is expected to begin in early 2013.

Fenway/Kenmore Economic Stimulus

An Economic Stimulus Bill passed by the Massachusetts Legislature in the fall of 2006 provided $55 million in transportation funding for the Fenway, Kenmore and LMA areas. In the spring of 2009, the BTD released the Fenway/ Longwood /Kenmore Transportation & Pedestrian Safety Action Plan portion of the stimulus package. Projects under this Plan aim to improve safety and provide an enhanced environment for pedestrians, cyclists, drivers and transit riders in the Fenway area. The three projects in the Plan are described below.

- **Audubon Circle Reconstruction** – This reconstruction project aims to preserve the historic character of Audubon Circle while improving the Circle for all roadway users. It proposes to remove the channelized right turns to increase pedestrian safety and add additional green spaces while maintaining vehicle operations. The reconstruction project also proposes the construction of a new median island pedestrian refuge across Beacon Street at the intersection of Arundel Street/Miner Street.

- **Boylston Street** – The project aims to widen add neckdowns and bike lanes in each direction, and plant additional street trees along the corridor.

- **Fenway/Yawkey Multi-Use Path** – The new path will allow pedestrians and cyclists to travel on an off-road path from Maitland Street to the Riverway. The path connects the proposed Fenway Center project multi-use path and the Yawkey MBTA Station.

3.3.1.5 MBTA-Sponsored Transit Improvements

The MBTA is continuously looking to improve the reliability of the service they offer and the access to this service. Currently, the MBTA has three projects that will increase service in the Project area or improve upon existing service.

Urban Ring Project

Currently, the MBTA provides circumferential transit services in the area via its existing Crosstown bus routes (CT2 and CT3). These existing routes are characterized as elements of Urban Ring Phase 1. Over the past several years, MassDOT had been conducting long-term transit planning for improved circumferential transportation in the Urban Ring corridor in addition to the existing Crosstown routes. The Urban Ring project was planned to be implemented in three phases, described as follows:

Phase 1 of the Urban Ring would expand current Crosstown bus routes by four routes and one Express Commuter route. The new CT routes will serve Franklin Park Zoo (CT7), Sullivan Square (CT8), JFK/UMass Station (CT10), and Fields Corner Station (CT11). Additionally, the existing CT2 will be extended to Sullivan Square. A new Express Commuter (EC) service was proposed in the Urban Ring Major Investment Study; however, it has not been recommended for implementation due to low ridership projections.

Phase 2 of the Urban Ring could include the replacement of existing Crosstown bus routes with Urban Ring Bus Rapid Transit (BRT) services. Within the LMA, the proposed BRT would operate with several routes between the Sears Rotary, Oscar Tugo Circle, and onward to Ruggles Station.

It was envisioned that over the long-term, the proposed BRT could operate in a tunnel through the LMA with the potential for light rail transit (LRT) or heavy-rail transit (HRT) under **Phase 3** of the Urban Ring. As contemplated, the tunnel could enter the LMA near Huntington Avenue and Ruggles Street (west of Ruggles Station), continue underneath Longwood Avenue and north, ultimately connecting to the new Yawkey Commuter Rail Station near Maitland Street and Beacon Street in the Kenmore/Fenway area.

As of January 2010, all three phases of the Urban Ring are on indefinite hold due to budget constraints and the current maintenance needs of the MBTA on their existing infrastructure. However, MassDOT has continued its transportation planning, civic engagement, and implementation of early action improvements associated with the Urban Ring.

Key Bus Route Improvement Program

The MBTA recently conducted a study of their bus operations. From this study, they determined the busiest 15 routes and classified them as Key Bus Routes. The MBTA is looking to implement bus rapid transit elements onto the corridors that these routes operate to improve service by "reducing trip times, enhancing customer comfort, convenience and safety, and making the bus service more reliable and cost-effective." Routes 39, 57 and 66 are Key Bus Routes.

Yawkey Station

Yawkey Commuter Rail Station is currently under reconstruction to transform the station into a full-service commuter rail station. The project entails the construction of full-length accessible station platforms, which will provide access from Beacon Street and Brookline Avenue. The improvement will allow for a more than doubling of service on the Worcester-Framingham Commuter Rail Line from 18 to 40 stops per day.

3.3.2 2022 No-Build Condition

The 2022 No-Build Condition was developed and analyzed to evaluate future transportation conditions in the study area, such as background traffic growth and development traffic growth, without taking into consideration anticipated Children's campus growth due to new construction. This future analysis year represents a ten-year horizon from the Existing Condition.

The 2022 No-Build Condition includes anticipated increases in traffic activity on study area roadways due to continued general area-wide traffic growth; approved developments in the area that are currently under construction; and other projects proposed for construction that have had, at a minimum, either a Project Notification Form or an Institutional Master Plan Notification Form filed on their behalf with the BRA, formally initiating the City of Boston Article 80 Development Review process for their respective project(s).

A two-step process has been utilized to estimate the increases in traffic activity in the Project study area under the 2022 No-Build Condition. Under Step 1 of this process, general area-wide traffic growth was estimated based on regional traffic growth trends along major study area roadways. Therefore, an annualized growth rate was developed and applied to existing condition peak hour traffic volumes to reasonably account for future through traffic growth in the area. Under Step 2, peak hour traffic generation estimates for specific developments that are either currently under construction, are approved, or are planned projects that have formally initiated the City of Boston Article 80 Development Review process were added to the resultant volumes produced under Step 1 to generate peak hour traffic volume estimates for the 2022 No-Build Condition. A more detailed discussion of this process is presented below.

3.3.2.1 Step 1 - Background Growth

In order to account for general background traffic growth, an annualized growth rate was developed and applied to the existing condition peak hour traffic volumes to reasonably account for future through traffic growth in the Project study area. An annual growth rate of 0.5 percent per year between 2012 and 2022 was applied to the 2012 Existing Condition.

This rate has been used in support of recently approved development projects in this area and is a conservative rate of growth given the historical trend of traffic growth in the area, which has been flat for approximately the past 10 years.

3.3.2.2 Step 2 - Site-Specific Growth

The following projects have been included in the 2022 No-Build Condition due to anticipated site-specific background traffic growth.

- Fenway Triangle Mixed-Use Project
- Boston Children's Hospital Main Building Expansion
- Massachusetts Mental Health Center Redevelopment
- Longwood Research Institute
- Longwood Center
- Landmark Center North
- Winsor School
- Brigham Green Parking and Enhancement Project
- Brigham and Women's Hospital
- Emmanuel College Campus Development Plan
- Wentworth Institute of Technology Institutional Master Plan

Infrastructure changes have been included in the future analysis to replicate the updates in these developments' related improvements (as described in Section 3.3.1.2).

3.3.2.3 2022 No-Build Peak Hour Traffic Volumes

The 2022 No-Build Condition weekday morning and evening peak hour traffic volumes were developed by adding the general background traffic growth (step one) and the traffic volumes associated with the site-specific Projects (step two) to the 2012 Existing Condition volumes as previously described. The roadway network changes, as previously discussed, were also included within this analysis condition. Figures 3-20 and 3-21 illustrate the morning and evening peak hour traffic volume networks for the 2022 No-Build Condition.

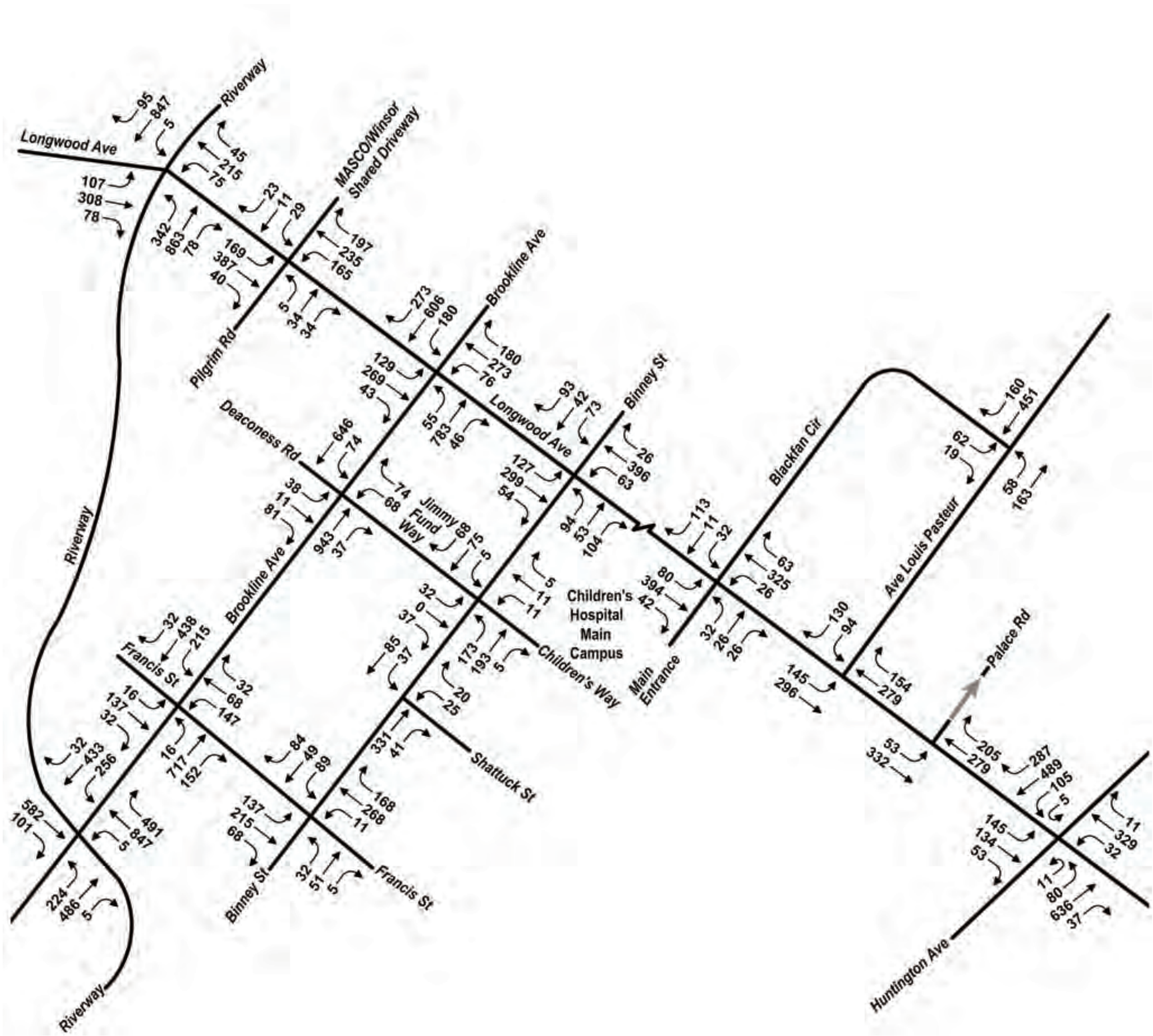

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Figure 3-20

2022 No-Build Condition Morning Peak Hour (7:15-8:15 AM) Traffic Volumes

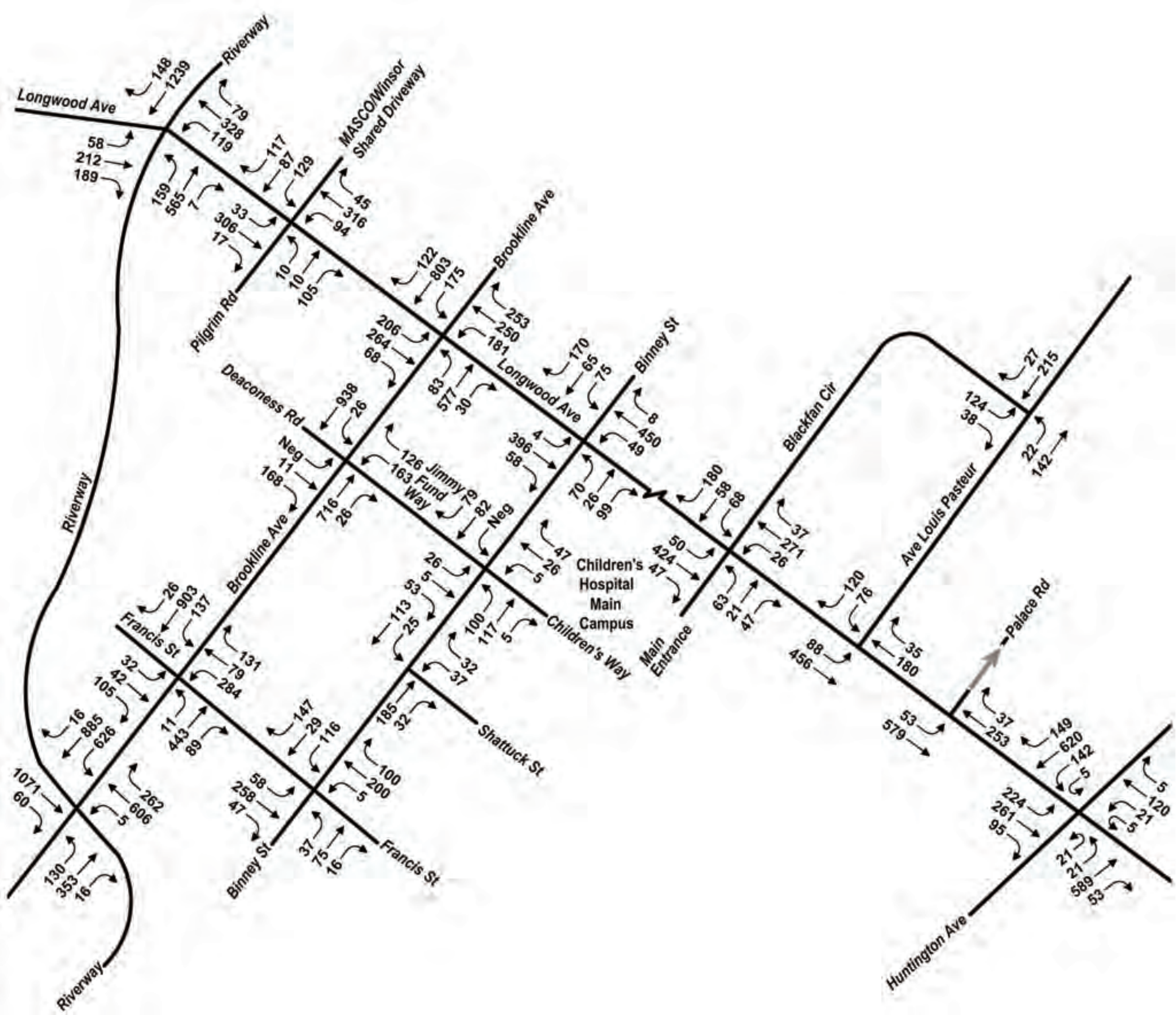

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Figure 3-21
2022 No-Build Condition Evening Peak Hour (4:45-5:45 PM) Traffic Volumes

3.3.3 2022 Build Condition

The 2022 Build Condition was developed in order to evaluate future transportation conditions in the study area with the BCCB and Patient and Family Garage Addition in place. The 2022 study year represents a ten year planning horizon. The Build Condition takes into account the changes and growth established as part of the 2022 No-Build Condition presented previously, and also accounts for the changes that will occur with the proposed Project.

3.3.3.1 Trip Generation

To assess the impact of the proposed Project, trip estimates were based on standard Institute of Transportation Engineers (ITE) trip rates published in ITE's Trip Generation manual (8th Edition). ITE's Land Use Code 610 Hospital was used to estimate the new trips generated by the Project. In total, Children's will be constructing approximately 403,311 net-new sf of hospital space.

Since the proposed Project is an expansion of the Children's overall existing Main Campus, trip generation was estimated for the entire campus with and without the expansion using the regression equation for the clinical component of the Project. The difference between these two values yields the "net-new trips" specifically associated with the expansion. Because most of the core building staff (i.e., security, janitorial, etc.) is already located within the building, the proposed Project will not be generating as many trips as a new stand-alone facility.

It is important to recognize that patient trips occur throughout the day. While some patient trips occur during the peak hours, there is a steady flow of patient and visitor trips between 8:00 a.m. and 7:00 p.m. The trip generation estimate (based on ITE) assumes a concentration of peak hour trips because the trip rates account for new employee trips when adjacent street traffic volumes are the highest. However, as mentioned previously, to minimize commuting by vehicle in the LMA, no new employee parking will be provided with this expansion so the actual trip results are expected to be less than reported below.

Table 3-5 summarizes the total number of unadjusted (raw ITE) vehicle trips to be generated for an average weekday and during the morning and evening peak hours. Person trips, the number of persons in vehicles, are also provided. These trip results do not account for alternative modes of transportation.

Table 3-5 Trip Generation Results (Net-New Project Trips)

	Unadjusted ITE Vehicle Trips (vehicles)	Person Trips (persons)
Daily Total	**4,118**	**4,942**
AM Peak Hour		
In	209	250
Out	145	174
Total	**354**	**424**
PM Peak Hour		
In	133	160
Out	184	221
Total	**317**	**381**

Source: ITE Trip Generation, 8th Edition LUC 610 (Hospital)

As shown in Table 3-5, the BCCB is anticipated to generate 4,118 daily unadjusted vehicle trips. According to ITE rates, the BCCB is expected to generate 354 and 317 unadjusted vehicle trips during the morning and evening peak hours, respectively. Person trip generation is slightly higher since some vehicles will carry more than one person.

Mode Share and Vehicle Occupancy Rates

To account for alternative modes of transportation, mode splits were applied to the person trip results presented in Table 3-5. The auto mode split includes all vehicle based trips including taxis. Mode splits for the area are based on BTD Guidelines and are shown in Table 3-6.

Table 3-6 Mode Splits

Mode	Peak Hour	Weekday Daily
Public Transit	31%	21%
Walk/Bike/Other	36%	46%
Automobile	33%	33%

Source: BTD Guidelines, Zone 5

Results of the vehicle trip generation estimate are shown in Table 3-7.

Table 3-7 Net-new Project Trip Generation

Time Period/Direction	Walk/Bike/Other	Transit	Vehicle
Daily			
Inbound	519	1,137	679
Outbound	519	1,137	679
Daily Total	**1,038**	**2,274**	**1,358**
AM Peak Hour			
Inbound	90	78	69
Outbound	63	54	48
AM Total	**153**	**132**	**117**
PM Peak Hour			
Inbound	58	50	44
Outbound	79	68	62
PM Total	**137**	**118**	**106**

Source: ITE Trip Generation, 8th Edition LUC 610 (Hospital)

The BCCB is anticipated to generate 69 inbound and 48 outbound vehicle trips during the morning peak hour. As a conservative analysis these estimates include patients, visitors, and employees. However, since no new parking will be provided at the campus for employees, it is likely that the vehicles trips will be less at the campus since employees will have to either use alternative modes of transportation or park outside of the LMA. In addition to these trips, the BCCB will generate approximately 90 inbound and 63 outbound walk and bike trips.

During the evening peak hour, the BCCB will generate 44 inbound and 62 outbound vehicle trips. Walk and bike trips will total approximately 58 inbound and 79 outbound trips at this time.

3.3.3.2 Trip Distribution

Zip code data provided by Children's was used to determine a distribution pattern for peak hour trips to and from the campus. These trips were assigned to the most convenient local corridor. The results show that visitors arriving by car come to the Hospital from within Boston and all counties in Massachusetts. Some patients even travel from as far as New Hampshire and Rhode Island. The vehicle trip distribution used for the transportation analysis is shown in Figure 3-22 and summarized in Table 3-8.

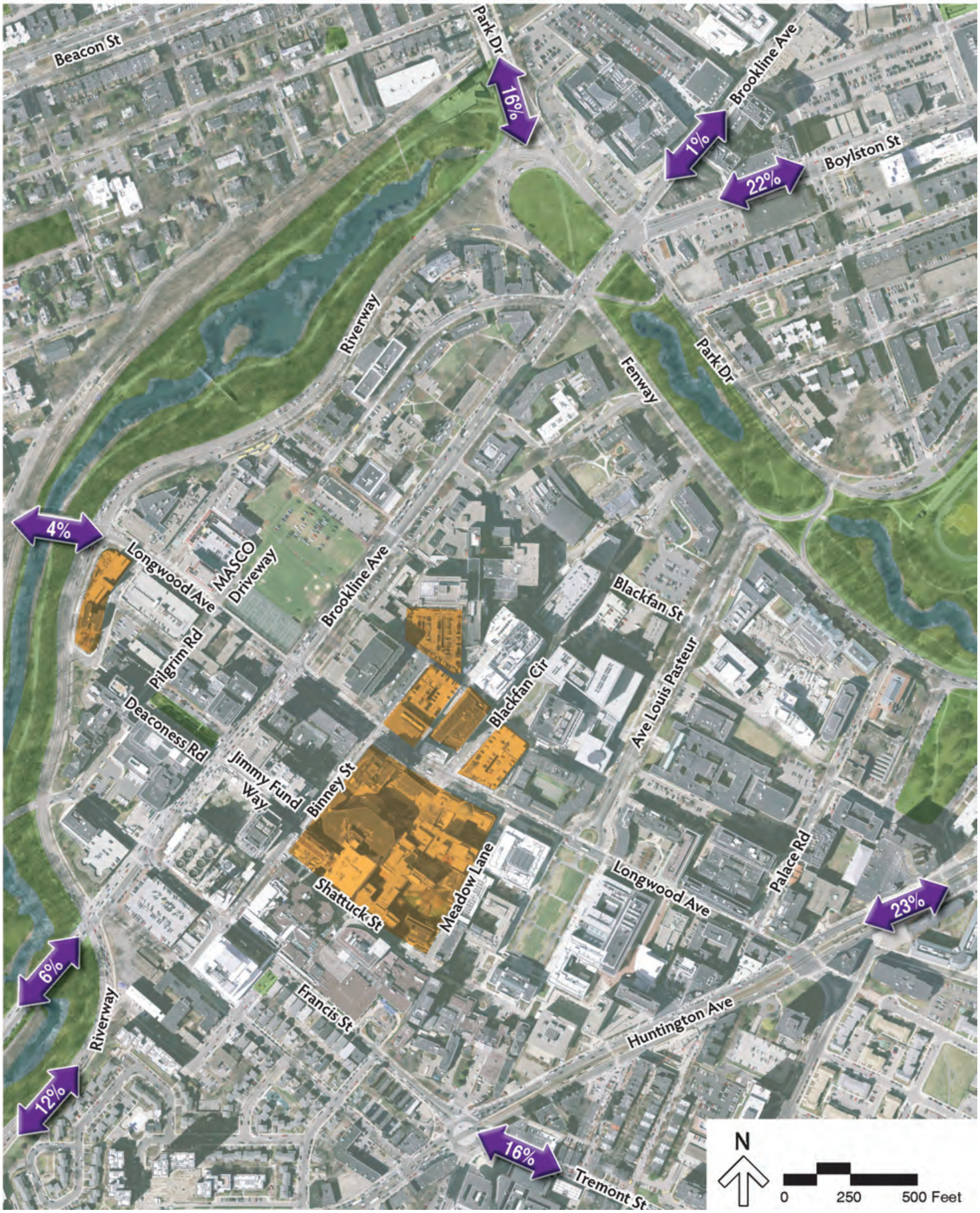

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Figure 3-22
Trip Distribution

Table 3-8 Trip Distribution

Route	Percent
Brookline to/from West	6%
Riverway to/from West	12%
Longwood Avenue to/from North	4%
Tremont Street to/from South	16%
Huntington to/from East	23%
Riverway to/from North	16%
Brookline Avenue to/from North	1%
Boylston Street to/from North	22%
TOTAL	**100%**

Once in the LMA, trips were routed to their destinations based the existing traffic volumes presented in Section 3.2.3 and other recent traffic studies. Final routing plans and their percentage break-up include:

- 73% - Self-park directly at the Patient and Family Parking Garage;
- 19% - Valet at the Main Entrance (these trips travel through the Longwood Avenue and Blackfan Circle intersection twice, once to/from the Main Entrance and once to/from the Karp Garage); and
- 8% - Drop-off/Pick-up at the Main Entrance and self-park at the Patient and Family Parking Garage.

Vehicles approaching from the South (to/from Huntington Avenue and Ruggles Street) will mainly utilize the Fenway and Avenue Louis Pasteur to self-park at the Patient and Family Parking Garage. The remaining vehicles will use Longwood Avenue.

Vehicles approaching from the North (to/from the Riverway, Beacon Street and Boylston Street) will have the ability to access the Patient and Family Parking Garage via South Service Road. Since the South Service Road is one-way southbound, all traffic exiting to the North will egress via Longwood Avenue.

During the p.m. peak, one of the exit lanes out of the Patient and Family Parking Garage becomes right only onto Blackfan Circle. It was observed that some drivers wishing to access Longwood Avenue use this exit lane and circle back to Longwood Avenue via Avenue Louis Pasteur.

3.3.3.3 2022 Build Condition Peak Hour Traffic Volumes

The 2022 Build Condition weekday morning and evening peak hour traffic volumes were developed by adding Children's Project-generated trips (represented in Figures 3-23 and 3-24) to the 2022 No-Build Condition traffic networks. Figures 3-25 and 3-26 present the resulting 2022 Build Condition traffic volume networks for the morning and evening peak hours.

3.3.3.4 Public Transportation

The BCCB will generate approximately 132 and 118 new transit trips during the morning and evening peak hours respectively (see Table 3-7). These trips will be distributed amongst the transit and bus lines in the area.

Children's will continue to promote public transportation for its employees by maintaining a 50 percent transit subsidy for its physicians and staff. The cost of passes is deducted on a pre-tax basis, resulting in an additional cost savings to employees. Currently, over 4,275 employees are enrolled in the pass program. The Hospital also has rolled out a new program, called "Three for Free", to promote the use of public transportation rather than driving. Employees who give up their parking spots for three months will receive a free T or commuter rail pass for that period.

Many patients are too sick to use public transportation. However, for those that are able, Children's will provide them with detailed information on public transportation in the area. This includes posting transit schedules and maps in the new building and online.

3.3.3.5 Pedestrian and Bicycle Operations

The BCCB will generate approximately 153 walk and bike trips during the morning peak hour and 137 trips during the evening peak hour. Children's will continue to promote walking and bicycling as alternative modes of travel for employees. Through the CommuteFit program, employees are rewarded based on the mileage they register.

As shown previously in Figure 3-7, additional bicycle spaces will be added to the campus to accommodate future bicycle users. To accommodate City of Boston guidelines, BCH will provide 269 additional bicycle spaces to the Campus.

3.3.3.6 Parking Operations

Table 3-9 summarizes proposed changes to the Children's parking supply. This section describes future parking actions that are anticipated both on the Main Campus as well as on the BCH 819 Beacon Street site (the study of future traffic conditions for that Project is summarized separately in Chapter 4.0). Table 3-4 summarizes proposed changes to the Children's parking supply once all of its currently proposed Projects are completed.

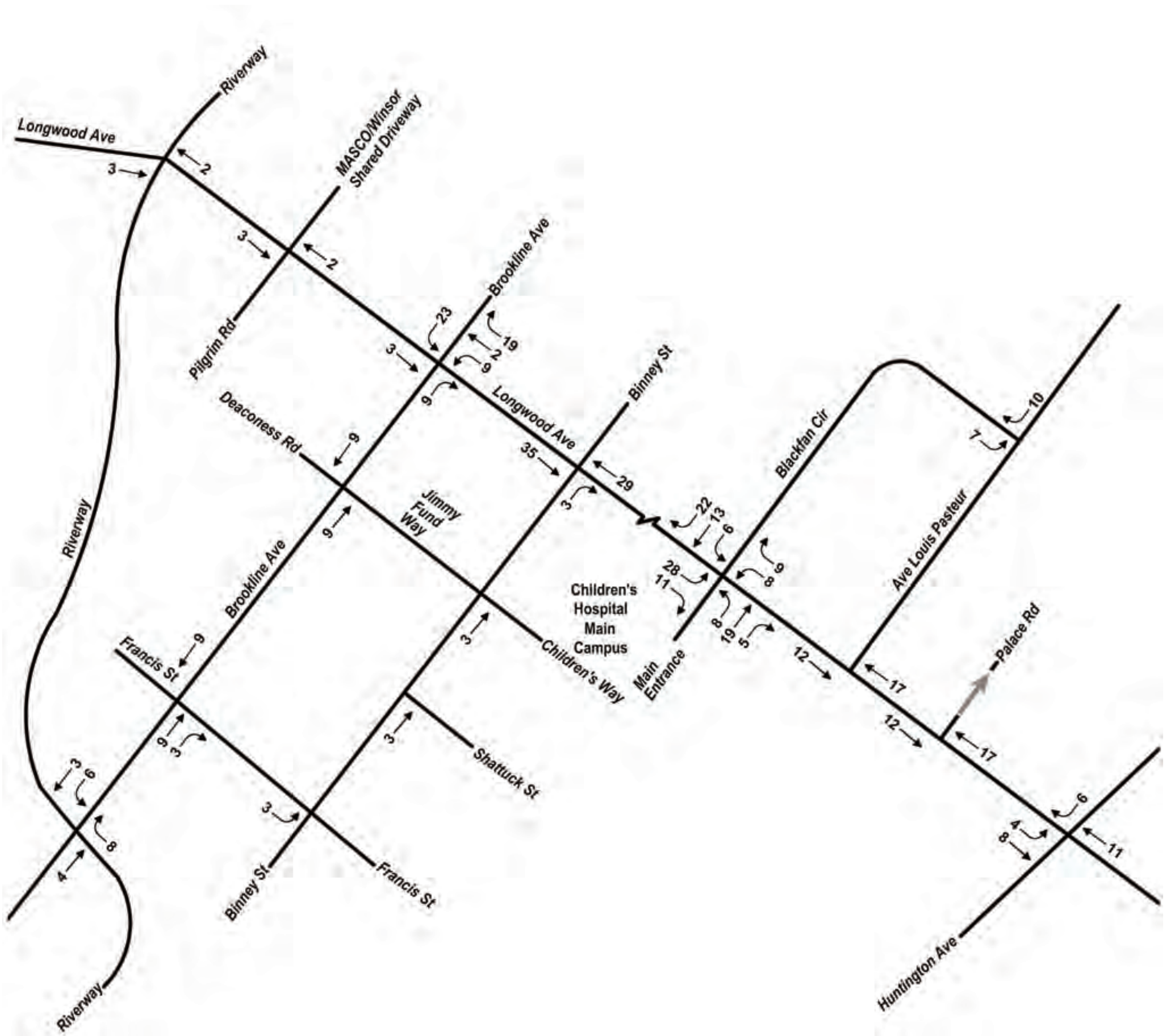
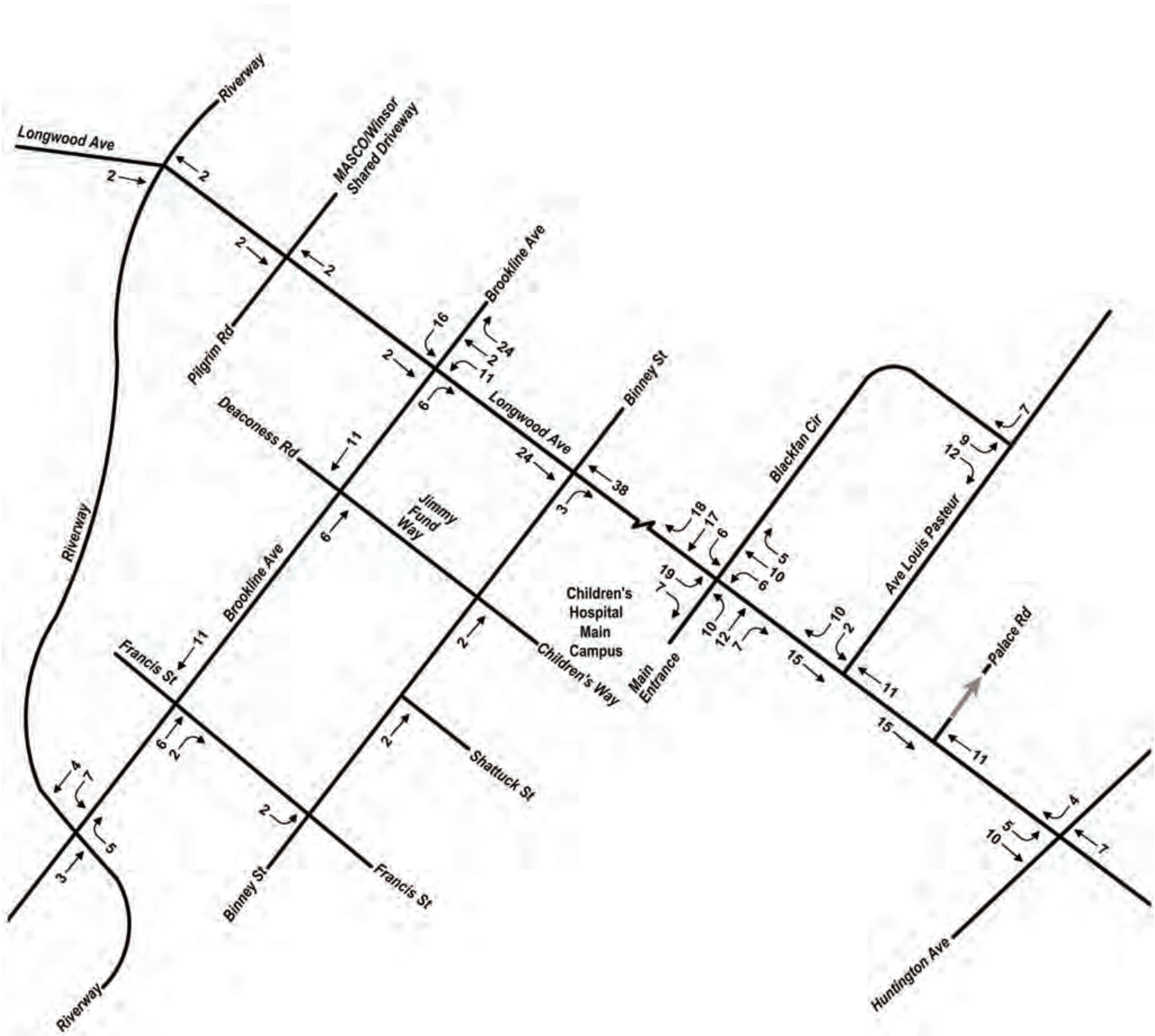


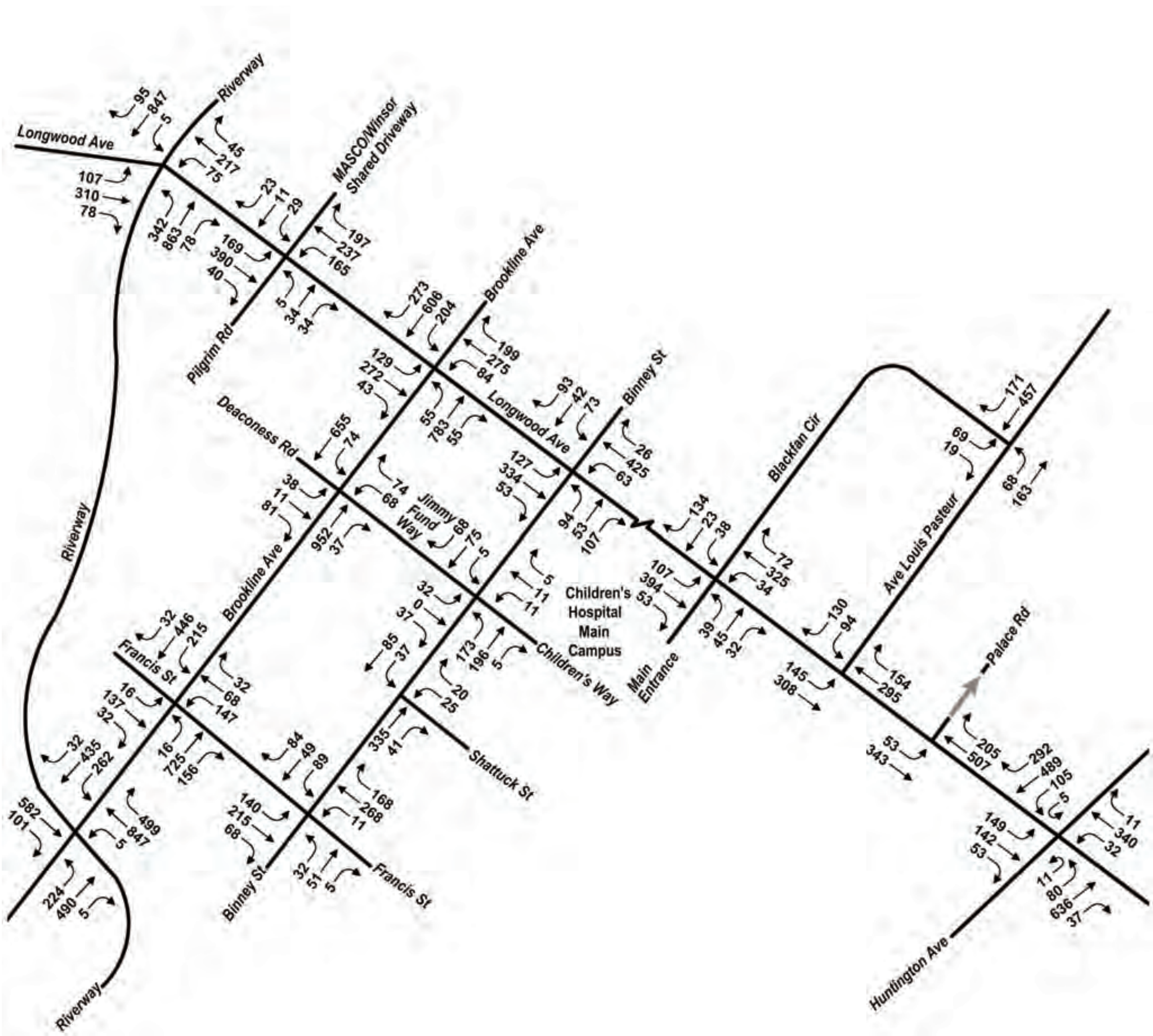
Figure 3-23
Project Trips Morning Peak Hour (7:15-8:15 AM) Traffic Volumes



Boston Children's Hospital

Vanasse Hangen Brustlin, Inc.

Figure 3-24
Project Trips Evening Peak Hour (4:45-5:45 PM) Traffic Volumes



Boston Children's Hospital

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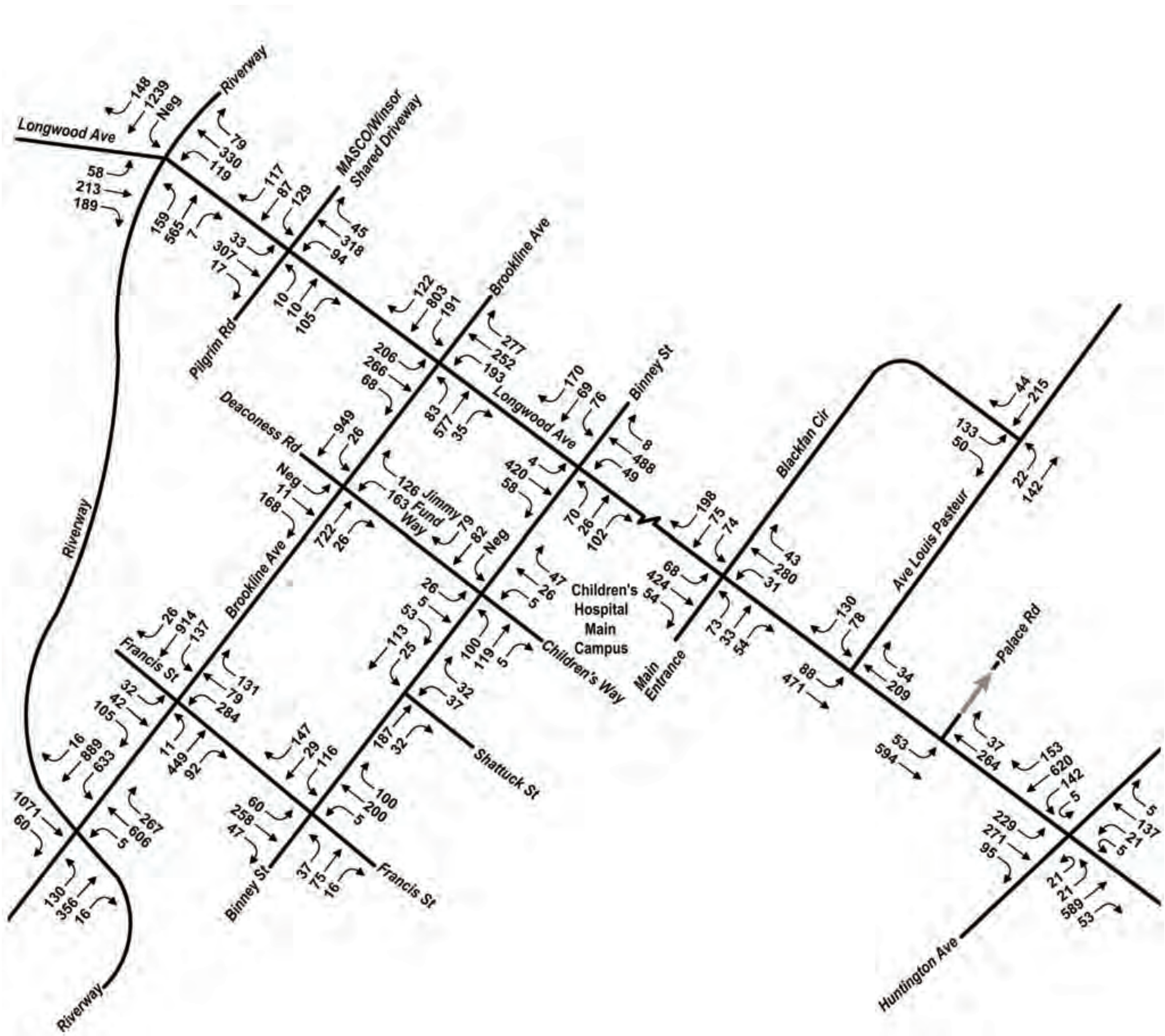
Figure 3-25

2022 Build Condition Morning Peak Hour (7:15-8:15 AM) Traffic Volumes



Boston Children's Hospital

Vanasse Hangen Brustlin, Inc.

Figure 3-26
2022 Build Condition Evening Peak Hour (4:45-5:45 PM) Traffic Volumes

Table 3-9 Proposed BCH Parking Supply Changes

	Parking Spaces	
	On-Campus/LMA	Off-Campus
Existing Spaces	2,400	1,142
Approved LRI Spaces (1 for 1 replacement of 340 Brookline Ave Garage)	0	0
Sub Total Existing + Future Approved Spaces	**2,400**	**1,142**
Children's Hospital IMP Parking Additions		
819 Beacon Street	-	+ 247
Patient and Family Parking Garage Addition	+86	-
Children's Hospital IMP Parking Taken out of Service		
Construction of BCCB	(-10)	
IMP Net Change	**+76**	**+247**
Grand Total	**2,476**	**1,389**

As currently contemplated, Children's proposes the development of approximately 615,741 sf of net-new development (including BCCB and 819 Beacon Street) and 582 (323 net new) parking spaces taking into consideration both on-campus and off-campus projects. This amount of parking complies with the guidelines set by the LMA Interim Guidelines and BTD parking guidelines for the Fenway/Audubon Circle neighborhood. In total, the Children's IMP will create approximately 0.52 net new parking spaces per 1,000 gsf of development.

Upon completion of Children's proposed Projects, its overall campus parking ratio is expected to decrease from 1.03 to 0.90. Existing and proposed parking ratios for the LMA (Core Campus and Autumn Street) are shown in Table 3-10.

Table 3-10 Children's Hospital Parking Ratios (Core Campus and Autumn Street)

Children's Core Campus and Autumn Street *	Floor Area (sf)**	Parking Spaces***	Parking Ratio (spaces/1,000 sf)
Existing + Approved Development	2,341,876	2,400	1.03
Future w/IMP Actions On Campus	2,745,187	2,476	0.90

* Includes owned and leased building area within the LMA. Does not include off-campus parking GSF or parking.
** Does not include Patient and Family Parking Garage and parking floor area in 333 Longwood.
*** Includes owned and leased parking spaces within the LMA.

As mentioned previously, the proposed 86 parking spaces at the Patient and Family Garage (76 net new spaces) will provide additional patient and visitor parking for the Main Campus. This garage consistently fills to capacity on weekdays, and Children's takes proactive measures to screen vehicles entering the garage to ensure they are affiliated with

BCH. Those that cannot find parking at the Patient and Family Garage often rely on valet services at the Main Entrance which in turn, creates more vehicle traffic since the valets need to cross Longwood Avenue to bring the vehicles to the Karp garage. The additional spaces will provide for much needed patient and visitor parking.

3.3.4 Loading and Service

The new BCCB loading dock will be located off of Shattuck Street, and is intended to reduce materials management activities at other BCH locations, in particular the main loading facility near the intersection of Binney Street and Jimmy Fund Way. As currently planned, the BCCB will be served by three loading bays, two dedicated to the removal of soiled linens and a third intended to house a compactor for the building.

3.3.5 Construction Management Plan

Children's will develop a detailed evaluation of potential short-term construction-related transportation impacts during the course of the proposed BCCB and Patient and Family Parking Garage Addition Projects, including construction vehicle traffic, parking supply and demand, and pedestrian access to the Main Campus. Detailed Construction Management Plans will be developed and submitted to the BTD for its approval on these Projects. These plans will detail construction vehicle routing and staging.

3.3.5.1 Construction Vehicle Traffic

Construction vehicles will be necessary to move construction materials to and from the Projects' sites. Every effort will be made to reduce the noise, control dust, and minimize other disturbances associated with construction traffic. It is anticipated that Longwood Avenue will serve as the principal construction traffic route to the Main Campus.

Truck staging and lay-down areas for the Projects will be carefully planned. The need for street occupancy (lane closures) along roadways adjacent to the Projects' sites is not known at this time.

3.3.5.2 Construction Parking Issues

Contractors will be encouraged to devise access plans for their personnel that de-emphasize auto use (such as seeking off-site parking, providing transit subsidies, on-site lockers, etc.). Construction workers will also be encouraged to use public transportation to access the Projects' sites because no new parking will be provided for them. Children's will work with the BTD, MASCO, and the Boston Police Department to ensure that parking regulations in the area and in designated residential parking areas are enforced. It is expected, as has been the case in past construction projects, that this will be a considerable disincentive.

3.3.5.3 Pedestrian Access During Construction

During the construction period, pedestrian access on the Main Campus may need to be re-routed around the construction sites. A variety of measures will be considered and implemented to protect the safety of pedestrians traversing those portions of the campus affected by construction. Temporary walkways, appropriate lighting, and new directional and informational signage to direct pedestrians around the construction sites will be provided. After construction is complete, finished pedestrian sidewalks will be permanently reconfigured around the new facilities. Any damage as a result of construction will be repaired per City standards. This reconfiguration of pedestrian paths will be carefully considered as the Projects' designs proceed.

3.4 Transportation Operations Analyses

This section presents the transportation operations analyses for vehicular operations at study area intersections. These operations analyses provide a summary of transportation capacities and overall operations as they relate to delay and congestion.

3.4.1 Intersection Level of Service (LOS) Operations

Vehicle Level of Service (LOS) is a qualitative measure of control delay at an intersection providing an index to the operational qualities of a roadway or intersection. LOS designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. LOS A through D are considered acceptable, while LOS E indicates vehicles endure significant delay and LOS F suggests unacceptable delay for the average vehicle. LOS thresholds differ for signalized and un-signalized intersections with longer delays at signalized intersections perceived as acceptable.

Table 3-11 below presents the LOS delay threshold criteria as defined in the 2000 Highway Capacity Manual (HCM). A LOS D is typically considered acceptable in an urban environment.

Table 3-11 Level of Service Criteria

Level of Service (LOS)	Unsignalized Intersection Control Delay (sec/veh)	Signalized Intersection Control Delay (sec/veh)
A	≤ 10	≤10
B	> 10 - ≤ 15	> 10 - ≤20
C	> 15 - ≤25	> 20 - ≤35
D	> 25 - ≤35	> 35 - ≤55
E	> 35 - ≤50	> 55- ≤ 80
F	> 50	> 80

Source: 2000 HCM

Consistent with BTD's guidelines, Synchro 6 software was used to model LOS operations at the study area intersections. Adjustments were made to the Synchro model to include characteristics of the study area such as heavy vehicles, bus operations, parking activity, and pedestrian crossings. "Defacto turns," were coded into the Synchro model when the traffic model recognized that a shared lane had a high enough turning volume that the lane is used for turns only, even though there may not be striping or signs posted at the intersection to designate such operations. Often this condition only occurs during one peak hour.

A summary of the results for each analysis scenario is presented in Tables 3-12 through 3-17. A comparison of the results is presented in Table 3-18. Overall intersection LOS and delay are only provided for signalized intersections by Synchro. Synchro calculation sheets are presented in Appendix C.

3.4.1.1 Existing (2012) AM Peak Hour LOS Summary

Three of the eight signalized intersections in the study area currently operate at LOS E or LOS F during the weekday morning peak hour. Lengthy vehicle queuing at signalized intersections along several corridors of the study area has been observed through field observations and Synchro output. The Riverway experiences lengthy queues in the northbound direction at the intersection with Brookline Avenue. Brookline Avenue experiences lengthy queues in the eastbound direction at its intersections with Jimmy Fund Way/Deaconess Road. Longwood Avenue experiences lengthy queues in the southbound direction at its intersection with the Riverway.

Queuing at unsignalized intersections was observed at the Avenue Louis Pasteur westbound approach at the intersection with Longwood Avenue, along Binney Street at Francis Street in both directions and at the MASCO Driveway approach to the Pilgrim Road/MASCO Driveway at Longwood Avenue intersection.

The intersection of Longwood Avenue/Blackfan Circle/Children's Driveway operates at an overall LOS C during the weekday morning peak hour. The movements along the Blackfan Street westbound and Children's Driveway eastbound approaches operate at LOS D and E. At the unsignalized intersection of Binney Street at Jimmy Fund Way/Children's Hospital, Binney Street eastbound operates at LOS B while the remaining approaches operate at LOS A.

Table 3-12 Existing Condition (2012) Intersection LOS Summary – AM Peak Hour

Intersection	LOS	Delay (sec.)	V/C Ratio	Average Queue	95^{th} % Queue (feet)
Signalized Intersections					
Brookline Avenue at Riverway	**F**	**>80**	**>1.0**		
EB Brookline Left	F	>80	>1.0	~277	#396
EB Brookline Thru/Right	D	40.8	0.50	134	184
WB Brookline Left	D	48.5	0.82	156	#251
WB Brookline Thru/Right	C	21.7	0.37	143	133
NB Riverway Left/Thru	F	>80	>1.0	~1051	#1222
NB Riverway Right	C	34.4	0.51	127	220
SB Riverway Left/Thru/Right	D	36.3	0.66	261	335
Brookline Avenue at Francis Street	**D**	**54.5**	**0.81**		
EB Brookline Thru/Left	F	>80	>1.0	~320	#437
EB Brookline Right	C	24.5	0.44	64	104
WB Brookline Left	D	52.3	0.78	91	#212
WB Brookline Thru/Right	C	23.8	0.32	87	131
NB Francis Left	C	33.9	0.57	96	#269
NB Francis Thru/Right	C	27.8	0.20	43	108
SB Francis Left/Thru/Right	C	29.1	0.31	94	200
Brookline Avenue at Deaconess/Jimmy Fund	**F**	**>80**	**>1.0**		
EB Brookline Thru/Right	F	>80	>1.0	~808	189
WB Brookline Thru/Left	B	12.4	0.58	40	m57
NB Jimmy Fund Way Left	E	63.5	0.71	67	92
NB Jimmy Fund Way Right	D	45.7	0.07	0	25
SB Deaconess Road Left	D	47.7	0.34	47	78
SB Deaconess Road Thru/Right	D	45.9	0.11	8	44
Brookline Avenue at Longwood Avenue	**D**	**40.6**	**0.75**		
EB Brookline Left	A	8.7	0.50	3	m3
EB Brookline Thru/Right	A	4.9	0.60	50	m40
WB Brookline Left	C	20.6	0.56	67	110
WB Brookline Thru/Right	B	18.0	0.42	157	204
NB Longwood Left	F	>80	>1.0	~93	m#154
NB Longwood Thru	D	48.7	0.80	201	209
NB Longwood Right	C	27.8	0.50	150	153
SB Longwood Left	F	>80	>1.0	~101	#215
SB Longwood Thru/Right	F	>80	0.97	217	#385
Riverway at Longwood Avenue	**E**	**56.0**	**>1.0**		
EB Riverway Left	D	40.4	0.86	162	#311
EB Riverway Thru/Right	D	47.4	0.94	314	#457
WB Riverway Thru	D	38.1	0.86	290	#368
WB Riverway Right	C	22.5	0.08	0	32
NB Longwood Left	D	51.7	0.66	48	85
NB Longwood Thru/Right	C	30.3	0.49	148	178
SB Longwood Thru/Left	F	>80	>1.0	~323	#491
SB Longwood Right	A	9.2	0.09	15	34

Table 3-12 Existing Condition (2012) Intersection LOS Summary – AM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	Average Queue	95th % Queue (feet)
Signalized Intersections					
Binney Street at Longwood Avenue	**C**	**28.1**	**0.54**		
EB Binney Left/Thru/Right	D	50.8	0.78	182	211
WB Binney Left/Thru	D	36.2	0.46	78	111
WB Binney Right	C	31.9	0.08	0	33
NB Longwood Left/Thru/Right	B	19.0	0.41	94	m134
SB Longwood Left	B	12.8	0.29	51	m88
SB Longwood Thru	C	24.2	0.46	169	m204
SB Longwood Right	C	27.2	0.04	4	m12
BCH Driveway/Blackfan Circle at Longwood	**C**	**22.7**	**0.56**		
EB BCH Driveway Left/Thru/Right	D	44.8	0.44	72	100
WB Blackfan Left/Thru	D	43.7	0.32	39	54
WB Blackfan Right	E	65.1	0.79	120	131
NB Longwood Left	A	8.3	0.08	9	29
NB Longwood Thru/Right	B	12.6	0.46	152	286
SB Longwood Left	A	8.8	0.17	24	m41
SB Longwood Thru/Right	B	11.4	0.50	138	m179
Huntington Avenue at Longwood Avenue	**E**	**53.5**	**1.00**		
EB Huntington Left	D	50.6	0.64	61	104
EB Huntington Thru/Right	C	21.7	0.58	187	227
WB Huntington Left	D	48.2	0.64	71	128
WB Huntington Thru/Right	C	22.8	0.66	207	284
NB Longwood Left/Thru/Right	F	>80	>1.0	~390	#355
SB Longwood Left (defacto)	F	>80	>1.0	~165	#253
SB Longwood Left/Thru/Right	D	35.8	0.56	119	167

Table 3-12 Existing Condition (2012) Intersection LOS Summary – AM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Unsignalized Intersections				
Binney Street at Francis Street				
EB Binney Left/Thru/Right	F	>50	>1.0	n/a
WB Binney Left/Thru/Right	F	>50	>1.0	n/a
NB Francis Left/Thru/Right	A	0.4	0.01	1
SB Francis Left	B	12.6	0.23	22
SB Francis Thru/Right	A	0.0	0.17	0
Binney Street at Shattuck Street				
EB Binney Thru/Right	A	0	0.23	0
WB Binney Thru/Left	A	5.4	0.03	3
NB Driveway Left/ Right	C	23.3	0.35	38

Table 3-12 Existing Condition (2012) Intersection LOS Summary – AM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Unsignalized Intersections				
Binney Street at Jimmy Fund Way/BCH Driveway				
EB Binney Left/Thru/Right	B	13.3	0.56	n/a
WB Binney Left/Thru/Right	A	9.0	0.23	n/a
NB BCH Driveway Left/Thru/Right	A	9.0	0.07	n/a
SB Jimmy Fund Way Left/Thru/Right	A	9.0	0.13	n/a
Pilgrim Rd./MASCO Driveway at Longwood Avenue				
WB MASCO Left/Right	F	>50	>1.0	n/a
NB Longwood Left	A	9.0	0.08	7
NB Longwood Thru/Right	A	0	0.21	0
SB Longwood Left	D	31.2	0.53	66
SB Longwood Thru/Right	A	0	0.25	0
Avenue Louis Pasteur at Longwood Avenue				
WB Louis Pasteur Left	F	>50	0.81	177
WB Louis Pasteur Right	A	0	0.16	0
NB Longwood Thru	A	0	0.17	0
SB Longwood Thru	A	0	0.17	0
Avenue Louis Pasteur at Blackfan Circle				
EB Louis Pasteur Left	B	10.3	0.12	11
EB Louis Pasteur Thru	A	0	0.16	0
WB Louis Pasteur Thru	A	0	0.36	0
WB Louis Pasteur Right	A	0	0.12	0
SB Blackfan Left/Right	D	30.5	0.45	54
Palace Road at Longwood Avenue				
NB Longwood Thru/Right	A	0	0.48	0
SB Longwood Left/Thru	A	7.9	0.18	16

~ Volume exceeds capacity, queue is theoretically infinite.
# 95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

3.4.1.2 Existing (2012) Intersection LOS Summary PM Peak Hour

Two of the eight signalized intersections in the study area currently operate at LOS E or LOS F during the weekday evening peak hour. Lengthy vehicle queuing at signalized intersections along several corridors of the study area have been observed through field observations and Synchro output. Riverway experiences lengthy queues in both directions at the intersection with Brookline Avenue and in the westbound direction at its intersection with Longwood Avenue. Brookline Avenue experiences lengthy queues in the westbound direction at its intersections with Riverway.

Queuing at unsignalized intersections was observed along the MASCO Driveway approach at its intersection with Longwood Avenue, along the Avenue Louis Pasteur westbound approach at its intersection with Longwood Avenue, and at Both Binney Street approaches at Francis Street.

The intersection of Longwood Avenue/Blackfan Circle/Children's Driveway operates at an overall LOS C during the weekday evening peak hour, with all movements operating at LOS D or better. At the unsignalized intersection of Binney Street at Jimmy Fund Way/Children's Hospital, Binney Street eastbound operates at LOS B while the remaining approaches operate at LOS A.

Table 3-13 Existing Condition (2012) Intersection LOS Summary – PM Peak Hour

Intersection	LOS	Delay (sec.)	V/C Ratio	Average Queue	95th % Queue (feet)
Signalized Intersections					
Brookline Avenue at Riverway	**F**	**>80**	**>1.0**		
EB Brookline Left	F	>80	>1.0	~128	#246
EB Brookline Thru/Right	D	54.3	0.63	110	158
WB Brookline Left	F	>80	>1.0	~377	#564
WB Brookline Thru/Right	B	19.0	0.66	125	m228
NB Riverway Left/Thru	F	>80	>1.0	~706	#933
NB Riverway Right	C	28.5	0.22	27	94
SB Riverway Left/Thru/Right	E	72.9	>1.0	~554	#692
Brookline Avenue at Francis Street	**C**	**22.2**	**0.73**		
EB Brookline Thru/Left	C	24.4	0.67	76	107
EB Brookline Right	B	19.9	0.25	28	m53
WB Brookline Left	B	14.2	0.45	44	m43
WB Brookline Thru/Right	B	14.7	0.67	195	136
NB Francis Left	D	41.1	0.79	184	#482
NB Francis Thru/Right	C	24.6	0.32	69	182
SB Francis Left/Thru/Right	C	23.6	0.23	53	152
Brookline Avenue at Deaconess/Jimmy Fund	**C**	**33.7**	**0.74**		
EB Brookline Thru/Right	D	48.1	0.71	188	230
WB Brookline Thru/Left	B	10.9	0.59	81	m145
NB Jimmy Fund Way Left	E	75.8	0.89	148	176
NB Jimmy Fund Way Right	D	36.8	0.12	0	29
SB Deaconess Road Left	D	37.6	0.21	40	67
SB Deaconess Road Thru/Right	D	36.8	0.12	7	43

Table 3-13 Existing Condition (2012) Intersection LOS Summary – PM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	Average Queue	95th % Queue (feet)
Signalized Intersections					
Brookline Avenue at Longwood Avenue	**D**	**42.9**	**>1.0**		
EB Brookline Left	F	>80	>1.0	~52	m#101
EB Brookline Thru/Right	B	12.7	0.64	56	75
WB Brookline Left	C	29.0	0.69	87	131
WB Brookline Thru/Right	C	23.0	0.54	211	250
NB Longwood Left	F	>80	>1.0	~204	m#359
NB Longwood Thru	E	57.1	0.61	189	m273
NB Longwood Right	D	36.5	0.50	124	m279
SB Longwood Left	D	37.2	0.39	43	89
SB Longwood Thru/Right	D	38.7	0.52	139	216
Riverway at Longwood Avenue	**E**	**56.8**	**0.82**		
EB Riverway Left	C	24.0	0.64	90	171
EB Riverway Thru/Right	C	28.3	0.57	162	221
WB Riverway Thru	F	>80	>1.0	~487	#618
WB Riverway Right	C	23.6	0.13	5	50
NB Longwood Left	C	30.3	0.42	52	103
NB Longwood Thru/Right	C	29.3	0.52	168	251
SB Longwood Thru/Left	C	34.5	0.62	138	227
SB Longwood Right	A	9.7	0.23	49	83
Binney Street at Longwood Avenue	**D**	**36.3**	**0.48**		
EB Binney Left/Thru/Right	F	>80	0.95	122	160
WB Binney Left/Thru	E	75.7	0.86	121	165
WB Binney Right	D	40.1	0.15	0	48
NB Longwood Left/Thru/Right	C	21.2	0.38	136	243
SB Longwood Left	A	1.8	0.02	1	m1
SB Longwood Thru	A	9.2	0.43	127	252
SB Longwood Right	A	8.7	0.05	7	m17
BCH Driveway/Blackfan Circle at Longwood	**C**	**27.9**	**0.50**		
EB BCH Driveway Left/Thru/Right	B	19.1	0.28	73	95
WB Blackfan Left/Thru	B	19.1	0.27	64	99
WB Blackfan Right	C	20.2	0.34	92	133
NB Longwood Left	C	21.9	0.16	15	33
NB Longwood Thru/Right	C	31.6	0.64	209	262
SB Longwood Left	C	22.9	0.19	27	m50
SB Longwood Thru/Right	D	36.0	0.68	208	m426

Table 3-13 Existing Condition (2012) Intersection LOS Summary – PM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	Average Queue	95th % Queue (feet)
		Signalized Intersections			
Huntington Avenue at Longwood Avenue	**C**	**33.9**	**0.72**		
EB Huntington Left	D	47.6	0.43	27	59
EB Huntington Thru/Right	C	23.6	0.55	168	226
WB Huntington Left	D	52.6	0.72	90	#171
WB Huntington Thru/Right	B	19.7	0.57	184	264
NB Longwood Left/Thru/Right	C	28.6	0.37	81	130
SB Longwood Left/Thru/Right	E	59.9	0.95	193	#290

~ Volume exceeds capacity, queue is theoretically infinite.
# 95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

Table 3-13 Existing Condition (2012) Intersection LOS Summary – PM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
		Unsignalized Intersections		
Binney Street at Francis Street				
EB Binney Left/Thru/Right	F	>50	>1.0	n/a
WB Binney Left/Thru/Right	F	>50	>1.0	n/a
NB Francis Left/Thru/Right	A	0.3	0.01	1
SB Francis Left	B	11.2	0.10	8
SB Francis Thru/Right	A	0.0	0.19	0
Binney Street at Shattuck Street				
EB Binney Thru/Right	A	0	0.12	0
WB Binney Thru/Left	A	2.1	0.03	2
NB Driveway Left/ Right	C	20.8	0.23	22
Binney Street at Jimmy Fund Way/BCH Driveway				
EB Binney Left/Thru/Right	B	11.1	0.40	n/a
WB Binney Left/Thru/Right	A	9.0	0.24	n/a
NB BCH Driveway Left/Thru/Right	A	8.9	0.17	n/a
SB Jimmy Fund Way Left/Thru/Right	A	9.0	0.16	n/a
Pilgrim Rd./MASCO Driveway at Longwood Avenue				
WB MASCO Left/Right	F	>50	>1.0	402
NB Longwood Left	A	9.0	0.07	5
NB Longwood Thru/Right	A	0	0.19	0
SB Longwood Left	B	12.8	0.06	5
SB Longwood Thru/Right	A	0	0.16	0
Avenue Louis Pasteur at Longwood Avenue				
WB Louis Pasteur Left	F	>50	0.84	163
WB Louis Pasteur Right	A	0	0.13	0
NB Longwood Thru	A	0	0.16	0
SB Longwood Thru	A	0	0.16	0

Table 3-13 Existing Condition (2012) Intersection LOS Summary – PM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Unsignalized Intersections				
Avenue Louis Pasteur at Blackfan Circle				
EB Louis Pasteur Left	A	8.0	0.03	2
EB Louis Pasteur Thru	A	0	0.10	0
WB Louis Pasteur Thru	A	0	0.14	0
WB Louis Pasteur Right	A	0	0.03	0
SB Blackfan Left/Right	B	13.9	0.29	31
Palace Road at Longwood Avenue				
NB Longwood Thru/Right	A	0	0.18	0
SB Longwood Left/Thru	A	2.8	0.22	5

~ Volume exceeds capacity, queue is theoretically infinite.
# 95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

3.4.1.3 No-Build (2022) AM Peak Hour LOS Summary

Of the eight signalized intersections in the study area, four are expected to remain at the same overall LOS from the Existing (2012) Condition to the No-Build (2022) Condition. The anticipated change is mostly caused by anticipated traffic growth and other approved projects that will add traffic to the study area intersections. The change in traffic operations for the other four signalized intersections is presented below.

Table 3-14 No Build Condition (2022) Intersection LOS Summary – AM Peak Hour

Intersection	LOS	Delay (sec.)	V/C Ratio	Average Queue	95th % Queue (feet)
Signalized Intersections					
Brookline Avenue at Riverway	**F**	**>80**	**>1.0**		
EB Brookline Left	F	>80	>1.0	~311	#478
EB Brookline Thru/Right	D	45.4	0.68	193	256
WB Brookline Left	F	>80	>1.0	~189	#323
WB Brookline Thru/Right	C	22.7	0.46	154	215
NB Riverway Left/Thru	F	>80	>1.0	~1186	#1357
NB Riverway Right	D	45.7	0.77	248	#427
SB Riverway Left/Thru/Right	D	37.6	0.70	281	361
Brookline Avenue at Francis Street	**E**	**78.9**	**0.89**		
EB Brookline Thru/Left	F	>80	>1.0	~399	#513
EB Brookline Right	C	21.6	0.46	65	m90
WB Brookline Left	F	>80	0.95	125	m#235
WB Brookline Thru/Right	C	25.2	0.36	113	134
NB Francis Left	C	32.5	0.57	98	#289

Table 3-14 No Build Condition (2022) Intersection LOS Summary – AM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	Average Queue	95^{th} % Queue (feet)
Signalized Intersections					
NB Francis Thru/Right	C	26.4	0.20	44	115
SB Francis Left/Thru/Right	C	27.7	0.31	94	212
Brookline Avenue at Deaconess/Jimmy Fund	**F**	**>80**	**>1.0**		
EB Brookline Thru/Right	F	>80	>1.0	~1346	481
WB Brookline Thru/Left	B	15.5	0.74	51	m#102
NB Jimmy Fund Way Left	E	75.4	0.78	70	95
NB Jimmy Fund Way Right	D	44.7	0.08	0	25
SB Deaconess Road Left	D	45.7	0.22	32	59
SB Deaconess Road Thru/Right	D	45.1	0.13	9	48
Brookline Avenue at Longwood Avenue	**F**	**>80**	**>1.0**		
EB Brookline Left	F	>80	>1.0	~52	m5
EB Brookline Thru/Right	A	4.3	0.72	56	m23
WB Brookline Left	C	31.3	0.75	77	#154
WB Brookline Thru/Right	C	20.7	0.60	249	315
NB Longwood Left	F	>80	>1.0	~94	m#151
NB Longwood Thru	F	>80	>1.0	~335	#370
NB Longwood Right	C	23.6	0.54	136	142
SB Longwood Left	F	>80	>1.0	~179	m#290
SB Longwood Thru/Right	F	>80	>1.0	~335	m#502
Riverway at Longwood Avenue	**F**	**>80**	**>1.0**		
EB Riverway Left	D	51.2	0.91	181	#348
EB Riverway Thru/Right	E	66.8	>1.0	~377	#507
WB Riverway Thru	F	>80	>1.0	~556	#637
WB Riverway Right	C	22.9	0.08	0	33
NB Longwood Left	F	>80	>1.0	~74	#137
NB Longwood Thru/Right	C	32.6	0.58	181	211
SB Longwood Thru/Left	F	>80	>1.0	~447	#623
SB Longwood Right	A	9.1	0.10	18	38
Binney Street at Longwood Avenue	**C**	**28.3**	**0.60**		
EB Binney Left/Thru/Right	D	37.0	0.68	184	223
WB Binney Left/Thru	C	29.5	0.38	75	111
WB Binney Right	C	26.1	0.09	0	31
NB Longwood Left/Thru/Right	C	26.2	0.58	123	172
SB Longwood Left	B	18.8	0.35	57	m68
SB Longwood Thru	C	27.6	0.53	161	m167
SB Longwood Right	C	32.1	0.05	3	m4
BCH Driveway/Blackfan Circle at Longwood	**C**	**22.9**	**0.60**		
EB BCH Driveway Left/Thru/Right	D	44.9	0.46	75	103
WB Blackfan Left/Thru	D	43.6	0.34	42	58
WB Blackfan Right	E	64.9	0.80	123	134
NB Longwood Left	A	8.6	0.08	9	30
NB Longwood Thru/Right	B	14.2	0.53	190	355

Table 3-14 No Build Condition (2022) Intersection LOS Summary – AM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	Average Queue	95th % Queue (feet)
Signalized Intersections					
SB Longwood Left	A	9.1	0.21	28	m49
SB Longwood Thru/Right	B	12.1	0.54	157	204
Huntington Avenue at Longwood Avenue	**F**	**>80**	**>1.0**		
EB Huntington Left	D	53.4	0.68	65	111
EB Huntington Thru/Right	C	22.6	0.61	203	242
WB Huntington Left	D	49.8	0.66	75	134
WB Huntington Thru/Right	C	24.8	0.73	237	322
NB Longwood Left/Thru/Right	F	>80	>1.0	~472	#423
SB Longwood Left (defacto)	F	>80	>1.0	~193	#282
SB Longwood Thru/Right	D	37.3	0.60	130	179
Longwood Avenue at Pilgrim Road/MASCO	**B**	**18.0**	**0.70**		
EB Pilgrim Left/Thru/Right	D	49.3	0.30	33	78
WB MASCO Left	F	>80	0.95	29	54
WB MASCO Thru/Right	D	49.4	0.26	11	34
NB Longwood Left	A	6.9	0.47	31	m43
NB Longwood Thru/Right	A	8.3	0.66	66	m88
SB Longwood Left	B	19.5	0.59	85	#236
SB Longwood Thru/Right	B	11.7	0.46	174	287

~ Volume exceeds capacity, queue is theoretically infinite.
# 95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

Table 3-14 No Build Condition (2022) Intersection LOS Summary – AM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Unsignalized Intersections				
Binney Street at Francis Street				
EB Binney Left/Thru/Right	F	>50	>1.0	n/a
WB Binney Left/Thru/Right	F	>50	>1.0	n/a
NB Francis Left/Thru/Right	A	0.4	0.01	1
SB Francis Left	B	12.9	0.25	24
SB Francis Thru/Right	A	0.0	0.18	0
Binney Street at Shattuck Street				
EB Binney Thru/Right	A	0	0.24	0
WB Binney Thru/Left	A	3.3	0.05	4
NB Driveway Left/ Right	C	20.8	0.18	16
Binney Street at Jimmy Fund Way/BCH Driveway				
EB Binney Left/Thru/Right	B	14.8	0.61	n/a
WB Binney Left/Thru/Right	A	9.6	0.27	n/a
NB BCH Driveway Left/Thru/Right	A	9.2	0.08	n/a
SB Jimmy Fund Way Left/Thru/Right	A	9.3	0.14	n/a

Table 3-14 No Build Condition (2022) Intersection LOS Summary – AM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Unsignalized Intersections				
Avenue Louis Pasteur at Longwood Avenue				
WB Louis Pasteur Left	F	>50	0.92	232
WB Louis Pasteur Right	A	0	0.19	0
NB Longwood Thru	A	0	0.19	0
SB Longwood Thru	A	0	0.19	0
Avenue Louis Pasteur at Blackfan Circle				
EB Louis Pasteur Left	B	10.8	0.16	14
EB Louis Pasteur Thru	A	0	0.17	0
WB Louis Pasteur Thru	A	0	0.37	0
WB Louis Pasteur Right	A	0	0.13	0
SB Blackfan Left/Right	E	39.0	0.53	68
Palace Road at Longwood Avenue				
NB Longwood Thru/Right	A	0	0.54	0
SB Longwood Left/Thru	A	9.5	0.22	20

~ Volume exceeds capacity, queue is theoretically infinite.
# 95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

During the No-Build Condition, the overall LOS is expected to lower from LOS D to LOS E at the intersection of Brookline Avenue at Francis Street. The intersection of Brookline Avenue at Longwood Avenue is expected to decrease from an overall LOS D to LOS F. Overall traffic operations are expected to decline from LOS E to LOS F at the Riverway at Longwood Avenue and the intersection of Huntington Avenue at Longwood Avenue is expected to decrease from an overall LOS D to LOS E.

The intersection of Longwood Avenue at Pilgrim Road/MASCO Driveway is proposed to be signalized. The intersection is expected to operate at an overall LOS B under traffic signal control during the weekday morning peak hour.

The intersection of Longwood Avenue/Blackfan Circle/BCH Driveway is expected to continue to operate at an overall LOS C.

One of the unsignalized intersection traffic operations is also expected to change in the No-Build Condition. The Blackfan Circle southbound approach is expected to decrease from LOS D to LOS E at Avenue Louis Pasteur due to traffic growth and other approved projects.

Operations at the intersection of Binney Street at Jimmy Fund Way/Boston Children's Hospital are not expected to change between Existing and No-Build conditions.

3.4.1.4 No-Build (2022) PM Peak Hour LOS Summary

Of the eight signalized intersections during the evening peak hour, three are expected to remain at the same overall LOS from the Existing (2012) Condition to the No-Build (2022) Condition. Of the five remaining intersections, four are expected to experience a decreased LOS and one is expected to experience an increase when compared to the Existing Condition due to anticipated traffic growth and other approved projects. Traffic operations are expected to decline from overall LOS C to LOS D at the Brookline Avenue/Beth Israel Deaconess/Jimmy Fund Way intersection; LOS D to LOS F at the intersection of Brookline Avenue at Longwood Avenue; LOS E to LOS F at the intersection of Riverway at Longwood Avenue; and LOS C to LOS D at the intersection of Huntington Avenue at Longwood Avenue. The intersection of Binney Street at Longwood Avenue is expected to improve from LOS D to LOS C due to the additional actuated green time for the Binney Street approaches.

As stated above, the intersection of Longwood Avenue at Pilgrim Road/MASCO Driveway is proposed to be signalized. The intersection is expected to operate at an overall LOS D under traffic signal control during the weekday evening peak hour.

The unsignalized intersections are expected to remain at the same LOS from the Existing (2012) Condition to the No-Build (2022) Condition.

Table 3-15 No Build Condition (2022) Intersection LOS Summary – PM Peak Hour

Intersection	LOS	Delay (sec.)	V/C Ratio	Average Queue	95th % Queue (feet)
Signalized Intersections					
Brookline Avenue at Riverway	**F**	**>80**	**>1.0**		
EB Brookline Left	F	>80	>1.0	~180	#312
EB Brookline Thru/Right	E	68.8	0.86	156	#235
WB Brookline Left	F	>80	>1.0	~734	m#929
WB Brookline Thru/Right	C	30.3	0.83	314	m370
NB Riverway Left/Thru	F	>80	>1.0	~778	#1005
NB Riverway Right	C	29.6	0.29	42	122
SB Riverway Left/Thru/Right	F	>80	>1.0	~614	#753
Brookline Avenue at Francis Street	**C**	**21.6**	**0.80**		
EB Brookline Thru/Left	C	24.8	0.74	73	m113
EB Brookline Right	B	19.6	0.27	26	m48
WB Brookline Left	B	11.0	0.50	26	m30
WB Brookline Thru/Right	B	11.9	0.76	124	m127
NB Francis Left	D	47.3	0.84	202	#513

Table 3-15 No Build Condition (2022) Intersection LOS Summary – PM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	Average Queue	95th % Queue (feet)
Signalized Intersections					
NB Francis Thru/Right	C	24.9	0.34	75	194
SB Francis Left/Thru/Right	C	23.8	0.25	58	164
Brookline Avenue at Deaconess/Jimmy Fund	**D**	**42.9**	**0.96**		
EB Brookline Thru/Right	E	62.2	0.92	268	#437
WB Brookline Thru/Left	C	21.0	0.95	~218	m#414
NB Jimmy Fund Way Left	F	>80	0.98	150	#206
NB Jimmy Fund Way Right	C	32.3	0.12	0	29
SB Deaconess Road Left	A	0.0	0.00	0	0
SB Deaconess Road Thru/Right	C	32.9	0.19	7	54
Brookline Avenue at Longwood Avenue	**F**	**>80**	**>1.0**		
EB Brookline Left	F	>80	>1.0	~113	m#140
EB Brookline Thru/Right	A	7.1	0.67	33	m44
WB Brookline Left	D	39.0	0.80	97	#148
WB Brookline Thru/Right	C	30.0	0.79	365	416
NB Longwood Left	F	>80	>1.0	~250	m#394
NB Longwood Thru	E	56.1	0.68	211	m295
NB Longwood Right	D	42.2	0.54	179	m294
SB Longwood Left	F	>80	>1.0	~251	m#352
SB Longwood Thru/Right	E	64.1	0.95	296	m#426
Riverway at Longwood Avenue	**F**	**>80**	**>1.0**		
EB Riverway Left	D	41.9	0.70	106	195
EB Riverway Thru/Right	C	29.0	0.60	173	234
WB Riverway Thru	F	>80	>1.0	~594	#727
WB Riverway Right	C	24.1	0.16	13	62
NB Longwood Left	D	37.0	0.58	70	136
NB Longwood Thru/Right	D	35.5	0.71	246	356
SB Longwood Thru/Left	E	76.4	0.97	182	#353
SB Longwood Right	A	9.6	0.24	52	87
Binney Street at Longwood Avenue	**C**	**30.6**	**0.57**		
EB Binney Left/Thru/Right	E	57.8	0.81	148	172
WB Binney Left/Thru	D	41.7	0.61	116	146
WB Binney Right	C	34.4	0.15	0	40
NB Longwood Left/Thru/Right	C	27.3	0.47	198	257
SB Longwood Left	A	2.9	0.01	0	m1
SB Longwood Thru	B	17.1	0.60	302	m394
SB Longwood Right	B	16.2	0.05	10	m19
BCH Driveway/Blackfan Circle at Longwood	**C**	**29.8**	**0.56**		
EB BCH Driveway Left/Thru/Right	B	19.4	0.29	77	104
WB Blackfan Left/Thru	B	19.4	0.29	69	104
WB Blackfan Right	C	20.8	0.37	103	146
NB Longwood Left	C	32.2	0.20	15	35
NB Longwood Thru/Right	C	34.4	0.70	240	298

Table 3-15 No Build Condition (2022) Intersection LOS Summary – PM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	Average Queue	95th % Queue (feet)
Signalized Intersections					
SB Longwood Left	C	20.1	0.21	30	m44
SB Longwood Thru/Right	D	38.5	0.78	385	m498
Huntington Avenue at Longwood Avenue	**D**	**40.7**	**0.79**		
EB Huntington Left	D	47.6	0.44	28	62
EB Huntington Thru/Right	C	24.6	0.59	181	243
WB Huntington Left	D	54.5	0.74	94	#182
WB Huntington Thru/Right	C	20.5	0.60	198	283
NB Longwood Left/Thru/Right	C	31.0	0.46	90	146
SB Longwood Left (defacto)	F	>80	>1.0	~190	#329
SB Longwood Thru/Right	D	50.8	0.87	244	#392
Longwood Avenue at Pilgrim Road/MASCO	**D**	**52.8**	**0.91**		
EB Pilgrim Left/Thru/Right	D	46.8	0.76	169	0
WB MASCO Left	F	>80	>1.0	116	149
WB MASCO Thru/Right	D	35.6	0.48	114	#133
NB Longwood Left	B	15.2	0.41	42	m#113
NB Longwood Thru/Right	B	17.0	0.57	162	m#227
SB Longwood Left	B	17.8	0.17	17	55
SB Longwood Thru/Right	C	21.5	0.49	196	#334

~ Volume exceeds capacity, queue is theoretically infinite.
# 95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

Table 3-15 No Build Condition (2022) Intersection LOS Summary – PM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Unsignalized Intersections				
Binney Street at Francis Street				
EB Binney Left/Thru/Right	F	>50	>1.0	n/a
WB Binney Left/Thru/Right	F	>50	>1.0	n/a
NB Francis Left/Thru/Right	A	0.3	0.01	1
SB Francis Left	B	11.3	0.10	9
SB Francis Thru/Right	A	0.0	0.20	0
Binney Street at Shattuck Street				
EB Binney Thru/Right	A	0	0.14	0
WB Binney Thru/Left	A	2.0	0.03	3
NB Driveway Left/ Right	C	22.4	0.26	25

Table 3-15 No Build Condition (2022) Intersection LOS Summary – PM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Unsignalized Intersections				
Binney Street at Jimmy Fund Way/BCH Driveway				
EB Binney Left/Thru/Right	B	12.1	0.46	n/a
WB Binney Left/Thru/Right	A	9.4	0.27	n/a
NB BCH Driveway Left/Thru/Right	A	9.2	0.19	n/a
SB Jimmy Fund Way Left/Thru/Right	A	9.2	0.17	n/a
Avenue Louis Pasteur at Longwood Avenue				
WB Louis Pasteur Left	F	>50	0.95	205
WB Louis Pasteur Right	A	0	0.14	0
NB Longwood Thru	A	0	0.18	0
SB Longwood Thru	A	0	0.18	0
Avenue Louis Pasteur at Blackfan Circle				
EB Louis Pasteur Left	A	8.1	0.02	2
EB Louis Pasteur Thru	A	0	0.11	0
WB Louis Pasteur Thru	A	0	0.15	0
WB Louis Pasteur Right	A	0	0.03	0
SB Blackfan Left/Right	B	14.4	0.33	36
Palace Road at Longwood Avenue				
NB Longwood Thru/Right	A	0	0.20	0
SB Longwood Left/Thru	A	02.8	0.25	6

~ Volume exceeds capacity, queue is theoretically infinite.
# 95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

3.4.1.5 Build (2022) AM Peak Hour LOS Summary

Under the future Build Condition, only one intersection is expected to experience a decrease in LOS. Brookline Avenue at Francis Street is expected to change from LOS E to LOS F.

Table 3-16 Build Condition (2022) Intersection LOS Summary – AM Peak Hour

Intersection	LOS	Delay (sec.)	V/C Ratio	Average Queue	95th % Queue (feet)
Signalized Intersections					
Brookline Avenue at Riverway	**F**	**>80**	**>1.0**		
EB Brookline Left	F	>80	>1.0	~311	#478
EB Brookline Thru/Right	D	45.6	0.69	195	258
WB Brookline Left	F	>80	>1.0	~167	#337
WB Brookline Thru/Right	C	22.5	0.46	149	210
NB Riverway Left/Thru	F	>80	>1.0	~1186	#1357
NB Riverway Right	D	46.6	0.79	255	#437
SB Riverway Left/Thru/Right	D	37.6	0.70	281	361

Table 3-16 Build Condition (2022) Intersection LOS Summary – AM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	Average Queue	95th % Queue (feet)
Signalized Intersections					
Brookline Avenue at Francis Street	**F**	**81.2**	**0.90**		
EB Brookline Thru/Left	F	>80	>1.0	~407	#517
EB Brookline Right	C	21.8	0.47	67	m92
WB Brookline Left	F	94.8	0.99	127	m#236
WB Brookline Thru/Right	C	25.0	0.37	114	137
NB Francis Left	C	32.5	0.57	98	#289
NB Francis Thru/Right	C	26.4	0.20	44	115
SB Francis Left/Thru/Right	C	27.7	0.31	94	212
Brookline Avenue at Deaconess/Jimmy Fund	**F**	**>80**	**>1.0**		
EB Brookline Thru/Right	F	>80	>1.0	~1363	487
WB Brookline Thru/Left	B	15.0	0.75	51	m95
NB Jimmy Fund Way Left	E	75.4	0.78	70	95
NB Jimmy Fund Way Right	D	44.7	0.08	0	25
SB Deaconess Road Left	D	45.7	0.22	32	59
SB Deaconess Road Thru/Right	D	45.1	0.13	9	48
Brookline Avenue at Longwood Avenue	**F**	**>80**	**>1.0**		
EB Brookline Left	F	>80	>1.0	~52	m5
EB Brookline Thru/Right	A	4.4	0.73	58	m23
WB Brookline Left	D	44.9	0.85	88	#207
WB Brookline Thru/Right	C	20.7	0.60	249	315
NB Longwood Left	F	>80	>1.0	~104	m#170
NB Longwood Thru	F	>80	>1.0	~327	#380
NB Longwood Right	C	23.6	0.60	141	152
SB Longwood Left	F	>80	>1.0	~194	m#323
SB Longwood Thru/Right	F	>80	>1.0	~341	m#510
Riverway at Longwood Avenue	**F**	**>80**	**>1.0**		
EB Riverway Left	D	51.2	0.91	181	#348
EB Riverway Thru/Right	E	66.8	>1.0	~377	#507
WB Riverway Thru	F	>80	>1.0	~556	#637
WB Riverway Right	C	22.9	0.08	0	33
NB Longwood Left	F	>80	>1.0	~75	#137
NB Longwood Thru/Right	C	32.7	0.59	182	213
SB Longwood Thru/Left	F	>80	>1.0	~450	#626
SB Longwood Right	A	9.1	0.10	18	38
Binney Street at Longwood Avenue	**C**	**29.4**	**0.62**		
EB Binney Left/Thru/Right	D	36.1	0.68	184	226
WB Binney Left/Thru	C	28.9	0.38	75	111
WB Binney Right	C	25.6	0.09	0	31
NB Longwood Left/Thru/Right	C	29.0	0.64	154	m231
SB Longwood Left	B	19.6	0.37	59	m67
SB Longwood Thru	C	28.7	0.60	187	m187
SB Longwood Right	C	34.4	0.05	3	m4

Table 3-16 Build Condition (2022) Intersection LOS Summary – AM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	Average Queue	95th % Queue (feet)
Signalized Intersections					
BCH Driveway/Blackfan Circle at Longwood	**C**	**24.8**	**0.64**		
EB BCH Driveway Left	D	40.0	0.23	32	53
EB BCH Driveway Thru/Right	D	40.9	0.32	65	90
WB Blackfan Left	D	41.9	0.41	60	73
WB Blackfan Thru/Right	E	64.9	0.82	145	149
NB Longwood Left	B	10.4	0.12	13	42
NB Longwood Thru/Right	B	16.6	0.56	211	397
SB Longwood Left	B	10.3	0.31	36	m59
SB Longwood Thru/Right	B	13.0	0.58	152	318
Huntington Avenue at Longwood Avenue	**F**	**>80**	**>1.0**		
EB Huntington Left	D	53.4	0.68	65	111
EB Huntington Thru/Right	C	22.6	0.61	203	242
WB Huntington Left	D	49.8	0.66	75	134
WB Huntington Thru/Right	C	25.0	0.73	240	325
NB Longwood Left/Thru/Right	F	>80	>1.0	~499	#446
SB Longwood Left (defacto)	F	>80	>1.0	~203	#254
SB Longwood Thru/Right	D	28.2	0.63	136	187
Longwood Avenue at Pilgrim Road/MASCO	**B**	**16.8**	**0.70**		
EB Pilgrim Left/Thru/Right	D	49.3	0.30	33	78
WB MASCO Left	F	>80	0.95	29	54
WB MASCO Thru/Right	D	49.4	0.26	11	34
NB Longwood Left	A	6.3	0.47	50	m35
NB Longwood Thru/Right	A	8.6	0.66	114	m70
SB Longwood Left	B	13.7	0.59	85	#236
SB Longwood Thru/Right	B	10.4	0.46	176	289

~ Volume exceeds capacity, queue is theoretically infinite.
# 95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

Table 3-16 Build Condition (2022) Intersection LOS Summary – AM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Unsignalized Intersections				
Binney Street at Francis Street				
EB Binney Left/Thru/Right	F	>50	>1.0	n/a
WB Binney Left/Thru/Right	F	>50	>1.0	n/a
NB Francis Left/Thru/Right	A	0.4	0.01	1
SB Francis Left	B	13.0	0.25	25
SB Francis Thru/Right	A	0.0	0.18	0

Table 3-16 Build Condition (2022) Intersection LOS Summary – AM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Unsignalized Intersections				
Binney Street at Shattuck Street				
EB Binney Thru/Right	A	0	0.25	0
WB Binney Thru/Left	A	3.3	0.05	4
NB Driveway Left/ Right	C	20.9	0.18	16
Binney Street at Jimmy Fund Way/BCH Driveway				
EB Binney Left/Thru/Right	B	14.9	0.62	n/a
WB Binney Left/Thru/Right	A	9.6	0.27	n/a
NB BCH Driveway Left/Thru/Right	A	9.3	0.08	n/a
SB Jimmy Fund Way Left/Thru/Right	A	9.3	0.14	n/a
Avenue Louis Pasteur at Longwood Avenue				
WB Louis Pasteur Left	F	>50	>1.0	298
WB Louis Pasteur Right	A	0	0.21	0
NB Longwood Thru	A	0	0.19	0
SB Longwood Thru	A	0	0.19	0
Avenue Louis Pasteur at Blackfan Circle				
EB Louis Pasteur Left	B	10.9	0.16	14
EB Louis Pasteur Thru	A	0	0.17	0
WB Louis Pasteur Thru	A	0	0.38	0
WB Louis Pasteur Right	A	0	0.13	0
SB Blackfan Left/Right	E	44.3	0.59	70
Palace Road at Longwood Avenue				
NB Longwood Thru/Right	A	0	0.55	0
SB Longwood Left/Thru	A	9.7	0.22	21

~ Volume exceeds capacity, queue is theoretically infinite.
# 95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

3.4.1.6 Build (2022) PM Peak Hour LOS Summary

Under the future Build Condition, there are no anticipated changes from No-Build in overall LOS at any of the study intersections.

Table 3-17 Build Condition (2022) Intersection LOS Summary – PM Peak Hour

Intersection	LOS	Delay (sec.)	V/C Ratio	Average Queue	95th % Queue (feet)
Signalized Intersections					
Brookline Avenue at Riverway	**F**	**>80**	**>1.0**		
EB Brookline Left	F	>80	>1.0	~180	#312
EB Brookline Thru/Right	E	69.6	0.87	158	#237
WB Brookline Left	F	>80	>1.0	~746	m#943

Table 3-17 Build Condition (2022) Intersection LOS Summary – PM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	Average Queue	95th % Queue (feet)
Signalized Intersections					
WB Brookline Thru/Right	C	30.3	0.83	315	m369
NB Riverway Left/Thru	F	>80	>1.0	~778	#1005
NB Riverway Right	C	29.7	0.29	43	124
SB Riverway Left/Thru/Right	F	>80	>1.0	~614	#753
Brookline Avenue at Francis Street	**C**	**21.7**	**0.81**		
EB Brookline Thru/Left	C	25.4	0.75	75	m115
EB Brookline Right	B	19.9	0.27	28	m49
WB Brookline Left	B	10.9	0.51	26	m30
WB Brookline Thru/Right	B	11.9	0.77	126	m123
NB Francis Left	D	47.3	0.84	202	#513
NB Francis Thru/Right	C	24.9	0.34	75	194
SB Francis Left/Thru/Right	C	23.8	0.25	58	164
Brookline Avenue at Deaconess/Jimmy Fund	**D**	**43.5**	**0.97**		
EB Brookline Thru/Right	E	62.8	0.93	269	#436
WB Brookline Thru/Left	C	21.8	0.96	~230	m#420
NB Jimmy Fund Way Left	F	>80	0.98	150	#206
NB Jimmy Fund Way Right	C	32.3	0.12	0	29
SB Deaconess Road Left	A	0.00	0.00	0	0
SB Deaconess Road Thru/Right	C	32.9	0.19	7	54
Brookline Avenue at Longwood Avenue	**F**	**>80**	**>1.0**		
EB Brookline Left	F	>80	>1.0	~113	m#138
EB Brookline Thru/Right	A	7.1	0.68	33	m43
WB Brookline Left	D	52.7	0.88	107	#186
WB Brookline Thru/Right	C	30.0	0.79	365	416
NB Longwood Left	F	>80	>1.0	~272	m#420
NB Longwood Thru	E	56.2	0.68	213	m298
NB Longwood Right	D	44.1	0.59	203	m321
SB Longwood Left	F	>80	>1.0	~253	m#354
SB Longwood Thru/Right	E	65.4	0.95	298	m#429
Riverway at Longwood Avenue	**F**	**>80**	**>1.0**		
EB Riverway Left	D	41.9	0.70	106	195
EB Riverway Thru/Right	C	29.0	0.60	173	234
WB Riverway Thru	F	>80	>1.0	~594	#272
WB Riverway Right	C	24.1	0.16	13	62
NB Longwood Left	D	37.2	0.58	70	136
NB Longwood Thru/Right	D	35.6	0.72	247	359
SB Longwood Thru/Left	E	79.7	0.98	184	#358
SB Longwood Right	A	9.6	0.24	52	87

Table 3-17 Build Condition (2022) Intersection LOS Summary – PM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	Average Queue	95th % Queue (feet)
Signalized Intersections					
Binney Street at Longwood Avenue	**C**	**31.2**	**0.59**		
EB Binney Left/Thru/Right	E	65.9	0.85	151	196
WB Binney Left/Thru	D	43.5	0.63	115	161
WB Binney Right	D	35.0	0.15	0	44
NB Longwood Left/Thru/Right	C	25.8	0.51	174	218
SB Longwood Left	A	2.5	0.01	0	m1
SB Longwood Thru	B	17.3	0.64	333	m400
SB Longwood Right	B	14.7	0.05	10	m17
BCH Driveway/Blackfan Circle at Longwood	**C**	**29.9**	**0.59**		
EB BCH Driveway Left	B	18.2	0.20	41	64
EB BCH Driveway Thru/Right	B	17.3	0.16	47	69
WB Blackfan Left	B	19.9	0.32	82	121
WB Blackfan Thru/Right	C	21.5	0.41	115	161
NB Longwood Left	C	24.4	0.24	19	40
NB Longwood Thru/Right	D	36.2	0.74	256	314
SB Longwood Left	C	22.7	0.30	41	m66
SB Longwood Thru/Right	D	38.9	0.79	393	m506
Huntington Avenue at Longwood Avenue	**D**	**42.8**	**0.81**		
EB Huntington Left	D	47.6	0.44	28	62
EB Huntington Thru/Right	C	24.3	0.59	181	243
WB Huntington Left	D	54.5	0.74	94	#182
WB Huntington Thru/Right	C	20.6	0.61	201	285
NB Longwood Left/Thru/Right	C	31.9	0.49	95	153
SB Longwood Left (defacto)	F	>80	>1.0	~200	#340
SB Longwood Thru/Right	D	21.5	0.89	253	#407
Longwood Avenue at Pilgrim Road/MASCO	**D**	**52.7**	**0.91**		
EB Pilgrim Left/Thru/Right	D	46.8	0.76	169	0
WB MASCO Left	F	>80	>1.0	116	149
WB MASCO Thru/Right	D	35.6	0.48	14	133
NB Longwood Left	B	15.1	0.41	43	m#111
NB Longwood Thru/Right	B	17.0	0.57	162	m229
SB Longwood Left	B	17.8	0.17	17	55
SB Longwood Thru/Right	C	21.5	0.49	196	344

~ Volume exceeds capacity, queue is theoretically infinite.
# 95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

Table 3-17 Build Condition (2012) Intersection LOS Summary – PM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Unsignalized Intersections				
Binney Street at Francis Street				
EB Binney Left/Thru/Right	F	>50	>1.0	n/a
WB Binney Left/Thru/Right	F	>50	>1.0	n/a
NB Francis Left/Thru/Right	A	0.3	0.01	1
SB Francis Left	B	11.4	0.11	9
SB Francis Thru/Right	A	0.0	0.20	0
Binney Street at Shattuck Street				
EB Binney Thru/Right	A	0	0.14	0
WB Binney Thru/Left	A	2.0	0.03	3
NB Driveway Left/ Right	C	22.5	0.26	25
Binney Street at Jimmy Fund Way/BCH Driveway				
EB Binney Left/Thru/Right	B	12.1	0.47	n/a
WB Binney Left/Thru/Right	A	9.4	0.27	n/a
NB BCH Driveway Left/Thru/Right	A	9.2	0.19	n/a
SB Jimmy Fund Way Left/Thru/Right	A	9.2	0.17	n/a
Avenue Louis Pasteur at Longwood Avenue				
WB Louis Pasteur Left	F	>50	0.98	216
WB Louis Pasteur Right	A	0	0.15	0
NB Longwood Thru	A	0	0.19	0
SB Longwood Thru	A	0	0.19	0
Avenue Louis Pasteur at Blackfan Circle				
EB Louis Pasteur Left	A	8.1	0.02	2
EB Louis Pasteur Thru	A	0	0.11	0
WB Louis Pasteur Thru	A	0	0.15	0
WB Louis Pasteur Right	A	0	0.03	0
SB Blackfan Left/Right	B	14.8	0.37	42
Palace Road at Longwood Avenue				
NB Longwood Thru/Right	A	0	0.21	0
SB Longwood Left/Thru	A	2.8	0.25	6

~ Volume exceeds capacity, queue is theoretically infinite.
# 95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

3.4.2 Level of Service Summary

The BCCB is expected to have a minimal impact on the future study area intersections. The overall LOS is not expected to materially change at any of the study intersections during the peak hours from the No-Build (2022) Condition to the Build (2022) Condition.

Table 3-18 is a summary of the overall LOS comparing the 2012 Existing, 2022 No-Build, and 2022 Build conditions for both morning and evening peak hours.

Table 3-18 LOS Summary Comparison

	AM Peak Hour Operations			PM Peak Hour Operations		
Intersection	Existing	No-Build	Build	Existing	No-Build	Build
Signalized Intersections						
Brookline Avenue at Riverway	**F**	**F**	**F**	**F**	**F**	**F**
EB Brookline Left	F	F	F	F	F	F
EB Brookline Thru/Right	D	D	D	D	E	E
WB Brookline Left	D	F	F	F	F	F
WB Brookline Thru/Right	C	C	C	B	C	C
NB Riverway Left/Thru	F	F	F	F	F	F
NB Riverway Right	C	D	D	C	C	C
SB Riverway Left/Thru/Right	D	D	D	E	F	F
Brookline Avenue at Francis Street	**D**	**E**	**F**	**C**	**C**	**C**
EB Brookline Thru/Left	F	F	F	C	C	C
EB Brookline Right	C	C	C	B	B	B
WB Brookline Left	D	F	F	B	B	B
WB Brookline Thru/Right	C	C	C	B	B	B
NB Francis Left	C	C	C	D	D	D
NB Francis Thru/Right	C	C	C	C	C	C
SB Francis Left/Thru/Right	C	C	C	C	C	C
Brookline Avenue at Deaconess/Jimmy Fund	**F**	**F**	**F**	**C**	**D**	**D**
EB Brookline Thru/Right	F	F	F	D	E	E
WB Brookline Thru/Left	B	B	B	B	C	C
NB Jimmy Fund Way Left	E	E	E	E	F	F
NB Jimmy Fund Way Right	D	D	D	D	C	C
SB Deaconess Road Left	D	D	D	D	A	A
SB Deaconess Road Thru/Right	D	D	D	D	C	C
Brookline Avenue at Longwood Avenue	**D**	**F**	**F**	**D**	**F**	**F**
EB Brookline Left	A	F	F	F	F	F
EB Brookline Thru/Right	A	A	A	B	A	A
WB Brookline Left	C	C	D	C	D	D
WB Brookline Thru/Right	B	C	C	C	C	C
NB Longwood Left	F	F	F	F	F	F
NB Longwood Thru	D	F	F	E	E	E
NB Longwood Right	C	C	C	D	D	D
SB Longwood Left	F	F	F	D	F	F
SB Longwood Thru/Right	F	F	F	D	E	E

Table 3-18 LOS Summary Comparison (Continued)

Intersection	AM Peak Hour Operations			PM Peak Hour Operations		
	Existing	No-Build	Build	Existing	No-Build	Build
Signalized Intersections						
Riverway at Longwood Avenue	**E**	**F**	**F**	**E**	**F**	**F**
EB Riverway Left	D	D	D	C	D	D
EB Riverway Thru/Right	D	E	E	C	C	C
WB Riverway Thru	D	F	F	F	F	F
WB Riverway Right	C	C	C	C	C	C
NB Longwood Left	D	F	F	C	D	D
NB Longwood Thru/Right	C	C	C	C	D	D
SB Longwood Thru/Left	F	F	F	C	E	E
SB Longwood Right	A	A	A	A	A	A
Binney Street at Longwood Avenue	**C**	**C**	**C**	**D**	**C**	**C**
EB Binney Left/Thru/Right	D	D	D	F	E	E
WB Binney Left/Thru	D	C	C	E	D	D
WB Binney Right	C	C	C	D	C	D
NB Longwood Left/Thru/Right	B	C	C	C	C	C
SB Longwood Left	B	B	B	A	A	A
SB Longwood Thru	C	C	C	A	B	B
SB Longwood Right	C	C	C	A	B	B
BCH Driveway/Blackfan Circle at Longwood	**C**	**C**	**C**	**C**	**C**	**C**
EB BCH Driveway Left[1]	D	D	D	B	B	B
EB BCH Driveway Thru/Right[1]			D			B
WB Blackfan Left/Thru	D	D	D	B	B	B
WB Blackfan Right	E	E	E	C	C	C
NB Longwood Left	A	A	B	C	C	C
NB Longwood Thru/Right	B	B	B	C	C	D
SB Longwood Left	A	A	B	C	C	C
SB Longwood Thru/Right	B	B	B	D	D	D
Huntington Avenue at Longwood Avenue	**E**	**F**	**F**	**C**	**D**	**D**
EB Huntington Left	E	D	D	D	D	D
EB Huntington Thru/Right	D	C	C	C	C	C
WB Huntington Left	C	D	D	D	D	D
WB Huntington Thru/Right	D	C	C	B	C	C
NB Longwood Left/Thru/Right	E	F	F	C	C	C
SB Longwood Left (defacto)	F	F	F	E	F	F
SB Longwood Thru/Right	D	D	D		D	D
Longwood Avenue at Pilgrim Road/MASCO	**NA[3]**	**B**	**B**	**NA[3]**	**D**	**D**
EB Pilgrim Left/Thru/Right	NA[3]	D	D	NA[3]	D	D
WB MASCO Left[2]	F[3]	F	F	F[3]	F	F
WB MASCO Thru/Right[2]		D	D		D	D
NB Longwood Left	A[3]	A	A	A[3]	B	B
NB Longwood Thru/Right	A[3]	A	A	A[3]	B	B
SB Longwood Left	D[3]	B	B	B[3]	B	B
SB Longwood Thru/Right	A[3]	B	B	A[3]	C	C

Table 3-18 LOS Summary Comparison (Continued)

Intersection	AM Peak Hour Operations Existing	No-Build	Build	PM Peak Hour Operations Existing	No-Build	Build
Unsignalized Intersections						
Binney Street at Francis Street						
EB Binney Left/Thru/Right	F	F	F	F	F	F
WB Binney Left/Thru/Right	F	F	F	F	F	F
NB Francis Left/Thru/Right	A	A	A	A	A	A
SB Francis Left	B	B	B	B	B	B
SB Francis Thru/Right	A	A	A	A	A	A
Binney Street at Shattuck Street						
EB Binney Thru/Right	A	A	A	A	A	A
WB Binney Thru/Left	A	A	A	A	A	A
NB Driveway Left/ Right	C	C	C	C	C	C
Binney Street at Jimmy Fund Way/BCH Driveway						
EB Binney Left/Thru/Right	B	B	B	B	B	B
WB Binney Left/Thru/Right	A	A	A	A	A	A
NB BCH Driveway Left/Thru/Right	A	A	A	A	A	A
SB Jimmy Fund Way Left/Thru/Right	A	A	A	A	A	A
Avenue Louis Pasteur at Longwood Avenue						
WB Louis Pasteur Left	F	F	F	F	F	F
WB Louis Pasteur Right	A	A	A	A	A	A
NB Longwood Thru	A	A	A	A	A	A
SB Longwood Thru	A	A	A	A	A	A
Avenue Louis Pasteur at Blackfan Circle						
EB Louis Pasteur Left	B	B	B	A	A	A
EB Louis Pasteur Thru	A	A	A	A	A	A
WB Louis Pasteur Thru	A	A	A	A	A	A
WB Louis Pasteur Right	A	A	A	A	A	A
SB Blackfan Left/Right	D	E	E	B	B	B
Palace Road at Longwood Avenue						
NB Longwood Thru/Right	A	A	A	A	A	A
SB Longwood Left/Thru	A	A	A	A	A	A

1. Approach is a single lane in the Existing and No-Build Conditions.
2. Approach is a single lane in the Existing Conditions.
3. Intersection is unsignalized in the Existing Condition, LOS for the unsignalized configuration.

Chapter 4.0

Transportation Access Plan (819 Beacon Street Project)

4.0 TRANSPORTATION ACCESS PLAN (819 BEACON STREET PROJECT)

4.1 Introduction

This chapter presents an evaluation and summary of existing and future transportation infrastructure and operations for Boston Children's Hospital's 819 Beacon Street Project. This transportation study has been developed in order to understand and mitigate the transportation impacts of the Project and to develop appropriate transportation infrastructure improvements to Boston's Fenway neighborhood. A separate transportation study has also been prepared for the proposed BCH Main Campus. This study is summarized in Chapter 3.0, Transportation Access Plan (BCH Main Campus) of this DPIR/DEIR. The 819 Beacon Street Project study specifically addresses the Scoping Determination that was issued by the Boston Redevelopment Authority after their review of the IMPNF/PNF as well as the Certificate that was issued by MEPA after submittal of the ENF, both of which were submitted in October 2012.

The Transportation Access Plan includes an analysis of the following:

- Vehicle traffic on study area roadways and intersections;
- Parking conditions;
- Loading and service activities;
- Pedestrian and bicycle operations; and
- Public transportation and private shuttle bus services.

In addition, this chapter quantifies and assesses the transportation impacts that are expected within the 819 Beacon Street Project area under future conditions.

The purposes of these analyses are to:

- Define and quantify existing transportation conditions in the Project study area as defined by the BTD and MEPA;
- Estimate the transportation impacts that will be generated under future conditions based on the anticipated Project program for the 819 Beacon Street Project;
- Develop a set of mitigation strategies and improvement measures which will help to lessen the transportation effects of future growth, and to provide improvements to the transportation infrastructure in the Fenway area; and

- Demonstrate that these transportation mitigation efforts will meet or exceed the BRA and BTD requirements, and will serve as exceptional public benefits as they relate to transportation issues.

The sections below provide an overview of the 819 Beacon Street Project and a summary of findings of the transportation analysis, including anticipated impacts, proposed mitigation, a discussion of the study methodology, and a description of the study area. Subsequent sections provide detailed discussions of existing and future conditions expected both with and without the proposed 819 Beacon Street Project. The final section of the chapter presents a detailed summary of transportation mitigation and improvement actions that Children's is committed to implementing in connection with the 819 Beacon Street Project.

4.1.1 Project Overview

As described in Section 2.3, the 819 Beacon Street Project includes the construction of an approximately 212,430 sf building with ground floor retail and office above on an existing 249 space surface parking lot. The building's main purpose will be to relocate office and administrative space that supports the Hospital's Main Campus. Children's strives to offer the best clinical care to children in its Main Campus facilities in the Longwood Medical and Academic area (LMA). To continue to offer and expand on this care, office space must be moved from the Core to other nearby locations.

The Project will include a structured parking garage to replace the 249 surface parking spaces lost due to the building construction and add 247 net new spaces (or 496 total parking spaces on-site). The net new spaces will be used to support uses within the 819 Beacon Street Project (158 spaces, or at a rate of 0.75 spaces per 1,000 sf of space developed) as well as support the needs of Children's employees working on the Main Campus (89 spaces, or at a rate of 0.41 spaces per 1,000 sf of space developed on the Main Campus—more detailed information on parking supporting the Main Campus is provided in Chapter 3, Transportation Access Plan BCH Main Campus).

A summary of the proposed 819 Beacon Street Project is presented in Table 4-1.

Table 4-1 819 Beacon Street Project Program Summary

Project Program	Building Size* (SF)
Office Space	202,950
Ground Floor Retail	9,480
Total New Construction	**212,430**

Source: Children's Hospital, Facilities and Planning
* Zoning gross square footage.

4.1.2 *Summary of Findings & Transportation Mitigation*

The additional traffic generated by the 819 Beacon Street Project will generate limited impacts to the surrounding transportation infrastructure. This is due, primarily, to the site's central location which will provide the opportunity for vehicles to make use of multiple access routes in accessing and egressing the site. To help offset these new trips, Children's is committed to providing several transportation improvements and mitigation actions in connection with the future construction of the 819 Beacon Street Project. These improvements are intended to improve the transportation impacts of employees and visitors traveling through the Fenway neighborhood, as well as to support other important transportation infrastructure initiatives that are currently being pursued by others, including the City of Boston, MassDOT, and the MBTA. Key actions are shown on Figure 4-1 and include the following:

- Children's is committed to limiting on-site parking supporting the Project to 0.75 spaces per 1,000 sf of development (158 spaces to support the Project).

- The remaining 89 new parking spaces are intended to support parking needs on its Main Campus. This parking is being developed at a rate of 0.41 spaces per 1,000 sf of development on its Main Campus (taking into consideration 76 additional net new parking spaces to be built within the LMA in the BCH Patient and Family Parking Garage).

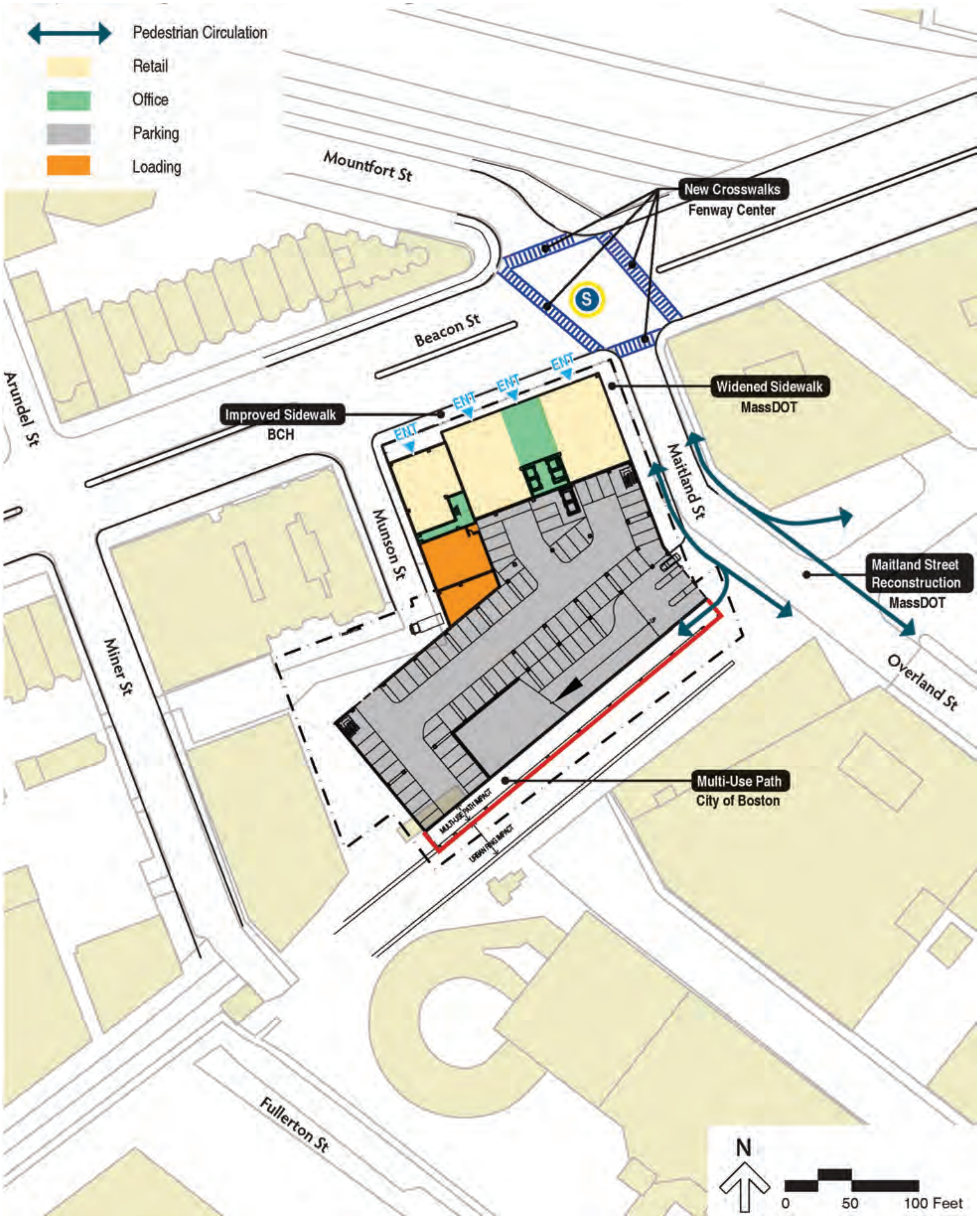
- Children's has worked proactively with MassDOT to develop a roadway plan for Maitland Street that supports the ongoing redesign of Yawkey Station and connection of this dead-end street to Overland Street. These improvements will provide for increased commuter rail use in the area (including the Project), as well as improved vehicle access to the Fenway/Kenmore area.

- Children's is committed to providing an easement through the 819 Beacon Street Project site to the City of Boston to support the future design and construction of the proposed Multi-Use Path, a shared pedestrian/bicycle corridor connecting the Emerald Necklace to the Fenway MBTA Green Line Station, the redesigned Yawkey Commuter Rail Station and onward to the future Fenway Center project.

- Children's is committed to providing an easement of land to support the potential future construction of a below-grade tunnel for MassDOT's Urban Ring project.

- Children's is committed to providing an easement of land along Maitland Street to support improved bus access and intersection alignment with Mountfort Street to support the future signalization of this intersection.

- Children's will provide bicycle storage capacity on-site to comply with the City of Boston Bicycle Guidelines.



Boston Children's Hospital

Vanasse Hangen Brustlin, Inc.

Figure 4-1
Proposed 819 Beacon Street Pedestrian Access

- Children's will continue to expand its proactive transportation demand management measures to its employees to encourage the use of transit and other alternative forms of transportation.

4.1.2.1 Parking Summary

The Project includes the construction of an above grade parking garage to provide necessary additional parking supply for the 819 Beacon Street building and to support Children's goal of accommodating those LMA employees that need to drive and park off-campus.

The garage will replace the existing 249 surface parking spaces with a new 496-space structured garage, resulting in 247 net-new parking spaces on-site. Of these net-new spaces, 158 will be allocated to supporting employees and visitors of the office and retail space in the 819 Beacon Street building (at a rate of 0.75 spaces per 1,000 sf). The remaining 89 new spaces will support Children's LMA off-campus parking efforts, allowing BCH to relocate on-campus staff parking to accommodate future patient parking needs (see Chapter 3.0 for more detailed information summarizing BCH LMA parking). Both Children's and MASCO operate shuttle service to provide quick, easy connections from the 819 Beacon Street site to the Main Campus.

Children's is committed to minimizing the number of employees that drive to work. To this end, Children's provides an extensive TDM plan for employees to encourage alternative modes of transportation to the campus, such as a 50% transit subsidy and walking/bicycling incentives. A full list of these programs is provided later in this Chapter and Chapter 3 includes a full list of these programs as they relate to the BCCB.

4.1.2.2 Traffic Impacts

A detailed traffic analysis including intersection level of service was conducted at 14 intersections (15 in the future conditions) during the morning and evening peak commuter hours. This analysis was conducted both for 2012 existing conditions and 2022 future conditions. The future conditions analysis assumes a 10-year planning horizon and considers background growth, growth and improvements attributable to other proposed area projects, and traffic generation estimates associated with the Project. Most motorists travelling to 819 Beacon Street will access the facility from its primary access gate on Maitland Street. The facility will also have some spaces that would be accessed via Munson Street, although this is a secondary access point serving only about 55 parking spaces. The results of the analysis indicate that there will be only minor changes in overall intersection LOS in the study area that are directly attributable to the 819 Beacon Street Project.

4.1.2.3 Pedestrian Access

Although an increase in pedestrian traffic at and around the Project site is anticipated, the additional pedestrians will be accommodated by the existing sidewalks and crosswalks in the area as well as the proposed multi-use path located directly adjacent to the site. The path will provide a new, off-street connection to the Fenway MBTA Station and the Emerald Necklace along the Riverway. The Project will also reconstruct sidewalks adjacent to the site on both Beacon and Maitland streets.

4.1.2.4 Loading and Service

The Project will be fitted with a loading dock off Munson Street with two enclosed bays in the basement level of the building. The dock will be accessed via Munson Street and is expected to be primarily used by delivery vans and single unit trucks. Children's will monitor loading operations at its loading dock to ensure timely operations and reduce impacts to surrounding streets.

4.1.2.5 Transportation Demand Management

Children's is committed to continuing to offer a wide array of TDM incentives as a means to reduce single occupant driving and increase use of alternative forms of transportation to access the workplace. Children's actively supports efforts to reduce auto use for employees traveling to the Hospital. Many actions to support this goal are actively employed by Children's today, including the following:

- Providing an Employee Transportation Advisor;
- Membership in MASCO's CommuteWorks TMA;
- Full support of MASCO's other on-going transportation initiatives;
- 50 percent transit pass subsidy for employees;
- Carpool assistance and incentives;
- Bicycling/walking incentives and amenities;
- Location-priced parking (i.e., offering competitive-rate parking on-campus and subsidized parking off-campus);
- Telecommuting and compressed workweeks, when feasible; and
- Promotional efforts.

Children's is committed to maintaining its employee transit subsidy of 50 percent in connection with the construction of the 819 Beacon Street Project and existing and future operations at its Core Campus. Children's will also continue to promote and improve its

TDM programs to benefit its employees and reduce traffic impacts to roadway and parking facilities within Fenway neighborhoods and the LMA. Chapter 3 also includes a full list of TDM measures as they relate to the BCCB.

4.1.2.6 Public Transportation

The Project is projected to have only a minor incremental impact on transit operations in the area by 2022. The transportation analysis assumes that future employees and visitors will have access to the many public transportation services offered by the MBTA, as well as the array of private shuttle and transportation demand management services that are offered to MASCO members.

Because there are so many public transportation options that provide service to and from the Fenway area, no single service is anticipated to be unduly affected by anticipated increases in activity because of the Project under future conditions. Consequently, the 819 Beacon Street Project transit trips are expected to affect the transit system only minimally in the future condition.

4.1.3 Methodology

The transportation analysis conforms to the BTD "Transportation Access Plans Guidelines" and uses standard methodologies such as Institute of Transportation Engineers' trip generation and local travel characteristics as defined in *Access Boston 2000-2010*.

The study was conducted in two distinct stages. The first stage (Existing Conditions) involved a survey and compilation of existing transportation conditions within the study area (defined below) including:

- An inventory of the transportation infrastructure within the defined Project study area;
- Geometric and operational characteristics of study area roadways and intersections;
- Existing traffic control at study area intersections (i.e., traffic signalization, stop signs, one-way streets, etc.);
- Area off-street and on-street parking supply;
- Pedestrian activity along study area roadways, and at study area intersections;
- Bicycle activity and accommodations;
- Public transportation options within the study area, including bus, trolley, commuter rail, and private shuttle bus options; and
- Existing parking operations currently on site.

In the second stage of the study (Evaluation of Long-Term Transportation Impacts), future transportation conditions were projected within the study area. The future No-Build condition includes an assessment of future transportation including background growth on area roadways and intersections, planned transportation infrastructure improvements, and growth related to other proposed projects within the study area (without consideration of the 819 Beacon Street Project). The future build condition assesses the no-build condition plus the 819 Beacon Street Project. Roadway, pedestrian, and transit capacity for morning and evening peak commuter periods were studied and are summarized for the following conditions:

- 2012 Existing Condition
- 2022 No-Build Condition
- 2022 Build Condition

Specific travel demand forecasts for the Project were assessed along with future transportation demands due to background traffic growth and traffic growth from other planned or approved projects within the study area. The year 2022 was selected as the horizon year for the purposes of quantifying and assessing future transportation impacts generated by the Project.

This section also quantifies the proposed mitigation and improvement actions (presented previously) to address Project-related pedestrian, parking, traffic, and public transportation impacts that have been identified. The proposed improvement actions serve as the basis for the forthcoming preparation of a Transportation Access Plan Agreement (TAPA) to be developed and executed by Children's and the BTD.

4.1.4 Study Area

The 819 Beacon Street site is located on Beacon Street in the Fenway neighborhood. The site is loosely bound by Beacon Street, Maitland Street, and Munson Street. In addition to Beacon Street, arterials serving the area include Brookline Avenue, Park Drive, Boylston Street, and Commonwealth Avenue.

The Project study area includes 14 intersections in the existing condition and 15 intersections in the future conditions. These intersections, illustrated in Figure 4-2, are listed below.

1. Park Drive/Mountfort Street
2. Beacon Street/Park Drive (Audubon Circle)
3. Beacon Street/Aberdeen Street

Figure 4-2
Project Study Area Roadways and Intersections

4. Beacon Street/Arundel Street/Miner Street

5. Beacon Street/Munson Street

6. Beacon Street/Mountfort Street/Maitland Street

7. Beacon Street/Brookline Avenue/Commonwealth Avenue/ Deerfield Street (Kenmore Square)

8. Sears Rotary (includes five intersections in the existing condition, six in the future conditions)

9. Brookline Avenue/Fullerton Street/Kilmarnock Street

10. Brookline Avenue/Overland Street

These study area intersections were evaluated in detail using standard traffic engineering analysis techniques following BTD guidelines to identify incremental impacts of future traffic growth and site-generated traffic.

4.2 Existing Conditions

Existing transportation conditions in the 819 Beacon Street study area, including roadway geometry, traffic control at study area intersections, and peak hour traffic, pedestrian, and bicycle flows are described in the following sections.

4.2.1 Study Area Intersections

The study area, previously illustrated in Figure 4-2, includes nine intersections and the Sears Rotary (containing five intersections in the existing condition, six in the future conditions) which provides a basis for determining to what extent, if any, Project traffic impacts area intersections. These intersections are described below, including general physical characteristics, geometric conditions, pedestrian facilities, and traffic control measures.

1. **Park Drive/Mountfort Street**

   The intersection is a three-leg unsignalized intersection. Mountfort Street, approaching from the east, is one-way into the intersection. The major movement at the intersection is turn to/from Park Drive to/from the Town of Brookline on Mountfort Street. All approaches are striped as a single general purpose lane, but Mountfort Street eastbound acts as two during the peak hours. No parking is allowed on either approach. Mountfort Street westbound is stop controlled, consisting of a single general-purpose lane with adjacent parking on both sides.

Sidewalks are provided adjacent to all approaches, and there is a crosswalk across Mountfort Street westbound. There is a MBTA bus stop just south of the intersection on the Park Drive approach; the stop is served by routes 47 and CT2.

In the future conditions, Mountfort Street becomes two-way for the entirety of its length. For this analysis, it is assumed that the stop sign is removed from the Mountfort Street approach and a stop sign is placed on the Park Drive approach.

2. **Beacon Street/Park Drive (Audubon Circle)**

This intersection is a four-legged intersection under four-phase traffic signal control with an exclusive push button all-pedestrian phase. Three of the four right turns from this intersection are unsignalized, channelized right turns (the exception is the eastbound Beacon Street right turn movement, which is signalized). All four approaches are divided by medians. The MBTA Green Line (C Branch) runs within the median of Beacon Street west of the intersection, going underground immediately to the west of Park Drive.

In addition to the channelized right turns, each approach consists of two general-purpose lanes, operating effectively as a shared left/through lane and a through lane; the exception is the eastbound Beacon Street approach, consisting of a shared left/through lane and two through lanes. This approach also has a u-turn slip lane just prior to the intersection. Sidewalks are provided along all intersection approaches. On-street parking is permitted on Beacon Street and on Park Drive south of the intersection. Crosswalks are provided in all directions, crossing by way of the medians and the channelized right turns islands. Pedestrians are permitted to cross during a protected pedestrian signal phase, during which no vehicular movements are permitted. Bus stops are provided on either side of Park Drive, north of the intersection, which is served by routes 47 and CT2.

In the future conditions, this intersection will be completely reconstructed. The channelized right turns will be eliminated and a third approach lane will be added to Beacon Street westbound and Park Drive northbound.

3. **Beacon Street/Aberdeen Street**

The intersection is a three-leg unsignalized intersection. Beacon Street is the major roadway traveling in the east/west direction. Both approaches on Beacon Street consist of two general-purpose lanes with adjacent parking. Aberdeen Street consists of a single general-purpose lane with parking permitted on the west side of the street. Sidewalks are provided adjacent to all approaches, although there are no crosswalks across any approach.

4. Beacon Street/Arundel Street/Miner Street

The intersection is a four-leg unsignalized intersection. Beacon Street is the major street traveling in the east/west direction. Both approaches on Beacon Street consist of two general-purpose lanes with adjacent on-street parking. Both Arundel Street, from the north, and Miner Street, from the south, consist of one general-purpose lane, adjacent parking, and are stop-controlled. Sidewalks are provided adjacent to all approaches, and crosswalks are provided at all approaches except the eastern Beacon Street leg.

5. Beacon Street / Munson Street

The intersection is a three-leg unsignalized intersection. Both approaches on Beacon Street consist of two general-purpose lanes with adjacent parking. Munson Street is a private way, consisting of a single general-purpose lane with adjacent private parking on the west side of the road. Sidewalks are provided adjacent to all approaches, although there are no crosswalks across any approach.

6. Beacon Street/Mountfort Street/Maitland Street

The intersection is a four-leg unsignalized intersection. Both approaches on Beacon Street consist of two general-purpose lanes with adjacent parking. Both Mountfort Street, approaching from the south, and Maitland Street, approaching from the north, consist of one general-purpose lane approaching Beacon Street and are stop-controlled. Parking is provided on both sides of Mountfort Street. The Maitland Street approach is on an approximate eight percent upgrade. Even though sidewalks are provided adjacent to all approaches, the only crosswalk provided is across the Mountfort Street approach.

In the future condition, a traffic signal is added to the intersection and crosswalks are provided across all approaches.

7. Beacon Street/Brookline Avenue/Commonwealth Avenue/Deerfield Street (Kenmore Square)

Kenmore Square is a five-leg signalized intersection. The Beacon Street approach is a median divided approach consisting of two right-turn lanes with adjacent metered parking. Brookline Avenue consists of two right-turn lanes with no adjacent parking. Commonwealth Avenue westbound consists of a shared through/right lane, a shared soft left/through lane, a soft left-turn lane, and a left-turn lane. The approach has adjacent metered parking. Commonwealth Avenue eastbound consists of two through lanes and a channelized right with no adjacent parking. Deerfield Street consists of one travel lane, restricted to right turns only at Commonwealth Avenue. Metered angular parking is provided on the east side of

Deerfield Street. Sidewalks are provided adjacent to all approaches. Pedestrians cross concurrently with other phases. MBTA service is provided at Kenmore Station, just east of the intersection. The station is serviced by the Green Line (B, C, and D Branches) and bus routes 8, 19, 57, 60, and 65.

8. Sears Rotary

The Sears Rotary is a circular grouping of five intersections (four signalized and one unsignalized). Roadway widths vary on each side of the Rotary, ranging from four to six lanes. The Rotary operates in a counterclockwise, one-way direction with the exception of Brookline Avenue which is two-way.

The Rotary is to be completely reconstructed as part of the Army Corps of Engineers' Muddy River Restoration Project. The Muddy River Project will alter how many of the intersections within the Sears Rotary operate via roadway realignments, land addition/removal, additional signalized intersections, and operational changes. The Muddy River Project will also signalize the only existing unsignalized intersection and create an additional new, signalized intersection within the Rotary.

The five existing and one proposed Sears Rotary intersections are described below. The descriptions include the existing operations as well as the effects the Muddy River Restoration Project will have on each intersection.

Brookline Avenue/Park Drive/Boylston Street

The intersection is a signalized intersection making up part of the greater Sears Rotary. This intersection operates with its own traffic controller owned by the Division of Conservation and Recreation but maintained by the City of Boston. In the existing condition, the Brookline Avenue eastbound approach has two through lanes and two soft right-turning lanes. All left turners must take a jughandle at the previous intersection onto Park Drive. Brookline Avenue westbound has two through lanes and one right-turn lane. Park Drive has four lanes, two through lanes, a shared left/through lane, and a shared hard/soft right-turn lane. Boylston Street has an exclusive soft left-turn lane and a general-purpose lane. There is also a slip lane for vehicles turning onto Brookline Avenue eastbound. Pedestrians cross on concurrent phases. On-street parking is permitted along the east side of the Park Drive approach and along both north and south sides of the east Boylston Street leg. Bus stops are located on both sides of Brookline Avenue directly to the east of the intersection which serve routes 8, 19, 60, and 65.

In the future, the existing jug handle will be eliminated and left turns from Brookline Avenue eastbound onto Park Drive will be permitted resulting in a changed eastbound approach geometry consisting of a left-turn lane, one through lane to Brookline Avenue and two right-turn movements onto Boylston Street. The

Brookline Avenue westbound approach will continue to operate with three approach lanes. Boylston Street will be striped as two lanes but continue to operate with three westbound approach lanes when there is heavy traffic. The Park Drive approach will maintain four approach lanes, but will be allotted additional green time to allow for a new concurrent pedestrian crosswalk on the west side of the intersection.

Park Drive/Landmark Center Driveway

This is a signalized intersection making up part of the greater Sears Rotary. The intersection operates with its own traffic controller owned by the Division of Conservation and Recreation but maintained by the City of Boston. In the existing condition, Park Drive has two through lanes and two left-turn lanes. The Landmark Driveway has a through lane and a right-turn lane. Crosswalks are provided across all legs except on the west side of the intersection. There is no on-street parking with the rotary.

With the Muddy River Project, this intersection will be relocated just south of its existing location to allow for a westbound connection from the Riverway to be accommodated. The northbound Park Drive approach will continue to operate with two lanes to Park Drive and two lanes to the Riverway as it does today. The Landmark Center driveway will operate with two exiting lanes.

Riverway/Park Drive Northbound (future conditions only)

This is a new intersection to be constructed as part of the proposed Muddy River Project. It will control the northbound flow from the Rotary. The intersection will have two approaches. The eastbound Riverway approach will consist of two right-turn lanes and the northbound Park Drive approach will consist of two through lanes. Traffic control at this intersection will be closely coordinated with its adjacent two intersections. A crosswalk is to be provided across Park Drive, south of the intersection, only.

Riverway/Park Drive Westbound

This is a signalized intersection with two approaches. The southbound Park Drive approach consists of two through lanes and a channelized right-turn lane. The westbound Riverway approach consists of three through lanes and two channelized left-turn lanes, also under the same traffic signal control. Crosswalks are provided across all approaches except the westbound through approach. Islands are provided between the channelized right-turn lane and the through lanes on the southbound approach, between the channelized left-turn lanes and the through lanes on the westbound approach, and between the Riverway and Park Drive to serve as pedestrian refuges.

With the Muddy River Project, this intersection will be completely reconstructed. The channelized turns will be removed and a new, eastbound approach from the Riverway will be added. This new approach will allow vehicles on the Riverway to turn northbound on Park Drive without traveling around the entire rotary.

Riverway/Park Drive Southbound

This two-approach unsignalized intersection currently operates as a merge in the existing conditions. The Riverway approaches from the west with three lanes and Park Drive approaches from the east with three lanes. These two roadways merge into the four lane southbound Riverway approach to the Brookline Avenue/Fenway/Riverway intersection. A crosswalk is provided across the Riverway approach, but is approximately 150 feet before the intersection.

The Muddy River Project will signalize this intersection and reduce both approaches to two lanes each. Crosswalks are proposed across both approaches at the intersection.

Brookline Avenue/Fenway/Riverway

This intersection is a signalized intersection making up the southwest corner of the Sears Rotary. This intersection also operates with its own traffic controller owned by the Department of Conservation and Recreation and maintained by the City of Boston. In the existing conditions, Brookline Avenue eastbound has two through lanes and one shared through/right lane. Brookline Avenue westbound has two through lanes. The Riverway has an exclusive left lane, a shared left/through lane, an exclusive through lane, and an exclusive right lane. Pedestrians are accommodated by an exclusive pedestrian phase. All approaches have crosswalks except on the east side of the intersection. MBTA bus stops are located on both sides of Brookline Avenue, west of the intersection, served by routes 8, 47, 60, and 65.

This intersection will also undergo a complete reconstruction as part of the Muddy River Project. The existing number of lanes will be maintained on all approaches. With the elimination of the jug handle, all traffic destined to Park Avenue northbound will now use Brookline Avenue eastbound. Pedestrians will be accommodated by concurrent pedestrian crossings.

9. Brookline Avenue/Fullerton Street/Kilmarnock Street

The intersection is a four-way signalized intersection. The Brookline Avenue approaches provide a shared through/right-turn lane and an exclusive left-turn lane. The eastbound left-turn operates with a lead protected phase. The Kilmarnock Street approach consists of one general-purpose lane while the Fullerton Street approach provides a shared left-turn/through lane and an exclusive right-turn lane. The right turners have a green arrow during the Brookline Avenue eastbound left lead phase. Metered parking is provided along both sides of Brookline Avenue to the east of the intersection, and along the south side of the street to the west of the intersection. Parking is prohibited on both sides of Kilmarnock Street and Fullerton Street. Bus stops are located on both sides of Brookline Avenue directly to the east of the intersection which serve routes 8, 19, 60, and 65. Pedestrians are accommodated in concurrent pedestrian phases. Crosswalks are provided across all approaches of the intersection.

10. **Brookline Avenue/Overland Street**

The intersection is a three-leg unsignalized intersection. Brookline Avenue is the major roadway traveling in the east/west direction. Both approaches on Brookline Street consist of one general-purpose lane with adjacent parking. Overland Street consists of a single general-purpose lane in each direction with parking permitted on each side. Sidewalks are provided adjacent to all approaches, and a crosswalk is provided across Overland Street.

4.2.2 Study Area Roadway and Intersection Conditions

An extensive transportation data collection program was conducted which included conducting peak hour turning movement counts (TMCs) from 7:00-9:00 a.m. and 4:00-6:00 p.m. at the 10 existing study area intersections. TMCs for the study area intersections were conducted in May 2012. The TMCs included vehicles (passenger and heavy vehicles), pedestrians, and bicycles. The intersection TMCs were used to establish traffic networks for Existing (2012) Conditions. From the turning movement counts, the study area's traffic peak hours were determined to be 7:45 to 8:45 a.m. and 4:45 to 5:45 p.m. for the morning and evening peaks, respectively.

Existing (2012) peak hour traffic volumes are shown in Figures 4-3 and 4-4 for the a.m. and p.m. peaks, respectively. Detailed traffic count data sheets are provided in Appendix C.

4.2.3 Crash Analysis

Accident data was investigated for the study area. Data was obtained from MassDOT Highway Division for the most recent three-year period available (2008 through 2010) for the intersections within the study area. As part of this analysis, MassDOT's crash rate at each of the intersections was calculated in order to compare against the district average. The 2010 MassDOT average crash rates for signalized and unsignalized intersections for District 6 [the MassDOT district designation for Boston] are 0.77 and 0.57 crashes per million entering vehicles, respectively. Crash results are summarized in Table 4-2. Detailed accident data are presented in Appendix C.

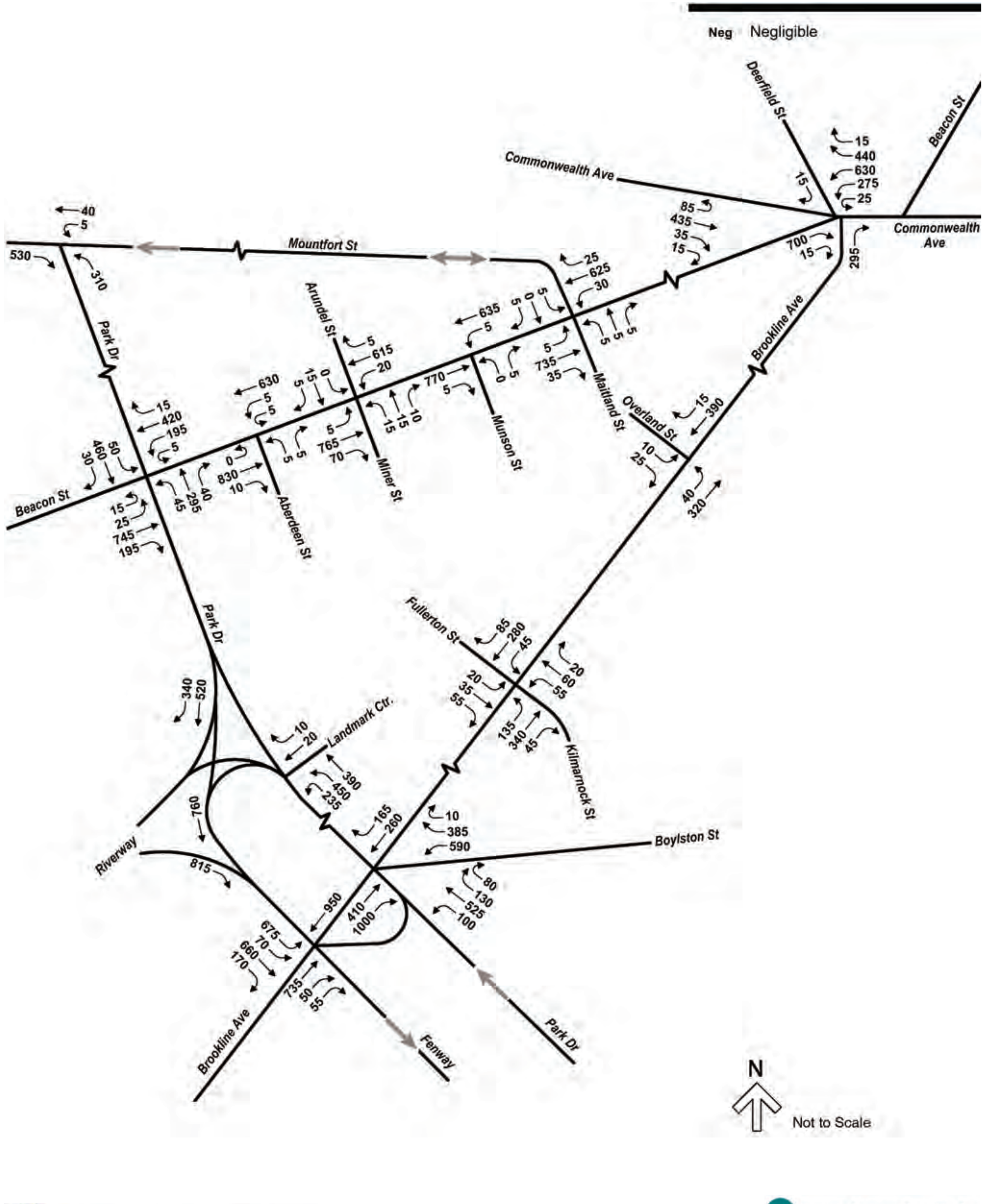


Figure 4-3
2012 Existing Condition Morning Peak Hour (7:45-8:45 AM) Traffic Volumes

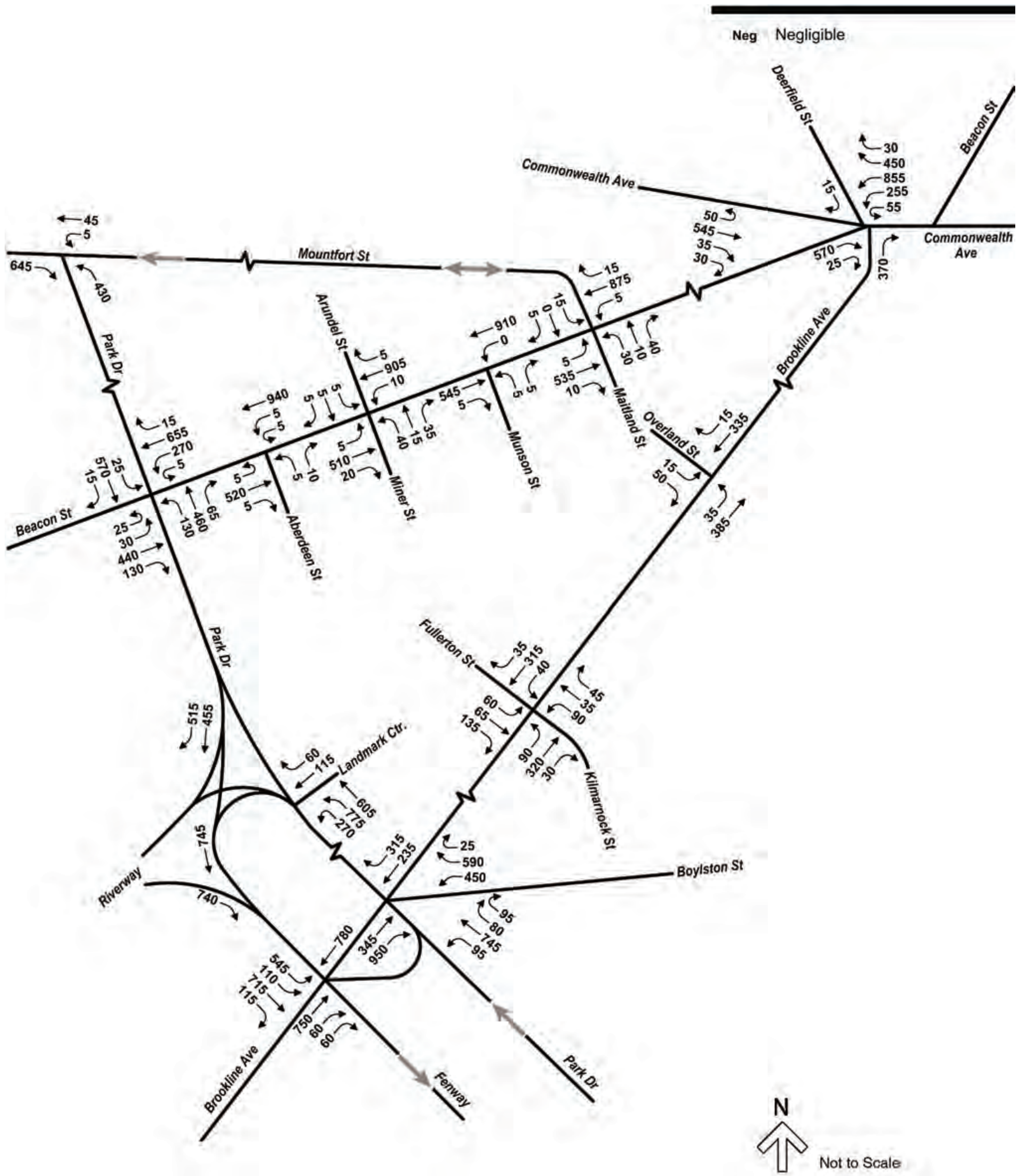


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Figure 4-4
2012 Existing Condition Evening Peak Hour (4:45-5:45 PM) Traffic Volumes

Table 4-2 819 Beacon Street Study Area Vehicular Crash Summary (2008 - 2010)

Location	Crash Rate (crashes per million entering vehicles)	Prominent Type of Collision
Park Drive/Mountfort Street	0.36	Sideswipe
Audubon Circle	0.66	Angular
Beacon Street/Aberdeen Street	0.05	Angle
Beacon Street/Arundel Street/Miner Street	0.36	Unknown
Beacon Street/Munson Street	0.06	Rear-End
Beacon Street/Mountfort Street/Maitland Street	0.05	Sideswipe
Kenmore Square	0.35	Sideswipe
Brookline Avenue/Boylston Street/Park Drive	0.86	Angle
Park Drive/Landmark Center Driveway	0.50	Angle
Riverway/Park Drive Westbound	None Reported	
Riverway/Park Drive Southbound	0.11	Rear-End
Brookline Avenue/Fenway/Riverway	0.53	Angle
Brookline Avenue/Fullerton Street/Kilmarnock Street	0.33	Angle
Brookline Avenue/Overland Street	0.10	Unknown

Source: MassDOT

Of the reported accidents, most (81 percent) occurred during a weekday outside of the traditional peak hours of 7:00-9:00 a.m. and 4:00-6:00 p.m. The majority (72 percent) of the reported incidents occurred during dry pavement conditions. The severity ranged from personal injury to exclusively property-damage. No fatalities were indicated by the data.

Overall, about 40 percent of the reported crashes with known crash types were angle (the front of car collides with the side of another car, commonly referred to as a T-Bone collision) while another 40 percent were either rear-end or sideswipe collisions.

The only intersection over the District average is Brookline Avenue at Boylston Street/Park Drive. This signalized intersection experienced 41 vehicle crashes during the three-year period. Of the 41 vehicle crashes, 37 percent were angle type collisions while rear-end, sideswipes and single vehicle crashes each made up about 15 percent of the total collisions. The average crash rate for the analysis period is 0.86.

4.2.4 Site Parking

The 819 Beacon Street site is currently an active 249-space off-campus parking lot owned by Children's. During weekdays, the lot is used exclusively by BCH employees who work primarily on the Main Campus in the LMA. Many employees that park in this lot work hours that require them to commute to and from work outside of typical peak hours. Due to this, much of the lot is full before the peak hour of the study area roadway network. Table 4-3 is a summary of the 819 Beacon Street Lot accumulation on a typical weekday.

Table 4-3 819 Beacon Street Parking Lot Accumulation/Departures

Time			Vehicles Entering	Vehicles Exiting	Occupied Spaces	Percent Occupied
Morning Accumulation						
Before		6:30			48	19%
6:30	to	6:45	35	0	83	33%
6:45	to	7:00	16	0	99	40%
7:00	to	7:15	15	1	113	45%
7:15	to	7:30	10	0	123	49%
7:30	to	7:45	14	0	137	55%
7:45	to	8:00	3	0	140	56%
8:00	to	8:15	22	0	162	65%
8:15	to	8:30	27	0	189	76%
8:30	to	8:45	23	0	212	85%
Evening Departures						
Before		4:00			176	71%
4:00	to	4:15	0	12	164	66%
4:15	to	4:30	0	16	148	59%
4:30	to	4:45	0	12	136	55%
4:45	to	5:00	0	9	127	51%
5:00	to	5:15	0	11	116	47%
5:15	to	5:30	0	7	109	44%
5:30	to	5:45	0	6	103	41%

During the morning accumulation period, approximately 55 percent of the 819 Beacon Street Lot is full before the 7:45 to 8:45 a.m. morning commuter peak hour. During the peak hour, approximately 75 vehicles, or 30 percent of the total capacity, enter the Lot. The remaining spaces fill after the peak hour, with the Lot typically becoming fully occupied by 9:30 a.m.

During the evening egress, approximately 45 percent of the Lot is unoccupied by 4:45 p.m., the start of the evening peak hour. Only about 33 vehicles, or approximately 15 percent of the Lot's capacity, exit the parking lot during the 4:45 to 5:45 p.m. network peak hour. There were 103 vehicles observed still parked in the lot at 5:45 p.m.

The lot is also used during off-peak periods, providing parking for Red Sox games and public parking supporting area restaurant and entertainment venues in the Fenway area.

4.2.5 Area-wide Parking

This section identifies the parking supply and demand relationship for the study area, including both off-street and on-street parking. There are both off-street parking facilities and on-street parking spaces located within the study area. Parking space summaries are based on field observations made in October and November 2012.

4.2.5.1 Off-Street Parking Facilities

Off-street parking areas within a quarter-mile of the Project site are provided in Table 4-4 and are shown in Figure 4-5. In total, there are 1,947 spaces provided in these facilities in addition to the on-campus spaces listed previously. Mid-day, there is generally little available parking at these facilities.

Table 4-4 Existing Nearby Off-Street Parking Supply (November 2012)

Facility/Location Name	Spaces
Kenmore/Maitland Lots	409
BU - Granby Street	150
BU - Kenmore Lot	116
Hotel Buckminster Garage	60
Lansdowne Garage	340
1330 Boylston Street Garage	179
Tasty Burger	43
120R Brookline Avenue Lot	75
Burger King	40
Trilogy Garage	135
Landmark Center	400

Source: VHB

4.2.5.2 On-Street Parking

On-street parking located in the area around 819 Beacon Street is illustrated in Figure 4-6. The majority of nearby on-street parking is metered spaces, including along Beacon Street north of the site and Brookline Avenue south of the site. Residential parking is also available along many of the minor streets perpendicular to Beacon Street.

4.2.6 Pedestrians

Pedestrian activity near the Project site is significant, with many intersection approaches having greater than 100 pedestrians crossing during each peak hour. Peak hour pedestrian counts are presented in Figures 4-7 and 4-8. The busiest intersections for pedestrian crossings are described below.

- Audubon Circle processes more than 250 pedestrian crossings during the morning peak hour and close to 500 crossings during the evening peak hour.
- More than 350 pedestrians cross the intersection of Beacon Street at Arundel Street/Miner Street during the evening peak hour.
- During the morning peak, more than 650 pedestrians cross at Kenmore Square and approximately 1,500 pedestrians cross during the evening peak hour.

1 Kenmore/Maitland Lots	409
2 BU-Granby Lot	150
3 BU-Kenmore Lot	116
4 Hotel Buckminster Garage	60
5 Landsdowne Garage	340
6 1330 Boylston Street	179
7 Tasty Burger	43
8 120R Brookline Avenue	75
9 Burger King	40
10 Trilogy	135
11 Landmark Center	400
Total	**1,947 Spaces**

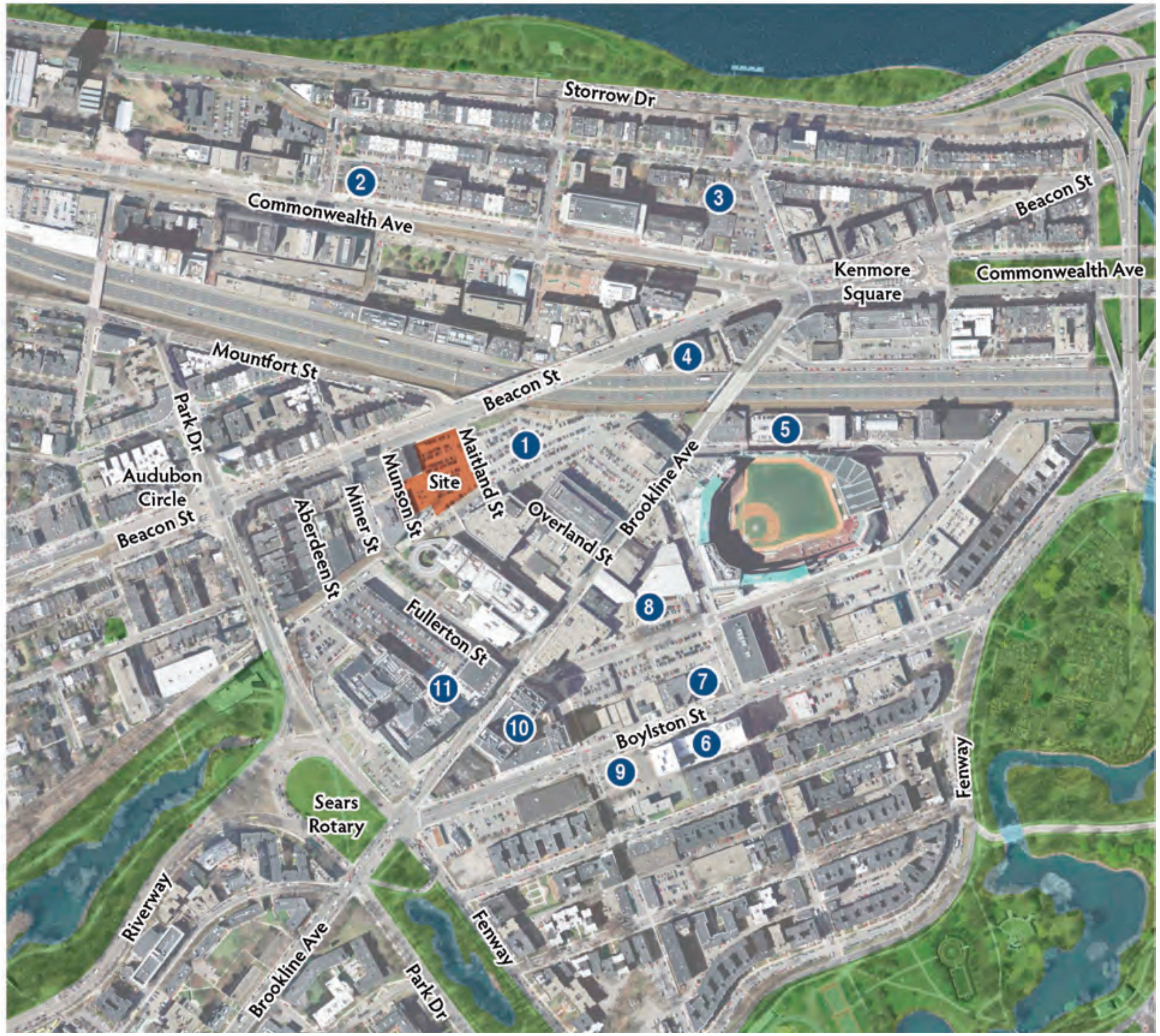

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Figure 4-5
Summary of Nearby Off-Street Parking Facilities

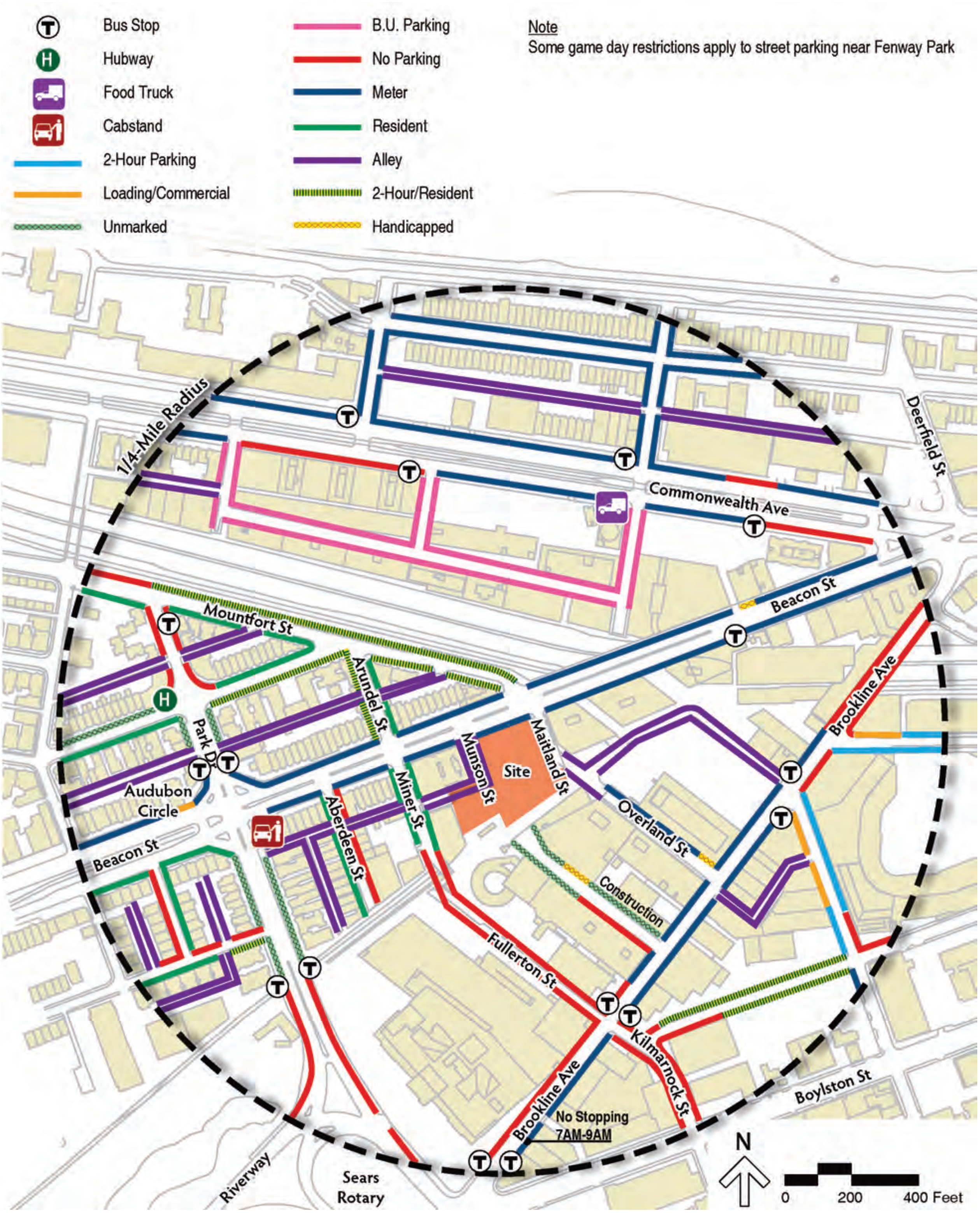

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Figure 4-6
Summary of Nearby On-Street Parking Regulations

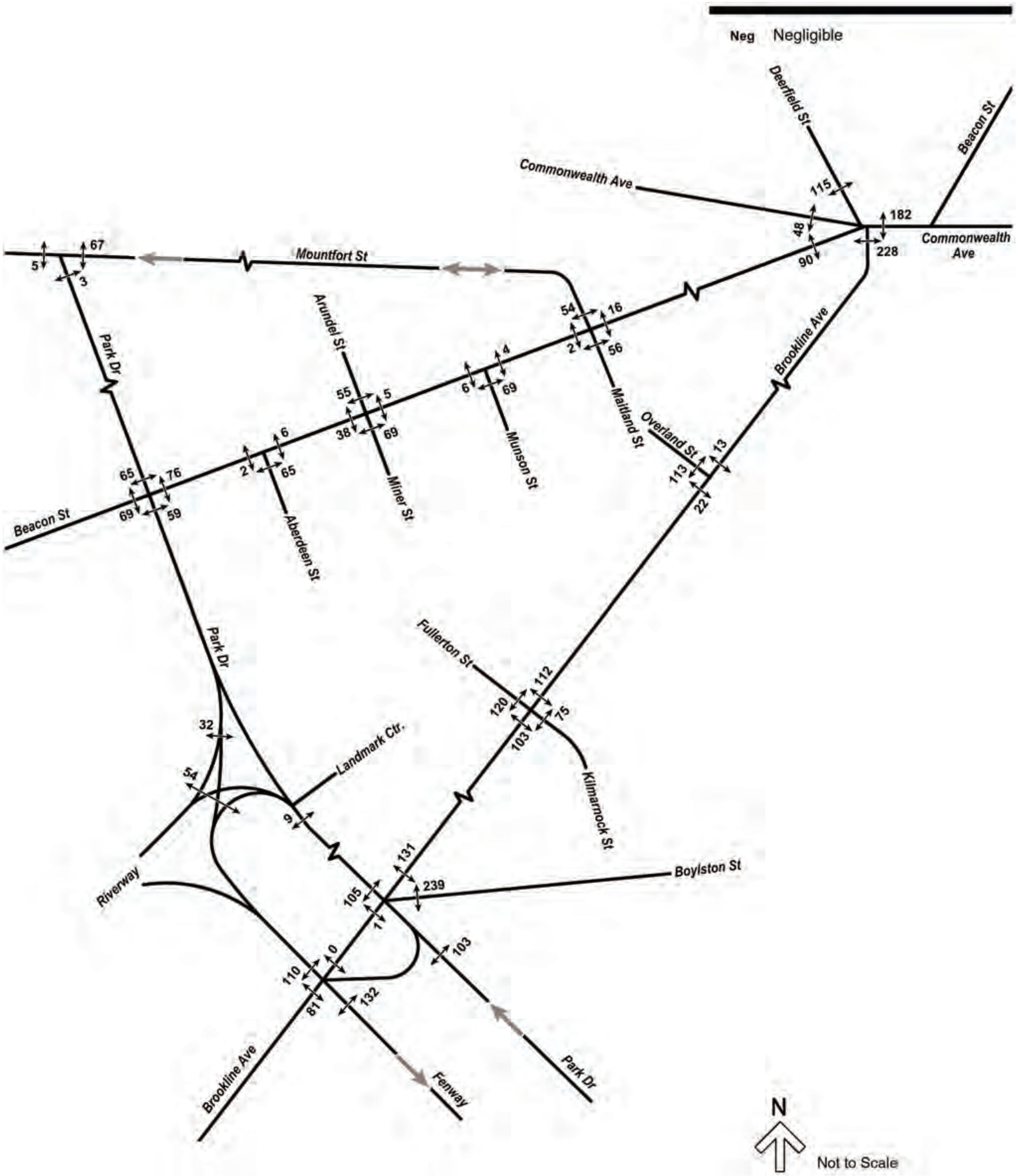

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Figure 4-7
2012 Existing Condition Morning Peak Hour (7:45-8:45 AM) Pedestrian Volumes

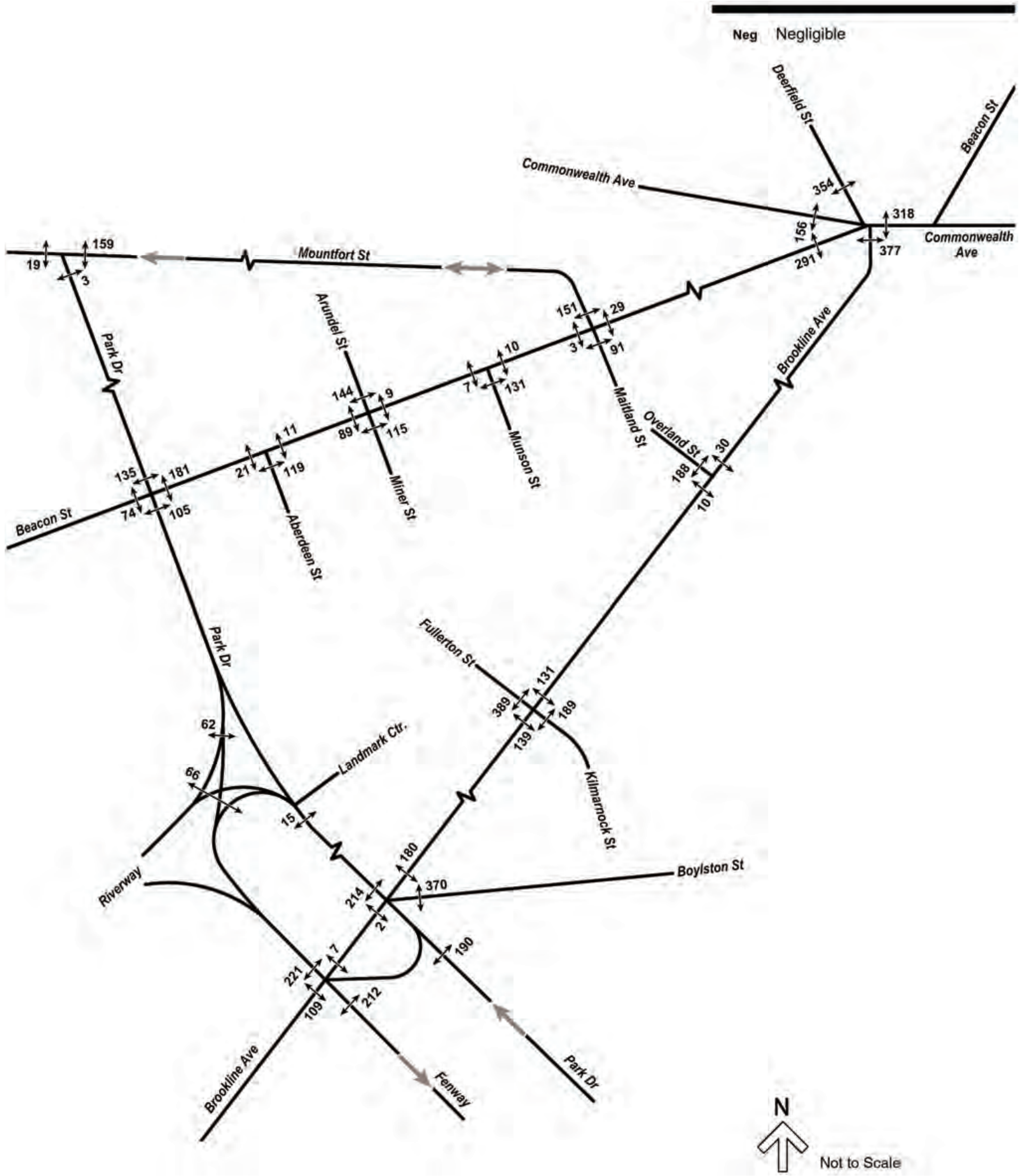

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Figure 4-8
2012 Existing Condition Evening Peak Hour (4:45-5:45 PM) Pedestrian Volumes

- Brookline Avenue at Riverway/Fenway has approximately 325 pedestrian crossings during the morning peak hour and 550 during the evening peak hour.

- Approximately 475 pedestrians cross the intersection of Brookline Avenue at Park Drive/Boylston Street during the morning peak hour and more than 750 pedestrians cross during the evening peak hour.

- The intersection of Brookline Avenue at Fullerton Street/Kilmarnock Street process more than 400 and 850 pedestrian crossings during the morning and evening peak hours, respectively.

Around the immediate site, pedestrians are well accommodated by a ten foot sidewalk along Beacon Street and seven foot sidewalk along Maitland Street. Crosswalks and pedestrian ramps are provided at most approaches, as described by intersection in Section 4.2.1. Many of the surrounding signalized intersections have exclusive pedestrian phases to minimize conflicts with vehicles and bicyclists.

4.2.7 Cyclists

There are five-foot-wide bike lanes along both sides of Beacon Street. These lanes extend from Kenmore Square to the east and to the intersection with Arundel Street/Miner Street to the west before converting into sharrows. This bike facility is heavily used, with over a hundred cyclists using the facility during the morning and evening peak hours. Bicycle volumes for the study area intersections are presented in Figures 4-9 and 4-10. There are five Hubway stations within walking distance of the site, located at Kenmore Square, Landmark Center, and the intersections of Brookline Avenue/Overland Street, Park Drive/Buswell Street and Boylston Street/Yawkey Way.

4.2.8 Public Transportation

The Project site, situated between the LMA and Kenmore Square, is well served by public transportation as shown in Figure 4-11. The site has easy and quick access to MBTA bus routes, MASCO shuttle routes, MBTA subways, and MBTA commuter rail lines. Many options that are available to 819 Beacon Street are also available to the BCCB as presented in Chapter 3.0. The public transit options serving the 819 Beacon Street site are described below.

4.2.8.1 MBTA Bus Route Service

There are seven bus routes within a quarter-mile radius of the Project site, as listed in Table 4-5. Route 57/57A is described below, while the other routes are described previously in Section 3.2.7.1.

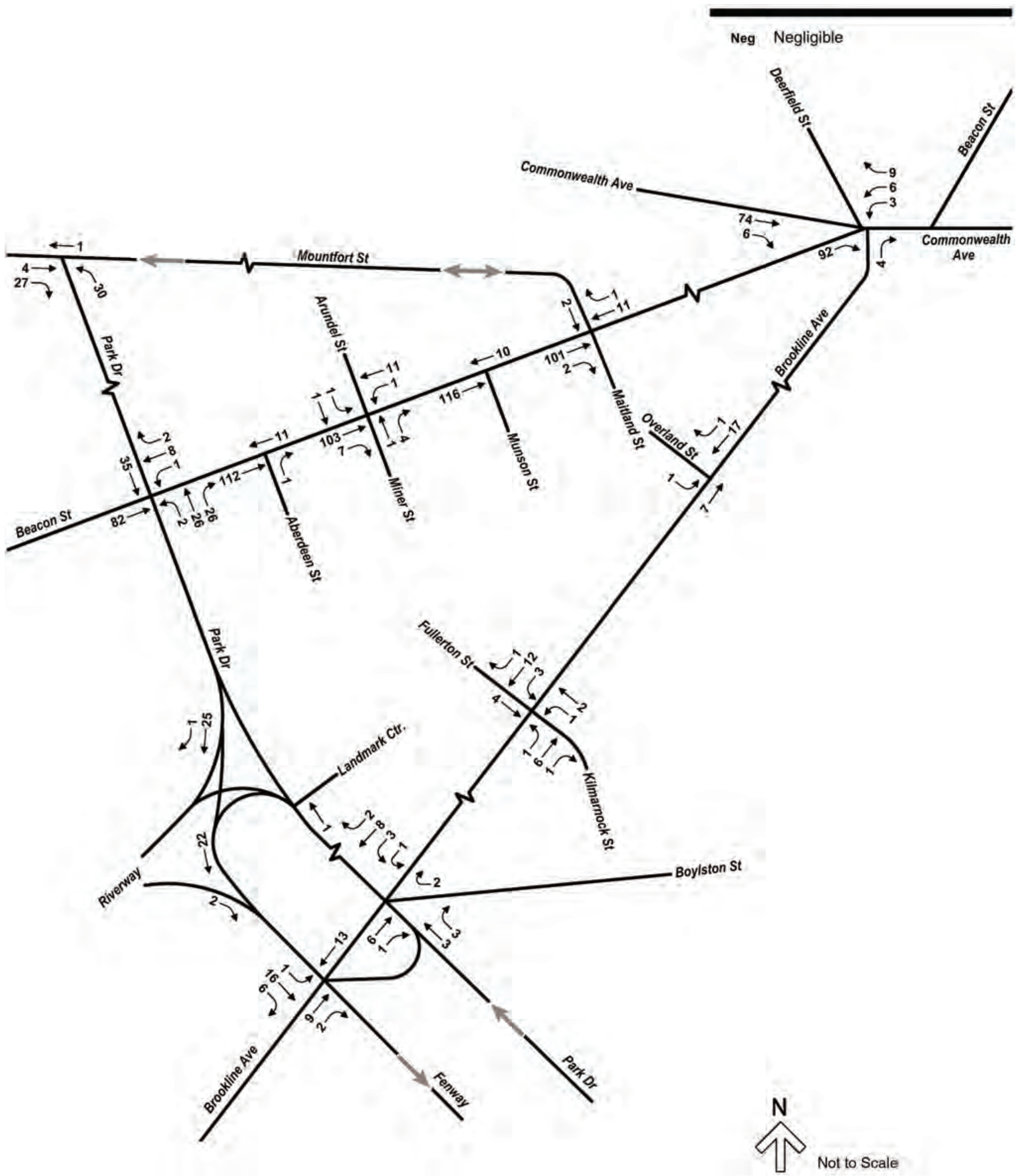

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Figure 4-9

2012 Existing Condition Morning Peak Hour (7:45-8:45 AM) Bicycle Volumes

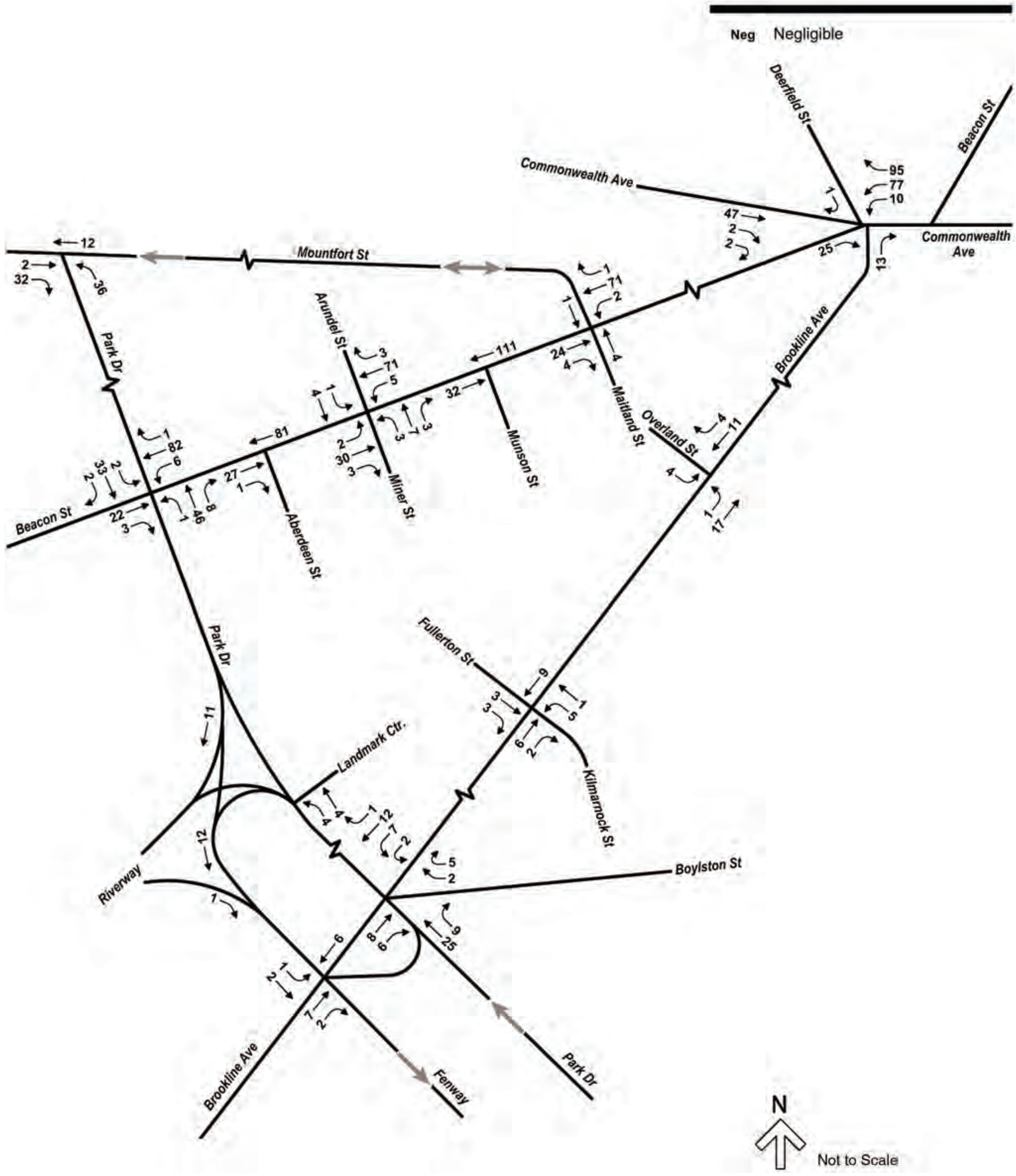

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Figure 4-10

2012 Existing Condition Evening Peak Hour (4:45-5:45 PM) Bicycle Volumes

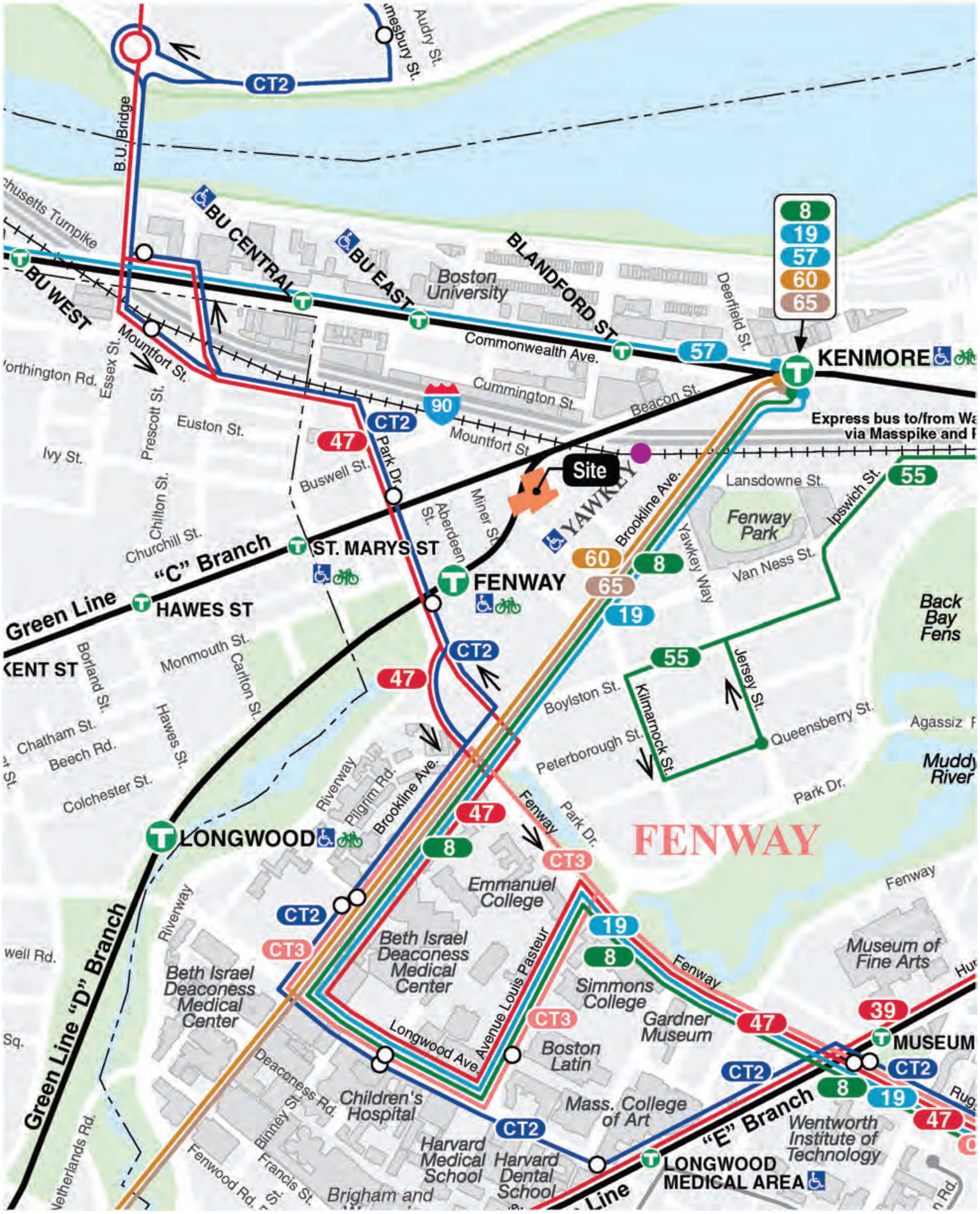

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Figure 4-11
Public Transportation

Table 4-5 MBTA Bus Service

Route	Origin	Destination	AM Peak Hour Headways	PM Peak Hour Headways
CT2	Sullivan Station	Ruggles Station	20-25	20-25
8	UMass/Harbor Point	Kenmore Station	13	20
19	Fields Corner Station	Kenmore Station or Ruggles Station	14	25
47	Central Square	Broadway Station	10-20	20
57/57A	Watertown Yard or Oak Square	Kenmore Station	5-6	6
60	Chestnut Hill	Kenmore Station	24	27
65	Brighton Center	Kenmore Station	12	20-25

Source: MBTA, October 2012

Route 57/57A connects Watertown Yard/Oak Square to Kenmore Station. It operates on 5- to 6-minute headways during the morning peak, 6-minute headways during the evening peak, and 10-minute headways during off-peak periods. This route provides connections to the MBTA Green Line via Kenmore Station. The route runs from 4:33 a.m. to 1:20 a.m. on weekdays, 4:33 a.m. to 1:21a.m. on Saturdays and from 6:00 a.m. to 1:20 a.m. on Sundays.

4.2.8.2 MASCO Shuttle Services

MASCO operates eight shuttle routes connecting its member institutions to their satellite campuses and parking areas. Many of these shuttles are free for employees and students of MASCO members; all that is needed is a valid ID. Description of the routes can be found in Section 3.2.7.2. There are three shuttle routes with stops within one-quarter mile of the 819 Beacon Street site:

- Fenway Combined Shuttle;
- HSPH Landmark Shuttle; and
- M2 Cambridge-Harvard Shuttle (inbound service only).

Figure 4-12 depicts MASCO shuttle routes serving the site.

4.2.8.3 MBTA Subway Services

The site is conveniently located near four MBTA Green Line stations. These stations include:

- Kenmore Station - B, C, and D Branches
- Blandford Street Station – B Branch

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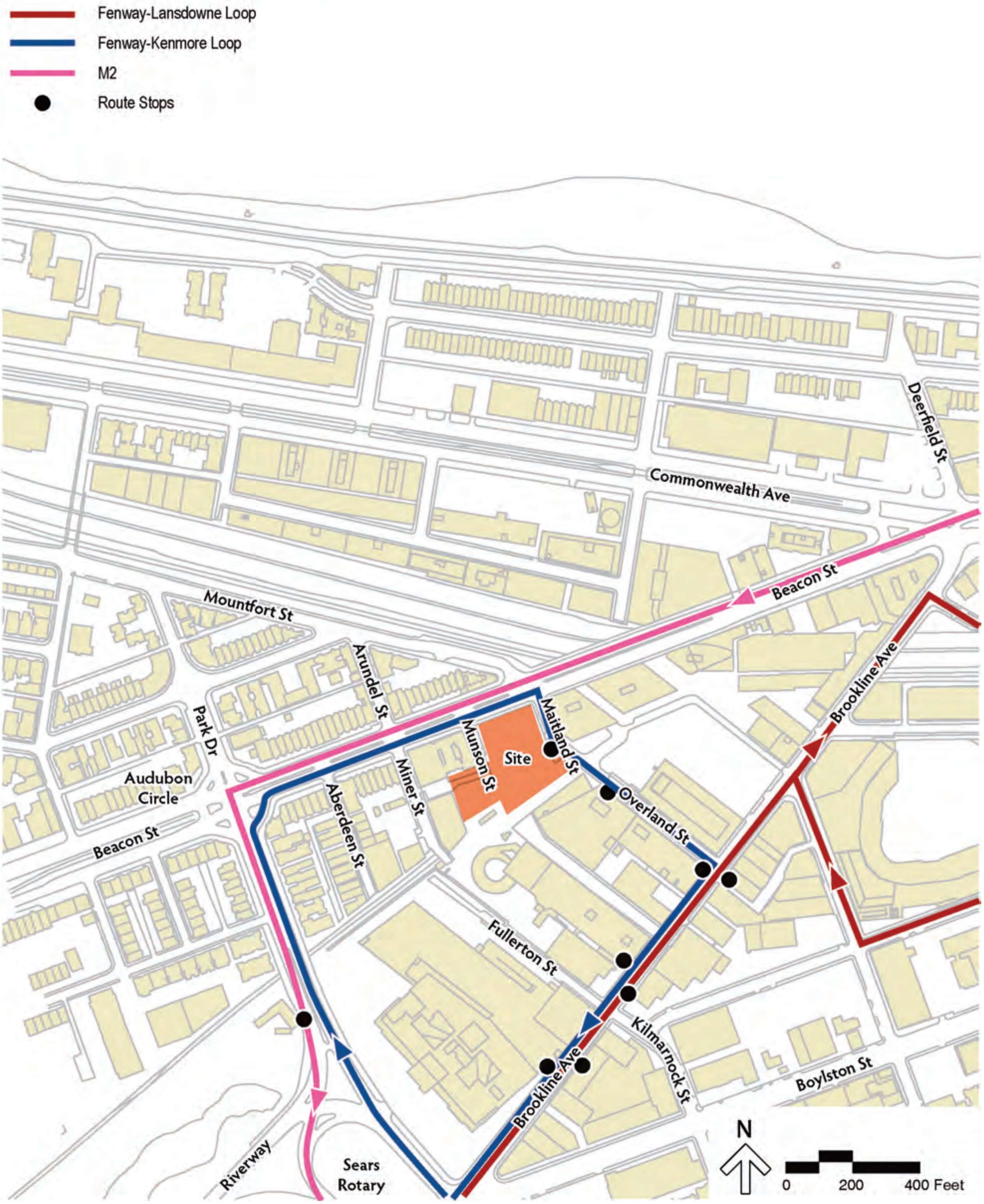

Figure 4-12
MASCO Shuttle Bus Service

- Boston University East Station - B Branch
- Fenway Station - D Branch

A description of the MBTA Green Line D Branch can be found in Section 3.2.7.3. The B Branch (Boston College) runs from Government Center Station down Commonwealth Avenue to Boston College in Chestnut Hill. The B Branch runs from 5:01 a.m. to 12:52 a.m. on weekdays, with six minute headways during the peak hours. The C Branch (Cleveland Circle) runs from North Station down Beacon Street to Cleveland Circle. The C Branch operates from 5:01 a.m. to 12:50 a.m. on weekdays, with seven minute headways during the peak hours.

4.2.8.4 MBTA Commuter Rail

The 819 Beacon Street site is adjacent to the Yawkey Commuter Rail Station. Yawkey Station, on the Framingham/Worcester Line, is currently under renovation to become a full-service commuter rail station. The Framingham/Worcester Line operates at approximately 30-minute headways during the peak hours, however just more than half of peak hour trains stop at the Yawkey Station. Once renovations are complete, all Framingham/Worcester line trains will stop at the Yawkey Station. In addition, the Commonwealth of Massachusetts has a recent agreement with the CSX Corporation to buy and operate the rail tracks from Boston to Worcester allowing the MBTA to increase service by three additional trips to/from Worcester per day in each direction.

Due to the availability of Children's and MASCO's shuttle routes, commuters are able to easily connect to the Project site from other MBTA stations that are not within walking distance, such as Ruggles, Back Bay, North, and JFK/UMass Stations.

4.3 Evaluation of Long-Term Transportation Impacts

This section describes the future transportation infrastructure in the Fenway neighborhood including the impacts of the 819 Beacon Street Project. Included in this section are a summary of area transportation infrastructure improvements that are currently planned, are under design, or are under construction by private developers, the City of Boston, Commonwealth of Massachusetts, and the MBTA. Also in this section is a detailed summary of the development of both the future 2022 No-Build and 2022 Build Conditions, including a detailed analysis of morning and evening peak hour traffic activity and operations, parking supply and demands, loading and service activities, future pedestrian and bicycle activities, and future transit options. The development and evaluation of the 2022 No-Build and Build Conditions has been conducted to help identify additional roadway, pedestrian, and transit improvements that may be needed to mitigate identified transportation impacts generated by the 819 Beacon Street Project.

4.3.1 Area Transportation Improvements

The Fenway neighborhood of Boston has continued to grow in popularity over the past decade and has attracted new development to the area. As a result, many transportation infrastructure initiatives are currently being put in place in connection with other nearby development projects by private developers, the City of Boston, Commonwealth of Massachusetts, and the MBTA and are described in detail below.

4.3.1.1 Area Developments

There are currently 12 approved or planned development projects that are expected to have an influence on 2022 peak hour traffic volumes within the study area. Except where specifically noted, the anticipated transportation impacts have been included within the analyses of the 2022 No-Build Condition. A description of each approved or planned project is provided below.

- **Fenway Center (Parcel 7 Air Rights)** is a BRA approved 1.3-million sf mixed-use development on approximately 3.63 acres. The site includes the area over the Massachusetts Turnpike between the Beacon Street overpass to the west and the Brookline Avenue overpass to the east, as well as the area to the east of Beacon Street between the Massachusetts Turnpike and Maitland Street that is currently used for surface parking. The project is a mixed-use project with four new buildings, the tallest of which will be 23 stories. It will include approximately 803,800 total sf, including 308 residential units, approximately 479,500 sf of commercial space and ground and first floor amenity retail uses. In addition, the project program also includes approximately 1,290 parking spaces, of which 700 will be shared-use and 590 private.

- **1282 Boylston Street** is a BRA approved 337,000 gross sf mixed-use development. The project includes 210 residential units, 99,000 sf of office space, 15,000 sf of ground floor retail space, and underground parking for approximately 295 vehicles.

- **Fenway Limited Service Hotel** is an extended stay, limited service hotel located at the corner of Brookline Avenue and Burlington Avenue. The project includes the construction of an approximately 121,000 sf building comprised of 183 extended stay rooms and includes 6,300 sf of first floor retail space along Brookline Avenue. The building will also provide approximately 45-50 underground parking spaces on one-level which will be accessible to hotel and retail customers and the public. The project is currently under construction with an expected completion date of early to mid 2013.

- **Fenway Triangle** is a BRA approved two-building, mixed-use development located between Brookline Avenue and Boylston Street, just east of Kilmarnock Street. The project includes 290 residential units, 225,000 sf of office space and 165,000 sf of retail space. Parking for both buildings will be accommodated in a single, 575-space underground garage.

- **Boston University (BU) Student Services Center**, recently completed, is a 99,600 sf six-story student services center located at the corner of Bay State Road and Deerfield Street. The building contains 64,000 sf of student services related office space and 36,000 sf of University dining facilities. Since the development is built on a former 69-space surface parking lot and no parking will be provided at the site, the trip generation of the project is expected to be negative. In order to remain conservative in this study, these negative BU trips were not applied to the 2022 No-Build Condition.

- **Stonewall Audubon Circle** is a BRA approved 66-unit, 86,000 sf residential development located at the end of Miner Street. The project will include 50 parking spaces in two subsurface parking levels.

- **Boston Children's Hospital Main Building Expansion** is an approximately 82,750 sf expansion of Children's Main Building. The building will include inpatient beds in addition to new hospital and emergency care space. No new parking is included in the project. The building is currently under construction, with a completion date of summer 2013.

- **Massachusetts Mental Health Center Redevelopment** is a four building, 633,960 sf project on Fenwood Road. During the first phase of the development, the Binney Street Building and Fenwood Inn (approximately 77,540 sf) were constructed and are now occupied. Subsequent phases include the 197,750 sf Residential Building and the 358,670 sf Brigham and Women's Building. Construction completion is anticipated for 2021. The Brigham and Women's Building will include a 406-space underground parking garage.

- **Longwood Research Institute** (formerly known as the Longwood North Research Center) is a 440,000 sf state-of-the-art research and laboratory facility that is planned to include 330 underground parking spaces. Construction of the LRI by Children's is expected to commence in the forthcoming few years—although a specific date of commencement is not known. For this study, occupation in 2022 has been assumed.

- **Longwood Center**, previously permitted as the Joslin Diabetes Center Expansion, includes a 350,000 sf life science building with ground floor retail space. Parking will be provided for approximately 290 vehicles. This project is currently under construction, with an expected completion date of fall 2014.

- **Landmark Center North** is an addition project totaling 308,337 sf at the Landmark Center. The project includes built-in flexibility for both office and laboratory use to be built over the existing garage of the existing Landmark Center. No new parking is proposed on site.

- **Winsor School Campus Projects** includes a two phased development on the Winsor School LMA campus. Phase 1 of the redevelopment includes the construction of the 110,000 sf Center for Performing Arts and Wellness on the site of the existing gymnasium along Pilgrim Road. This phase will also include a temporary, 101 parking space surface lot at the corner of Longwood and Brookline avenues. Phase 2 will include the privately developed Longwood Avenue Project, a 300,000 sf mixed-use building built on the location of the temporary parking lot. The building will contain a 225-space, below-grade parking facility. This phase also includes the construction of a separate, single level, 148-space below-grade parking garage for use by Winsor School.

4.3.1.2 Development-Related Improvements

Over the next several years, many important transportation improvement and mitigation actions are planned to be put in place to support transportation access in and around the Fenway neighborhood. This section lists those improvements that are expected to be constructed and fully operational in connection with other area development projects under the 2022 No-Build and 2022 Build Conditions. Figure 4-13 illustrates these area access improvements.

- The intersection of Beacon Street at Mountfort Street/Maitland Street will become signalized as part of the Fenway Center project. The signal will improve intersection operations and will allow pedestrians and Urban Ring buses through this intersection more efficiently. The signalization will also improve other nearby unsignalized intersections by introducing additional gaps within the Beacon Street traffic flow. The system is proposed to be incorporated into the City of Boston's coordinated signal system and traffic monitoring system.

- The conversion of Mountfort Street from one-way to two-way operation between Park Drive and Buswell Street is also proposed as part of the Fenway Center project. This will allow vehicles a more direct route to Beacon Street and remove some traffic from the Audubon Circle intersection. This corridor would also serve as a useful secondary access/egress route during Red Sox games. It is assumed that for this improvement to be implemented, the stop sign will be removed on Mountfort Street and added to the Park Drive approach.

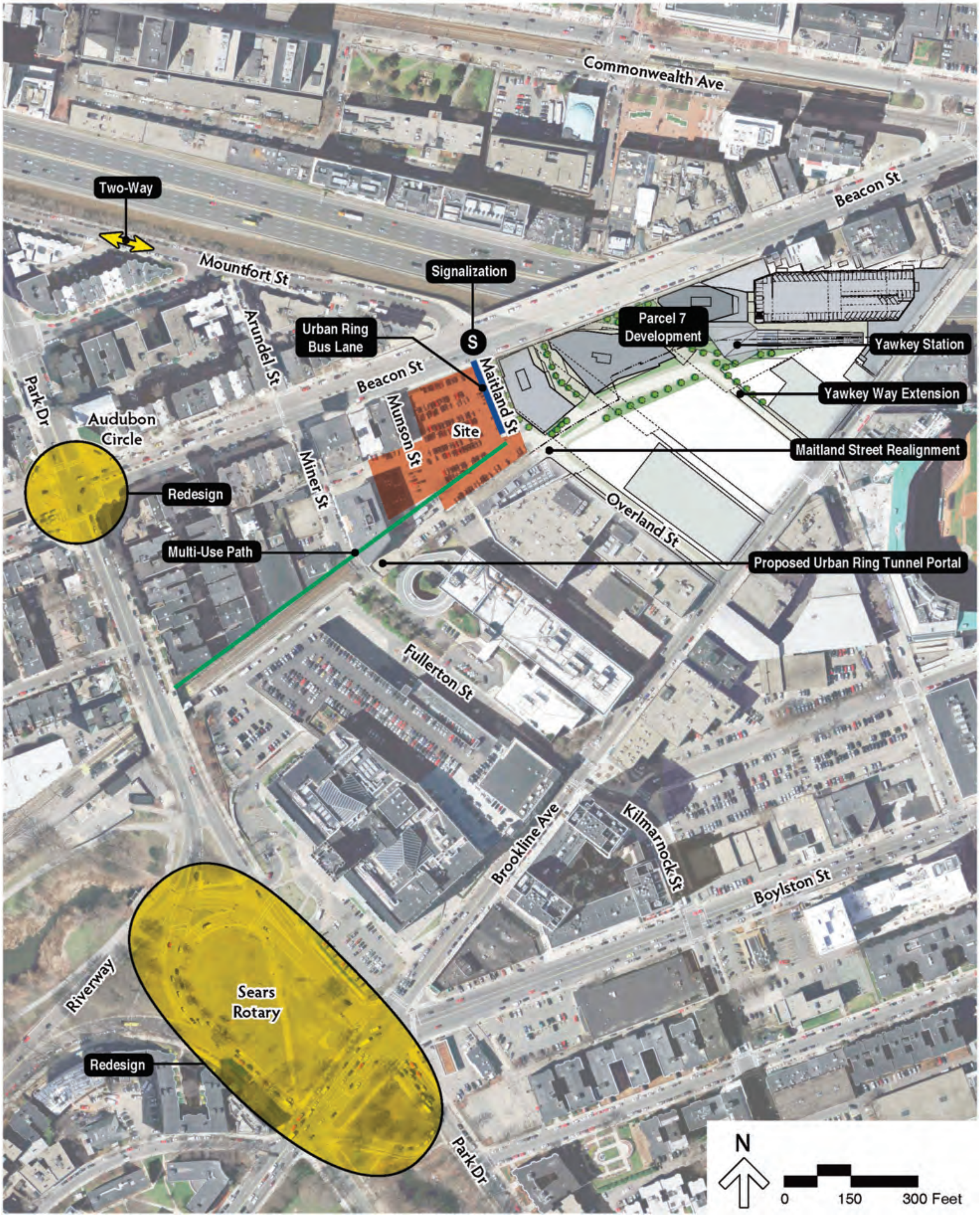

Figure 4-13
Area Access Improvements

- Maitland Street will be reconstructed with an improved horizontal and vertical alignment as part of the Fenway Center project. Maitland Street has been designed to align with Overland Street to complete a new connection between Beacon Street and Brookline Avenue diverting vehicles from Park Drive.

- A mid-block pedestrian crossing is proposed on Beacon Street, just east of the bridge over the Massachusetts Turnpike. The crossing will connect Commonwealth Avenue, BU's Metcalf Science Center and associated open space with the proposed 819 Beacon Street Project and the MBTA's Yawkey Station.

- Yawkey Way is to be extended from Brookline Avenue to the MBTA's Yawkey Station creating a focused and organized route for both pedestrians and vehicles accessing the station to/from Brookline Avenue and Fenway Park. Yawkey Way Extension will be constructed to provide ample curbside space for multiple bus berths, and a bus transfer point within 50 feet of the improved Yawkey Station for private shuttle buses and, potentially, MBTA bus routes.

4.3.1.3 MASCO Initiatives

Children's is a proactive member of MASCO, a community organization that works to improve access and overall quality of life to its member organizations. A description of the various initiatives and improvements that MASCO is working on are described in Section 3.3.1.3. Although many improvements are focused on problems in the LMA, many initiatives, such as the Ultra-Low Sulfur Diesel Fuel Bus Program and the LMA Sign Program, extend into and improve the neighboring areas.

4.3.1.4 City/State-Sponsored Traffic Improvements

The City of Boston and the Commonwealth of Massachusetts propose several mitigation projects that will positively impact the Fenway area, each of which is in the process of implementation or planning. These improvements are described in Section 3.3.1.4 and are shown in Figure 4-13.

4.3.1.5 MBTA Sponsored Improvements

The MBTA is continuously looking to improve the reliability of the service they offer and the access to this service. Currently, the MBTA has three projects that will increase service in the proposed Project area or improve upon existing service. The projects are described previously in Section 3.3.1.5.

4.3.1.6 Other Area Wide Planning Initiatives

In addition to the planned projects described above, the City has a future Fenway area vision that includes a new connection from Boylston Street to Beacon Street. This new connection will be made in three phases: the Richard B. Ross Way connection from

Boylston Street to Van Ness Street; the Maitland Street realignment with Overland Street that connects Beacon Street to Brookline Avenue; and a future third project that connects these two proposed roadways from Brookline Avenue to Van Ness Street. This new connection will help to alleviate traffic in the Fenway area by reducing traffic volumes traveling through the Sears Rotary and Audubon Circle, as well as along Boylston Street. It will also provide a much needed pedestrian link between the two Fenway neighborhoods: Fens area neighborhood and Audubon Circle neighborhood. Currently, there is no timetable for this last connection and to be conservative is not included in the transportation analysis of the future conditions.

4.3.2 2022 No-Build Condition

The 2022 No-Build Condition was developed and analyzed to evaluate future transportation conditions in the study area, such as background traffic growth and site-specific traffic growth, without taking into consideration anticipated growth due to the construction of 819 Beacon Street. This future analysis year represents a 10-year horizon from the existing conditions.

The 2022 No-Build Condition includes anticipated increases in traffic activity on study area roadways due to continued general area-wide traffic growth; approved projects in the area that are currently under construction; and other projects proposed for construction that have had, at a minimum, either a PNF or an IMPNF filed on their behalf with the BRA, formally initiating the City of Boston Article 80 Development Review process for their respective project(s).

A two-step process has been utilized to estimate the increases in traffic activity in the Project study area under the 2022 No-Build Condition. Under Step 1 of this process, general area-wide traffic growth was estimated based on regional traffic growth trends. Therefore, an annualized growth rate was developed and applied to existing condition peak hour traffic volumes to reasonably account for future through traffic growth in the area. Under Step 2, peak hour traffic generation estimates for specific projects that are either currently under construction, are approved, or are planned projects that have formally initiated the City of Boston Article 80 Development Review process were added to the resultant volumes produced under Step 1 to generate peak hour traffic volume estimates for the 2022 No-Build Condition. A more detailed discussion of this process is presented below.

4.3.2.1 Step 1 - Background Growth

As mentioned previously, in order to account for general background traffic growth, an annualized growth rate needed to be developed and applied to the existing condition peak hour traffic volumes to reasonably account for future through traffic growth in the Project study area.

An annual growth rate of 0.5 percent per year between 2012 and 2022 was applied to the 2012 Existing Condition. This rate has been used in support of recently approved Fenway area development projects and is a conservative rate of growth given the historical trend of traffic growth in the area (which has been flat for approximately the past 10 years).

4.3.2.2 Step 2 - Site-Specific Growth

The following projects have been included in the 2022 No-Build Condition due to anticipated site-specific background traffic growth:

- Fenway Center
- 1282 Boylston Street
- Fenway Limited Service Hotel
- Fenway Triangle
- Stonewall Audubon Circle
- Boston Children's Hospital Main Building Expansion
- Massachusetts Mental Health Center Redevelopment
- Longwood Research Institute
- Longwood Center
- Landmark Center North
- The Winsor School Campus Projects

4.3.2.3 2022 No-Build Peak Hour Traffic Volumes

The 2022 No-Build Condition weekday morning and evening peak hour traffic volumes were developed by adding the general background traffic growth (step one) and the traffic volumes associated with the site-specific projects (step two) to the 2012 Existing Condition volumes as previously described. The infrastructure changes to the roadway network, as previously discussed, are also included within this analysis condition. Figures 4-14 and 4-15 illustrate the morning and evening peak hour traffic volume networks for the 2022 No-Build Condition.

4.3.3 2022 Build Condition

The 2022 Build Condition was developed in order to evaluate future transportation conditions in the study area with the proposed 819 Beacon Street building in place. The 2022 study year represents a 10 year planning horizon. The Build Condition takes into

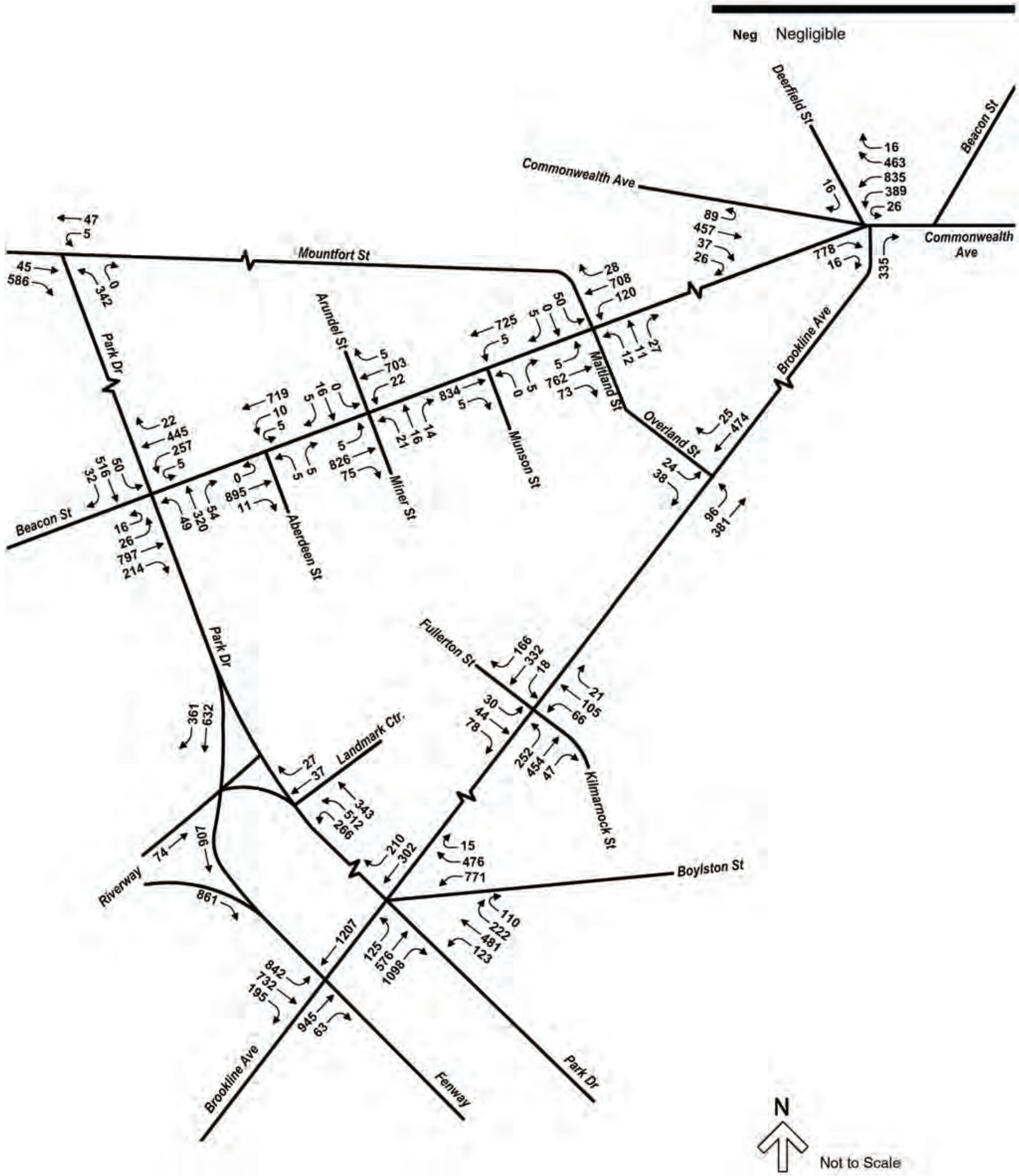

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Figure 4-14
2022 No-Build Condition Morning Peak Hour (7:45-8:45 AM) Traffic Volumes

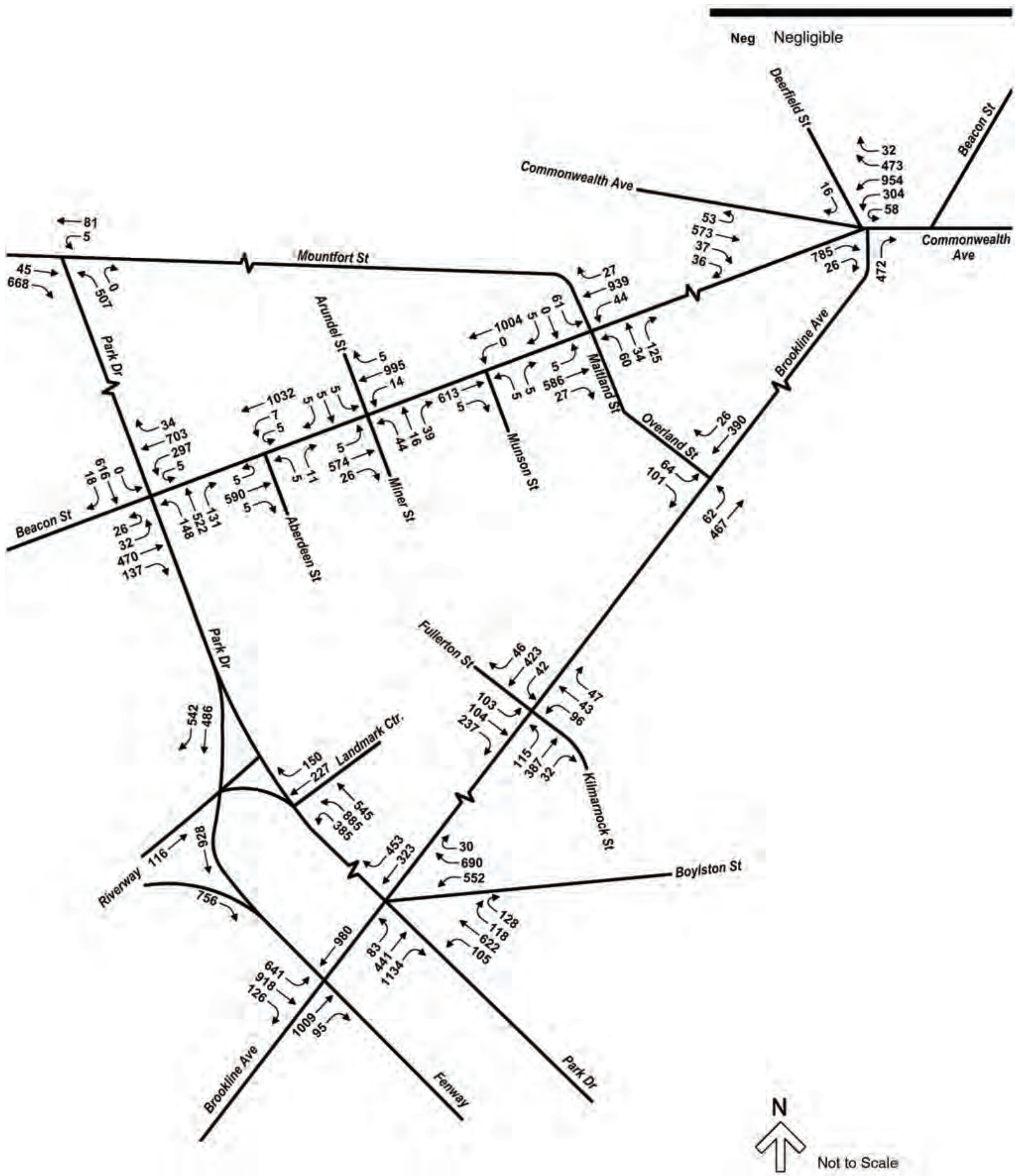

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Figure 4-15

2022 No-Build Condition Evening Peak Hour (4:45-5:45 PM) Traffic Volumes account the changes and growth established as part of the 2022 No-Build Condition presented previously, and also accounts for the changes that will occur with the 819 Beacon Street Project, physically and in terms of transportation operations. Section 4.4 includes the transportation operations analysis for vehicular operations at study area intersections.

4.3.3.1 Trip Generation

Future trips to the site will be grouped into one of three categories: existing trips that will be maintained, new trips generated by the additional off-campus parking for Children's Main Campus employees, and new trips generated by the proposed 819 Beacon Street building's office/retail space. A description of each of these groups' trip generation is described below.

The existing 249 parking spaces on site are to be replaced in-kind within the Project. Since these trips currently exist, they are already included in the existing and no-build traffic network. Therefore, these replacement spaces are excluded from future trip generation calculations.

Additional off-campus Children's employee parking will be provided in the proposed parking garage. Similar to the existing off-campus parking spaces that currently occupy the site, the proposed parking garage will contain 89 spaces for the Children's off-campus employee parking. It is assumed that these spaces will follow the same accumulation as the current surface parking lot, as presented previously in Section 4.2.4.

The remaining trips to and from the site are associated with the proposed office/retail space. To assess the impact of the proposed building, trip estimates were based on standard ITE trip rates published in ITE's *Trip Generation Manual* (8th Edition). ITE's Land Use Code 710-General Office Building and 820-Shopping Center were used to estimate the new trips generated by the Project. In total, Children's is proposing the construction of approximately 202,950 sf of office space and 9,480 sf of ground floor retail.

Table 4-6 summarizes the total number of unadjusted (raw ITE) vehicle trips to be generated for an average weekday, and morning and evening peak hours for the proposed office/retail space. Person trips, the number of persons in vehicles, are also provided. The peak-hour person trip estimate assumes 1.2 persons per vehicle for work trips and 1.8 persons per vehicle for shopping/errand trips. These values are based on the 2009 National Household Survey prepared by the U.S. Department of Transportation that estimates the average number of persons per vehicle by trip purpose. These trip results are for private vehicles only and do not account for alternative modes of transportation.

Table 4-6 ITE Trip Generation Results (New Office/Retail Trips)

	Unadjusted ITE Vehicle Trips (vehicles)	Person Trips (persons)
Daily Total	2,672	3,432
AM Peak Hour		
Inbound	296	358
Outbound	43	54
Total	338	411
PM Peak Hour		
Inbound	68	91
Outbound	270	334
Total	338	426

As shown in Table 4-6 the proposed building (office/retail space) is anticipated to generate 2,672 daily unadjusted vehicle trips. According to ITE rates, the building is expected to generate 338 unadjusted vehicle trips during both the morning and evening peak hours, respectively. Person trip generation is slightly higher since some vehicles will carry more than one person.

Mode Share Adjustment

To account for the alternative modes of transportation available in Boston, mode splits were applied to the person trip results presented previously in Table 4-6. The auto mode split includes all private vehicle based trips including taxis. Mode splits for the Project are based on BTD Guidelines for Area 4 and are shown in Table 4-7.

Table 4-7 Mode Splits by Land Use Category

Mode	Office		Retail	
	Peak Hour	Daily	Peak Hour	Daily
Automobile	37%	44%	33%	33%
Public Transit	38%	32%	31%	21%
Walk/Bike/Other	25%	24%	36%	46%

Source: BTD Guidelines, Zone 4

The mode share, shown in Table 4-7, is applied to person trips, shown in Table 4-6, to calculate the trips generated by the project. Results of the office/retail space trip generation estimates are shown in Table 4-8.

Table 4-8 Proposed Building (Office/Retail Space) Trip Generation

Time Period/Direction	Walk/Bike/Other	Transit	Vehicle
Daily			
Inbound	486	512	568
Outbound	486	512	568
Daily Total	**972**	**1,024**	**1,136**
AM Peak Hour			
Inbound	91	135	110
Outbound	14	20	16
AM Total	**105**	**155**	**126**
PM Peak Hour			
Inbound	26	33	25
Outbound	87	125	100
PM Total	**113**	**158**	**125**

Source: ITE Trip Generation, 8th Edition

To calculate the trip generation for the entire Project, trips due to the additional Children's off-campus employee parking needed to be added to the estimated vehicular trips presented in Table 4-8. It was assumed that the proposed new off-campus parking spaces would operate under the same accumulation pattern as the existing surface parking lot, described in Section 4.2.4. The vehicle trips associated with the proposed additional 89 off-campus employee spaces is presented below in Table 4-9.

Table 4-9 Proposed Off-Campus Employee Parking Trip Generation

Time Period/Direction	Percentage	Vehicle Trips Generated
Morning/Inbound		
Arrive during peak hour	30%	27
Arrive during non-peak hour	70%	62
Morning Total	**100%**	**89**
Evening/Outbound		
Exit during peak hour	15%	13
Exit during non-peak hour	85%	76
Evening Total	**100%**	**89**

The total Project trip generation, comprised of the 819 Beacon Street building and the additional off-campus employee parking trips generation, is presented in Table 4-10.

Table 4-10 Project Trip Generation

Time Period/Direction	Walk/Bike/Other	Transit	Vehicle
Daily			
Inbound	486	512	657
Outbound	486	512	657
Daily Total	**972**	**1,024**	**1,314**
AM Peak Hour			
Inbound	91	135	137
Outbound	14	20	16
AM Total	**105**	**155**	**153**
PM Peak Hour			
Inbound	26	33	25
Outbound	87	125	113
PM Total	**113**	**158**	**138**

4.3.3.2 Trip Distribution

The anticipated trip distribution patterns are based on BTD Guidelines for trips to/from Area 4, which encompasses the Project study area. Generated trips were distributed according to 'trips ending' in Area 4, since the two Project land uses do not produce trip origins.

The majority of the vehicle trips travel on Beacon Street/Commonwealth Avenue, Park Drive/Fenway, or Riverway to reach the site. Six percent of the trips live and work in the BTD Area 4. These local trips were assigned to the Back Bay Neighborhood of Area 4 since it is likely that residents working and living in Audubon Circle or the Fens neighborhood would walk to work and not generate a vehicle trip. Most motorists travelling to the 819 Beacon Street Building will access the facility from its primary access gate on Maitland Street. The facility will also have a secondary access point on Munson Street which will serve approximately 55 parking spaces.

The trip distribution used for the transportation analysis is summarized in Table 4-11 and shown in Figure 4-16.

Table 4-11 Trip Distribution

Route	Percent
Mountfort to/from North	9%
Beacon/Commonwealth to/from East	38%
Park/Fenway to/from South	17%
Brookline to/from West	7%
Riverway to/from West	22%
Beacon to/from West	7%
TOTAL	**100%**

Source: BTD Guidelines, Area 4

4.3.3.3 2022 Build Condition Peak Hour Traffic Volumes

The 2022 Build Condition weekday morning and evening peak hour traffic volumes were developed by adding the Project-generated trips (represented in Figures 4-17 and 4-18) to the 2022 No-Build Condition traffic networks. Figures 4-19 and 4-20 present the resulting 2022 Build Condition traffic volume networks for the morning and evening peak hours.

4.3.3.4 Public Transportation

The Project will generate approximately 155 and 158 new transit trips during the morning and evening peak hours, respectively (see Table 4-10). These trips will be distributed amongst the MBTA buses, subway, and commuter rail, as well as MASCO and Children's shuttles. The overall impact to the transit system is expected to be minimal due to the central location of the 819 Beacon Street site. The variety of these services will disperse in all directions and not limit transit access to the site along any single corridor or service line.

Children's will continue to promote public transportation for its employees at 819 Beacon Street by maintaining a 50 percent transit subsidy for its staff. The cost of passes is deducted on a pre-tax basis, resulting in an additional cost savings to employees. Currently, over 4,275 employees are enrolled in this program. The Hospital also offers the "CommuteSwap" program through CommuteWorks. This program allows an employee to give up their parking spot for three months and receive a subsidy to buy a transit pass and pay for parking at transit stations.

Children's will provide on-site information regarding public transportation in the area. This includes posting transit schedules and maps in the new building and online.

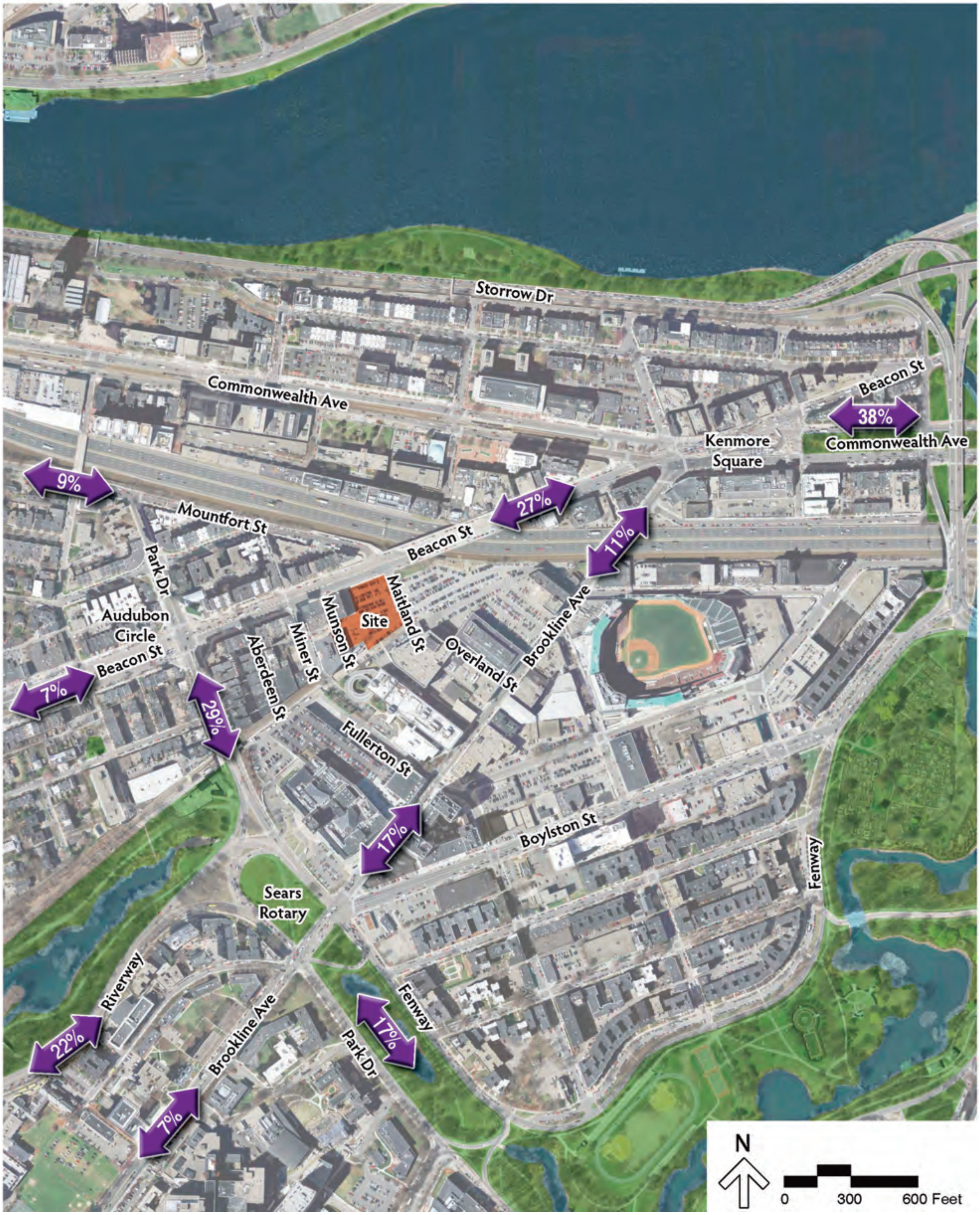

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Figure 4-16
Trip Distribution

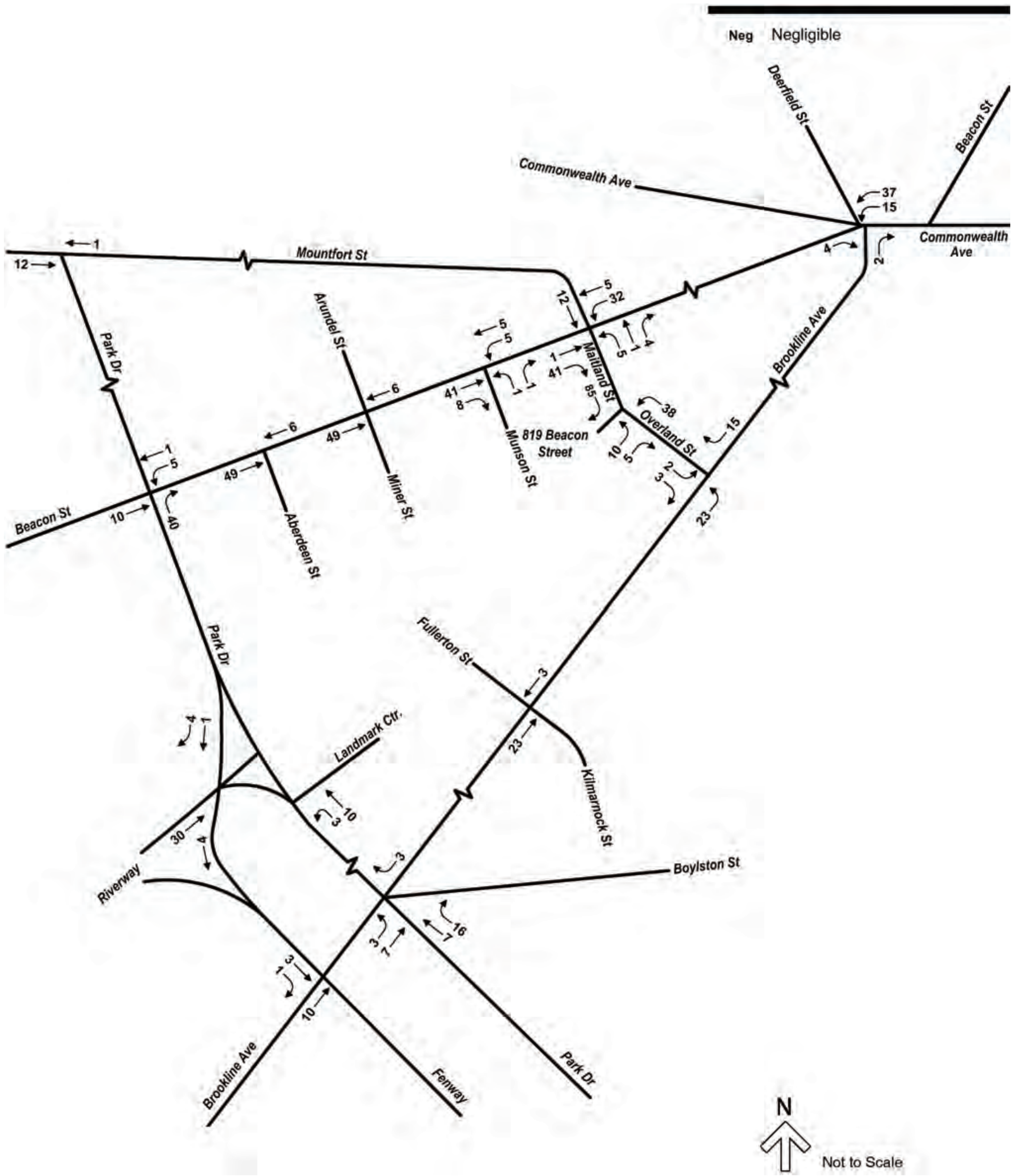

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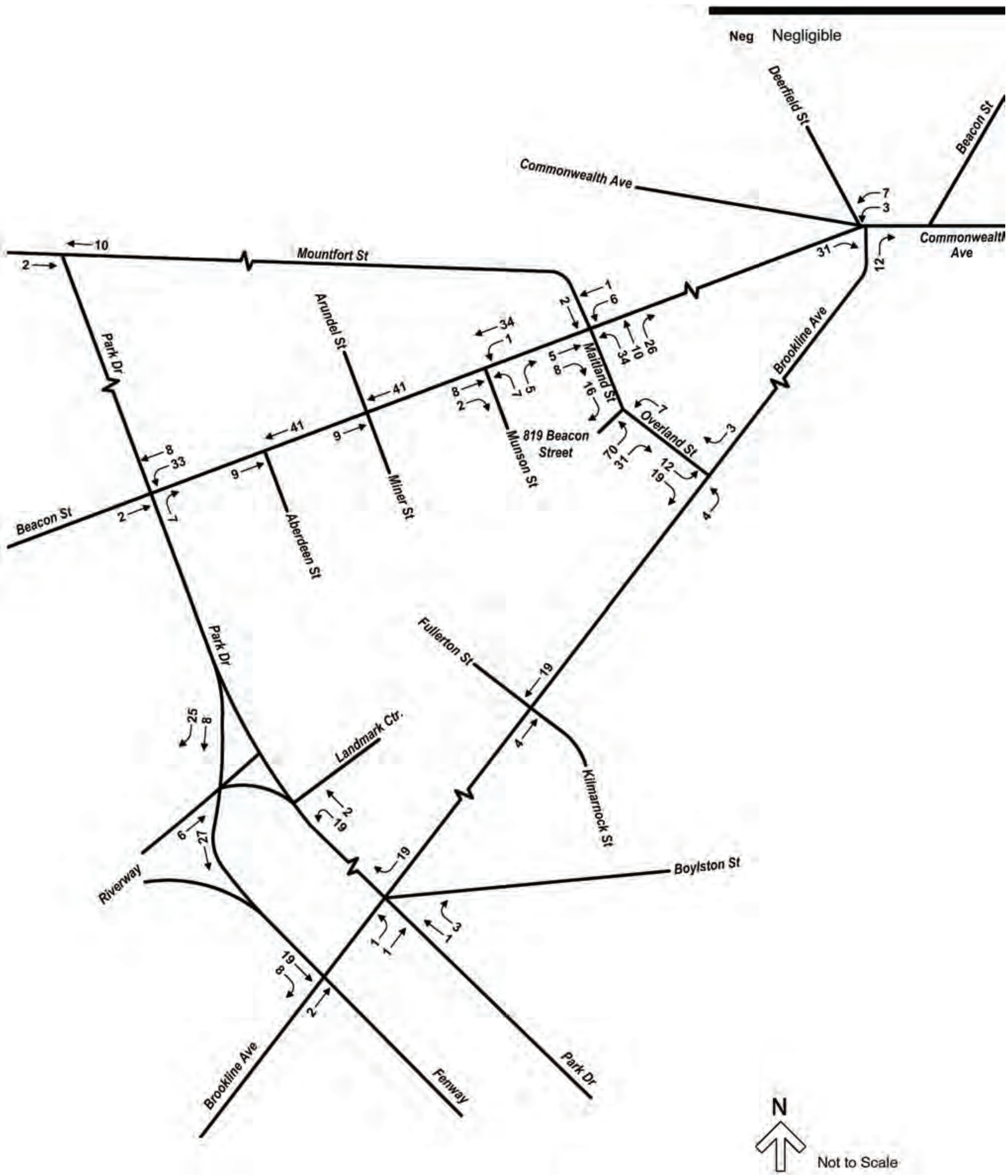
Figure 4-17
Project Generated Trips Morning Peak Hour (7:45-8:45 AM) Traffic Volumes



Boston Children's Hospital

VHB Vanasse Hangen Brustlin, Inc.

Figure 4-18
Project Generated Trips Evening Peak Hour (4:45-5:45 PM) Traffic Volumes

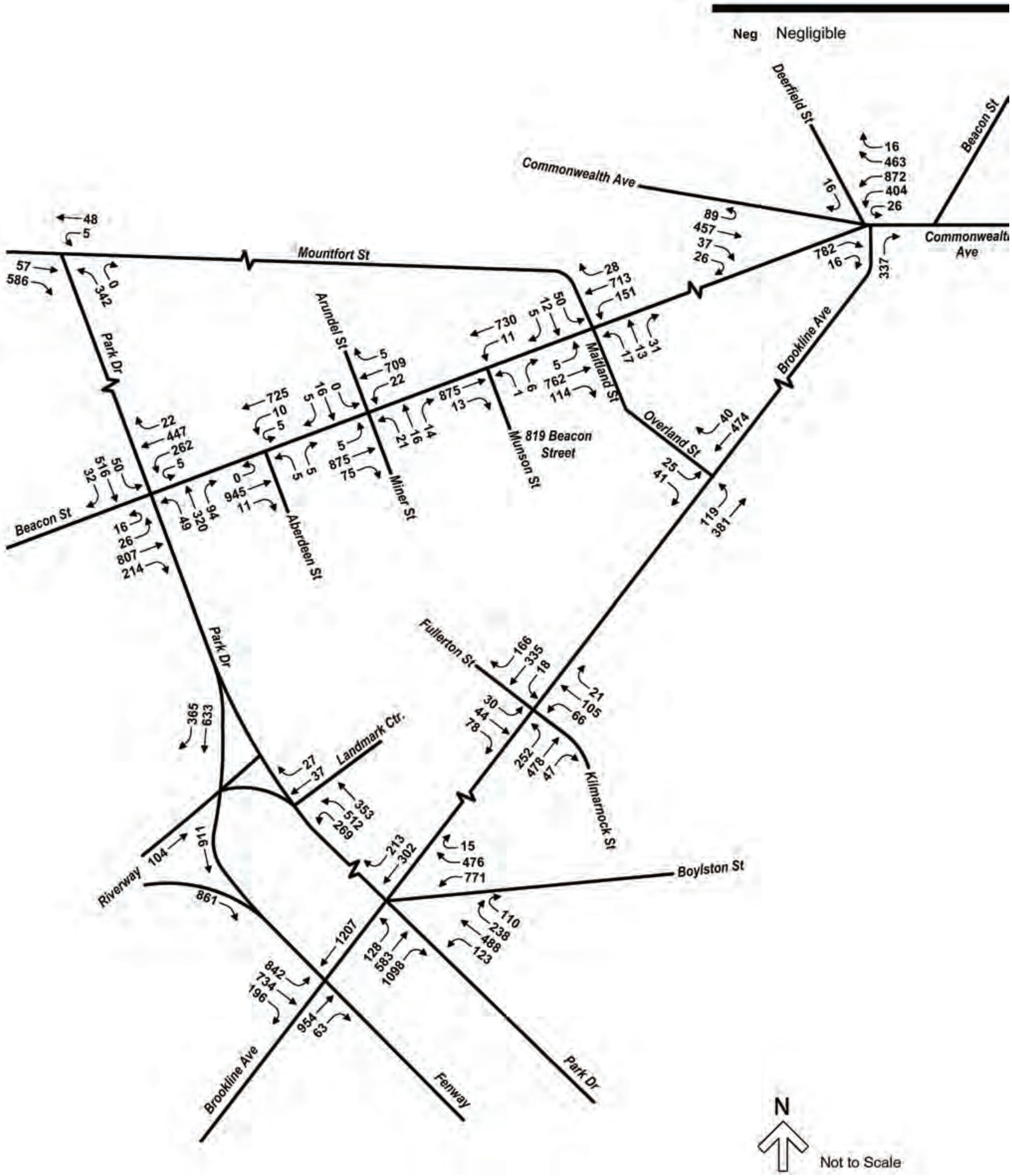
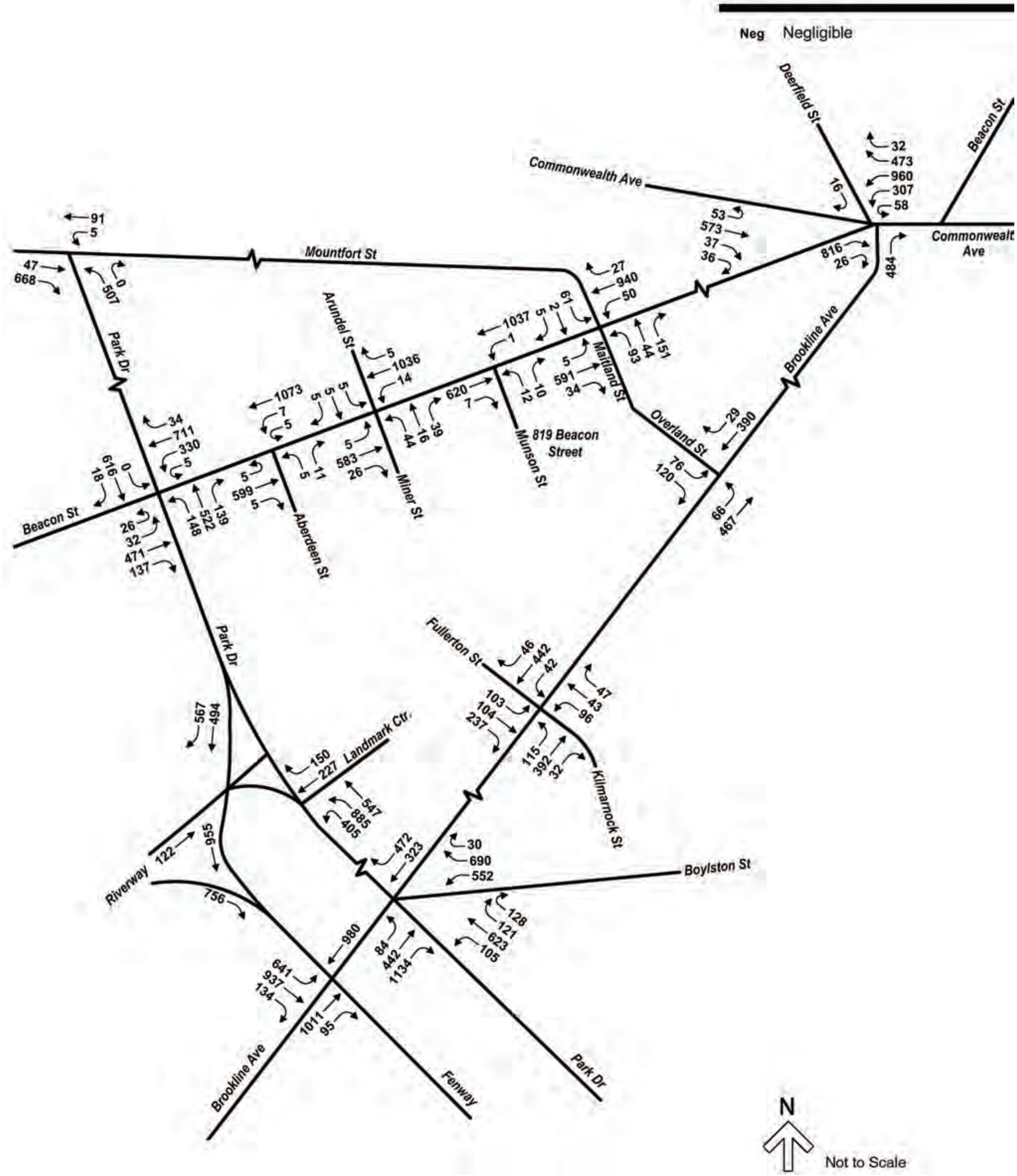


Figure 4-19
2022 Build Condition Morning Peak Hour (7:45-8:45 AM) Traffic Volumes



Vanasse Hangen Brustlin, Inc.

Boston Children's Hospital

Figure 4-20

2022 Build Condition Evening Peak Hour (4:45-5:45 PM) Traffic Volumes

4.3.3.5 Pedestrian & Bicycle Operations

The Project will generate approximately 105 walk and bike trips during the morning peak hour and 113 trips during the evening peak hour. The increase in the pedestrian and bicycle traffic in the area due to the 819 Beacon Street Project will be easily handled by combination of the existing sidewalks and the City of Boston's proposed multi-use path. The path, located directly behind the Project site, will connect the Emerald Necklace paths along the Riverway and the Fenway MBTA Station with Yawkey Station, Brookline Avenue, and the Fenway Center Development.

Children's will continue to promote walking and bicycling as alternative modes of travel for employees. Through the CommuteFit program, employees are rewarded based on the mileage they register.

4.3.3.6 Parking Operations

See Section 3.3.3.6 for a detailed discussion of future BCH parking operations during the term of the entire Children's IMP.

4.3.4 Loading and Service

There will be a single dock with two enclosed loading bays located in the basement level of the proposed building and accessed via Munson Street. It is expected that most, if not all, deliveries will be made by a single unit type truck or smaller. Children's will continue to monitor loading operations at its loading dock to ensure timely operations and reduce impacts to the surrounding streets.

4.3.5 Development of Mitigation Plan

The following section provides an overview of the transportation improvements and mitigation plan developed by Children's. These actions will:

- Help alleviate transportation impacts generated by the Project:
  - Improve the pedestrian and bicycle realm in the public right-of-way; and
  - Improve public space amenities.

As discussed previously in Section 4.1.2.5, Children's currently utilizes a variety of TDM strategies and will continue to offer these programs on the 819 Beacon Street site. In addition to these programs, Children's will also offer the following services on site:

- A transportation information area in the building for use by employees and visitors. Information to be provided includes:
  - Area transportation maps;
  - Bicycle maps;

- o MBTA maps and service schedules; and
- o Private shuttle (MASCO and Children's) maps and service schedules.

♦ Bicycle/Pedestrian TDM measures will include:

- o Providing landscaped sidewalks adjacent to and around the site;
- o Providing on-site (both indoor/secure and outdoor) bike racks for use by employees and visitors; and
- o Providing a shower/changing facility within the building.

4.3.6 Construction Management Plan

Children's will develop a detailed evaluation of potential short-term construction-related transportation impacts during the course of the 819 Beacon Street Project, including construction vehicle traffic, parking supply and demand, and pedestrian access around the site. A detailed Construction Management Plan will be developed and submitted to BTD for its approval on the Project. These plans will detail construction vehicle routing and staging.

4.3.6.1 Construction Vehicle Traffic

Construction vehicles will be necessary to move construction materials to and from the site. Every effort will be made to reduce the noise, control dust, and minimize other disturbances associated with the construction traffic. It is anticipated that Beacon Street will serve as the principal construction traffic route to the site. The primary lay-down area is expected to be located on site. Truck staging and lay-down areas for the Project will be carefully planned. The need for street occupancy (lane closures) along roadways adjacent to the Project site is not known at this time.

4.3.6.2 Construction Parking Issues

Contractors will be encouraged to devise access plans for their personnel that de-emphasize auto use (such as seeking off-site parking, provide transit subsidies, on-site lockers, etc.). Construction workers will also be encouraged to use public transportation to access the Project site because no new parking will be provided for them. Children's will work with the BTD and the Boston Police Department to ensure that parking regulations in the area, especially in the residential permit areas, are enforced. It is expected, as has been the case in past Children's construction projects, that this will be a considerable disincentive.

4.3.6.3 Pedestrian Access during Construction

During the construction period, pedestrian circulation around the 819 Beacon Street site may need to be re-routed. A variety of measures will be considered and implemented to protect the safety of pedestrians around the site that are affected by construction.

Temporary walkways, appropriate lighting, and new directional and informational signage to direct pedestrians around the construction site will be provided. After construction is complete, finished pedestrian sidewalks will be permanently reconfigured along public roadways. Any damage as a result of construction vehicles or otherwise will be repaired per City standards. This reconfiguration of pedestrian paths will be carefully considered as Project design proceeds.

4.4 Transportation Operations Analysis

This section presents the transportation operations analysis for vehicular operations at study area intersections. The operations analysis provides a summary of transportation capacities and overall operations as they relate to delay and congestion. Signal timings used for the Existing Condition analysis were provided by BTD, with the exception of Kenmore Square which was collected by VHB through field observations. Signal timings at multiple intersections were updated to match planned improvements in the area for the 2022 No-Build and Build Conditions.

4.4.1 Intersection Level of Service (LOS) Operations

Vehicle Level of Service is a qualitative measure of control delay at an intersection providing an index to the operational qualities of a roadway or intersection. Section 3.4.1 provides details of LOS designations and methodology.

A summary of the results of modeled LOS operations at the study area intersections for each analysis scenario is presented in Tables 4-12 through 4-17. A comparison of the results is presented in Table 4-18. Overall intersection LOS and delay are only provided for signalized intersections by Synchro, unsignalized intersection LOS and delay represent the minor street with the greatest delay. Synchro printouts are presented in Appendix C.

4.4.1.1 Existing (2012) AM Peak Hour LOS Summary

There is only one signalized intersection, Kenmore Square, in the study area currently operating at an unacceptable LOS during the morning peak hour period. The delay is due to the Beacon Street northbound right movement, which has a volume to capacity ratio above one.

The unsignalized intersections in the Project area were determined to operate at acceptable LOS D or better for the minor movements. Both Arundel Street and Miner Street operate at an LOS D at the intersection with Beacon Street. This is due to the single multi-purpose configuration of both the approaches and the need for left turning vehicles to cross two high volume lanes of traffic to exit the minor street.

A summary of the morning Existing Condition peak hour intersection operations can be found below in Table 4-12.

Table 4-12 Existing Condition (2012) Intersection LOS Summary – AM Peak Hour

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Signalized Intersections				
Beacon Street/Park Drive (Audubon Circle)	**C**	**34.2**	**0.78**	**NA**
EB Beacon left/thru	D	37.3	0.80	223
EB Beacon right	D	35.3	0.66	195
WB Beacon left (defacto)	D	54.9	0.81	m#173
WB Beacon thru	C	21.0	0.72	141
WB Beacon right	B	11.4	0.02	m3
NB Park left/thru	B	17.6	0.44	102
NB Park right	B	10.6	0.04	17
SB Park left/thru	D	45.2	0.82	#315
SB Park right	C	27.6	0.04	29
Beacon Street/Brookline Avenue/ Commonwealth Avenue/Deerfield Street (Kenmore Square)	**E**	**57.2**	**0.85**	**NA**
EB Commonwealth thru/right	D	37.5	0.67	219
WB Beacon/Commonwealth hard left	C	30.4	0.65	277
WB Beacon/Commonwealth soft left	B	18.4	0.59	303
WB Beacon/Commonwealth soft left/thru/right	B	17.9	0.59	250
NB Brookline right	D	38.9	0.71	m145
SB Deerfield right	C	28.0	0.05	22
NEB Beacon right	F	>80	>1.0	#466
Brookline Avenue/Park Drive/Boylston Street	**C**	**33.6**	**0.70**	**NA**
EB Brookline thru	C	34.4	0.47	206
EB Brookline right	B	18.7	0.67	468
WB Brookline thru	C	33.1	0.39	103
WB Brookline right	D	41.0	0.61	m163
NB Park left/thru/right	C	31.8	0.58	181
NWB Boylston left/right	D	45.1	0.88	#335
NWB Boylston right	E	55.3	0.87	#381
Park Drive/Landmark Center Driveway	**A**	**4.1**	**0.28**	**NA**
WB Driveway thru	D	37.3	0.09	30
WB Driveway right	D	37.1	0.05	20
NB Park left	A	3.4	0.32	m82
NB Park thru	A	3.0	0.17	m46
Riverway/Park Drive Westbound	**B**	**13.1**	**0.40**	**NA**
WB Park left	A	8.8	0.16	0
WB Park thru	A	9.2	0.21	35
SB Park thru	B	15.6	0.44	m110
SB Park right	B	18.0	0.65	m140

Table 4-12 Existing Condition (2012) Intersection LOS Summary – AM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Signalized Intersections				
Brookline Avenue/Riverway/Fenway	**C**	**25.6**	**0.80**	**NA**
EB Brookline thru/right	C	22.9	0.51	220
WB Brookline thru	C	26.3	0.84	#523
SB Riverway left	C	30.3	0.74	432
SB Riverway left/thru	C	26.6	0.75	396
SB Riverway right	B	17.9	0.28	134
Brookline Avenue/Fullerton Street/Kilmarnock Street	**B**	**19.7**	**0.86**	**NA**
EB Brookline left	B	11.0	0.33	m63
EB Brookline thru/right	B	10.6	0.49	m163
WB Brookline left	F	>80	0.95	m#84
WB Brookline thru/right	A	6.6	0.58	52
NB Kilmarnock left/thru/right	D	49.6	0.71	147
SB Fullerton left/thru	D	37.1	0.33	66
SB Fullerton right	C	28.0	0.05	20
Unsignalized Intersections				
Park Drive/Mountfort Street				
WB Maitland right	A	9.6	0.27	27
EB Maitland left/thru	C	24.1	0.22	20
NB Park left	A	7.9	0.22	22
Beacon Street/Aberdeen Street				
EB Beacon thru/right	A	0.0	0.35	0
WB Beacon left/thru	A	0.1	0.26	1
NB Aberdeen left/right	C	22.0	0.08	6
Beacon Street/Arundel Street/Miner Street				
EB Beacon left/thru/right	A	0.1	0.29	0
WB Beacon left/thru/right	A	0.5	0.20	2
NB Miner left/thru/right	D	32.9	0.31	32
SB Arundel left/thru/right	D	31.3	0.20	18
Beacon Street/Munson Street				
EB Beacon thru/right	A	0.0	0.33	0
WB Beacon left/thru	A	0.1	0.26	1
NB Munson left/right	B	10.4	0.01	1
Beacon Street/Mountfort Street/Maitland Street				
EB Beacon left/thru/right	A	0.1	0.26	1
WB Beacon left/thru/right	A	0.7	0.21	4
NB Maitland left/thru/right	C	24.0	0.11	9
SB Mountfort left/thru/right	C	19.1	0.07	5
Riverway/Park Drive Southbound				
EB Riverway right	A	0.0	0.17	0
WB Park left	A	9.4	0.50	73
Brookline Avenue/Overland Street				
EB Brookline left/thru	A	1.5	0.05	4
WB Brookline thru/right	A	0.0	0.25	0
SB Overland left/right	C	17.0	0.12	10

95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

4.4.1.2 Existing (2012) PM Peak Hour LOS Summary

The intersection of Beacon Street at Park Drive operates at LOS E during the evening peak hour. At the intersection, the north, south, and westbound approaches experience long vehicle queues. The northbound approach in particular is over capacity during this time period.

Kenmore Square, as a whole, operates at an acceptable LOS D during the evening peak hour. However, at the Kenmore Square intersection, the northeast and westbound approaches experience significant queuing. The northeast Beacon Street approach has a volume to capacity ratio above one.

Although the intersections of Brookline Avenue at Park Drive/Boylston Street and Brookline Avenue at Riverway/Fenway both operate at a LOS C, some approaches at these intersections have significant queuing. In particular, the southbound Riverway approach at Brookline Avenue and the westbound Brookline Avenue and north-westbound Boylston Street approaches Park Drive operate with significant queues during the evening peak hour. The westbound Brookline Avenue right movement at the intersection with Park Drive/Boylston Street operates at LOS F during this peak period.

The intersection of Brookline Avenue at Fullerton Street/Kilmarnock Street also operates at LOS C, but the westbound Brookline Avenue left-turn movement and northbound Kilmarnock Street movement experiences significant delays and operates at LOS F during the evening peak hour.

The minor movements at the unsignalized intersections in the study area operate at LOS D or better with the exception of Beacon Street at Arundel Street/Miner Street and Beacon Street at Mountfort Street/Maitland Street both of which operate at LOS E. At Park Drive and Mountfort Street, the stop controlled movement of Mountfort Street westbound operates at LOS F.

A summary of the Existing Condition evening peak hour intersection operations can be found below in Table 4-13.

Table 4-13 Existing Condition (2012) Intersection LOS Summary – PM Peak Hour

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Signalized Intersections				
Beacon Street/Park Drive (Audubon Circle)	**E**	**71.6**	**>1.0**	**NA**
EB Beacon left/thru	C	29.1	0.44	139
EB Beacon right	C	28.4	0.36	134
WB Beacon left/thru	E	74.1	>1.0	m#516
WB Beacon right	B	18.4	0.02	m9
NB Park left/thru	F	>80	>1.0	#380
NB Park right	C	24.2	0.10	42
SB Park left/thru	F	>80	>1.0	#371
SB Park right	C	32.0	0.03	21
Beacon Street/Brookline Avenue/ Commonwealth Avenue/Deerfield Street (Kenmore Square)	**D**	**49.0**	**0.85**	**NA**
EB Commonwealth thru/right	D	38.8	0.71	277
WB Beacon/Commonwealth hard left	C	33.6	0.64	306
WB Beacon/Commonwealth soft left	C	24.8	0.72	449
WB Beacon/Commonwealth soft left/thru/right	C	23.2	0.71	361
NB Brookline right	D	52.0	0.82	#241
SB Deerfield right	C	28.2	0.10	18
NEB Beacon right	F	>80	>1.0	m#407
Brookline Avenue/Park Drive/Boylston Street	**C**	**34.1**	**0.87**	**NA**
EB Brookline thru	C	30.0	0.43	m161
EB Brookline right	B	12.3	0.65	149
WB Brookline thru	C	27.8	0.31	m89
WB Brookline right	F	>80	>1.0	m#383
NB Park left/thru/right	D	39.4	0.80	235
NWB Boylston left/right	D	36.2	0.80	316
NWB Boylston right	D	41.1	0.76	#358
Park Drive/Landmark Center Driveway	**A**	**8.7**	**0.45**	**NA**
WB Driveway thru	C	33.8	0.34	116
WB Driveway right	C	32.7	0.21	69
NB Park left	A	6.4	0.49	m119
NB Park thru	A	5.4	0.27	m65
Riverway/Park Drive Westbound	**C**	**23.0**	**0.65**	**NA**
WB Park left	C	22.3	0.23	133
WB Park thru	C	24.6	0.45	241
SB Park thru	B	15.0	0.32	95
SB Park right	C	28.0	0.82	335
Brookline Avenue/Riverway/Fenway	**C**	**23.4**	**0.70**	**NA**
EB Brookline thru/right	C	20.9	0.54	218
WB Brookline thru	B	11.7	0.58	242
SB Riverway left	D	36.5	0.83	#490
SB Riverway left/thru	C	30.4	0.83	410
SB Riverway right	B	18.7	0.22	89

Table 4-13 Existing Condition (2012) Intersection LOS Summary – PM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Signalized Intersections				
Brookline Avenue/Fullerton Street/Kilmarnock Street	C	30.5	0.84	NA
EB Brookline left	A	9.8	0.22	m45
EB Brookline thru/right	B	11.2	0.43	m172
WB Brookline left	F	>80	0.85	#88
WB Brookline thru/right	B	16.8	0.59	237
NB Kilmarnock left/thru/right	F	>80	0.95	173
SB Fullerton left/thru	D	39.7	0.60	128
SB Fullerton right	C	27.1	0.29	83
Unsignalized Intersections				
Park Drive/Mountfort Street				
WB Maitland right	B	10.2	0.34	37
EB Maitland left/thru	F	>50	0.44	49
NB Park left	A	8.4	0.32	35
Beacon Street/Aberdeen Street				
EB Beacon thru/right	A	0.0	0.22	0
WB Beacon left/thru	A	0.1	0.41	0
NB Aberdeen left/right	B	14.7	0.04	3
Beacon Street/Arundel Street/Miner Street				
EB Beacon left/thru/right	A	0.2	0.18	1
WB Beacon left/thru/right	A	0.2	0.31	1
NB Miner left/thru/right	E	40.6	0.52	68
SB Arundel left/thru/right	E	35.4	0.16	13
Beacon Street/Munson Street				
EB Beacon thru/right	A	0.0	0.23	0
WB Beacon left/thru	A	0.0	0.39	0
NB Munson left/right	C	17.0	0.06	5
Beacon Street/Mountfort Street/Maitland Street				
EB Beacon left/thru/right	A	0.2	0.17	1
WB Beacon left/thru/right	A	0.1	0.29	0
NB Maitland left/thru/right	D	29.3	0.45	54
SB Mountfort left/thru/right	E	37.1	0.18	16
Riverway/Park Drive Southbound				
EB Riverway right	A	0	0.15	0
WB Park left	A	9.3	0.49	70
Brookline Avenue/Overland Street				
EB Brookline left/thru	A	1.3	0.05	4
WB Brookline thru/right	A	0	0.25	0
SB Overland left/right	C	20.6	0.27	26

95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

4.4.1.3 No-Build (2022) AM Peak Hour LOS Summary

Of the ten signalized intersections in the study area, only one is expected to remain at the same overall LOS from the Existing (2012) Condition to the No-Build (2022) Condition. Two intersections that are unsignalized in the Existing Condition have been analyzed as signalized in the No-Build and Build Conditions, and the new intersection related to the planned infrastructure improvements has been included in the future conditions analysis. The anticipated change in traffic operations for the other six signalized intersections is presented below. In general, the change in LOS is a result of background traffic growth and other approved projects as well as specific changes noted below.

During the No-Build Condition, the overall LOS is expected to change from LOS C to LOS E at the intersection of Beacon Street at Park Drive.

The LOS at the intersection of Riverway at Park Drive (westbound) is expected to decrease from overall LOS B to LOS C. In addition to the change in background conditions, this will be caused by the addition of the eastbound Riverway approach.

Overall traffic operations are expected to decline from LOS A to LOS B at the Park Drive at Landmark Center Driveway intersection. An intersection operating at LOS B is still considered operating well with little delay.

The intersection of Brookline Avenue at Park Drive/Boylston Street is expected to decline from overall LOS C to LOS E in part due to the additional Brookline Avenue eastbound left movement that will be added to the intersection.

Kenmore Square is expected to decline from LOS E to LOS F in the future.

The intersection of Brookline Avenue at Fullerton Street/Kilmarnock Street will decrease from LOS B to LOS C.

Some of the unsignalized intersection traffic operations are also expected to change in the No-Build Condition. The Aberdeen Street northbound approach is expected to decrease from LOS C to LOS D at Beacon Street due to increase in traffic volume on Beacon Street. Note that average delay only increases four seconds on the approach. At the Brookline Avenue at Overland Street intersection, the Overland Street southbound approach is expected to decrease from LOS C to LOS E primarily due to the increased traffic from other approved projects.

The intersection of Park Drive at Mountfort Street will be reconfigured as a result of the Mountfort Street two-way project. Although Park Drive northbound LOS will decrease from LOS A to LOS B, the westbound Mountfort Street approach will increase from LOS C to LOS A.

A summary of the morning No-Build Condition peak hour intersection operations can be found below in Table 4-14.

Table 4-14 No-Build Condition (2022) Intersection LOS Summary – AM Peak Hour

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Signalized Intersections				
Beacon Street/Park Drive (Audubon Circle)	**E**	**66.0**	**>1.0**	**NA**
EB Beacon left/thru	F	>80	>1.0	#473
EB Beacon right	C	28.6	0.56	192
WB Beacon left	F	>80	>1.0	m#221
WB Beacon thru/right	A	6.9	0.37	m52
NB Park left	B	13.0	0.25	21
NB Park thru/right	B	15.0	0.33	150
SB Park left/thru/right	F	>80	>1.0	m#366
Beacon Street/Mountfort Street/Maitland Street	**B**	**14.0**	**0.68**	**NA**
EB Beacon left/thru/right	A	9.3	0.56	m292
WB Beacon left/thru/right	B	13.5	0.82	#550
NB Maitland left/thru/right	D	39.8	0.21	32
SB Mountfort left/thru/right	D	41.5	0.49	56
Beacon Street/Brookline Avenue/ Commonwealth Avenue/Deerfield Street (Kenmore Square)	**F**	**>80**	**>1.0**	**NA**
EB Commonwealth thru/right	D	39.1	0.72	236
WB Beacon/Commonwealth hard left	D	48.9	0.89	#464
WB Beacon/Commonwealth soft left	C	22.1	0.71	402
WB Beacon/Commonwealth soft left/thru/right	C	20.8	0.72	330
NB Brookline right	D	39.6	0.81	m#197
SB Deerfield right	C	28.1	0.06	24
NEB Beacon right	F	>80	>1.0	#567
Brookline Avenue/Park Drive/Boylston Street	**E**	**69.5**	**>1.0**	**NA**
EB Brookline left	E	63.1	0.75	m#140
EB Brookline thru	E	72.9	>1.0	m#612
EB Brookline right	B	11.1	0.67	384
WB Brookline thru	D	47.3	0.66	m142
WB Brookline right	F	>80	>1.0	m#261
NB Park left/thru	D	37.7	0.64	184
NB Park right (defacto)	F	>80	>1.0	#455
NWB Boylston left/right	F	>80	>1.0	#491
NWB Boylston right	F	>80	>1.0	#534
Park Drive/Landmark Center Driveway	**B**	**10.2**	**0.36**	**NA**
WB Driveway thru/right	D	36.6	0.14	36
NB Park left	A	9.4	0.41	m197
NB Park thru	A	7.3	0.18	m73
Riverway/Park Drive Northbound	**A**	**1.7**	**0.15**	**NA**
EB Riverway left	A	0.2	0.10	0
NB Park thru	A	2.0	0.17	18

Table 4-14 No-Build Condition (2022) Intersection LOS Summary – AM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Signalized Intersections				
Riverway/Park Drive Westbound	**C**	**28.4**	**0.63**	**NA**
EB Riverway thru	D	36.8	0.17	41
WB Park left	C	23.4	0.55	262
WB Park thru	C	22.2	0.55	231
SB Park thru	C	27.4	0.75	m#258
SB Park right	D	42.4	0.96	m#341
Riverway/Park Drive Southbound	**C**	**33.8**	**0.74**	**NA**
EB Riverway right	B	18.2	0.68	364
WB Park left	D	48.5	0.81	409
Brookline Avenue/Riverway/Fenway	**C**	**25.3**	**0.88**	**NA**
EB Brookline thru/right	B	18.6	0.52	234
WB Brookline thru	B	18.9	0.91	m#201
SB Riverway left	D	37.5	0.82	m393
SB Riverway left/thru	C	34.7	0.84	367
SB Riverway right	C	23.2	0.32	m97
Brookline Avenue/Fullerton Street/Kilmarnock Street	**C**	**22.1**	**0.84**	**NA**
EB Brookline left	C	22.5	0.78	m85
EB Brookline thru/right	A	7.2	0.65	m115
WB Brookline left	B	17.0	0.37	m3
WB Brookline thru/right	B	17.4	0.84	m107
NB Kilmarnock left/thru/right	E	66.2	0.88	#241
SB Fullerton left/thru	D	36.7	0.44	86
SB Fullerton right	C	27.3	0.08	23
Unsignalized Intersections				
Park Drive/Mountfort Street				
EB Maitland thru/right	A	0.0	0.37	0
WB Maitland left/thru	A	0.9	0.01	1
NB Park left	B	12.8	0.46	62
Beacon Street/Aberdeen Street				
EB Beacon thru/right	A	0.0	0.38	0
WB Beacon left/thru	A	0.6	0.29	1
NB Aberdeen left/right	D	25.7	0.09	8
Beacon Street/Arundel Street/Miner Street				
EB Beacon left/thru/right	A	0.1	0.31	1
WB Beacon left/thru/right	A	0.6	0.23	3
NB Miner left/thru/right	D	33.8	0.38	41
SB Arundel left/thru/right	D	32.5	0.22	20
Beacon Street/Munson Street				
EB Beacon thru/right	A	0.0	0.36	0
WB Beacon left/thru	A	0.1	0.30	1
NB Munson left/right	B	10.2	0.01	1
Brookline Avenue/Overland Street				
EB Brookline left/thru	A	3.4	0.13	11
WB Brookline thru/right	A	0.0	0.31	0
SB Overland left/right	E	30.3	0.35	37

95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

4.4.1.4 No-Build (2022) PM Peak Hour LOS Summary

Of the ten signalized intersections during the evening peak hour, four are expected to see a decline in LOS from the Existing (2012) Condition to the No-Build (2022) Condition. The remaining intersections are either newly signalized, as stated previously, expected to remain at the same overall LOS, or improve their LOS. In general, the change in LOS is a result of background traffic growth and other approved projects as well as specific changes noted below.

Traffic operations are expected to decline from overall LOS C to LOS F at the Riverway at Park Drive (westbound) intersection due in part to the addition of the eastbound Riverway approach.

The overall LOS is expected to worsen from LOS A to LOS B at the intersection of Park Drive at Landmark Center Driveway due to the diversion of traffic due to the opening of new roadways. An intersection operating at LOS B is still considered operating well with little delay.

The intersection of Brookline Avenue at Park Drive/Boylston Street is expected to decline from overall LOS C to LOS F due in part to the additional Brookline Avenue eastbound left movement at the intersection.

Intersection operations at Kenmore Square are expected to decline from LOS D to LOS F in the future. This will be caused by the additional traffic due to growth and other approved projects, especially on Beacon Street/Commonwealth Avenue westbound and Brookline Avenue northbound.

Beacon Street at Park Drive is expected to improve from LOS E to LOS C. This improvement is due to the new geometry and signal timings of the intersection.

The evening No-Build Condition is also expected to have an effect on two of the unsignalized intersections. At the intersection of Brookline Avenue at Overland Street, the LOS is expected to decrease from LOS C to LOS F due to the anticipated traffic growth and other approved projects. As stated previously, the Park Drive at Mountfort Street intersection will be reconfigured causing LOS to increase from a LOS F to a LOS A at the westbound Mountfort Street approach and decline from a LOS A to LOS C on the Park Drive northbound approach.

A summary of the No-Build Condition evening peak hour intersection operations can be found below in Table 4-15.

Table 4-15 No-Build Condition (2022) Intersection LOS Summary – PM Peak Hour

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Signalized Intersections				
Beacon Street/Park Drive (Audubon Circle)	**C**	**24.2**	**0.78**	**NA**
EB Beacon left/thru	D	54.1	0.91	#273
EB Beacon right	C	27.8	0.38	126
WB Beacon left	C	32.3	0.88	m#202
WB Beacon thru/right	B	11.3	0.58	m168
NB Park left	C	20.5	0.67	#76
NB Park thru/right	A	9.2	0.59	88
SB Park left/thru/right	C	27.7	0.59	m241
Beacon Street/Mountfort Street/Maitland Street	**C**	**25.5**	**0.75**	**NA**
EB Beacon left/thru/right	B	11.2	0.44	m226
WB Beacon left/thru/right	C	23.8	0.80	#520
NB Maitland left/thru/right	E	55.7	0.84	171
SB Mountfort left/thru/right	D	41.0	0.41	73
Beacon Street/Brookline Avenue/ Commonwealth Avenue/Deerfield Street (Kenmore Square)	**F**	**>80**	**>1.0**	**NA**
EB Commonwealth thru/right	D	40.4	0.75	296
WB Beacon/Commonwealth hard left	D	38.3	0.75	368
WB Beacon/Commonwealth soft left	C	28.1	0.78	519
WB Beacon/Commonwealth soft left/thru/right	C	25.6	0.78	415
NB Brookline right	F	>80	>1.0	#345
SB Deerfield right	C	28.3	0.11	19
NEB Beacon right	F	>80	>1.0	#611
Brookline Avenue/Park Drive/Boylston Street	**F**	**>80**	**>1.0**	**NA**
EB Brookline left	D	50.0	0.53	M86
EB Brookline thru	D	40.4	0.84	m#443
EB Brookline right	B	11.8	0.74	473
WB Brookline thru	D	35.9	0.59	m132
WB Brookline right	F	>80	>1.0	m#641
NB Park left/thru/right	D	46.7	0.89	#238
NWB Boylston left/right	F	>80	>1.0	#484
NWB Boylston right	F	>80	>1.0	#509
Park Drive/Landmark Center Driveway	**B**	**19.4**	**0.67**	**NA**
WB Driveway thru/right	D	38.8	0.64	168
NB Park left	B	16.6	0.68	m297
NB Park thru	B	11.6	0.28	m99
Riverway/Park Drive Northbound	**A**	**7.3**	**0.27**	**NA**
EB Riverway left	A	0.1	0.12	0
NB Park thru	A	8.5	0.35	90
Riverway/Park Drive Westbound	**F**	**>80**	**>1.0**	**NA**
EB Riverway thru	C	33.2	0.19	59
WB Park left	C	30.9	0.77	#404
WB Park thru	D	40.1	0.94	#480
SB Park thru	D	45.8	0.84	m#275
SB Park right	F	>80	>1.0	m#834

Table 4-15 No-Build Condition (2022) Intersection LOS Summary – PM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Signalized Intersections				
Riverway/Park Drive Southbound	**C**	**20.1**	**0.69**	**NA**
EB Riverway right	C	24.5	0.71	294
WB Park left	B	16.7	0.66	397
Brookline Avenue/Riverway/Fenway	**C**	**24.2**	**0.76**	**NA**
EB Brookline thru/right	C	20.8	0.64	266
WB Brookline thru	B	17.1	0.68	m177
SB Riverway left	C	34.4	0.84	406
SB Riverway left/thru	C	30.4	0.84	380
SB Riverway right	B	19.4	0.21	m72
Brookline Avenue/Fullerton Street/Kilmarnock Street	**C**	**33.5**	**0.87**	**NA**
EB Brookline left	A	3.8	0.39	m5
EB Brookline thru/right	A	1.9	0.55	m14
WB Brookline left	F	>80	0.88	#92
WB Brookline thru/right	C	27.3	0.81	373
NB Kilmarnock left/thru/right	F	>80	1.00	#247
SB Fullerton left/thru	D	54.9	0.85	#242
SB Fullerton right	C	31.3	0.61	175
Unsignalized Intersections				
Park Drive/Mountfort Street				
EB Maitland thru/right	A	0.0	0.42	0
WB Maitland left/thru	A	0.6	0.01	1
NB Park left	C	21.5	0.74	170
Beacon Street/Aberdeen Street				
EB Beacon thru/right	A	0.0	0.25	0
WB Beacon left/thru	A	0.1	0.45	1
NB Aberdeen left/right	B	13.4	0.04	3
Beacon Street/Arundel Street/Miner Street				
EB Beacon left/thru/right	A	0.2	0.20	1
WB Beacon left/thru/right	A	0.3	0.34	2
NB Miner left/thru/right	E	39.3	0.54	72
SB Arundel left/thru/right	E	36.5	0.16	14
Beacon Street/Munson Street				
EB Beacon thru/right	A	0.0	0.26	0
WB Beacon left/thru	A	0.0	0.43	0
NB Munson left/right	C	16.6	0.06	5
Brookline Avenue/Overland Street				
EB Brookline left/thru	A	2.3	0.09	7
WB Brookline thru/right	A	0.0	0.29	0
SB Overland left/right	F	>80	>1.0	252

95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

4.4.1.5 Build (2022) AM Peak Hour LOS Summary

Of the ten signalized intersections studied, only two intersections are expected to drop in LOS from the No-Build Condition to the Build Condition due to the Project-generated traffic during the morning peak hour. Both of the intersections, however, will remain at an acceptable LOS.

The intersection of Beacon Street at Mountfort Street/Maitland Street is expected to decrease from LOS B to LOS C. This is primarily due to the increase in left turning vehicles from Beacon Street into the site. The LOS is expected to decline from LOS C to LOS D at the intersection of Riverway at Park Drive (westbound) due to Project generated traffic during the morning peak hour.

The minor approaches at the unsignalized intersection of Beacon Street at Arundel Street/Miner Street will decrease from LOS D to LOS E. This is due to Project generated traffic on Beacon Street, although overall delay for the intersection only increases half a second.

There are no other anticipated changes in overall LOS during the morning peak hour as a result of the Project. A summary of the Build Condition morning peak hour intersection operations can be found below in Table 4-16.

Table 4-16 Build Condition (2022) Intersection LOS Summary – AM Peak Hour

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Signalized Intersections				
Beacon Street/Park Drive (Audubon Circle)	**E**	**67.8**	**>1.0**	**NA**
EB Beacon left/thru	F	>80	>1.0	#482
EB Beacon right	C	28.6	0.56	192
WB Beacon left	F	>80	>1.0	m#199
WB Beacon thru/right	A	7.1	0.37	m46
NB Park left	B	14.7	0.25	25
NB Park thru/right	B	16.6	0.37	171
SB Park left/thru/right	F	>80	>1.0	m#364
Beacon Street/Mountfort Street/Maitland Street	**C**	**23.0**	**0.80**	**NA**
EB Beacon left/thru/right	B	10.5	0.62	m314
WB Beacon left (defacto)	C	21.0	0.74	m#159
WB Beacon thru/right	C	33.8	0.99	#939
NB Maitland left/thru/right	D	40.1	0.27	38
SB Mountfort left/thru/right	D	40.4	0.52	67

Table 4-16 Build Condition (2022) Intersection LOS Summary – AM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Signalized Intersections				
Beacon Street/Brookline Avenue/ Commonwealth Avenue/Deerfield Street (Kenmore Square)	**F**	**>80**	**>1.0**	**NA**
EB Commonwealth thru/right	D	39.1	0.72	236
WB Beacon/Commonwealth hard left	D	58.5	0.93	#490
WB Beacon/Commonwealth soft left	C	22.9	0.73	419
WB Beacon/Commonwealth soft left/thru/right	C	21.5	0.74	345
NB Brookline right	D	39.9	0.81	m#200
SB Deerfield right	C	28.1	0.06	24
NEB Beacon right	F	>80	>1.0	#571
Brookline Avenue/Park Drive/Boylston Street	**E**	**72.1**	**>1.0**	**NA**
EB Brookline left	E	64.8	0.77	m#146
EB Brookline thru	E	77.0	>1.0	m#625
EB Brookline right	B	11.2	0.67	385
WB Brookline thru	D	47.1	0.66	m145
WB Brookline right	F	>80	>1.0	m#266
NB Park left/thru	D	37.9	0.65	186
NB Park right (defacto)	F	>80	>1.0	#480
NWB Boylston left/right	F	>80	>1.0	#491
NWB Boylston right	F	>80	>1.0	#534
Park Drive/Landmark Center Driveway	**B**	**11.4**	**0.37**	**NA**
WB Driveway thru/right	D	35.6	0.13	36
NB Park left	B	10.8	0.43	m199
NB Park thru	A	8.5	0.19	m75
Riverway/Park Drive Northbound	**A**	**1.8**	**0.16**	**NA**
EB Riverway left	A	0.0	0.13	0
NB Park thru	A	2.3	0.18	18
Riverway/Park Drive Westbound	**D**	**40.2**	**0.66**	**NA**
EB Riverway thru	D	36.2	0.23	54
WB Park left	C	32.9	0.88	264
WB Park thru	F	>80	>1.0	231
SB Park thru	C	21.0	0.52	m#259
SB Park right	B	19.8	0.52	m#346
Riverway/Park Drive Southbound	**C**	**33.6**	**0.74**	**NA**
EB Riverway right	B	18.2	0.68	364
WB Park left	D	48.1	0.82	m399
Brookline Avenue/Riverway/Fenway	**C**	**25.4**	**0.88**	**NA**
EB Brookline thru/right	B	18.6	0.52	236
WB Brookline thru	B	18.9	0.91	m#201
SB Riverway left	D	37.7	0.83	m393
SB Riverway left/thru	C	34.8	0.84	368
SB Riverway right	C	23.2	0.32	m97

Table 4-16 Build Condition (2022) Intersection LOS Summary – AM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Signalized Intersections				
Brookline Avenue/Fullerton Street/Kilmarnock Street	**C**	**22.1**	**0.85**	**NA**
EB Brookline left	C	22.5	0.79	m83
EB Brookline thru/right	A	8.0	0.68	m123
WB Brookline left	B	16.9	0.37	m3
WB Brookline thru/right	B	17.3	0.84	m97
NB Kilmarnock left/thru/right	E	66.2	0.88	#241
SB Fullerton left/thru	D	36.7	0.44	86
SB Fullerton right	C	27.3	0.08	23
Unsignalized Intersections				
Park Drive/Mountfort Street				
EB Maitland thru/right	A	0.0	0.37	0
WB Maitland left/thru	A	0.9	0.01	1
NB Park left	B	13.1	0.47	64
Beacon Street/Aberdeen Street				
EB Beacon thru/right	A	0.0	0.40	0
WB Beacon left/thru	A	0.2	0.30	1
NB Aberdeen left/right	D	28.5	0.11	9
Beacon Street/Arundel Street/Miner Street				
EB Beacon left/thru/right	A	0.2	0.32	1
WB Beacon left/thru/right	A	1.2	0.23	3
NB Miner left/thru/right	E	44.1	0.46	53
SB Arundel left/thru/right	E	39.3	0.26	24
Beacon Street/Munson Street				
EB Beacon thru/right	A	0.0	0.37	0
WB Beacon left/thru	A	0.7	0.30	1
NB Munson left/right	B	12.5	0.01	1
Brookline Avenue/Overland Street				
EB Brookline left/thru	A	4.1	0.16	15
WB Brookline thru/right	A	0.0	0.32	0
SB Overland left/right	E	36.7	0.42	47

95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

4.4.1.6 Build (2022) PM Peak Hour LOS Summary

During the evening peak hour, all intersections in the study area continue to operate at the same LOS as the No-Build Condition, with the exception of the intersection of Beacon Street at Mountfort Street/Maitland Street. This intersection will experience a drop in LOS from LOS C to still acceptable LOS D as a result of the Project generated traffic. With the exception of the northbound Maitland Street approach, all approaches will operate at a LOS D or better.

A summary of the evening Build Condition peak hour intersection operations can be found below in Table 4-17.

Table 4-17 Build Condition (2022) Intersection LOS Summary – PM Peak Hour

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Signalized Intersections				
Beacon Street/Park Drive (Audubon Circle)	**C**	**26.0**	**0.83**	**NA**
EB Beacon left/thru	D	54.1	0.91	#274
EB Beacon right	C	27.7	0.37	126
WB Beacon left	D	49.1	0.98	m#217
WB Beacon thru/right	B	11.7	0.59	m154
NB Park left	C	20.4	0.67	#77
NB Park thru/right	A	9.4	0.60	91
SB Park left/thru/right	C	27.7	0.59	m241
Beacon Street/Mountfort Street/Maitland Street	**D**	**38.7**	**0.84**	**NA**
EB Beacon left/thru/right	B	12.9	0.48	m229
WB Beacon left/thru/right	C	28.5	0.85	#537
NB Maitland left/thru/right	F	>80	>1.0	#275
SB Mountfort left/thru/right	D	41.0	0.42	74
Beacon Street/Brookline Avenue/ Commonwealth Avenue/Deerfield Street (Kenmore Square)	**F**	**>80**	**>1.0**	**NA**
EB Commonwealth thru/right	D	40.4	0.75	296
WB Beacon/Commonwealth hard left	D	38.6	0.76	372
WB Beacon/Commonwealth soft left	C	28.3	0.79	523
WB Beacon/Commonwealth soft left/thru/right	C	25.7	0.78	417
NB Brookline right	F	>80	>1.0	#357
SB Deerfield right	C	28.3	0.11	19
NEB Beacon right	F	>80	>1.0	#642
Brookline Avenue/Park Drive/Boylston Street	**F**	**>80**	**>1.0**	**NA**
EB Brookline left	D	50.2	0.54	m87
EB Brookline thru	D	40.6	0.85	m#442
EB Brookline right	B	11.9	0.74	475
WB Brookline thru	D	35.6	0.59	m130
WB Brookline right	F	>80	>1.0	m#657
NB Park left/thru/right	D	47.0	0.89	#241
NWB Boylston left/right	F	>80	>1.0	#484
NWB Boylston right	F	>80	>1.0	#509
Park Drive/Landmark Center Driveway	**B**	**19.5**	**0.68**	**NA**
WB Driveway thru/right	D	38.1	0.63	168
NB Park left	B	17.2	0.70	m297
NB Park thru	B	11.7	0.29	m96
Riverway/Park Drive Northbound	**A**	**7.4**	**0.27**	**NA**
EB Riverway left	A	0.1	0.13	0
NB Park thru	A	8.7	0.35	90

Table 4-17 Build Condition (2022) Intersection LOS Summary – PM Peak Hour (Continued)

Intersection	LOS	Delay (sec.)	V/C Ratio	95th % Queue (feet)
Signalized Intersections				
Riverway/Park Drive Westbound	**F**	**>80**	**>1.0**	**NA**
EB Riverway thru	C	33.0	0.20	62
WB Park left	C	31.9	0.80	#434
WB Park thru	D	38.9	0.94	#480
SB Park thru	D	48.6	0.87	m#266
SB Park right	F	>80	>1.0	m#847
Riverway/Park Drive Southbound	**C**	**20.0**	**0.70**	**NA**
EB Riverway right	C	24.5	0.71	294
WB Park left	B	16.6	0.68	m407
Brookline Avenue/Riverway/Fenway	**C**	**24.4**	**0.76**	**NA**
EB Brookline thru/right	C	21.0	0.65	266
WB Brookline thru	B	17.2	0.69	m177
SB Riverway left	D	35.1	0.84	413
SB Riverway left/thru	C	30.46	0.85	387
SB Riverway right	B	19.6	0.23	m77
Brookline Avenue/Fullerton Street/Kilmarnock Street	**C**	**34.1**	**0.87**	**NA**
EB Brookline left	A	4.4	0.40	m5
EB Brookline thru/right	A	1.9	0.56	m15
WB Brookline left	F	>80	0.88	#92
WB Brookline thru/right	C	29.6	0.84	399
NB Kilmarnock left/thru/right	F	>80	1.00	#247
SB Fullerton left/thru	D	54.9	0.85	#242
SB Fullerton right	C	31.4	0.62	177
Unsignalized Intersections				
Park Drive/Mountfort Street				
EB Maitland thru/right	A	0.0	0.42	0
WB Maitland left/thru	A	0.6	0.01	1
NB Park left	C	22.6	0.76	178
Beacon Street/Aberdeen Street				
EB Beacon thru/right	A	0.0	0.25	0
WB Beacon left/thru	A	0.3	0.47	1
NB Aberdeen left/right	B	13.6	0.04	3
Beacon Street/Arundel Street/Miner Street				
EB Beacon left/thru/right	A	0.4	0.20	1
WB Beacon left/thru/right	A	0.5	0.35	2
NB Miner left/thru/right	E	41.9	0.56	76
SB Arundel left/thru/right	E	39.1	0.17	15
Beacon Street/Munson Street				
EB Beacon thru/right	A	0.0	0.26	0
WB Beacon left/thru	A	0.0	0.44	0
NB Munson left/right	C	18.3	0.14	12
Brookline Avenue/Overland Street				
EB Brookline left/thru	A	2.4	0.09	8
WB Brookline thru/right	A	0.0	0.29	0
SB Overland left/right	F	>50	>1.0	357

95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

4.4.2 Level of Service Summary

The 819 Beacon Street Project is expected to have a minimal impact on the future study area intersections. The overall intersection LOS is expected to change at only two signalized intersections during the morning peak hour from the No-Build (2022) Condition to the Build (2022) Condition, Beacon Street at Mountfort Street/Maitland Street and Riverway at Park Drive (Westbound). Both of which are expected to remain at an acceptable LOS. The unsignalized intersection of Beacon Street at Arundel Street/Miner Street will also have a change in LOS during the a.m. peak, but will remain at an acceptable LOS. During the evening peak hour, only one intersection, Beacon Street at Mountfort Street/Maitland Street, is expected to experience a change in intersection LOS which also will remain at an acceptable LOS.

Table 4-18 is a summary of the overall LOS comparing the 2012 Existing, 2022 No-Build, and 2022 Build conditions for both morning and evening peak hours by intersection and approach.

Table 4-18 LOS Summary Comparison

	AM Peak Hour Operations			PM Peak Hour Operations		
Intersection	Existing	No-Build	Build	Existing	No-Build	Build
Signalized Intersections						
Beacon Street/Park Drive (Audubon Circle)	**C**	**E**	**E**	**E**	**C**	**C**
EB Beacon	D	F	F	C	D	D
WB Beacon	C	D	D	E	B	C
NB Park	B	B	B	F	B	B
SB Park	D	F	F	F	C	C
Beacon Street/ Mountfort Street/Maitland Street	**NA***	**B**	**C**	**NA***	**C**	**D**
EB Beacon	A*	A	B	A*	B	B
WB Beacon	A*	B	C	A*	C	C
NB Maitland	C*	D	D	D*	E	F
SB Mountfort	C*	D	D	E*	D	D
Beacon Street/Brookline Avenue/ Commonwealth Avenue/Deerfield Street (Kenmore Square)	**E**	**F**	**F**	**D**	**F**	**F**
EB Commonwealth	D	D	D	D	D	D
WB Beacon/Commonwealth	C	C	C	C	C	C
NB Brookline	D	D	D	D	F	F
SB Deerfield	C	C	C	C	C	C
NEB Beacon	F	F	F	F	F	F
Brookline Avenue/Park Drive/Boylston Street	**C**	**E**	**E**	**C**	**F**	**F**
EB Brookline	C	C	D	B	C	C
WB Brookline	D	F	F	E	F	F
NB Park	C	E	E	D	D	D
NWB Boylston	D	F	F	D	F	F
Park Drive/Landmark Center Driveway	**A**	**B**	**B**	**A**	**B**	**B**
WB Driveway	D	D	D	C	D	D
NB Park	A	A	B	A	B	B

Table 4-18 LOS Summary Comparison (Continued)

Intersection	AM Peak Hour Operations Existing	No-Build	Build	PM Peak Hour Operations Existing	No-Build	Build
Signalized Intersections						
Riverway/Park Drive Northbound**	**NA**	**A**	**A**	**NA**	**A**	**A**
WB Riverway	NA	A	A	NA	A	A
NB Park		A	A		A	A
Riverway/Park Drive Westbound	**B**	**C**	**D**	**C**	**F**	**F**
EB Riverway**	NA	D	D	NA	C	C
WB Park	A	C	C	C	D	D
SB Park	B	C	E	C	F	F
Riverway/Park Drive Southbound	**NA***	**C**	**C**	**NA***	**C**	**C**
EB Riverway	A*	B	B	A*	C	C
WB Park	A*	D	D	A*	B	B
Brookline Avenue/Riverway/Fenway	**C**	**C**	**C**	**C**	**C**	**C**
EB Brookline	C	B	B	C	C	C
WB Brookline	C	B	B	B	B	B
SB Riverway	C	C	C	C	C	C
Brookline Avenue/Fullerton Street/ Kilmarnock Street	**B**	**C**	**C**	**C**	**C**	**C**
EB Brookline	B	B	B	B	A	A
WB Brookline	B	B	B	C	C	D
NB Kilmarnock	D	E	E	F	F	F
SB Fullerton	C	C	C	C	D	D
Unsignalized Intersections						
Park Drive/Mountfort Street						
EB Mountfort	A	A	A	B	A	A
WB Mountfort	C	A	A	F	A	A
NB Park	A	B	B	A	C	C
Beacon Street/Aberdeen Street						
EB Beacon	A	A	A	A	A	A
WB Beacon	A	A	A	A	A	A
NB Aberdeen	C	D	D	B	B	B
Beacon Street/Arundel Street/Miner Street						
EB Beacon	A	A	A	A	A	A
WB Beacon	A	A	A	A	A	A
NB Miner	D	D	E	E	E	E
SB Arundel	D	D	E	E	E	E
Beacon Street/Munson Street						
EB Beacon	A	A	A	A	A	A
WB Beacon	A	A	A	A	A	A
NB Munson	B	B	B	C	C	C
Brookline Avenue/Overland Street						
EB Brookline	A	A	A	A	A	A
WB Brookline	A	A	A	A	A	A
SB Overland	C	E	E	C	F	F

* Intersection is unsignalized in the Existing Condition, LOS for the unsignalized configuration.
** Does not exist in Existing Conditions.

Chapter 5.0

Environmental Review Component

5.0 ENVIRONMENTAL REVIEW COMPONENT

This Chapter includes environmental analyses for the BCCB and the 819 Beacon Street Projects. Although the Patient and Family Parking Garage Addition is subject only to Small Project Review, it has been included voluntarily in the discussion of impacts where appropriate.

5.1 Wind

5.1.1 Introduction

A pedestrian level wind study was conducted for the BCCB, Patient and Family Parking Garage Addition and 819 Beacon Street Projects. The objective of the study was to assess the effect of the BCCB and 819 Beacon Street Projects on local wind conditions in pedestrian areas around the sites. The Patient and Family Parking Garage Addition was included in the BCCB wind study. With respect to the BCCB and the Patient and Family Parking Garage Addition, the pedestrian level winds were similar and generally comfortable for the intended uses in both the No Build and Build conditions. None of the studied locations had annual pedestrian winds that worsened to Uncomfortable or Dangerous from the No Build to the Build condition.

The annual pedestrian level winds in the No Build and Build Conditions with the 819 Beacon Street Project are similar and in some locations the mean annual wind conditions have improved with the 819 Beacon Street Project in place. The study involved wind simulations on a 1:300 scale model for the BCCB and a 1:400 scale model for the 819 Beacon Street Project of the Projects and surroundings. These simulations were then conducted in RWDI's boundary-layer wind tunnel at Guelph, Ontario, for the purpose of quantifying local wind speed conditions and comparing to appropriate criteria for gauging wind comfort in pedestrian areas. A list of the drawings used for the construction of the model is found in Appendix D. The criteria recommended by the BRA were used in this study. The following section includes a discussion of the methods and the results of the wind tunnel simulations.

5.1.2 Overview

Major buildings, especially those that protrude above their surroundings, often cause increased local wind speeds at the pedestrian level. Typically, wind speeds increase with elevation above the ground surface, and taller buildings intercept these faster winds and deflect them down to the pedestrian level. The funneling of wind through gaps between buildings and the acceleration of wind around corners of buildings may also cause increases in wind speed. Conversely, if a building is surrounded by others of equivalent height, it may be protected from the prevailing upper-level winds, resulting in no significant changes to the local pedestrian-level wind environment. The most effective way to assess potential pedestrian-level wind impacts around a proposed new building is to conduct scale model tests in a wind tunnel.

The consideration of wind in planning outdoor activity areas is important since high winds in an area tend to deter pedestrian use. For example, winds should be light or relatively light in areas where people would be sitting, such as outdoor cafes or playgrounds. For bus stops and other locations where people would be standing, somewhat higher winds can be tolerated. For frequently used sidewalks, where people are primarily walking, stronger winds are acceptable. For infrequently used areas, the wind comfort criteria can be relaxed even further. The actual effects of wind can range from pedestrian inconvenience, due to the blowing of dust and other loose material in a moderate breeze, to severe difficulty with walking due to the wind forces on the pedestrian.

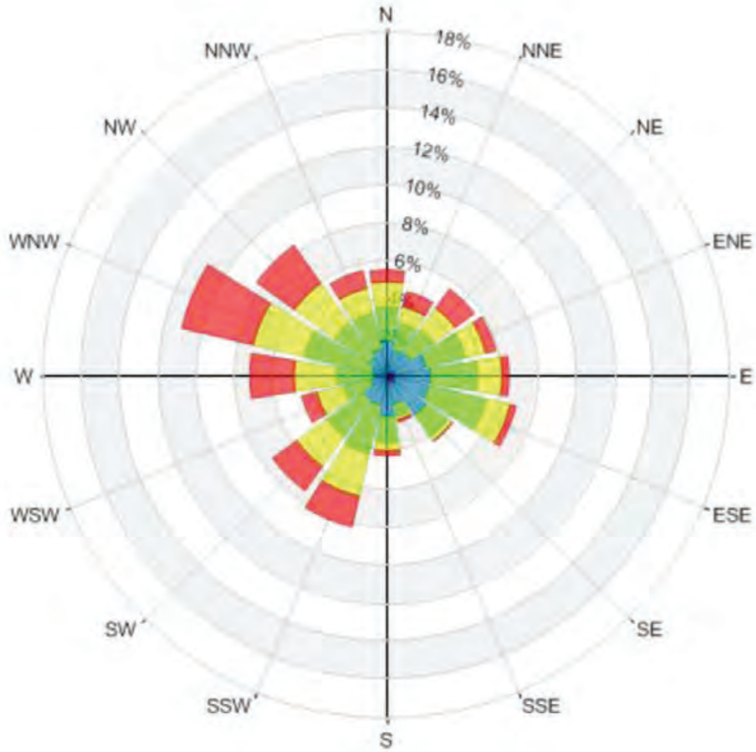
5.1.3 Methodology

Figures 5.1-1 to 5.1-3 present "wind roses", summarizing the annual and seasonal wind climates in the Boston area, based on the data from Logan International Airport. The left side wind rose in Figure 5.1-1, for example summarizes the spring (March, April, and May) wind data. In general, the prevailing winds at this time of year are from the west-northwest, northwest, west, southwest and east. On an annual basis (Figure 5.1-3), the most common wind directions are those between southwest and northwest.

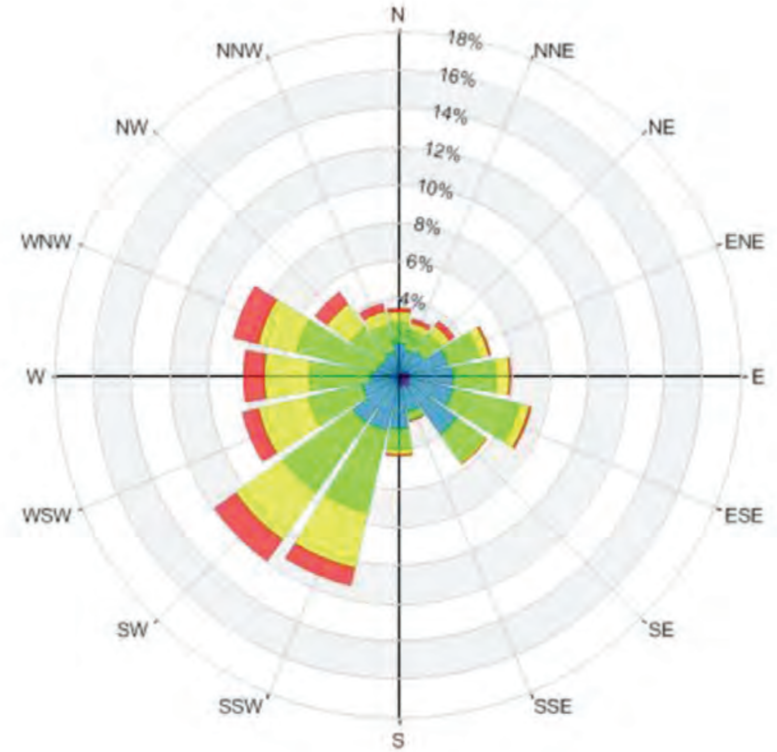
The study involved state-of-the-art measurement and analysis techniques to predict wind conditions at the Projects' sites. Nevertheless, some uncertainty remains in predicting wind comfort, and this must be kept in mind. For example, the sensation of comfort among individuals can be quite variable. Variations in age, individual health, clothing, and other human factors can change a particular response of an individual. The comfort limits used in the study represent an average for the total population. Also, unforeseen changes in the Projects' areas, such as the construction or removal of buildings, can affect the conditions experienced at the sites. Finally, the prediction of wind speeds is necessarily a statistical procedure. The wind speeds reported are for the frequency of occurrence stated (one percent of the time). Higher wind speeds will occur, but on a less frequent basis.

5.1.4 Pedestrian Wind Comfort Criteria

The BRA has adopted two standards for assessing the relative wind comfort of pedestrians. First, the BRA wind design guidance criterion states that an effective gust velocity (hourly mean wind speed +1.5 times the root-mean-square wind speed) of 31 mph should not be exceeded more than one percent of the time. The second set of criteria used by the BRA to



Spring
(March - May)



Summer
(June - August)

Wind Speed (mph)	Probability (%) Spring	Summer
Calm	1.7	1.8
1-5	3.5	4.6
6-10	22.5	30.3
11-15	31.5	36.4
16-20	23.0	19.5
>20	17.8	7.4

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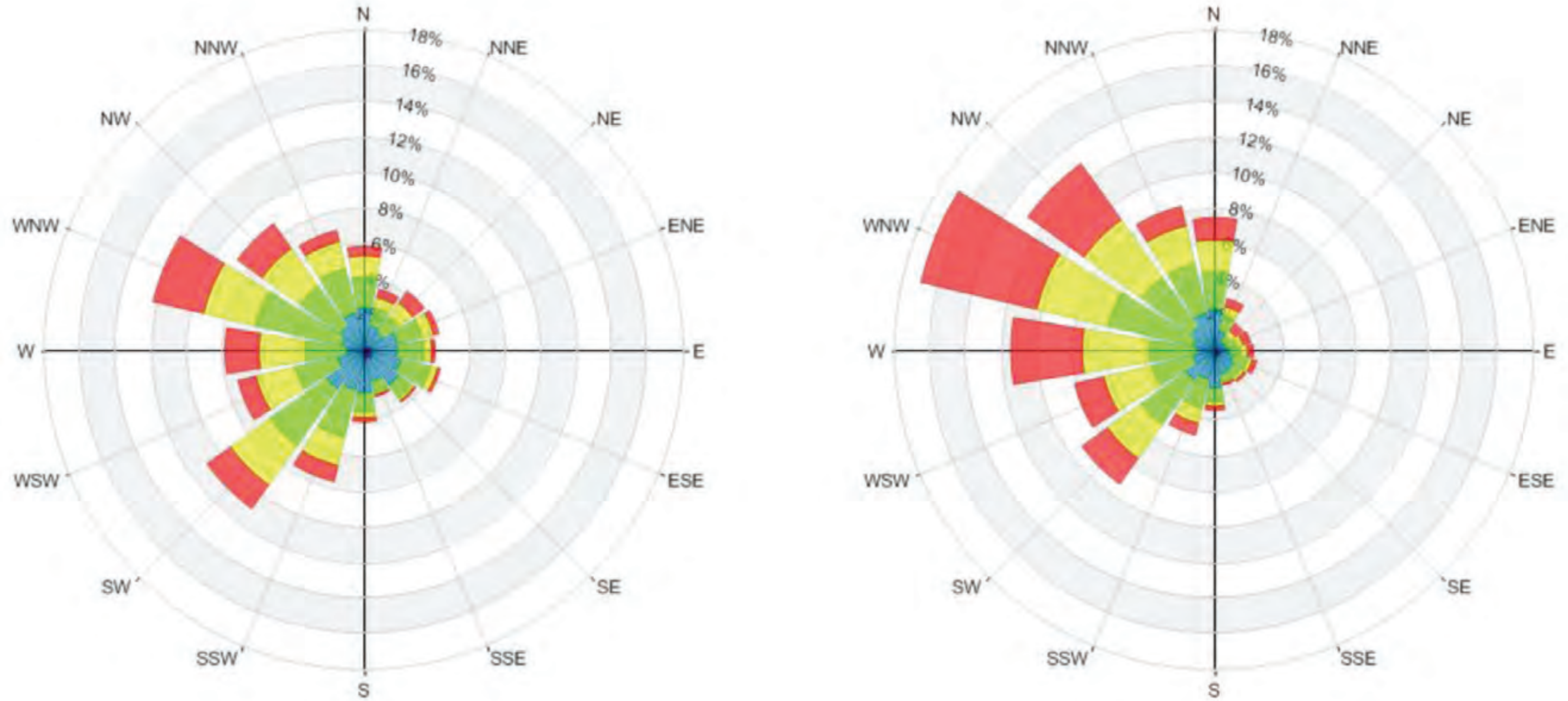
Figure 5.1-1
Directional Distribution (%) of Winds (Blowing from) Boston Logan International Airport (1981-2011) – Spring and Summer



Fall
(September - November)

Winter
(December - February)

Wind Speed (mph)	Probability (%) Fall	Winter
Calm	1.9	1.5
1-5	4.1	3.0
6-10	26.3	19.8
11-15	32.7	27.7
16-20	21.4	24.6
>20	13.5	23.4

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Figure 5.1-2
Directional Distribution (%) of Winds (Blowing from) Boston Logan International Airport (1981-2011) – Fall and Winter

Annual Winds

Wind Speed (mph)	Probability (%)
Calm	1.7
1-5	3.8
6-10	24.7
11-15	32.1
16-20	22.1
>20	15.5

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Figure 5.1-3
Directional Distribution (%) of Winds (Blowing from) Boston Logan International Airport (1981-2011) - Annual

determine the acceptability of specific locations is based on the work of Melbourne[1]. This set of criteria is used to determine the relative level of pedestrian wind comfort for activities such as sitting, standing, or walking. The criteria are expressed in terms of benchmarks for the one-hour mean wind speed exceeded one percent of the time (i.e., the 99-percentile mean wind speed). They are as follows:

Table 5.1-1 BRA Mean Wind Criteria*

Dangerous	$>$ 27 mph
Uncomfortable for Walking	$>$ 19 and $\leq$ 27 mph
Comfortable for Walking	$>$ 15 and $\leq$ 19 mph
Comfortable for Standing	$>$ 12 and $\leq$ 15 mph
Comfortable for Sitting	$<$ 12 mph

* Applicable to the hourly mean wind speed exceeded one percent of the time.

The wind climate found in a typical downtown location in Boston is generally comfortable for the pedestrian use of sidewalks and thoroughfares and meets the BRA effective gust velocity criterion of 31 mph.

5.1.5 Boston Children's Clinical Building and Patient and Family Parking Garage Addition

Two conditions were simulated:

No-Build Condition	including all existing and on-site buildings and BRA approved buildings not yet constructed; and
Build Condition	including the proposed BCCB Project and Patient and Family Parking Garage Addition and all existing and approved surroundings.

5.1.5.1 Boston Children's Clinical Building and Patient and Family Parking Garage Addition Model

As shown in Figures 5.1-4 and 5.1-5, the wind tunnel model included the BCCB, the Patient and Family Parking Garage Addition and all relevant surrounding buildings and topography within a 1,200 foot radius of the Projects' sites. The mean speed profile and turbulence of the natural wind approaching the modeled area were also simulated in RWDI's boundary layer wind tunnel. The scale model was equipped with 82 specially designed wind speed

[1] Melbourne, W.H., 1978, "Criteria for Environmental Wind Conditions", Journal of Industrial Aerodynamics, 3 (1978) 241 - 249.

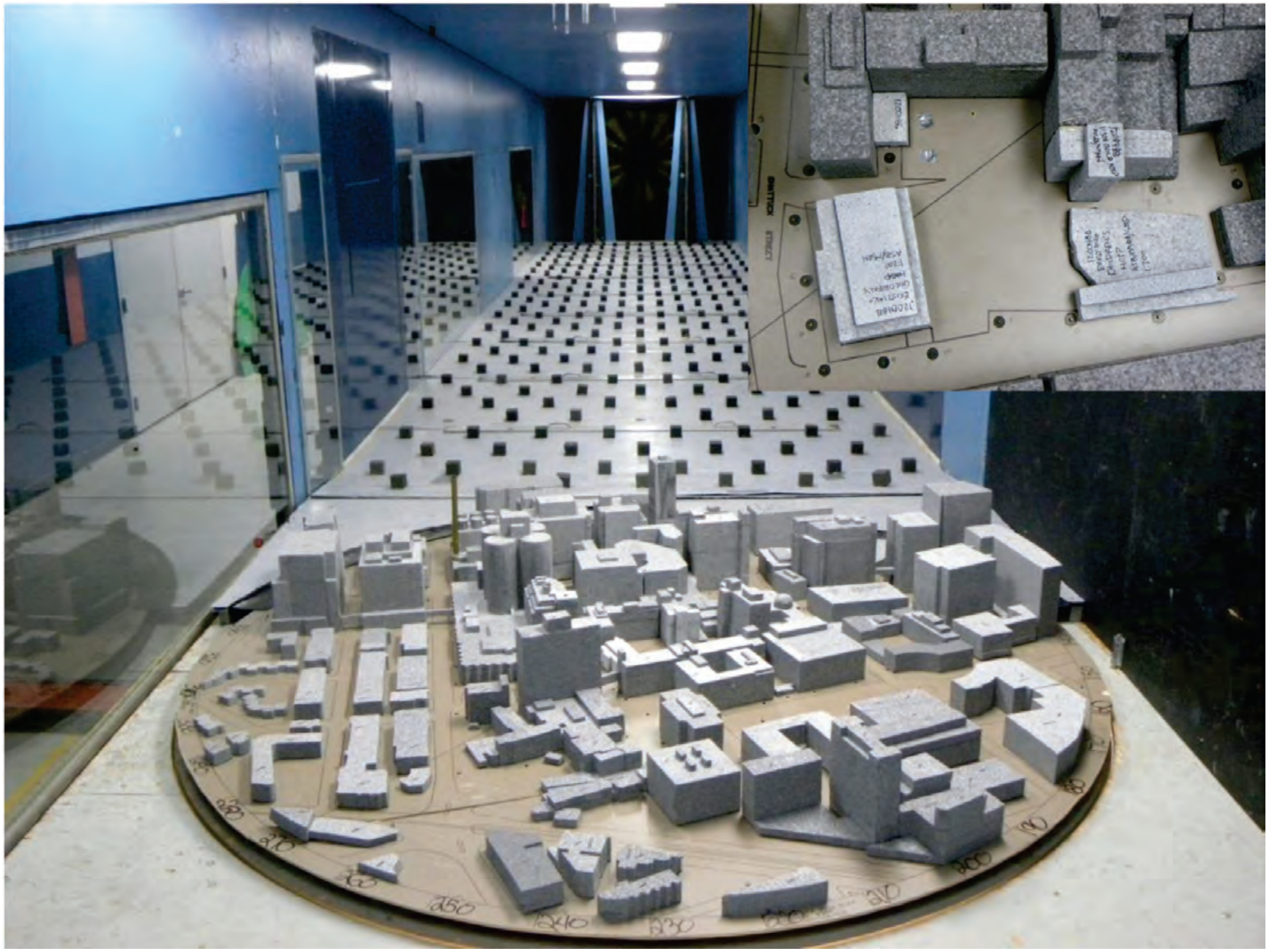

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Figure 5.1-4
BCCB Wind Tunnel Study Model – No Build Condition

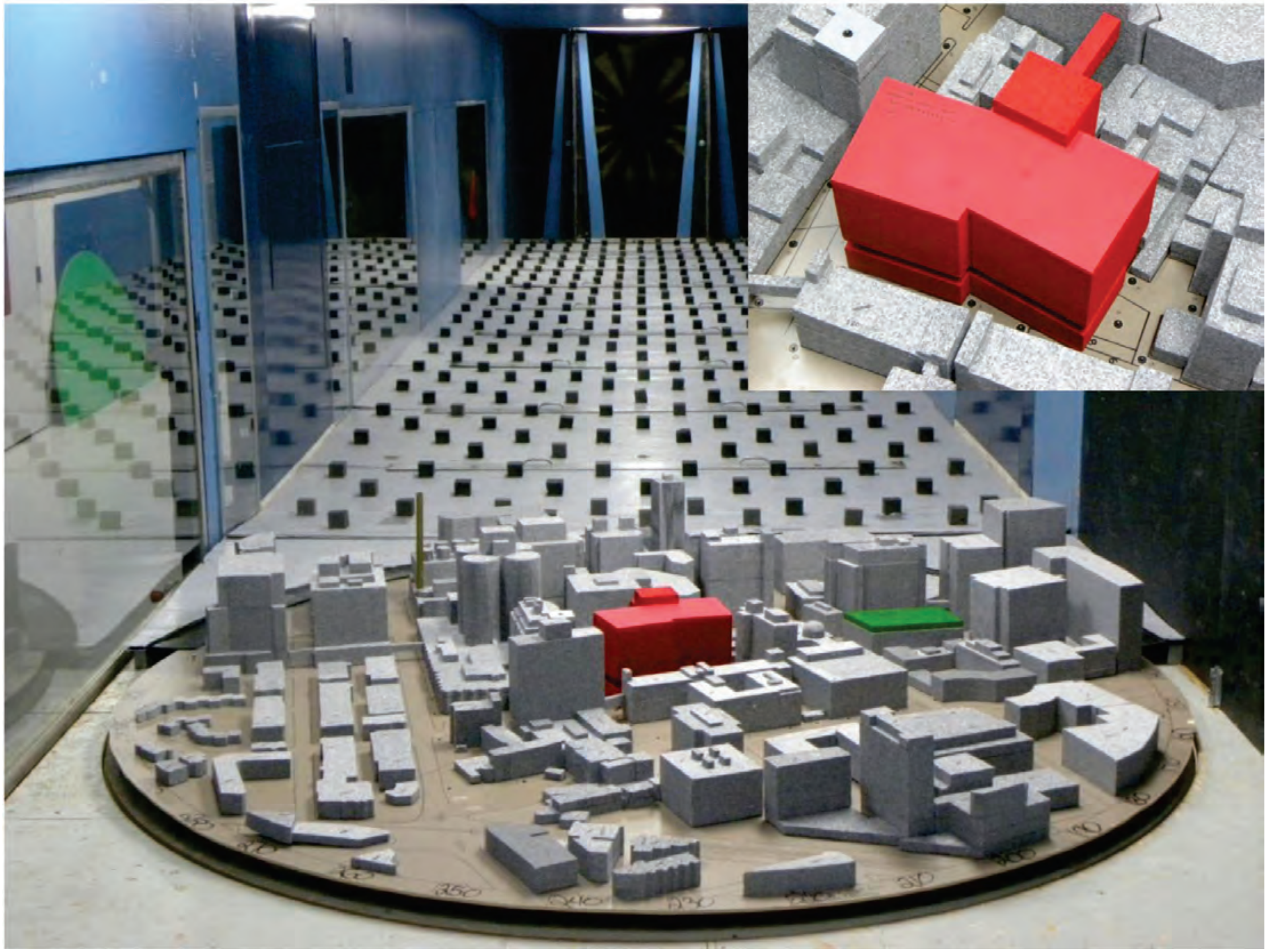

Figure 5.1-5
BCCB Wind Tunnel Study Model – Build Condition

sensors that were connected to the wind tunnel's data acquisition system to record the mean and fluctuating components of wind speed at a full-scale height of five feet above grade in pedestrian areas throughout the study site. Wind speeds were measured for 36 wind directions, in 10 degree increments, starting from true north. The measurements at each sensor location were recorded in the form of ratios of local mean and gust speeds to the reference wind speed in the free stream above the model. The results were then combined with long-term meteorological data, recorded during the years 1981 to 2011 at Boston's Logan International Airport, in order to predict full scale wind conditions. The analysis was performed separately for each of the four seasons and for the entire year. Details of the design of the proposed BCCB continue to evolve including the sculpting of the top and a reduced height along Shattuck Street. These changes, however, are not expected to impact pedestrian level winds around the Project.

5.1.5.2 Boston Children's Clinical Building and Patient and Family Parking Garage Addition Results

Appendix D-1 presents the mean and effective gust wind speeds for each season as well as annually. Figures 5.1-6 and 5.1-7 graphically depict the pedestrian wind conditions at each wind measurement location based on the annual winds for the No Build and Build conditions. The following summary of pedestrian wind comfort is based on the annual winds for each condition tested.

On-site Building Entrances and Walkways (Locations 1 through 32, 34 through 36 and 79)

The effective gust criterion was met annually at all locations. In addition, the annual wind speeds at the on-site entrances and walkways including those near the Patient and Family Parking Garage Addition were similar in both the No Build and Build Conditions and were suitable for the intended uses. None of the studied locations had annual pedestrian winds that worsened to Uncomfortable or Dangerous from the No Build to the Build condition.

No Build and Build Condition

As shown in Figures 5.1-6 and 5.1-7, all locations were suitable for walking or better annually, with the exception of Location 28.

Off-site Walkways (Locations 33, and 37 through 78)

Wind conditions suitable for walking are acceptable for sidewalks annually.

No Build and Build Condition

As shown in Figures 5.1-6 and 5.1-7, wind conditions were similar in the No Build and Build Conditions and all locations were suitable for walking or better annually, with the exception of Location 39. None of the studied locations had annual pedestrian winds that worsened to Uncomfortable or Dangerous from the No Build to the Build condition.

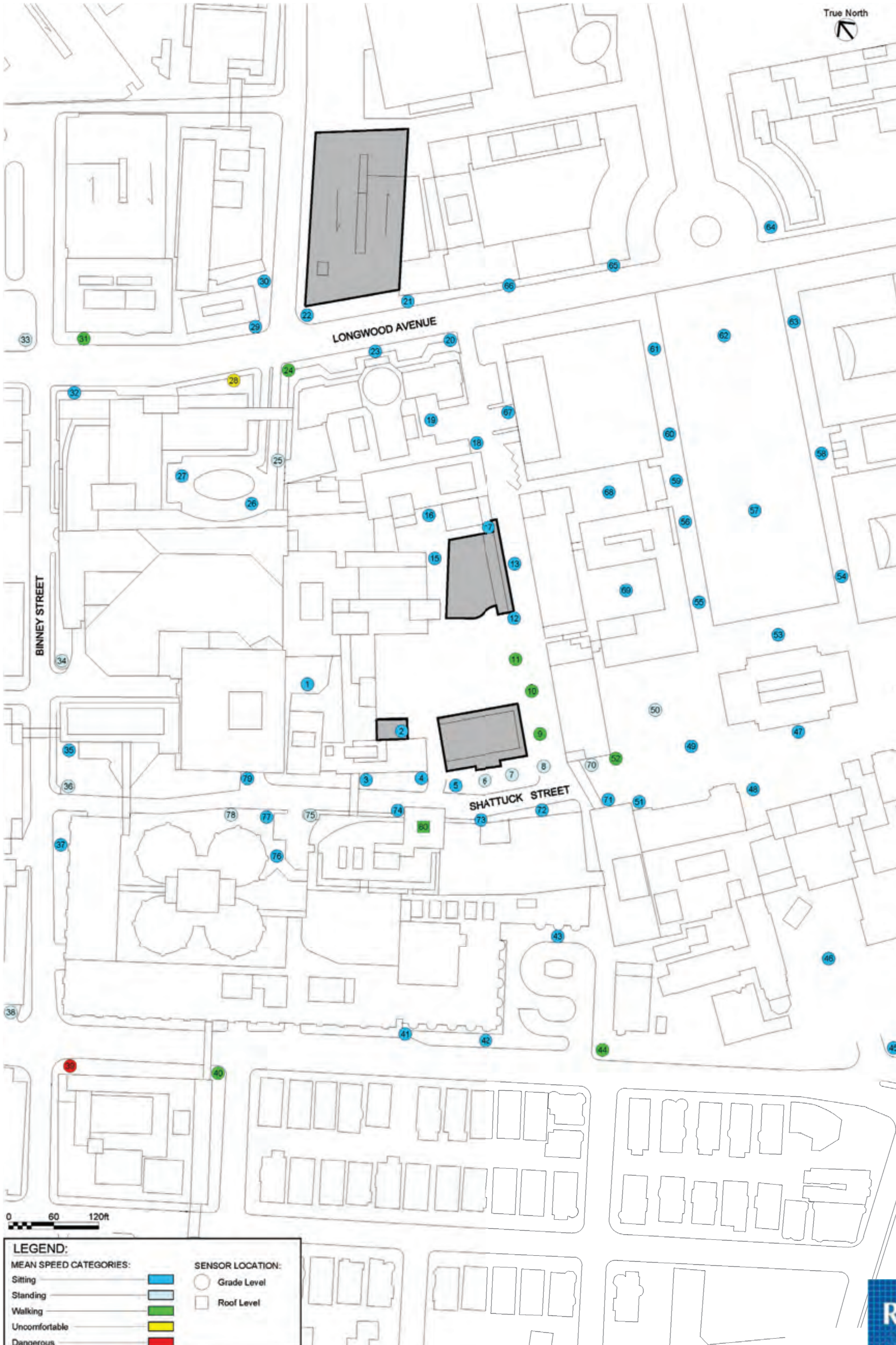

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Figure 5.1-6
BCCB Pedestrian Wind Conditions – Mean Speed – No Build

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Figure 5.1-7
BCCB Pedestrian Wind Conditions – Mean Speed – Build

The effective gust criterion was exceeded at Location 39 as well in both the No Build and Build conditions, as shown in Appendix D-1.

Brigham and Women's Hospital Helipad (Location 80)

No Build and Build Condition

For both the No Build and Build conditions, the helipad was suitable for walking annually, as shown in Figures 5.1-6 and 5.1-7. In addition, the effective gust criterion was not exceeded at the helipad in both the No Build and Build conditions. None of the studied locations had annual pedestrian winds that worsened to Uncomfortable or Dangerous from the No Build to the Build condition.

Boston Children's Clinical Building Roof Garden (Locations 81 and 82)

Build Condition

The roof garden on the BCCB was also studied in the Build condition. The BCCB roof garden was suitable for sitting annually as shown in Figure 5.1-7 and in Appendix D-1. In addition, the effective gust criterion was not exceeded at the garden roof.

5.1.6 819 Beacon Street Project

5.1.6.1 819 Beacon Street Model

As shown in Figures 5.1-8 and 5.1-9, the wind tunnel model included the proposed 819 Beacon Street Project and all relevant surrounding buildings and topography within a 1,600 foot radius of the Project site. The mean speed profile and turbulence of the natural wind approaching the modeled area were also simulated in RWDI's boundary layer wind tunnel. The scale model was equipped with 109 specially designed wind speed sensors that were connected to the wind tunnel's data acquisition system to record the mean and fluctuating components of wind speed at a full-scale height of five feet above grade in pedestrian areas throughout the study site. Wind speeds were measured for 36 wind directions, in 10 degree increments, starting from true north. The measurements at each sensor location were recorded in the form of ratios of local mean and gust speeds to the reference wind speed in the free stream above the model. The results were then combined with long-term meteorological data, recorded during the years 1981 to 2011 at Boston's Logan International Airport, in order to predict full scale wind conditions. The analysis was performed separately for each of the four seasons and for the entire year.

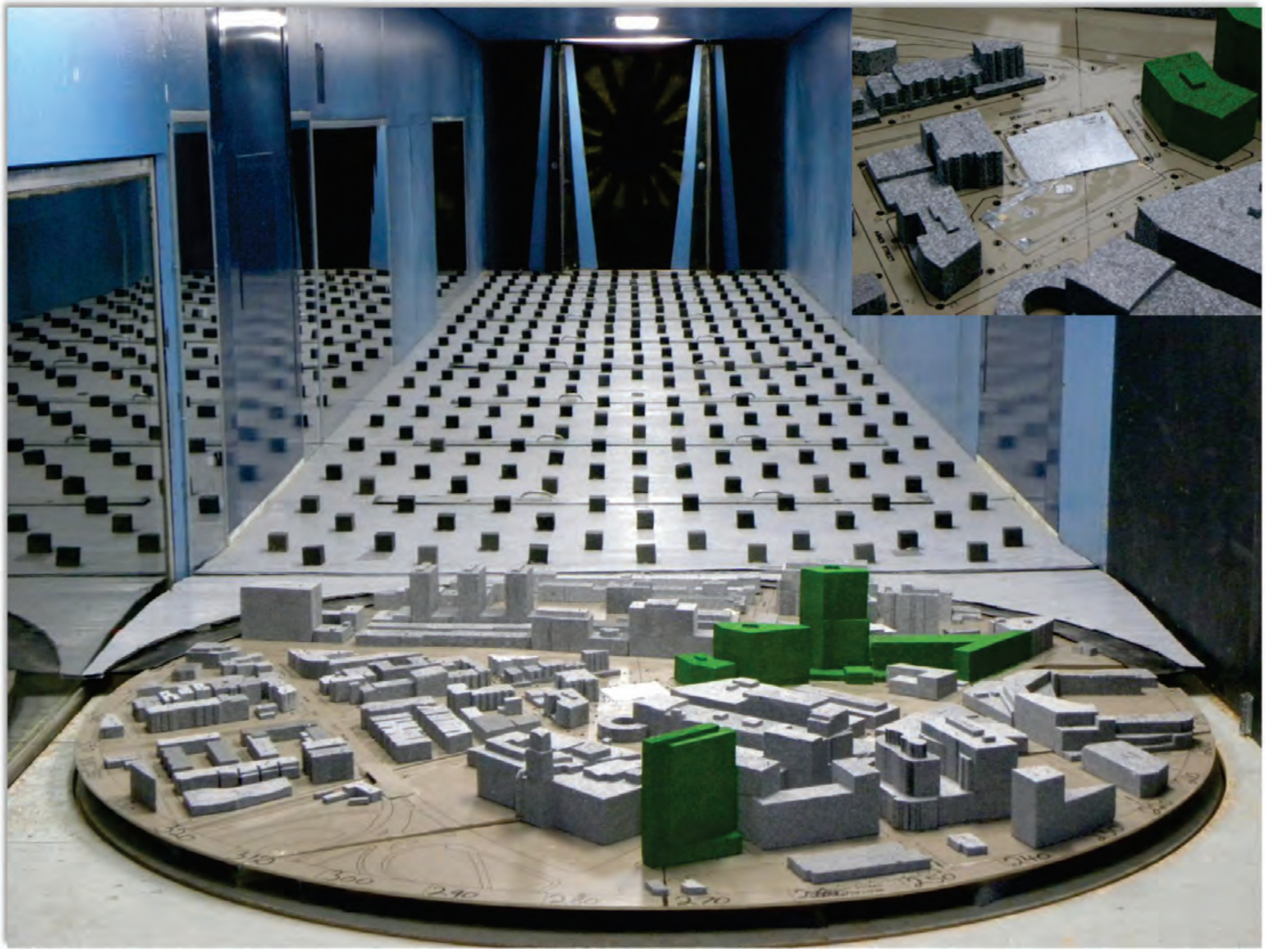

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Figure 5.1-8
819 Beacon Street Wind Tunnel Study Model – No Build Condition

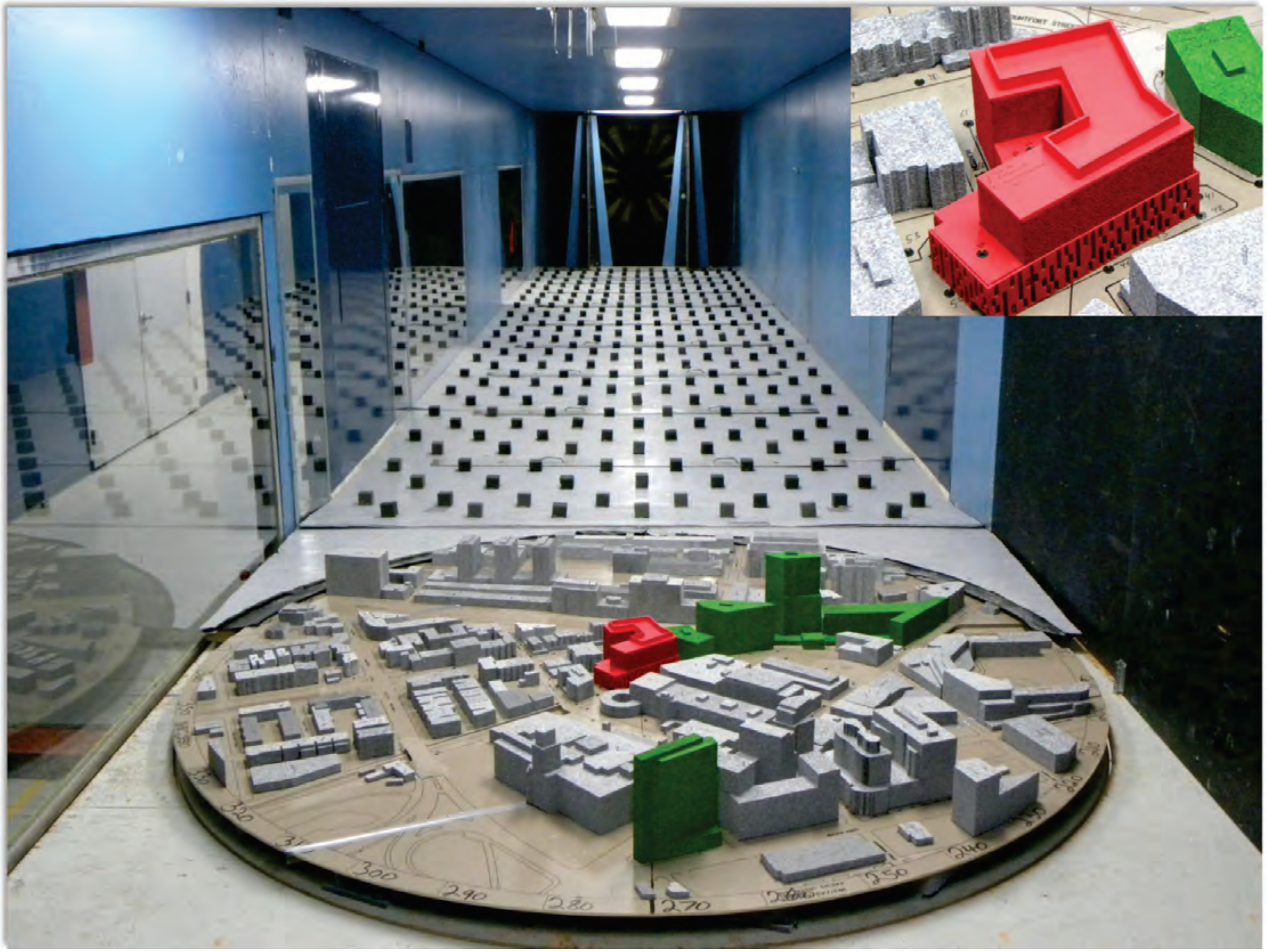

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Figure 5.1-9
819 Beacon Street Wind Tunnel Study Model – Build Condition

5.1.6.2 819 Beacon Street Results

Appendix D-2 presents the mean and effective gust wind speeds for each season as well as annually. Figures 5.1-10 and Figure 5.1-11 graphically depict the pedestrian wind conditions at each wind measurement location based on the annual winds. Figures 5.1-12 and 5.1-13 show compliance with the annual effective gust wind conditions. The following summary of pedestrian wind comfort is based on the annual winds for each condition tested.

Miner and Munson Streets (Locations 1-10)

No Build and Build Conditions

As shown on Figures 5.1-10 and 5.1-11, the pedestrian level wind conditions around the 819 Beacon Street Project in both the No Build and Build conditions were suitable for sitting and standing on an annual basis. In addition, the effective gust criterion was met at all locations studied.

819 Beacon Street Entrance, Walkways, and Terrace (Locations 11-32)

No Build Condition

The conditions measured around the 819 Beacon Street Project were generally comfortable for sitting and standing, with one location being suitable for walking (Location 27 in Figure 5.1-10), annually. The effective gust criterion was satisfied at all test locations for the No Build condition annually (Appendix D-2 and Figure 5.1-12).

Build Condition

Annual wind conditions were generally suitable for walking or better (Figure 5.1-11) around the 819 Beacon Street Project. At the main entrance (Location 12), conditions were comfortable for sitting, while at the roof terrace they were comfortable for standing (Locations 31 and 32). Only one location to the north of the Project was measured to be uncomfortable (Location 16). It is anticipated that with a proposed canopy, pedestrian level annual winds will be comfortable for walking or better at Location 16 as shown on Figure 6-23.

The elevated wind conditions at Location 16 (Figure 5.1-11) occurred as a result of the predominantly west-northwest wind flow being redirected down towards grade level by the north façade of the 819 Beacon Street Project. However, the wind speeds measured in this area were only marginally above the uncomfortable for walking rating. A corner canopy of at least 10 feet in depth (or tower setback at the corner) is being considered for this area to minimize impacts.

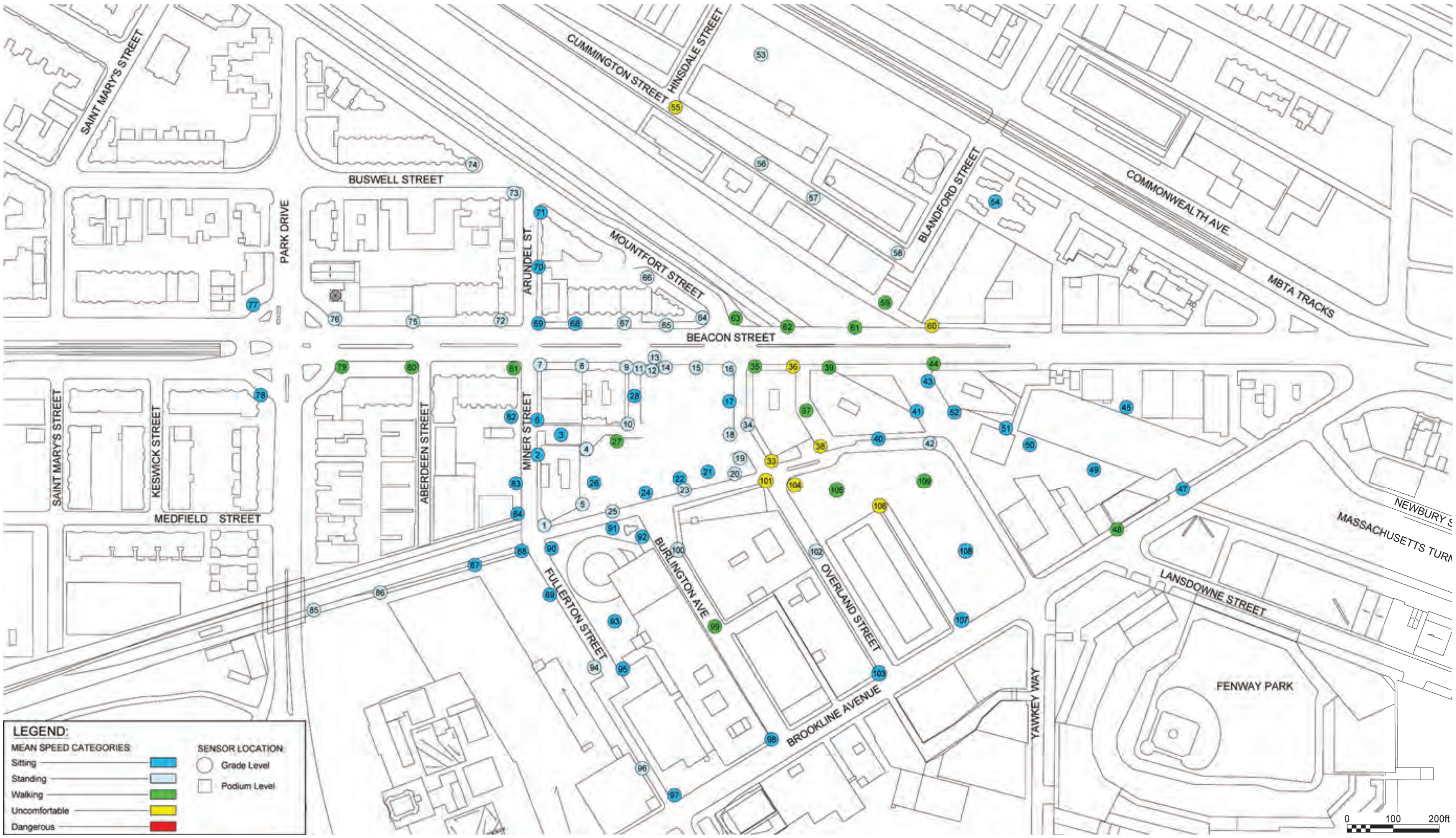

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Figure 5.1-10

819 Beacon Street Pedestrian Wind Conditions – Mean Speed – No Build (Annual)

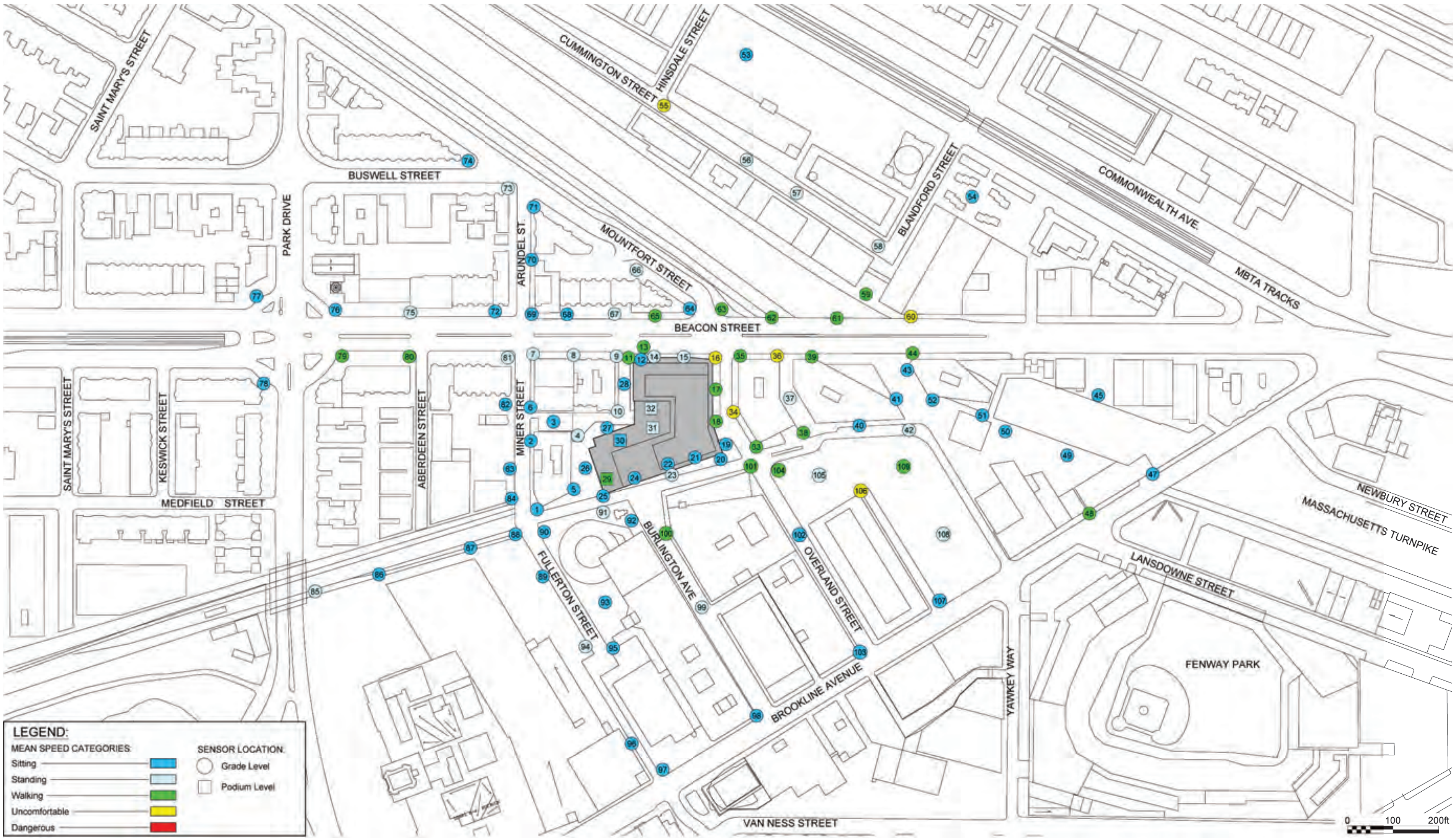

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Figure 5.1-11

819 Beacon Street Pedestrian Wind Conditions – Mean Speed – Build (Annual)

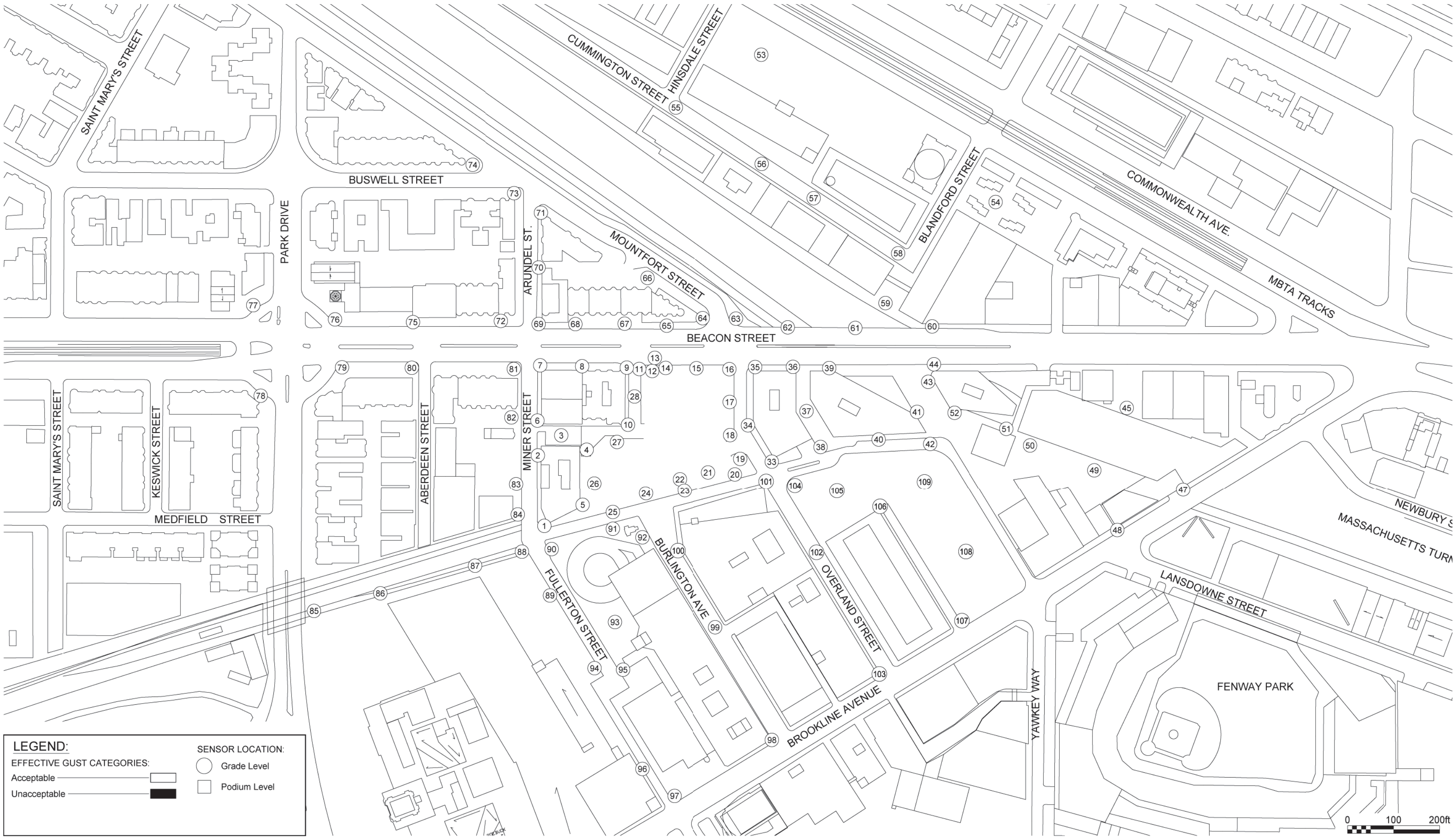

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Figure 5.1-12

819 Beacon Street Pedestrian Wind Conditions – Effective Gust – No Build (Annual)

Wind conditions on the terrace (Locations 31 and 32 in Figure 5.1-11) are comfortable for standing on an annual basis. Even lower wind speeds are expected with the proposed landscaping (such as trees and planters) in place.

The effective gust criterion was satisfied at all test locations for both alternatives annually (Appendix D-2 and Figure 5.1-13).

Additional Areas (Locations 33-109)

Wind conditions comfortable for walking are desired throughout the year for sidewalks and parking lots.

No Build Condition

The conditions measured in these areas were suitable for walking or better, with eight areas being uncomfortable (Locations 33, 36, 38, 55, 60, 101, 104 and 106 in Figure 5.1-10) annually. No areas exceeded the gust criterion as shown in Appendix D-2 and Figure 5.1-12.

Build Condition

Overall, the wind conditions with 819 Beacon Street improved in comparison to the No Build condition. Wind conditions were generally suitable for sitting and walking annually, with the 819 Beacon Street Project in place (Figure 5.1-11). The number of locations with uncomfortable pedestrian level winds decreased from eight in the No Build condition to five in the Build condition (Locations 34, 36, 55, 60, and 106 in Figure 5.1-11).

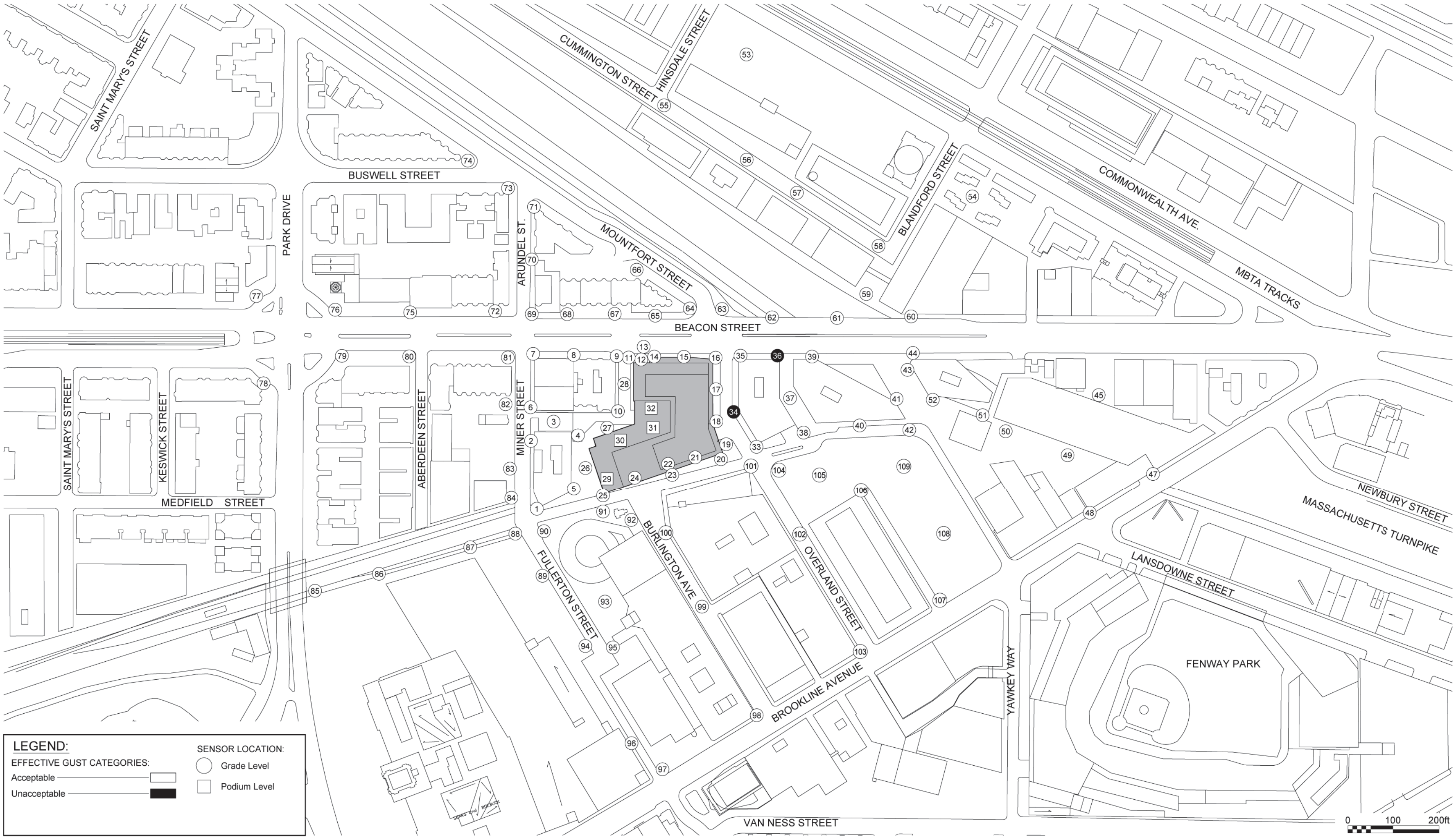
There were two areas which exceeded the effective gust criterion annually (Locations 34 and 36) as shown on Figure 5.1-13 and in Appendix D-2. To minimize impacts, mitigation such as planters, landscaping and/or canopies is being considered for these locations.

5.2 Shadow

5.2.1 Introduction and Methodology

A shadow impact analysis was conducted to investigate shadow impacts from the Projects during three time periods (9:00 a.m., 12:00 p.m., and 3:00 p.m.) during the summer solstice (June 21), autumnal equinox (September 21), vernal equinox (March 21), and the winter solstice (December 21). In addition, shadow studies were conducted for the 6:00 p.m. time period during the summer solstice and autumnal equinox.

The shadow analysis presents the existing shadow and new shadow that would be created by the Projects, illustrating the incremental impact of the Projects. The analysis focuses on nearby open spaces, sidewalks and bus stops and stations adjacent to and in the vicinity of



Boston Children's Hospital

Figure 5.1-13

819 Beacon Street Pedestrian Wind Conditions – Effective Gust – Build (Annual)

the Project sites. Shadows have been determined using the applicable altitude and azimuth data for Boston. Figures showing the net new shadow from the Projects are provided in Figures 5.2-1 to 5.2-28 at the end of Sections 5.2.2 and 5.2.3.

5.2.2 Boston Children's Clinical Building and Patient and Family Parking Garage Addition

5.2.2.1 Vernal Equinox (March 21)

At 9:00 a.m., during the vernal equinox, new shadow will be cast to the northwest. New shadow will be cast across the portions of the Children's campus with small slivers of new shadow reaching the sidewalk along Shattuck Street and onto the Bader Garden and Roof Garden. The Patient and Family Parking Garage Addition will not create new shadow at this time period.

At 12:00 p.m., new shadow is cast to the north. New shadow from the BCCB will be limited to the BCCB site and Children's surrounding campus. New shadow will be cast onto portions of the Bader Garden, Roof Garden and Garden Adjacent to the BCCB. The Patient and Family Parking Garage Addition will create minor new shadow on Blackfan Circle and its sidewalks, and the open space immediately north of the garage.

At 3:00 p.m., new shadow will be cast to the northeast across Meadow Lane, the sidewalks and the adjacent buildings. New shadow will be cast onto a portion of the Garden Adjacent to the BCCB. The Patient and Family Parking Garage will cast minor new shadow to the east.

No new shadows are created on nearby bus stops or public open spaces as a result of the proposed BCCB or Patient and Family Parking Garage Addition during the vernal equinox time periods studied.

5.2.2.2 Summer Solstice (June 21)

At 9:00 a.m., during the summer solstice, new shadow will be cast to the west. A sliver of new shadow will be cast onto a portion of Shattuck Street and its sidewalks. The remaining new shadow from the BCCB will fall within the Children's campus. New shadow will be cast onto the Bader Garden and Roof Garden. The Patient and Family Parking Garage Addition will create a small area of new shadow on the open space to the south of the Karp Research Building.

At 12:00 p.m., minimal new shadow from the BCCB will be cast to the north primarily within the Children's campus. New shadow will be cast onto minor portions of the Bader Garden and Garden Adjacent to the BCCB. The Patient and Family Parking Garage Addition will create minor new shadow on Blackfan Circle and the open space immediately north of the garage.

At 3:00 p.m., new shadow will be cast to the east across Meadow Lane, its sidewalks and the adjacent buildings. New shadow will be cast onto a portion of the Garden Adjacent to the BCCB. No new shadow will be created by the Patient and Family Parking Garage Addition during this time period.

At 6:00 p.m., new shadow will be cast to the east. New shadow will be cast across Meadow Lane and its sidewalks. New shadow will be cast onto a small area of the Harvard Medical School Quadrangle. No new shadow will be cast on the campus' open spaces. No new shadow will be created by the Patient and Family Parking Garage Addition during this time period.

No new shadows are created on nearby bus stops as a result of the proposed BCCB or Patient and Family parking Garage Addition during the summer solstice time periods studied.

5.2.2.3 Autumnal Equinox (September 21)

At 9:00 a.m. during the autumnal equinox, new shadow will be cast to the west. New shadow will be cast onto a small portion of the sidewalks along Shattuck Street with the majority of the new shadows falling within the BCCB Project site and surrounding campus. New shadow will be cast onto portions of the Bader Garden and Roof Garden. No new shadow will be created by the Patient and Family Parking Garage Addition during this time period.

At 12:00 p.m., new shadow will be cast to the north. New shadow from the BCCB will be limited to a small portion of the BCCB Project site and surrounding campus. New shadow from the BCCB will be cast onto portions of the Bader Garden, Roof Garden and Garden Adjacent to the BCCB. New shadow from the Patient and Family Parking Garage Addition will be cast onto a small portion of Blackfan Circle and its sidewalks, as well as the open space to the north of the garage.

At 3:00 p.m., new shadow will be cast to the northeast. New shadow will be cast across both the BCCB Project site and Meadow Lane, including sidewalks, and adjacent buildings. New shadow will be cast onto a portion of the Garden Adjacent to the BCCB. The Patient and Family Parking Garage will cast minor new shadow to the east.

At 6:00 p.m., new shadow will be cast to the east. New shadow will be cast across Meadow Lane and its sidewalks. New shadow will be cast onto a small area of the Harvard Medical School Quadrangle and a minor portion of Longwood Avenue. No new shadow will be cast on the campus' open spaces. No new shadow will be created by the Patient and Family Parking Garage Addition during this time period.

No new shadows are created on nearby bus stops as a result of the proposed BCCB or Patient and Family Parking Garage Addition during the vernal equinox time periods studied.

5.2.2.4 Winter Solstice (December 21)

The winter solstice creates the least favorable conditions for sunlight in New England. The sun angle during the winter is lower than in any other season, causing the shadows in urban areas to elongate and be cast onto large portions of the surrounding area.

At 9:00 a.m. during the winter solstice, new shadow is cast to the west. New shadow will be limited to the BCCB Project site and surrounding campus. No new shadow will be cast on the campus' open spaces. No new shadow will be created by the Patient and Family Parking Garage Addition during this time period.

At 12:00 p.m., new shadow will be cast to the northwest. New shadow will be limited to the BCCB Project site as well as the surrounding campus. New shadow will be cast onto small portions of the Bader Garden and Roof Garden. No new shadow will be created by the Patient and Family Parking Garage Addition during this time period.

At 3:00 p.m., new shadow will be cast to the north. New shadow will be cast across the campus and Meadow Lane. No new shadow will be cast on the campus' open spaces. No new shadow will be created by the Patient and Family Parking Garage Addition during this time period.

No new shadows are created on nearby bus stops or public open spaces as a result of the proposed BCCB or Patient and Family Parking Garage Addition during the winter solstice time periods studied.

5.2.2.5 Boston Children's Clinical Building and Patient and Family Parking Garage Addition Conclusions

The BCCB and Patient and Family Parking Garage Addition Projects have minimal shadow impacts. The impacts are generally limited to the BCCB Project site and Children's campus and the area immediately surrounding the Patient and Family Parking Garage. There will be no impacts from new shadows on any surrounding bus or shuttle stops. There will also be little impact on existing public open space as only small portions of shadow are expected to fall on Harvard's Medical School Quadrangle during just two of the fourteen time periods studied. New shadow will fall on some of the campus' open spaces due to their location within the campus, but will be limited.

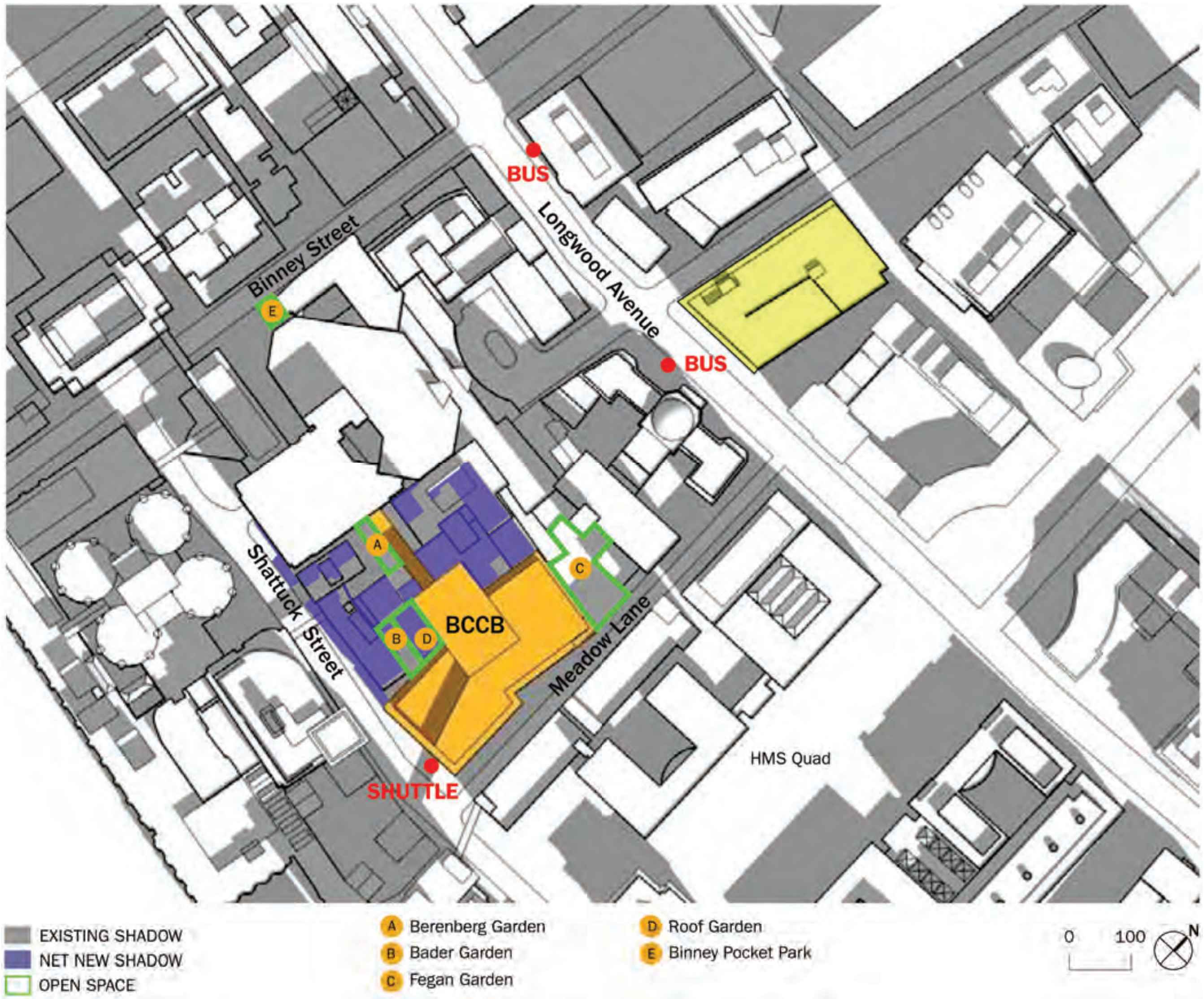


Figure 5.2-1

BCCB and Patient and Family Parking Garage Addition, March 21, 9:00 a.m.

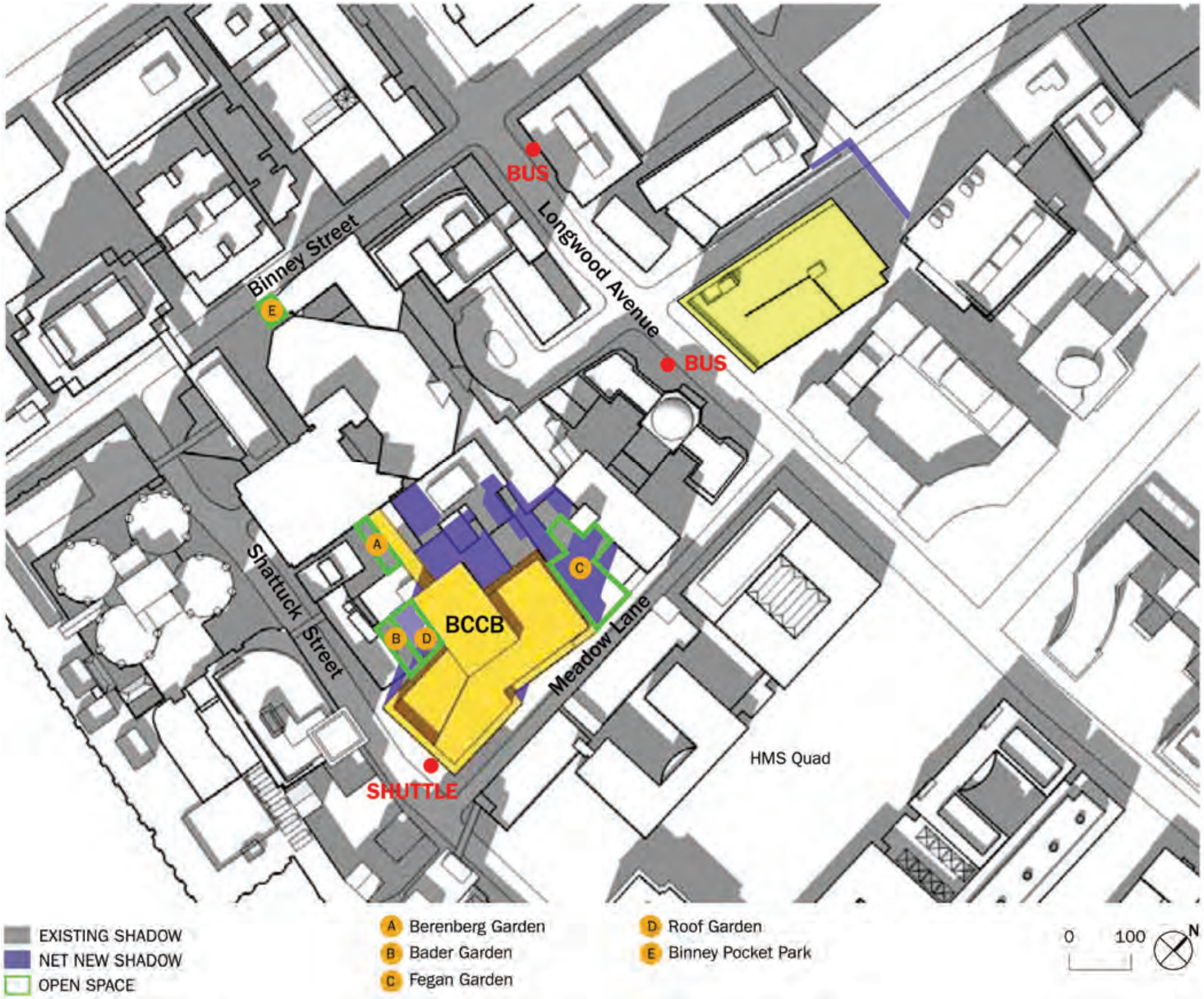


Figure 5.2-2

BCCB and Patient and Family Parking Garage Addition, March 21, 12:00 p.m.

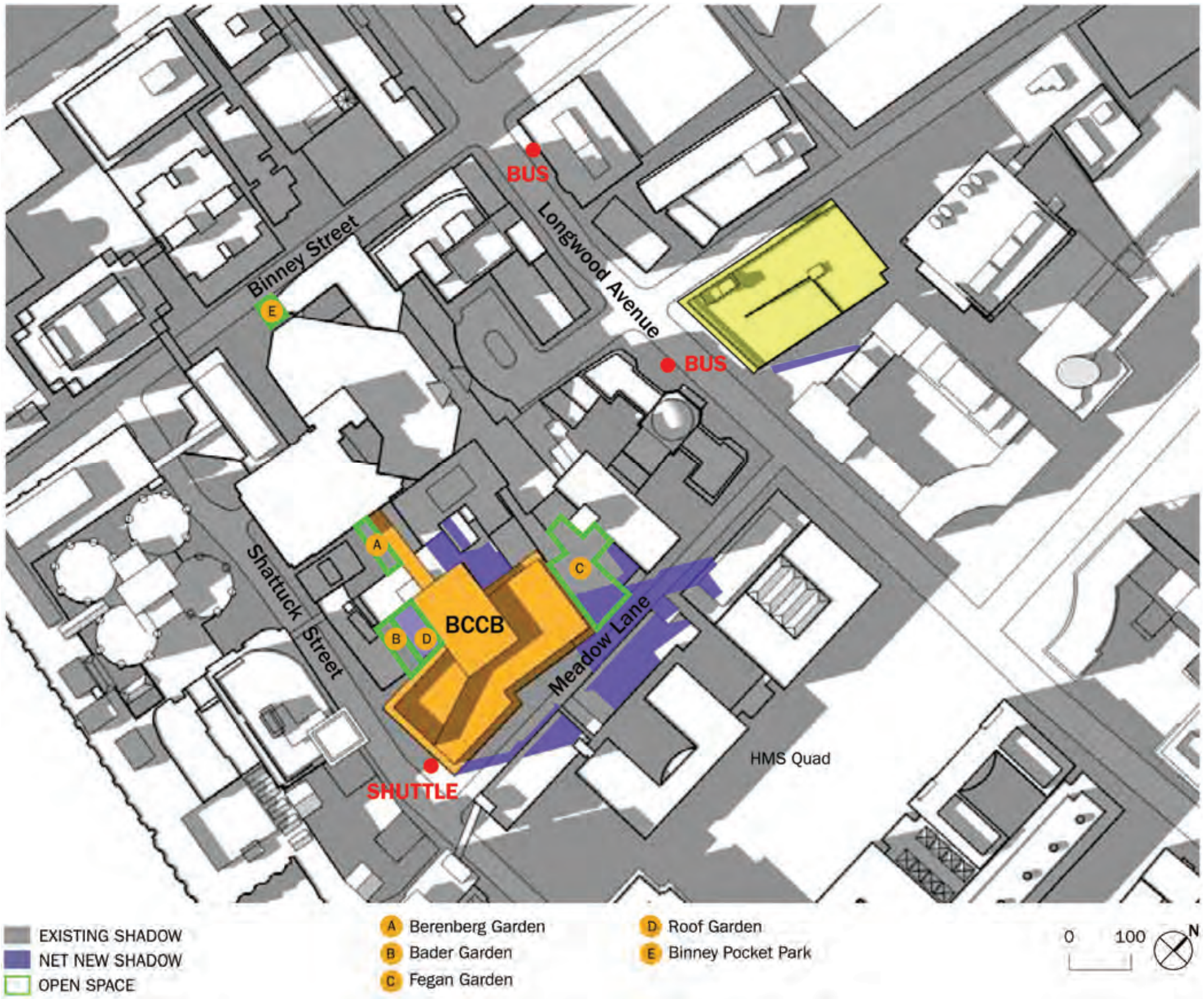


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Figure 5.2-3

BCCB and Patient and Family Parking Garage Addition, March 21, 3:00 p.m.

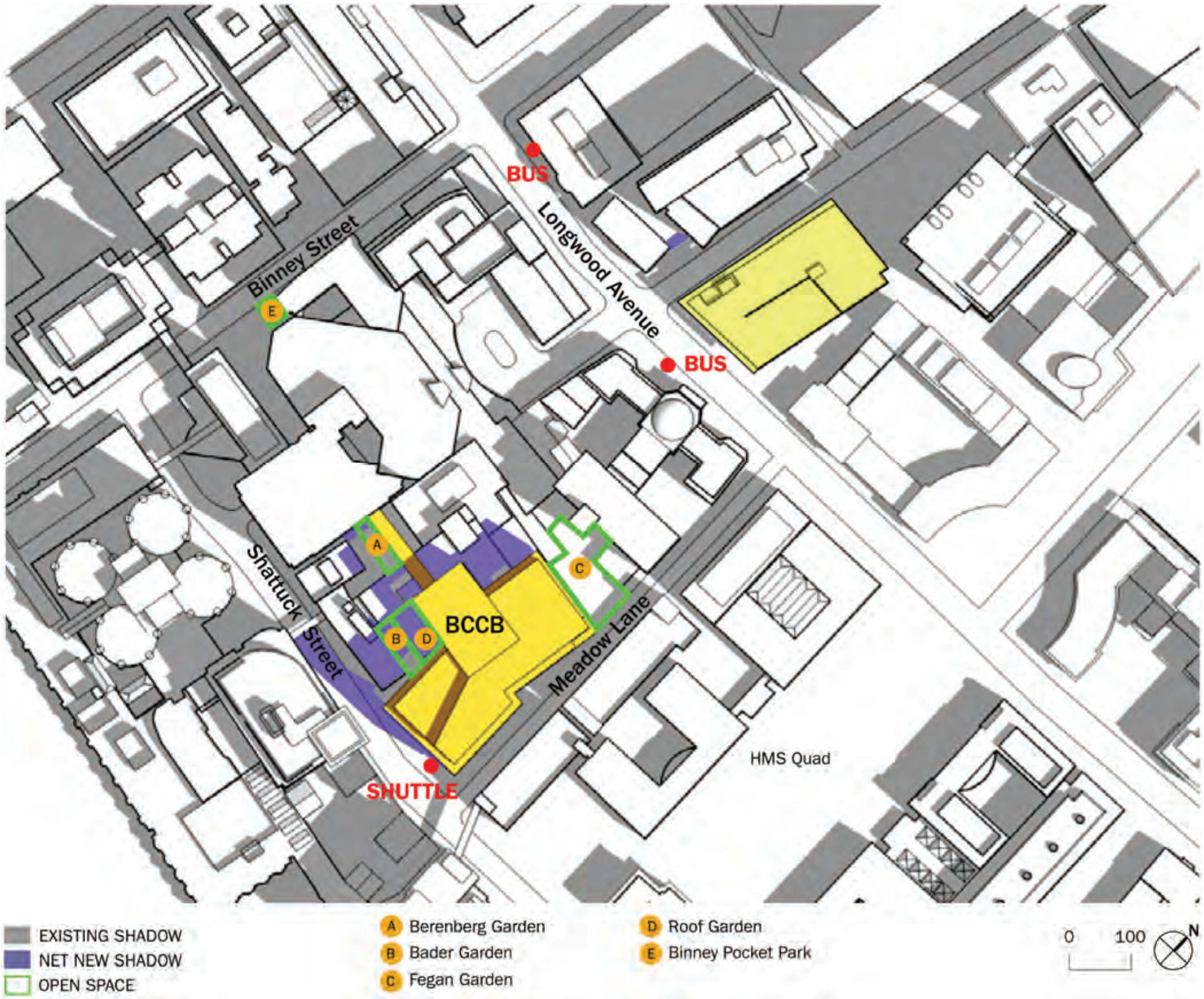

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Figure 5.2-4

BCCB and Patient and Family Parking Garage Addition, June 21, 9:00 a.m.

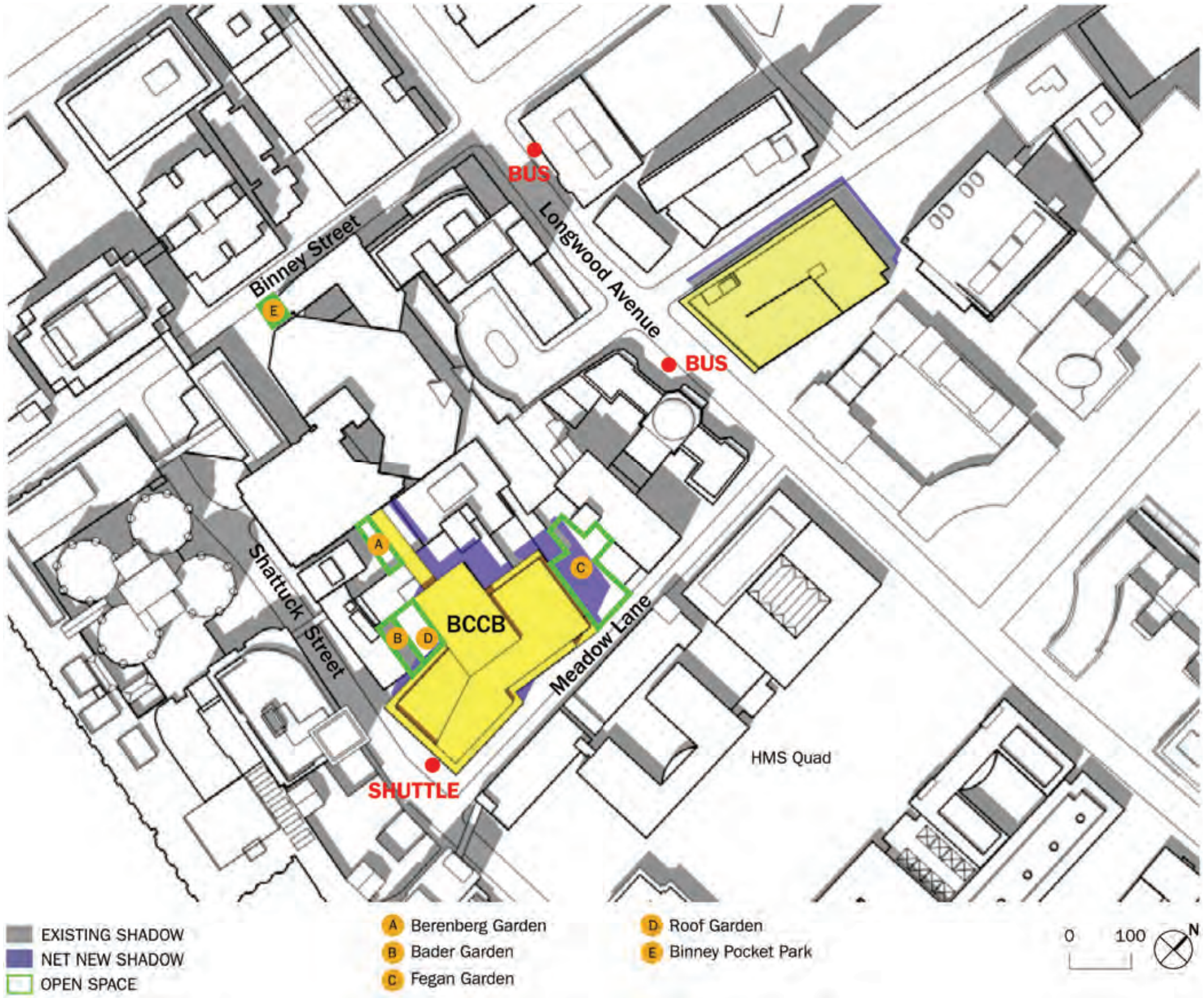

Figure 5.2-5
BCCB and Patient and Family Parking Garage Addition, June 21, 12:00 p.m.

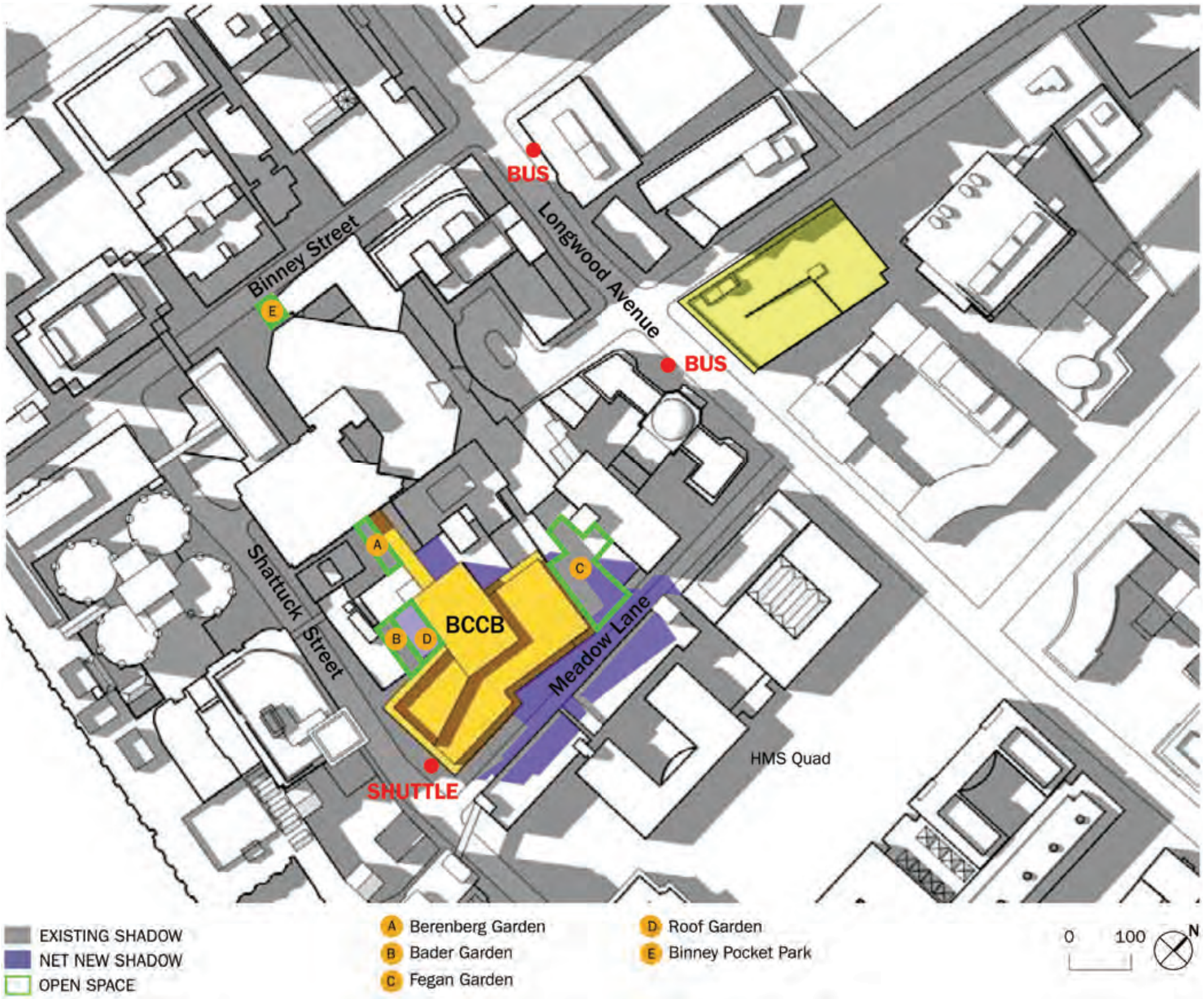

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Figure 5.2-6

BCCB and Patient and Family Parking Garage Addition, June 21, 3:00 p.m.

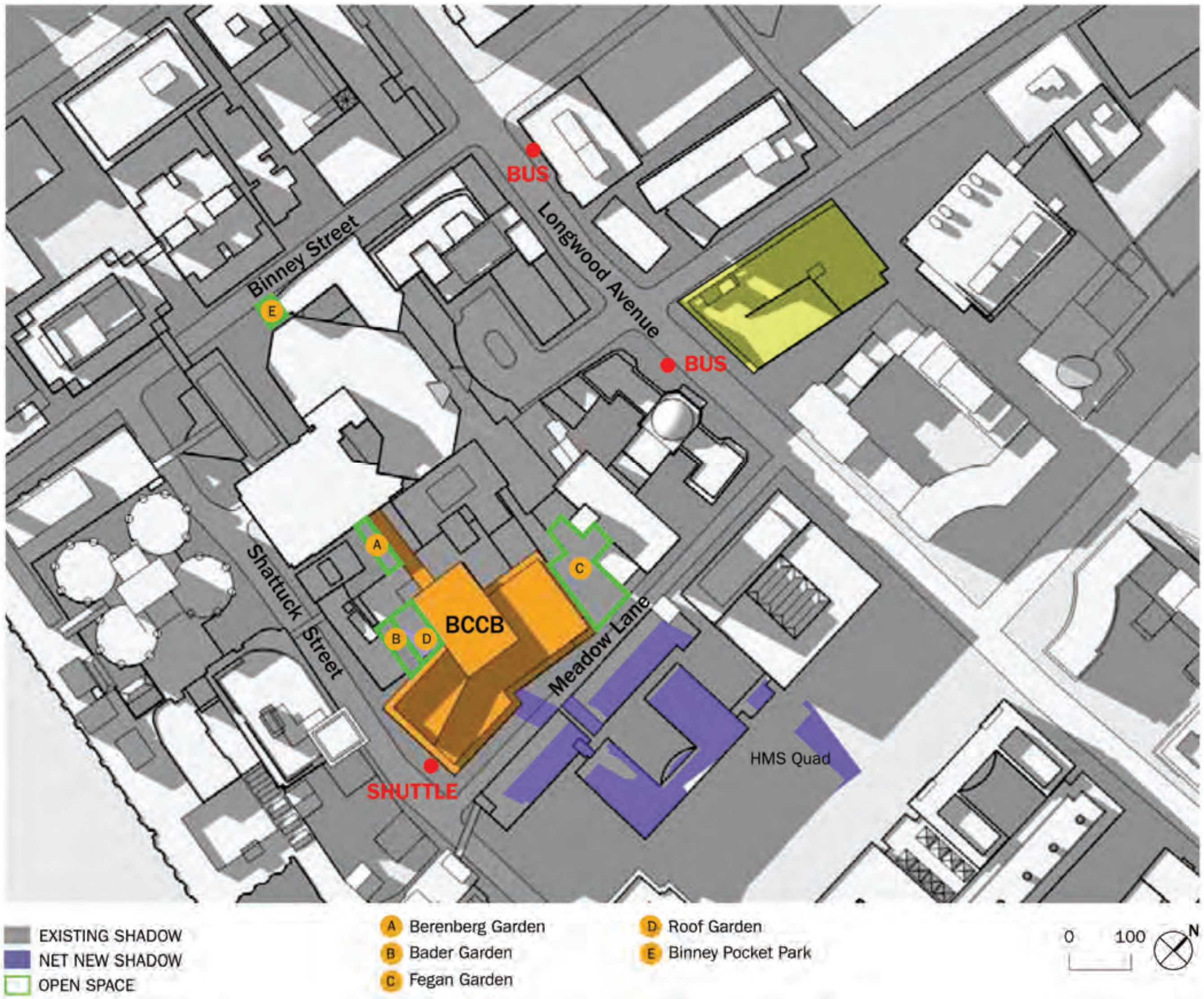

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Figure 5.2-7
BCCB and Patient and Family Parking Garage Addition, June 21, 6:00 p.m.

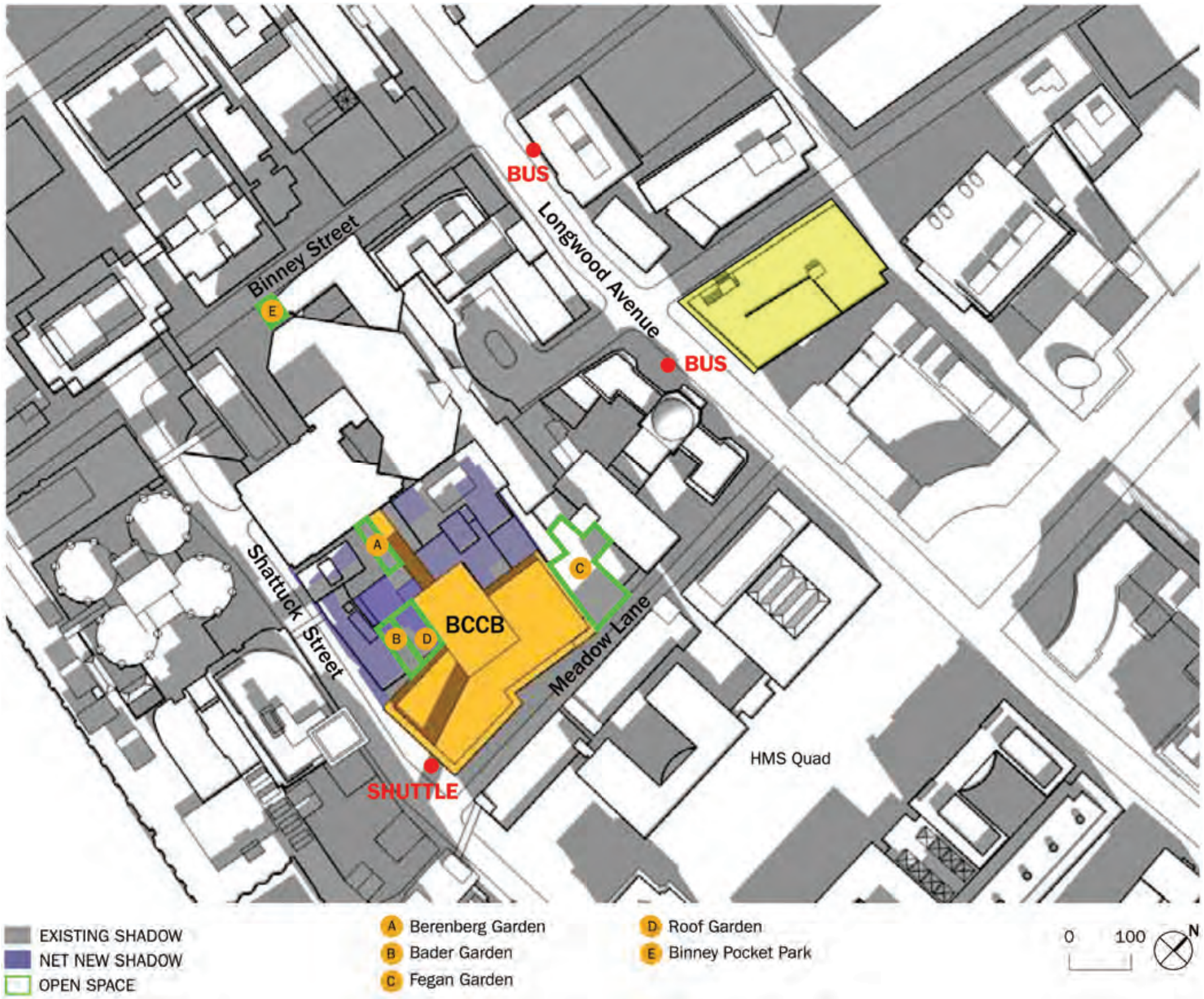

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Figure 5.2-8

BCCB and Patient and Family Parking Garage Addition, September 21, 9:00 a.m.

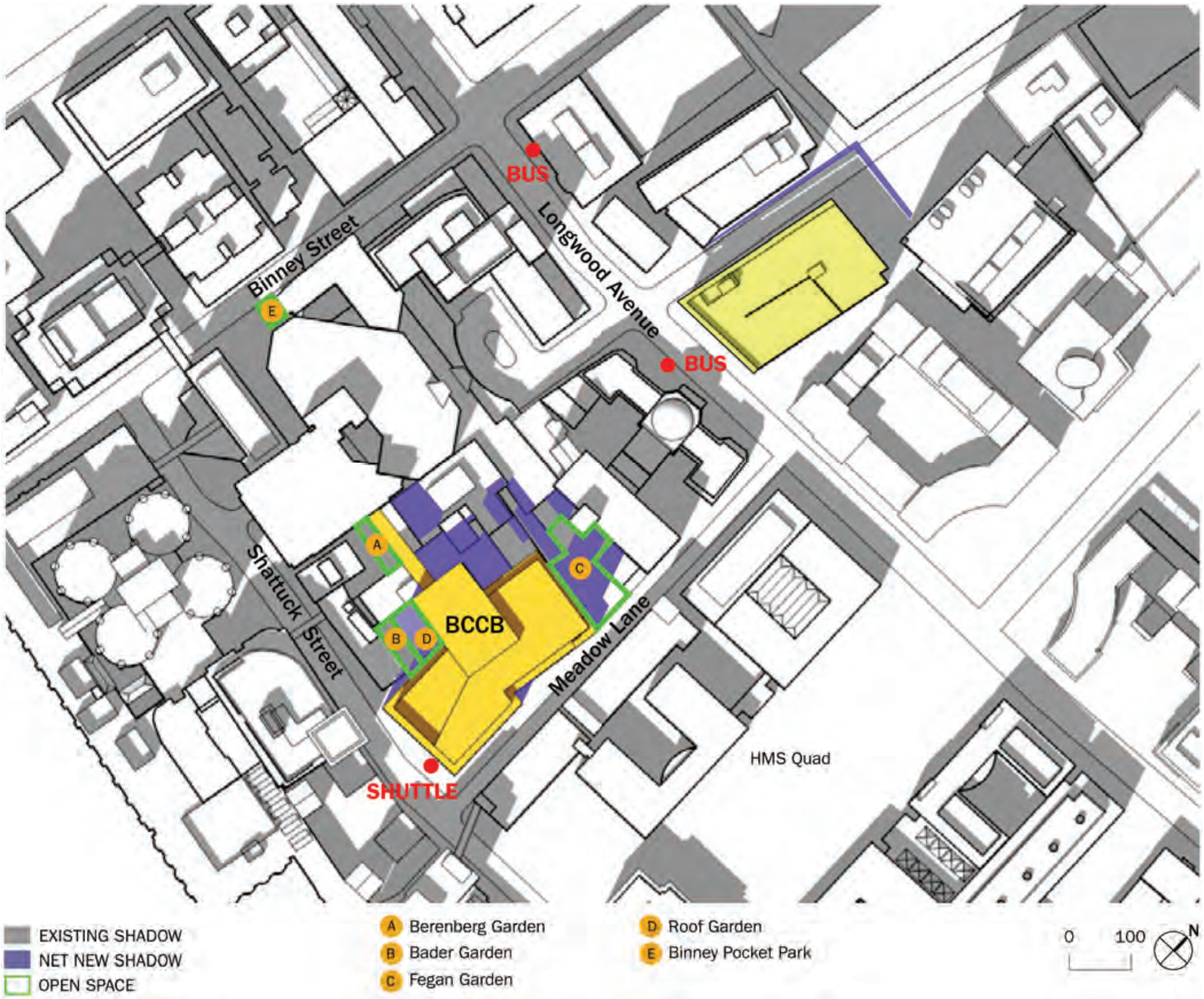

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Figure 5.2-9

BCCB and Patient and Family Parking Garage Addition, September 21, 12:00 p.m.

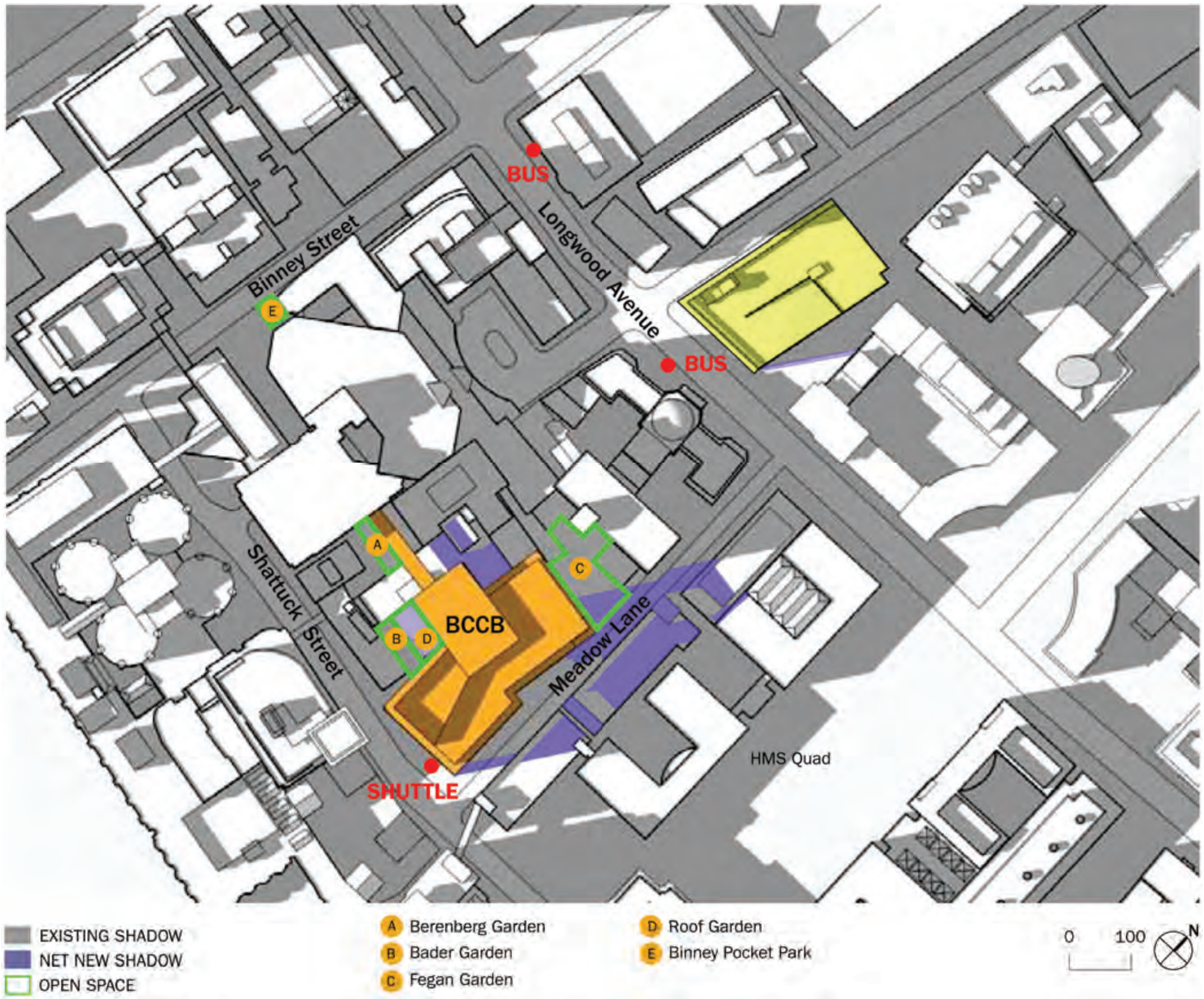

Figure 5.2-10

BCCB and Patient and Family Parking Garage Addition, September 21, 3:00 p.m.

EXISTING SHADOW
NET NEW SHADOW
OPEN SPACE

A Berenberg Garden
B Bader Garden
C Fegan Garden
D Roof Garden
E Binney Pocket Park

0 100 N

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Figure 5.2-11

BCCB and Patient and Family Parking Garage Addition, September 21, 6:00 p.m.

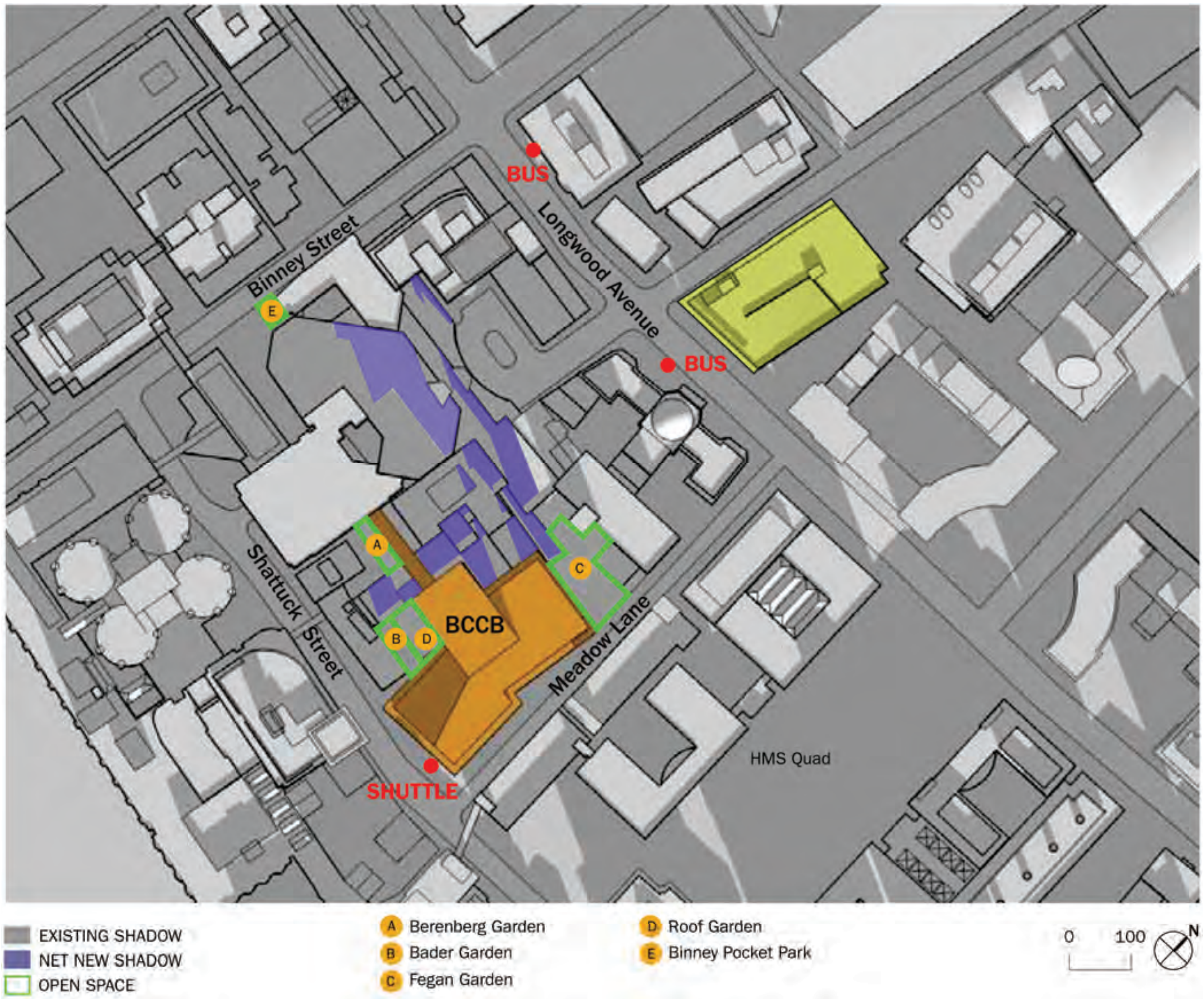

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Figure 5.2-12

BCCB and Patient and Family Parking Garage Addition, December 21, 9:00 a.m.

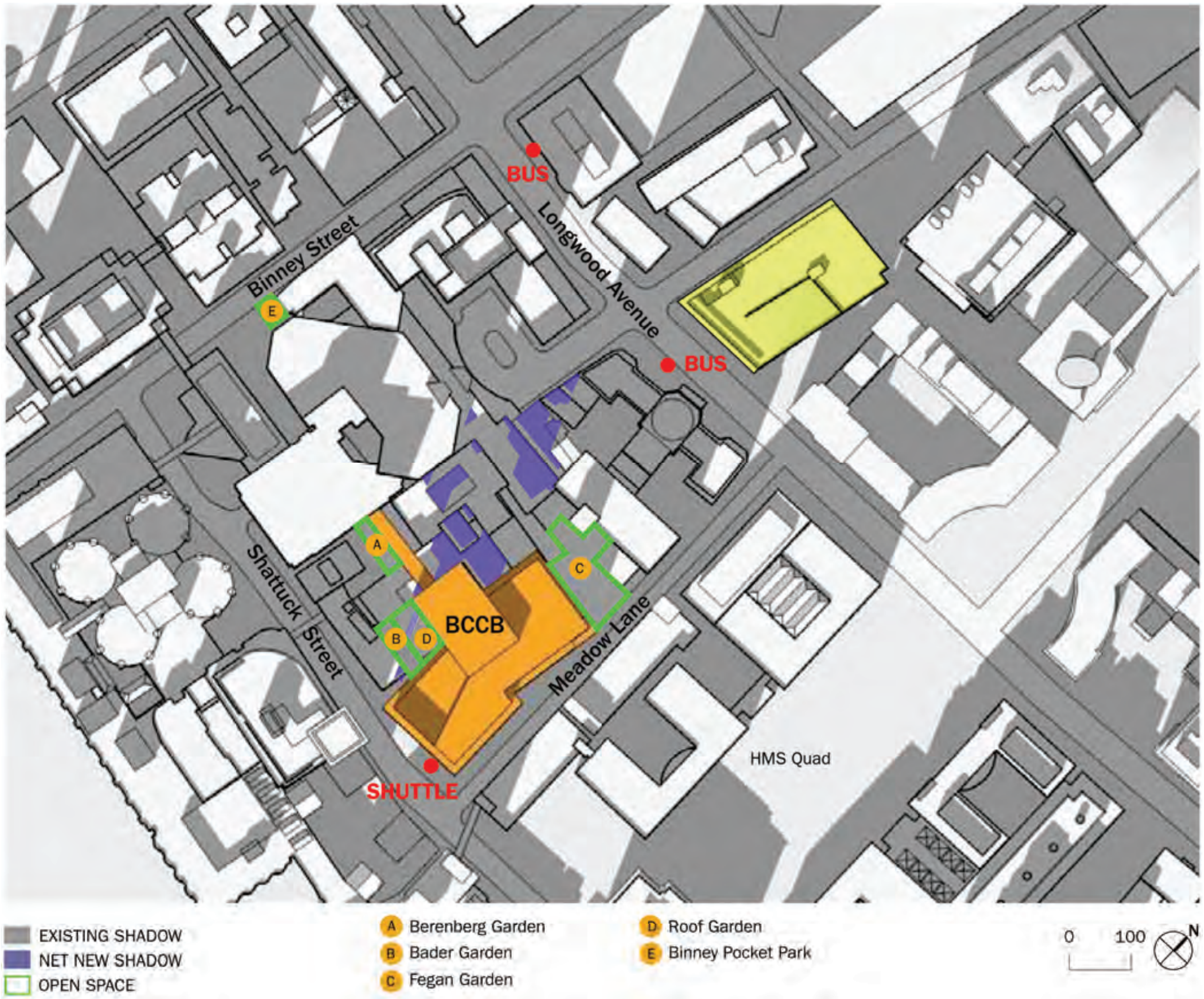

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Figure 5.2-13

BCCB and Patient and Family Parking Garage Addition, December 21, 12:00 p.m.

Figure 5.2-14
BCCB and Patient and Family Parking Garage Addition, December 21, 3:00 p.m.

5.2.3 819 Beacon Street

5.2.3.1 Vernal Equinox (March 21)

At 9:00 a.m., during the vernal equinox, new shadow from the 819 Beacon Street Project will be cast to the northwest. New shadow will be limited to Beacon Street and Munson Street, the surrounding sidewalks, and along portions of surrounding buildings.

At 12:00 p.m., new shadow is cast to the north. New shadow will be limited to small portions of Beacon, Maitland and Munson streets, as well as the Project site itself.

At 3:00 p.m., new shadow will be cast to the northeast across portions of Beacon Street and Maitland Street as well as portions of the surrounding sidewalks.

No new shadows are cast onto nearby bus stops or open spaces by the proposed 819 Beacon Street Project during the vernal equinox time periods studied.

5.2.3.2 Summer Solstice (June 21)

At 9:00 a.m., during the summer solstice, new shadow will be cast to the northwest. New shadow will be cast onto Munson Street as well as a small portion of Beacon Street and the surrounding sidewalk.

At 12:00 p.m., minimal new shadow will be cast to the north primarily along the abutting sidewalks along Beacon, Maitland and Munson streets.

At 3:00 p.m., new shadow will be cast to the east across Maitland Street, its sidewalks and to the rear of the 819 Beacon Street Project site.

At 6:00 p.m., new shadow will be cast to the southeast. New shadow will be cast across Maitland Street, its sidewalks, and onto the adjacent properties to the southeast of the 819 Beacon Street Project site.

No new shadows are cast onto nearby bus stops or public open spaces during the time periods studied.

5.2.3.3 Autumnal Equinox (September 21)

At 9:00 a.m., during the autumnal equinox, new shadow will be cast to the northwest. New shadow will be cast across portions of Munson and Beacon streets, as well as onto the surrounding buildings and sidewalks.

At 12:00 p.m., new shadow will be cast to the north. New shadow will be limited to small portions of Beacon, Maitland and Munson Streets, as well as the Project site itself.

At 3:00 p.m., new shadow is cast to the northeast. New shadow will be cast across Maitland Street and a portion of Beacon Street and its sidewalk.

At 6:00 p.m., much of the area is under existing shadow; new shadow is cast to the east. New shadow will be minimal and will fall on slivers of Maitland Street sidewalks.

No new shadows are cast onto nearby bus stops or public open spaces during the time periods studied.

5.2.3.4 Winter Solstice (December 21)

The winter solstice creates the least favorable conditions for sunlight in New England. The sun angle during the winter is lower than in any other season, causing the shadows in urban areas to elongate and be cast onto large portions of the surrounding area.

At 9:00 a.m., during the winter solstice, new shadow is cast to the northwest. New shadow will be cast onto the sidewalks and roadways of Munson and Beacon streets, as well as small portions of the Massachusetts Turnpike and Mountfort Street.

At 12:00 p.m., new shadow will be cast to the north. New shadow will be cast across portions of Beacon, Munson, and Maitland streets, including parts of their sidewalks, as well as a portion of the Massachusetts Turnpike and Mountfort Street.

At 3:00 p.m., new shadow will be cast to the north. New shadow will be cast along segments of Maitland and Beacon streets and portions of the surrounding sidewalks, as well as a portion of the Massachusetts Turnpike.

No new shadows are cast onto nearby bus stops or public open spaces during the time periods studied.

5.2.3.5 819 Beacon Street Project Conclusions

The 819 Beacon Street Project site is currently vacant, and therefore the Project will necessarily create new shadow in the surrounding area. New shadow is generally cast onto the surrounding streets and sidewalks. No new shadows will impact any nearby public open space or bus stops. Project impacts are expected to be minimal and generally limited to the immediate site and surroundings.

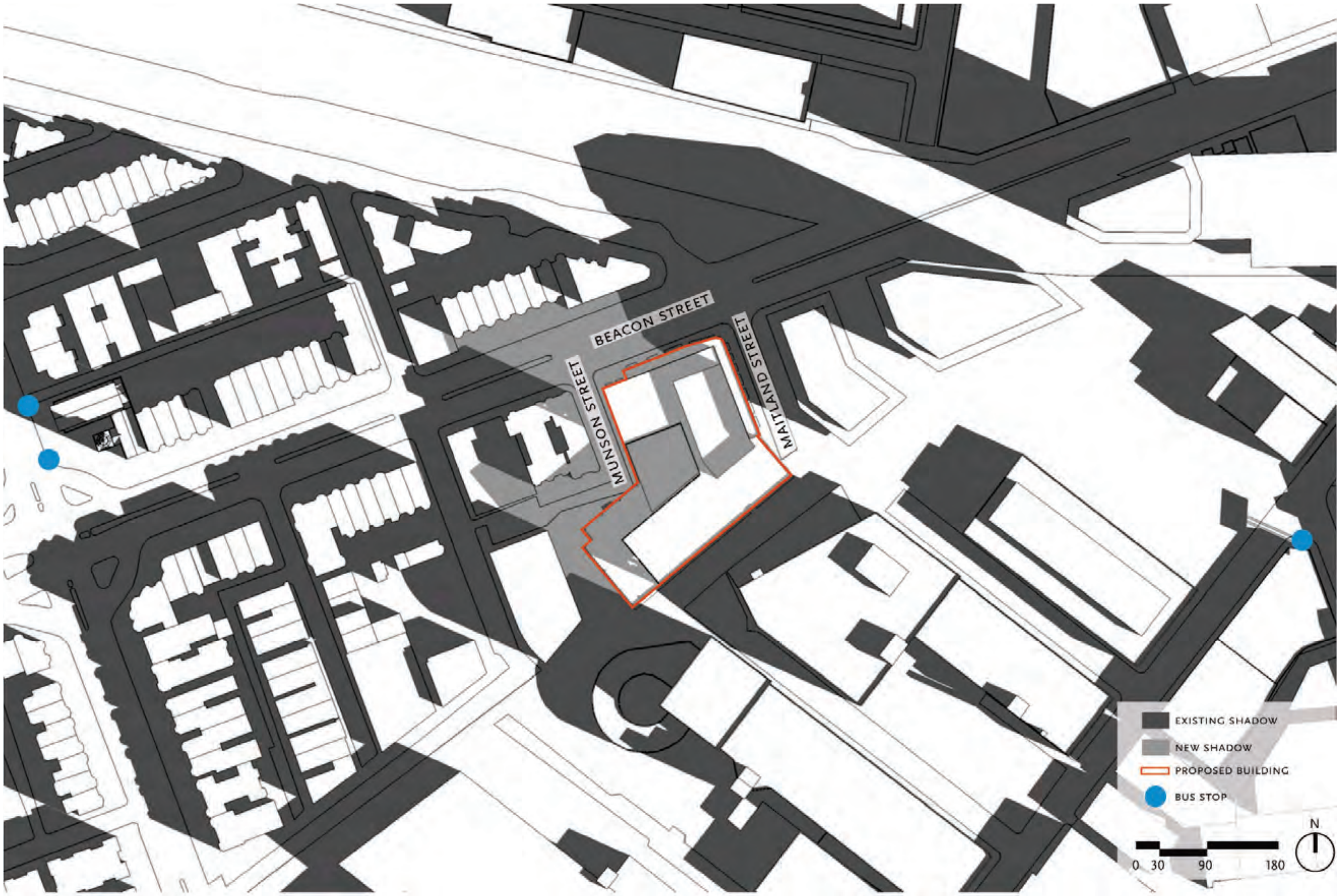

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Figure 5.2-15
819 Beacon Street March 21, 9:00 a.m.

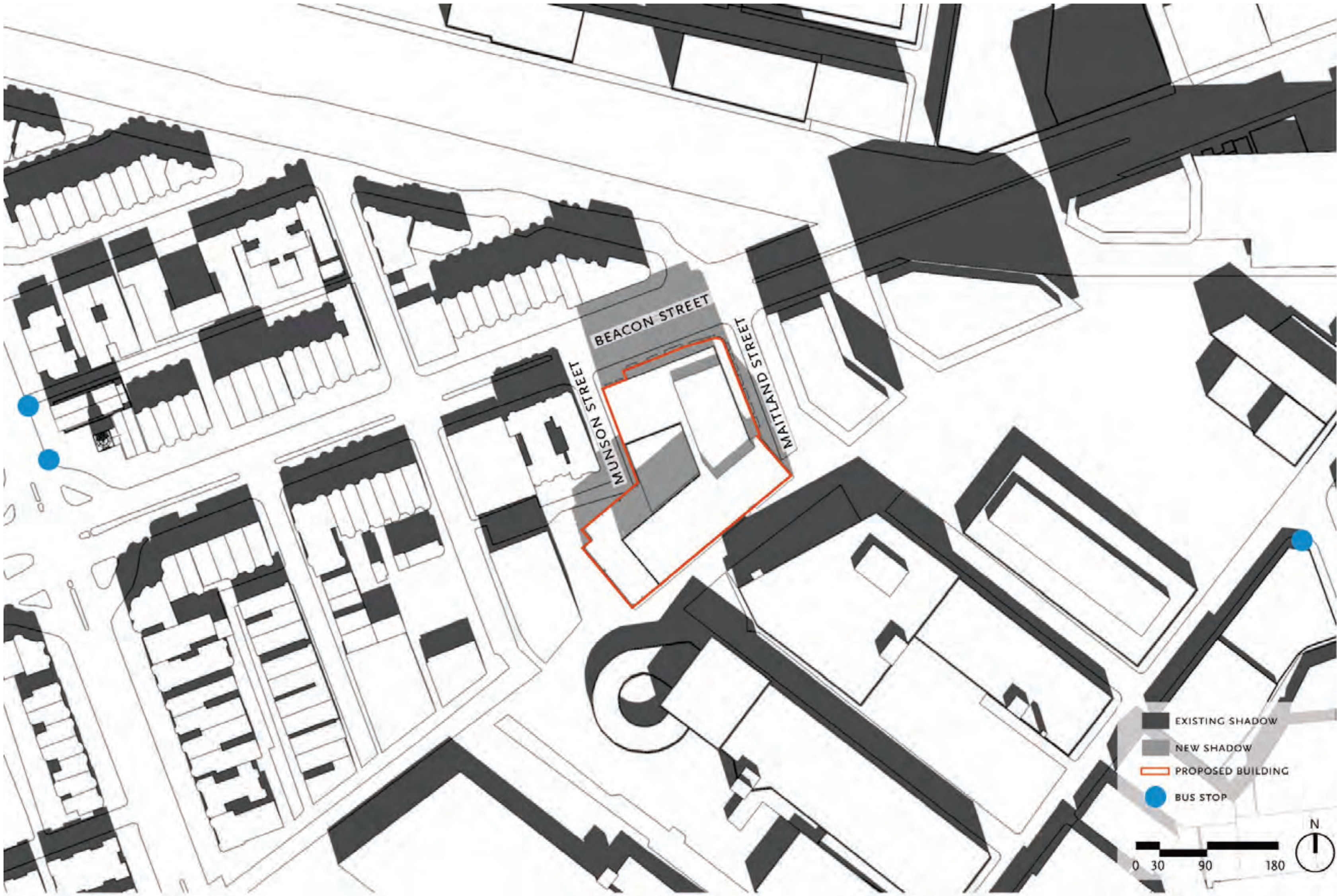

Figure 5.2-16
819 Beacon Street March 21, 12:00 p.m.

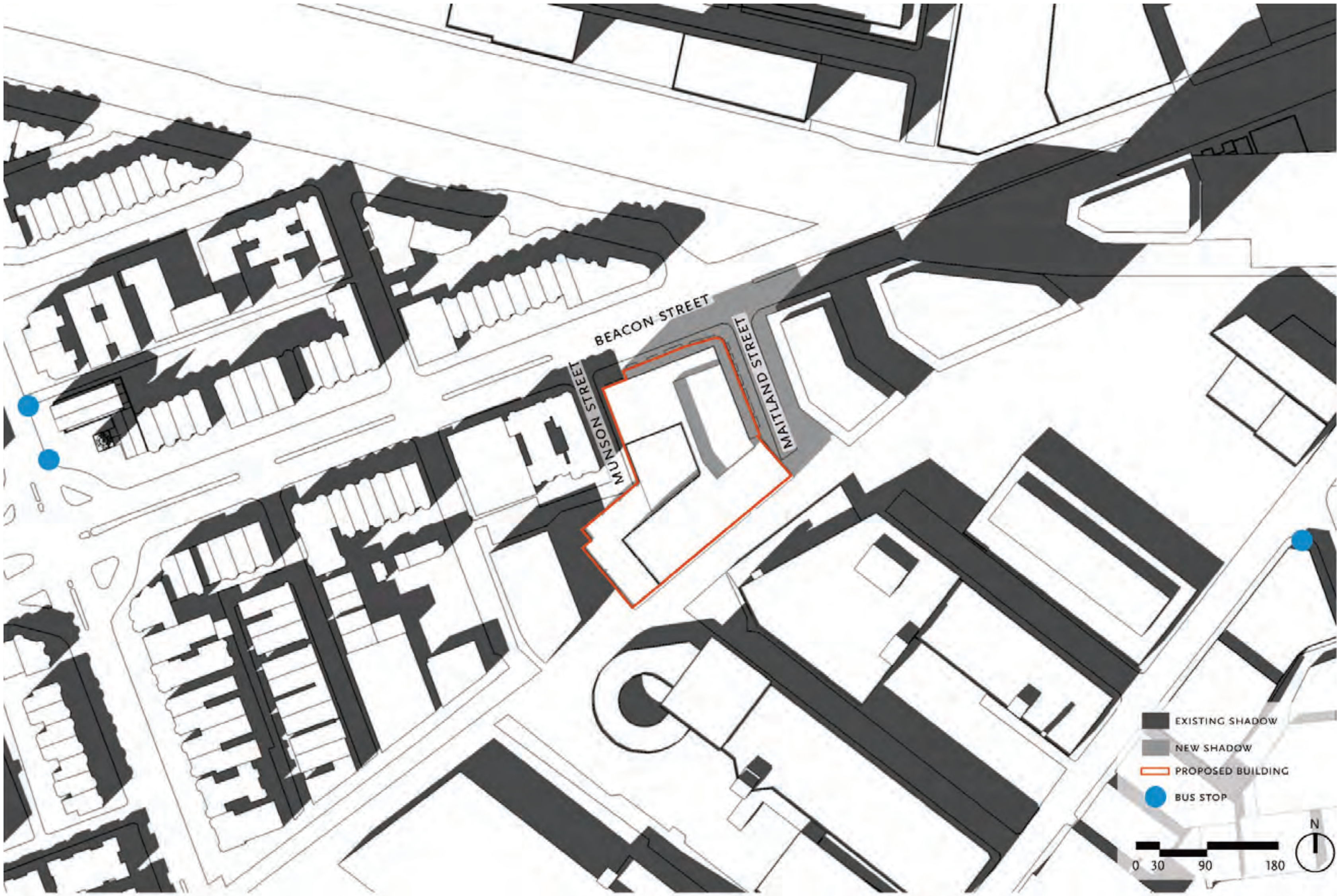

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Figure 5.2-17
819 Beacon Street March 21, 3:00 p.m.

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Figure 5.2-18
819 Beacon Street June 21, 9:00 a.m.

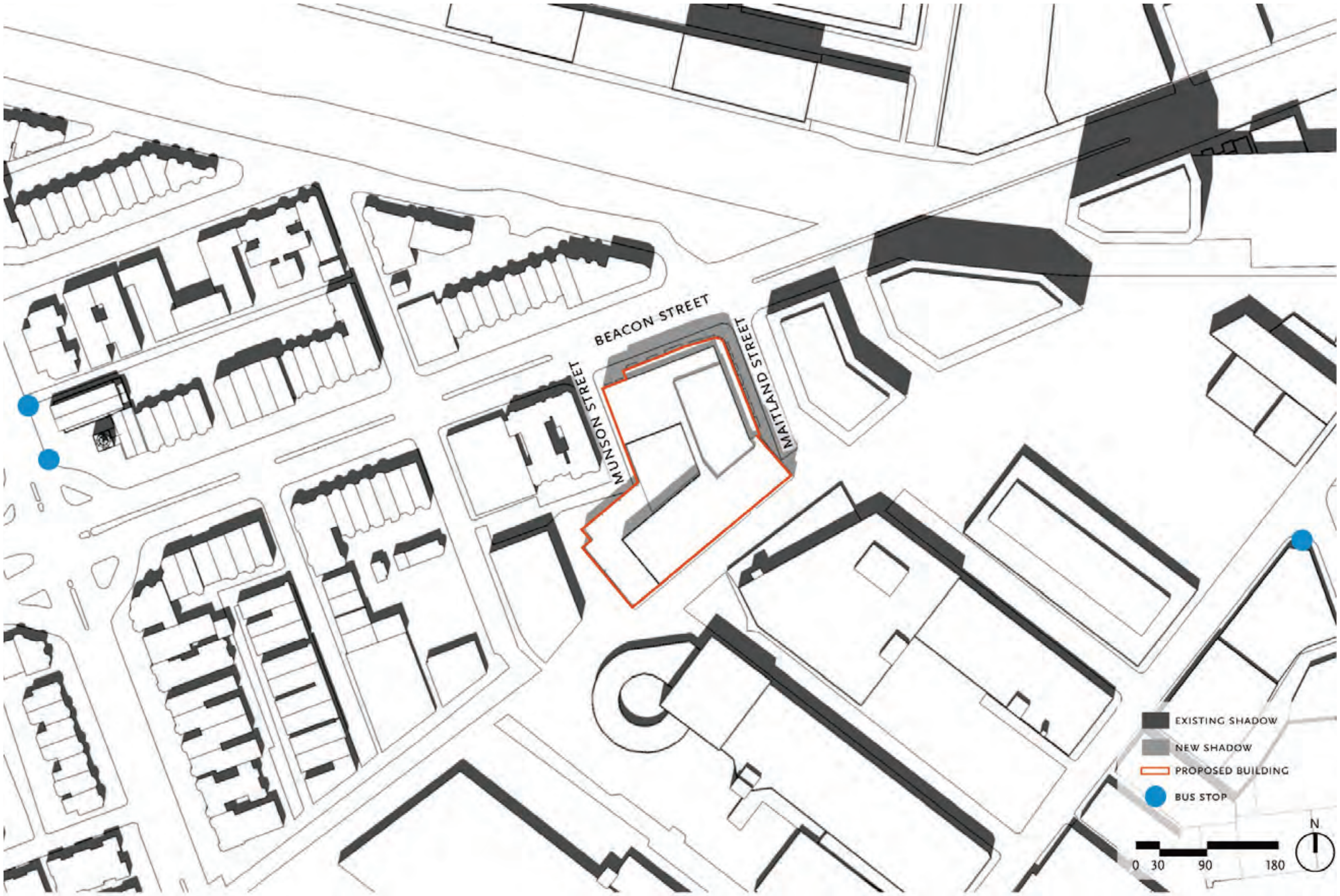

Figure 5.2-19
819 Beacon Street June 21, 12:00 p.m.

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Figure 5.2-20
819 Beacon Street June 21, 3:00 p.m.

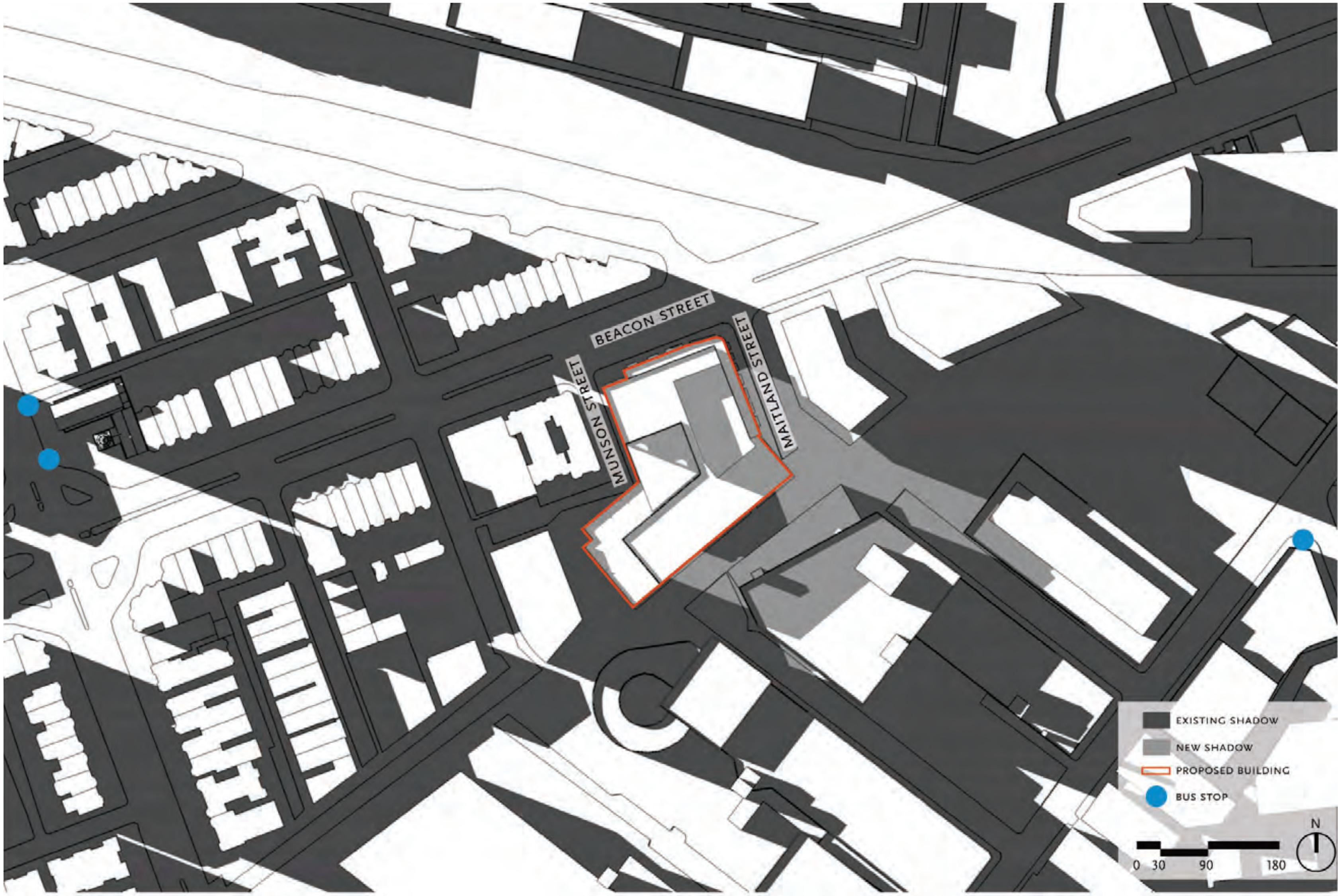

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Figure 5.2-21
819 Beacon Street June 21, 6:00 p.m.

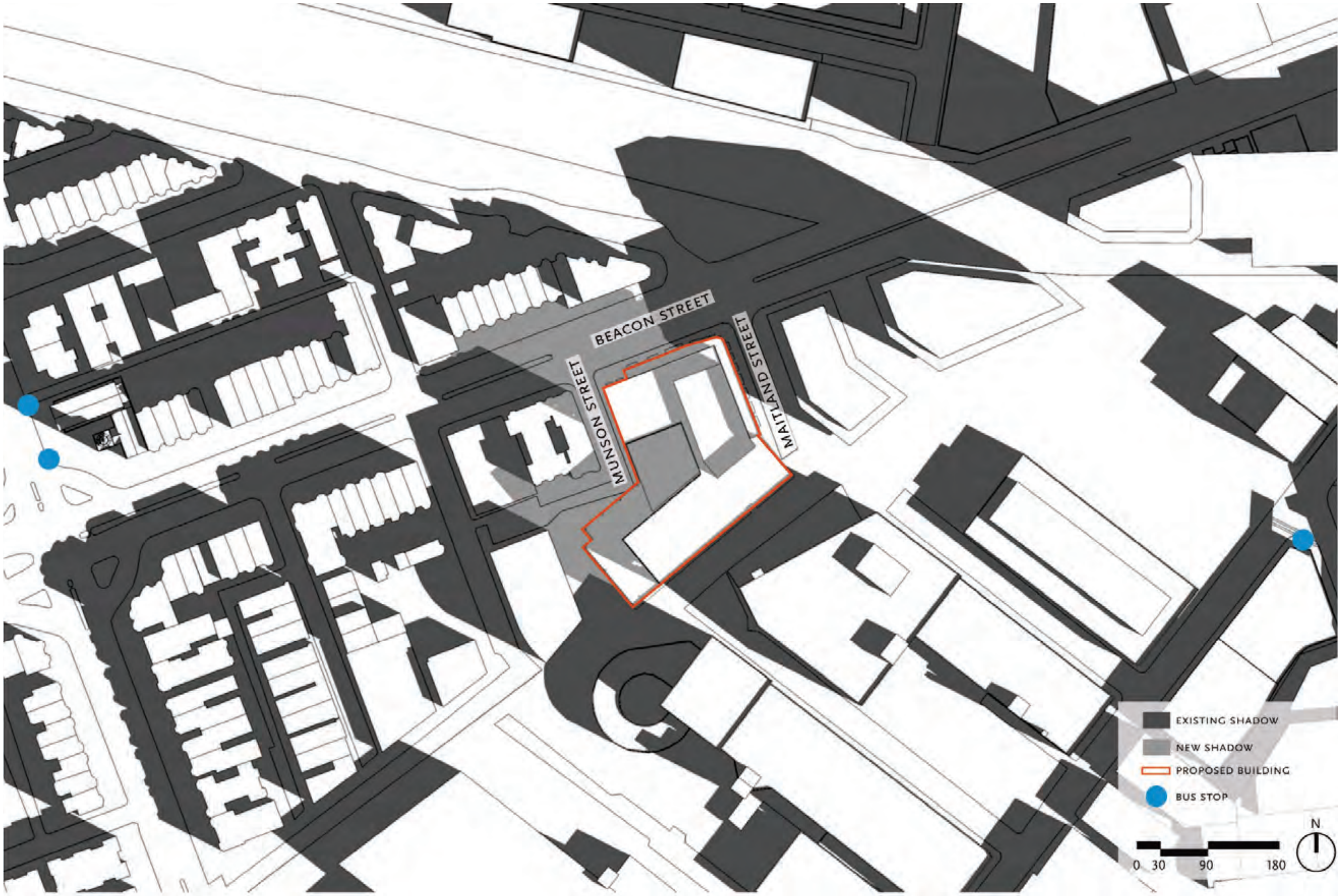

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Figure 5.2-22
819 Beacon Street September 21, 9:00 a.m.

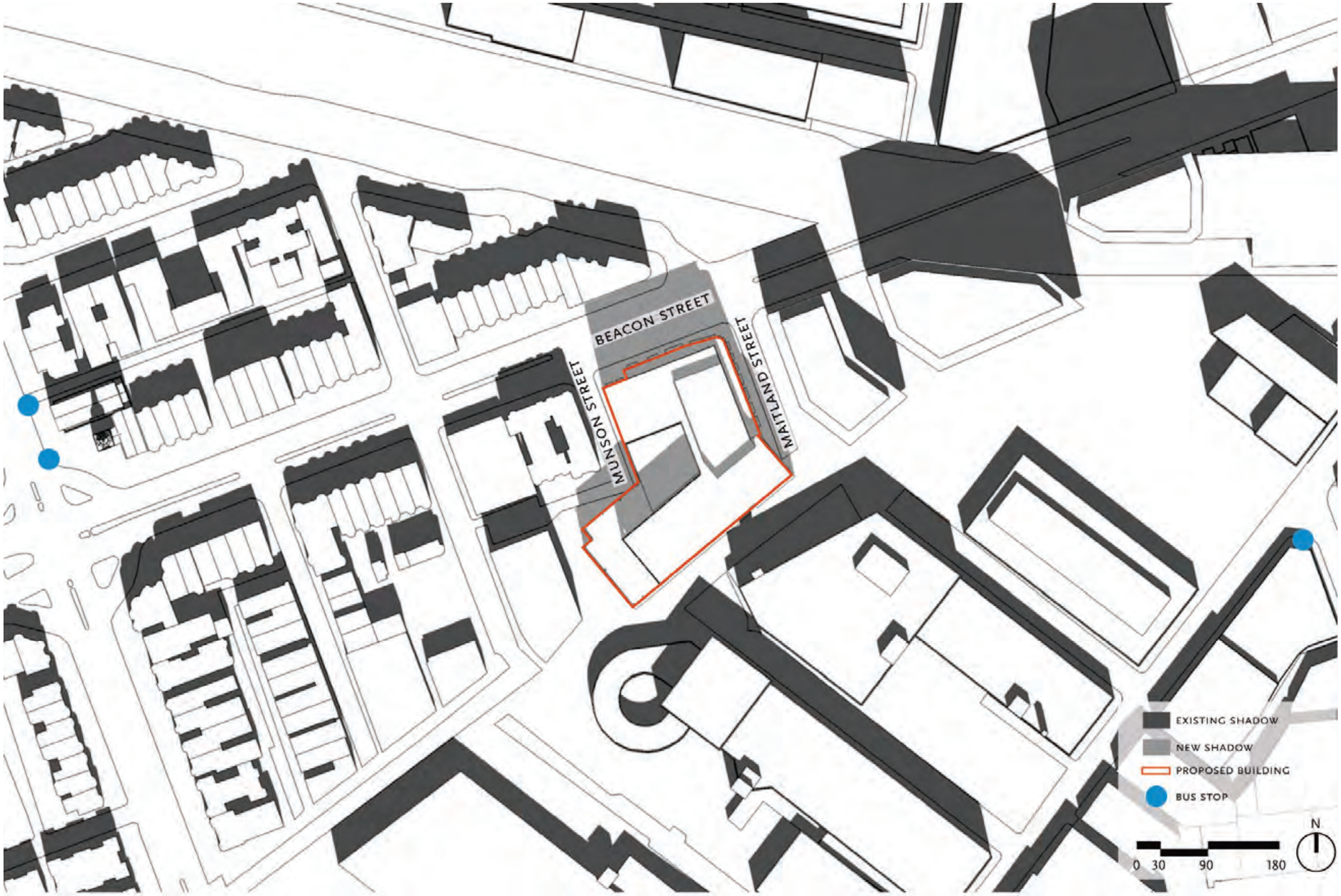

Figure 5.2-23
819 Beacon Street September 21, 12:00 p.m.

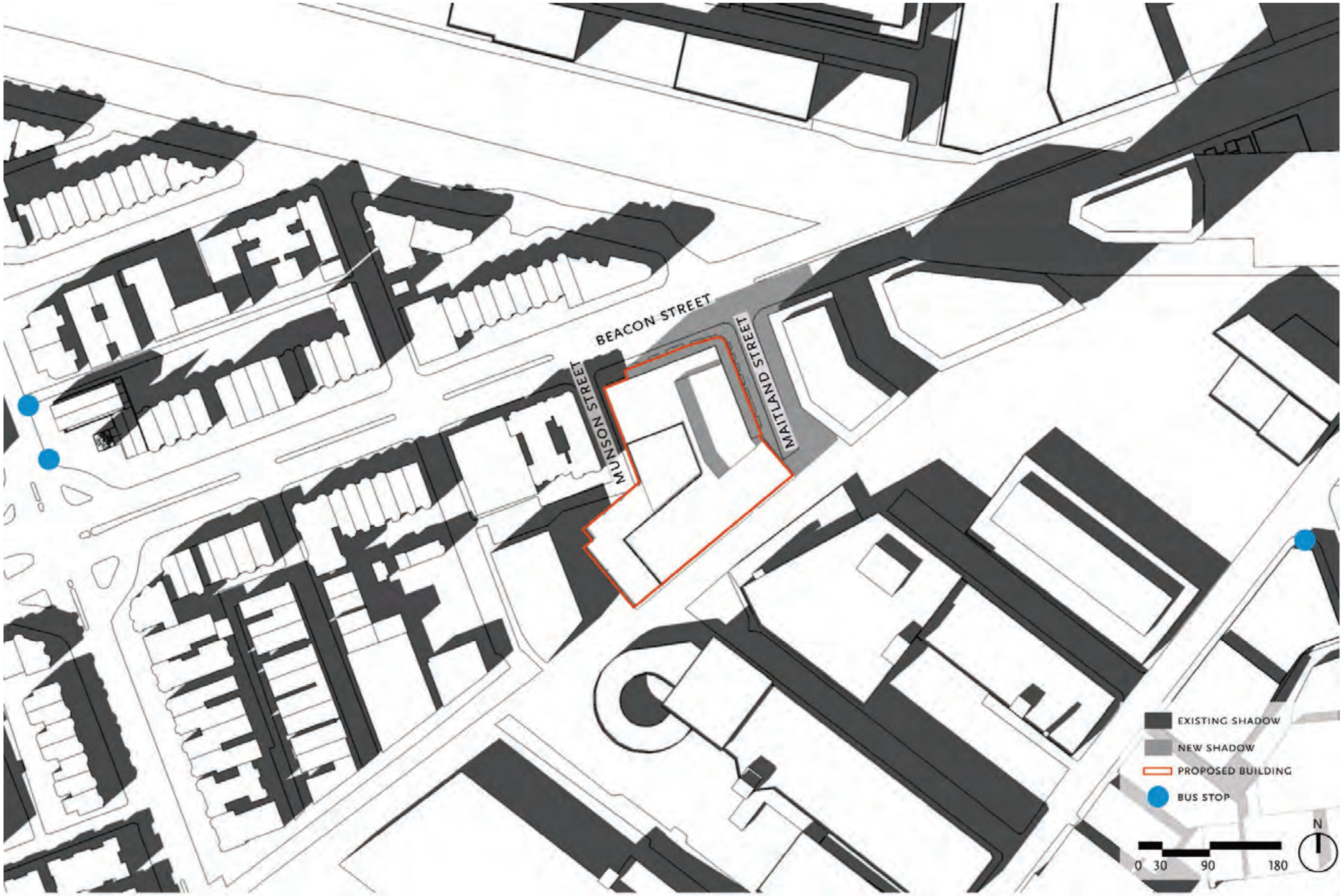

Figure 5.2-24
819 Beacon Street September 21, 3:00 p.m.

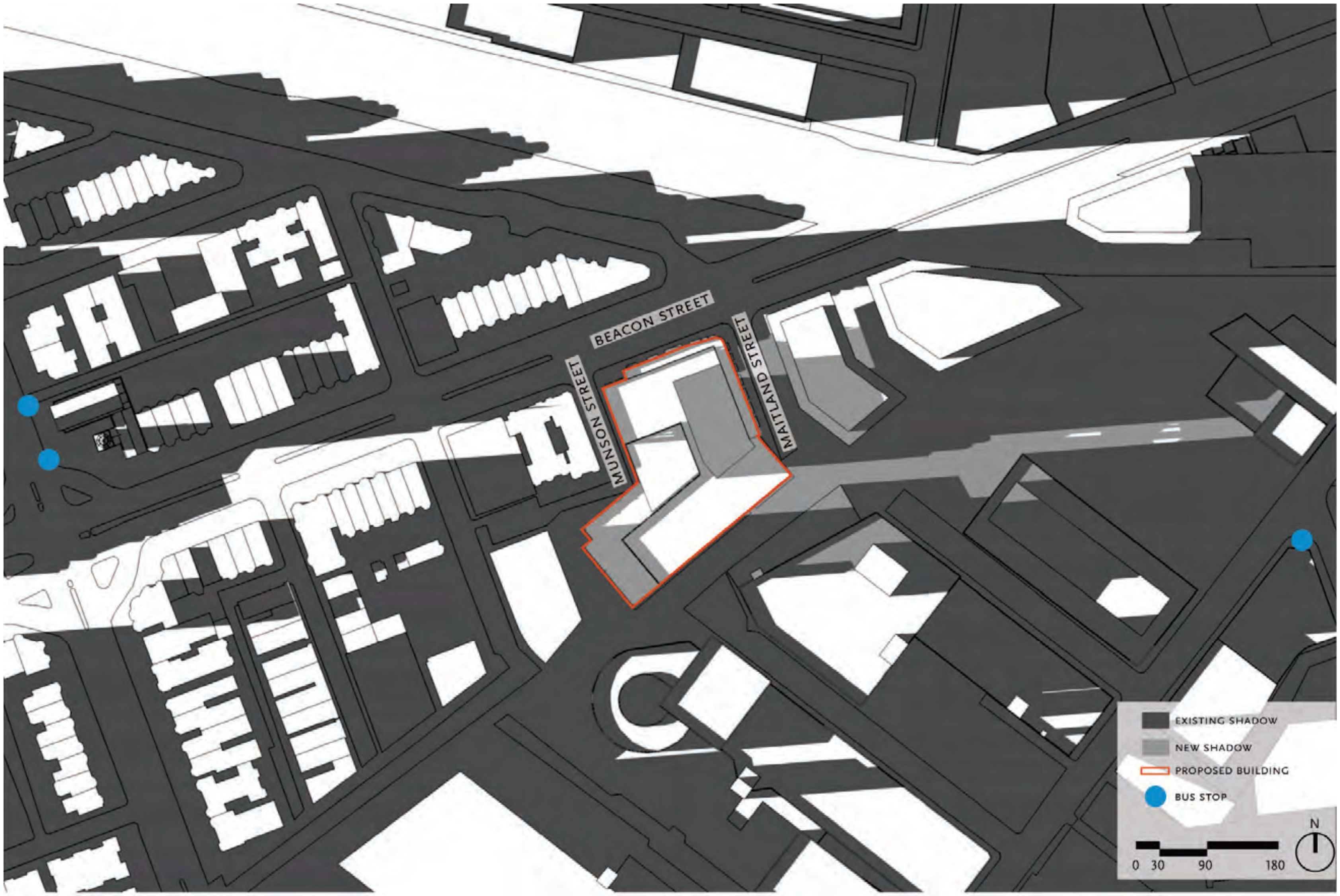

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Figure 5.2-25
819 Beacon Street September 21, 6:00 p.m.

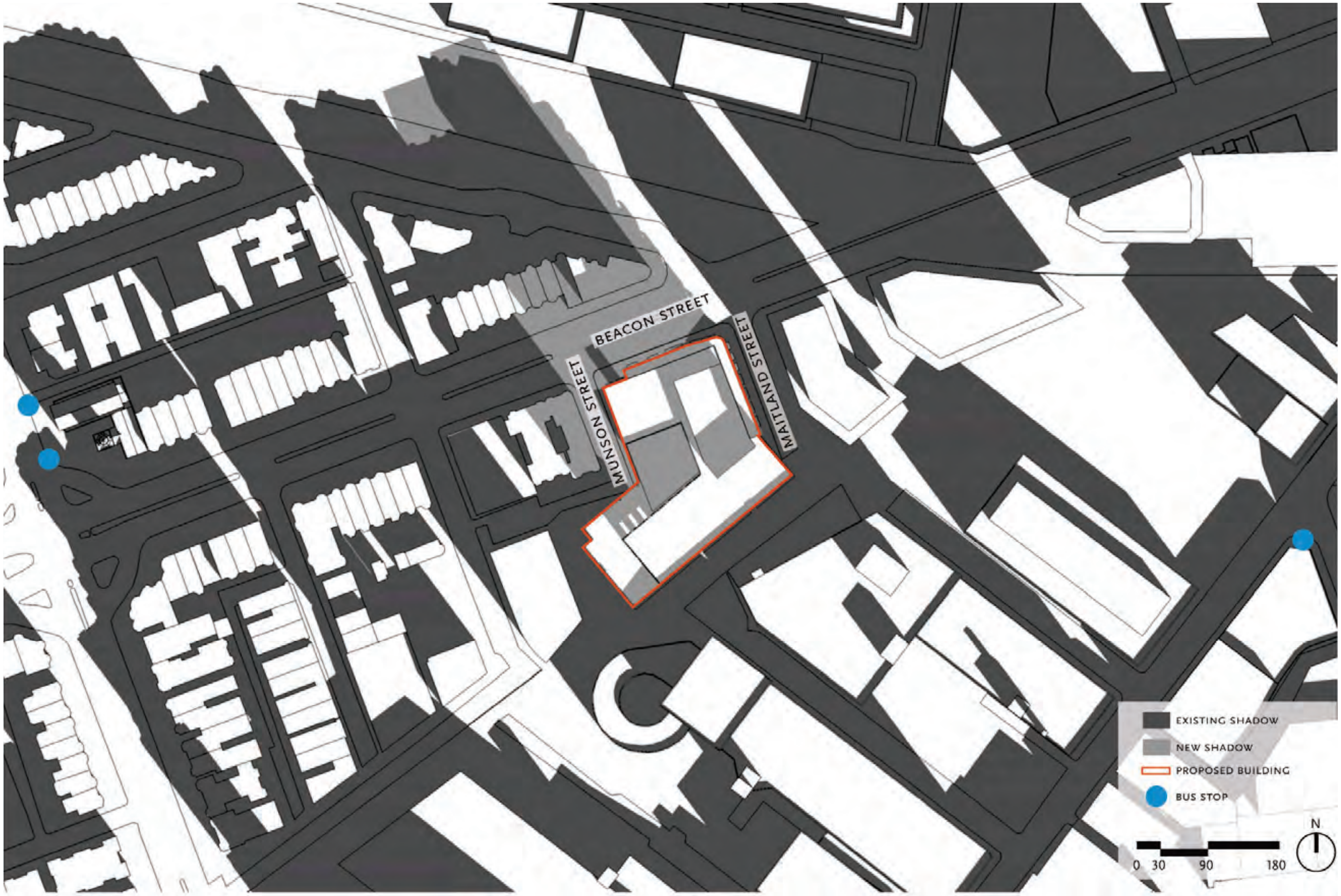

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Figure 5.2-26
819 Beacon Street December 21, 9:00 a.m.

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Figure 5.2-27
819 Beacon Street December 21, 12:00 p.m.

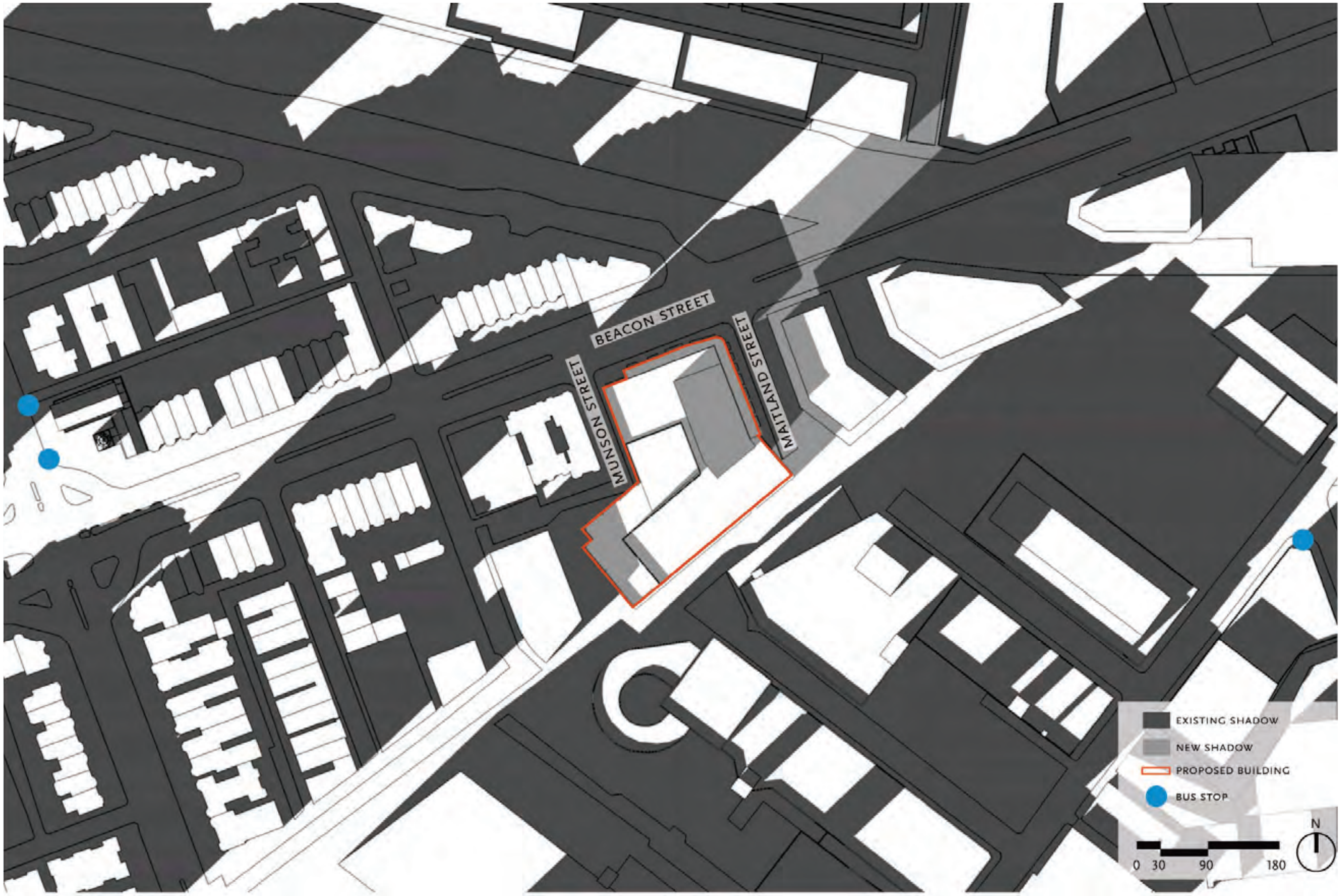

Figure 5.2-28
819 Beacon Street December 21, 3:00 p.m.

5.3 Daylight

5.3.1 Introduction

The purpose of a daylight analysis is to estimate the extent to which a proposed project will affect the amount of daylight reaching the streets and the sidewalks in its immediate vicinity. A daylight analysis considers the existing and proposed conditions on the Projects' sites and daylight obstruction values of the surrounding areas.

The daylight obstruction values for the BCCB will be typical of the dense LMA area. Because the Project site for 819 Beacon Street is currently a vacant lot, the proposed Project will necessarily increase daylight obstruction; however, the resulting conditions will be typical of an urban public realm. The Patient and Family Parking Garage Addition is not expected to substantively impact daylight obstruction values since it will add only one story on top of the existing garage.

5.3.2 Methodology

The daylight analyses were performed using the Boston Redevelopment Authority Daylight Analysis (BRADA) computer program.[2] The BRADA program measures the percentage of sky that is obstructed by a project and is a useful tool in evaluating the net change in obstruction from existing to build conditions at a specific site.

Using BRADA, a silhouette view of the building being analyzed is taken at ground level from the middle of the adjacent city streets or pedestrian ways centered on the proposed building. The façade of the building facing the viewpoint, including heights, setbacks, corners and other features, is plotted onto a base map using lateral and elevation angles. The two-dimensional base map generated by BRADA represents a figure of the building in the "sky dome" from the viewpoint chosen. The BRADA program calculates the percentage of daylight that will be obstructed on a scale of zero to 100 percent based on the width of the view, the distance between the viewpoint and the building, and the massing and setbacks incorporated into the design of the building; the lower the number, the lower the percentage of obstruction of daylight from any given viewpoint. The analysis compares three conditions for the BCCB and 819 Beacon Street Projects: Existing Conditions; Proposed Conditions; and the context of the area.

[2] This method was developed by Harvey Bryan and Susan Stuebing, and the computer program was developed by Ronald Fergle of the Massachusetts Institute of Technology, located in Cambridge, MA, during September of 1984.

5.3.3 Boston Children's Clinical Building

To evaluate daylight obstruction for the proposed and existing conditions associated with the BCCB, viewpoints were taken from both Shattuck Street and Meadow Lane. In addition, four area context points were considered in order to provide a basis of comparison to existing conditions in the surrounding area. The viewpoints and area context viewpoints were taken in the following locations and are shown on Figure 5.3-1.

Viewpoint 1 – View from the Shattuck Street looking north toward the BCCB site.

Viewpoint 2 – View from Meadow Lane looking west toward the BCCB site.

Area Context Viewpoint AC1 – View from Shattuck Street looking northeast at One Children's Way (The Berthiaume Family Building).

Area Context Viewpoint AC2 – View from Shattuck Street looking southwest at The Mary Harrigon Connors Center for Women's Health and Gender Biology.

Area Context Viewpoint AC3 – View from Francis Street looking northeast at Brigham and Women's campus at 75 Francis Street.

Area Context Viewpoint AC4 – View from Binney Street looking southeast at The Shapiro Cardiovascular Center (70 Francis Street).

5.3.3.1 Results for Boston Children's Clinical Building

The results for each viewpoint associated with the BCCB are described in Table 5.3-1. Figures 5.3-2 through Figure 5.3-3 illustrate the BRADA results for each analysis.

Table 5.3-1 Daylight Obstruction Values for BCCB

Viewpoint Locations		Existing Conditions	Proposed Conditions
Viewpoint 1	Shattuck Street looking north toward BCCB site	35.7%	79.0%
Viewpoint 2	Meadow Lane looking west toward the BCCB site	23.4%	91.1%
Area Context Points			
AC1	View from Shattuck Street looking northeast at One Children's Way (Berthiaume Family Building)	90.9%	N/A
AC2	View from Shattuck Street looking southwest at The Mary Harrigon Connors Center for Women's Health and Gender Biology	94.9%	N/A
AC3*	View from Francis Street looking northeast at Brigham & Women's campus (75 Francis Street)	70.2%	N/A
AC4*	View from Binney Street looking southeast at the Shapiro Cardiovascular Center (70 Francis Street)	91.3%	N/A

*AC3 and AC4 are based on a daylight analysis prepared by Epsilon Associates for the 70 Francis Street / Brigham Green Enhancement and Parking DEIR/DPIR from August 2004.

G:\Projects2\MA\Boston\153005_Childrens\DPIR\CCB_viewpoints.mxd

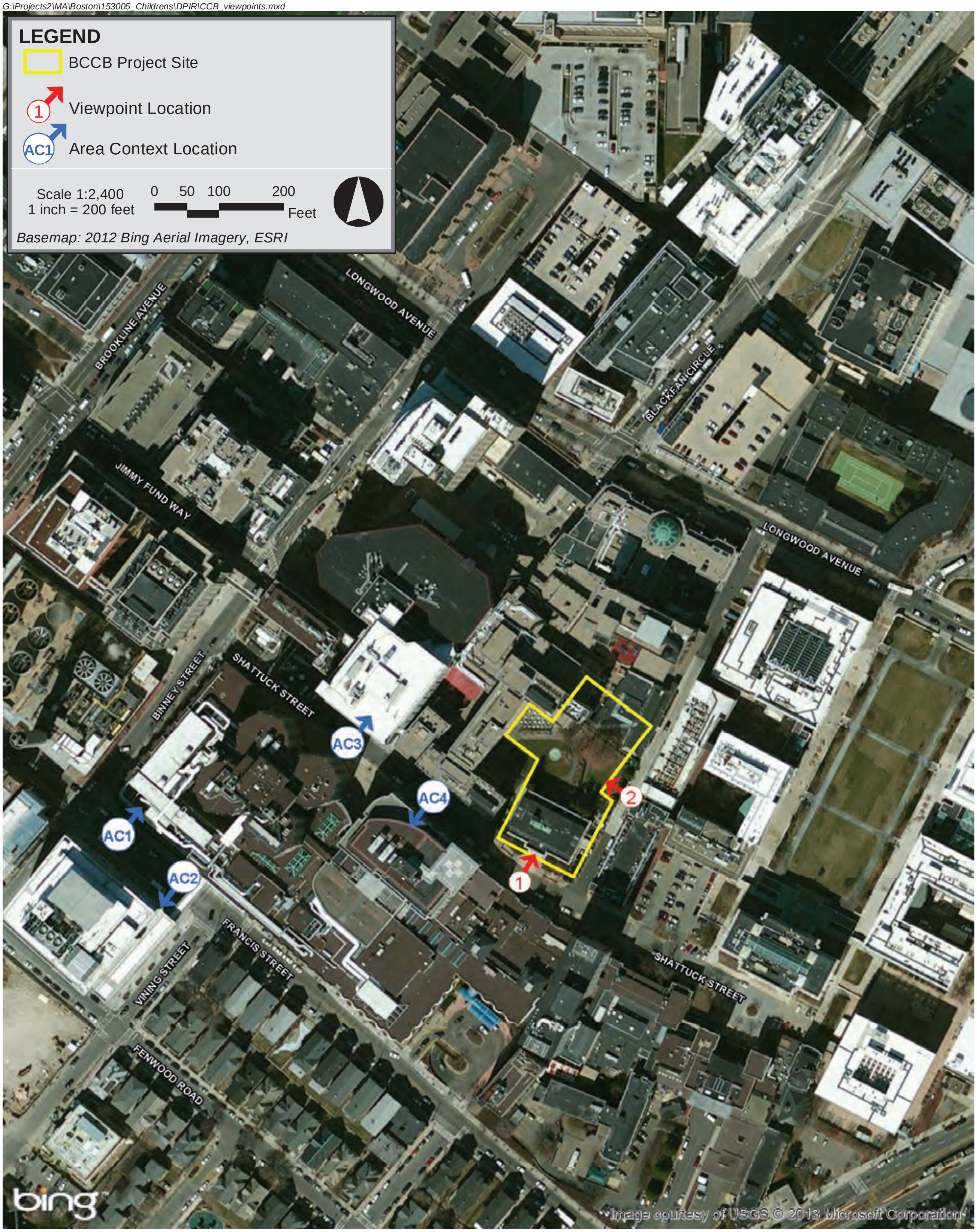

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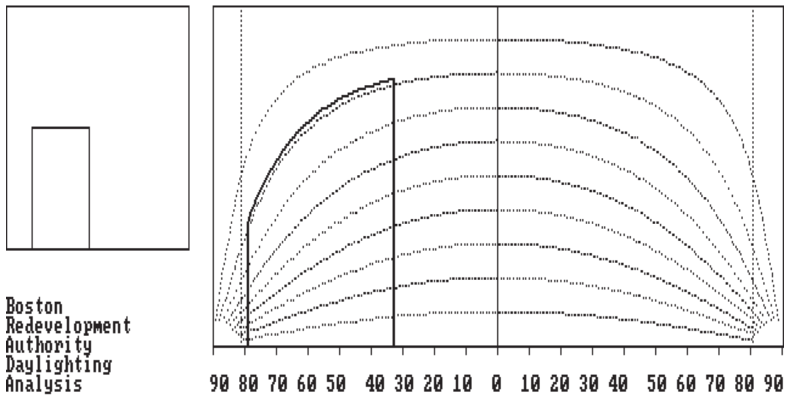
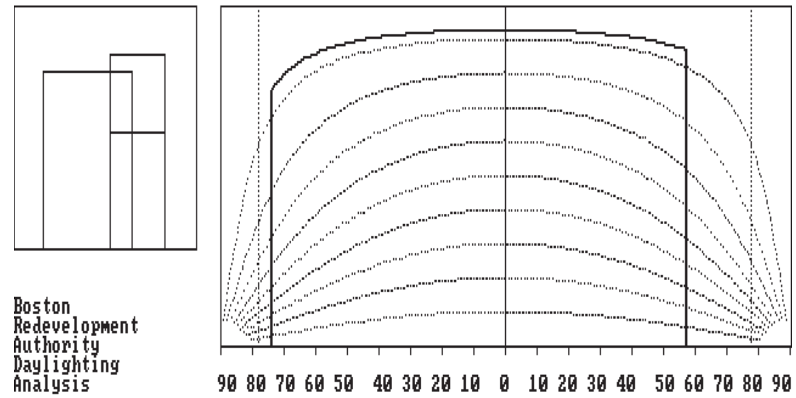
Figure 5.3-1
BCCB - Viewpoint and Area Context Locations



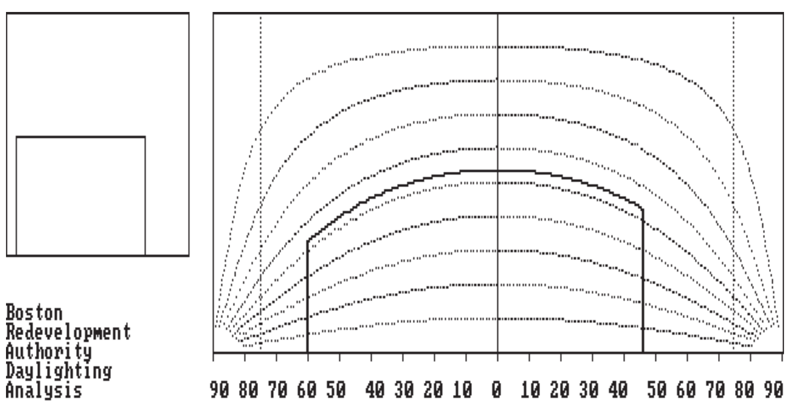
Obstruction of daylight by the building is 23.4 %

Viewpoint 1 - Existing site from Shattuck Street



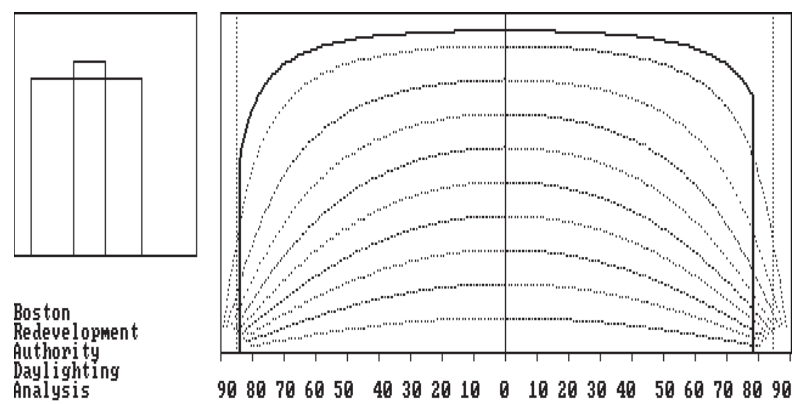
Obstruction of daylight by the building is 79.0 %

Viewpoint 1 – Proposed BCCB looking north from Shattuck Street



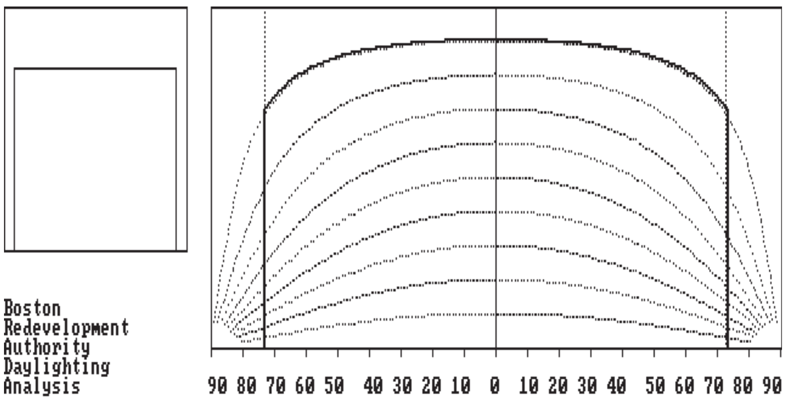
Obstruction of daylight by the building is 35.7 %

Viewpoint 2 - Existing site from Meadow Lane



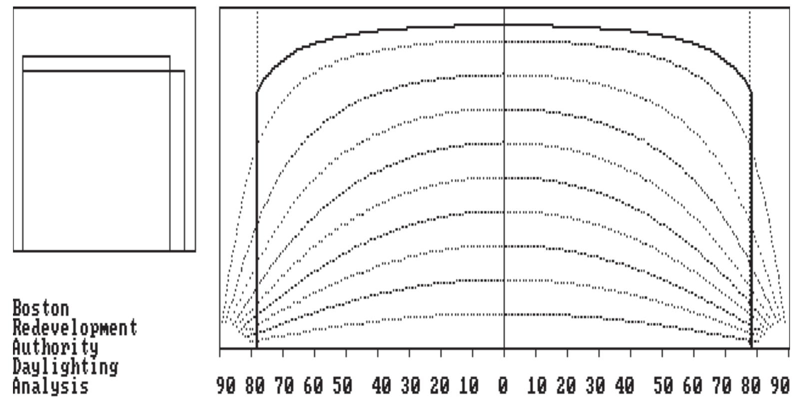
Obstruction of daylight by the building is 91.1 %

Viewpoint 2 – Proposed BCCB from Meadow Lane



Obstruction of daylight by the building is 90.9 %

Area Context 1 - One Children's Way from Shattuck Street looking northeast



Obstruction of daylight by the building is 94.9 %

Area Context 2 - Mary Horrigan Connors Center for Women's Health and Gender Biology (75 Francis Street) taken from Shattuck Street looking south

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Figure 5.3-3
BCCB Daylight Analysis – Area Context Results

Shattuck Street – Viewpoint 1

Shattuck Street borders the Project site to the south. Viewpoint 1 was taken from the center of Shattuck Street, looking directly north at the Project site. The Project site currently consists of a two and a half story building resulting in a relatively small existing daylight obstruction value of 35.7 percent. The development of the BCCB Project will increase daylight obstruction values to 79.0 percent from this perspective. Despite the increase in daylight obstruction this percentage is still in line with the characteristics of typical buildings in the surrounding area.

Meadow Lane – Viewpoint 2

Viewpoint 2 was taken from the center of Meadow Lane looking directly west toward the BCCB Project site. Meadow Lane is a narrow private way that acts as an alleyway between Longwood Avenue and Shattuck Street. The site currently consists of relatively low building heights and open space providing a daylight obstruction value of 23.4% from this perspective. The construction of the BCCB will result in a daylight obstruction value of 91.1%. While this is an increase over existing conditions, the daylight obstruction value consistent with the character of the surrounding area as shown previously in Table 5.3-1.

Area Context Views

The area around the BCCB site is primarily characterized by other institutional uses. To provide a larger context for comparison of daylight conditions, obstruction values from four Area Context Points described above and shown on Figure 5.3-1 were compared to the viewpoints calculated for the BCCB Project. The daylight obstruction values ranged from 70.2 percent on Francis Street (AC3) to 94.9 percent on Shattuck Street (AC2). The BCCB offers similar daylight obstruction values to those found in the surrounding area.

5.3.4 819 Beacon Street

To evaluate daylight obstruction for the proposed and existing conditions associated with 819 Beacon Street, viewpoints were taken from both Beacon Street and Munson Street. Because the 819 Beacon Street Project site currently consists of a surface parking lot, the existing daylight obstruction value for the site is zero percent. In addition, three area context points were considered in order to provide a basis of comparison to existing conditions in the surrounding area. The viewpoints and area context viewpoints were taken in the following locations and are shown on Figure 5.3-4.

Viewpoint 1 – View from Beacon Street looking south toward the 819 Beacon Street site.

Viewpoint 2 – View from Munson Street looking east toward the 819 Beacon Street site.

Area Context Viewpoint AC1 – View from Miner Street looking east toward 16 Miner Street.

G:\Projects2\MA\Boston\153005_Childrens\DPIR\819beacon_viewpoints.mxd

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Figure 5.3-4

819 Beacon Street - Viewpoint and Area Context Locations

Area Context Viewpoint AC2 – View from Beacon Street looking south toward 833 Beacon Street.

Area Context Viewpoint AC3 – View from Beacon Street looking south toward 845-857 Beacon Street.

5.3.4.1 Results for 819 Beacon Street

The results for each viewpoint are described in Table 5.3-2. Figures 5.3-5 through Figure 5.3-6 illustrate the BRADA results for each analysis.

Table 5.3-2 Daylight Obstruction Values for 819 Beacon Street

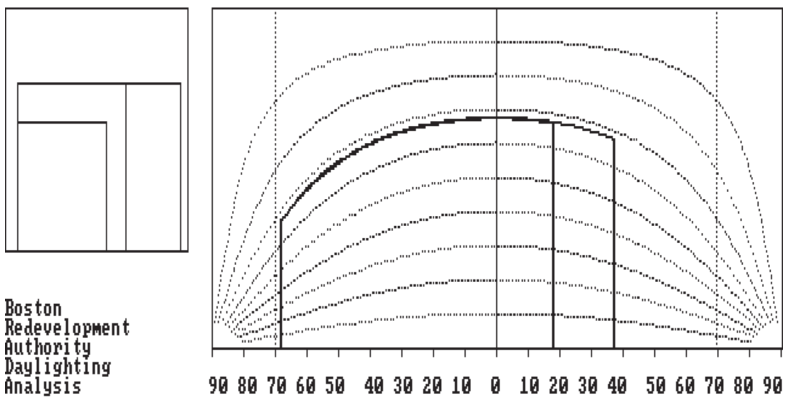
Viewpoint Locations		Existing Conditions	Proposed Conditions
Viewpoint 1	View from Beacon Street looking south towards the 819 Beacon Street site	0%	51.5%
Viewpoint 2	View from Munson Street looking east towards the 819 Beacon Street Site	0%	84.8%
Area Context Points			
AC1	View from Miner Street looking east toward 16 Miner Street	76.8%	N/A
AC2	View from Beacon Street looking south toward 833 Beacon Street	59.9%	N/A
AC3	View from Beacon Street looking south toward 845-857 Beacon Street	75.6%	N/A

Beacon Street – Viewpoint 1

Beacon Street borders the 819 Beacon Street site to the north. Viewpoint 1 was taken from the center of Beacon Street, looking directly south at the site. The site is currently a surface parking lot and, therefore, has an existing daylight obstruction value of zero percent. The development will increase daylight obstruction values to 51.5 percent from this perspective. Despite the increase in daylight obstruction, this percentage is similar to or less than that of the typical residential buildings of the surrounding area as shown in AC1 and AC3.

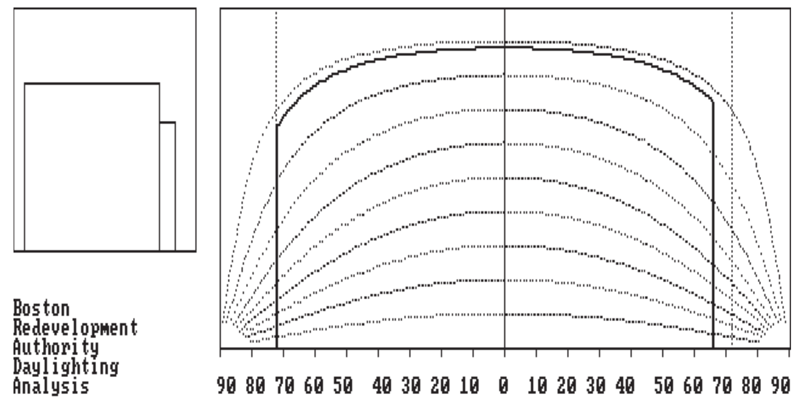
Munson Street – Viewpoint 2

Viewpoint 2 was taken from the center of Munson Street looking east toward the site. From this perspective, the development will result in a daylight obstruction value of 84.8 percent. This is a value that is typical of a building in an urban location and largely representative of the characteristics of the surrounding neighborhood.



Obstruction of daylight by the building is 51.5 %

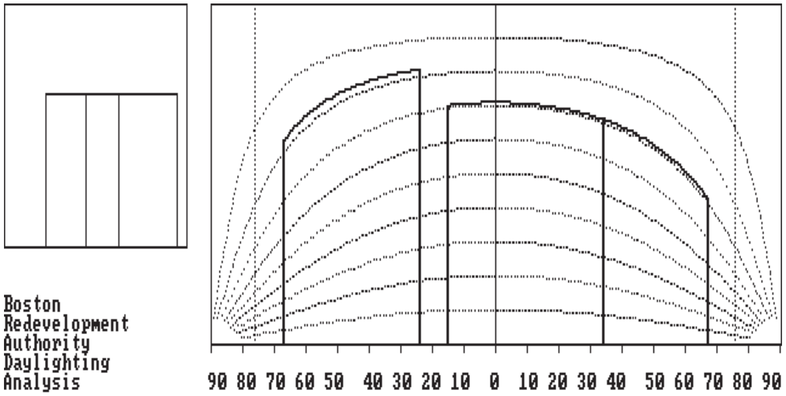
Viewpoint 1: Proposed Project looking south from Beacon Street



Obstruction of daylight by the building is 84.8 %

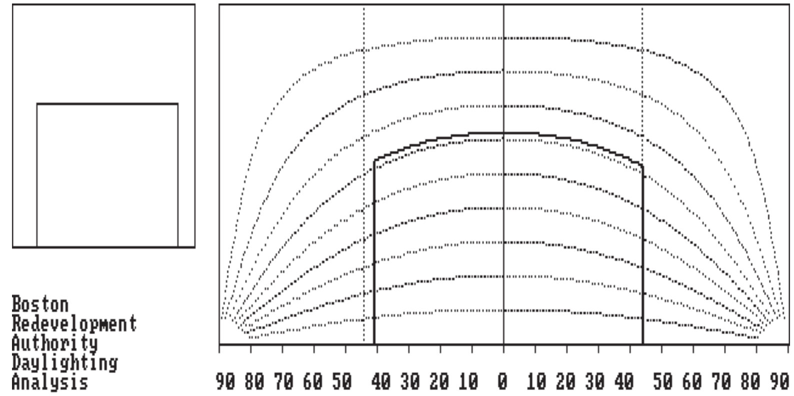
Viewpoint 2: Proposed Project looking east from Munson Street

Figure 5.3-5
819 Beacon Street Daylight Analysis – Proposed Condition Results



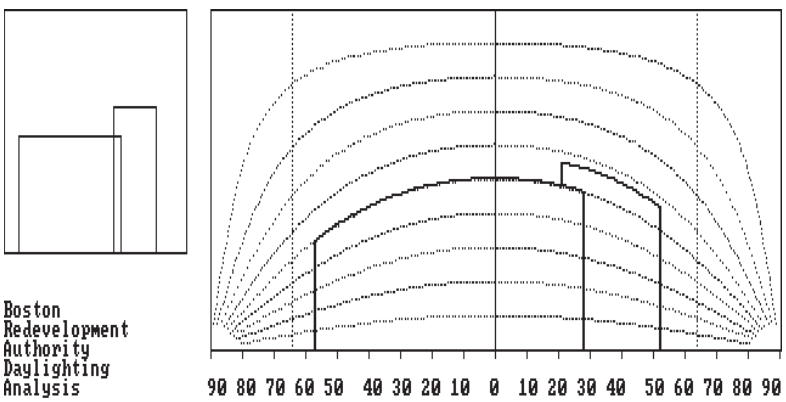
Obstruction of daylight by the building is 76.8 %

Area Context 1 – 16 Miner Street



Obstruction of daylight by the building is 59.9 %

Area Context 2 – 833 Beacon Street



Obstruction of daylight by the building is 75.6 %

Area Context 3 – 845-857 Beacon Street

Area Context Views

The urban fabric in the vicinity of the 819 Beacon Street site offers a mix of heights, ranging between surface parking lots and multi-story residential buildings. To provide a larger context for comparison of daylight conditions, obstruction values were calculated for three Area Context Points described above and shown on Figure 5.3-4. The daylight obstruction values ranged from 59.9 percent on Beacon Street (AC2) to 76.8 percent on Miner Street (AC1). The area context views demonstrate that daylight obstruction values related to the 819 Beacon Street Project are similar to those found for the existing buildings surrounding the Project site.

5.3.5 Conclusions

Both the BCCB and 819 Beacon Street Projects offer daylight impacts that are consistent with other buildings found in their respective surrounding areas. The proposed designs have made an effort to complement the surrounding area and context, while meeting Children's needs. The impact on daylight to the surrounding streets will be typical of urban areas.

5.4 Solar Glare

The materials for both the 819 Beacon Street and BCCB Projects are still being studied and glazing of the windows will be determined as the design for each Project progresses. Due to the type of potential glass and glazing used, solar glare impacts are not currently anticipated.

5.5 Air Quality

5.5.1 Introduction

An air quality analysis was conducted to determine the impact of pollutant emissions from combustion and mobile source emissions generated by the BCCB and 819 Beacon Street Projects. A microscale analysis was performed to evaluate the potential air quality impacts of carbon monoxide (CO) due to traffic flow around the BCCB and 819 Beacon Street Project areas. The Patient and Family Parking Garage Addition has been included in the transportation impacts for the BCCB and is therefore included in the evaluation of CO impacts. In addition, for stationary sources (i.e., combustion source stacks), United States Environmental Protection Agency (EPA) approved air dispersion models were used to estimate Project-generated ambient concentrations of nitrogen oxides (NOx), particulate matter (PM10 and PM2.5), and sulfur dioxide (SO_2), in addition to CO.

5.5.1.1 National Ambient Air Quality Standards

The 1970 Clean Air Act was enacted by the U.S. Congress to protect the health and welfare of the public from the adverse effects of air pollution. As required by the Clean Air Act, EPA promulgated National Ambient Air Quality Standards (NAAQS) for these criteria pollutants: nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM) (PM10 and PM2.5), carbon monoxide (CO), ozone (O_3), and lead (Pb). The NAAQS are listed in Table 5.5-1. Massachusetts Ambient Air Quality Standards (MAAQS) are typically identical to NAAQS. However, since the NAAQS are not incorporated into the MAAQS by reference, there can be differences if EPA promulgates new standards and there is delay for Massachusetts to incorporate them into 310 CMR 6.04.

NAAQS specify concentration levels for various averaging times and include both "primary" and "secondary" standards. Primary standards are intended to protect human health, whereas secondary standards are intended to protect public welfare from any known or anticipated adverse effects associated with the presence of air pollutants, such as damage to vegetation. The more stringent of the primary or secondary standards were applied when comparing to the modeling results for the Projects.

A new one-hour NO_2 standard was promulgated on January 22, 2010 to protect public health, including the health of sensitive populations (e.g., people with asthma, children, and the elderly). The final rule for the new hourly NO_2 NAAQS was published in the Federal Register on February 9, 2010 and became effective on April 12, 2010. The form of this standard is the three-year average of the 98th percentile of the daily maximum one-hour concentrations.

Similarly, a new one-hour SO_2 standard was promulgated on June 2, 2010 to protect public health, including the health of sensitive populations (e.g., people with asthma, children, and the elderly). The final rule for the new hourly SO_2 NAAQS was published in the Federal Register on June 22, 2010 and became effective on August 23, 2010. The form of this standard is the three-year average of the 99th percentile of the daily maximum one-hour concentrations.

Table 5.5-1 National Ambient Air Quality Standards

Pollutant	Averaging Period	National Ambient Air Quality Standards and Massachusetts Ambient Air Quality Standards (micrograms per cubic meter)	
		Primary	Secondary
NO_2	Annual [1]	100	Same
	1-hour [7]	188	None
SO_2	Annual [1]	80	None
	24-hour [2]	365	None
	3-hour [2]	None	1,300
	1-hour [7]	195	None
PM10 [6]	Annual	50	Same
	24-hour [3]	150	Same
PM2.5	Annual [4]	15	Same
	24-hour [5]	35	Same

Table 5.5-1 National Ambient Air Quality Standards (Continued)

Pollutant	Averaging Period	National Ambient Air Quality Standards and Massachusetts Ambient Air Quality Standards (micrograms per cubic meter)	
		Primary	Secondary
CO	8-hour [2]	10,000	Same
	1-hour [2]	40,000	Same
Ozone	8-hour [3]	235	Same
Pb	3-month [1]	1.5	Same

Notes:
[1] Not to be exceeded.
[2] Not to be exceeded more than once per year.
[3] Not to be exceeded more than an average of one day per year over three years.
[4] Not to be exceeded by the arithmetic average of the annual arithmetic averages from 3 successive years.
[5] Not to be exceeded based on the 98th percentile of data collection.
[6] Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, EPA revoked the annual PM10 standard in 2006 (effective December 17, 2006). However, the annual standard remains codified in 310 CMR 6.00.
[7] Not to be exceeded. Based on the 3-yr average of the 98th (NO2) or 99th (SO2) percentile of the daily maximum 1-hour concentrations.
Source: 40 CFR 50 and 310 CMR 6.00

The NAAQS also reflect various durations of exposure. The short-term periods (24 hours or less) refer to exposure levels not to be exceeded more than once a year. Long-term periods refer to limits that cannot be exceeded for exposure averaged over three months or longer.

The inhalable particulate (PM10) NAAQS were promulgated on July 1, 1987 at the federal level with the intent of replacing the existing standards limiting ambient levels of Total Suspended Particulate (TSP). EPA also promulgated a Fine Particulate (PM2.5) NAAQS, effective December 2006, with an annual standard of 15 micrograms per cubic meter ($\mu g/m^3$) and the 24-hour standard of 35 $\mu g/m^3$.

The impacts from the Projects were modeled and were added to monitored background values and compared to the NAAQS.

The modeling methodology was developed in accordance with the latest Massachusetts Department of Environmental Protection (MassDEP) modeling policies and Federal modeling guidelines.[3]

Modeling assumptions and backup data for results presented in this section are provided in Appendix E.

3 40 CFR 51 Appendix W, Guideline on Air Quality Models, 70 FR 68228, Nov. 9, 2005.

5.5.2 Methodology

5.5.2.1 Microscale Analysis

The BRA Scoping Determination requires an analysis of the effect on air quality of the increase in traffic generated by the Projects. This "microscale" analysis is required for any intersection (including garage entrances/exits) where the Level of Service (LOS) is expected to deteriorate to D and the proposed Projects cause a 10 percent increase in traffic or where the LOS is E or F and the proposed Projects contribute to a reduction in LOS. The microscale analysis involves modeling of carbon monoxide (CO) emissions from vehicles idling at and traveling through both signaled and unsignalized intersections. Predicted ambient concentrations of CO for the Build and No Build cases are compared with federal (and state) ambient air quality standards for CO.

The microscale analysis typically examines ground-level CO impacts due to traffic queues in the immediate vicinity of a project. CO is used in microscale studies to indicate roadway pollutant levels since it is the most abundant pollutant emitted by motor vehicles and can result in so-called "hot spot" (high concentration) locations around congested intersections. The NAAQS standards do not allow ambient CO concentrations to exceed 35 parts per million (ppm) for a one-hour averaging period and 9 ppm for an eight-hour averaging period, more than once per year at any location. The widespread use of CO catalysts on current vehicles has reduced the occurrences of CO hotspots. Air quality modeling techniques (computer simulation programs) are typically used to predict CO levels for both existing and future conditions to evaluate compliance of the roadways with the standards. The analyses for the Projects followed the procedure outlined in U.S. EPA's intersection modeling guidance.[4]

The microscale analysis has been conducted using the latest versions of EPA MOBILE6.2, CAL3QHC, and AERMOD to estimate CO concentrations at sidewalk receptor locations.

Baseline (2012) and future year (2022) emission factor data calculated from the MOBILE6.2 model, along with traffic data, were input into the CAL3QHC program to determine CO concentrations due to traffic flowing through the selected intersections. AERMOD was used to estimate potential ground-level impacts due to emissions from the combustion sources.

Existing background values of CO at the nearest monitor location in Kenmore Square were obtained from the MassDEP. CAL3QHC and AERMOD results were then added to background CO values of 1.9 ppm (one-hour) and 1.5 ppm (eight-hour), as provided by the MassDEP, to determine total air quality impacts due to the Projects. This value was compared to the NAAQS for CO of 35 ppm (one-hour) and 9 ppm (eight-hour).

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4 U.S. EPA, Guideline for Modeling Carbon Monoxide from Roadway Intersections; EPA-454/R-92-005, November 1992.

Emissions Calculations (MOBILE6.2)

The EPA MOBILE6.2 computer program was used to estimate motor vehicle emission factors on the roadway network. Emission factors calculated by the MOBILE6.2 model are based on motor vehicle operations typical of daily periods. The Commonwealth's statewide annual Inspection and Maintenance (I&M) program was included, as well as the state specific vehicle age registration distribution. The input files for MOBILE6.2 for the existing (2012) and build year (2022) are provided by MassDEP. As is typical, minor edits to the files were necessary to allow the program to output emission factors for the various speeds used in the analyses.

The current version of MOBILE6.2 does not explicitly calculate idle emissions. However, idle emissions can be obtained from a vehicle speed of 2.5 mph (the lowest speed MOBILE6 will model). The resulting emission rate given in (grams/mile) is then multiplied by 2.5 mph to estimate idle emissions (in grams/hour). Moving emissions are calculated based on actual speeds at which free-flowing vehicles travel through the intersections. A speed of 30 mph is used for all free-flow traffic. Speeds of 10 and 15 mph were used for right (and U-turns, if necessary) and left turns, respectively.

Winter CO emission factors are typically higher than summer for CO. Therefore winter vehicular emission factors were conservatively used in the microscale analyses.

Intersection Selection

As stated previously, a "microscale" analysis is required for a Project at intersections where 1) project traffic would impact intersections or roadway links currently operating at Level of Service (LOS) D, E, or F or would cause LOS to decline to D, E, or F; 2) project traffic would increase traffic volumes on nearby roadways by 10% or more (unless the increase in traffic volume is less than 100 vehicles per hour); or, 3) a project will generate 3,000 or more new average daily trips on roadways providing access to a single location.

The modeling guidance identifies the following steps to determine the intersections to be modeled.

- ♦ Rank the top 20 intersections by traffic volumes
- ♦ Calculate the Level of Service (LOS) for each intersection
- ♦ Rank the intersections by volume
- ♦ Rank the intersections by LOS
- ♦ Model the top three intersections based on worst LOS and the top three intersections based on the highest traffic volumes

An analysis of the nineteen signalized intersections from the traffic study was conducted (see Chapter 3.0 Transportation – BCCB and Chapter 4.0, Transportation – 819 Beacon Street Project). The traffic volumes and LOS calculations provided in the transportation chapters form the basis of evaluating the traffic data versus the microscale thresholds.

The following intersections were found to be the worst intersections by either LOS or volumes or both:

- the intersection of the Riverway and Longwood Avenue. (LOS)
- the intersection of Brookline Avenue and the Riverway. (LOS & Volumes)
- the intersection of Brookline Avenue, Park Drive, and the Fenway and Riverway entry and exit roads. (Volumes)
- the intersection of Brookline Avenue, Boylston Street, and Park Drive (Volumes)
- the intersection of Commonwealth Avenue, Brookline Avenue, Deerfield Street, and Beacon Street, aka Kenmore Square. (LOS)

Since the intersection of Brookline Avenue, Park Drive, and the Fenway and Riverway entry and exit roads, and the intersection of Brookline Avenue, Boylston Street, and Park Drive are only about 250 feet apart, they were modeled as a single intersection. Two intersections (the intersection of the Riverway and Longwood Avenue and the intersection of Brookline Avenue and the Riverway) are associated with the BCCB while the remaining two are associated with the 819 Beacon Street Project. Microscale modeling was performed for the intersections based on the aforementioned methodology. The 2012 existing conditions, the 2022 No Build conditions and the 2022 Build conditions were each evaluated.

Receptors & Meteorology Inputs

Sets of up to 225 receptors were placed in the vicinity of each of the modeled intersections. Receptors extended approximately 100 to 300 feet on the sidewalks along the roadways approaching the intersection. The roadway links and receptor locations of the modeled intersections are presented in Figures 5.5-1 through 5.5-4.

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Figure 5.5-1
Kenmore Square

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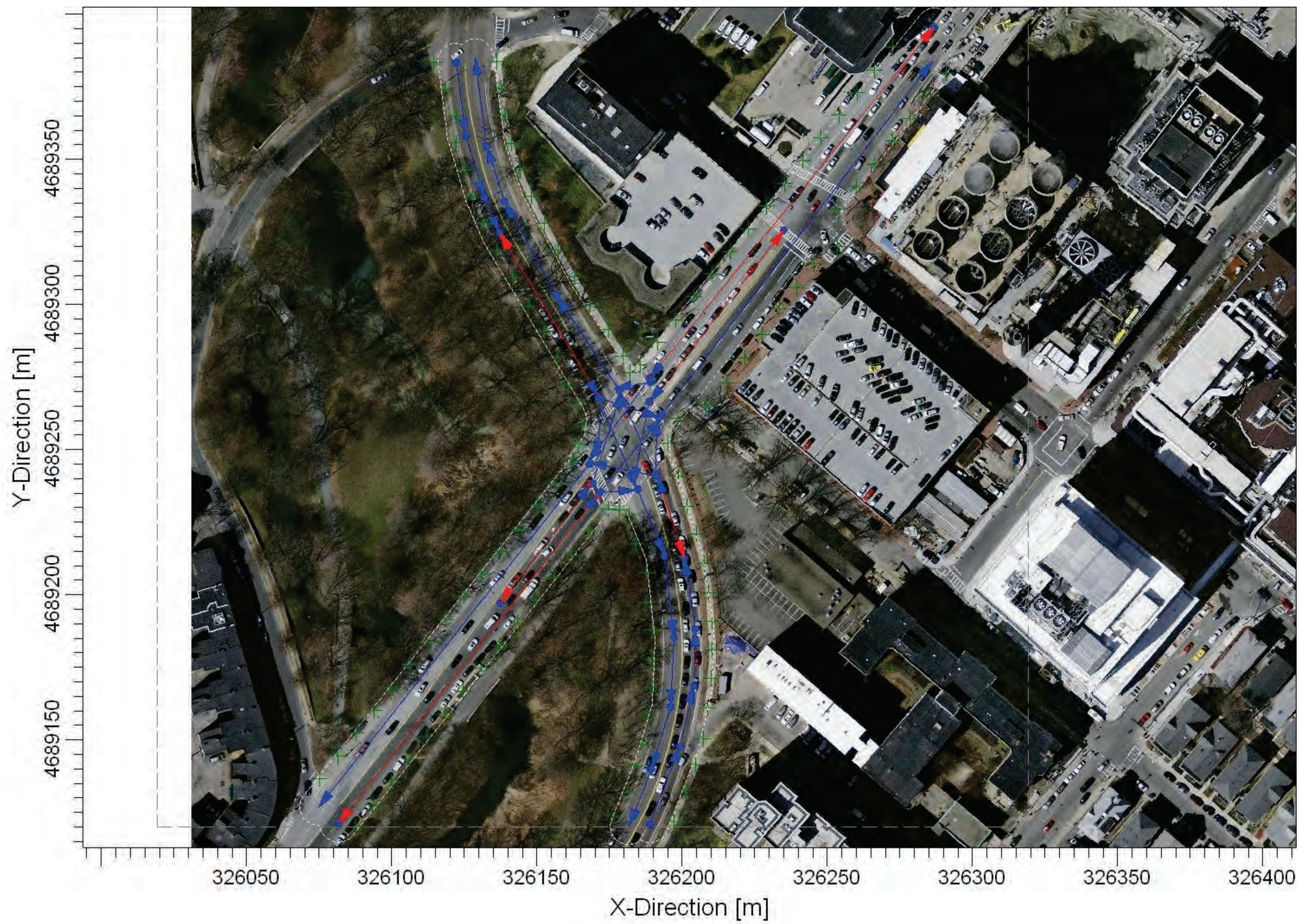
Figure 5.5-2
Brookline, Park, & Boylston Streets



Boston Children's Hospital

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Figure 5.5-3
Brookline & Riverway

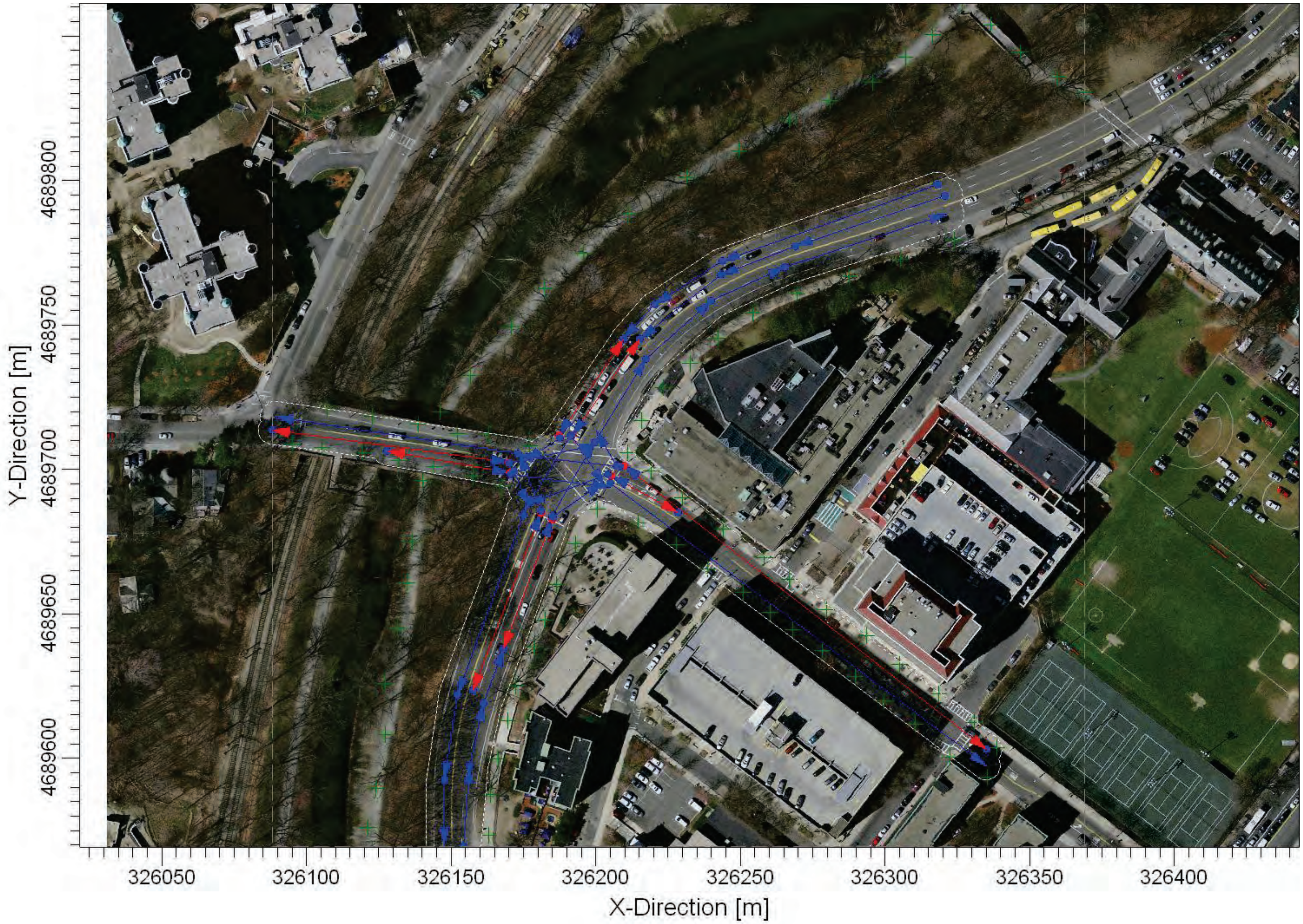

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Figure 5.5-4
Riverway & Longwood

For the CAL3QHC model, limited meteorological inputs are required. Following EPA guidance[5], a wind speed of 1 m/s, stability class D (4), and a mixing height of 1,000 meters was used. To account for the intersection geometry, wind directions from 0° to 350°, every 10° were selected. A surface roughness length of 175 cm was selected for all four intersections.[6]

Impact Calculations (CAL3QHC)

The CAL3QHC model predicts one-hour concentrations using queue-links at intersections, worst-case meteorological conditions, and traffic input data. The one-hour concentrations were scaled by a factor of 0.7 to estimate 8-hour concentrations.[7] The CAL3QHC methodology was based on EPA CO modeling guidance. Signal timings were provided directly from the traffic modeling outputs. The CAL3QHC input parameters are also described in Appendix E.

5.5.2.2 Stationary Source Analysis

AERMOD Modeling Methodology

The most recent version of the U.S. EPA AERMOD refined dispersion model (Version 12345) was selected to predict concentrations from the stationary sources related to the Projects. AERMOD is the U.S. EPA's preferred model for regulatory applications. The use of AERMOD provides the benefits of using the most current algorithms available for steady state dispersion modeling.

The ISC-AERMOD View graphical user interface (GUI) Version 8.0.5, created by Lakes Environmental, was used to facilitate model setup and post-processing of data. The AERMOD model was selected for this analysis because it:

- is the required U.S. EPA model for all refined regulatory analyses for receptors within 50 km of a source;
- is a refined model for facilities with multiple sources, source types, and building-induced downwash;
- uses actual representative hourly meteorological data;

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5 U.S. EPA, *Guideline for Modeling Carbon Monoxide from Roadway Intersections.* EPA-454/R-92-005, November 1992.

6 U.S. EPA, *User's Guide for CAL3QHC Version 2: A Modeling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections*. EPA –454/R-92-006 (Revised), September 1995.

7 U.S. EPA, Screening Procedures for Estimating the Air Quality Impact of Stationary Sources; EPA-454/R-92-019, October 1992.

- incorporates direction-specific building parameters which can be used to predict impacts within the wake region of nearby structures;

- allows the modeling of multiple sources together to predict cumulative downwind impacts;

- provides for variable emission rates;

- provides options to select multiple averaging periods between one-hour and one year (scaling factors can be applied to adjust the one-hour impact to a peak impact less than one-hour); and

- allows the use of large Cartesian and polar receptor grids, as well as discrete receptor locations.

Regulatory default options adopted for the model include the options described below.

- *Use stack-tip downwash (except for building downwash).* Stack-tip downwash is an adjustment of the actual stack release height for conditions when the gas exit velocity is less than 1.5 times the wind speed. For these conditions, the effective release height is reduced a bit, based on the diameter of the stack and the wind and gas exit velocity. This option applies to point sources only, such as emergency generators, cooling towers, boiler units and garage vents.

- *Use the missing data and calms processing routines.* The model treats missing meteorological data in the same way as the calms processing routine, i.e., it sets the concentration values to zero for that hour, and calculates the short term averages according to U.S. EPA's calms policy, as set forth in the Guideline. Since only one-hour averages are being used, concentrations predicted with calm or missing data would not affect model results.

The AERMOD model is able to assign sources to a rural or urban category to allow specified urban sources to use the effects of increased surface heating under stable atmospheric conditions. The urban dispersion classification was selected based on a visual inspection of the area within a three kilometer radius of the Projects' sites. A population estimate of 4,500,000 was obtained from the U.S. Census website (www.census.gov) and is used in the AERMOD model to estimate the urban boundary layer height.

The regional meteorology in Boston is best approximated with meteorological data collected by the nearby Boston Logan International Airport in East Boston, MA. The station is located approximately five miles (eight km) to the east of the Projects' sites at an elevation of 15 feet (4.57 m) above mean sea level. This station is the closest site for which extensive meteorological data are available which are representative of similar topographic influences that affect the proposed sites. Five years (2007-2011) of hourly surface data collected at the station include wind speed and direction, temperature, cloud cover and ceiling height. Upper air data from Gray, Maine was processed along with the surface data. The processed meteorological files for use in AERMOD were provided by the MassDEP. These files have been used on other AERMOD applications in the area for review by MassDEP and are presumed to be of sufficient quality for regulatory applications.

A network of 1,830 receptors was used for the refined AERMOD modeling analysis. A nested grid of Cartesian receptors centered on the project was used. The entire modeling domain encompassed 25.2 square kilometers. The spacing of the receptors was as follows:

- A 500 meter square area surrounding the 819 Beacon Street Project site with receptors spaced every 25 meters.
- A 750 meter square area surrounding the BCCB site with receptors spaced every 25 meters.
- A 5 kilometer square area surrounding the Projects' sites with receptors spaced every 250 meters.

Receptors falling on project building footprints were removed from the analysis.

Terrain data were obtained from the U.S.G.S National Map Seamless Server (www.seamless.usgs.gov) according to guidance set forth by EPA.[8] Source, building, and receptor elevations were processed using the AERMAP processor by way of the Lakes AERMOD View interface. Figures 5.5-5 through 5.5-7 present the source and receptor locations, as well as the buildings used in the GEP stack height/downwash analysis described below.

Stationary Sources

Stationary sources of air pollution are typically units that combust fuel. In this case, these sources consist of heating units and electrical generating units in both the BCCB and 819 Beacon Street Projects. The BCCB also includes a CUP with a combined heat and power unit in the sub-basement. Cooling towers, although not a combustion source, are a source of particulate emissions and are included in the analysis.

8 U.S. EPA, AERMOD Implementation Guide, March 19, 2009.

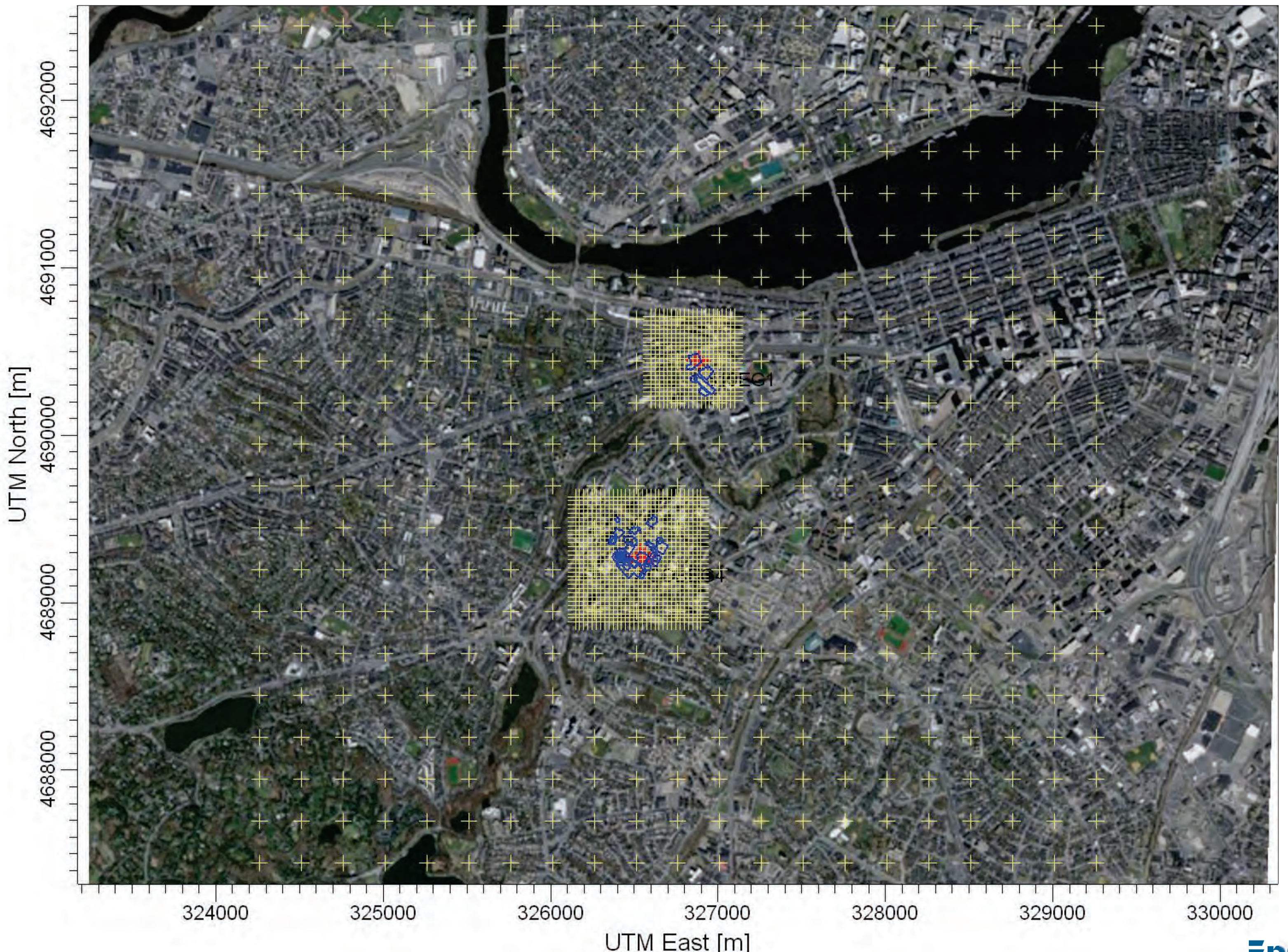

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Figure 5.5-5

Source and Receptor Locations for AERMOD modeling of Stationary Sources

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Figure 5.5-6
Source and Receptor Locations for AERMOD modeling of 819 Beacon Street Stationary Sources

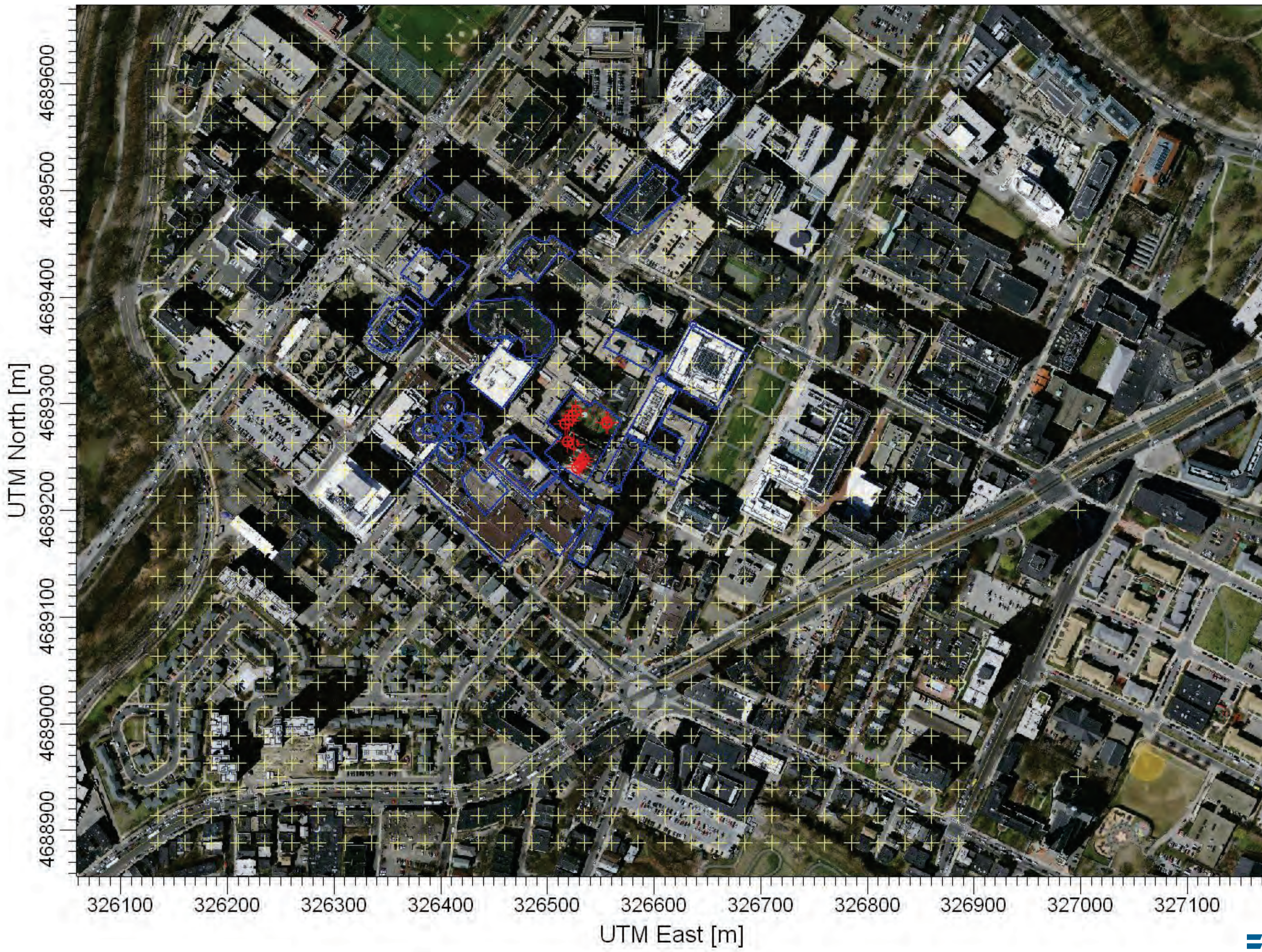

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Figure 5.5-7

Source and Receptor Locations for AERMOD modeling of Clinical Building Stationary Sources

Boilers

The current plans include a number of small condensing boilers for heat and domestic hot water. All units will be natural gas-fired and located in a penthouse mechanical area on the roofs of the buildings. The units are expected to be exhausted through individual stacks. The number and size of the boilers on each building are as follows:

- BCCB: two @ 37 MMBtu/hour (heat input) each.
- 819 Beacon Street: three @ 3 MMBtu/hour each.

The boilers will be within the requirements of the MassDEP's Environmental Results Program (ERP) since individual estimated heat inputs are within or below the 10 to 40 MMBtu/hour ERP range. However, emissions were conservatively estimated for each boiler based on the MassDEP Boiler ERP program emission limits. Dispersion modeled impacts from the heating units were estimated from exhaust stacks 10 feet above the building roof heights above ground level. For all impacts, the heating equipment is assumed to be in operation 24 hours per day, seven days per week.

Emergency Generators

Current design plans include emergency generators to be installed on the buildings to be constructed. The units will provide life safety and standby emergency power to the building. The units will be diesel-fired and located in a mechanical area on the roof of the building. The generators are assumed to be designed such that its exhaust stack extends at least 10 feet above the individual building roof height above ground level. The number and size of the generator on each building are as follows:

- BCCB: four 2,500 kilowatt units.
- 819 Beacon Street: one 750 kilowatt unit.

Typically, the generators will operate for approximately one hour each month for testing and general maintenance. The ERP regulation applies to new emergency generators greater than 37 kW. The regulation is similar to the boiler ERP in that new engines are subject to emission standards, recordkeeping, certification, and compliance with the MassDEP noise policy. Since the generator maximum rating capacity is greater than the ERP limit of 37 kW, it will be subject to the new ERP program. Per the ERP, the generator owner will limit operation of the generator to less than 300 hours per year and submit a certification form to MassDEP within 60 days of installation.

Emissions were estimated for the emergency generators based on vendor supplied data. Comparable equipment was assumed where not provided by the architects or design engineers. The generators are assumed to operate 300 of 8,760 hours per year in the modeling for annual averaging times.

Cooling Towers

Current plans call for cooling towers to be installed on the proposed BCCB and 819 Beacon Street buildings. These units will remove the excess heat generated by the buildings' mechanical equipment. All units will be located on the roofs of the buildings. The number and size of the cooling towers on each building are as follows:

- BCCB: four 1,400-ton two celled cooling towers.
- 819 Beacon Street: two 350-ton two celled cooling towers

Only emissions of particulate matter are assumed to be produced by the cooling tower cells. The cooling towers are assumed to operate at 100% capacity for 8,760 hours per year. Emissions of all other pollutants from the cooling towers are expected to be negligible.

Emissions and exhaust parameters were based on vendor supplied data and/or engineering judgment.

Combined Heat & Power

A combined heating and power system is planned for the BCCB. A CHP system includes a reciprocating engine, along with heat recovery units to provide power, while collecting the waste heat energy to produce steam for other uses, mainly heating. The currently planned system consists of a 1,200 kW gas fired reciprocating engine and waste heat boiler (together a combined heat and power unit). It is assumed to exhaust from the roof of the BCCB. The unit is assumed to operate 8,760 hours per year.

Emissions and exhaust parameters were based on vendor supplied data and/or engineering judgment.

Parking Garage Exhausts

Since the Patient and Family Parking Garage Addition is an open air above grade addition, there will likely be no requirement for mechanical ventilation. In addition, the 819 Beacon Street parking garage is above grade and mechanical ventilation is also not expected.

GEP Stack Height Analysis

The Good Engineering Practice (GEP) stack height evaluation of the facility has been conducted in accordance with the EPA revised Guidelines for Determination of Good Engineering Practice Stack Height (EPA, 1985). A GEP stack is sufficiently high to avoid aerodynamic downwash effects from nearby buildings or structures. As defined by the EPA guidelines, the formula for computing GEP stack height is the greater of:

1. 65 meters, or

2. for stacks constructed after January 12, 1979,

$$H_{GEP} = H_b + 1.5L$$

where H_{GEP} = GEP stack height,

H_b = Height of adjacent or nearby structures,

L = Lesser of height or maximum projected width of adjacent or nearby building (i.e., the critical dimension), and nearby is within 5L of the stack from downwind (trailing edge) of the building.

The GEP formula was applied to each input building. The EPA's Building Profile Input Program Prime Version (BPIP-Prime) was run to confirm the GEP height and to calculate direction-specific building dimensions for use in AERMOD.

The point sources subject to building influences are the boiler stacks, the cooling towers, the CHP, and the emergency generator stacks.

The proposed boiler stacks, the cooling towers, and emergency generator stacks are all below GEP height; therefore, building downwash effects were considered in the air quality modeling. The AERMOD model determines when and if to include downwash in its calculations. In addition, if downwash applies, the AERMOD downwash algorithm will be used to estimate concentrations in the building cavity areas.

5.5.2.3 Mesoscale/GHG Analysis

A mesoscale analysis is required to ensure that the proposed Projects will not adversely impact the existing State Implementation Plan (SIP), which tracks how the state intends to maintain compliance with the NAAQS or plans for reductions in emissions to attain compliance in the future.

A mesoscale analysis predicts the change in regional ozone precursor emissions (oxides of nitrogen [NOx] and volatile organic compounds [VOC]) due to the Project. Additionally, emissions of carbon dioxide (CO_2) are calculated for use in the greenhouse gas analysis presented in Chapter 9.

In accordance with MassDEP guidance[9], a mesoscale analysis is required for the following projects for which an ENF is filed under MEPA after May 1, 1991:

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[9] MassDEP, Guidelines For Performing Mesoscale Analysis Of Indirect Sources, May 1991

- any office project generating 3,000 or more ADT; and
- any other non-residential project generating 6,000 or more ADT.

A mesoscale analysis will be required for the following projects for which a decision on the adequacy of an EIR is issued under MEPA after May 1, 1991:

- any non-residential project generating 10,000 or more ADT.

A mesoscale analysis is required to ensure that a proposed project will not negatively impact the existing SIP. The SIP is created to track how the state intends to maintain compliance with NAAQS or to plan for future emissions reductions to attain compliance.

The analysis includes a comparison of the future Build conditions to the No-Build condition. If emissions are greater for the Build conditions, reasonable and feasible mitigation measures are to be evaluated. The methodology and parameters for the mesoscale analysis follow methodology approved by MassDEP.

The mesoscale analysis performed for the BCCB and 819 Beacon Street Projects predict the change in regional ozone precursor emissions due to the proposed redevelopment of the Project sites. The total vehicle pollutant burden was estimated for the 2012 existing conditions and the No-Build and Build conditions for year 2022. The traffic conditions are described in more detail in Chapters 3 and 4.

The EPA's MOBILE6.2 computer program was used to estimate motor vehicle emission factors of VOC and NOx (and CO_2 for GHG) on the roadway network in the Project area. Conservatively, emission factors derived from MOBILE6.2 for VOC and NOx (and CO_2) are based on the worst case of either wintertime or summertime conditions. Daily and yearly emission estimates were calculated using the vehicle count data, mileage between intersections, modeled signalized intersection delay times, and emission factors.

The traffic volumes provided in Chapters 3 and 4 form the basis of the mesoscale study. Peak hour traffic volumes were provided by the transportation consultant. Estimates of ADT were made from the peak hour volumes assuming a 10% K-Factor. Average speeds assumed based on roadway type (30 mph for arterial roads) were used for all links. Distances for the links were estimated with mapping software.

Average per-vehicle idle times were based on SYNCHRO output reports provided by the transportation consultant to calculate emissions from idling vehicles. Further idling on roadway links was included assuming a one-minute per hour per vehicle idling time.

5.5.2.4 Background Concentrations

To estimate background pollutant levels representative of the area, the most recent air quality monitor data reported by the MassDEP in their Annual Air Quality Reports was obtained for 2007 to 2011. MassDEP guidance specifies the use of the latest three years of available monitoring data from within 10 km of the project site.

The Clean Air Act allows for one exceedance per year of the CO and SO_2 short-term NAAQS per year. The highest second-high accounts for the one exceedance. Annual NAAQS are never to be exceeded. The 24-hour PM10 standard is not to be exceeded more than once per year on average over three years. To attain the 24-hour PM2.5 standard, the three-year average of the 98th percentile of 24-hour concentrations must not exceed 35 $\mu g/m^3$. For annual PM2.5 averages, the average of the highest yearly observations was used as the background concentration. A new one-hour NO_2 standard was recently promulgated. To attain this standard, the three-year average of the 98^{th} percentile of the maximum daily one-hour concentrations must not exceed 188 $\mu g/m^3$.

Background concentrations were determined from the closest available monitoring stations to the proposed development. The closest monitor is located at Kenmore Square, in Boston. A summary of the background air quality concentrations are presented in Table 5.5-2.

Table 5.5-2 Observed Ambient Air Quality Concentrations and Selected Background Levels

Pollutant	Averaging Time	2009	2010	2011	Background Concentration ($\mu g/m^3$)	Location
SO_2 (1)(7)(8)	1-Hour	65.0	69.9	127.4	127.4	Kenmore Sq., Boston
	3-Hour	88.4	62.4	49.4	88.4	Kenmore Sq., Boston
	24-Hour	23.4	21.8	31.5	31.5	Kenmore Sq., Boston
	Annual	6.5	5.8	6.1	6.5	Kenmore Sq., Boston
PM10	24-Hour	69.0	40.0	38.0	69.0	Kenmore Sq., Boston
	Annual	20.6	15.5	16.8	20.6	Kenmore Sq., Boston
PM2.5	24-Hour (4)	19.1	21.9	21.2	20.7	Kenmore Sq., Boston
	Annual (5)	9.0	9.3	9.4	9.2	Kenmore Sq., Boston

Table 5.5-2 Observed Ambient Air Quality Concentrations and Selected Background Levels (Continued)

Pollutant	Averaging Time	2009	2010	2011	Background Concentration ($\mu g/m^3$)	Location
NO_2 (3)	1-Hour (6)	112.8	119.4	140.8	140.8	Kenmore Sq., Boston
	Annual	37.8	35.9	38.3	38.3	Kenmore Sq., Boston
CO (2)	1-Hour	1596	2166	1710	2166	Kenmore Sq., Boston
	8-Hour	1254	1710	1482	1710	Kenmore Sq., Boston

Notes: From 2007-2011 MA DEP Annual Data Summaries

1 SO_2 reported in ppm or ppb. Converted to $\mu g/m^3$ using factor of 1 ppm = 2600 $\mu g/m^3$.

2 CO reported in ppm or ppb. Converted to $\mu g/m^3$ using factor of 1 ppm = 1140 $\mu g/m^3$.

3 NO_2 reported in ppm or ppb. Converted to $\mu g/m^3$ using factor of 1 ppm = 1880 $\mu g/m^3$.

4 Background level for 24-hour PM2.5 is the average concentration of the 98th percentile for three years.

5 Background level for annual PM2.5 is the average for three years.

6 Maximum annual 1-hr concentrations.

7 The 24-hour and Annual standards were revoked by EPA on June 22, 2010, Federal Register 75-119, p. 35520.

8 The 2010 & 2011 SO_2 3-hr value is not reported. Years 2007-2009 used instead.

For use in the microscale analysis, background concentrations of CO in ppm were required. The corresponding maximum background concentrations in ppm were 1.9 ppm for one-hour and 1.5 ppm for eight-hour CO.

5.5.3 Air Quality Results

5.5.3.1 Boston Children's Clinical Building

Microscale Results

The results of the maximum one-hour predicted CO concentrations at the intersections associated with the BCCB from CAL3QHC are provided in Tables 5.5-3 through 5.5-5 for the 2012 and 2022 scenarios. Eight-hour average concentrations are calculated by multiplying the maximum one-hour concentrations by a factor of 0.7.[10]

The results of the one-hour and eight-hour maximum modeled CO ground-level concentrations from CAL3QHC were added to EPA supplied background levels for comparison to the NAAQS. These values represent the highest potential concentrations at the intersection as they are predicted during the simultaneous occurrence of "defined" worst case meteorology. The highest one-hour traffic-related concentration predicted in the

10 U.S. EPA, Screening Procedures for Estimating the Air Quality Impact of Stationary Sources; EPA-454/R-92-019, October 1992.

area of the BCCB, for the modeled conditions (2.2 ppm) plus background (1.9 ppm) is 4.1 ppm for the 2022 afternoon peak hour cases at Brookline Avenue and Riverway. The highest eight-hour traffic-related concentration predicted in the area of the BCCB for the modeled conditions (1.5 ppm) plus background (1.5 ppm) is 3.0 ppm for at the same location and scenario. Both concentrations are well below the one-hour NAAQS of 35 ppm and the eight-hour NAAQS of 9 ppm.

It would be expected that any other mitigation measures implemented to improve traffic flow at any of the modeled intersections would result in further improved air quality impacts.

Table 5.5-3 Summary of Microscale Modeling Analysis (BCCB, Existing 2012)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
The Riverway and Longwood Avenue	AM	1.1	1.9	3.0	35
	PM	1.6	1.9	3.5	35
Brookline Avenue and the Riverway	AM	2.0	1.9	3.9	35
	PM	2.0	1.9	3.9	35
8-Hour					
The Riverway and Longwood Avenue	AM	0.8	1.5	2.3	9
	PM	1.1	1.5	2.6	9
Brookline Avenue and the Riverway	AM	1.4	1.5	2.9	9
	PM	1.4	1.5	2.9	9

Notes:
CAL3QHC 8-hour impacts were conservatively obtained by multiplying 1-hour impacts by a screening factor of 0.7.

Table 5.5-4 Summary of Microscale Modeling Analysis (BCCB, No Build 2022)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
The Riverway and Longwood Avenue	AM	1.1	1.9	3.0	35
	PM	1.5	1.9	3.4	35
Brookline Avenue and the Riverway	AM	2.0	1.9	3.9	35
	PM	2.2	1.9	4.1	35
8-Hour					
The Riverway and Longwood Avenue	AM	0.8	1.5	2.3	9
	PM	1.1	1.5	2.6	9
Brookline Avenue and the Riverway	AM	1.4	1.5	2.9	9
	PM	1.5	1.5	3.0	9

Notes:

CAL3QHC 8-hour impacts were conservatively obtained by multiplying 1-hour impacts by a screening factor of 0.7.

Table 5.5-5 Summary of Microscale Modeling Analysis (BCCB, Build 2022)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
The Riverway and Longwood Avenue	AM	1.1	1.9	3.0	35
	PM	1.5	1.9	3.4	35
Brookline Avenue and the Riverway	AM	2.1	1.9	4.0	35
	PM	2.2	1.9	4.1	35
8-Hour					
The Riverway and Longwood Avenue	AM	0.8	1.5	2.3	9
	PM	1.1	1.5	2.6	9
Brookline Avenue and the Riverway	AM	1.5	1.5	3.0	9
	PM	1.5	1.5	3.0	9

Notes:
CAL3QHC 8-hour impacts were conservatively obtained by multiplying 1-hour impacts by a screening factor of 0.7.

Stationary Source Results

In addition to the microscale analysis, a cumulative impact analysis was also conducted for comparison to the NAAQS for SO_2, NOx, PM10, and PM2.5. This analysis addresses emissions from the Project's heating boilers, emergency generators, and cooling towers.

Worst case maximum predicted impacts from these source groups were added to monitored background values obtained from MassDEP and compared to the NAAQS. Table 5.5-6 presents the results of the stationary sources related to the BCCB only. All concentrations are below the applicable NAAQS for the respective pollutants.

Table 5.5-6 Summary of NAAQS Stationary Source Modeling Analysis (BCCB)

Pollutant	Averaging Time	Max Modeled Conc. ($\mu g/m^3$)	Modeled Year	Background Concentration ($\mu g/m^3$)	Total Conc. ($\mu g/m^3$)	Standard ($\mu g/m^3$)	% Of Standard
SO_2	1 HR (1)	0.86	2007-2011	127.4	128.3	195	66%
	3 HR (2)	0.74	2010	88.4	89.1	1300	7%
	24 HR (2)	0.46	2010	31.5	31.9	365	9%
	ANN. (3)	0.06	2007	6.5	6.6	80	8%
PM10	24 HR (4)	3.61	2011	69.0	72.6	150	48%
	ANN. (3)	0.32	2007	20.6	20.9	50	42%
PM2.5	24 HR (5)	3.84	2007-2011	20.7	24.6	35	70%
	ANN. (6)	0.29	2007-2011	9.2	9.5	15	63%
NO_2	1 HR (7)	26.14	2007-2011	140.8	167.0	188	89%
	ANN. (3)	2.87	2007	38.3	41.1	100	41%
CO	1 HR (2)	81.54	2007	2166.0	2247.5	40000	6%
	8 HR (2)	50.93	2011	1710.0	1760.9	10000	18%

Notes:
(1) Maximum 4th-Highest Maximum Daily 1-Hr Concentration Averaged Over 5 Years
(2) Highest 2nd-High Concentration Over 5 Years
(3) Highest Annual Concentration Over 5 Years
(4) Highest 6th-High Concentration Over 5 Years
(5) Maximum 1st-Highest 24-Hour Concentration Averaged Over 5 Years
(6) Maximum Annual Concentration Averaged Over 5 Years
(7) Maximum 8th Highest Maximum Daily 1-hour Concentrations Averaged Over 5 Years.

Mesoscale Results

Results of the mesoscale analysis for the BCCB are presented in Tables 5.5-7 through 5.5-8.

The decrease in total emissions from Existing 2012 to 2022 No-Build, even with the modest increases in traffic vehicle miles traveled (VMT) and delay times, is attributable to anticipated improvements in vehicle engine and emissions technologies, which are expected to reduce the per-vehicle emission rates.

Table 5.5-7 Regional Mesoscale (Indirect) Emissions Analysis Summary (BCCB)

Pollutant	VOC (lbs/day)	VOC (tons/yr)	NOx (lbs/day)	NOx (tons/yr)
2012 Existing	46.66	7.28	75.30	11.75
2022 No Build	37.01	5.77	27.56	4.30
Difference	-9.64 -20.7%	-1.50 -20.67%	-47.74 -63.40%	-7.45 -63.40%

For Build conditions, shown in Table 5.5-8, the 2022 Build condition shows slight increases of NOx and VOC emissions compared to 2022 No Build conditions. Due to trip increases, results show increases of approximately 2.5% in VOC and 1.8% in NOx emissions.

Table 5.5-8 Regional Mesoscale (Indirect) Emissions Analysis Summary (BCCB)

Pollutant	VOC (lbs/day)	VOC (tons/yr)	NOx (lbs/day)	NOx (tons/yr)
2022 No Build	37.01	5.77	27.56	4.30
2022 Build	37.93	5.92	28.07	4.38
Difference	0.92 2.5%	0.14 2.5%	0.51 1.8%	0.08 1.8%

Transportation Mitigation Measures

The Proponent has identified and reviewed reasonable and feasible mitigation measures to address traffic impacts and the resulting minimal increase in emissions associated with the 2022 Build scenario. Chapter 3 provides a description of the TDM program that will be implemented to reduce vehicle trips attributable to the BCCB. The Proponent is committed to implementing transportation management improvements to minimize potential impacts to the transportation system, including signal improvements at area intersections, encouraging alternative modes of travel, rideshare programs, and telecommuting. Proposed transportation-related mitigation measures are further described in Chapter 3.

Combined Microscale and Stationary Source Impacts

Since concentrations of CO are predicted from both stationary and mobile sources, the combined impact from both can be evaluated. Looking at each Project separately, the overall one-hour CO concentration associated with the BCCB is 4.2 ppm (2.2 ppm from vehicles, 0.072 ppm from stationary sources, and 1.9 ppm from background). The overall eight-hour CO concentration associated with the BCCB is 3.0 ppm (1.5 ppm from vehicles, 0.045 ppm from stationary sources, and 1.5 ppm from background).

This is a highly conservative estimate, since the added values are irrespective of time and space (i.e., the modeled and background concentrations occur at different times and at different locations).

5.5.3.2 819 Beacon Street Building

Microscale Results

The results of the maximum one-hour predicted CO concentrations from CAL3QHC are provided in Tables 5.5-9 through 5.5-11 for the 2012 and 2022 scenarios. Eight-hour average concentrations are calculated by multiplying the maximum one-hour concentrations by a factor of 0.7.[11]

The results of the one-hour and eight-hour maximum modeled CO ground-level concentrations from CAL3QHC were added to EPA supplied background levels for comparison to the NAAQS. These values represent the highest potential concentrations at the intersection as they are predicted during the simultaneous occurrence of "defined" worst case meteorology. The highest one-hour traffic-related concentration predicted in the area of the 819 Beacon Street Project, for the modeled conditions (3.1 ppm) plus background (1.9 ppm) is 5.0 ppm for the 2022 No Build morning peak hour case at Brookline Avenue, Park Drive, Boylston Street, the Riverway, and the Fenway. The highest eight-hour traffic-related concentration predicted in the area of the Project for the modeled conditions (2.2 ppm) plus background (1.5 ppm) is 3.7 ppm for at the same location and scenario. Both concentrations are well below the one-hour NAAQS of 35 ppm and the eight-hour NAAQS of 9 ppm.

It would be expected that any other mitigation measures implemented to improve traffic flow at any of the modeled intersections would result in further improved air quality impacts.

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[11] U.S. EPA, Screening Procedures for Estimating the Air Quality Impact of Stationary Sources; EPA-454/R-92-019, October 1992.

Table 5.5-9 Summary of Microscale Modeling Analysis (819 Beacon Street, Existing 2012)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Brookline Avenue, Park Drive, Fenway, Riverway, and, Boylston Street	AM	2.3	1.9	4.2	35
	PM	2.5	1.9	4.4	35
Kenmore Square	AM	1.4	1.9	3.3	35
	PM	1.7	1.9	3.6	35
8-Hour					
Brookline Avenue, Park Drive, Fenway, Riverway, and, Boylston Street	AM	1.6	1.5	3.1	9
	PM	1.8	1.5	3.3	9
Kenmore Square	AM	1.0	1.5	2.5	9
	PM	0.8	1.5	2.3	9
Notes: CAL3QHC 8-hour impacts were conservatively obtained by multiplying 1-hour impacts by a screening factor of 0.7.					

Table 5.5-10 Summary of Microscale Modeling Analysis (819 Beacon Street, No Build 2022)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Brookline Avenue, Park Drive, Fenway, Riverway, and, Boylston Street	AM	3.1	1.9	5.0	35
	PM	2.4	1.9	4.3	35
Kenmore Square	AM	1.6	1.9	3.5	35
	PM	1.8	1.9	3.7	35
8-Hour					
Brookline Avenue, Park Drive, Fenway, Riverway, and, Boylston Street	AM	2.2	1.5	3.7	9
	PM	1.7	1.5	3.2	9
Kenmore Square	AM	1.1	1.5	2.6	9
	PM	1.3	1.5	2.8	9

Notes: CAL3QHC 8-hour impacts were conservatively obtained by multiplying 1-hour impacts by a screening factor of 0.7.

Table 5.5-11 Summary of Microscale Modeling Analysis (819 Beacon Street, Build 2022)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Brookline Avenue, Park Drive, Fenway, Riverway, and, Boylston Street	AM	3.0	1.9	4.9	35
	PM	2.5	1.9	4.4	35
Kenmore Square	AM	1.6	1.9	3.6	35
	PM	1.9	1.9	3.8	35
8-Hour					
Brookline Avenue, Park Drive, Fenway, Riverway, and, Boylston Street	AM	2.1	1.5	3.6	9
	PM	1.8	1.5	3.3	9
Kenmore Square	AM	1.3	1.5	2.8	9
	PM	1.3	1.5	2.8	9

Notes:
CAL3QHC 8-hour impacts were conservatively obtained by multiplying 1-hour impacts by a screening factor of 0.7.

Stationary Source Results

In addition to the microscale analysis, a cumulative impact analysis was also conducted for comparison to the NAAQS for SO_2, NOx, PM10, and PM2.5. This analysis addresses emissions from the Project’s heating boilers, emergency generators, and cooling towers.

Worst case maximum predicted impacts from these source groups were added to monitored background values obtained from MassDEP and compared to the NAAQS. Stationary source impacts attributable to 819 Beacon Street are presented in Table 5.5-12. All predicted concentrations are below applicable NAAQS.

Table 5.5-12 Summary of NAAQS Stationary Source Modeling Analysis (819 Beacon Street)

Pollutant	Averaging Time	Max Modeled Conc. ($\mu g/m^3$)	Modeled Year	Background Concentration ($\mu g/m^3$)	Total Conc. ($\mu g/m^3$)	Standard ($\mu g/m^3$)	% Of Standard
SO_2	1 HR (1)	0.23	2007-2011	127.4	127.6	195	65%
	3 HR (2)	0.19	2011	88.4	88.6	1300	7%
	24 HR (2)	0.12	2009	31.5	31.6	365	9%
	ANN. (3)	0.02	2011	6.5	6.5	80	8%
PM10	24 HR (4)	1.33	2009	69.0	70.3	150	47%
	ANN. (3)	0.31	2011	20.6	20.9	50	42%
PM2.5	24 HR (5)	1.42	2007-2011	20.7	22.1	35	63%
	ANN. (6)	0.31	2007-2011	9.2	9.5	15	64%
NO_2	1 HR (7)	11.41	2007-2011	140.8	152.2	188	81%
	ANN. (3)	1.78	2009	38.3	40.1	100	40%
CO	1 HR (2)	26.19	2008	2166.0	2192.2	40000	5%
	8 HR (2)	15.93	2011	1710.0	1725.9	10000	17%

Notes:
(1) Maximum 4th-Highest Maximum Daily 1-Hr Concentration Averaged Over 5 Years
(2) Highest 2nd-High Concentration Over 5 Years
(3) Highest Annual Concentration Over 5 Years
(4) Highest 6th-High Concentration Over 5 Years
(5) Maximum 1st-Highest 24-Hour Concentration Averaged Over 5 Years
(6) Maximum Annual Concentration Averaged Over 5 Years
(7) Maximum 8th Highest Maximum Daily 1-hour Concentrations Averaged Over 5 Years.

Mesoscale Results

Results of the mesoscale analysis for the 819 Beacon Street Project are presented in Tables 5.5-13 through 5.5-14.

The decrease in total emissions from Existing 2012 to 2022 No-Build, even with the modest increases in traffic vehicle miles traveled (VMT) and delay times, is attributable to anticipated improvements in vehicle engine and emissions technologies, which are expected to reduce the per-vehicle emission rates.

Table 5.5-13 Regional Mesoscale (Indirect) Emissions Analysis Summary (819 Beacon Street)

Pollutant	VOC (lbs/day)	VOC (tons/yr)	NOx (lbs/day)	NOx (tons/yr)
2012 Existing	46.96	7.33	88.53	13.81
2022 No Build	37.37	5.83	33.09	5.16
Difference	-9.6 -20.4%	-1.5 -20.42%	-55.4 -62.63%	-8.6 -62.63%

For Build conditions, shown in Table 5.5-14, the 2022 Build condition shows slight increases of NOx and VOC emissions compared to 2022 No-Build conditions. Due to traffic, results show increases of approximately 2.8% in VOC and 1.1% in NOx emissions.

Table 5.5-14 Regional Mesoscale (Indirect) Emissions Analysis Summary (819 Beacon Street)

Pollutant	VOC (lbs/day)	VOC (tons/yr)	NOx (lbs/day)	NOx (tons/yr)
2022 No-Build	37.37	5.83	33.09	5.16
2022 Build	38.43	5.99	33.46	5.22
Difference	1.1 2.8%	0.2 2.8%	0.4 1.1%	0.1 1.1%

Transportation Mitigation Measures

The Proponent has identified and reviewed reasonable and feasible mitigation measures to address traffic impacts and the resulting minimal increase in emissions associated with the 2022 Build scenario. Chapter 4 provides a description of the TDM program that will be implemented to reduce vehicle trips attributable to the 819 Beacon Street Project. The Proponent is committed to implementing transportation management improvements to minimize potential impacts to the transportation system, including encouraging alternative modes of travel, rideshare programs, and telecommuting. Proposed transportation-related mitigation measures are further described in Chapter 3.

Combined Microscale and Stationary Source Impacts

Since concentrations of CO are predicted from both stationary and mobile sources, the combined impact from both can be evaluated. The overall one-hour CO concentration associated with the 819 Beacon Street Project is 5.0 ppm (3.1 ppm from vehicles, 0.023 ppm from stationary sources, and 1.9 ppm from background). The overall eight-hour CO concentration associated with the 819 Beacon Street Project is 3.7 ppm (2.2 ppm from vehicles, 0.014 ppm from stationary sources, and 1.5 ppm from background).

This is a highly conservative estimate, since the added values are irrespective of time and space (i.e., the modeled and background concentrations occur at different times and at different locations).

Cumulative Stationary Sources

Since the Projects are proposed by the same entity, and are close enough where their stationary source impacts may interact, the combined results of both Projects' stationary sources were evaluated. Table 5.5-15 presents the cumulative modeling results for the stationary sources of both the 819 Beacon Street Project and the BCCB plus monitored background values. The total impacts when combined with background are below the NAAQS for all pollutants and averaging periods.

Table 5.5-15 Summary of NAAQS Stationary Source Modeling Analysis (All Sources)

Pollutant	Averaging Time	Max Modeled Conc. ($\mu g/m^3$)	Modeled Year	Background Concentration ($\mu g/m^3$)	Total Conc. ($\mu g/m^3$)	Standard ($\mu g/m^3$)	% Of Standard
SO_2	1 HR (1)	0.86	2007-2011	127.4	128.3	195	66%
	3 HR (2)	0.74	2010	88.4	89.1	1300	7%
	24 HR (2)	0.46	2010	31.5	31.9	365	9%
	ANN. (3)	0.06	2007	6.5	6.6	80	8%
PM10	24 HR (4)	3.61	2011	69.0	72.6	150	48%
	ANN. (3)	0.33	2011	20.6	20.9	50	42%
PM2.5	24 HR (5)	3.84	2007-2011	20.7	24.6	35	70%
	ANN. (6)	0.32	2007-2011	9.2	9.5	15	64%
NO_2	1 HR (7)	26.16	2007-2011	140.8	167.0	188	89%
	ANN. (3)	2.89	2007	38.3	41.2	100	41%
CO	1 HR (2)	81.58	2007	2,166.0	2,247.6	40,000	6%
	8 HR (2)	50.93	2011	1,710.0	1,760.9	10,000	18%

Notes:
(1) Maximum 4th-Highest Maximum Daily 1-Hr Concentration Averaged Over 5 Years
(2) Highest 2nd-High Concentration Over 5 Years
(3) Highest Annual Concentration Over 5 Years
(4) Highest 6th-High Concentration Over 5 Years
(5) Maximum 1st-Highest 24-Hour Concentration Averaged Over 5 Years
(6) Maximum Annual Concentration Averaged Over 5 Years
(7) Maximum 8th Highest Maximum Daily 1-hour Concentrations Averaged Over 5 Years.

When adding the high-second highest overall AERMOD-predicted one-hour CO concentrations from the stationary sources to the highest overall traffic-generated impacts for the 2022 Build case, the one-hour modeled concentration from stationary sources (81.58 $\mu g/m^3$, 0.07 ppm), vehicles (3.1 ppm), plus background (1.9 ppm) is 5.1 ppm This combined value is also well below the one-hour NAAQS standard of 35 ppm.

Similarly, when adding the high-second highest overall AERMOD-predicted eight-hour CO concentrations from the stationary sources to the highest overall traffic-generated impacts for the future build case, the eight-hour modeled concentration from stationary sources (50.93 $\mu g/m^3$, 0.04 ppm), vehicles (2.2 ppm) plus background (1.5 ppm) is 3.7 ppm. These values are also below the eight-hour NAAQS standard of 9.0 ppm.

5.5.4 Conclusions

5.5.4.1 Microscale Analyses

Results of the microscale analyses show that all predicted CO concentrations are well below one-hour and eight-hour NAAQS. Therefore, it can be concluded that there are no adverse air quality impacts resulting from increased traffic in the area.

5.5.4.2 Stationary Source Analyses

Using conservative estimates, the CO concentrations at the nearest receptors for impacts from the intersection, the heating boilers, CHP, and emergency generator units, plus monitored background values, are well under the CO NAAQS thresholds. In addition, maximum cumulative impacts from the heating boilers, CHP, cooling towers, and emergency generators plus monitored background values are also below the NAAQS thresholds for SO_2, NO_x, PM10, and PM2.5.

5.5.4.3 Mesoscale Analyses

Although the results of the mesoscale analyses show small percentage increases in NO_x and VOC emissions, the quantitative values (in tons per year) are essentially identical between No-Build and Build cases. It is expected that adjustments to signal timing at area intersections would effectively eliminate these increases.

5.5.5 Permitting

It is expected that the majority of stationary sources (boilers, engines, etc) for both the BCCB and 819 Beacon Street Projects would be subject to the MassDEP's Environmental Results Program. In addition, since the BCCB is part of the larger Boston Children's Hospital Main Campus, other air quality regulations may apply if total emissions exceed thresholds for other air pollution control requirements, including New Source Review (NSR), Operating Permits, and Prevention of Significant Deterioration (PSD). A combined heat and power unit may exceed the thresholds requiring a Non-Major Comprehensive Plan Approval from MassDEP before construction.

5.6 Noise

5.6.1 Introduction

This section describes two independent noise analyses conducted for the 819 Beacon Street Project as well as the BCCB, each including a noise-monitoring program to determine existing background levels and an estimate of future sound levels when the Projects are in operation. The scope of these analyses is consistent with BRA requirements for noise studies. The Patient and Family Parking Garage Addition is not expected to result in any net new noise impacts.

Baseline noise levels were measured in the vicinities of the proposed Projects and were compared to predicted noise levels based on reference sound data for mechanical equipment identified by the Project architects. These predicted noise levels were compared to the City of Boston Zoning District Noise Standards and the MassDEP Noise Policy. The analyses indicate that predicted noise levels from mechanical equipment, with appropriate noise attenuation measures, will comply with both state and local regulations for both the BCCB and the 819 Beacon Street Projects.

5.6.2 Noise Terminology

There are several ways in which sound (noise) levels are measured and quantified, all of which use the logarithmic decibel (dB) scale. The following information defines the noise terminology used in this analysis.

The decibel scale is logarithmic to accommodate the wide range of sound intensities observed in the environment. A property of the decibel scale is that the sound pressure levels of two distinct sounds are not purely additive. For example, if a sound of 50 dB is added to another sound of 50 dB, the total is only a three-decibel increase (53 dB), not a doubling (100 dB). Thus, every three-decibel change in sound level represents a doubling or halving of sound energy. Related to this is the fact that a change in sound level of less than three dB is generally imperceptible to the human ear.

Another property of the decibel scale is that if one source of noise is 10 dB (or more) louder than another source, then the total combined sound level is simply that of the louder source (i.e., the quieter source contributes negligibly to the overall sound level). For example, a source of sound at 60 dB plus another source at 47 dB is 60 dB.

The sound level meter used to measure noise is a standardized instrument.[12] It contains "weighting networks" to adjust the frequency response of the instrument to approximate that of the human ear under various conditions. One network is the A-weighting network

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[12] *American National Standard Specification for Sound Level Meters*, ANSI S1.4-1983, published by the Standards Secretariat of the Acoustical Society of America, Melville, NY.

(there are also B- and C-weighting networks), which most closely approximates how the human ear responds to sound as a function of frequency, and is the accepted scale used for community sound level measurements. Sounds are frequently reported as detected with the A-weighting network of the sound level meter, in dBA. A-weighted sound levels emphasize the middle frequencies (i.e., middle pitched—around 1,000 Hertz sounds), and de-emphasize lower- and higher-frequencies.

Because the sounds in our environment vary with time, they cannot simply be represented with a single number. In fact, there are several methods used for quantifying variable sounds which are commonly reported in community noise assessments, as defined below.

- L_{eq}, the equivalent level, in dBA, is the level of a hypothetical steady sound that would have the same energy (i.e., the same time-averaged mean square sound pressure) as the actual fluctuating sound observed.

- L_{90} is the sound level, in dBA, exceeded 90 percent of the time in a given measurement period. The L_{90}, or residual sound level, is close to the lowest sound level observed when there are no obvious nearby intermittent noise sources.

- L_{50} is the median sound level, in dBA, exceeded 50 percent of the time in a given measurement period.

- L_{10} is the sound level, in dBA, exceeded only 10 percent of the time in a given measurement period. The L_{10}, or intrusive sound level, is close to the maximum sound level observed due to occasional louder intermittent noises, like those from passing motor vehicles.

- L_{max} is the maximum instantaneous sound level observed in a given measurement period.

By employing various noise metrics it is possible to separate prevailing, steady sounds (the L_{90}) from occasional louder sounds (L_{10}) in the noise environment. This analysis treats all noise sources from the Projects as though the emissions will be steady and continuous, described most accurately by the L_{90} exceedance level.

In the design of noise controls, which do not function quite like the human ear, it is important to understand the frequency spectrum of the noise source of interest. The spectra of noises are usually stated in terms of octave-band sound pressure levels, in dB, with the octave frequency bands being those established by standard. To facilitate the noise-control design process, the estimates of noise levels in this analysis are also presented in terms of octave-band sound pressure levels.

5.6.3 Noise Regulations and Criteria

The primary set of regulations relating to the potential increase in noise levels is the City of Boston Zoning District Noise Standards (City of Boston Code – Ordinances: Section 16–26 Unreasonable Noise and City of Boston Air Pollution Control Commission Regulations for the Control of Noise in the City of Boston). Results of the baseline ambient sound level surveys and the modeled Project sound levels were compared to the City of Boston Zoning District Noise Standards. Separate regulations within the Standards provide criteria to control different types of noise. Regulation 2 is applicable to the effects of the proposed Projects, as completed, and is considered in this noise study. Table 5.6-1 includes the Zoning District Standards.

Table 5.6-1 City of Boston Zoning District Noise Standards, Maximum Allowable Sound Pressure Levels

Octave-band Center	Residential Zoning District		Residential-Industrial Zoning District		Business Zoning District	Industrial Zoning District
Frequency (Hz)	Daytime (dB)	All Other Times (dB)	Daytime (dB)	All Other Times (dB)	Anytime (dB)	Anytime (dB)
32	76	68	79	72	79	83
63	75	67	78	71	78	82
125	69	61	73	65	73	77
250	62	52	68	57	68	73
500	56	46	62	51	62	67
1000	50	40	56	45	56	61
2000	45	33	51	39	51	57
4000	40	28	47	34	47	53
8000	38	26	44	32	44	50
A-Weighted (dBA)	**60**	**50**	**65**	**55**	**65**	**70**

Notes: Noise standards are extracted from Regulation 2.5, City of Boston Air Pollution Control Commission, "Regulations for the Control of Noise in the City of Boston", adopted December 17, 1976.
All standards apply at the property line of the receiving property.
dB and dBA based on a reference sound pressure of 20 micropascals.
"Daytime" refers to the period between 7:00 a.m. and 6:00 p.m. daily, excluding Sunday.

Additionally, the MassDEP has the authority to regulate noise under 310 CMR 7.10, which is part of the Commonwealth's air pollution control regulations. According to MassDEP, "unnecessary" noise is considered an air contaminant and thus prohibited by 310 CMR 7.10. The MassDEP administers this regulation through Noise Policy DAQC 90-001 which limits a source to a 10-dBA increase above the L_{90} ambient sound level measured at the Project property line and at the nearest residences. The MassDEP policy further prohibits "pure tone" conditions where the sound pressure level in one octave-band is 3 dB or more greater than the sound levels in each of two adjacent bands.

5.6.4 Boston Children's Clinical Building

5.6.4.1 Existing Conditions

5.6.4.1.1 Baseline Noise Environment

An ambient noise level survey was conducted to characterize the existing "baseline" acoustical environment in the vicinity of the BCCB, located at 55 Shattuck Street in the Longwood Medical and Academic Area of Boston, Massachusetts. Existing noise sources in the vicinity of the BCCB include: vehicular traffic (including trucks, buses, ambulances, and cars) on the local roadways; birds; wind noise; pedestrian conversation and foot traffic; mechanical equipment located on the surrounding buildings; construction activity; and the general din of the city.

5.6.4.1.2 Noise Monitoring Locations

The selection of the noise monitoring locations was based upon a review of zoning and land-use in the area of the BCCB. Three noise monitoring locations were selected as representative sites to obtain a sampling of the ambient baseline noise environment. These measurement locations are depicted in Figure 5.6-1 and described below.

- **Location ST-1** is southwest of the Project along Francis Street, between #40 and the Francis Street Garden. This location was selected to represent the nearest residential neighborhood along Francis Street.

- **Location ST-2** is at the southern corner of the BCCB Project property line, in front of #55 Shattuck Street. This location was selected to represent sound levels at the closest property line to the proposed BCCB.

- **Location ST-3** is at the eastern property line of Children's, along Longwood Avenue at the BCH 'Receiving' entranceway across from the Harvard University Health Services building (275 Longwood Avenue). This location was selected to represent sound levels in the commercial/institutional area north of Children's along Longwood Avenue.

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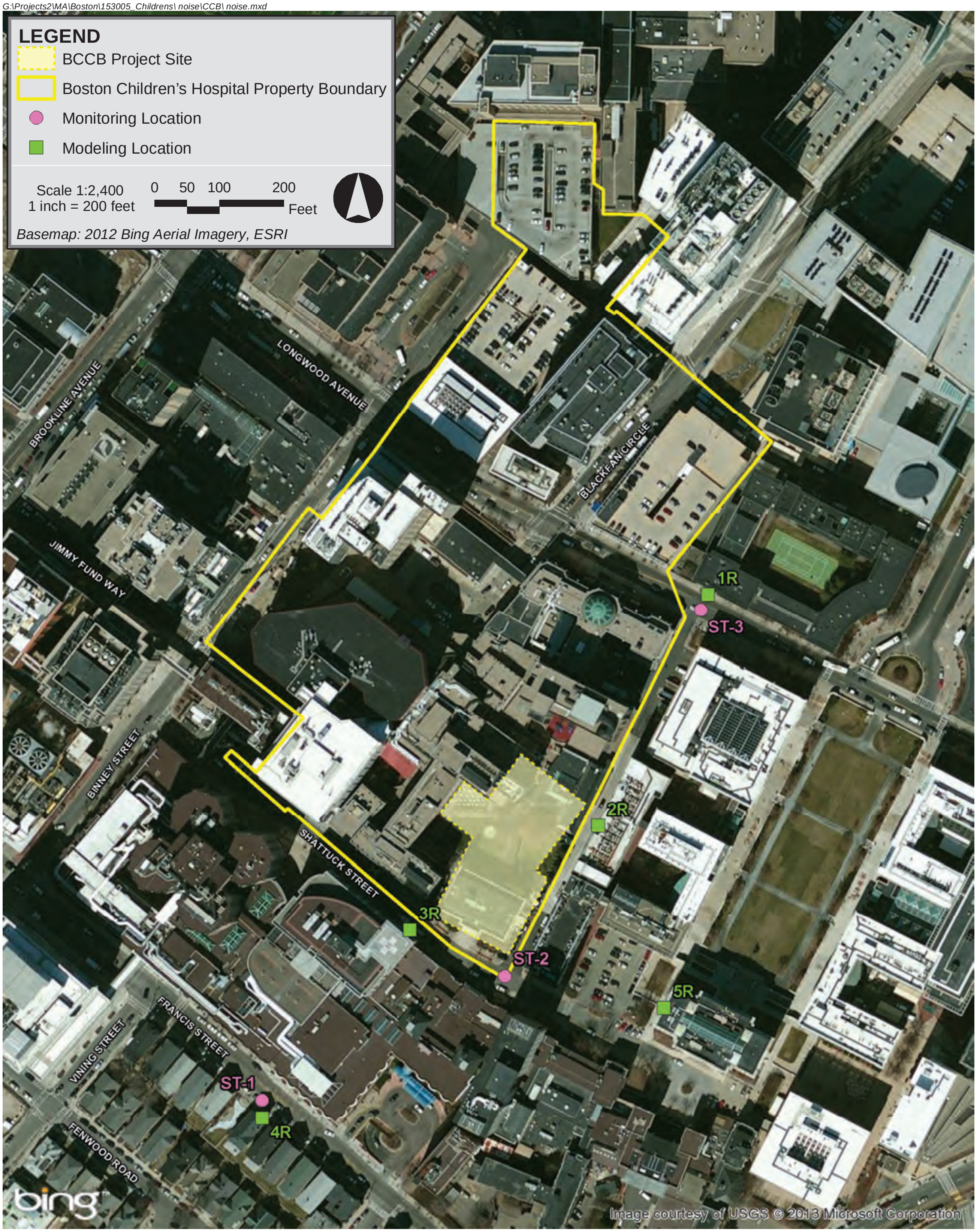

Boston Children's Hospital

Epsilon

Figure 5.6-1
BCCB Noise Monitoring and Modeling Locations

5.6.4.1.3 Noise Monitoring Methodology

Sound level measurements were taken for 20 minutes per location during the daytime (12:00 p.m. to 2:00 p.m.) on January 9, 2013, and during nighttime hours (12:00 a.m. to 2:00 a.m.) on January 10, 2013. Since noise impacts are greatest at night when existing noise levels are lowest, the study was designed to measure community noise levels under conditions typical of a "quiet period" for the area. Daytime measurements were scheduled to exclude peak traffic conditions. All measurements were 20 minutes in duration.

Sound levels were measured at publicly accessible locations at a height of five feet (1.5 meters) above ground level, under low wind conditions, and with dry roadway surfaces. Wind speed measurements were made with a Davis Instruments TurboMeter electronic wind speed indicator, and temperature and humidity measurements were made using a General Tools digital psychrometer. Unofficial observations about meteorology or land use in the community were made solely to characterize the existing sound levels in the area and to estimate the noise sensitivity at properties near the proposed BCCB.

5.6.4.1.4 Noise Monitoring Equipment

A Larson Davis Model 831 sound level meter equipped with a PRM831 Type I Preamplifier, a 377B20 half-inch microphone, and manufacturer-provided windscreen was used to collect background sound pressure level data. This instrumentation meets the "Type 1 - Precision" requirements set forth in American National Standards Institute (ANSI) S1.4 for acoustical measuring devices. The measurement equipment was calibrated in the field before and after the surveys with a Larson Davis CAL200 acoustical calibrator which meets the standards of IEC 942 Class 1L and ANSI S1.40-1984. Statistical descriptors (L_{eq}, L_{90}, etc.) were calculated for each 20-minute sampling period, with octave-band sound levels corresponding to the same data set processed for the broadband levels.

5.6.4.1.5 Measured Background Noise Levels

Baseline noise monitoring results are presented in Table 5.6-2, and summarized below.

- The daytime residual background (L_{90}) measurements ranged from 59 to 62 dBA;
- The nighttime residual background (L_{90}) measurements ranged from 56 to 62 dBA;
- The daytime equivalent level (L_{eq}) measurements ranged from 64 to 71 dBA; and
- The nighttime equivalent level (L_{eq}) measurements ranged from 62 to 65 dBA.

Table 5.6-2 Summary of Measured Background Noise Levels – BCCB

Location	Period	Start Time	L_{eq}	L_{max}	L_{10}	L_{50}	L_{90}	L_{90} Sound Pressure Level by Octave-Band								
								32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
			dBA	dBA	dBA	dBA	dBA	dB	dB	dB	dB	dB	dB	dB	dB	dB
ST-1	Day	12:31 PM	66	86	68	61	59	67	63	61	58	56	54	50	43	33
ST-2	Day	1:02 PM	64	80	65	62	61	65	63	61	61	57	56	51	42	31
ST-3	Day	1:28 PM	71	94	73	66	62	66	65	62	63	58	56	52	43	32
ST-1	Night	12:18 AM	65	86	66	57	56	62	59	57	56	54	51	46	38	24
ST-2	Night	12:45 AM	62	65	63	62	62	65	63	62	62	58	57	52	41	30
ST-3	Night	1:08 AM	65	89	65	59	58	62	62	60	62	55	51	46	35	24

Weather Conditions:

	Date	Temp	RH	Sky	Wind
Daytime	Wednesday, January 09, 2013	44ºF	44%	Overcast	0-3.5 mph NW
Nighttime	Thursday, January 10, 2013	44ºF	43%	Clear	3-5 mph SE, Gusts to 8mph

Monitoring Equipment Used:

	Manufacturer	Model	S/N
Sound Level Meter	Larson Davis	LD831	2154
Microphone	Larson Davis	377B20	112245
Preamp	Larson Davis	PRM831	016477
Calibrator	Larson Davis	CAL200	7147

5.6.4.2 Future Conditions

5.6.4.2.1 Overview of Potential Project Noise Sources

The major sources of sound exterior to the proposed BCCB will consist of rooftop cooling towers, exhaust ducts from emergency generators and a CHP unit. Emissions from the primary sources, as estimated from the equipment's capacity or from manufacturer-provided specifications, are presented in Table 5.6-3, which includes broadband (dBA) as well as octave-band sound levels. Secondary and interior noise sources including boilers, pumps, transformers, and smaller ventilation fans are expected to have much lower sound level contributions (10 dBA or more) than the other, larger pieces of equipment and are not considered in this analysis. Similarly, a rooftop gas compressor assumed to be well-controlled within a dedicated acoustical enclosure is not included in the model. Sound levels from the rooftop cooling towers will be partially attenuated by louvered screening walls to the north and south.

The gas-fired CHP will be located below-grade within the sub-basement of the proposed BCCB, exhausted vertically approximately 30 feet above roof level. Mechanical noise from this unit is expected to be well-controlled within the basement and is not expected to be a major contributor to outdoor sound levels. The CHP exhaust duct will be treated with a hospital grade exhaust silencer and further attenuated by a downstream heat recovery steam generator. It is assumed that sound levels from at-grade inlet air plenum(s) for the CHP will be adequately controlled using acoustical louvers and/or inlet silencers.

Four emergency diesel generators exhausted vertically approximately 30 feet above roof level, as well as several air handling units will be located within a mechanical penthouse minimizing any noise impact. Mechanical noise from the generators and air handling units in the penthouse and on Level 4/5 are assumed to be well-controlled within the enclosed structures and considered negligible as compared to larger rooftop contributors. Noise from generator exhaust ducts will be controlled using hospital-grade exhaust silencers. Furthermore, it is assumed that the generators will only operate during the day for brief, routine testing when the background sound levels are higher, or during an interruption of the electrical grid, in which case the rooftop mechanical equipment will not be operating.

A tabular summary of the modeled mechanical equipment proposed for the Project is presented below in Table 5.6-3a. Sound power level data for each unit, as provided by the manufacturer or calculated from provided sound pressure level data, is presented in Table 5.6-3b. Sound power levels of those units for which data was not provided were assumed based on data for similar or representative equipment. The approximate locations of the mechanical equipment were provided by the Project team in a preliminary roof plan. A summary of the noise mitigation measures included in this analysis is presented in Table 5.6-4.

Table 5.6-3a Modeled Noise Sources

Noise Source	Quantity	Location	Size/Capacity per Unit
Cooling Tower	4	Roof	350 Ton
CHP Exhaust	1	Roof	1,200 kW
Emergency Generator Exhaust	4	Roof	2,500 kW

Table 5.6-3b Modeled Sound Power Levels per Unit

Noise Source	Broadband	32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
	dBA	dB	dB	dB	dB	dB	dB	dB	dB	dB
Emergency Generator – Exhaust[1] (Unsilenced)	133	123	123	138	134	126	124	126	125	123
CHP – Exhaust[2]	132	128	128	137	130	127	126	125	122	116
Cooling Tower[3]	107	111	111	109	110	105	100	93	89	85

Notes:
1. Milton Cat 3516CDITA Genset, 2500 kW, exhaust noise
2. Milton Cat CG170-12 Genset, 1,200 kW, exhaust noise
3. BAC Series 3000, Model 31301 C/V, 1200 ton per unit

Table 5.6-4 Attenuation Values Used for Noise Modeling (dB)

Noise Control	Noise Source	Noise Reduction (dB) per Octave-band Center Frequency (Hz)								
		32	63	125	250	500	1000	2000	4000	8000
Hospital-Grade Exhaust Silencer[1]	Emergency Diesel Generator and CHP Exhausts	-	30	51	50	32	30	29	30	31

Notes:
1. Assumed Silex JDDS-18 Hospital Grade Silencer

5.6.4.2.2 Noise Modeling Methodology

Noise impacts from mechanical equipment associated with the BCCB were predicted using Cadna/A noise calculation software (DataKustik Corporation, 2005). This software, which uses the ISO 9613-2 international standard for sound propagation (Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation), offers a refined set of computations accounting for local topography, ground attenuation, drop-off with distance, barrier shielding, diffraction around building edges, reflection off building facades, and atmospheric absorption of sound from multiple noise sources.

An initial analysis considered all of the mechanical equipment without the emergency generators running, to simulate typical nighttime operating conditions at nearby receptors. A second analysis combined the mechanical equipment and the emergency generators, to reflect worse-case daytime conditions during brief, routine, testing of the generators.

5.6.4.2.3 Noise Modeling Results

In the first modeling scenario, the analysis of sound levels at night considered all of the mechanical equipment without the emergency generators running, to simulate typical nighttime operating conditions at nearby receptors. In the second modeling scenario, the analysis combined sound emissions from the mechanical equipment and the emergency generators, to reflect worse-case conditions during brief, routine, daytime testing of the generators when ambient levels are higher. Five modeling locations with a height of 1.5 meters above-grade were included in the analysis, consisting of nearby residential and institutional locations, and were evaluated against the applicable daytime or nighttime background sound levels and noise limits. Sound levels at institutional receptors were evaluated against daytime residential limits. Figure 5.6-1 shows the locations of each modeled receptor as well as the monitoring locations selected for background measurements.

In both scenarios, the predicted future sound levels (Project + Background) are well below the measured background L_{90} sound levels at all sensitive receptor locations. This evaluation, with and without emergency generators, is presented in Tables 5.6-5a and 5.6-5b, respectively. The BCCB's mechanical equipment is not expected to create or exacerbate any "pure-tone" conditions as defined by the MassDEP when combined with existing background sound levels at these locations. Predicted sound levels combining BCCB and background sources are shown with and without emergency generators in Tables 5.6-6a and 5.6-6b, respectively. Additionally, modeled sound levels from the BCCB equipment are within the most stringent broadband and octave-band residential zoning limits for the City of Boston at the closest residential receptors. This evaluation is presented with and without emergency generators in Tables 5.6-7a and 5.6-7b, respectively.

Table 5.6-5a MassDEP Compliance Evaluation (*With* Emergency Generators) – BCCB

Receptor Description	Receptor ID	Land Use	Representative Background ID	Evaluation Period	Measured Background Noise Level	Modeled Project-Only Noise Level	Combined Project + Background Noise Level	Project Impact[1]	Compliance with MassDEP Noise Policy
					dBA	dBA	dBA	dBA	
Vanderbilt Hall	1R	Residential	ST-3	Day	62	40	62	0	YES
Harvard Medical School	2R	Residential	ST-2	Day	61	45	61	0	YES
Brigham & Women's Hospital	3R	Residential	ST-2	Day	61	43	61	0	YES
Francis Street	4R	Residential	ST-1	Day	59	39	59	0	YES
Gordon Hall	5R	Residential	ST-2	Day	61	50	61	0	YES

1. Calculation of increase over background performed using data rounded to nearest whole decibel

Table 5.6-5b MassDEP Compliance Evaluation (Without Emergency Generators) – BCCB

Receptor Description	Receptor ID	Land Use	Representative Background ID	Evaluation Period	Measured Background Noise Level	Modeled Project-Only Noise Level	Combined Project + Background Noise Level	Project Impact[1]	Compliance with MassDEP Noise Policy
					dBA	dBA	dBA	dBA	
Vanderbilt Hall	1R	Residential	ST-3	Night	58	40	58	0	YES
Harvard Medical School	2R	Residential	ST-2	Day	61	45	61	0	YES
Brigham & Women's Hospital	3R	Residential	ST-2	Night	62	43	62	0	YES
Francis Street	4R	Residential	ST-1	Night	56	39	56	0	YES
Gordon Hall	5R	Residential	ST-2	Day	61	50	61	0	YES

1. Calculation of increase over background performed using data rounded to nearest whole decibel

Table 5.6-6a MassDEP "Pure Tone" Evaluation: Combined BCCB + Background Levels (*With* Emergency Generators)

Receptor ID	Land Use	Representative Background ID	Evaluation Period	Broadband	32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
				dBA	dB	dB	dB	dB	dB	dB	dB	dB	dB
1R	Residential	ST-3	Day	62	66	65	62	63	58	56	52	43	32
2R	Residential	ST-2	Day	61	66	64	62	62	57	57	51	42	31
3R	Residential	ST-2	Day	61	66	63	61	61	57	57	51	42	31
4R	Residential	ST-1	Day	59	67	63	61	58	56	54	50	43	33
5R	Residential	ST-2	Day	61	66	64	62	62	57	57	51	42	31

Table 5.6-6b MassDEP "Pure Tone" Evaluation: Combined BCCB + Background Levels (*Without* Emergency Generators)

Receptor ID	Land Use	Representative Background ID	Evaluation Period	Broadband	32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
				dBA	dB	dB	dB	dB	dB	dB	dB	dB	dB
1R	Residential	ST-3	Night	58	63	62	60	62	55	51	46	35	24
2R	Residential	ST-2	Day	61	66	64	62	62	57	57	51	42	31
3R	Residential	ST-2	Night	62	67	63	62	62	58	57	52	41	30
4R	Residential	ST-1	Night	56	62	59	57	56	54	51	46	38	24
5R	Residential	ST-2	Day	61	66	64	62	62	57	57	51	42	31

Table 5.6-7a City of Boston Compliance Evaluation: BCCB-Only Modeling Results (*With* Emergency Generators)

Receptor ID	Land Use	Period	dBA	32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
				dB	dB	dB	dB	dB	dB	dB	dB	dB
1R	Residential	Day	40	57	53	48	45	37	30	22	15	0
2R	Residential	Day	45	61	56	51	49	43	38	30	24	14
3R	Residential	Day	43	61	53	47	46	41	36	29	25	10
4R	Residential	Day	39	55	50	46	44	36	29	21	13	0
5R	Residential	Day	50	62	59	55	55	48	41	33	25	8
City of Boston Noise Limits	Residential	Day	60	76	75	69	62	56	50	45	40	38
		Night	50	68	67	61	52	46	40	33	28	26
	Residential/Industrial	Day	65	79	78	73	68	62	56	51	47	44
		Night	55	72	71	65	57	51	45	39	34	32
	Business	Day	65	79	78	73	68	62	56	51	47	44
		Night	65	79	78	73	68	62	56	51	47	44
	Industrial	Day	70	83	82	77	73	67	61	57	53	50
		Night	70	83	82	77	73	67	61	57	53	50

Table 5.6-7b City of Boston Compliance Evaluation: BCCB-Only Modeling Results (*Without* Emergency Generators)

Receptor ID	Land Use	Period	dBA	32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
				dB	dB	dB	dB	dB	dB	dB	dB	dB
1R	Residential	Night	40	56	53	48	45	37	30	22	14	0
2R	Residential	Day	45	59	56	51	49	43	38	30	24	14
3R	Residential	Night	43	61	53	47	46	41	36	29	25	10
4R	Residential	Night	39	53	50	46	44	36	29	20	12	0
5R	Residential	Day	50	60	58	55	55	48	41	30	21	3
City of Boston Noise Limits	Residential	Day	60	76	75	69	62	56	50	45	40	38
		Night	50	68	67	61	52	46	40	33	28	26
	Residential/Industrial	Day	65	79	78	73	68	62	56	51	47	44
		Night	55	72	71	65	57	51	45	39	34	32
	Business	Day	65	79	78	73	68	62	56	51	47	44
		Night	65	79	78	73	68	62	56	51	47	44
	Industrial	Day	70	83	82	77	73	67	61	57	53	50
		Night	70	83	82	77	73	67	61	57	53	50

5.6.4.3 Conclusions

Baseline noise levels were measured in the vicinity of the proposed BCCB and were compared to predicted noise levels based on information provided by the manufacturers of representative mechanical equipment or estimated from the equipment's capacity. With appropriate attenuation as described in Section 5.6.4.2.1, the BCCB is not expected to introduce significant outdoor mechanical equipment noise into the surrounding community.

Results of this analysis indicate that noise levels from the BCCB at the nearest receptors, with appropriate noise control, will be equal to or below the City of Boston Noise Zoning requirements based on land-use, and will comply with all MassDEP A-weighted and tonal noise limits. The results in Section 5.6.4.2.3 indicate that the proposed BCCB can operate without significant impact on the existing acoustical environment.

At this time, the mechanical equipment and noise controls are conceptual in nature and, during the final design phase of the Project, will be specified to meet the applicable City of Boston and MassDEP noise limits. Additional mitigation may include the selection of quieter units, acoustical louvers, screening walls, mufflers, or equipment enclosures, as needed.

5.6.5 819 Beacon Street

5.6.5.1 Existing Conditions

5.6.5.1.1 Baseline Noise Environment

An ambient noise level survey was conducted to characterize the existing "baseline" acoustical environment in the vicinity of the 819 Beacon Street Project. Existing noise sources in the vicinity of the 819 Beacon Street Project include: vehicular traffic including trucks and buses on the local roadways; MBTA trains; birds; wind noise; pedestrian conversation and foot traffic; mechanical equipment located on the surrounding buildings; and the general din of the city.

5.6.5.1.2 Noise Monitoring Locations

The selection of the noise monitoring locations was based upon a review of zoning and land-use in the Project area at the time. Four noise monitoring locations were selected as representative sites to obtain a sampling of the ambient baseline noise environment. These measurement locations are depicted in Figure 5.6-2 and are described below.

- **Location ST-1** is north of the Project along Beacon Street, in front of 820 Beacon Street. This location was selected to represent residences across the street from 819 Beacon Street along Beacon Street.

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Boston Children's Hospital

Epsilon

Figure 5.6-2
819 Beacon Street Noise Monitoring and Modeling Locations

- **Location ST-2** is at the central corner of the 819 Beacon Street Project property line, outside the parking lot fence set back approximately 150 feet from Beacon Street. This location was selected to represent the closest residences along Munson Street.

- **Location ST-3** is south of the 819 Beacon Street Project in front of the entrance to the Harvard Vanguard Medical Association building along Fullerton Street. This location was selected to represent the commercial buildings South and Southeast of the 819 Beacon Street Project.

- **Location ST-4** is west of the 819 Beacon Street Project along Aberdeen Street, in front of 11 Aberdeen Street. This location was selected to represent the residential neighborhood farther West of the 819 Beacon Street Project.

5.6.5.1.3 Noise Monitoring Methodology

Sound level measurements were taken for 20 minutes per location during the daytime (12:00 p.m. to 2:00 p.m.) on Thursday, December 13, 2012, and during nighttime hours (12:00 a.m. to 2:00 a.m.) on Friday, December 14, 2012. Since noise impacts from the 819 Beacon Street Project on the community are highest when background noise levels are the lowest, the study was designed to measure community noise levels under conditions typical of a "quiet period" for the area. Daytime measurements were scheduled to avoid peak traffic conditions. All measurements were 20 minutes in duration.

Sound levels were measured at publicly accessible locations at a height of five feet (1.5 meters) above ground level, under low wind conditions, and with dry roadway surfaces. Wind speed measurements were made with a Davis Instruments TurboMeter electronic wind speed indicator, and temperature and humidity measurements were made using a General Tools digital psychrometer. Unofficial observations about meteorology or land use in the community were made solely to characterize the existing sound levels in the area and to estimate the noise sensitivity at properties near the proposed 819 Beacon Street Project.

5.6.5.1.4 Noise Monitoring Equipment

A Norsonic Nor140 sound level meter equipped with a Nor1209 Type I Preamplifier, a Gras 40AN half-inch microphone, and manufacturer-provided windscreen was used to collect background sound pressure level data. This instrumentation meets the "Type 1 - Precision" requirements set forth in American National Standards Institute (ANSI) S1.4 for acoustical measuring devices. The measurement equipment was calibrated in the field before and after the surveys with a Larson Davis CAL200 acoustical calibrator which meets the standards of IEC 942 Class 1L and ANSI S1.40-1984. Statistical descriptors (L_{eq}, L_{90}, etc.) were calculated for each 20-minute sampling period, with octave-band sound levels corresponding to the same data set processed for the broadband levels.

5.6.5.1.5 Measured Background Noise Levels

Baseline noise monitoring results are presented in Table 5.6-8, and summarized below.

- The daytime residual background (L_{90}) measurements ranged from 51 to 62 dBA;
- The nighttime residual background (L_{90}) measurements ranged from 49 to 60 dBA;
- The daytime equivalent level (L_{eq}) measurements ranged from 60 to 72 dBA; and
- The nighttime equivalent level (L_{eq}) measurements ranged from 54 to 68 dBA.

5.6.5.2 Future Conditions

5.6.5.2.1 Overview of Potential Project Noise Sources

The major sources of sound exterior to the proposed 819 Beacon Street building, as described in Table 5.6-9a will be a pair of rooftop cooling towers and four air handling units (AHUs). The approximate locations of the mechanical equipment were provided by the Project team in a preliminary roof plan. Emissions from the primary sources, as estimated from the equipment's capacity or from manufacturer-provided specifications, are presented in Table 5.6-9b, which includes broadband (dBA) as well as octave-band sound levels. Secondary noise sources including chillers, to be located in the basement or in a prefab mechanical penthouse, are expected to have much lower sound level contributions (10 dBA or more) than the other, larger pieces of equipment and are not considered in this analysis. The Project's open parking structure will not require mechanical ventilation. One emergency diesel generator will be located at roof-level in a dedicated weather-proof enclosure, exhausted vertically a minimum of 15 feet above the roof. It is assumed that this generator will only operate during the day for brief, routine testing when the background sound levels are higher, or during an interruption of the electrical grid, in which case the rooftop mechanical equipment will not be operating.

Typical attenuation measures were included in the noise analysis. The rooftop emergency generator noise will be controlled using an exhaust silencer and weather-proof enclosure. Sound emissions from the AHU discharge ducts will be attenuated by internal sound traps. The cooling towers will be fitted with "quiet" fans. The noise control features assumed in the analysis included generator enclosures and critical-grade generator exhaust silencers, as well as cooling tower sound attenuation either by a solid noise barrier, the selection of a quieter model, or some combination thereof. A summary of the noise mitigation measures included in this analysis is presented in Table 5.6-10.

Table 5.6-8 Summary of Measured Background Noise Levels – 819 Beacon Street

Location	Period	Start Time	L_{eq}	L_{max}	L_{10}	L_{50}	L_{90}	L_{90} Sound Pressure Level by Octave-Band								
								32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
			dBA	dBA	dBA	dBA	dBA	dB	dB	dB	dB	dB	dB	dB	dB	dB
ST-1	Day	12:07 PM	72	84	76	68	62	64	63	62	61	58	58	51	37	21
ST-2	Day	12:30 PM	61	73	63	61	60	65	63	59	57	57	56	50	36	19
ST-3	Day	12:57 PM	67	91	65	59	56	64	63	60	56	53	52	46	37	26
ST-4	Day	1:25 PM	60	82	61	54	51	58	57	55	50	49	47	39	23	15
ST-1	Night	12:02 AM	68	81	72	63	60	60	63	61	61	56	55	49	38	26
ST-2	Night	12:55 AM	63	76	65	61	60	60	64	64	61	56	54	49	39	32
ST-4	Night	12:32 AM	54	72	56	50	49	54	54	51	49	46	45	37	23	15

<u>Weather Conditions:</u>

	Date	Temp	RH	Sky	Wind
Daytime	Thursday, December 13, 2012	46ºF	31%	Sunny	Light, < 2mph SW
Nighttime	Friday, December 14, 2012	35ºF	51%	Clear	Calm

<u>Monitoring Equipment Used:</u>

	Manufacturer	Model	S/N
Sound Level Meter	Norsonic	Nor140	1403178
Microphone	Gras	40AN	73449
Preamp	Norsonic	1209	12492
Calibrator	Norsonic	Nor1251	32059

Table 5.6-9a Modeled Noise Sources

Noise Source	Quantity	Location	Size/Capacity per Unit
Cooling Tower	2	Roof	350 Ton
Air Handling Unit	4	Roof	60,000 CFM
Emergency Generator	1	Roof	750 kW

Table 5.6-9b Modeled Sound Power Levels per Unit

Noise Source	Broadband	32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
	dBA	dB	dB	dB	dB	dB	dB	dB	dB	dB
Emergency Generator - Mechanical (Enclosed)[1]	111	115	115	116	108	106	104	104	104	98
Emergency Generator – Exhaust[2]	120	82	82	108	118	114	113	112	103	84
Air Handling Unit – Inlet[3]	75	90	90	82	82	67	52	53	57	60
Air Handling Unit – Exhaust[3]	77	90	90	83	84	68	54	55	58	61
Cooling Tower[4]	92	96	96	93	92	89	87	82	79	73

Notes:

1. Caterpillar Diesel Generator Set (SR4B Generator/C27 TA Engine), 800 kW, WP Canopy
2. Caterpillar Diesel Generator Set (SR4B Generator/C27 TA Engine), 800 kW, Open Exhaust
3. Ventrol 60,000 CFM Air Handling Unit, With sound trap attenuation
4. Marley Model NC8405NLN2, 1-Cell induced draft cooling tower with quiet fan

Table 5.6-10 Attenuation Values Used for Noise Modeling (dB)

Noise Control	Noise Source	Noise Reduction (dB) per Octave-band Center Frequency (Hz)								
		32	63	125	250	500	1000	2000	4000	8000
Exhaust Silencer[1]	Emergency Diesel Generator Exhaust	-	20	35	35	27	20	20	22	22
TBD[2]	Cooling Towers	0	0	0	3	5	8	10	10	0

Notes:

2. Assumed JB Series Critical Grade Silencer (JB-18)
3. Method of noise control to be determined, but may include a noise barrier or quieter equipment selection.

5.6.5.2.2 Noise Modeling Methodology

Noise impacts from mechanical equipment associated with the 819 Beacon Street Project were predicted using Cadna/A noise calculation software (DataKustik Corporation, 2005). This software, which uses the ISO 9613-2 international standard for sound propagation (Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation), offers a refined set of computations accounting for local topography, ground attenuation, drop-off with distance, barrier shielding, diffraction around building edges, reflection off building facades, and atmospheric absorption of sound from multiple noise sources.

An initial analysis considered all of the mechanical equipment without the emergency generators running, to simulate typical nighttime operating conditions at nearby receptors. A second analysis combined the mechanical equipment and the emergency generators, to reflect worse-case daytime conditions during brief, routine, testing of the generators.

5.6.5.2.3 Noise Modeling Results

In the first modeling scenario, the analysis of sound levels at night considered all of the mechanical equipment without the emergency generators running, to simulate typical nighttime operating conditions at nearby receptors. In the second modeling scenario, the analysis combined sound emissions from the mechanical equipment and the emergency generators, to reflect worse-case conditions during brief, routine, daytime testing of the generators when ambient levels are higher. Nine modeling locations with a height of 1.5 meters above-grade were included in both analyses, consisting of nearby residential and business locations, and were evaluated against the applicable daytime or nighttime background sound levels and noise limits. Figure 5.6-2 shows the locations of each modeled receptor as well as the monitoring locations selected for background measurements.

In both scenarios, the predicted future sound levels (Project + Background) are well below the MassDEP criteria of 10dBA over the measured background L_{90} sound levels at all sensitive receptor locations. This evaluation, with and without emergency generators, is presented in Tables 5.6-11a and 5.6-11b, respectively. The 819 Beacon Street Project's mechanical equipment is not expected to create or exacerbate any "pure-tone" conditions as defined by the MassDEP when combined with existing background sound levels at these locations. Predicted sound levels combining 819 Beacon Street Project and background sources are shown with and without emergency generators in Tables 5.6-12a and 5.6-12b, respectively. Additionally, modeled sound levels from the 819 Beacon Street Project equipment are within the most stringent broadband and octave-band residential zoning limits for the City of Boston at the closest residential receptors and also meet the business limits where applicable. This evaluation is presented with and without emergency generators in Tables 5.6-13a and 5.6-13b, respectively.

Table 5.6-11a MassDEP Compliance Evaluation (*With* Emergency Generators) – 819 Beacon Street

Receptor ID	Land Use	Representative Background ID	Evaluation Period	Measured Background Noise Level	Modeled Project-Only Noise Level	Combined Project + Background Noise Level	Project Impact[1]	Complies with MassDEP Noise Policy
				dBA	dBA	dBA	dBA	
R1	Residential	ST-1	Day	62	44	62	0	YES
R2	Residential	ST-2	Day	60	43	60	0	YES
R3	Residential	ST-2	Day	60	53	61	1	YES
R4	Residential	ST-4	Day	51	50	54	2	YES
R5	Residential	ST-4	Day	51	50	54	2	YES
B6	Business	ST-3	Day	56	44	57	0	YES
B7	Business	ST-3	Day	56	50	57	1	YES
B8	Business	ST-3	Day	56	52	58	1	YES
B9	Business	ST-3	Day	56	55	59	2	YES

1. Calculation of increase over background performed using data rounded to nearest whole decibel

Table 5.6-11b MassDEP Compliance Evaluation (*Without* Emergency Generators) – 819 Beacon Street

Receptor ID	Land Use	Representative Background ID	Evaluation Period	Measured Background Noise Level	Modeled Project-Only Noise Level	Combined Project + Background Noise Level	Project Impact[1]	Meets MassDEP Noise Policy?
				dBA	dBA	dBA	dBA	
R1	Residential	ST-1	Night	60	29	60	0	YES
R2	Residential	ST-2	Night	60	34	60	0	YES
R3	Residential	ST-2	Night	60	48	60	0	YES
R4	Residential	ST-4	Night	49	43	50	1	YES
R5	Residential	ST-4	Night	49	36	49	0	YES
B6	Business	ST-3	Day	56	31	56	0	YES
B7	Business	ST-3	Day	56	31	56	0	YES
B8	Business	ST-3	Day	56	30	56	0	YES
B9	Business	ST-3	Day	56	32	56	0	YES

1. Calculation of increase over background performed using data rounded to nearest whole decibel

Table 5.6-12a MassDEP "Pure Tone" Evaluation: Combined 819 Beacon Street Project + Background Levels (*With* Emergency Generators)

Receptor ID	Land Use	Representative Background ID	Evaluation Period	Broadband	32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
				dBA	dB	dB	dB	dB	dB	dB	dB	dB	dB
R1	Residential	ST-1	Day	62	65	64	62	61	58	58	51	38	23
R2	Residential	ST-2	Day	60	66	64	60	58	57	56	50	37	21
R3	Residential	ST-2	Day	61	66	65	64	60	57	56	50	39	27
R4	Residential	ST-4	Day	54	61	61	60	53	51	49	42	35	21
R5	Residential	ST-4	Day	54	61	61	60	53	51	49	42	34	18
B6	Business	ST-3	Day	57	65	63	61	57	53	52	46	37	26
B7	Business	ST-3	Day	57	66	64	62	57	54	52	47	41	27
B8	Business	ST-3	Day	58	68	66	64	58	54	52	47	42	30
B9	Business	ST-3	Day	59	67	66	65	59	55	53	49	44	29

Table 5.6-12b MassDEP "Pure Tone" Evaluation: Combined 819 Beacon Street Project + Background Levels (*Without* Emergency Generators)

Receptor ID	Land Use	Representative Background ID	Evaluation Period	Broadband	32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
				dBA	dB	dB	dB	dB	dB	dB	dB	dB	dB
R1	Residential	ST-1	Night	60	60	63	61	61	56	55	49	38	26
R2	Residential	ST-2	Night	60	61	64	64	61	56	54	49	39	32
R3	Residential	ST-2	Night	60	62	65	65	62	56	54	49	40	33
R4	Residential	ST-4	Night	50	55	56	53	51	47	45	38	27	20
R5	Residential	ST-4	Night	49	55	55	51	49	46	45	37	24	15
B6	Business	ST-3	Day	56	64	63	60	56	53	52	46	37	26
B7	Business	ST-3	Day	56	64	63	60	56	53	52	46	37	26
B8	Business	ST-3	Day	56	64	63	60	56	53	52	46	37	26
B9	Business	ST-3	Day	56	64	63	60	56	53	52	46	37	26

Table 5.6-13a City of Boston Compliance Evaluation: 819 Beacon Street Project-Only Modeling Results (*With* Emergency Generators)

Receptor ID	Land Use	Period	dBA	32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
				dB	dB	dB	dB	dB	dB	dB	dB	dB
R1	Residential	Day	44	59	56	54	44	38	36	34	32	18
R2	Residential	Day	43	60	57	54	44	37	34	32	29	17
R3	Residential	Day	53	61	60	62	55	50	46	41	37	27
R4	Residential	Day	50	58	59	58	51	47	44	40	35	20
R5	Residential	Day	50	59	59	59	50	46	44	40	34	15
B6	Business	Day	44	57	56	55	45	39	35	31	24	3
B7	Business	Day	50	61	59	59	51	46	44	41	38	22
B8	Business	Day	52	66	64	62	52	46	44	41	40	29
B9	Business	Day	55	64	63	64	55	51	49	46	43	26
City of Boston Noise Limits	Residential	Day	60	76	75	69	62	56	50	45	40	38
		Night	50	68	67	61	52	46	40	33	28	26
	Residential/Industrial	Day	65	79	78	73	68	62	56	51	47	44
		Night	55	72	71	65	57	51	45	39	34	32
	Business	Day	65	79	78	73	68	62	56	51	47	44
		Night	65	79	78	73	68	62	56	51	47	44
	Industrial	Day	70	83	82	77	73	67	61	57	53	50
		Night	70	83	82	77	73	67	61	57	53	50

Table 5.6-13b City of Boston Compliance Evaluation: 819 Beacon Street Project-Only Modeling Results (*Without* Emergency Generators)

Receptor ID	Land Use	Period	dBA	32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
				dB	dB	dB	dB	dB	dB	dB	dB	dB
R1	Residential	Night	29	47	45	38	33	24	18	10	4	0
R2	Residential	Night	34	52	50	43	39	29	21	12	8	6
R3	Residential	Night	48	57	57	55	52	46	40	33	28	25
R4	Residential	Night	43	51	53	49	46	41	38	30	25	18
R5	Residential	Night	36	47	47	43	40	34	28	20	13	2
B6	Business	Day	31	45	46	39	37	24	13	9	5	0
B7	Business	Day	31	46	46	39	37	25	17	11	7	0
B8	Business	Day	30	48	47	39	36	24	17	9	6	4
B9	Business	Day	32	47	46	40	38	26	17	9	6	0
City of Boston Noise Limits	**Residential**	Day	60	76	75	69	62	56	50	45	40	38
		Night	50	68	67	61	52	46	40	33	28	26
	Residential/Industrial	Day	65	79	78	73	68	62	56	51	47	44
		Night	55	72	71	65	57	51	45	39	34	32
	Business	Day	65	79	78	73	68	62	56	51	47	44
		Night	65	79	78	73	68	62	56	51	47	44
	Industrial	Day	70	83	82	77	73	67	61	57	53	50
		Night	70	83	82	77	73	67	61	57	53	50

5.6.5.3 Conclusions

Baseline noise levels were measured in the vicinity of the proposed 819 Beacon Street Project and were compared to predicted noise levels based on information provided by the manufacturers of representative mechanical equipment or estimated from the equipment's capacity. With appropriate attenuation described in Section 5.6.5.2.1, the 819 Beacon Street Project is not expected to introduce significant outdoor mechanical equipment noise into the surrounding community.

Results of the analysis indicate that noise levels from the 819 Beacon Street Project at the nearest receptors, with appropriate noise control, will be equal to or below the City of Boston Noise Zoning requirements based on land-use, and will comply with all MassDEP A-weighted and tonal noise limits. The results in Section 5.6.5.2.3 indicate that the proposed 819 Beacon Street Project can operate without significant impact on the existing acoustical environment.

At this time, the mechanical equipment and noise controls are conceptual in nature and, during the final design phase of the Project, will be specified to meet the applicable City of Boston and MassDEP noise limits. Additional mitigation may include the selection of quieter units, acoustical louvers, screening walls, mufflers, or equipment enclosures, as needed.

5.7 Geotechnical/Groundwater

5.7.1 Boston Children's Clinical Building

5.7.1.1 Subsurface Soil Conditions

Subsurface conditions at the BCCB site are based on review of historic testing boring information. Subsurface conditions in the general location of the site consist of miscellaneous fill soils overlaying a relatively thick deposit of marine soils. Glacial till directly underlies the marine soils at an approximate depth of 60 feet below adjacent street grades (El. -25+/- BCB). Bedrock consisting of Roxbury Conglomerate underlies the glacial deposit at approximately El. -35 +/- BCB, approximately 70 feet below adjacent street grades.

Groundwater is anticipated at approximately El. 22 BCB per historical data. The BCCB proposes below-grade space that is below site groundwater levels, and therefore, preliminary information suggests an underdrain system and waterproofing of the below grade space would be utilized. The site is not located within the Groundwater Conservation Overlay District, but is adjacent to the district. Children's will contact the Boston Groundwater Trust to discuss the BCCB and measures to protect groundwater during construction as the design progresses.

5.7.1.2 Building Foundations

The depth of excavation, proposed construction sequencing, and limited effects on adjacent, existing building structures suggest the use of diaphragm foundation (slurry) walls socketing into bedrock for groundwater cutoff and building column support. Drilled shaft foundations for the proposed interior building columns extend into bedrock to limit differential settlement. The lowest level floor slab may be slab-on-grade on prepared subgrade when combined with a sub-slab groundwater pressure-relief system.

5.7.2 819 Beacon Street

5.7.2.1 Subsurface Soil Conditions

Subsurface conditions at 819 Beacon Street are based on review of historic testing boring information. Subsurface conditions in the general location of the site consist of miscellaneous fill soils overlaying a relatively thick deposit of marine deposits. Glacial till directly underlies the marine deposits at an approximate depth of 2100 feet below adjacent street grades (El. -185+/- BCB). Bedrock consisting of Cambridge Argillite underlies the glacial deposit at approximately El. -195 +/- BCB, approximately 210 feet below adjacent street grades.

Groundwater is anticipated at approximately El. 7 to 10 + BCB per historical data. The 819 Beacon Street Project does not include the construction of any below-grade space that will be below site groundwater levels. The site is not located within the Groundwater Conservation Overlay District. However, Children's will contact the Boston Groundwater Trust to discuss the 819 Beacon Street Project and measures to protect groundwater during construction.

5.7.2.2 Building Foundations

The proposed 819 Beacon Street Project is anticipated to be supported on deep foundations with a structural slab. The pile foundations will either bear in the fluvial and marine deposit or be driven to bear in the glacial till and underlying bedrock. Pre-auguring may be necessary to remove obstructions before installing deep foundations. The proposed slab will be roughly the same elevation as existing site grade along Beacon Street. With the exception of the intersection of Maitland and Beacon Streets, limited excavation support will likely be required. A temporary earth support system for the excavation will be required along portions of Beacon and Maitland Streets to maintain existing sidewalks, streets, and utilities.

5.8 Solid and Hazardous Waste

5.8.1 Boston Children's Clinical Building

5.8.1.1 Site Hazardous Waste

Based on environmental site assessment work completed to date and historic information, there are no known historic sources of soil contamination on the site. Children's is aware, however, of a historic release emanating from an upgradient site that may have impacted groundwater in the vicinity of the BCCB site at bedrock depths. Children's anticipates that the construction of the BCCB will include significant excavation activities on the site, and the removal of excess soils that will be disposed of off-site. Prior to the commencement of construction of the BCCB, Children's will undertake a soil pre-characterization on the site that will include chemical testing on soil samples obtained from borings and test pits. If Children's encounters contaminated soils during its pre-characterization activities or, thereafter, during the construction of the Project at the site, it will ensure that such soils are handled, managed and, if necessary, disposed of in a manner that is consistent with applicable law.

5.8.1.2 Operational Solid and Hazardous Waste

Based on Children's current generation rates, the proposed BCCB Project is expected to produce a total of approximately 850 tons of solid waste per year. The Project will generate solid waste typical of institutional hospital uses. All waste will be segregated at the point of origin into separate streams. Solid waste is expected to include wastepaper, styrofoam, cardboard, glass bottles, cans and food. The proposed BCCB Project will also generate biomedical and infectious wastes typical of medical facilities. Management of hazardous waste is highly regulated for the safety of the public, the environment and the hospital community. Children's has an existing hazardous waste collection program, which will be used to handle and dispose of all wastes generated by existing and proposed hospital facilities in accordance with applicable laws and regulations.

Solid and hazardous waste generated by the proposed BCCB Project will be handled according to Children's current waste management policy. No operational solid and hazardous waste is anticipated from the Patient and Family Parking Garage Addition.

Regulated Medical Waste Generation and Disposal

Regulated medical waste (excluding pathological/antineoplastic) will be staged in waste rooms in large leak-proof, dedicated, labeled waste carts. These carts will be transported to the Hospital's main waste processing area. Medical waste is rendered non-infectious in Children's on-site autoclave, shredded, and disposed of as solid waste.

Pathological/antineoplastic-contaminated waste will be contained in cartons labeled "Regulated Medical Waste". The cartons will be lined, sealed, marked for incineration and staged pending removal by a licensed vendor for offsite incineration. The pathological waste generated in the Operating Rooms is sent to the Clinical Pathology Laboratory for examination and disposal. The items are placed in lined bio-hazardous-labeled totes. Environmental Services Department staff transport the biohazard totes daily to the Hospital's waste treatment area, where biohazardous waste is rendered non-infectious by steam sterilization. Treated waste is shredded on-site prior to disposal as solid waste.

Children's performs regular twice a week biological monitoring to ensure that hazardous infectious waste is effectively decontaminated through autoclaving.

Sharps waste is segregated at the point of use from other wastes and placed in rigid, puncture resistant, leakproof, shatterproof biohazard sharps containers immediately following use. Sharps containers are sealed and transported by Environmental Services Department staff to the Hospital's waste treatment area to be rendered non-infectious by steam sterilization. Treated waste is shredded on-site prior to disposal as solid waste.

All waste is transported separately and disposed of in accordance with local, state and federal regulations.

Hazardous Waste

The Project may increase the volume of hazardous waste generated at BCH. However, as a Large Quantity Generator, BCH has a plan to assess areas of need and ensure appropriate support following all documented regulatory requirements. The materials will be stored on-site and removed as part of the current chemical waste removal procedure.

All chemical waste will be characterized for chemical composition, packaged, transported and disposed of in accordance with local, state and federal regulations, utilizing a Massachusetts Licensed Hazardous Waste Contractor.

5.8.1.3 Recycling

Children's currently recycles white paper, cardboard, Styrofoam, bottles, cans, computer monitors, TVs, beds, dressers, medical equipment and other furniture and old electronics. The Hospital will extend its existing policy to the proposed Project and will recycle as much solid waste as is feasible from the proposed BCCB.

Cardboard generation is expected to be minimal on-site because case receiving and case breakdown will occur at central receiving. The minimal quantities generated within the building will be collected and transported with the solid waste to the Hospital's main waste facility, where it will likewise be baled and stored for pickup by the recycling vendor.

Paper will be disposed of in secure confidential data bins, removed by a vendor who will shred the paper before the pulp is recycled. Labeled paper recycling collection containers will be located throughout the building at collection points. These will be emptied nightly to larger totes on each floor which will be transported to the main Hospital facility collection dumpster for pickup by the recycling vendor.

Glass and metal containers will be rinsed by food service staff and placed into collection totes, which, when full, will be transported to Children's main waste processing facility for pickup by the recycling vendor.

5.8.2 819 Beacon Street

5.8.2.1 Site Hazardous Waste

Based on environmental site assessment work completed to date and historic information, there are no known historic sources of soil contamination on the 819 Beacon Street site, although urban fill, typical for this area of Boston, is likely present. Children's expects that very little excavation work will be undertaken in connection with the construction of the Project on the site given the fact that the MBTA Green Line tunnel runs under the site. As a result, Children's does not expect to generate a significant amount of excess soil on the site that would require off-site disposal. With regard to soils excavated from the site, Children's will pre-characterize the soil for proper disposal, which pre-characterization will include chemical testing performed on samples obtained from borings and test pits. If Children's encounters contaminated soils during its pre-characterization activities or during the construction of the Project at the site, it will ensure that the soils are handled and, if necessary, disposed of in a manner that is consistent with applicable law.

5.8.2.2 Operational Solid and Hazardous Waste

The 819 Beacon Street Project will generate solid waste that is typical of other office and retail projects. Solid waste generated by the Project is estimated to be approximately 445 tons per year, based on a generation rate of 5.5 pounds per 1,000 sf per day.

5.8.2.3 Recycling

The 819 Beacon Project will have solid waste typical of most commercial office buildings. Children's will provide adequate areas throughout the 819 Beacon Street Project for recycling. Waste that is not recycled will be compacted and removed by a waste hauler contracted by building management.

Children's currently recycles white paper, cardboard, Styrofoam, bottles, cans, computer monitors, and other furniture and old electronics. Children's will extend its existing policy to the proposed Project and will recycle as much solid waste as is feasible from the Project.

Paper will be disposed of in secure confidential data bins, removed by a vendor who will shred the paper before the pulp is recycled. Labeled paper recycling collection containers will be located throughout the building at collection points. These will be emptied nightly to larger totes on each floor which will be transported to the building's trash area at the loading dock.

5.9 Construction Impacts

5.9.1 Introduction

This section discusses the construction impacts and measures to minimize those impacts for the 2013 IMP Amendment Projects. Separate discussions related to a specific Project are provided where necessary including the Patient and Family Parking Garage Addition although as noted above, it is not subject to Large Project Review.

Construction Management Plans (CMPs), in compliance with the City's Construction Management Program, will be submitted to the Boston Transportation Department once final plans for each Project are developed and the construction schedules are fixed. The construction contractors will be required to comply with the details and conditions of the approved CMPs. Proper planning with the City and neighborhood will be essential to the successful construction of the Projects. Construction methodologies, which ensure public safety and protect nearby residences and businesses, will be employed. The Proponent intends to follow the guidelines of the City of Boston and of MassDEP, which direct the evaluation and mitigation of construction impacts.

5.9.2 Construction Methodology

Construction methodologies that ensure public safety and protect nearby residents will be employed. Techniques such as barricades, walkways and signage will be used. Construction management and scheduling will minimize impacts on the surrounding environments and will include plans for construction worker commuting and parking, routing plans for trucking and deliveries, and the control of noise and dust.

It may be necessary to occasionally occupy pedestrian walkways and portions of the surrounding street network. As the design of the Projects progress, Children's will meet with BTD to discuss the specific location of barricades, the need for lane closures, pedestrian walkways, and truck queuing areas. Secure fencing, signage, and covered walkways may be employed to ensure the safety and efficiency of all pedestrian and vehicular traffic flows. In addition, sidewalk areas and walkways near construction activities will be well marked and lighted to protect pedestrians and ensure their safety. Public safety for pedestrians on abutting sidewalks will also include covered pedestrian walkways when appropriate. If required by BTD and the Boston Police Department, police details will be provided to facilitate traffic flow. During the construction phase of the Projects, the Proponent will provide the name, telephone number and address of a contact person to communicate with on issues related to construction.

All of these measures will be incorporated into the CMPs that will be submitted to BTD for approval prior to the commencement of construction work.

5.9.3 Construction Schedule

Construction of the Patient and Family Parking Garage Addition is anticipated to commence in the first quarter of 2014 and anticipated to be completed within 12 months. Construction of the BCCB is expected also to start in 2014 with completion in 2017. The 819 Beacon Street Project is expected to begin construction in 2016 with completion in 2019.

Typical construction hours will be from 7:00 a.m. to 6:00 p.m., Monday through Friday, with most shifts ordinarily ending at 3:30 p.m. No substantial sound-generating activity will occur before 7:00 a.m. If longer hours, additional shifts, or Saturday work is required, the construction manager will place a work permit request to the Boston Air Pollution Control Commission and BTD in advance. Notification should occur during normal business hours, Monday through Friday. It is noted that some activities such as finishing activities could run beyond 6:00 p.m. to ensure the structural integrity of the finished product; certain components must be completed in a single pour, and placement of concrete cannot be interrupted.

5.9.4 Construction Mitigation

Children's will follow City and MassDEP guidelines that direct the evaluation and mitigation of construction impacts. As part of this process, Children's and its construction team will evaluate the Commonwealth's Clean Air Construction Initiative.

CMPs will be submitted to BTD for review and approval prior to issuance of a Building Permit for any of the Projects. The CMPs will include detailed information on specific construction mitigation measures and construction methodologies to minimize impacts to abutters and the local communities. The CMPs will also define truck routes which will help in minimizing the impact of trucks on City and neighborhood streets. "Don't Dump - Drains to Charles River" plaques will be installed at storm drains that are replaced or installed as part of the Projects.

5.9.5 Construction Air Quality

Short-term air quality impacts from fugitive dust may be expected during excavation and the early phases of construction. Plans for controlling fugitive dust during excavation and construction include mechanical street sweeping, wetting portions of the Project sites during periods of high wind, and removal of debris in covered trucks. The construction contract documents will provide for a number of strictly enforced measures to be used by contractors to reduce potential emissions and minimize impacts, pursuant to Article 80 of the Boston Zoning Code. These measures are expected to include:

- Using wetting agents on areas of exposed soil on a scheduled basis;
- Using covered trucks;
- Minimizing spoils on the construction sites;
- Monitoring of actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized;
- Minimizing storage of debris on the Project sites; and
- Periodic street and sidewalk cleaning with water to minimize dust accumulations.

In addition, BCH has committed to the installation of after-engine emission controls such as diesel oxidation catalysts or diesel particulate filters on construction vehicles and use of Ultra Low Sulfur Diesel fuel in off-road engines.

5.9.6 Construction Noise

Children's is committed to mitigating noise impacts from the construction of the Projects. Increased community sound levels, however, are an inherent consequence of construction activities. Construction work will comply with the requirements of the City of Boston Noise Ordinance. Every reasonable effort will be made to minimize the noise impact of construction activities.

Mitigation measures are expected to include:

- Instituting a proactive program to ensure compliance with the City Noise Standards;
- Using appropriate mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;
- Muffling enclosures on continuously running equipment, such as air compressors and welding generators;
- Replacing specific construction operations and techniques with less noisy ones where feasible;
- Selecting the quietest of alternative items of equipment where feasible;

- Scheduling equipment operations to keep average noise levels low, to synchronize the noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels;
- Turning off idling equipment; and
- Locating noisy equipment at locations that protect sensitive locations by shielding or distance.

5.9.7 Construction Vibration

Means and methods for performing work at the Project sites will be evaluated for potential vibration impacts on adjoining property, utilities, and existing structures. Acceptable vibration criteria will be established prior to construction, and vibration will be monitored, if required, during construction to ensure compliance with the agreed-upon standard.

5.9.8 Construction Waste

Children's will take an active role with regard to the reprocessing and recycling of construction waste. The disposal contract will include specific requirements that will ensure that construction procedures allow for the necessary segregation, reprocessing, reuse and recycling of materials when possible. For those materials that cannot feasibly be recycled, solid waste will be transported in covered trucks to an approved solid waste facility, per MassDEP Regulations for Solid Waste Facilities (310 CMR 16.00). This requirement will be specified in the disposal contract documents. Construction will be conducted so that materials that may be recycled are segregated from those materials not recyclable to enable disposal at an approved solid waste facility. Children's will have a construction waste management plan which will include a commitment to 50% reuse/recycling of construction waste.

5.9.9 Protection of Utilities

Existing public and private infrastructure located within the public right-of-way and within easements across the properties will be protected during construction. The installation of proposed utilities within public ways will be in accordance with the MWRA, BWSC, Boston Public Works, Dig Safe, and the governing utility company requirements. Required permits will be obtained before the commencement of the specific utility installation. Specific methods for constructing proposed utilities where they are near to, or connect with, existing water, sewer and drain facilities will be reviewed by BWSC as part of its site plan review process.

5.9.10 Rodent Control

A rodent extermination certificate will be filed with the Boston Inspectional Services Department along with the building permit applications for the Projects. Rodent inspection monitoring and treatment will be carried out before, during, and at the completion of all construction work for each phase of the Projects, in compliance with the City's requirements.

5.9.11 Construction Impacts – Boston Children's Clinical Building

Construction impacts associated specifically with the BCCB and the Patient and Family Parking Garage where applicable are described in this section.

5.9.11.1 Demolition

Demolition will occur as part of the BCCB Project. The demolition debris will be disposed of at a properly licensed solid waste disposal facility. Concrete, brick, and asphalt will be separated for crushing and possible re-use on site. During demolition, provisions will be made for the use of water spray to control the generation of dust. An Asbestos and Hazardous Material Evaluation was conducted in 2009, and additional asbestos investigations in 2010. Several types of common asbestos containing materials (ACM) and hazardous materials were identified to be present in various building materials. The identified ACM, lead, and hazardous materials were in generally good condition. Prior to conducting demolition activities, Massachusetts-licensed abatement contractors will be retained to remove the ACM and other materials in compliance with applicable regulations.

5.9.11.2 Construction Employment and Worker Transportation

The number of workers required during the construction period will vary. It is anticipated that approximately 2,200 construction jobs will be created by the BCCB. In addition, it is anticipated that approximately 50 construction jobs will be created as a result of the Patient and Family Parking Garage Addition. Children's will enter into Boston Residents Construction Employment Program agreements with the BRA, thereby committing to make reasonable, good-faith efforts to have at least 50% of the total employee work hours for Boston residents, at least 25% of total employee work hours for minorities and at least 10% of the total employee work hours for women.

5.9.11.3 Transportation

To reduce vehicle trips to and from the construction sites, minimal construction worker parking will be available at the BCCB and the Patient and Family Parking Garage Addition sites and all workers will be strongly encouraged to use public transportation and ridesharing options. The general contractor will work aggressively to ensure that construction workers are well informed of the public transportation options serving the area. Space onsite will be made available for workers' supplies and tools so they do not have to be brought to the site each day.

Truck traffic will vary throughout the construction period, depending on the activity. The construction team will manage deliveries to the site during morning and afternoon peak hours in a manner that minimizes disruption to traffic flow on adjacent streets. Construction truck routes to and from the site for contractor personnel, supplies, materials, and removal of excavations required for the development will be coordinated with BTD. Traffic logistics and routing will be planned to minimize community impacts. Truck access during construction will be determined by the BTD as part of the CMPs. These routes will be mandated as a part of all subcontractors' contracts for the development. The construction team will provide subcontractors and vendors with Construction Vehicle & Delivery Truck Route Brochures in advance of construction activity. "No Idling" signs will be posted at the loading, delivery, pick-up and drop-off areas.

5.9.11.4 Construction Staging/Public Safety/Access

Access to the sites and construction staging areas will be identified in the CMP. Although specific construction and staging details have not been finalized, Children's and its construction management consultants will work to ensure that staging areas are located to minimize impacts to pedestrian and vehicular flow. Secure fencing and barricades will be used to isolate construction areas from pedestrian traffic adjacent to the sites. Construction procedures will be designed to meet all Occupational Safety and Health Administration (OSHA) safety standards for specific site construction activities.

5.9.12 Construction Impacts – 819 Beacon Street

5.9.12.1 Construction Employment and Worker Transportation

The number of workers required during the construction period will vary. It is anticipated that approximately 193 construction jobs will be created by the 819 Beacon Street construction. Children's will enter into a Boston Residents Construction Employment Program agreement with the BRA, thereby committing to make reasonable, good-faith efforts to have at least 50% of the total employee work hours for Boston residents, at least 25% of total employee work hours for minorities and at least 10% of the total employee work hours for women.

5.9.12.2 Transportation

To reduce vehicle trips to and from the construction sites, minimal construction worker parking will be available at the 819 Beacon Street site and all workers will be strongly encouraged to use public transportation and ridesharing options. The general contractor will work aggressively to ensure that construction workers are well informed of the public transportation options serving the area. Space onsite will be made available for workers' supplies and tools so they do not have to be brought to the site each day.

Truck traffic will vary throughout the construction period, depending on the activity. The construction team will manage deliveries to the site during morning and afternoon peak hours in a manner that minimizes disruption to traffic flow on adjacent streets. Construction truck routes to and from the site for contractor personnel, supplies, materials, and removal of excavations required for the development will be coordinated with BTD. Traffic logistics and routing will be planned to minimize community impacts. Truck access during construction will be determined by the BTD as part of the CMPs. These routes will be mandated as a part of all subcontractors' contracts for the development. The construction team will provide subcontractors and vendors with Construction Vehicle & Delivery Truck Route Brochures in advance of construction activity. "No Idling" signs will be posted at the loading, delivery, pick-up and drop-off areas.

5.9.12.3 Construction Staging/Public Safety/Access

Access to the sites and construction staging areas will be identified in the CMP. Although specific construction and staging details have not been finalized, Children's and its construction management consultants will work to ensure that staging areas are located to minimize impacts to pedestrian and vehicular flow. Secure fencing and barricades will be used to isolate construction areas from pedestrian traffic adjacent to the sites. Construction procedures will be designed to meet all Occupational Safety and Health Administration (OSHA) safety standards for specific site construction activities.

5.9.12.4 Community Coordination

In an effort to have clear, open and up-to-date communications with the neighborhood, a community liaison will be appointed as a contact person who will update the neighborhood regarding the construction schedule and will be the point-of-contact for any community concerns.

5.10 Sustainability/LEED

Children's is committed to developing buildings that are sustainably designed, energy efficient, and environmentally conscious. As required under Article 37 of the Boston Zoning Code, projects that are subject to Article 80B, Large Project Review, shall be Leadership in Energy and Environmental Design (LEED) certifiable. Appendix F includes the LEED checklists for the BCCB and 819 Beacon Street Projects.

5.10.1 Boston Children's Clinical Building

The BCCB is anticipated to meet the LEED Healthcare certifiable threshold as required under Article 37 of the Boston Zoning Code. (Descriptions in *italics* are credits that are still being studied.)

Sustainable Sites

Prerequisite 1: Construction Activity Pollution Prevention

The Construction Manager will submit and implement an Erosion and Sedimentation Control (ESC) Plan for construction activities related to the demolition of the existing buildings and the construction of the new building. The ESC Plan will conform to the erosion and sedimentation requirements of the 2003 EPA Construction General Permit and specific municipal requirements for the City of Boston.

Prerequisite 2: Environmental Site Assessment

Prior to the start of construction, Children's will conduct a Phase 1 Environmental Site Assessment per ASTM E1527-05. If there is contamination suspected on the site, a Phase 2 Environmental Site Assessment will be conducted per ASTM E1903-97.

Credit 1: Site Selection

The site is located on previously developed urban site of the Boston Children's Hospital Campus in the Longwood Medical and Academic Area.

Credit 2: Development Density and Community Connectivity

The site is on the Boston Children's Hospital Campus in the Longwood Medical and Academic Area bordering many other hospital institutions and research facilities. The surrounding community is replete with housing, restaurants, shops, educational institutions, and other community amenities.

Credit 3: Brownfield Redevelopment

The site may be classified as a Brownfield Site and will be assessed for hazardous materials.

Credit 4.1: Alternative Transportation, Public Transportation Access

The site is located within a ½ mile of a wide array of alternative mode choices. BCH is located near two major MBTA Green Line stations. To the east, the Longwood Medical Station is located along the Green Line-E Branch at the intersection of Huntington Avenue and Longwood Avenue. To the west, the Green Line's Longwood Station, on the D Branch, is located along Chapel Street. The Core Campus is also located within ¼ mile of more than 10 public bus routes that are operated by the MBTA, providing access to and from downtown Boston, Cambridge, and the suburbs. Ruggles Station, a commuter rail and Orange Line station and bus hub is located just under a mile away from the Core Campus. MASCO and Children's both provide private shuttle buses from Longwood Avenue to Ruggles Station during peak commuter hours.

Credit 4.2: Alternative Transportation—Bicycle Storage and Changing Rooms

Appropriate bicycle storage facilities may be provided to encourage cycling as an alternate form of transportation. BCH and/or tenants will provide appropriate measures to ensure that cycling is a convenient form of transportation.

BCH currently maintains approximately 600 bicycle spaces throughout their LMA campus. These racks serve both employees and visitors. Additional racks will be provided with the opening of 57 Binney Street which is currently under construction. Additionally, Children's participates in CommuteWorks' Commute Fit Program that provides rewards to employees who bicycle, walk, or rollerblade to work, based on the miles they log.

As part of ongoing planning, BCH is exploring the feasibility of providing new bicycle storage for up to 5 percent of total new employees, and shower and changing facilities for up to 0.5 percent of total new employees that would be employed with the BCCB.

Credit 4.3: Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles

The current Patient and Family Parking Garage provides several parking spots dedicated to Zipcar vehicles. The BCCB will explore adding additional parking spots for Low Emitting and Fuel Efficient Vehicles.

Credit 4.4: Alternate Transportation Parking Capacity

There is no parking (existing or new) associated with the development.

Credit 5.1: Site Development, Protect or Restore Habitat

The plantings on the roof terrace and expansion of existing gardens will be considered for contributions to restoring natural habitat.

Credit 5.2: Site Development—Maximize Open Space

The overall area of the roof terrace and the expansion of gardens contribute to the urban open spaces. This credit is being studied.

Credit 6.1: Stormwater Design—Quantity Control

The site has existing impervious areas that are greater than 50 percent of the entire site. The Proponent will study the ability to implement a stormwater management plan that results in a 25 percent decrease in the volume of stormwater runoff from the two-year, 24-hour design storm.

SS Credit 6.2: Stormwater Design – Quality Control

BCH will study the implementation of a stormwater management plan that reduces impervious cover, promotes infiltration, and captures and treats the stormwater runoff from 90% of the average annual rainfall using acceptable BMPs. The BMPs studied will be capable of removing 80% of the average annual post-development total suspended solids (TSS) load based on existing monitoring reports. BCH will work with the BWSC and the state in adopting a design that meets the city and state standards.

Credit 7.1: Heat Island Effect, Non-Roof

The development may use sidewalk surfacing materials that meet or exceed SRI value limits.

Credit 9.1: Connection to the Natural World—Places of Respite

The development's various green open spaces will provide patients and families places of respite for 5% of the net program area and a staff respite area for 2% of the net program area.

Water Efficiency

Prerequisite 1: Water Use Reduction, 20% Reduction

Through the use of low flow and high efficiency plumbing fixtures, the development will implement water use reduction strategies that use 20% less water than the water use baseline calculated for the building (not including irrigation) after meeting Energy Policy Act of 1992 fixture performance requirements.

Prerequisite 2: Minimize Potable Water Use for Medical Equipment Cooling

The selected medical equipment will be selected to reduce usage of potable water.

Credits 1: Water Efficient Landscaping, Reduce by 50%, No Potable Use or No Irrigation

The development will not have a permanent irrigation system. Vegetated roofs will have drought tolerant plant materials that may require occasional watering by hand.

Credit 2: Water Use Reduction: Measurement & Verification

Children's has a rigid measurement and verification program for its M/E/P systems.

Credit 3: Water Use Reduction

Specified fixtures will include high efficiency toilets and urinals, low flow lavatory faucets and ultra-low flow shower heads. The goal is an overall water savings of 30% above the calculated baseline.

Credit 4.1: Water Use Reduction—Building Equipment

Building system equipment will be selected to minimize use of potable water for non-potable process use.

Credit 4.2: Water Use Reduction—Cooling Towers

Cooling towers will be selected to minimize use of potable water.

Energy and Atmosphere

Prerequisite 1: Fundamental Commissioning of the Building Energy Systems

A third party Commissioning Agent (CxA) will be engaged by BCH for purposes of providing both basic and enhanced commissioning services for the building energy related systems, including heating, ventilation, air conditioning, and refrigeration (HVAC & R), lighting and domestic hot water systems. The CxA will verify the building systems are installed, calibrated and performing to the building owner's requirements.

Prerequisite 2: Minimum Energy Performance

The building performance rating will demonstrate a minimum of a 10% improvement compared to the baseline building performance calculated using the rating method in Appendix G of ANSI/ASHREA/IESNA Standard 90.1-2007. A whole building energy simulation will demonstrate the projected energy savings for the development.

Prerequisite 3: Fundamental Refrigerant Management

The specifications for refrigerants used in the building HVAC & R systems will not permit the use of CFC based refrigerants. All refrigerants specified will be acceptable to LEED standards.

Credit 1: Optimize Energy Performance

The proposed building systems will target a performance level of a minimum of 20% improvement over a baseline building performance rating. The team will develop a whole building energy model to demonstrate the expected performance rating of the designed building systems.

In connection with construction of the BCCB, Children's will develop a CUP in the sub-basement of the BCCB that will include a 1,200 kilowatt (kW) gas-fired reciprocating engine and waste heat boiler (together a CHP unit) and two 30 thousand pound per hour (kpph) dual-fuel fire tube boilers. In addition, electrically operated chiller units will be placed in the sub-basement of the BCCB and will be sized to reliably provide 100% of the chilled water needs for the BCCB.

CHP is the simultaneous production of electrical or mechanical energy (power) and useful thermal energy from a single energy source. By capturing and using heat energy from an effluent stream that otherwise would be discharged to the environment, CHP systems can operate at efficiencies that are not achieved when heat and power are produced through separate processes.

Traditional power plants operate with efficiencies around 35%, while cogeneration allows for efficiencies around 80% due to the capture and use of the systems waste heat. The degree of use of the available waste heat will determine the overall system efficiency, and thus is the critical factor in economic feasibility.

The feasibility and design of the CHP system will depend on the magnitude, duration, and coincidence of electrical and thermal loads for the service area. Integrating design of the BCCB and the campus electrical and thermal requirements with the CHP plant is required for optimum economic performance.

Credit 3: Enhanced Commissioning

The CxA will be engaged during the design process. The CxA's role will include reviewing the owner's development requirements, creating, distributing and implementing a commissioning plan, and performing a design review of the design development and construction documents.

Credit 4: Enhanced Refrigerant Management

Long life, high-efficiency mechanical equipment will be specified for the HVAC systems, and the refrigerants specified for the systems will have low ozone-depletion and global warming potentials. All refrigerants specified will be acceptable to LEED standards.

Credit 5: Measurement and Verification

Children's will continue to develop and implement a measurement and verification plan for its campus. New energy meters will be included in the design of the building.

Material & Resources

Prerequisite 1: Storage and Collection of Recyclables

Storage of collected recyclables shall be accommodated throughout the building.

Prerequisite 2: PBT Source Reduction—Mercury

The development will comply with 2010 FGI Guidelines for Design and Construction of Health Care Facilities.

Credits 2: Construction Waste Management

Prior to the start of construction, the Construction Manager (CM) will prepare a Construction Waste Management plan. The CM will endeavor to divert as much demolition debris and construction waste from area landfills as possible with a goal of achieving 75% diversion.

Credits 3: Sustainably Sourced Materials and Products

The development specifications will require sustainably sourced materials and products. During construction, materials submittals will include a document indicating the origin, recycled content, and sustainable product certification. The CM will track the material with a goal to achieve 20% sustainably sourced materials and products based on overall materials costs.

Credits 4.1: PBT Source Reduction—Mercury in Lamps

The development specifications will require lighting products that meet LEED Healthcare credit 4.1 requirements. During construction, materials submittals will include documentation that meets the criteria.

Credits 4.2: PBT Source Reduction—Lead, Cadmium, and Copper

The development specifications will require materials and paint, exterior/interior, that are lead free. During construction, materials submittals will include documentation that meets the criteria.

Credits 5: Furniture and Medical Furnishings

The development specifications will require sustainably sourced materials and products for all furniture and medical furnishing. During construction, materials submittals will include a document indicating the origin, recycled content, and sustainable product certification. The CM will track the material with a goal to achieve 30% sustainably sourced materials and products based on overall materials costs.

Indoor Environmental Quality

Prerequisite 1: Minimum Indoor Air Quality (IAQ) Performance

The building mechanical systems will be designed to meet or exceed the requirements of ASHRAE Standard 61.1-2007 sections 4 through 7 and/or applicable building codes.

Prerequisite 2: Environmental Tobacco Smoke (ETS) Control

The building will be a non-smoking environment.

Credit 1: Outdoor Air Delivery Monitoring

The development will incorporate permanent CO_2 sensors and measuring devices to provide feedback on the performance of the HVAC system. Devices will be programmed to generate an alarm when the conditions vary by 10% from a set point.

Credit 2: Acoustic Environment

The development will be designed to meet the sound and vibration criteria outlined in the 2010 FGI Guidelines for Design and Construction of Health Care Facilities and the Sound and Vibration Design Guidelines for Design and Construction of Health Care Facilities.

Credit 3.1: Construction IAQ Management Plan (during construction)

The CM will develop an Indoor Air Quality Management Plan for the construction and pre-occupancy phases of the building to meet/exceed the recommended Control Measures of the SMACNA IAQ Guidelines for Occupied buildings Under Construction 2nd Edition 2007, ANSI/SMACNA 008-2008 (Chapter3). Absorptive materials stored on site will be protected from moisture damage.

Credit 3.2: Construction IAQ Management Plan (before occupancy)

After the completion of construction and prior to occupancy, Children's will conduct baseline IAQ testing to demonstrate that contaminant maximum concentrations are not exceeded.

Credits 4: Low-Emitting Materials, Adhesives & Sealants

The specifications will include requirements for all materials to meet low Volatile Organic Compounds (VOC) criteria.

Credit 5: Indoor Chemical and Pollutant Source Control

The development team will design the building to minimize and control the entry of pollutants into the building and to contain chemical use areas.

Credit 6.1: Controllability of Systems, Lighting

It is the intent of the design to provide individual lighting controls for regularly occupied spaces. The controls may include vacancy/occupancy sensors and day light dimming controls. Multi-occupant user spaces such as classrooms will have multi-level lighting controls for modifying light levels as necessary for the various uses. All controls in the different types of space will meet guidelines specified in LEED for Health Care.

Credit 6.2: Controllability of Systems, Thermal Comfort

It is the intent of the design to provide individual temperature controls for regularly occupied spaces and every patient room.

Credit 7: Thermal Comfort—Design and Verification

The development will meet ASHRAE Standard 55-2004 Thermal Comfort Condition for Human Occupancy and 2010 FGI Guidelines for Design and Construction of Health Care Facilities. A permanent monitoring system will also be implemented to monitor building performance to meet the criteria above.

Innovation in Design

Credit 1: Innovation in Design: Development Density

Option 1 of Credit 2 requires that a new building or renovation project on a previously developed site and in a community with a minimum density of 60,000 sf per acre. An exemplary performance credit can be achieved for a new building or renovation project on a previously developed site and in a community with a minimum density of 120,000 sf per acre. The LMA has an average density that far exceeds the minimum density requirement for the surrounding area. Further, a development density of 120,000 sf per acre equates to an overall Floor Area Ratio of about 2.8. The BCCB is proposed at a density in exceedance of the minimum threshold set forth by SS Credit 2: Development Density.

Credit 1.2: Innovation in Design: Public Transportation

Children's has a wide network of shuttles for staff, patient, and family that augment MBTA facilities.

Credit 2: LEED Accredited Professional

The development team will include a LEED Accredited Professional.

5.10.2 819 Beacon Street

The 819 Beacon Street building will be certifiable, at minimum, currently anticipated to receive 48 credit points. There are 11 additional credits, listed in italics below, still being considered to determine if appropriate.

Sustainable Sites

The 819 Beacon Street site is in a dense urban neighborhood close to several public transportation options. The proposed design includes leased retail space on the ground floor. The development includes 247 net new parking spaces.

<u>Prerequisite 1 Construction Activity Pollution Prevention</u>

The Construction Manager will submit and implement an Erosion and Sedimentation Control (ESC) Plan for construction activities related to the construction of the new building specific to this project. The ESC Plan will conform to the erosion and sedimentation requirements of the 2003 EPA Construction General Permit and specific municipal requirements for the City of Boston.

<u>Credit 1 Site Selection</u>

The site is currently used as surface parking lot with a capacity of 249 parking spaces.

<u>Credit 2 Development Density and Community Connectivity</u>

The site is in the Audubon Circle neighborhood of Boston bordering on the Back Bay neighborhood. The surrounding community is replete with housing, restaurants, shops, grocery stores, educational and religious institutions, performance venues and other community amenities.

<u>Credit 4.1 Alternative Transportation, Public Transportation Access</u>

There are three MBTA subway stations located within approximately 0.1 mile from the site. There are 10 bus routes that pass directly by or in close proximity to the site. Other MBTA stations in close proximity include the Symphony Green Line station (0.3 mile), the Prudential Green Line station (0.3 mile), and the Massachusetts Avenue Orange Line station (0.4 mile). Additionally, the Yawkey Commuter Rail station is approximately 500 feet away.

<u>Credit 4.2 Alternate Transportation-Bicycle Storage and Changing Rooms</u>

Bicycle racks or storage will be provided for at least 5% of all building users. Shower and changing facilities for 0.5% of full-time occupants will be provided.

Credit 4.3 Alternate Transportation-Low-emitting and Fuel-efficient Vehicles

The development may consider dedicating 5% of the vehicle parking capacity to low-emitting and fuel-efficient vehicles.

Credit 6.1 Stormwater Design, Quantity Control

The development will implement a stormwater management plan that results in a 25% decrease in the volume of stormwater runoff from the two-year, 24-hour design storm.

Credit 6.2 Stormwater Design, Quality Control

The development may consider treating captured stormwater prior to release into the municipal storm sewer system.

Credit 7.1 Heat Island Effect, Non-Roof

The development will use sidewalk surfacing materials that meet or exceed SRI value limits.

Credit 8 Light Pollution Reduction

The development will design interior and exterior lighting that meets or exceeds requirements to minimize light pollution.

Water Efficiency

The development will specify low flow and high efficiency plumbing fixtures to achieve Water Efficiency.

Prerequisite 1 Water Use Reduction, 20% Reduction

Through the use of low flow and high efficiency plumbing fixtures, the development will implement water use reduction strategies that use 20% less water than the water use baseline calculated for the building (not including irrigation) after meeting Energy Policy Act of 1992 fixture performance requirements.

Credit 2 Innovative Wastewater Technologies

The development will implement measures that reduce potable water use for building sewage conveyance by 50%.

Credit 3 Water Use Reduction

Specified fixtures will include high efficiency toilets and urinals, low flow lavatory faucets and ultra low flow shower heads. The development's goal is an overall water savings of 30% above the calculated baseline.

Energy and Atmosphere

The building systems will be designed to optimize energy performance and will not use refrigerants that are harmful to the environment. The owner will engage a CxA to confirm the building systems are installed and function as intended and designed.

Prerequisite 1 Fundamental Commissioning of the Building Energy Systems

A third party CxA will be engaged by the owner for purposes of providing both basic and enhanced commissioning services for the building energy related systems, including HVAC & R, lighting and domestic hot water systems. The CxA will verify the building systems are installed, calibrated and performing to the building owner's requirements.

Prerequisite 2 Minimum Energy Performance

The building performance rating will demonstrate a minimum of a 10% improvement compared to the baseline building performance calculated using the rating method in Appendix G of ANSI/ASHREA/IESNA Standard 90.1-2007. A whole building energy simulation will demonstrate the projected energy savings for the building.

Prerequisite 3 Fundamental Refrigerant Management

The specifications for refrigerants used in the building HVAC & R systems will NOT permit the use of CFC based refrigerants.

Credit 1 Optimize Energy Performance

The proposed building systems will target a performance level of a minimum of 20% improvement over a baseline building performance rating. The team will develop a whole building energy model to demonstrate the expected performance rating of the designed building systems.

Credit 3 Enhanced Commissioning

The CxA will be engaged during the design process. The CxA's role will include reviewing the owner's building requirements, creating, distributing and implementing a commissioning plan, and performing a design review of the design development and construction documents.

Credit 5 Measurement and Verification

A measurement and verification plan will be developed and implemented for the building.

Credit 6 Green Power

Children's may choose to purchase 'green power' via a two-year renewable energy contract to provide a minimum of 35% of the building's electricity from renewable sources.

Materials and Resources

Throughout the construction phase, the development team will endeavor to divert construction and demolition waste from area landfills and procure materials that have recycled content and/or are manufactured locally.

Prerequisite 1 Storage and Collection of Recyclables

Storage of collected recyclables will be accommodated throughout the building.

Credit 2 Construction Waste Management

Prior to the start of construction, the CM will prepare a Construction Waste Management plan. The CM will endeavor to divert as much demolition debris and construction waste from area landfills as possible with a goal of achieving 50% diversion.

Credit 4 Recycled Content

The development may specify materials to include pre- and or post-consumer recycled content. During construction, materials submittals may include a document indicating the percentage of both pre-and post-consumer recycled content. The CM may track the recycled content for each material with a goal to achieve 10% recycled-content materials based on overall materials costs.

Credit 5 Regional Materials

The development specifications will indicate which materials are to be extracted, harvested, recovered and manufactured within a 500 mile radius of the site. The development team's goal is that 10% of the materials used be regional materials. The CM will track the source location for each material with a target to achieve 10% regional materials based on overall materials costs.

Credit 6 Rapid Renewable Materials

The development may specify rapidly renewable building materials and products for 2.5% of the total value of all building materials and products used.

Credit 7 Certified Wood

The development will use a minimum of 50% FSC certified wood for wood permanently installed inside the building envelope.

Indoor Environmental Quality

The air quality will be monitored during the construction phase of the building and likely prior to occupancy. Low emitting materials will be used throughout construction to maintain and improve air quality. The building occupants will be able to maintain a comfortable environment through access to thermal and lighting controls.

Prerequisite 1 Minimum Indoor Air Quality (IAQ) Performance

The building mechanical systems are designed to meet or exceed the requirements of ASHRAE Standard 61.1-2007 sections 4 through 7 and/or applicable building codes.

Prerequisite 2 Environmental Tobacco Smoke (ETS) Control

The building will be a non-smoking environment.

Credit 1 Outdoor Air Delivery Monitoring

The development will incorporate permanent CO_2 sensors and measuring devices to provide feedback on the performance of the HVAC system. Devices will be programmed to generate an alarm when the conditions vary by 10% from a set point.

Credit 2 Increased Ventilation

The development will incorporate measures that meet the requirements of providing additional outdoor air ventilation to improving indoor air quality.

Credit 3.1 Construction IAQ Management Plan (during construction)

The CM will develop an Indoor Air Quality Management Plan for the construction and pre-occupancy phases of the development to meet/exceed the recommended Control Measures of the SMACNA IAQ Guidelines for Occupied Buildings Under Construction 2nd Edition 2007, ANSI/SMACNA 008-2008 (Chapter3). Absorptive materials stored on site will be protected from moisture damage.

Credit 3.2 Construction IAQ Management Plan (before occupancy)

After the completion of construction and prior to occupancy, Children's will conduct baseline IAQ testing to demonstrate that contaminant maximum concentrations are not exceeded.

Credits 4.1 Low-Emitting Materials, Adhesives & Sealants

The development specifications will include requirements for adhesives and sealants to meet low VOC criteria for adhesives and sealants.

Credits 4.2 Low-Emitting Materials, Paints and Coatings

The development specifications will include requirements for paints and coatings to meet low VOC criteria for paints and coatings.

Credits 4.3 Low-Emitting Materials, Flooring Systems

The specifications will include requirements for hard surface flooring materials to be FloorScore certified and carpet systems will comply with the Carpet Institute Green label program.

Credit 4.4 Low Emitting Materials, Composite Wood and Agrifiber Products

The development team will endeavor to use composite wood and agrifiber products that contain no added urea-formaldehyde.

Credit 5 Indoor Chemical and Pollutant Source Control

The development team will design the building to minimize and control the entry of pollutants into the building and to contain chemical use areas.

Credit 6.1 Controllability of Systems, Lighting

It is the intent of the design to provide individual lighting controls for regularly occupied spaces. The controls may include vacancy/occupancy sensors and day light dimming controls. Multi-occupant user spaces will have multi-level lighting controls for modifying light levels as necessary for the various uses.

Credit 6.2 Controllability of Systems, Thermal Comfort

It is the intent of the design to provide individual temperature controls for regularly occupied spaces.

Credit 7.1 Thermal Comfort - Design

The development team will design HVAC systems and the building envelope to meet requirements of ASHRAE standard 55-2004, and demonstrate design compliance in accordance with the Section 6.1.1 documentation.

Credit 7.2 Thermal Comfort - Verification

Children's will conduct a thermal comfort survey of building occupants within 6 to 18 months after occupancy, and make the necessary adjustment to maximize building occupant's thermal comfort over time.

Credit 8.1 Daylight and Views, Daylight for 75% of the spaces

The development team may develop the design to locate regularly occupied spaces along the perimeter of the floor plate with ample vision glass to achieve daylight for 75% of the areas.

Credit 8.2 Daylight and Views, Views for 90% of the spaces

The development team may develop the design to locate regularly occupied spaces along the perimeter of the floor plate with ample vision glass to achieve views for 90% of the areas, below-grade areas excepted.

Innovation & Design Processes

Credit 1.1 Double Transit Ridership

The site's close adjacency to several subway, bus and commuter rail stations with a frequency of service results in over 200 transit rides per day.

Credit 2 LEED Accredited Professional

A LEED accredited professional will be part of the 819 Beacon Street development team.

Chapter 6.0

Urban Design

6.0 URBAN DESIGN

6.1 Boston Children's Clinical Building

6.1.1 Urban Design Context

The proposed BCCB is nestled within a large block of buildings and is located entirely within the Children's campus. The BCCB is generally consistent with the prevailing heights and heights allowed with exceptional public benefits, as outlined in the LMA Interim Guidelines (see Figure 6-1). The BCCB will be similar in height or shorter than the heights of adjacent existing and proposed buildings in the surrounding area (see Figure 6-2). The new building will be most notable from Shattuck Street and Meadow Lane. Pedestrian traffic on Shattuck Street is largely internal to the LMA community; traffic on Meadow Lane is almost exclusively service vehicles and not conducive to foot traffic. Floor plans and elevations are included in Appendix G.

Figures 6-3 to 6-12 show four different viewpoints in and around the LMA in the existing condition and with the proposed BCCB. Views from Francis Street, from Avenue Louis Pasteur and the Harvard Medical School Quadrangle (Figures 6-3 to 6-8) illustrate the visible upper floors of the BCCB in scale with adjacent buildings at Children's and Brigham and Women's Hospitals. Figure 2-6 in the Project Description includes a view from Shattuck Street. The design incorporates roof gardens, internal gardens and common spaces at major visible corners, invigorating the views from Francis Street and Longwood Avenue, the two major public streets with views of the building, although it does not directly front on either street. For more information on these spaces, please see Section 2.2.2.

On Shattuck Street, the on-grade green spaces, both internal and external to the building, will significantly contribute to creating a more pedestrian friendly environment. The transparency of the building at street level, making the internal garden visible to the street, will animate the streetscape through views and quality of lighting. The footprint of the building will be set back approximately 25 feet from the existing curb to allow for significant landscaping, paving, street lighting and street furniture.

The design of the BCCB has been further developed since the IMPNF/PNF in order to break down the broad and heavy visual quality of the previous proposal, especially from street level. Figure 6-13 illustrates the evolution of the BCCB design. The overall height of the BCCB has been substantially reduced along Shattuck Street, and the mechanical penthouse has been recessed towards the center and back of the building. Consequently, this setback at the top level allows for more clearance for the Med Flight and BWH helipad operations at the Conners Center for Women's Health, facing the BCCB. The sculptural massing of the building as it reaches its full height will create a light and slender profile.

As shown in Figures 6-3 to 6-12, the updated design helps reduce the overall perceived mass of the building.

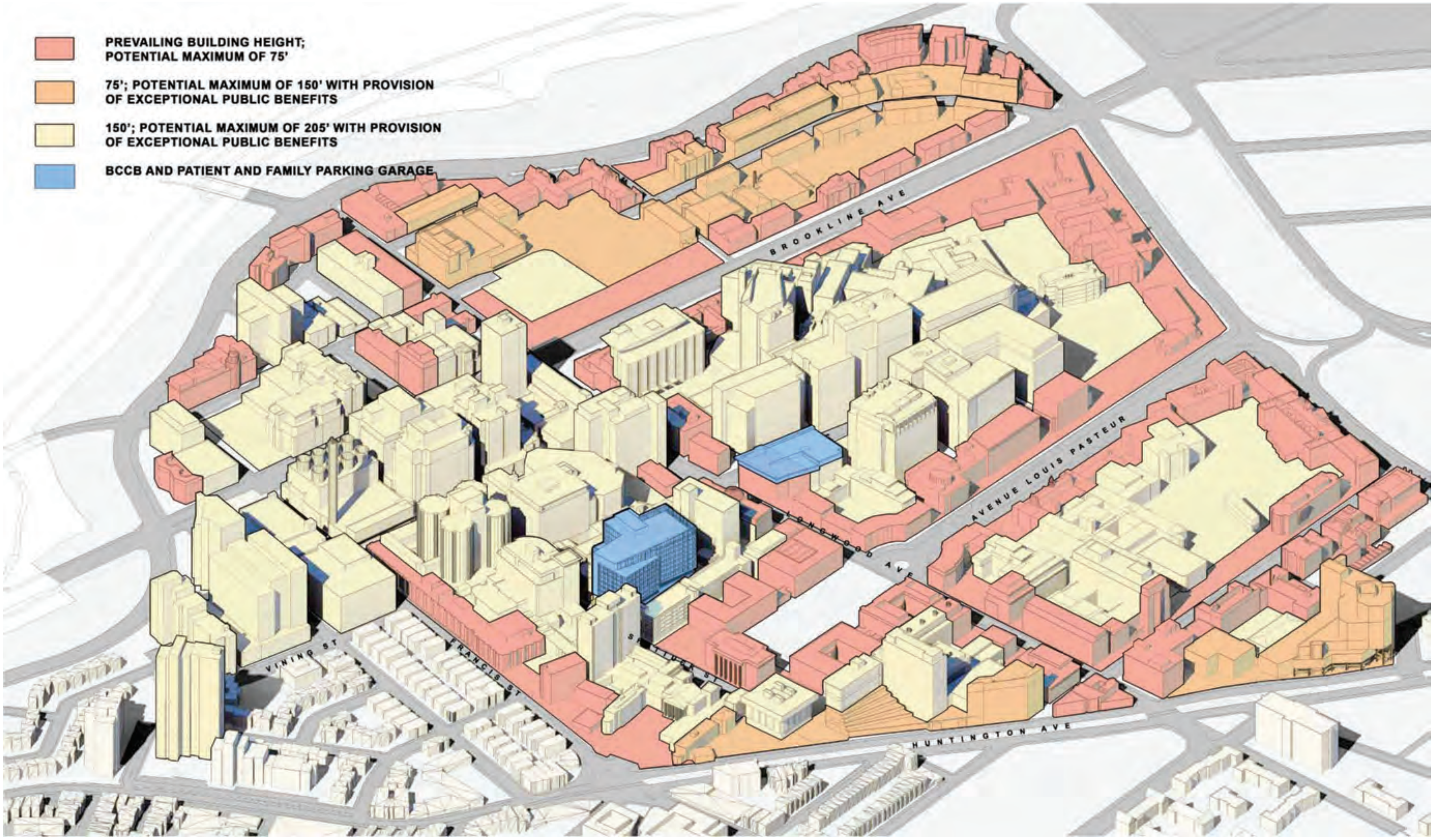

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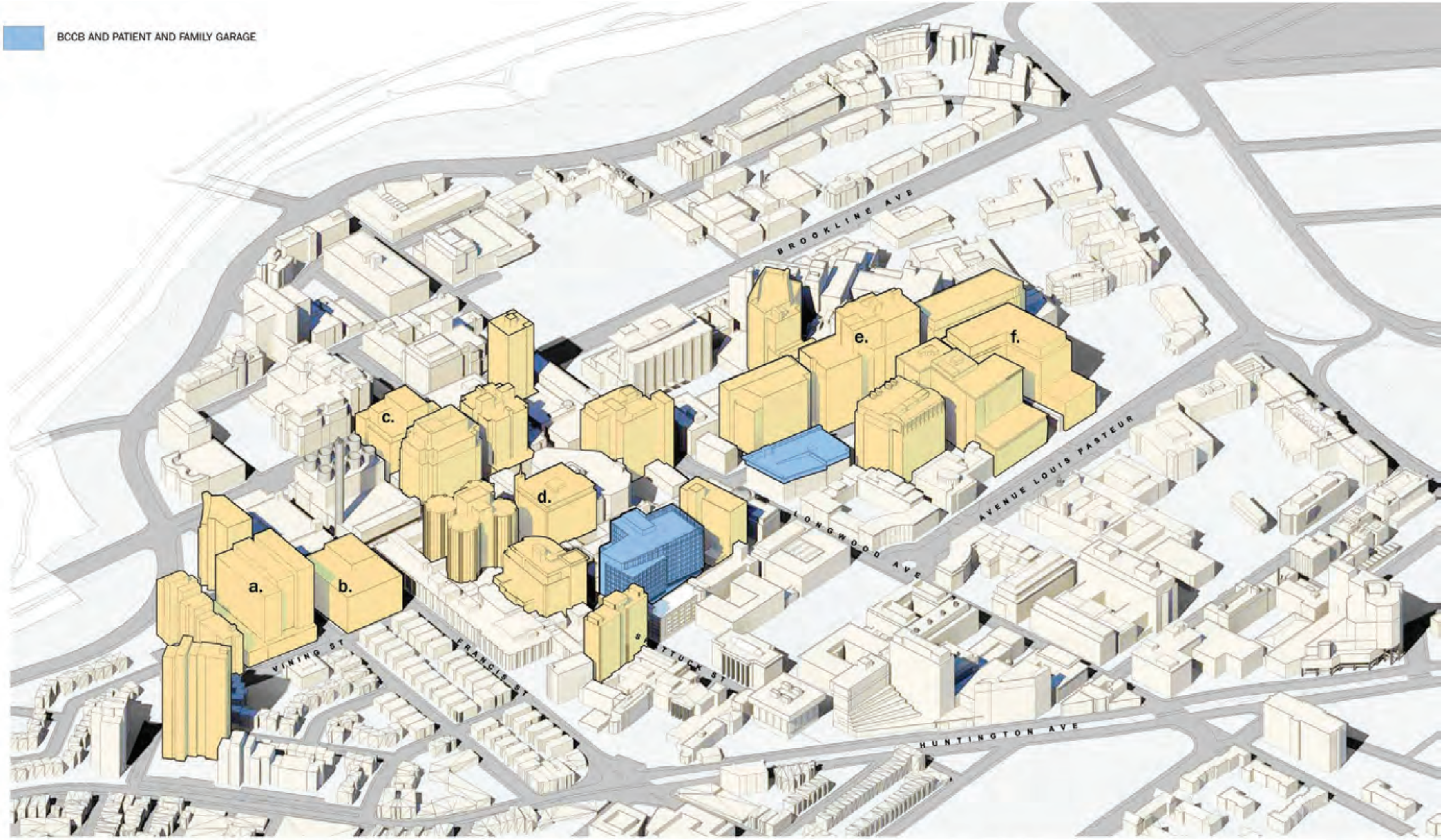
Figure 6-1
LMA Interim Guidelines – Height Provisions



a. BRIGHAM & WOMEN'S HOSPITAL
MASS MENTAL HEALTH CENTER REDEVELOPMENT
BWH BUILDING FOR A BRIGHTER FUTURE
14 STORIES

b. BRIGHAM & WOMEN'S HOSPITAL
SHAPIRO CARDIOVASCULAR CENTER
70 FRANCIS STREET
14 STORIES

c. DANA – FARBER CANCER INSTITUE
YAWKEY BUILDING
450 BROOKLINE AVENUE
12 STORIES

d. BOSTON CHILDREN'S HOSPITAL
MAIN SOUTH BUILDING
SHATTUCK STREET
12 STORIES

e. BIOMED REALTY TRUST
CENTER FOR LIFE SCIENCE BOSTON
3 BLACKFAN CIR
20 STORIES

f. BRIGHAM & WOMEN'S HOSPITAL
PARCEL C
45 AVENUE LOUIS PASTEUR
10 STORIES

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Figure 6-2
Existing and Proposed High Rise Buildings in the LMA

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Figure 6-3
Existing View from Francis Street

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Figure 6-4
Proposed View from Francis Street

Figure 6-5
Existing View from Avenue Louis Pasteur

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Figure 6-6
Proposed View from Avenue Louis Pasteur

Figure 6-7
Existing View from Harvard Medical School Quadrangle

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Figure 6-8

Proposed View from Harvard Medical School Quadrangle

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Figure 6-9
Existing View from Main Entrance

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Figure 6-10
Proposed View from Main Entrance

Figure 6-11
Existing View from Huntington Avenue

Figure 6-12
Proposed View from Huntington Avenue

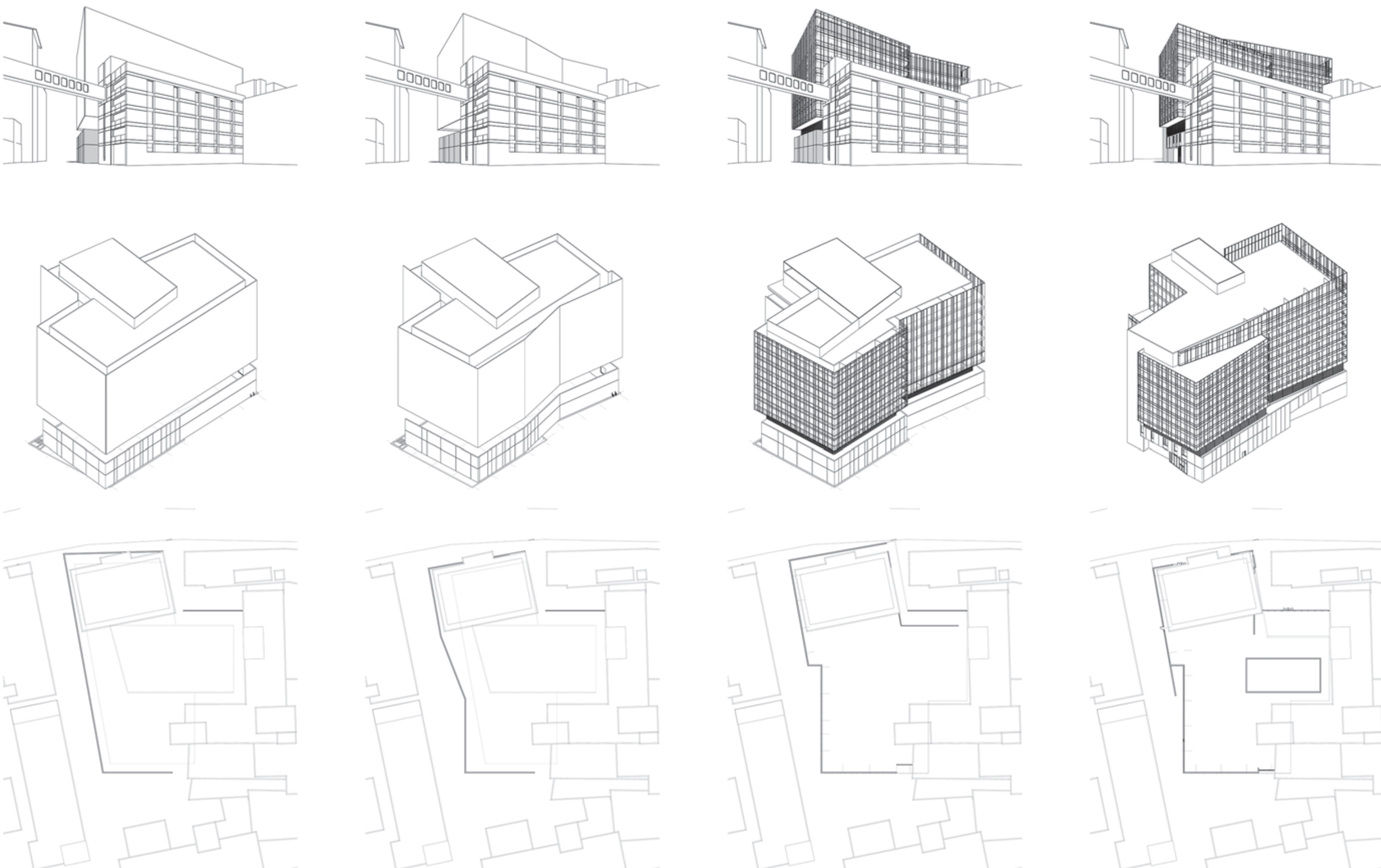

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Figure 6-13
Evolution of Massing Concept

6.1.2 Architectural Design Guidelines

The architectural materials of the BCCB were chosen to reflect the primary services within the building, its visual relationship with the Children's campus and the adjacent context. The facades of the BCCB are scaled to match the façade of the Main South building. They are composed of three main parts:

- Levels 1-3 include a solid base of precast concrete panels with punched openings and house mostly clinical and support space, offices and the loading dock.

- Levels 4-5 include the lower mechanical space clad with continuous architectural metal louvers, recessed from the lower base. The color and finish will match the curtain wall mullions.

- Levels 6-12 include patient rooms wrapped in a curtain wall system with various levels of transparency (clear, translucent, fritted, opaque) to provide privacy and views. The glass façade is articulated with prominent vertical mullion caps, providing additional shading and further breaking down the perceived overall mass of the building. The glass screen wraps around the upper part of the building and cantilevers slightly along Shattuck Street, sheltering the service entry and shuttle waiting area below.

- The mechanical penthouse is set back behind the curtain wall. The glass wall slopes gently from the north to south covering the higher cooling towers and mechanical equipment.

- At ground level, the solid base opens up to staff entrances and the Shattuck Street Green Space with transparent curtain walls. This reinforces the notion of connecting the interior and exterior spaces of the BCCB, as well as improving natural light and views for all users.

6.1.3 Green and Gathering Spaces

As previously described, Children's campus includes a number of green and gathering spaces (see Section 2.2.2 and Figures 6-14 to 6-17). The site of the proposed BCCB currently includes the Prouty Garden which is approximately 23,220 sf, approximately 64% of which is landscaped. The Prouty Garden includes grass areas, trees, pathways, benches and a patio with tables and seating. To determine how the Prouty Garden is currently used, Children's conducted an observational survey of use and users in 2012. The survey found that the Prouty Garden was mainly used by staff members (87% of all users), and to a substantially lesser extent by patients and families (13% of all users).

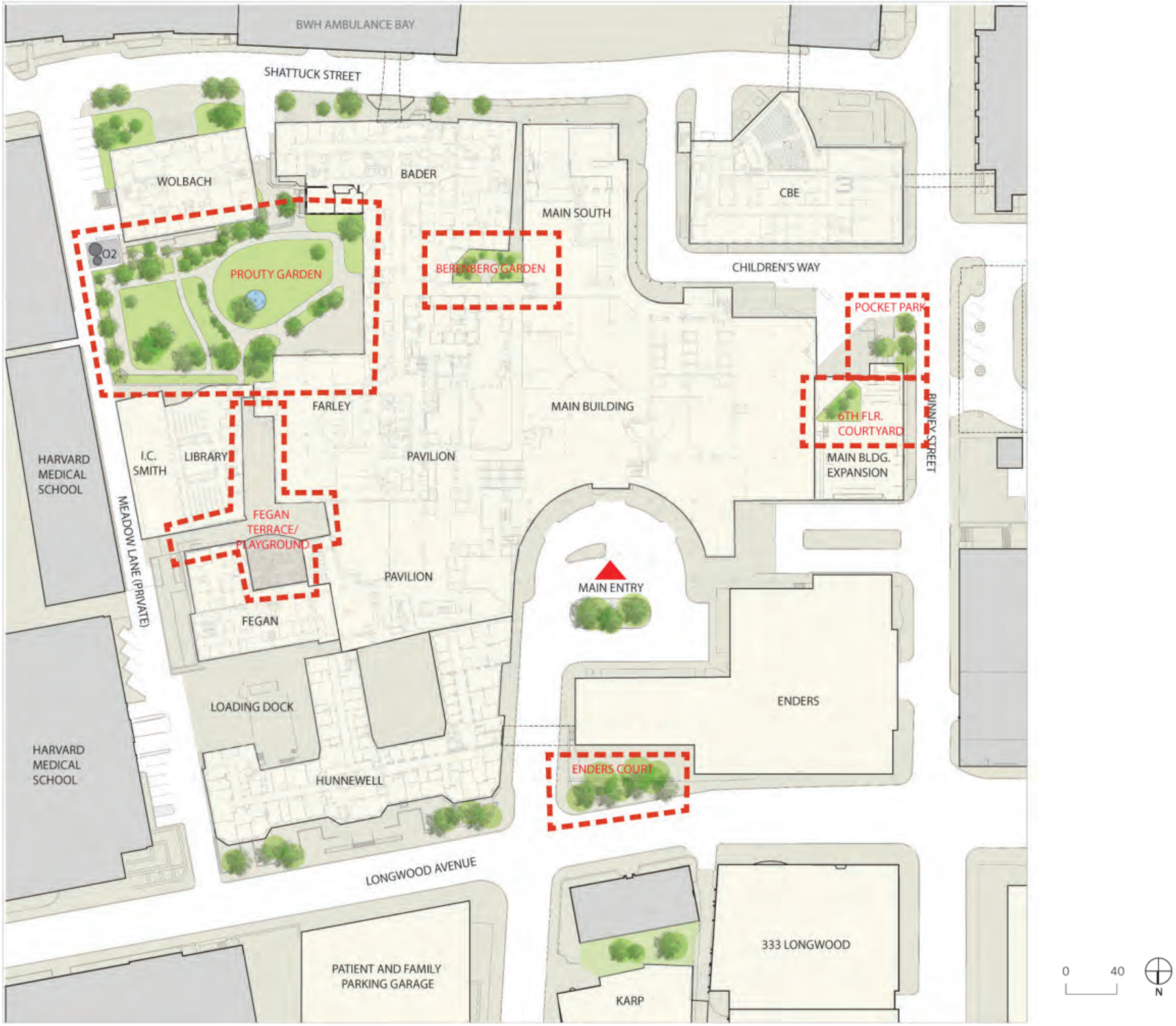

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Figure 6-14
Existing Green and Gathering Spaces

Fegan Terrace/Playground

AREA: 7,570 SF

100% HARDSCAPE 0% LANDSCAPE

Fegan Terrace/Playground

Fegan Terrace/Playground

Fegan Terrace/Playground

Berenberg

25% HARDSCAPE 75% LANDSCAPE

AREA: 1,270 SF

Berenberg

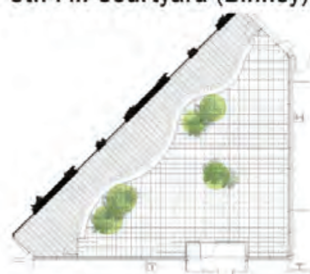
Binney Pocket Garden

78% HARDSCAPE 22% LANDSCAPE

AREA: 400 SF

Binney Pocket Garden

6th Flr. Courtyard (Binney)



85% HARDSCAPE 15% LANDSCAPE

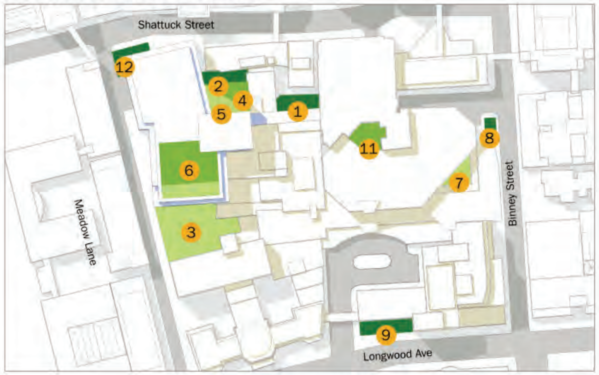
AREA: 2,500 SF

6th Flr. Courtyard (Binney)

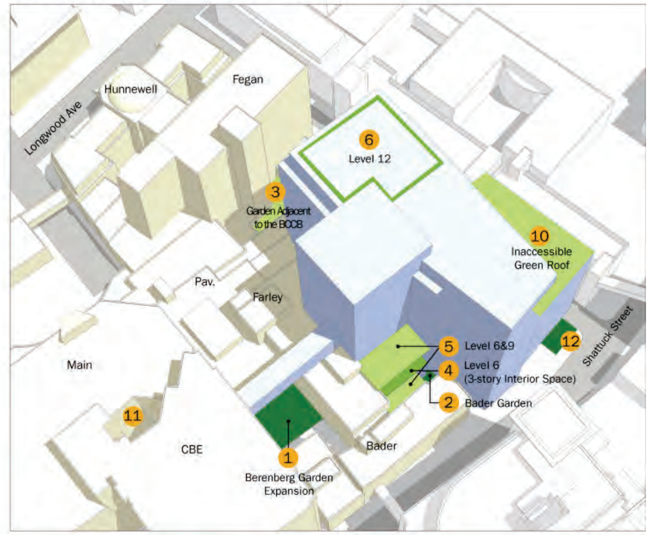
Figure 6-15
Existing Green and Gathering Spaces - Details

Figure 6-16
Prouty Garden

Plan View of Gardens Location



Aerial View Showing Final Build Out



At Grade Garden | Indoor Garden | Roof Terrace

Key	Name	Type	Access from Patient Floor	Existing SF	New or Enhanced SF	
	Prouty Garden		✗	23,220 sf		
1	Berenberg Garden Expansion		✗	1,270 sf	2,500 sf	
2	Bader Garden		✓		800 sf	
3	Garden Adjacent to the BCCB (Include Play Gym Spaces)		✗	7,570 sf	11,500 sf	
4	BCCB Level 6 Wintergarden		✓		3,000 sf	
5	BCCB Level 6 & 9 Roof Garden		✓		5,200 sf	
6	BCCB Level 12 (sanctuary interior space)		✓		6,000 sf	
7	Binney Courtyard (exterior roof terrace)		✓		800 sf	
8	Binney Pocket Park		✗		400 sf	
9	Perlmutter Garden		✗	800 sf	800 sf	
12	Shattuck St. Green Space		✗		1,000 sf	
13	Patient Unit Green Space		✓		1,800 sf	
				32,860 sf	33,800 sf	+940 sf
10	BCCB Penthouse Inaccessible Green Roof		✗		3,000 sf	
11	Main Building Level 6 Inaccessible Green Roof		✗		2,400 sf	

Figure 6-17
Existing and Proposed Green and Gathering Spaces

The construction of the proposed BCCB will enable BCH to create additional green and gathering spaces within the new clinical facility, as well as outside; these new spaces will be more accessible to patients, staff and family and will be able to be fully utilized during bad weather months.

The proposed BCCB will create more patient-focused green and gathering spaces by providing more diversity in types and uses (see Section 2.2.2 for more details about these spaces). These spaces have been designed and located to meet the following accessibility and usability goals:

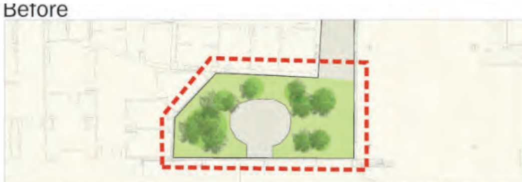
- Create spaces that can be used during all seasons.
- Promote different uses and provide users options.
- Provide direct access to some spaces from patient floors.
- Locate spaces at the center of the campus as well as include spaces distributed throughout.
- Provide zones of privacy, creating spaces to be used separately by patients, family and staff.
- Integrate patient and family amenities and programs, such as end of life, meditation, etc.

The new and enhanced spaces proposed as part of the BCCB will meet these goals, and have been influenced by the design of existing spaces in hospitals around Boston and across the country. As shown in Figure 6-18, the Berenberg Garden will be more than doubled in size and include more landscaped area. This garden will create an outdoor area of respite within the campus and the LMA. The new Garden Adjacent to the BCCB will be the signature green space providing an open-air environment for patients, family members and staff, while continuing to include a playground area for children. As shown in Figure 6-19, the Winter Garden will be centrally located with access from a patient floor. Precedents for this type of space can be found at the Dana-Farber Yawkey Center for Cancer Care, Massachusetts General Hospital's (MGH) Lunder Building and the Ann & Robert H. Lurie Children's Hospital of Chicago. The Roof Garden/Terrace will be additional outdoor space that will be centrally located and be accessible from patient floors (see Figure 6-20). Precedents for these spaces are found at MGH, Yale New Haven Hospital and Danbury Hospital (Connecticut). The Sanctuary space on the roof of the BCCB will be an interior space with access from the patient floors that look over the Boston skyline.

Altogether, Children's green and gathering spaces, as shown in Figures 6-17 through 6-21, including those proposed as part of the BCCB, both exterior and interior, will serve staff, patients and families year-round, bringing light, nature, and places for respite and activity

Berenberg Garden Expansion 1

Before



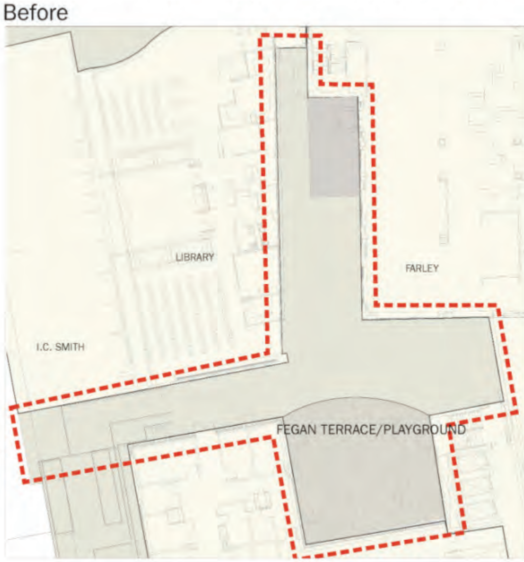
AREA: 1,270 SF 25% HARDSCAPE 75% LANDSCAPE

After

AREA: 2,500 SF 15% HARDSCAPE 85% LANDSCAPE

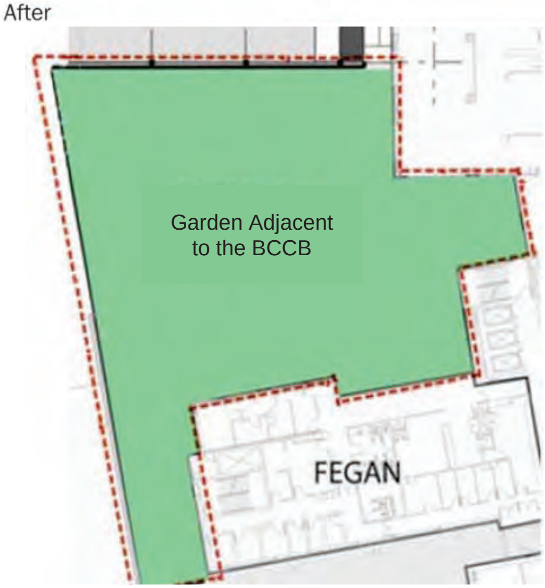
Garden Adjacent to the BCCB 3

Before



AREA: 7,570 SF 100% HARDSCAPE 0% LANDSCAPE

After



AREA:11,500 30% HARDSCAPE 70% LANDSCAPE

Figure 6-18
Enhanced Green and Gathering Spaces - Comparison

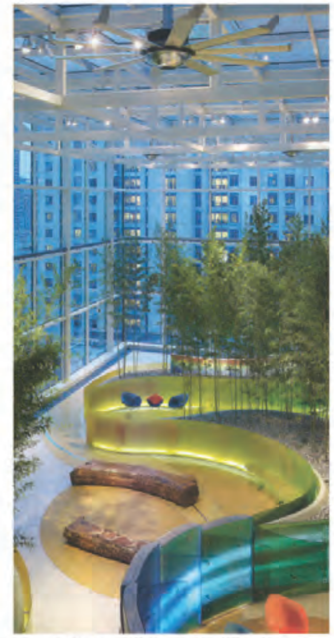
BCCB Winter Garden Rendering Study 4

BCCB Winter Garden

The winter garden will be centrally located in the patient area providing ease of access as well as patient and family amenities.

Winter Garden Precedent Study

MGH Lunder Building



Ann & Robert H. Lurie Children's Hospital

Dana Farber Yawkey Building

Figure 6-19
Winter Garden Precedent Study

Roof Garden / Terrace Precedent Study 5


Yale New Haven Hospital


MGH


Danbury Hopsital

Level 12 (Sanctuary Interior Space) Precedent Study 6


View of Boston from BCCB Sanctuary


Palomar Medical Center


Packard Children's Hopsital at Stanford

Figure 6-20
Roof Garden/Terrace and Sanctuary Space Precedent Studies

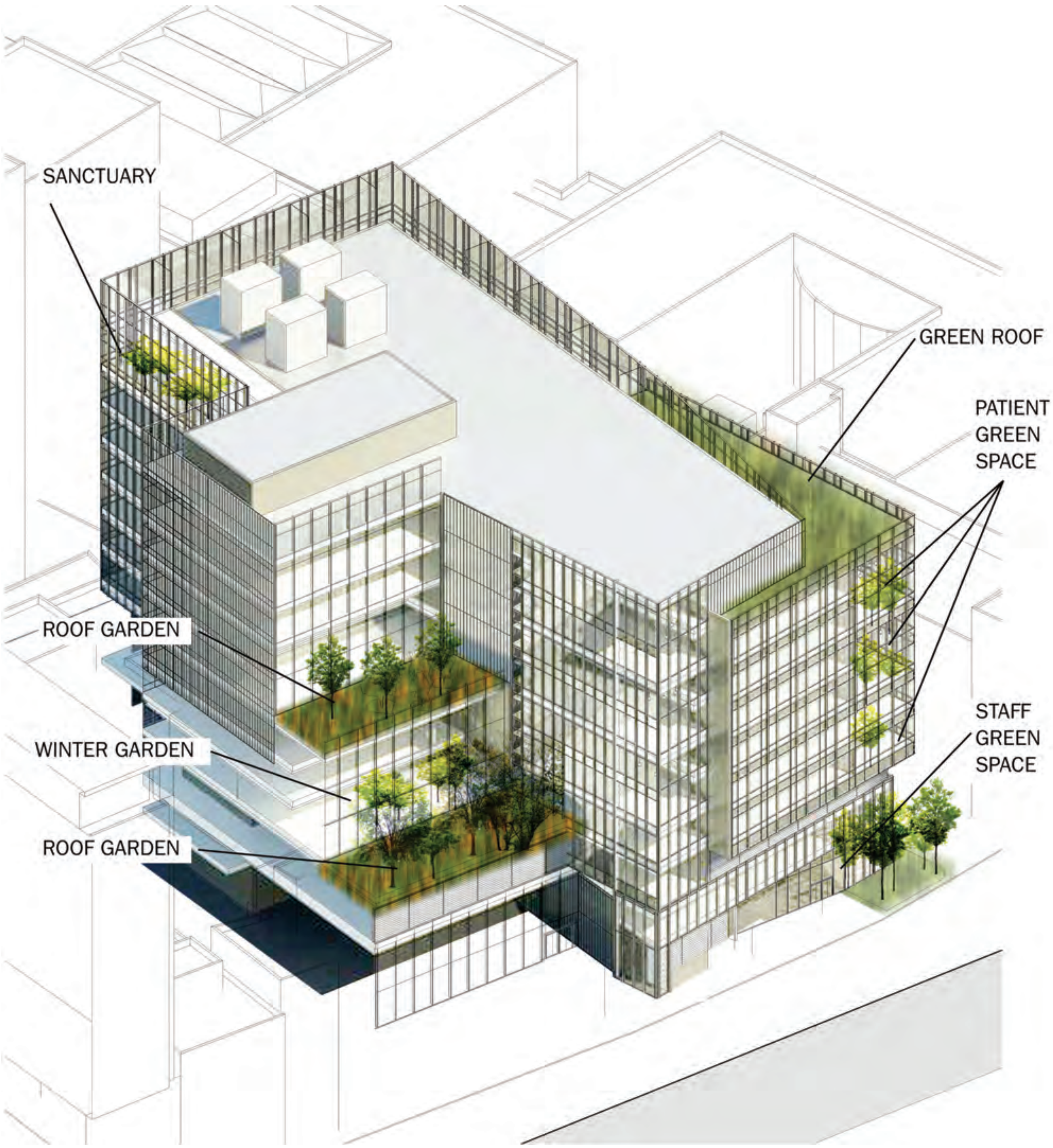


Figure 6-21
BCCB Green and Gathering Spaces Exterior Visibility

into the clinical environment, even during Boston's winter months. The program and amenities on each green and gathering space have been carefully planned to interact with a diverse population of patients and families. In addition, with the increasing higher acuity patient population, the proposed green and gathering spaces will be designed to accommodate the patient population by providing protected areas that are connected visually to the outdoor open spaces, as well as spaces that can be accessed from patient floors. The green and gathering spaces also act as way finding system for the campus. They highlight public areas and main circulation routes that lead to many destinations on campus. Overall, they will enhance the experience of patients, families and staff visiting the BCCB and the campus.

6.2 819 Beacon Street

6.2.1 Height/massing/Architectural Design

The 819 Beacon Street Project has evolved since submission of the IMPNF/PNF in response, in part, to comments and input from the BRA, Boston Civic Design Commission and the community. The Project has been revised to step back from Beacon Street, and the height has been reduced from 10 stories to eight stories. As described previously in Section 2.3.2, the design and massing of the 819 Beacon Street Project has evolved into a single building with a portion of the parking garage integrated below a portion of the office building. The design ensures that the Beacon Street façade includes retail space on the ground floor and office space above creating an active street presence along Beacon Street.

The 819 Beacon Street Project is a commercial office building designed to be used by Boston Children's Hospital. The property is a lynchpin between existing and new developments in the Audubon/Kenmore/Fenway area. On its east-west axis are lower-scale old and new residential buildings to the west (Audubon Circle) and larger, modern buildings approved to be built above the Massachusetts Turnpike to the east. On its north-south axis the 819 Beacon Street Project must also relate to new developments to the south including the burgeoning residential and retail community along Brookline Avenue and Boylston Street, as well as Boston University's new buildings to the north. Development of this site provides an infill opportunity that can serve to knit the disparate elements together resulting in a building with four relevant facades. As shown on Figures 6-22 through 6-26, great care has been taken to ensure that all four sides of the building respond to their existing and future context.

Previously, the program was envisioned to be accommodated in two separate buildings. However, encroachments on the site necessary to support certain regional transportation initiatives (as described in Section 2.3.2) have led to a concept with the parking and office components merged into the proposed single structure. The proposed urban design approach on this single structure is intended to break down the scale of the building and create visual interest through the use of massing variations and material changes.

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Figure 6-22
819 Beacon Street – View on Beacon Street Looking East

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Figure 6-23
View from Beacon Street Looking West

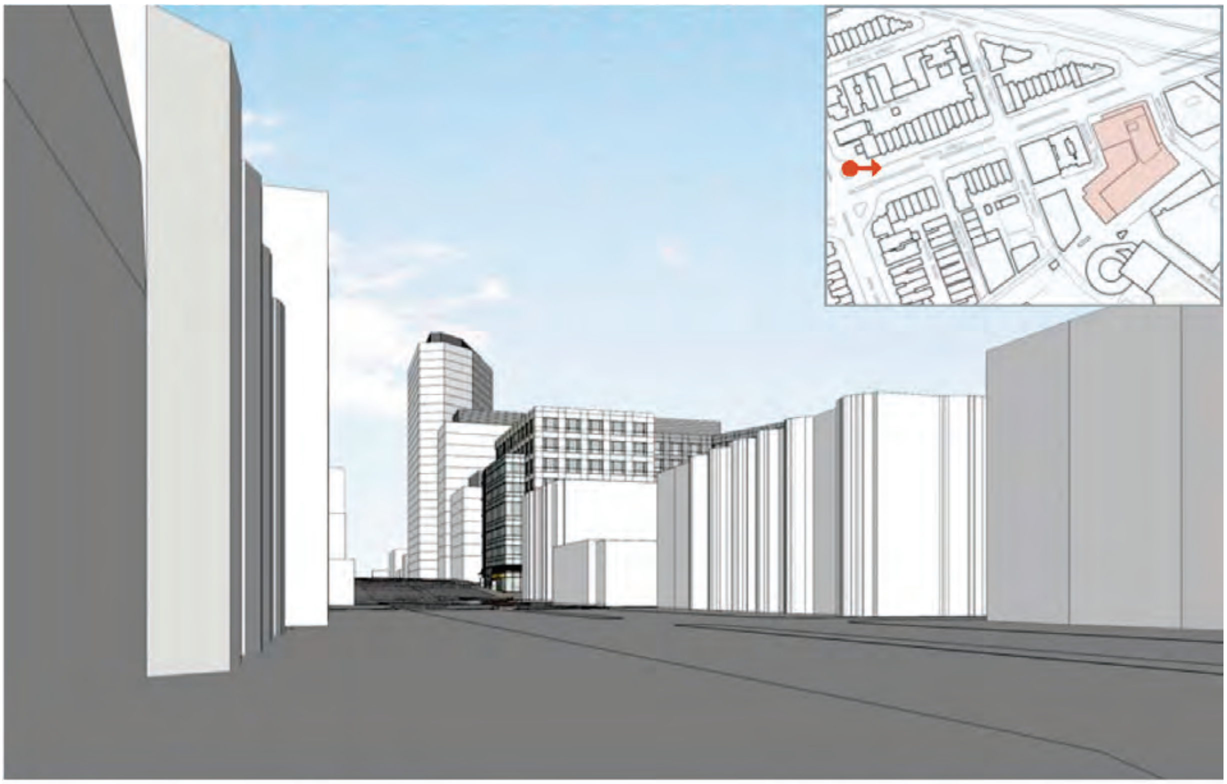

Figure 6-24
819 Beacon Street – Conceptual Views

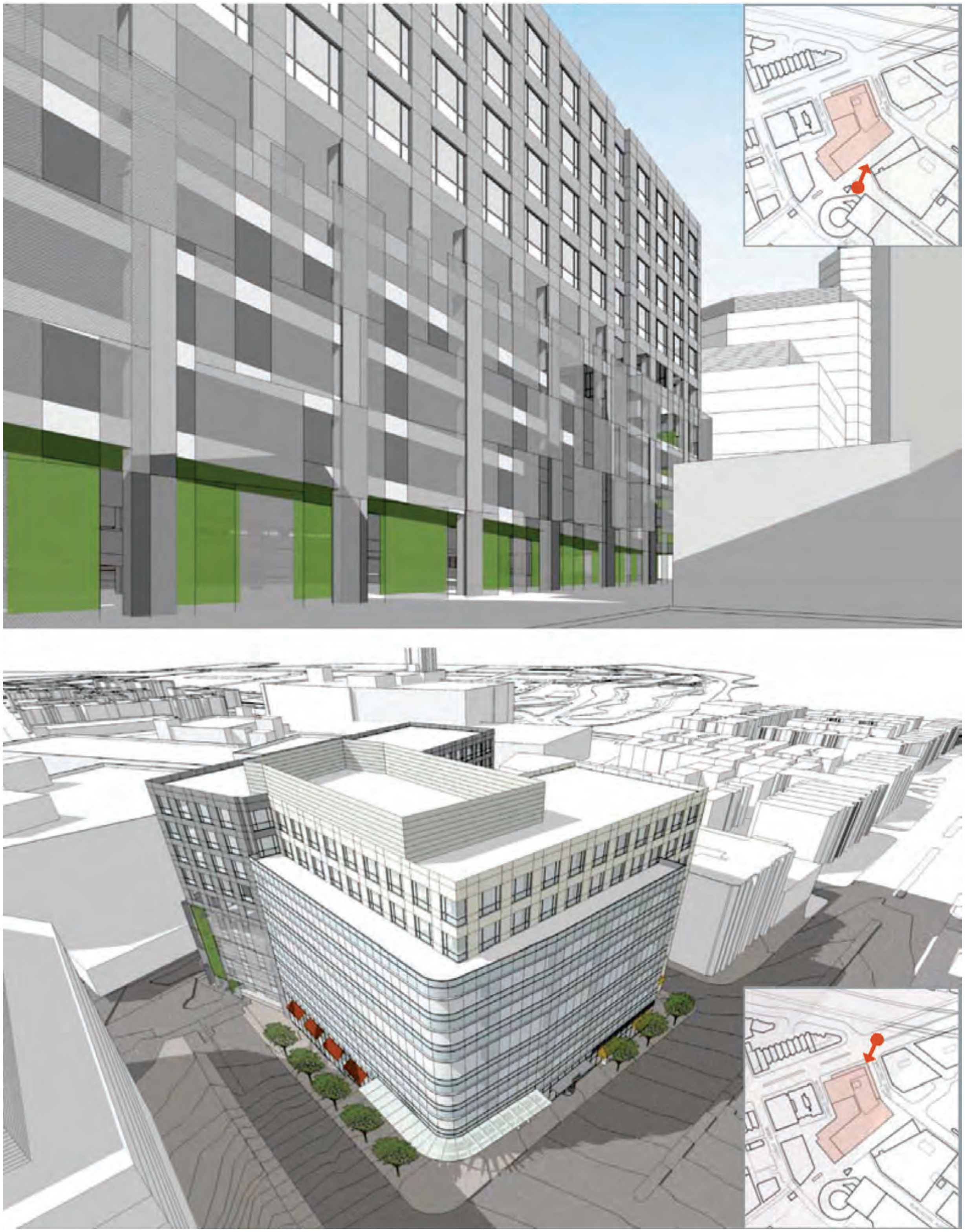

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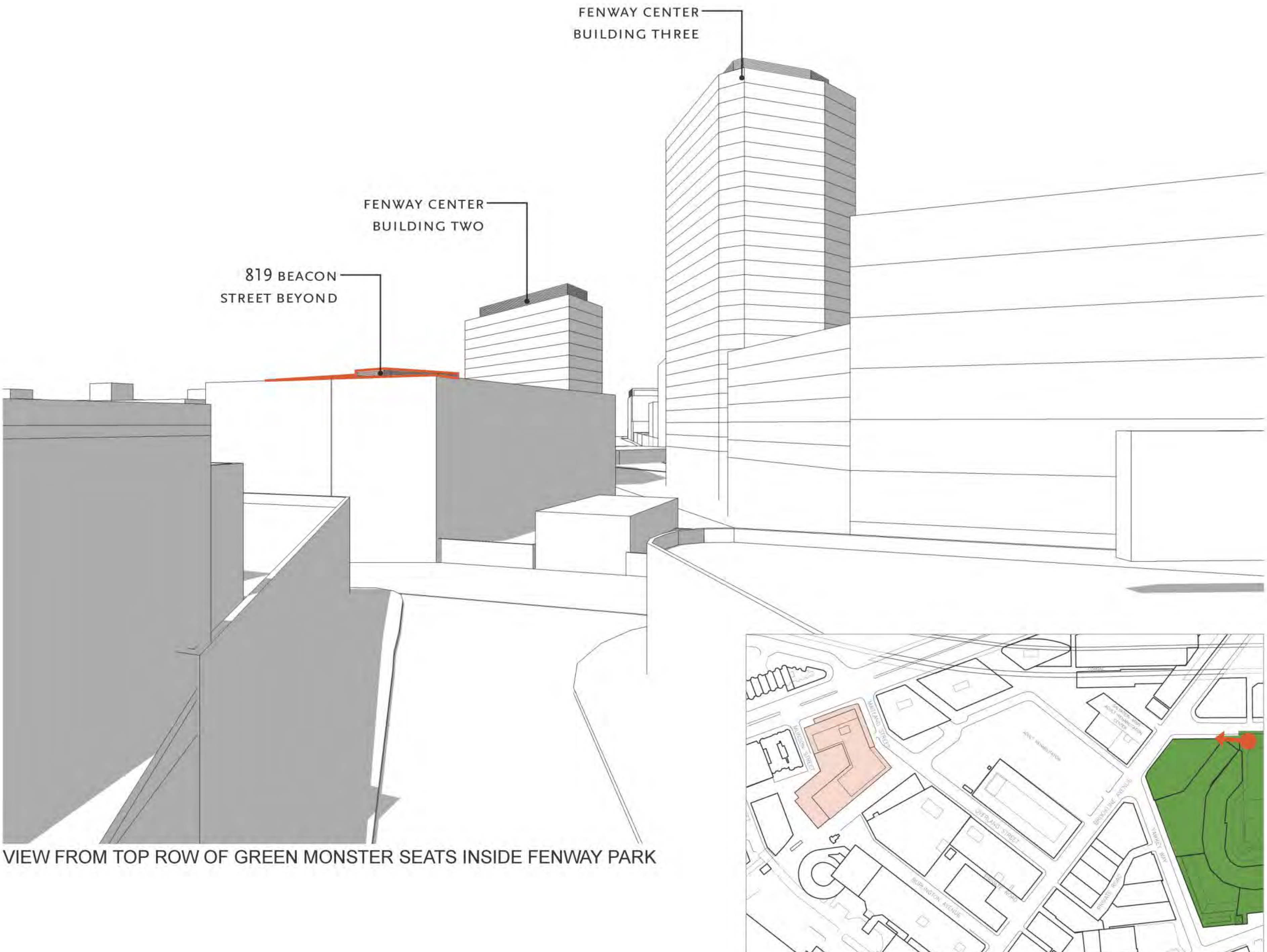
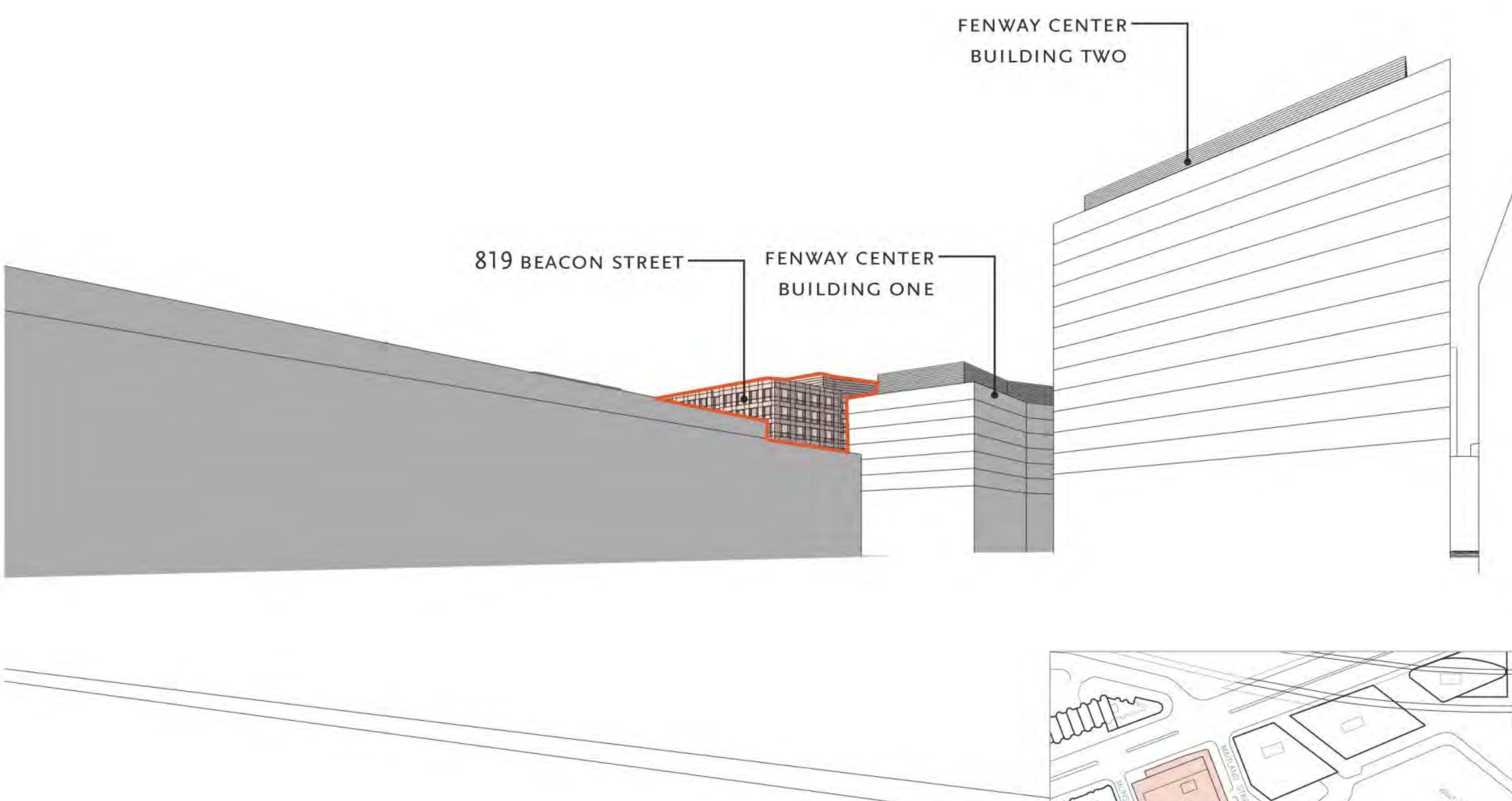
Figure 6-25
819 Beacon Street – Conceptual Views



VIEW FROM TOP ROW OF GREEN MONSTER SEATS INSIDE FENWAY PARK



STREET LEVEL VIEW FROM INTERSECTION OF BROOKLINE AVE AND YAWKEY WAY

* VIEWS ARE APPROXIMATE AND BASED ON BRA 3D MODEL

Figure 6-26
819 Beacon Street – Views from Fenway Park

Along Beacon Street, the proposed eight story office/retail structure will be set back 14 feet above the sixth floor across the entire façade, and from the ground at the westernmost building bays, to address the change in height and massing that will occur between the existing lower scale residential buildings along Beacon Street and Miner Street to the west and the planned large scale Fenway Center development to the east. Specifically, the step back above the sixth level more closely aligns the perceived height with that of approved Parcel 7, Building 1 (see Figures 6-27 and 6-28). As further shown on Figure 6-29, the west side of the façade will be clad predominantly with precast concrete materials to relate to the traditional materials in the adjacent residential buildings and transition to predominantly modern curtainwall materials as it gets closer to the proposed new buildings to the east.

The Beacon Street façade design also pays homage to some of the unique historical elements in the surrounding buildings, such as the rounded corner of the brownstone building at the corner of Beacon and Mountfort Streets. The ground floor along the Beacon Street side is designed to include two small neighborhood retail establishments of approximately 3,000 to 6,000 sf that are characteristic of the existing neighborhood. These will be signified by a signage and awning system which will create an identifiable separation between the public and private building spaces.

The curtainwall (and precast concrete at the stepped back upper levels) will wrap to the Maitland Street façade. The rapid grade change precludes retail entrances along the Maitland Street façade, but the design wraps the visual cues of the ground floor retail, including the storefront windows and awnings, along Maitland Street for the depth of the first storefront. Approximately 150 feet down Maitland Street, the garage begins to become visible providing a natural opportunity to break the dimensions of the building through material changes at both the upper level office and lower level garage. Metal panel has been introduced at the upper levels, while at the garage level, a perforated metal "green screen" will introduce some playfulness in contrast to the precast concrete, and will integrate the building with the new public realm and pedestrian improvements—including the multi-use path, Yawkey Way station and direct roadway and sidewalk connections between Brookline Avenue and Beacon Street by way of the Overland/Maitland connection—that will be introduced to the southeast of the building.

The building does not have a presence directly on Miner Street, but the western façade abuts the residential buildings located on Miner Street. Great care has been taken to step the building back from 16 Miner Street and include materials which provide interest to the building. Along the Miner Street façade, the upper level office building steps back to allow more light and air in the area. The ground floor garage levels are separated from 16 Miner Street by at least 37 feet. As the design progresses, the Proponent will continue to work with abutters and residents regarding landscaping details.

Roof top mechanicals will be consistent with those of a typical office building and will be screened.

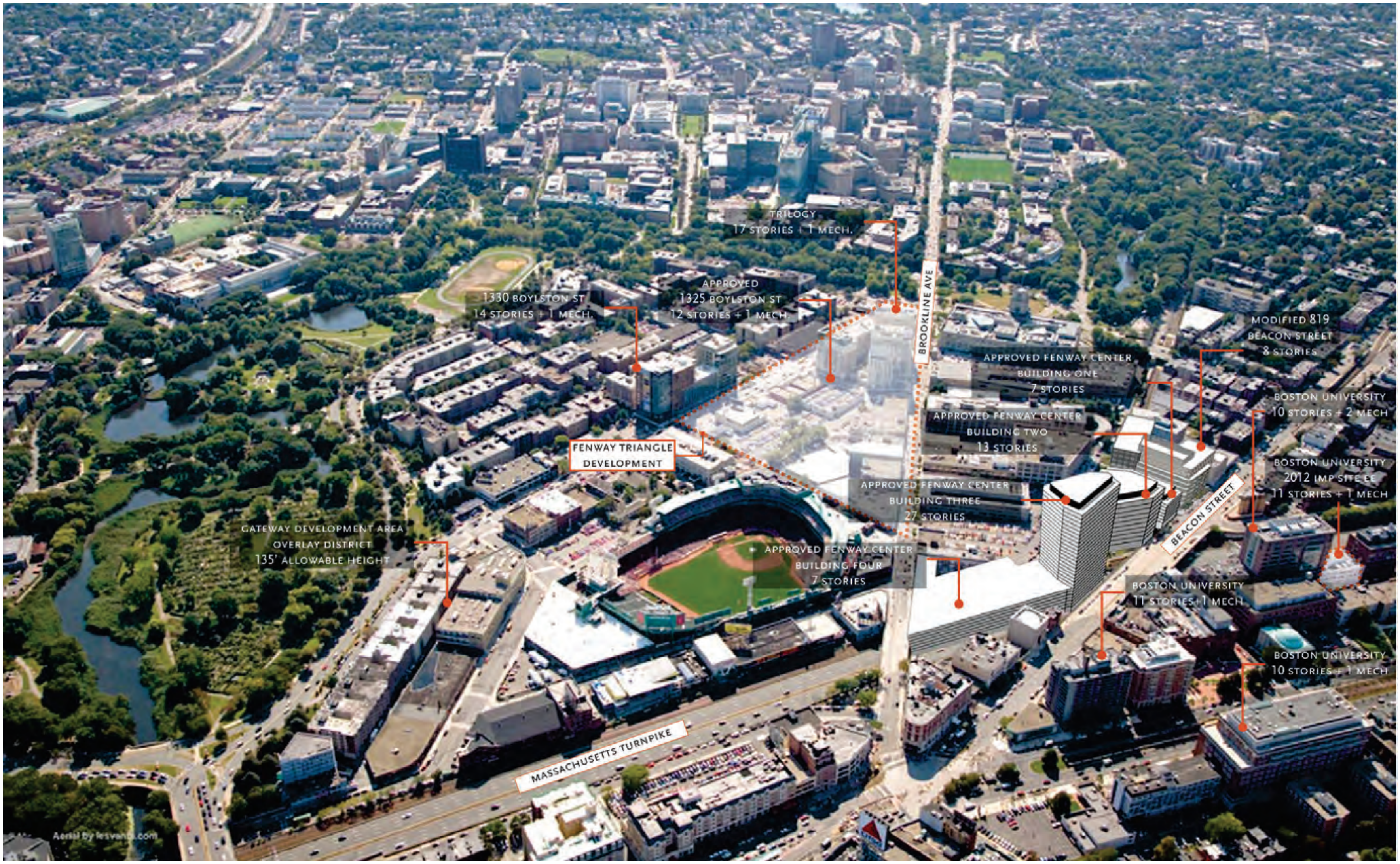


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Figure 6-27
819 Beacon Street – Massing Study – Aerial View

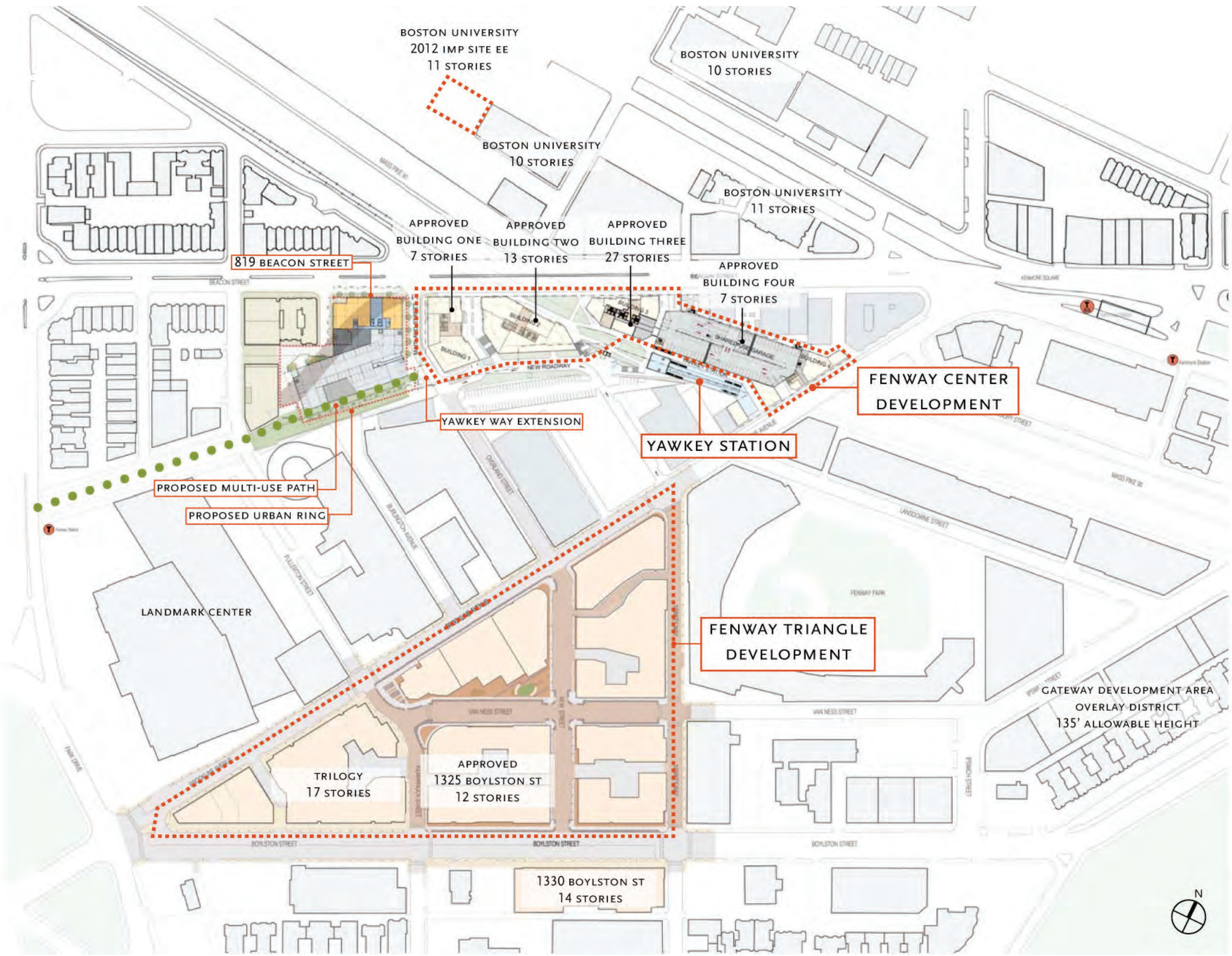

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Figure 6-28
819 Beacon Street – Area Plan

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Figure 6-29
819 Beacon Street – Elevations

6.2.2 Public Realm

As previously described, the 819 Beacon Street Project provides numerous benefits to the public realm including the following:

- Replacing a surface parking lot with a new building that will fill in a “missing tooth” along Beacon Street and provide a transition between new and old buildings in the area;
- Enhancing and enlivening the streetscape along Beacon and Maitland Streets, including ground floor retail space;
- Improving sidewalks along Beacon Street and Maitland Street including new paving, planting and lighting;
- Providing a designated route for and integration of the City of Boston’s proposed multi-use path along the south side of the property both before and after the implementation of the Urban Ring;
- Providing an easement for the proposed Urban Ring along the south side of the property; and
- Accommodating a future bus lane on Maitland Street within the boundary of the 819 Beacon Street Project site.

Figure 6-30 is a Landscape Plan illustrating conditions prior to the Urban Ring project. The diagram includes the approved Fenway Center, the City’s multi-use path and other improvements planned by the BRA and BTD for the area. The multi-use path will initially be located substantially on the CSX right-of-way (the interim condition). Once the CSX right-of-way is repurposed to accommodate the proposed Urban Ring, the multi-use path will be accommodated within the southerly boundary of the 819 Beacon Street building footprint at the garage level (the final condition). The southern portion of the garage will be designed and constructed to be column supported with a south facing open arcade 13 feet high and 14 feet wide to accommodate multi-use path functions in this section of the path

In the interim condition, the landscaping will occur partially on Children’s property and the arcade will be screened to create a solid edge to the multi-use path. In the final condition the screens will be removed so that the path is open to the air. Children’s will work with the City of Boston to develop seamless landscaping and wayfinding details in both the interim and final conditions. In addition, Children’s and the City will ensure adequate, but not excessive, lighting adequate for perceived and actual safety along this section of the multi-use path.

Boston Children's Hospital

Shepley Bulfinch

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Figure 6-30
819 Beacon Street – Proposed Landscape Plan

Figure 6-31 indicates the ground floor configuration and the location of the major building components including, loading, service and active retail uses. The Project includes two internal loading bays and a dumpster bay accessed off of Munson Street. The operations will be contained inside the building.

Figures 6-32 through 6-35 include floor plans. Figure 2-11 provides a section of the 819 Beacon Street Project.

6.3 Patient and Family Parking Garage Addition

The proposed Patient and Family Parking Garage Addition includes one level of 86 parking spaces (76 net new due to the elimination of 10 parking spaces in connection with the BCCB) on top of the existing garage structure (see Figure 2-13). The new height, approximately 12 feet, will generally be imperceptible from the surrounding streets. The exterior of the added level will be closely matched to the existing garage to create a seamless addition.

Boston Children's Hospital

Shepley Bulfinch

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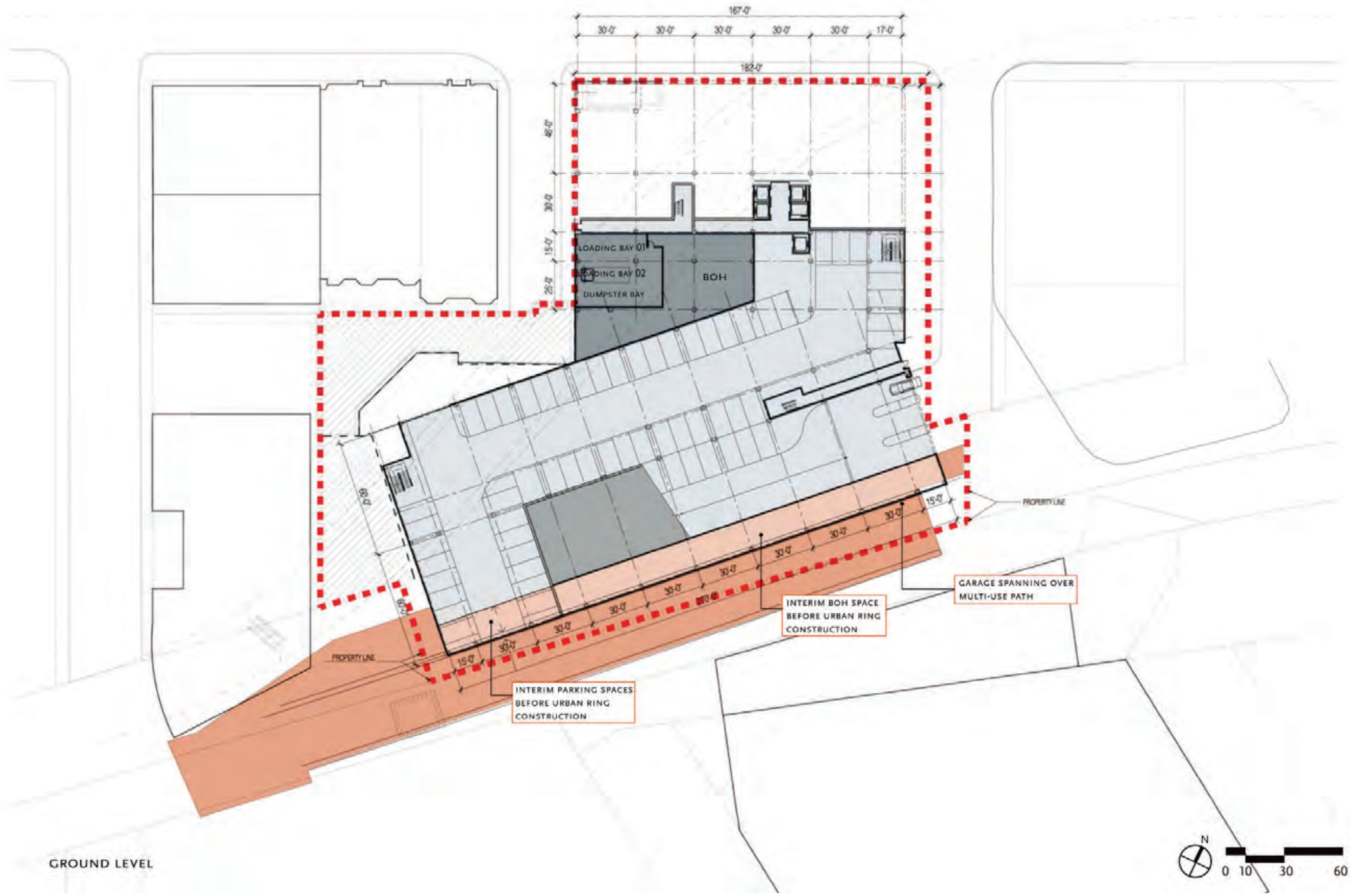
Figure 6-31

819 Beacon Street – Proposed Site Plan



Boston Children's Hospital

Shepley Bulfinch

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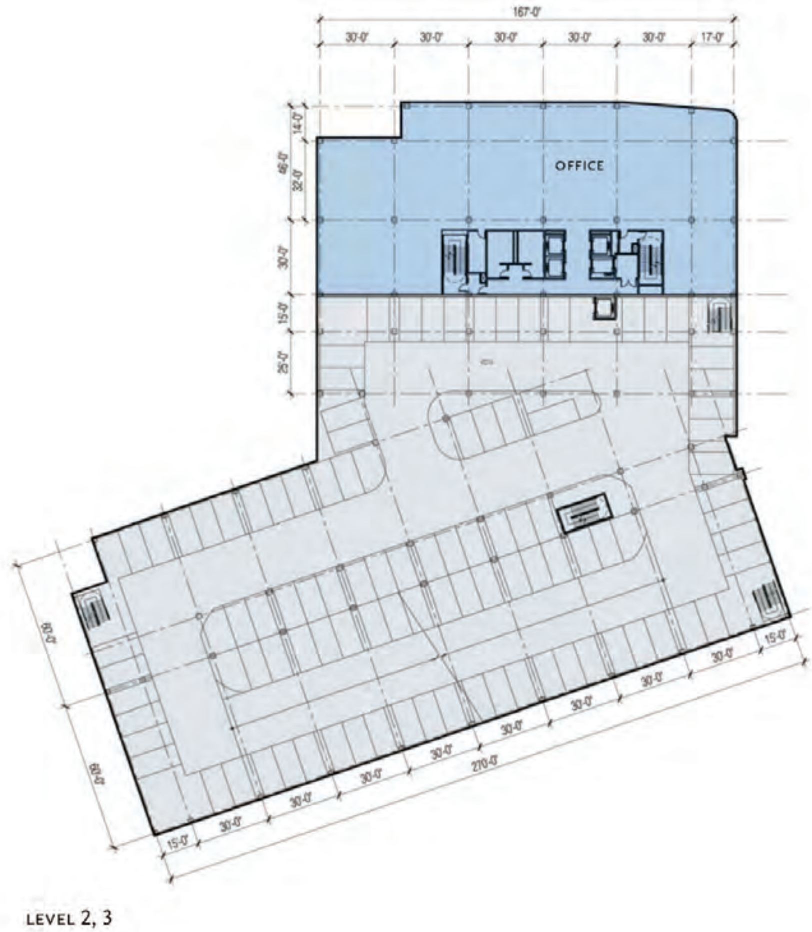
Figure 6-32

819 Beacon Street – Ground Level Plan



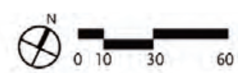


Figure 6-33
819 Beacon Street – Levels 1 to 3 Floor Plans

LEVEL 4

LEVEL 5, 6

Figure 6-34
819 Beacon Street – Levels 4 to 6 Floor Plans

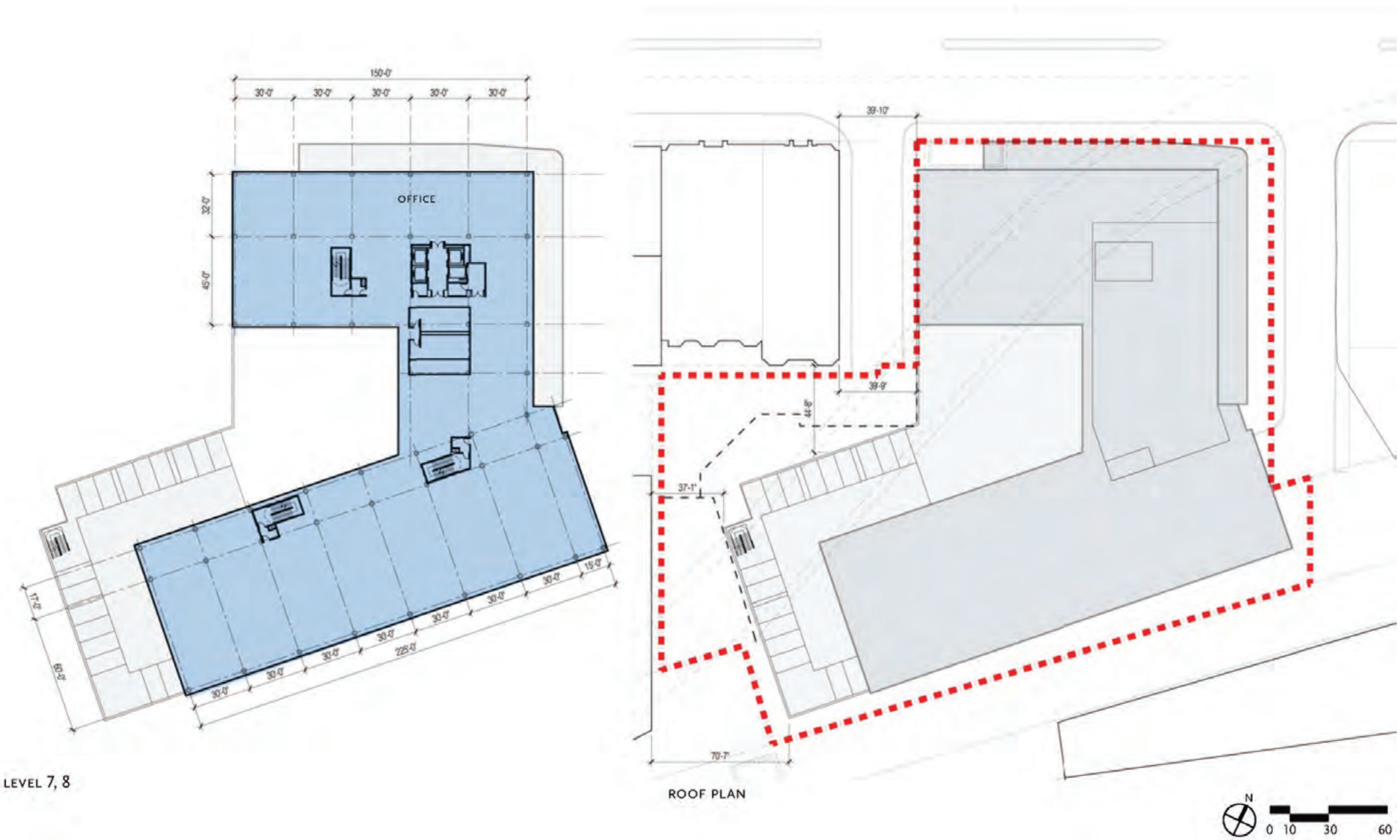


Figure 6-35

819 Beacon Street – Levels 7 and 8 Floor Plan and Roof Plan

Chapter 7.0

Historic and Archaeological Resources

7.0 HISTORIC AND ARCHAEOLOGICAL RESOURCES

7.1 Boston Children's Clinical Building

7.1.1 Buildings on the Project Site

Children's owns 19 buildings in and around the LMA, most of which are located within the Core Campus on Longwood Avenue. None of the buildings owned by Children's are listed in the State or National Registers of Historic Places. Two properties owned by Children's are included in the Inventory of Historic and Archaeological Assets of the Commonwealth (the Inventory) maintained by the Massachusetts Historical Commission (MHC); these include the Hunnewell Building (formerly known as Children's Hospital Administration Building), 300 Longwood Avenue; and the William W. Wolbach Building (formerly known as Thomas M. Rotch Jr. Memorial Hospital for Infants), 55 Shattuck Street.

Hunnewell Building, 1912

Constructed in 1912 as Children's Hospital Administration Building, the Hunnewell Building is a noteworthy example of Classical Revival institutional architecture. Designed by Shepley, Rutan and Coolidge, who designed several other institutional buildings in the LMA, the Hunnewell Building features a Corinthian-columned portico and grand front façade containing 25 bays in five parts. The building is crowned by a copper dome.

The building is significant for its association with Boston Children's Hospital, the third pediatric hospital established in America, which has since achieved national prominence. The hospital was incorporated in 1869 by Chandler Robbins, George H. Kuhn and Nathaniel H. Emmons. Nathaniel Thayer was its first president. Objectives outlined in the bylaws were the medical and surgical treatment of sick children; instruction in the diseases of children; and instruction of young women in the duties of nurses and nursery maids.

When the Hunnewell Building was surveyed in 1984 by the Boston Landmarks Commission (BLC) it was evaluated as a "Category II" building, worthy of consideration as a Boston landmark.

William W. Wolbach Building, 1914

Historically known as the Thomas Morgan Rotch, Jr. Memorial Hospital for Infants, the Wolbach Building was constructed in 1914 for hospital use and was designed by the Boston architecture firm of Shepley, Rutan and Coolidge. The building was originally used as a hospital for infants until that function was relocated to Children's Hospital in 1922. In 1923, the building was purchased by Harvard University for use by the School of Public Health, which immediately prior had been operating out of facilities at the adjacent Medical School. When the Harvard School of Public Health relocated to new facilities, Harvard University sold the building in 1976 to Children's Hospital for use as office space. The building was renamed to honor a former Chairman of the Children's Board of Trustees, William W. Wolbach (1915-2009). The building is not visible from any public way or publicly accessible open space, is located to the rear of the Boston Children's Core Campus south of Longwood Avenue, and is bounded only by two private ways.

The building is an example of Classical Revival architecture executed in white marble and displaying an 11 bay symmetrical façade with a projecting center entrance portico supported by monumental Ionic columns and pilasters. The building was designed to emulate the neighboring Gordon Hall, Harvard Medical School's administration building; thereby making it a smaller reproduction of an existing building.

The building is not considered a rare example of the work of Shepley, Rutan and Coolidge who were responsible also for the stellar buildings such as the Hunnewell Building discussed above, the 1893 Ames Building at 1 Court Street (Landmark Voted 11/23/93) and Boston's 1899 South Station at Atlantic Avenue in Boston. There are 38 buildings nationwide on the National Register of Historic Places that represent the work of Shepley, Rutan and Coolidge.

The building is currently used by Children's for general office use and has no adaptability for clinical use. There is no remaining interior feature of the building which is connected to or reflects prior tenancy by either the Thomas Morgan Rotch, Jr. Memorial Hospital for Infants or the Harvard School of Public Health.

The Boston Landmarks Commission survey of this property in 1984 evaluated the property as "Category III." In December 2012, in consideration of a petition for potential Boston Landmark designation, the BLC recategorized the property as "Category III, F.S." and the petition was accepted for further study.

Ida C. Smith Building, 1930

The Ida C. Smith Building is a remnant of a former collection of ward buildings that were constructed in the field behind Children's Hunnewell Building. Constructed soon after Children's moved to Longwood Avenue in 1914, these "cottage wards" (sometimes referred to as "chicken coops") were designed to maximize fresh air and natural light and minimize the spread of infectious diseases. Originally, five wards were constructed. In 1930, the Ida C. Smith Ward was added to serve infants with surgical conditions. The existing building is currently used for office space. The building has been heavily modified with most of the original window openings in-filled and its walls largely rebuilt in concrete block. The 1994 Library was connected to the west elevation of the building.

Library, 1994

Constructed in 1994, the single-story, flat roof Library building contains approximately 5,500 square feet. Its south elevation is largely glazed. The building is connected to the west elevation of the Ida C. Smith Building and the east elevation of the nine-story Farley Building.

Bader Building, 1930

The seven-story Bader Building was constructed in 1930 and named after major hospital donors Mr. and Mrs. L. F. S. Bader. When constructed, the building primarily provided treatment to children with neuromuscular diseases. Today, the building houses a number of inpatient and ambulatory care uses, as well as hospital office uses. Construction of the BCCB will require the demolition of the single story wing located on the building's north elevation.

Farley Building, 1956

Constructed in 1956, the nine-story Farley Building contains approximately 130,000 square feet of ambulatory and hospital office uses. Construction of the BCCB will require the demolition of two below grade levels located in the southeast portion of the Farley Building.

7.1.2 Historic Resources within the Vicinity of the Children's Campus

Five historic resources listed in the State and National Registers of Historic Places are located within a quarter-mile radius of the Children's campus. These properties include: the Olmsted Park System, the Isabella Stewart Gardner Museum, Massachusetts School of Art, the site of the Massachusetts Mental Health Center, and the Mission Hill Triangle District.

In addition, several properties included in the Massachusetts Historical Commission's Inventory of Historic and Archaeological Assets of the Commonwealth (the Inventory) are also located within a quarter-mile radius of the Children's campus. The properties listed in the State and National Registers of Historic Places, and properties included in the Inventory within a quarter-mile radius of the Children's campus are listed in Table 7-1. Figure 7-1 depicts the locations of these properties.

Table 7-1 Historic Resources within a ¼ mile of Children's Core Campus

No.	Name	Address
State and National Register-Listed Resources		
A	Olmsted Park System	Sections of the Back Bay Fens, Emerald Necklace Parks
B	Isabella Stewart Gardner Museum	280 The Fenway
C	Massachusetts School of Art	364 Brookline Avenue
D	MA Mental Health Center site and complex	74 Fenwood Road
E	Mission Hill Triangle District	Huntington Avenue, Smith, Worthington, Wigglesworth and Tremont streets
Properties included in the *Inventory of Historic and Archaeological Assets of the Commonwealth*		
1	Southwest Fenway District	The Fenway
2	Emmanuel College Main Building	400 The Fenway
3	Simmons College Main Building	300 The Fenway
4	Francis Street and Fenwood Road District	Francis Street and Fenwood Road
5	Winsor School	103 Pilgrim Road
6	Simmons College, North Hall	86 Pilgrim Road
7	Simmons College, Refectory	Behind Pilgrim Road
8	Simmons College, South Hall	321 Brookline Avenue
9	Former N.E. Deaconess Hospital Building	175 Pilgrim Road
10	Former Palmer Hospital Building	195 Pilgrim Road
11	Boston Public Latin School	78 Avenue Louis Pasteur
12	Vanderbilt Hall	245 Longwood Avenue
13	Boston Lying In Hospital	221 Longwood Avenue
14	Massachusetts College of Pharmacy	179 Longwood Avenue
15	Girl's Latin School and Normal School	Palace Road, Tetlow Street, Huntington Avenue
16	Hunnewell Building / Former Children's Hospital Administration Building*	300 Longwood Avenue
17	Harvard Medical School campus	210, 220, 230, 240, 260 Longwood Ave. ,25 Shattuck St.
18	Harvard Dental School	188 Longwood Avenue
19	Former Angell Memorial Hospital	180 Longwood Avenue
20	Westcourt Apartment Block	164 Longwood Avenue
21	Carlton Apartment Block	160 Longwood Avenue
22	Wolbach Building/Former Thomas M. Rotch Jr. Memorial Hospital For Infants *	55 Shattuck Street
23	Peter Bent Brigham Hospital	721 Huntington Avenue/ 15 Francis Street
24	Farragut School	10 Fenwood Road
25	Thomas Maquire Apartment Houses	6-16 Wait Street

Key: * Property located within the Children's Core Campus

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Boston Children's Hospital

Epsilon

Figure 7-1
Historic Resources Proximate to Core Campus

7.1.3 Archaeological Resources

There are no known archaeological resources within the Children's Core Campus. The campus consists of previously developed urban parcels. A review of the Inventory indicates there are no previously identified archaeological resources within the vicinity of the BCCB site. Due to previous development and related site disturbances, it is anticipated that BCCB site contains no significant archaeological resources.

7.1.4 Potential Impacts

Construction of the BCCB will require some demolition activities on the Children's campus, including demolition of the Wolbach Building, Ida C. Smith Building and the Library. Portions of the Bader and Farley buildings will also need to be removed to accommodate the construction of the BCCB. Specifically, the single story wing located on the Bader building's north elevation will need to be removed and two below grade levels in the southeast portion of the Farley building will also need to be removed.

7.1.5 Alternatives Considered

The Proposed Project is the culmination of a six year effort to analyze alternatives for possible locations for an expansion of the clinical facilities on the Boston Children's Core Campus with a suitably located and sized footprint as discussed above. The proposal of the BCCB has involved analyses of numerous Boston Children's Core Campus building sites, each with multiple options generated by their unique locations. Initially, Children's explored all possible locations on the Longwood Campus to ascertain suitability, including sites both north and south of Longwood Avenue (Figure 7-2). As discussed below, this analysis led to the conclusion that the proposed site is the only feasible site option for a building the scope and size of the BCCB which will meet Children's programmatic needs. Figure 7-3 through 7-20 provide diagrams of the alternatives and are located at the end of Section 7.1.5.4

7.1.5.1 Consideration of Alternatives North of Longwood Avenue

<u>Alternatives 1-3</u>: Clinical Building on Sites North of Longwood Avenue (333 Longwood Avenue, the Longwood Research Institute Site (340 Longwood Avenue) or the Patient and Family Garage Site)

The analyses included the study of a clinical building at the various locations north of Longwood Avenue owned by Children's: 333 Longwood Avenue (Figure 7-3), the Longwood Research Institute Site (340 Brookline Avenue) (Figure 7-4), and the Patient and Family Garage site (Figure 7-5). These sites are all located north of Longwood Avenue. Under the configuration of the Children's Core Campus, all the inpatient clinical uses and facilities are located south of Longwood Avenue. Clinical facilities such as surgery and radiology south of Longwood cannot be duplicated north of Longwood and Inpatient

Figure 7-2
Alternative Options Key Plan

clinical uses located north of Longwood Avenue would not have direct or immediate access to critical facilities such as certain testing and special care. All the sites north of Longwood Avenue are too remote for clinical program expansion because clinical services must be integrated with existing facilities south of Longwood Avenue. Accordingly, all the sites north of Longwood Avenue have been rejected as the site of expansion of surgery, radiology or inpatient clinical facilities.

7.1.5.2 Consideration of Alternatives South of Longwood Avenue

<u>Alternative 4:</u> Main Building Vertical Expansion

This alternative studied erecting an expansion above the existing Main Building (Figure 7-6). In addition to the construction challenges throughout the entire construction period involved in construction of a vertical addition to an existing structure, this alternative would require shutting down an entire floor of existing patient beds through-out the construction period. This two-story alternative would not have resulted in sufficient total space to meet the programmatic needs due to a building height limitation, would not have resulted in a sufficiently large floor plate (since the maximum floor plate would be approximately 31,600 square feet) and is inconsistent with Children's current on-going operational needs for inpatient care, which require a floor plate of 40,000 square feet. Shutting down an entire floor of existing patient beds throughout the construction period is not operationally feasible.

A variation of this alternative had been considered by Children's in depth in 2008 prior to construction of the Main Building Expansion at Binney Street, and was rejected for even the smaller expansion (ultimately constructed at Binney Street, which began the conversion of semi-private rooms to private patient rooms by converting semi-private rooms to 44 private patient rooms) due to these logistical difficulties.

<u>Alternative 5:</u> Clinical Building on Existing Enders Building Site

This alternative studied construction at the Enders Building site (Figure 7-7). With respect to the Enders Building site in particular, the Enders Building is used for ongoing research purposes and cannot be decanted during the construction period without prior construction of a new research facility in which to house these important research functions, which is not feasible from timing or an economic perspective. Further, the demolition of the Enders Building would not provide for coherent connections between the surgery and radiology expansion space and existing facilities on the Children's Core Campus or yield sufficient floor area to support Children's inpatient needs (as it would only result in a floor plate measuring approximately 20,000 square feet). Additionally, this alternative is inconsistent with maintaining patient access at the Main Entrance during construction.

<u>Alternative 6:</u> Clinical Building (Patient Care Clinical Tower) in Motor Court, including replacement of existing Enders Building

This alternative studied construction in the existing motor court extending from the current Main Entrance drive to Blackfan Street, including the Enders Building site (Figure 7-8). The path of motor vehicle access would be accommodated beneath the new facility.

As is the case in Alternative 5, the Enders Building is used for ongoing research purposes and cannot be decanted during the construction period without prior construction of a new research facility in which to house these important research functions, which is not feasible from timing or an economic perspective. Further, this alternative would not provide for coherent connections between the surgery and radiology expansion space and existing facilities on the Children's Core Campus or yield sufficient floor area to support Children's inpatient needs (as it would only result in a floor plate measuring approximately 30,000 square feet which would only support 22 beds per floor). Additionally, this alternative is inconsistent with maintaining patient access at the Main Entrance during construction.

<u>Alternative 7:</u> Clinical Building (Longwood Avenue Tower) in Motor Court, retaining existing Enders Building

This alternative studied construction in the existing motor court extending from the face of the existing Enders Building to and over the west wing of the existing Hunnewell Building (Figure 7-9). The path of motor vehicle access would be accommodated beneath the new facility.

Although this alternative retains the Enders Building, this alternative involves demolition of the existing Perlmutter building, a new main lobby on Longwood Avenue, bridge connection to the existing Main Building, and expansion up to the face of and over the Hunnewell Building, which may impact the Hunnewell Building. Since this building will not be contiguous to existing inpatient areas of the Core Campus, it would need bridge connections to the Main Building and would be disconnected from the emergency department and other clinical support areas. Additionally, this alternative is inconsistent with maintaining patient access at the Main Entrance during construction.

<u>Alternative 8</u>: Clinical Building south of the existing Hunnewell Building, including the replacement of the existing Fegan Building

This alternative studied construction at the existing Fegan Building site (Figure 7-10). Since the Fegan Building, which is currently undergoing a phased renovation, is the primary facility used for out-patient services, the Fegan Building cannot be decanted during the construction period without prior construction of a new out-patient facility, which is not feasible from timing or an economic perspective. This alternative would not tie into the floor to floor connections with the adjacent existing buildings, most specifically the surgery and radiology floors and, accordingly, designing an efficient and effective floor plate was not possible at this site. Additionally, this alternative is inconsistent with maintaining patient access at the Main Entrance during construction.

7.1.5.3 Alternatives Based on Wolbach Site

In addition to the alternatives considered and rejected for the reasons discussed above, Children's has explored and considered multiple alternative development scenarios to ascertain the feasibility of retaining the Wolbach Building, either in whole or in part. Specifically, the renovation and retention of the existing structure in totality, the retention of only the Wolbach façade and the retention of only the Wolbach facade portico were all considered.

As discussed below, these alternatives yielded a building which does not meet Children's clinical programmatic needs, and which, in combination with greater construction costs and inability to provide support facilities, make these reuse alternatives programmatically and economically infeasible and/or not resulting in meaningful preservation or good urban design. The following are summaries of the alternatives considered. Attached also are copies of the massing diagrams of the alternatives described below.

Alternative 9: Clinical Building Retaining the Wolbach Building in its entirety with New Building Spanning over Wolbach Building

This alternative studied retaining the Wolbach Building in its entirety and spanning the new clinical building over it completely (Figure 7-11). This allowed for a 505,000 square foot building, accommodating 180 beds (six, 30 bed floors), and three sub-basement levels for support services. Although this alternative provides the required number of beds, there would be substantial loss of square footage to the diagnostic, treatment and clinical support levels (floors SB, LB and 1-3) which are proposed to be used for radiology and surgery as well as the mechanical levels SB2 and SB3. Further, this alternative would prevent access to loading bay space on Shattuck Street. As a result, this alternative does not meet Children's programmatic needs. Moreover, this alternative would require erection of support columns in front of Wolbach's Shattuck Street façade, thus blocking a meaningful view of the façade, and further limiting the available streetscape area.

Alternative 10: Clinical Building Retaining the Wolbach Building with New Construction to North of Wolbach, obstructing visibility of Wolbach North Façade

This alternative also retains the Wolbach Building in its entirety. Rather than spanning the new clinical building over the Wolbach Building, this alternative included construction of the new building to the north of the Wolbach Building (Figure 7-12). This alternative considerably reduces the floor plates, resulting in a total of only 325,000 square feet for the new building and therefore eliminates the ability to maintain the necessary 40,000 square feet needed for the inpatient bed units. The smaller floor plates result in a reduction of the total number of beds to from 180 to 144 (six, 24 bed floors) and reduces the square footage of the diagnostic and treatment levels which are proposed to be used for uses such as radiology and surgery. Further, this alternative would prevent access to loading bay space on Shattuck Street. As a result, this alternative does not meet Children's programmatic needs.

Alternative 11: Clinical Building Retaining the Wolbach Building with New Construction to North of Wolbach, retaining visibility of Wolbach North Façade

This alternative also retains the Wolbach Building and locates the new clinical building to its north, similar to the alternative above (Alternative 10). However, the new building would be set further back by approximately 20 to 40 feet, retaining the visibility of the Wolbach Building's north elevation (Figure 7-13). This alternative further reduces the floor plates, resulting in a total of only 300,000 square feet for the new building. The smaller floor plates result in reduction of the total number of beds to 120 (six, 20 bed floors) and substantially reduce the square footage needed for the inpatient bed units, as well as reduce the square footage of the diagnostic and treatment levels which are proposed for uses such as radiology and surgery. Further, this alternative would prevent access to loading bay space on Shattuck Street. As a result, this alternative does not meet Children's programmatic needs.

Alternative 12: Clinical Building retaining the Wolbach Building with New Construction to the North, closer to Fegan Building

This alternative also retains the Wolbach Building and locates the new clinical building to its north, similar to the alternatives above (Alternatives 10 and 11) but 30 feet closer to the Fegan Building, with a bridge connection to the existing inpatient services (Figure 7-14). This alternative allows the lower level floorplate to be increased as compared to Alternatives 10 and 11, and locates green space between the new building and the Wolbach Building which is crossed by the bridge connection. However, this alternative does not result in a sufficiently large floorplate, resulting in a total of approximately 350,000 square feet for the new building. Also, since the floor plates have limited exterior wall space due to the building configuration, the floor plates result in a reduction of the total number of beds to 120 (six, 20 bed floors) and substantially reduce the square footage needed for the inpatient bed units, as well as reduce the square footage of the diagnostic and treatment levels which are proposed for uses such as radiology and surgery. Further, this alternative is totally disconnected from the existing emergency department and does not result in the expansion space being in sufficient proximity to the existing buildings, most specifically the surgery and radiology floors, and, accordingly, designing an efficient and effective floor plate was not possible at this site. Importantly, the subsurface of the area closest to the Fegan Building currently houses the mechanical infrastructure which supports one-third of the existing Core Campus; erection of a building on this area would prevent continued access to these subsurface mechanicals needed for continued operation of the Core Campus. Finally, this alternative would reduce the garden areas being planned as part of the BCCB project. As a result, this alternative does not meet Children's programmatic needs.

7.1.5.3.1 Wolbach Building "Facadectomy" with New Construction

The above studies led to considerations that would maximize the footplates, thereby maintaining the square footage of the lower level diagnostic and treatment clinical space which are proposed for expansion of surgery and radiology and the required number of inpatient beds per floor on the upper levels, while preserving the facade (south elevation) of the Wolbach Building either in total or limited to the portico element of the facade. The following are variations of a "facadectomy" approach in which the façade, or portions thereof, would be retained and incorporated into the new building while removing the remainder of the Wolbach Building.

Alternative 13: Clinical Building Retaining the Wolbach south façade and stairs, with New Construction to Rear and Cantilever above

This alternative studied the feasibility of retaining the Wolbach Building's façade and stairs in their current location, with the new building constructed behind and cantilevered above it (Figure 7-15). The diagnostic, treatment and clinical support levels (floors SB, LB and 1-3) would be reduced by approximately 3,600 square feet per floor for a total loss of 18,000 square feet, compromising the functionality of the diagnostic and treatment space. In addition, the mechanical space (floors SB2. SB3 and 4-5) would be reduced for a total loss of 10,800 square feet. Further, on-grade access to the mechanical space below would be eliminated, as a result of which this alternative would not even allow the inclusion of a Central Utility Plant for the clinical building. The retained or reconstructed façade also would preclude the possibility of any loading bays on Shattuck Street, which will prevent proper operation of the building. As a result, this alternative does not meet Children's programmatic needs.

Although efforts would be made to stabilize the portico in place, it is likely that a fair amount of the façade would require dismantling and reconstruction. To retain the façade, dismantling and demolition will have to done manually, increasing costs by approximately $5,125,000 and adding time to the project schedule. Reconstruction of the façade would be complicated, requiring that components be cataloged, stored and preserved for reconstruction. Additional structural members would also be required. The potential presence of asbestos would also require a prolonged abatement process.

In addition, this alternative would lack architectural integrity and good urban design since the application of a façade from the previous century and a different architectural style to a contemporary structure will diminish the integrity of both the new building and the goal of preservation.

Alternative 14: Clinical Building involving Dismantling and Reconstruction of Wolbach south façade and stairs in new Atrium Space, with New Construction to Rear and Cantilever above

This alternative studied stabilizing, dismantling and reconstructing the entire Wolbach façade and stairs in an atrium space within the new building constructed behind and cantilevered above it (Figure 7-16). The atrium would be positioned in this location for the sole purpose of accommodating the reconstruction of the Wolbach façade and entry portico as an interior element. The diagnostic, treatment and clinical supports levels (floors SB, LB and 1-3) would be reduced by approximately 3,600 square feet per floor for a total loss of 18,000 square feet, compromising the functionality of the diagnostic and treatment space. In addition, the mechanical space (floors 4-5) would be reduced for a total loss of 3,600 square feet. The reconstructed façade also would preclude the possibility of any loading bays on Shattuck Street, which will prevent proper operation of the building. As a result, this alternative does not meet Children's programmatic needs.

To reconstruct the façade, dismantling and demolition will have to done manually, increasing costs by approximately $6,050,000 and adding time to the project schedule. Reconstruction of the façade would be complicated, requiring that components be cataloged, stored and preserved for reconstruction. Additional structural members would also be required. The potential presence of asbestos would also require a prolonged abatement process.

Similar to Alternative 13 above, this alternative would lack architectural integrity and good urban design since the application of a façade from the previous century and a different architectural style to a contemporary structure will diminish the integrity of both the new building and the goal of preservation.

<u>Alternative 15</u>: Clinical Building involving Dismantling and Reconstruction of Wolbach entry portico and stairs in new Atrium Space, with New Construction to the Side of the Portico, Rear and Cantilever above

This alternative studied stabilizing, dismantling and reconstructing the Wolbach Building's portico and stairs, in an atrium space within the new building constructed to the sides of the portico, behind and cantilevered above it (Figure 7-17). Similar to Alternative 14 above, the atrium would be positioned in this location for the sole purpose of accommodating the reconstruction of the Wolbach façade and entry portico as an interior element. The diagnostic, treatment and clinical support levels (floors SB, LB and 1-3) would be reduced by approximately 2,100 square feet per floor for a total loss of 10,500 square feet, compromising the functionality of the diagnostic and treatment space. In addition, the mechanical space (floors 4-5) would be reduced for a total loss of 2,100 square feet. The reconstructed façade also would preclude the possibility of any loading bays on Shattuck Street, which will prevent proper operation of the building. As a result, this alternative does not meet Children's programmatic needs.

To retain the portico, dismantling and demolition will have to be done manually, increasing costs by approximately $4,970,000 and adding time to the project schedule. Reconstruction of the façade would be complicated, requiring that components be cataloged, stored and preserved for reconstruction. Additional structural members would also be required for the reconstruction of the façade. The potential presence of asbestos would also require a prolonged abatement process.

Similar to Alternative 13 above, this alternative would lack architectural integrity and good urban design since the application of a façade from the previous century and a different architectural style to a contemporary structure will diminish the integrity of both the new building and the goal of preservation.

Alternative 16: Clinical Building involving Dismantling and Reconstruction of the Wolbach entry portico not including the stairs as stand-alone structure in front of new building

This alternative studied the feasibility of dismantling and reconstructing the Wolbach Building's portico not including the stairs in front of the new building, as a stand alone structure (Figure 7-18). The reconstructed portico would serve as a sculptural piece, potentially used as a porte-cochere. The new building's floor plates could achieve the required square footage, thereby not impacting the program and maintaining a footprint to allow for maximum clinical operational efficiency. However, this alternative would limit functionality of the three bay loading spaces on Shattuck Street, since there would be constrained maneuvering space around the reconstructed portico, and sidewalks and landscaping would be eliminated. Additionally, the dismantling and reconstruction of the portico would compromise the structure's architectural integrity. Similar to the alternatives above, dismantling and reconstructing the portico would result in increasing project costs by approximately $3,725,000 and adding time to the schedule. Reconstruction of the façade would be complicated, requiring that components be cataloged, stored and preserved for reconstruction. Additional structural members would also be required for the reconstruction of the façade. The potential presence of asbestos would also require a prolonged abatement process. In addition, this alternative would lack architectural integrity and good urban design as the reconstructed portico would add little to no value to the urban context.

Alternative 17: Clinical Building involving Stabilizing or Dismantling and Reconstruction of Wolbach façade not including stairs as lower level façade integrated into the new Clinical Building's South Façade

The alternative studied stabilizing, or possibly dismantling and reconstructing, the entire façade not including the stairs and constructing the new building directly behind it (Figure 7-19). The Wolbach façade would serve as the façade of the lower levels to the new building. The diagnostic, treatment and clinical support levels (floors SB, LB and 1-3) would be reduced by approximately 1,800 square feet per floor for a total loss of 9,000 square feet, compromising the functionality of the diagnostic and treatment space. In addition, the mechanical space (floors 4-5) would be reduced for a total loss of 1,800 square feet. The reconstructed façade also would preclude the possibility of any loading bays on Shattuck Street, which would prevent proper operation of the building.

Additionally, similar to the other facadectomy alternatives, it is likely that a fair amount of the façade would require dismantling and reconstruction thereby, compromising the structure's architectural integrity. Similar to the other facadectomy alternatives, this approach would result in increasing the project costs by approximately $5,250,000 and adding time to the project schedule, further complicating the design and construction of the new building, while adding little to the urban context in the form of good urban design or preservation. Reconstruction of the façade would be complicated, requiring that components be cataloged, stored and preserved for reconstruction. Additional structural members would also be required for the reconstruction of façade. The potential presence of asbestos would also require a prolonged abatement process.

Alternative 18: Clinical Building involving Stabilizing or Dismantling and Reconstruction of Wolbach entry portico not including stairs as feature of new lower level façade with new construction behind

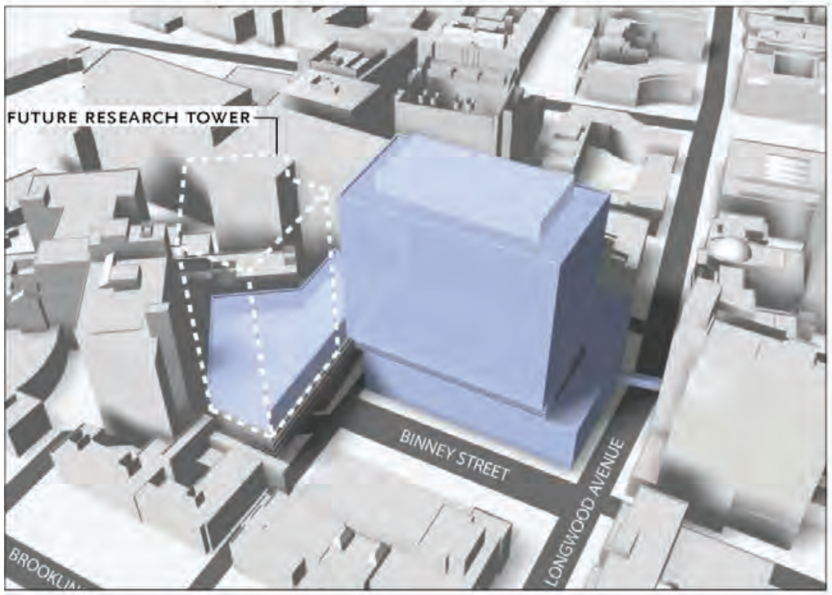
This alternative studied stabilizing, or possibly dismantling and reconstructing, the portico portion of the facade not including the stairs and constructing a new lower level façade containing the portico and the new building directly behind it (Figure 7-20). The diagnostic, treatment and clinical support levels (floors SB, LB and 1-3) would be reduced by approximately 750 square feet per floor for a total loss of 3,750 square feet compromising the functionality of the diagnostic and treatment space. In addition, the mechanical space (floors 4-5) would be reduced for a total loss of 750 square feet. The reconstructed façade also would preclude the possibility of any loading bays on Shattuck Street, which will prevent proper operation of the building. Additionally, the primary portions of the façade could not be retained and, similar to the other facadectomy alternatives, the portico itself would require dismantling and reconstruction thereby, compromising the structure's architectural integrity. Similar to the other facadectomy alternatives, this approach would result in increasing the project costs by approximately $4,250,000 and adding time to the project schedule, further complicating the design and construction of the new building, while adding little to the urban context in the form of good urban design or preservation. Reconstruction of the façade would be complicated, requiring that components be cataloged, stored and preserved for reconstruction. Additional structural members would also be required for the reconstruction of the façade. The potential presence of asbestos would also require a prolonged abatement process.

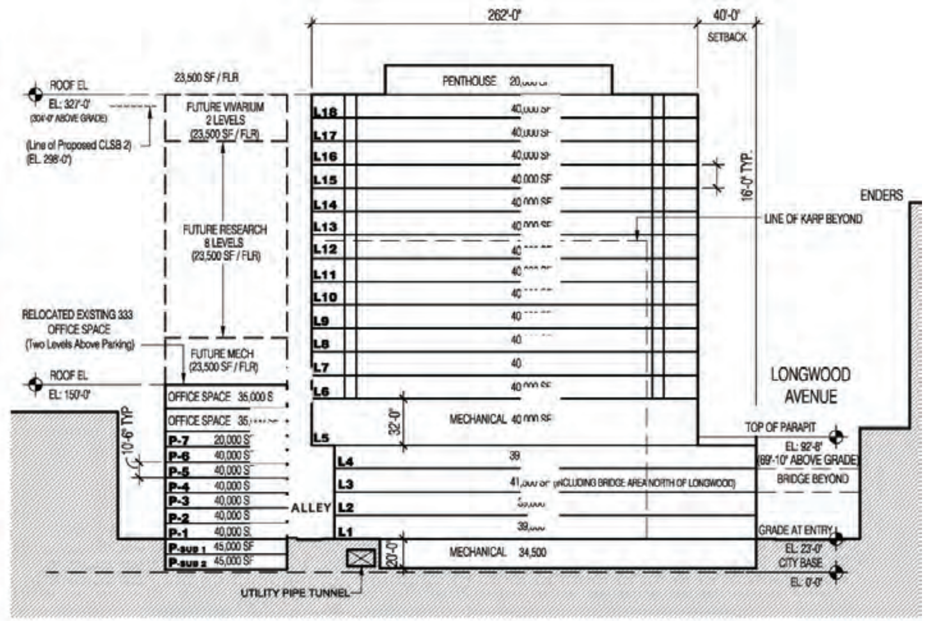
7.1.5.4 Conclusion

Each of the alternatives listed above would significantly impact the proposed BCCB program, with the options that involve the retention of the entire Wolbach building having the greatest impacts. Various facadectomy alternatives also impact the program of the new building and the ability to service the building with loading dock access and the ability for the building to contain a Combined Heat and Power Facility, in addition to compromising the architectural integrity of the Wolbach Building. Furthermore, the facadectomy

Alternative 1:

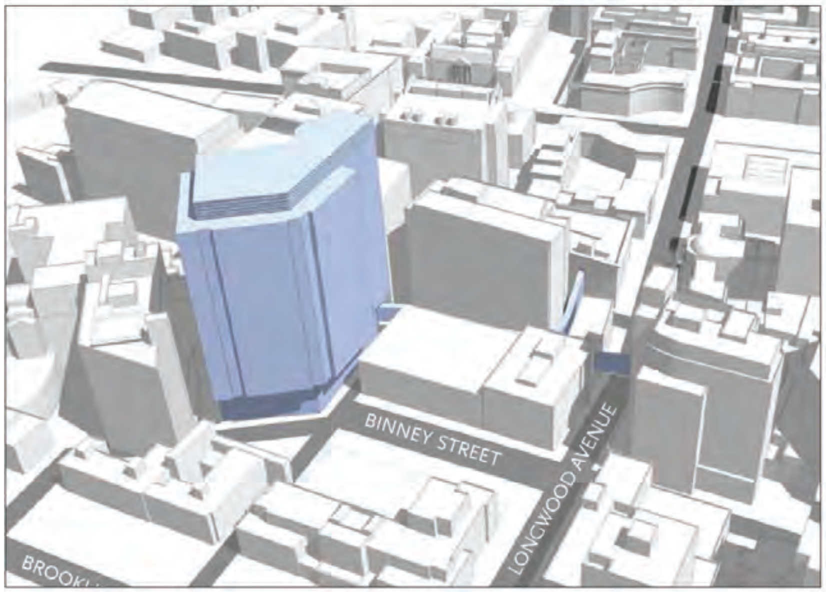
Clinical Building on Sites North of Longwood Avenue - 333 Longwood





Alternative 2:

Clinical Building on Sites North of Longwood Avenue - the Longwood Research Institute Site (340 Longwood Avenue)



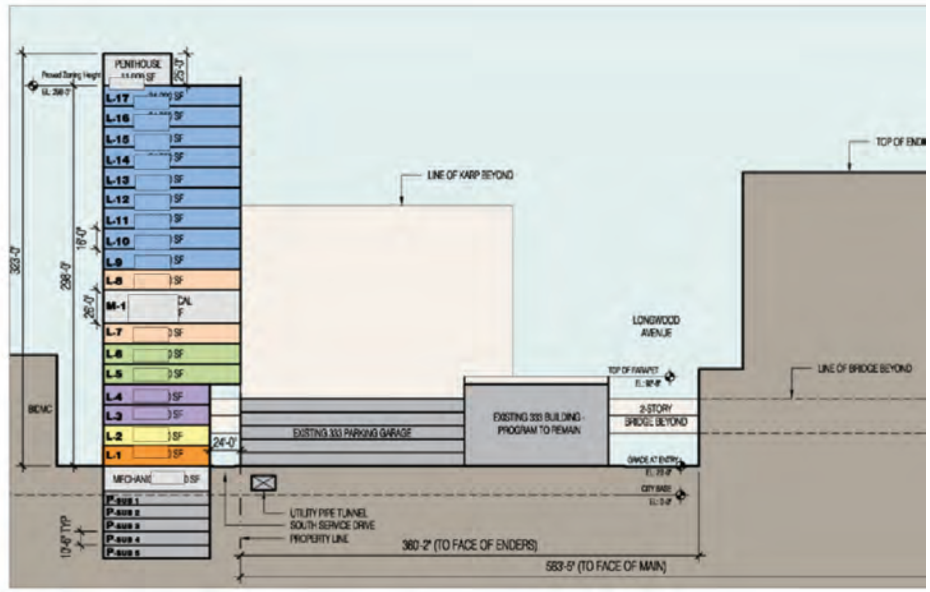


Figure 7-4

Alternative Massing & Stacking – North of Longwood Avenue

Alternative 3:

Clinical Building on Sites North of Longwood Avenue - the Patient and Family Garage Site

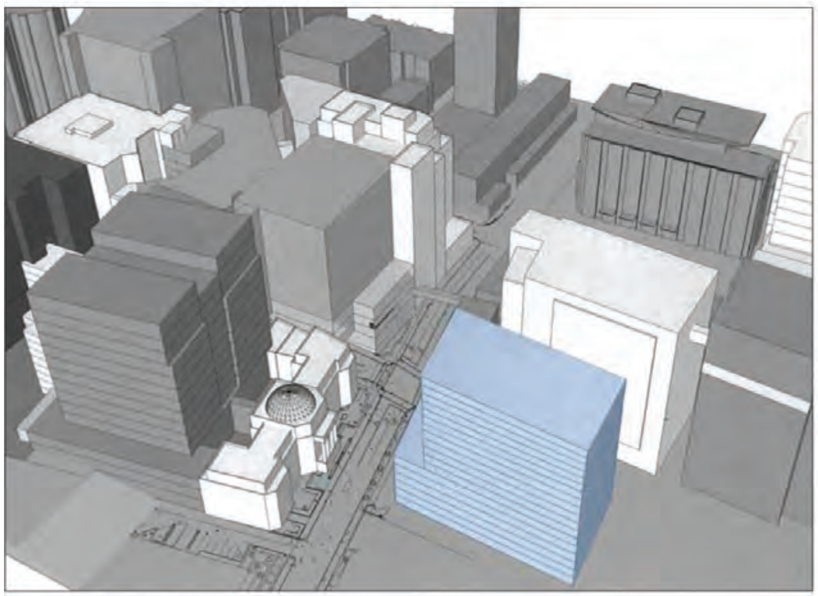
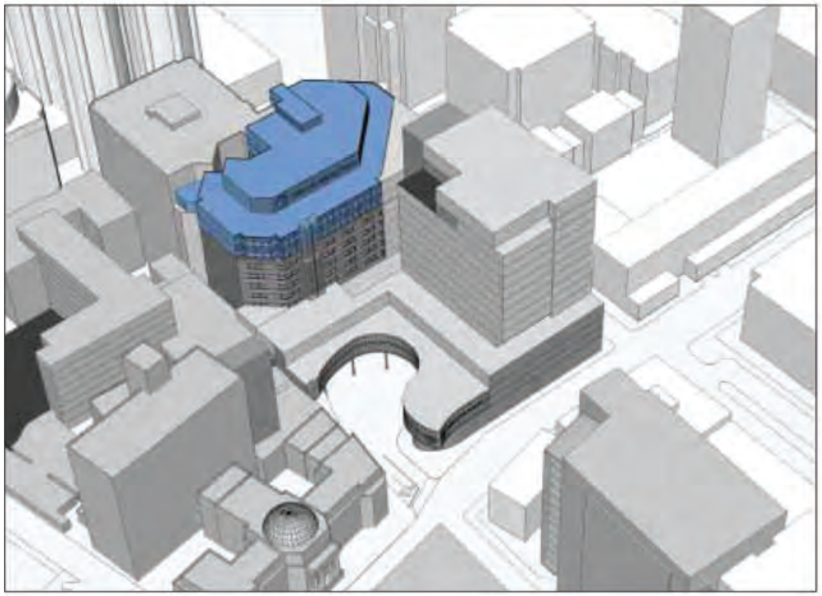


Figure 7-5
Alternative Massing & Stacking – North of Longwood Avenue

Alternative 4:

Main Building Vertical Expansion



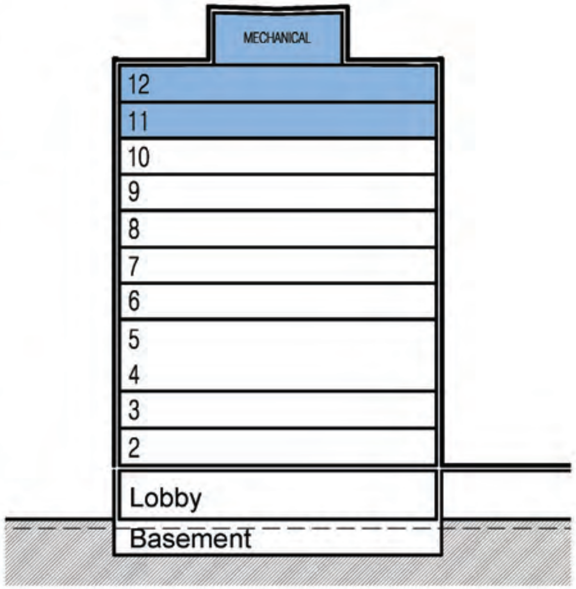
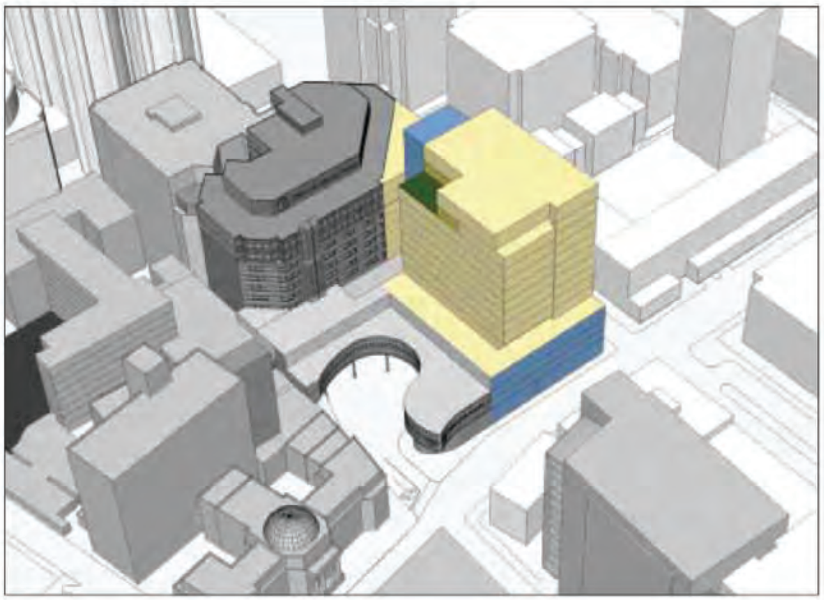


Figure 7-6

Alternative Massing & Stacking – South of Longwood Avenue

Alternative 5:

Clinical Building on Existing Enders Building Site



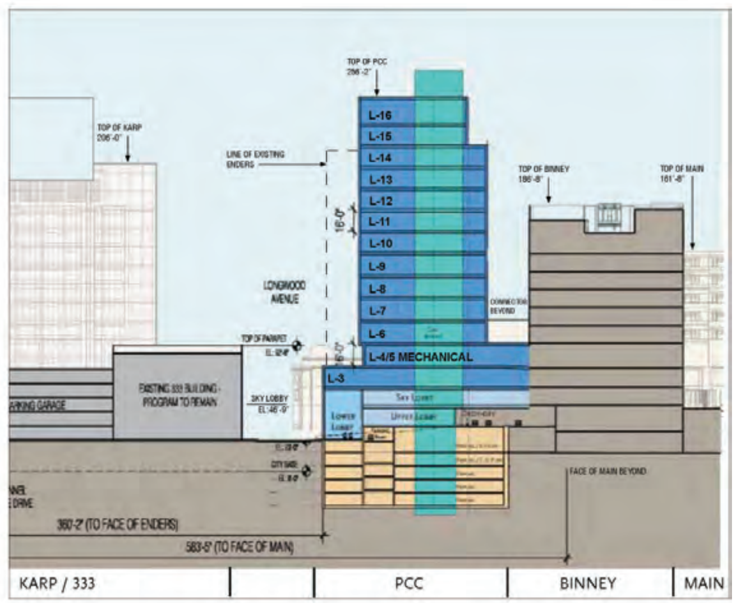


Figure 7-7
Alternative Massing & Stacking – South of Longwood Avenue

Alternative 6:

Clinical Building (Patient Care Clinical Tower) in Motor Court, inlcuding replacement of existing Enders Building

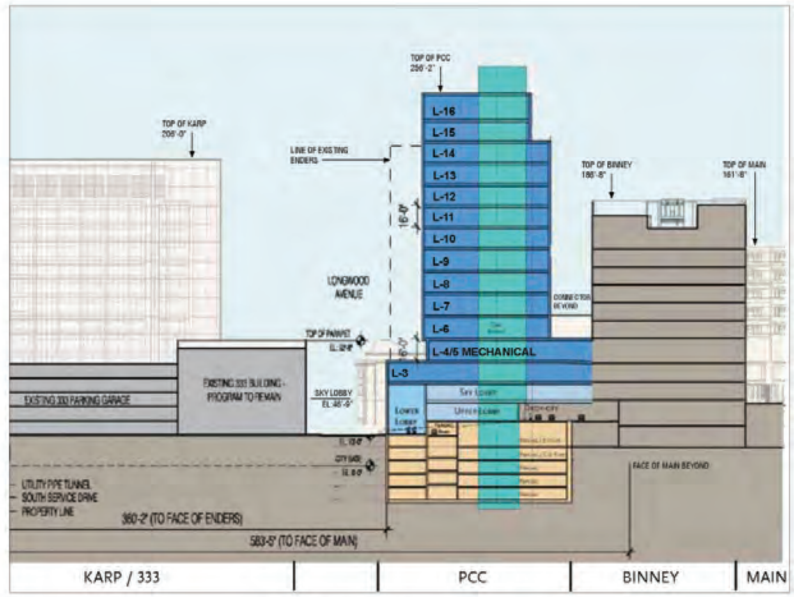
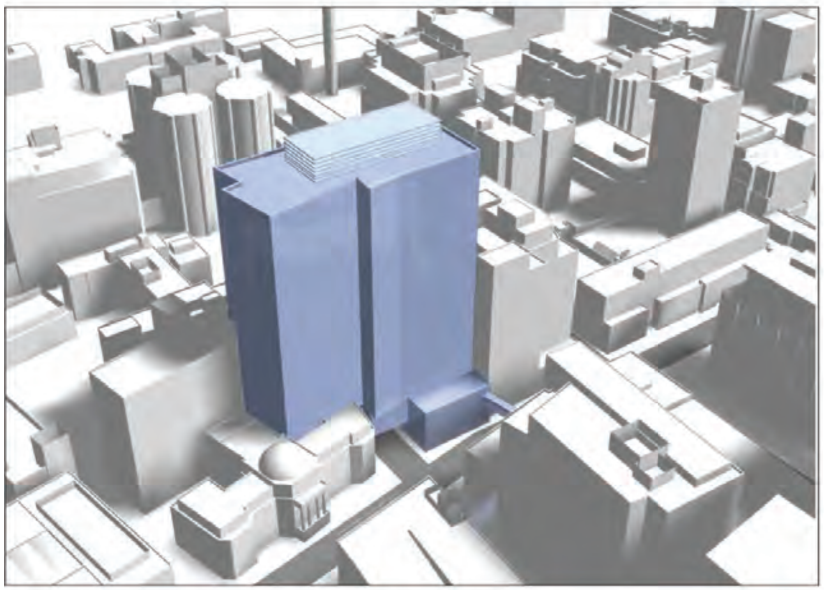


Figure 7-8

Alternative Massing & Stacking – South of Longwood Avenue

Alternative 7:

Clinical Building (Longwood Avenue Tower) in Motor Court retaining existing Enders Building



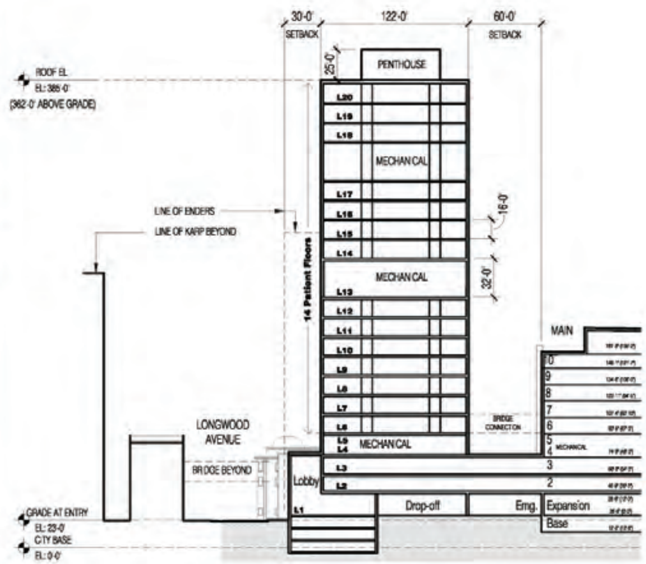
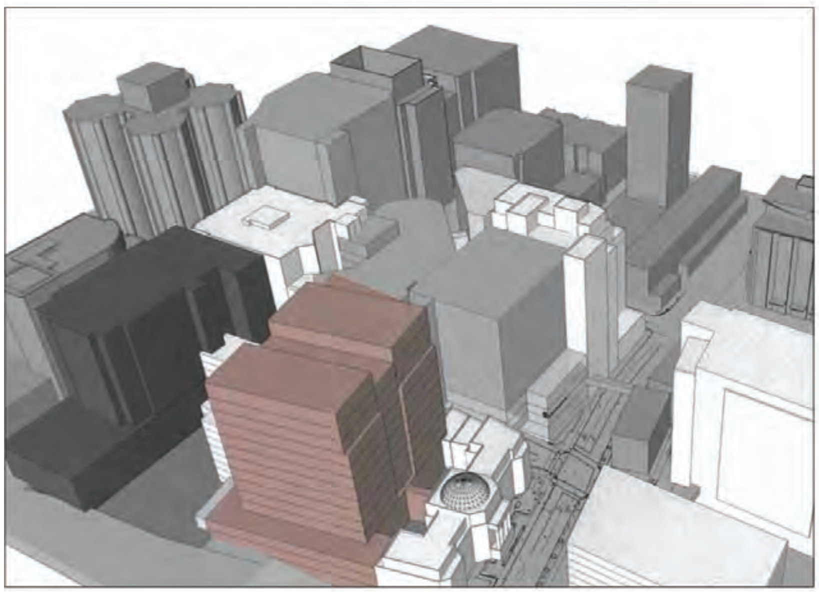


Figure 7-9

Alternative Massing & Stacking – South of Longwood Avenue

Alternative 8:

Clinical Building south of the existing Hunnewell Building



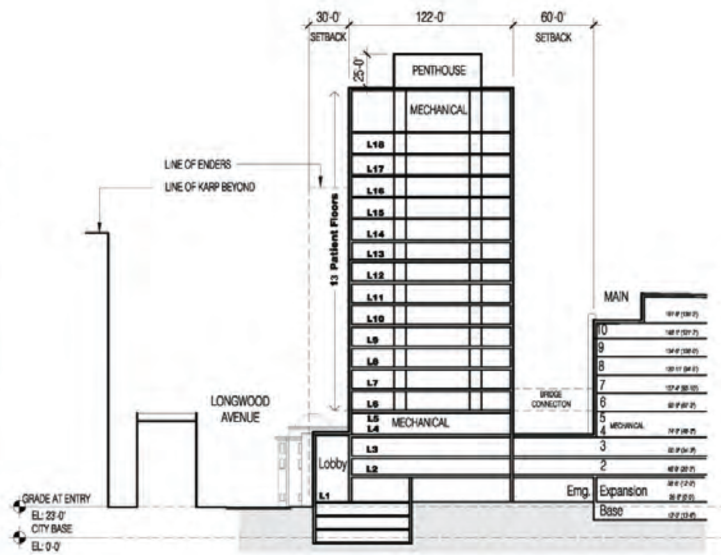


Figure 7-10

Alternative Massing & Stacking – South of Longwood Avenue

Alternative 9

Clinical Building Retaining the Wolbach Building in its entirely with Cantilever above

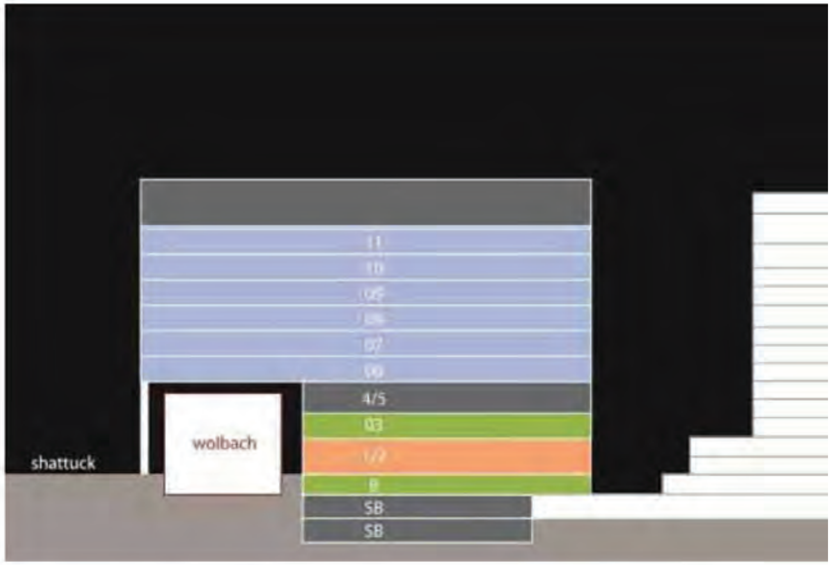


Figure 7-11
Alternatives Based on Wolbach Building Site

Alternative 10

Clinical Building Retaining the Wolbach Building with New Construction to North of Wolbach, obstructing visibility of Wolbach North Facade

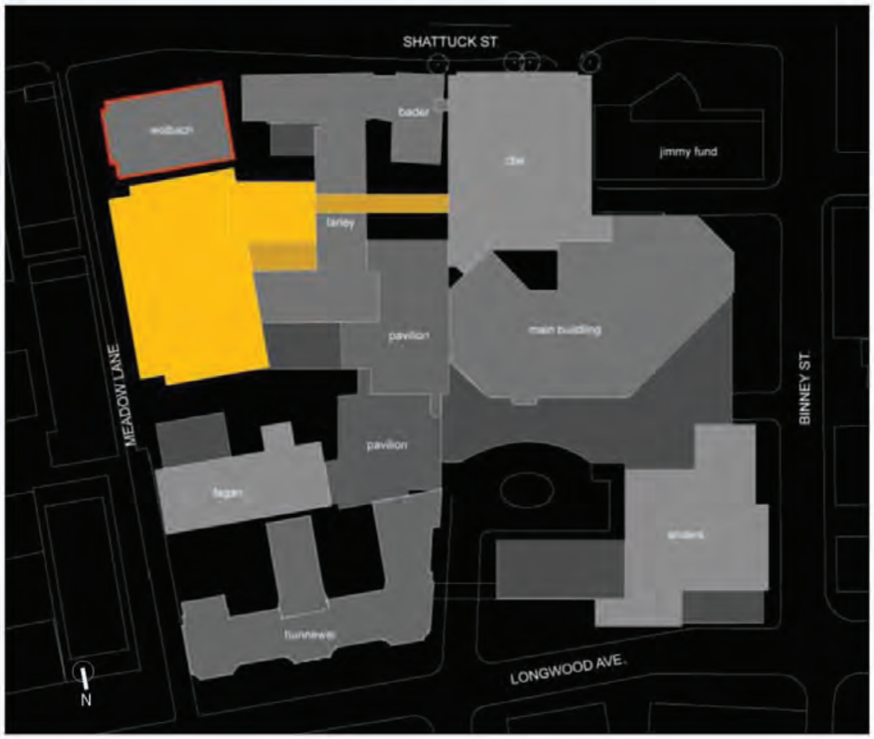


Figure 7-12

Alternatives Based on Wolbach Building Site

Alternative 11

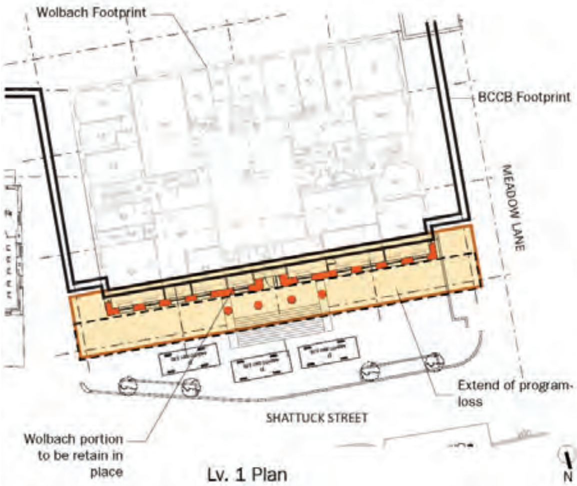
Clinical Building Retaining the Wolbach Building with New Construction to North of Wolbach, retaining visibility of Wolbach North Facade

Alternative 12

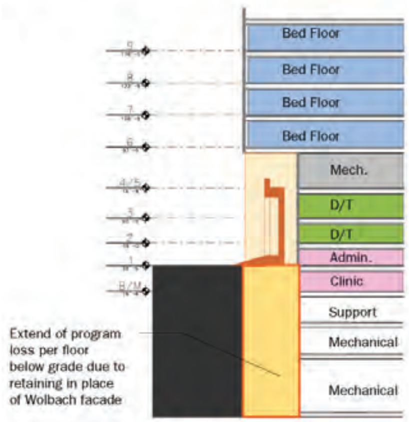
Clinical Building Retaining the Wolbach Building with New Construction to the North closer to Fegan Building

Alternative 13

Clinical Building Retaining the Wolbach south facade and stairs, with New Construction to Rear and Cantilever above



Alt. 13 — Sectional Study



Alt. 13 — Elevation View

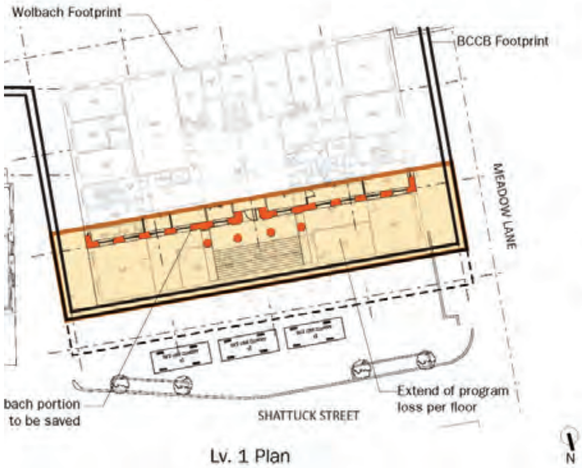
Alt. 13 — Perspective View

Figure 7-15

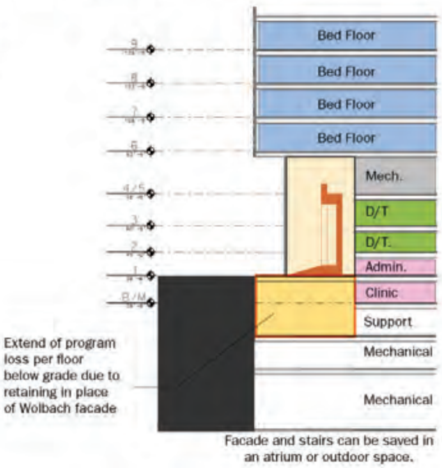
Wolbach Building 'Facedectomy' with New Construction

Alternative 14

Clinical Building involving Dismantling and Reconstructing of Wolbach south façade and stairs in new Atrium Space, with New Construction to Rear and Cantilever above



Alt. 14 — Sectional Study



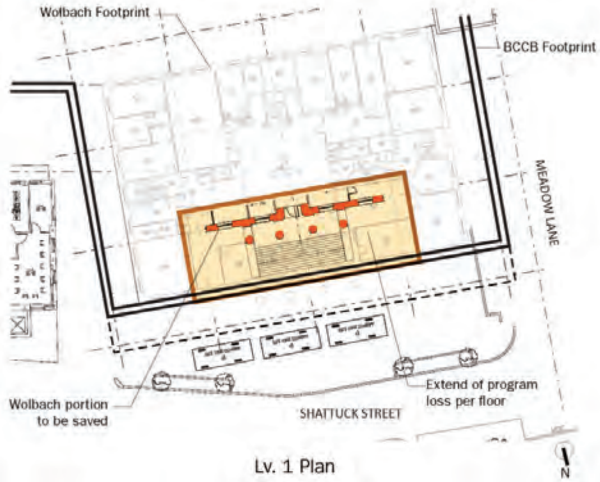
Alt. 14 — Elevation View

Alt. 14 — Perspective View

Figure 7-16
Wolbach Building 'Facedectomy' with New Construction

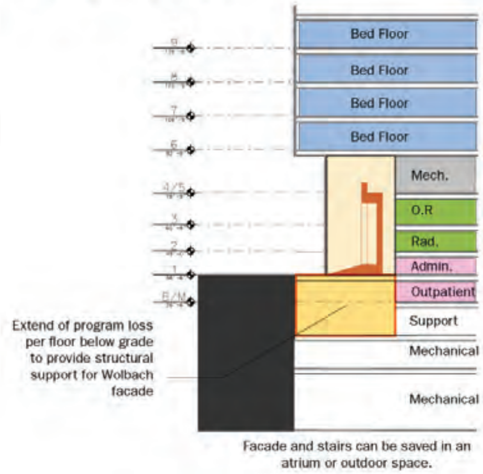
Alternative 15

Clinical Building involving Dismantling and Reconstructing of Wolbach entry portico and stairs in new Atrium Space, with New Construction to the Side of the Portico, Rear and Cantilever above

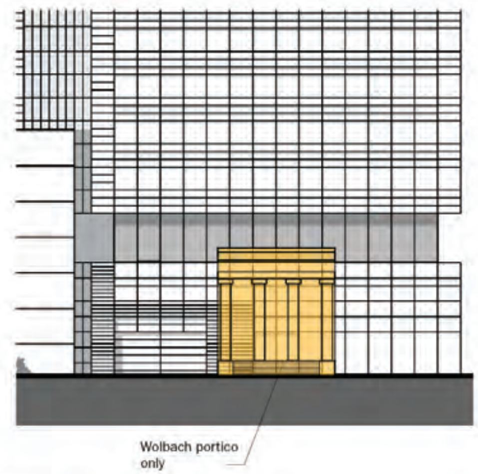


Lv. 1 Plan

Alt. 15 — Sectional Study



Alt.15 — Elevation View



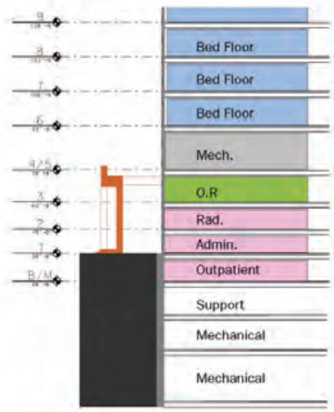
Alt.15 — Perspective View

Figure 7-17
Wolbach Building 'Facedectomy' with New Construction

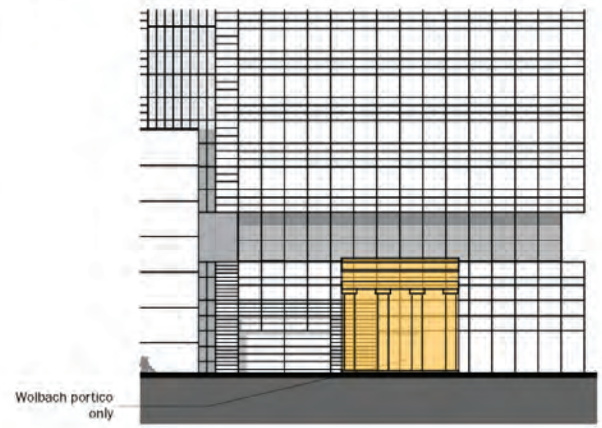
Alternative 16

Clinical Building involving Dismantling and Reconstructing the Wolbach entry portico not including the stairs as stand-alone structure in front of new building

Alt. 16 — Sectional Study



Alt. 16 — Elevation View



Alt. 16 — Perspective View

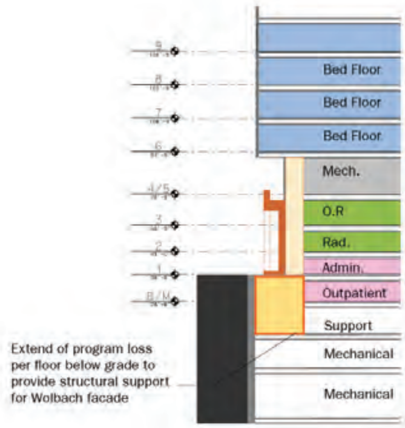
Figure 7-18

Wolbach Building 'Facedectomy' with New Construction

Alternative 17

Clinical Building involving Stabilizing or Dismantling and Reconstructing of Wolbach façade not including stairs as lower level façade integrated into the new Clinical Building's South Facade

Alt. 17 — Sectional Study



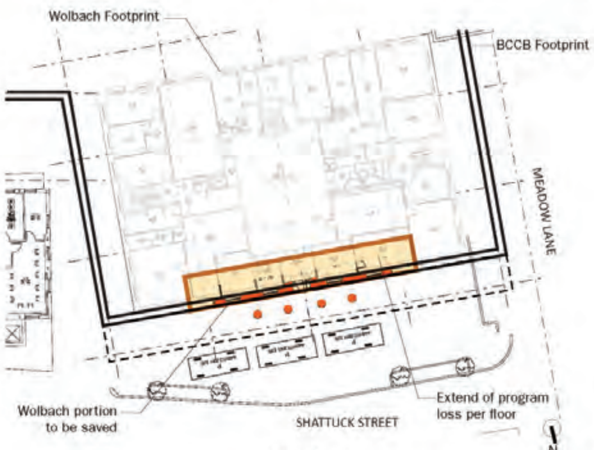
Alt. 17 — Perspective View

Alt. 17 — Perspective View

Figure 7-19
Wolbach Building 'Facedectomy' with New Construction

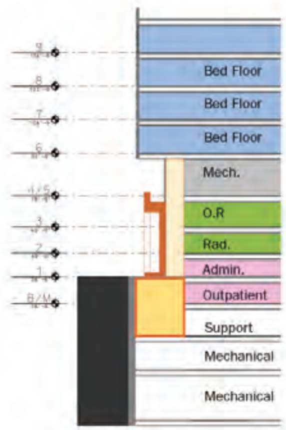
Alternative 18

Clinical Building involving Stabilizing or Dismantling and Reconstructing of Wolbach entry portico not including stairs as feature of new lower level façade with new construction behind

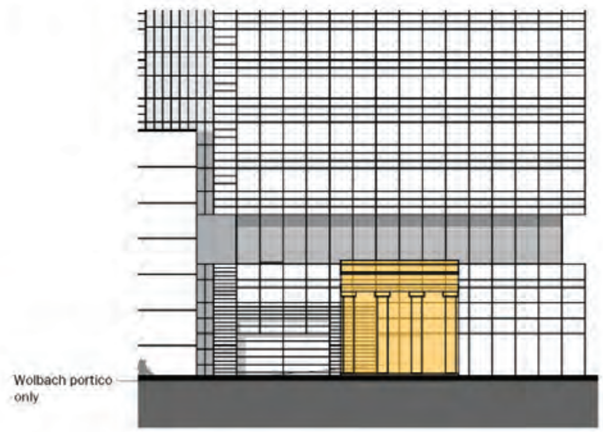


Lv. 1 Plan

Alt. 18 — Sectional Study



Alt. 18 — Perspective View



Alt. 18 — Perspective View

alternatives would not result in meaningful preservation or good urban design and would have excessive increased costs. The proposed site is the sole location within the Boston Children's Hospital Core Campus south of Longwood Avenue which can be physically integrated with Children's existing clinical facilities and can accommodate a sufficiently large footprint to meet its clinical programmatic needs and needs for inpatient care.

7.1.6 Shadow Impacts

As discussed in greater detail in Section 5.2, the BCCB will generate some net new shadow; however, shadows will generally be limited to the Children's Core Campus. At no point during any of the time periods studied will new shadows be cast on Children's Hunnewell Building, or any of the State and National Register listed properties in the vicinity.

During five of the 14 time periods studied (March 21st, 3:00 p.m.; June 21st, 6:00 p.m.; September 21st, 3:00 p.m.; September 21st, 6:00 p.m.; and December 21st, 3:00 p.m.) new shadow will be cast on the adjacent Harvard Medical School campus, a property included in the MHC Inventory. However, shadows will be limited to rooftops and at no point will new shadow be cast on the facades of the buildings that comprise the Medical School campus. In addition, some new shadow will be cast onto the Harvard Medical School Quadrangle during the evening hours during some seasons.

7.1.7 Potential Mitigation Measures

Recognizing that some community members consider the Wolbach Building to be of significance to the history of the Harvard School of Public Health and recognizing the Wolbach Building's clinical history as a hospital for infants, Children's has offered to explore opportunities to mitigate the impact of the removal of the building and to commemorate developments in the field of health.

Documentation: Archival photographic documentation of the Wolbach Building prior to its removal or alteration. The photo documentation would be submitted to the Boston Landmarks Commission and would be available to the public for research or other purposes. The documentation package could also include copies of the original building plans, if available.

Architectural Salvage: Children's would explore the possibility of salvaging key architectural features of the Wolbach Building, such as the Ionic columns located in the façade's portico, for possible reuse as decorative elements in the expanded gardens within the Core Campus to be developed as part of the BCCB project and/or on site as decorative elements of the new building, as appropriate. Children's would invite BLC staff's participation in the on-going design review discussions regarding such architectural salvage.

Interpretive Exhibit: Children's would explore the possibility of developing an interpretive exhibit to commemorate its achievements in the field of pediatric medicine, as well as achievements in the field of public health and particularly achievements of the Harvard School of Public Heath which once occupied the Wolbach Building. The potential interpretive exhibit could be incorporated as an exterior element integrated into reuse in the expanded gardens of architectural features such as the Ionic columns located in the façade's portico, as discussed above, and/or could be installed in a prominent public space such as the new building lobby or Children's Main Lobby. Children's would invite BLC staff's participation in the on-going design review discussions regarding such interpretive exhibit.

Design Review: Children's would invite BLC staff's participation in on-going design review discussions with the Boston Redevelopment Authority design staff and the Boston Civic Design Commission as the architectural plans for the new building advance.

7.1.8 Boston Landmarks Commission Article 85 Review

The Proponent and Project team have met with the staff of the BLC to present the BCCB and to review the alternatives listed above. On May 22, 2013 an Article 85 application was filed with BLC for the proposed demolition activities. As a requirement of the Article 85 process, a community meeting has been scheduled for June 24, 2013. The purpose of the community meeting is to inform the public about the Project and to present alternatives to demolition that have been considered. A BLC public hearing has been scheduled for July 9, 2013 at which time the Commission will consider the Article 85 application.

7.1.9 Massachusetts Historical Commission

Children's will consult with MHC in accordance with M.G.L. Chapter 9, Sections 26-27C (950 CMR 71.00), to assess potential impacts to significant historic resources. In their written comments provided in response to the Environmental Notification Form, MHC expressed its understanding that the Hospital requires additional critical care capable beds, improved technology, and expanded surgery, clinic and clinical support space in order to meet the needs of a rapidly growing patient population. As indicated in the IMPNF/PNF and ENF, Children's is committed to further consultations with MHC and interested parties, such as BLC and the Boston Preservation Alliance, and anticipates developing a Memorandum of Agreement (MOA) with MHC and the interested parties to formalize measures to mitigate project impacts on historic resources.

7.2 Patient and Family Parking Garage Addition

7.2.1 Historic Resources within the Vicinity of the Parking Garage Addition

Given the close proximity of the Patient and Family Parking Garage Addition site to the BCCB site across Longwood Avenue, the historic resources within the vicinity of the two Projects are essentially the same (see Table 7-1 and Figure 7-1).

7.2.2 Potential Impacts

As noted in Chapter 2 Project Description and Chapter 6: Urban Design, the Patient and Family Parking Garage Addition includes the addition of a single parking level to the existing garage structure. Because of the limited nature of the Project, there will be no impacts to the historic resources in the vicinity.

7.2.3 Massachusetts Historical Commission

In their written comments provided in response to the Environmental Notification Form, MHC determined that the Patient and Family Parking Garage Addition will have "no adverse effect" on the historic resources in the vicinity.

7.3 819 Beacon Street

7.3.1 Historic Resources within the Vicinity of 819 Beacon Street

The 819 Beacon Street site currently consists of a surface parking lot with no built structures. In the vicinity of the site are numerous properties and historic districts included in the State and National Registers of Historic Places and the MHC Inventory. Historic districts in the vicinity of the Project site include the Back Bay Fens, the Bay State Road – Back Bay West Architectural Conservation District and the Charles River Basin Historic District. These historic resources are also listed in Table 7-2 below. Figure 7-21 also depicts the historic resources within a one-quarter mile radius of the Project area.

Table 7-2 Historic Resources in ¼ mile of 819 Beacon Street

No.	State and National Register Listed Properties	Address
A	Sears Roebuck Mail Order Store	309 Park Drive
B	Back Bay Fens	Emerald Necklace
C	Charles River Basin Historic District	Both banks of the Charles River from the Eliot Bridge to the Charles River Dam
D	Bay State Road Architectural Conservation District	Bay State Road
E	Fenway Park	24 Yawkey Way
Properties included in the *Inventory of Historic and Archaeological Assets of the Commonwealth*		
1	Audubon Circle District	Park Drive, Beacon, St. Mary's, Aberdeen, Keswick and Medford Streets
2	Richardson Building	5-15 Jersey Street, 76-88 Brookline Avenue
3	Industrial building	2 Cummington Street
4	Nash New England Company Building	30-38 Cummington Street
5	Industrial building	48-60 Cummington Street
6	Industrial building	64-86 Cummington Street
7	William A. Hayes Automobile Garage	96-100 Cummington Street
8	Henry Turner Stable and Blacksmith Shop	110-112 Cummington Street

Table 7-2 Historic Resources in ¼ mile of 819 Beacon Street (Continued)

No.	State and National Register Listed Properties	Address
Properties included in the *Inventory of Historic and Archaeological Assets of the Commonwealth*		
9	Commonwealth Hall Apartment Building	718 Commonwealth Avenue
10	Braman House	714 Commonwealth Avenue
11	Sleeper House	710 Commonwealth Avenue
12	Neal House	708 Commonwealth Avenue
13	Alden Hall Apartment House	704 Commonwealth Avenue
14	Boston University	685-771 Commonwealth Avenue
15	Boston University Communication Park	630-640 Commonwealth Avenue
16	Nash New England Company Building	640 Commonwealth Avenue
17	Temple Adath Israel	602 Commonwealth Avenue
18	Remington Rand Building	635 Commonwealth Avenue
19	Cummings-Wolf House	627 Commonwealth Avenue
20	Fannie Hurlburt House – Commonwealth Hospital	621 Commonwealth Avenue
21	S.M. Slapleigh House – Commonwealth Hospital	619 Commonwealth Avenue
22	Lahey Clinic	605 Commonwealth Avenue
23	590 Commonwealth Avenue Plaza	590 Commonwealth Avenue
24	General Tire and Rubber Company	565 Commonwealth Avenue
25	Hotel Buckminster	645 Beacon Street
26	Industrial building	677 Beacon Street
27	Wedgemere Chambers Apartment House	806-820 Beacon Street
28	WD Vinal & George Wheatland Jr Rowhouses	822-836 Beacon Street
29	Audubon Restaurant	838 Beacon Street
30	Apartment houses	840-842 Beacon Street
31	Arundel Apartment House	844 Beacon Street
32	WD Vinal Apartment House	848-852 Beacon Street
33	Apartment houses	854 Beacon Street
34	Wheatland & Vinal Rowhouses	856-864 Beacon Street
35	WD Vinal Rowhouse	872 Beacon Street
36	Mountfort Chambers	46 Mountfort Street
37	Fairbanks, Mayfield and Auburndale Chambers	98-100 Mountfort Street
38	Melbourne Apartment House	1A Buswell Street
39	Joseph Harris Apartment Building	6 Buswell Street
40	Ambassador Apartments	14 Buswell Street
41	Clemetis Apartment House	22 Buswell Street
42	Carminea Apartment House	24 Buswell Street
43	Longford Apartment Building	1 Buswell Street
44	Melbourne Apartment House	1A Buswell Street
45	Warren Vinal Rowhouses	3-11 Buswell Street
46	Rowhouses	15-17 Buswell Street

Table 7-2 Historic Resources in ¼ mile of 819 Beacon Street (Continued)

No.	State and National Register Listed Properties	Address
47	Plymouth Apartment House	509 Park Drive
48	Royal Apartment House	515 Park Drive
49	Amsterdam Apartment House	519 Park Drive
50	Audubon Court Apartment House	514-522 Park Drive
51	Apartment House	506 Park Drive
52	Rowhouse	27 Buswell Street
53	Warren Vinal Rowhouse	29-47 Buswell Street
54	George White Two Family House	8-16 Aberdeen Street
55	Mark Lewis Row House	25-27 Aberdeen Street
56	Martin Millmore School	85 Peterborough Street
57	Edison Electric Illuminating Transformer Station	693 Beacon Street
58	Back Bay Realty Association Garage	111 Cummington Street
59	Mayfield Chambers	96 Mountfort St
60	Howard Coon Row House	845-847 Beacon St

7.3.2 Archaeological Resources

There are no known archaeological resources on the 819 Beacon Street site. The site consists of a previously developed surface parking lot. A review of the Inventory indicates there are no previously identified archaeological resources within the Project site. Due to previous development and related site disturbances, it is anticipated that the site contains no significant archaeological resources.

7.3.3 Potential Impacts

As discussed in greater detail in Section 5.2, the 819 Beacon Street Project will generate some net new shadow. Given that the 819 Beacon Street site is currently a vacant, surface parking lot, new shadow would be inevitable with any new construction on the site. At no point during any of the time periods studied will new shadow be cast on any of the State and National Register listed properties in the vicinity.

During six of the 14 time periods studied (March 21st, 9:00 a.m.; March 21st, 12:00 p.m.; September 21st, 9:00 a.m.; September 21st, 12:00 p.m.; December 21st, 9:00 a.m.; and December 21st, 12:00 p.m.) new shadow will be cast on properties across Beacon Street. Specifically, shadow will be cast onto the Wedgemere Chambers Apartment House, 806-820 Beacon Street and the WD Vinal / George Whatland Jr. Rowhouses, 822-836 Beacon Street. However these properties, which are included in the MHC Inventory but not the State or National Registers, will only be minimally impacted as the shadows will not alter the buildings' character-defining features.

G:\Projects2\MA\Boston\153005_Childrens\DPIR\historic_resources2.mxd

Boston Children's Hospital

Epsilon

Figure 7-21
Historic Resources Proximate to 819 Beacon Street Site

7.3.4 Massachusetts Historical Commission

Children's will consult with MHC in accordance with M.G.L. Chapter 9, Sections 26-27C (950 CMR 71.00), to assess potential impacts to significant historic resources. The Draft Environmental Impact Report filed with the MEPA office responds to MHC's comments provided following their review of the Environmental Notification Form. Children's is committed to further consultations with MHC and interested parties, such as BLC and the Boston Preservation Alliance, and anticipates developing a Memorandum of Agreement (MOA) with MHC and the interested parties to formalize measures to mitigate Project impacts on historic resources.

Chapter 8.0

Infrastructure Systems Component

8.0 INFRASTRUCTURE SYSTEMS COMPONENT

8.1 Introduction

The Infrastructure Systems Component includes a description of the infrastructure systems that will support the BCH 2013 IMP Amendment Projects. Various Project components will connect to existing City and private utility company systems in the adjacent public streets. Based on initial investigations with the appropriate agencies and utility companies, existing infrastructure systems are available to accept the incremental increase in demand associated with the development and operation of the BCCB and 819 Beacon Street Projects. The following utilities are discussed: wastewater, water, stormwater, natural gas, electricity, and telecommunications. In addition, consideration is given to the sustainable elements of the energy supply provision for the Projects. The proposed Patient and Family Parking Garage Addition will not have any impact related to wastewater, water or stormwater because sewage generation is not anticipated from the addition.

The final design process for the Projects will include required engineering analyses and will adhere to applicable protocols and design standards, ensuring that the proposed buildings are properly supported by, and in turn properly use, the City's infrastructure. Detailed design of the Projects' utility systems will proceed in conjunction with the final design of the Projects and their mechanical systems.

The systems discussed below include those owned or managed by the Boston Water and Sewer Commission (BWSC), private utility companies, and on-site infrastructure systems. There will be close coordination among these entities and with the Projects' engineers and architects during subsequent reviews, and design and construction processes.

All improvements and connections to BWSC infrastructure will be reviewed by BWSC as part of the BWSC site plan review process. This process includes a comprehensive design review of the proposed service connections, assessment of system demands and capacity and establishment of service accounts.

8.2 Regulatory Framework

This chapter, in addition to a description of existing and future infrastructure connections, discusses the regulatory framework of utility connection reviews and standards. All connections will be designed and constructed in accordance with city, state, and federal standards.

- BWSC approvals will be required for all water, sewer, and stormwater systems.
- Sewer connection self-certification and/or permits will be filed with the Massachusetts Department of Environmental Protection (MassDEP) as required.

- The Boston Fire Department will review the proposed Projects with respect to fire protection measures such as fire department connections, hydrants, and standpipes.
- Design of the energy systems (gas and electric) will be coordinated with the respective system owners.
- New utility connections will be authorized by the Boston Public Works Department through the street opening permit process, as required.
- Additional information on the regulatory framework for each utility system is included in subsequent sections of this chapter.

A more complete list of state and local permits anticipated in connection with the Projects' infrastructure is included in Chapter 2.

8.3 Water Quality and Stormwater Management

The Projects are expected to result in beneficial changes in both drainage patterns and water quality. Site-by-site descriptions of stormwater management are included in the following sections.

The proposed Project sites are currently mostly impervious to rainfall percolation. The BCCB site is currently 68% impervious. The 819 Beacon Street site is currently 100% impervious. Therefore, construction of the Projects is not expected to produce significant increases in the rate and volume of stormwater runoff. The proposed Patient and Family Parking Garage Addition is not expected to have any impact on stormwater rate, quantity and quality.

In addition, the Proponent is exploring the use of rainwater harvesting tanks, stormwater infiltration systems, as well as vegetated terrace areas as potential stormwater management systems for the Projects. The 819 Beacon Street Project is currently contemplating an approximately 7,000 sf vegetated roof area. The possible implementation of these stormwater management systems will have a positive impact on the quality of the stormwater discharged from the Project sites. When put in place, rooftop vegetation and subsurface stormwater infiltration create an opportunity to replicate the natural water cycle in a dense urban core environment.

Stormwater management controls will be established in compliance with BWSC standards, and the Projects will reduce peak flows, pollutants, or sediments that would potentially impact the Charles River. In conjunction with the site plan and the General Service Application, the Proponent will submit a Stormwater Management Plan to the BWSC. Compliance with the standards for the final site design will be reviewed as part of the BWSC site plan review process. Furthermore, the Proponent intends to coordinate with BWSC regarding existing drainage at the Core Campus.

8.3.1 MassDEP Stormwater Management Policy Standards

In March 1997, MassDEP adopted a new Stormwater Management Policy to address non-point source pollution. In 1997, MassDEP published the Massachusetts Stormwater Handbook as guidance on the Stormwater Policy, which was revised in February 2008. The Policy prescribes specific stormwater management standards for redevelopment projects, including urban pollutant removal criteria for projects that may impact environmental resource areas. Compliance is achieved through the implementation of Best Management Practices (BMPs) in the stormwater management design. The Policy is administered locally pursuant to MGL Ch. 131, s. 40.

A brief explanation of each Policy Standard and the system compliance is provided below:

Standard #1: *No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

Compliance: The proposed designs will comply with this Standard. No new untreated stormwater will be directly discharged to, nor will erosion be caused to wetlands or waters of the Commonwealth as a result of stormwater discharges related to the proposed Projects.

The Proponent is exploring rainwater harvesting tanks and/or stormwater infiltration systems and vegetated terrace areas for the BCCB and 819 Beacon Street. For example, the 819 Beacon Street Project is currently contemplating an approximately 7,000 sf vegetated roof area. It is the Proponent's intention to treat runoff whether through the options listed above or mechanical treatment units prior to discharge into the public storm drain system.

Standard #2: *Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.*

Compliance: The proposed Projects will be designed to comply with this Standard. The existing discharge rate will be met or decreased as a result of the improvements associated with the proposed Projects. The quantities shown below are representative of pre-development and maximum post-development discharge rates. The implementation of potential rainwater harvesting tanks, green roofs, and infiltration systems will help achieve these numbers for the proposed Projects. The assumed time of concentration used to determine the values was five minutes.

Site	Event (yr)	Pre-development and Maximum Post-Development Discharge Rate (cfs)
BCCB	2	1.91
	10	3.14
	25	3.94
	100	4.91
819 Beacon Street	2	4.71
	10	6.82
	25	8.17
	100	9.81

Standard #3: Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to the maximum extent practicable. The annual recharge from the post development site should approximate the annual recharge from the pre-development or existing site conditions, based on soil types.

Compliance: The proposed Projects will explore the use of recharge to the maximum extent feasible.

Standard #4: For new development, stormwater management systems must be designed to remove 80% of the average annual load (post-development conditions) of Total Suspended Solids (TSS). It is presumed that this standard is met when: Suitable nonstructural practices for source control and pollution prevention are implemented; Stormwater management best management practices (BMPs) are sized to capture the prescribed runoff volume; and Stormwater management BMPs are maintained as designed.

Compliance: The proposed designs will include BMPs intended to remove TSS. Within the proposed Projects' limit of work, there will be mostly roof, landscaping, and pedestrian areas. Any paved areas that would contribute unwanted sediments or pollutants to the existing storm drain system will be collected by deep sump, hooded catch basins and conveyed through water quality units or tanks before discharging into the BWSC system.

Standard #5: For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If, through source control and/or pollution prevention, all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be *suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L.c. 21, §§ 26-53 and the regulations promulgated there under at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.*

Compliance: The proposed Projects are not associated with Higher Potential Pollutant Loads.

Standard #6: *Stormwater discharge to critical areas must utilize certain stormwater management BMPs approved for critical areas. Critical areas are Outstanding Resource Waters (ORWs), shellfish beds, swimming beaches, cold-water fisheries and recharge areas for public water supplies.*

Compliance: The proposed Projects do not discharge to a critical area.

Standard #7: *A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural stormwater best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.*

Compliance: The proposed designs will comply with this Standard. The proposed Projects will comply with the Stormwater Management Standards to the extent practicable and are anticipated to improve upon existing conditions.

Standard #8: *Erosion and sediment controls must be implemented to prevent impacts during construction or land disturbance activities.*

Compliance: Sedimentation and erosion controls will be incorporated as part of the design of these Projects and employed during construction.

Standard 9: *A Long-Term Operation and Maintenance (O&M) Plan shall be developed and implemented to ensure that stormwater management systems function as designed.*

Compliance: An O&M Plan will be developed during the design process of the buildings.

Standard 10: *All illicit discharges to the stormwater management system are prohibited.*

Compliance: There will be no illicit connections associated with the proposed Projects.

8.4 Protection of Utilities

Existing public and private infrastructure located within the public right-of-way will be protected during construction. The installation of proposed utilities within the public way will be in accordance with BWSC, Boston Public Works Department, the Dig-Safe Program, and governing utility company requirements. All necessary permits will be obtained before the commencement of work. Specific methods for constructing proposed utilities where they are near to, or connect with, existing water, sewer, and storm drain facilities will be reviewed by the BWSC as part of its site plan review process.

8.5 Construction Coordination

The Proponent will continue to work and coordinate with the utility companies to assure compliance and integrity to the proposed Projects.

8.6 Sustainable Design/Energy Conservation

Energy conservation measures will be an integral part of the Projects' infrastructure designs. The buildings will employ energy-efficient and water-conservation features for mechanical, electrical, architectural, and structural systems, assemblies, and materials where possible. Mechanical and HVAC systems will be installed to the current industry standards and full cooperation with the local utility providers will be maintained during design and construction. Additional information on sustainable design is provided in Chapter 5.

In connection with construction of the BCCB, Children's will develop a Central Utilities Plant in the sub-basement of the BCCB that will include a 1,200 kilowatt (kW) gas-fired reciprocating engine and waste heat boiler (together a CHP unit) and two 30 thousand pound per hour (kpph) dual-fuel fire tube boilers. In addition, electrically operated chiller units will be placed in the sub-basement of the BCCB and will be sized to reliably provide 100% of the chilled water needs for the BCCB.

CHP is the simultaneous production of electrical or mechanical energy (power) and useful thermal energy from a single energy source. By capturing and using heat energy from an effluent stream that otherwise would be discharged to the environment, CHP systems can operate at efficiencies that are not achieved when heat and power are produced through separate processes.

8.7 Boston Children's Clinical Building

8.7.1 Wastewater

Local sanitary sewer service is provided by the BWSC. The Core Campus site is serviced by sewer mains in the adjacent public and privately-owned streets. All wastewater collected by BWSC facilities are conveyed to the Massachusetts Water Resources Authority's (MWRA) Deer Island treatment plant where, after treatment, it is discharged into Massachusetts Bay.

Adjacent to the Core Campus are the following sanitary sewer lines:

- Two 12-inch gravity sewers in Binney Street;
- 39 x 41-1/4-inch gravity sewer in Blackfan Circle;
- 12-inch gravity sewer in Children's Way;
- 12-inch gravity sewer in Shattuck Street; and
- 15-inch and 24-inch gravity sewer in Longwood Avenue.

The BCCB will require either new or modified sanitary sewer service. The BCCB, which will consist of clinical space and clinical support space is located on the BCH Core Campus and will generate approximately 77,525 gallons per day (gpd) of wastewater, according to the Massachusetts State Environmental Code (Title V) at 310 CMR 15.203 as indicated in Table 8-1. The CUP will be located on the Core Campus in the basement of the BCCB.

Table 8-1 Net New Wastewater Generation – Full Project Build Out

Proposed Project Component	Gross Floor Area (gsf)	Flow Rate (gpd)	Sewage Generation (gpd)
<u>BCCB</u>			
Clinical	354,700	200/1,000 sf	70,940
Clinical support	87,800	75/1,000 sf	6,585
Total New Wastewater Generation			**77,525**

The BCCB, will generate over 50,000 gpd of sewage. Currently, buildings generating these flow rates are required to file a Sewer Connection Permit with MassDEP. Under the current design, the CUP is not expected to generate any appreciable quantity of sewage.

The sewer service connections at the Core Campus may tie directly into the 15-inch main located in Longwood Avenue or the 12-inch main located in Shattuck Street.

The Proponent will coordinate with the BWSC on the design of the proposed connections to the sewer system. In addition, the Proponent will submit a General Service Application and site plan for review as the Projects progress.

8.7.2 Water Infrastructure

Domestic and fire protection water is provided by the BWSC. There are five different water systems/service districts within the City, which provide service to portions of the City based on ground surface elevation. The five systems are southern low (commonly known as low service), southern high (commonly known as high service), southern extra high, northern low, and northern high. The Core Campus is serviced by the BWSC southern low water system. BWSC has the following water mains in the streets adjacent to the Core Campus:

- 8-inch main in Binney Street;
- 12-inch main in Blackfan Circle;
- 8-inch and 12-inch main in Children's Way;
- 12-inch main in Shattuck Street; and
- 12-inch main in Longwood Avenue.

Domestic water demand is based on estimated sewage generation with an added factor of 10 percent for consumption, system losses, and other use. Based upon these assumptions, the BCCB will require approximately 85,278 gallons of water per day. Under the current design, the CUP facility is not expected to require any appreciable quantity of water.

The proposed BCCB and CUP facility will both connect to the BWSC's low service system located on Longwood Avenue. Service connections required by the proposed Project will meet the applicable city and state codes and standards, including cross-connection backflow prevention.

Compliance with the standards for the water system service connections will be reviewed as part of BWSC's site plan review process. The review includes, but is not limited to, sizing of domestic water and fire protection services, calculation of meter sizing, backflow prevention design, and location of hydrants and siamese connections conformance to BWSC and Boston Fire Department requirements.

8.7.3 Fire Protection System

The fire protection system for the BCCB Project will be designed in compliance with the latest Massachusetts Building Code, which refers to the *National Fire Protection Association Handbook.* In addition, the fire protection system will meet all applicable standards and requirements as set forth in the *Boston Fire Prevention Code*, the *Massachusetts Fire Prevention Regulation* (527 CMR), and the *Massachusetts Fire Prevention Laws* (MGL CH 148).

Compliance with the standards for the fire protection system connections will be determined as part of BWSC's site plan review process.

At the BCCB, the proposed fire suppression system may connect to the BWSC's low service system located in Longwood Avenue. Water service connections required by the Project will be designed to meet the applicable city and state codes and standards, including cross-connection backflow prevention.

In addition to fire protection connections to the BWSC system, the current edition of the Massachusetts State Building Code requires that high-rise buildings in certain seismic design categories provide on-site storage of a sufficient volume of water to service the most demanding zone of the building fire protection system for a period of 90 minutes. To meet this requirement, the BCCB will include storage for 150,000 gallons of fire protection water.

Emergency vehicle site access to the BCCB, including the siamese building connections, will be provided. The Proponent will seek input from the Boston Fire Department as the Project's designs progress.

The Proponent will obtain required permits pursuant to the Boston Fire Prevention Code, CMR 527 and MGL Chapter 148.

8.7.4 Stormwater

The Core Campus is serviced by a 15-inch and 24-inch drain line in Longwood Avenue which then conveys stormwater down Blackfan Street. A 12-inch drain line is also located in Shattuck Street connecting to the same system.

The existing BCCB site is currently 68% impervious and includes little to no stormwater controls. Much of the site's runoff discharges untreated to the drainage system in the surrounding streets.

Construction of the proposed Project is expected to result in a decrease in the rate and quantity of stormwater runoff from the site. As part of the BWSC's review process, the Proponent will consider measures wherever applicable to minimize flows from the site.

The Proponent is exploring the use of rainwater harvesting tanks and/or stormwater infiltration systems as well as vegetated terrace areas on the BCCB site. The potential infiltration stormwater management options will promote the infiltration of stormwater runoff into the ground and evapotranspiration and reduce the rate and quantity of stormwater discharge to the drainage system. Rainwater harvesting would reduce both runoff and domestic water demand.

8.7.5 Natural Gas Service

It is anticipated that National Grid will provide gas service from a 20 psi main for the BCCB, and if constructed, the CUP Facility. The demand associated with the CUP being considered is such that National Grid would provide reinforcement to the existing grid to handle the load. The Proponent will work with National Grid to confirm adequate system capacity as the Project designs are finalized.

The estimated combined gas demand for the BCCB and CUP is 40,000 cubic feet per hour (CFH).

8.7.6 Electrical Service

The electrical service for the BCCB building is anticipated to be provided by the local electrical utility, NSTAR. The BCCB will require an NSTAR service entrance room and 15 KV, three phase, three wire switchgear lineup. The potential CUP facility, located within the BCCB, may also require a separate NSTAR service entrance room and a 15 KV, three phase, three wire switchgear lineup. The estimated electrical output for the BCCB is 3.4 MW. The estimated electrical load for the CUP facility is 2 MW.

8.7.7 Telecommunications

The Proponent will select private telecommunications companies to provide telephone, cable, and data services. There are several potential candidates with substantial Boston networks capable of providing service. Upon selection of a provider or providers, the Proponent will coordinate service connection locations and obtain appropriate approvals.

8.8 819 Beacon Street

8.8.1 Wastewater

Local sanitary sewer service is provided by the BWSC. The 819 Beacon Street site is serviced by sewer mains in the adjacent public and privately-owned streets. All wastewater collected by BWSC facilities are conveyed to the Massachusetts Water Resources Authority's (MWRA) Deer Island treatment plant where, after treatment, it is discharged into Massachusetts Bay.

The 819 Beacon Street site is located adjacent to 12-inch and 20-inch sewer mains located along Beacon Street.

The 819 Beacon Street Project will require new sanitary sewer service. The site will be primarily office and administrative space which will generate approximately 15,696 gpd of wastewater as indicated in Table 8-2.

Table 8-2 Net New Wastewater Generation – Full Project Build Out

Proposed Project Component	Gross Floor Area (gsf)	Flow Rate (gpd)	Sewage Generation (gpd)
Office/Administrative	202,950	75/1,000 sf	15,222
Retail	9,480	50/1,000 sf	474
Total New Wastewater Generation			**15,696**

At 212,430 sf, the 819 Beacon Street building will generate over 15,000 gpd of sewage. Buildings generating flow rates between 15,000 gpd and 50,000 gpd are currently required to file a Sewer Connection Self-certification with MassDEP.

It will potentially tie directly into the 20-inch main located in Beacon Street.

The Proponent will coordinate with the BWSC on the design of the proposed connections to the sewer system. In addition, the Proponent will submit a General Service Application and site plan for review as the Projects progress.

8.8.2 Water Infrastructure

Domestic and fire protection water is provided by the BWSC. BWSC has a 12-inch main in Beacon Street adjacent to the 819 Beacon Street site.

Domestic water demand is based on estimated sewage generation with an added factor of 10 percent for consumption, system losses, and other use. Based upon these assumptions, 819 Beacon Street will require approximately 17,266 gallons of water per day.

The 819 Beacon Street building will most likely connect to the existing water main in Beacon Street. Service connections required by the proposed Project will meet the applicable city and state codes and standards, including cross-connection backflow prevention.

Compliance with the standards for the water system service connections will be reviewed as part of BWSC's site plan review process. The review includes, but is not limited to, sizing of domestic water and fire protection services, calculation of meter sizing, backflow prevention design, and location of hydrants and siamese connections conformance to BWSC and Boston Fire Department requirements.

8.8.3 Fire Protection System

The fire protection systems for 819 Beacon Street will be designed in compliance with the latest Massachusetts Building Code, which refers to the *National Fire Protection Association Handbook.* In addition, the fire protection system will meet all applicable standards and requirements as set forth in the Boston Fire Prevention Code, the Massachusetts Fire Prevention Regulation (527 CMR), and the Massachusetts Fire Prevention Laws (MGL CH 148).

Compliance with the standards for the fire protection system connections will be determined as part of BWSC's site plan review process.

For the 819 Beacon Street building, the proposed fire suppression system may connect to BWSC's low service system location in Beacon Street. Water service connections required by the Project will be designed to meet the applicable city and state codes and standards, including cross-connection backflow prevention.

In addition to fire protection connections to the BWSC system, the current edition of the Massachusetts State Building Code requires that high-rise buildings in certain seismic design categories provide on-site storage of a sufficient volume of water to service the most demanding zone of the building fire protection system for a period of 90 minutes.

Emergency vehicle site access to the Project, including the siamese building connections, will be provided. The Proponent will seek input from the Boston Fire Department as the Project's design progresses.

The Proponent will obtain required permits pursuant to the Boston Fire Prevention Code, CMR 527 and MGL Chapter 148.

8.8.4 Stormwater

The 819 Beacon Street site will potentially tie into either a 12-inch line located in Maitland Street and/or a 24-inch line located in Beacon Street. Preference will be given to the 12-inch line in Maitland Street as noted by reviewers.

The 819 Beacon Street site is currently 100% impervious. The 819 Beacon Street Project is currently contemplating an approximately 7,000 sf vegetated roof area, which will reduce stormwater runoff. Therefore, construction of the Project is not expected to produce an increase in the rate and volume of stormwater runoff.

In addition, the Proponent is exploring the use of rainwater harvesting tanks and/or stormwater infiltration system on the 819 Beacon Street site. These potential infiltration stormwater management options will promote the infiltration of stormwater runoff into the ground and evapotranspiration and reduce the rate and quantity of stormwater discharge to the drainage system. Rainwater harvesting would reduce both runoff and domestic water demand.

With the potential implementation of these stormwater management options, the construction of the proposed 819 Beacon Street Project is expected to result in a decrease in the rate and quantity of stormwater runoff from the site. As part of the BWSC's review process, the Proponent will consider measures wherever applicable to minimize flows from the site.

8.8.5 Natural Gas Service

It is anticipated that National Grid will provide gas service. The Proponent will work with National Grid to confirm adequate system capacity as the Project designs are finalized.

The estimated gas demand for 819 Beacon Street is 6,500 CFH.

8.8.6 Electrical Service

The electrical service for the building is anticipated to be provided by the local electrical utility, NSTAR. The proposed 819 Beacon Street building will require an exterior pad mounted transformer. The estimated electrical load for the 819 Beacon Street Project is 2.1 MW.

8.8.7 Telecommunications

The Proponent will select private telecommunications companies to provide telephone, cable, and data services. There are several potential candidates with substantial Boston networks capable of providing service. Upon selection of a provider or providers, the Proponent will coordinate service connection locations and obtain appropriate approvals.

8.9 Conclusion

The Projects will use the existing water, sewer, electrical, and natural gas systems available in public streets adjacent to the Project sites. Research and coordination to date indicate that these services are adequately sized to support the increased demands associated with the development of the Projects. The proposed Projects are consistent with MassDEP's Stormwater Management Policy, and incorporate a number of sustainable design and energy conservation measures.

Chapter 9.0

Greenhouse Gas Analysis

9.0 GREENHOUSE GAS ANALYSIS

9.1 Introduction

This section addresses greenhouse gas (GHG) emissions generated by the BCCB and 819 Beacon Street Projects and options that may reduce those emissions, in accordance with the MEPA Greenhouse Gas Emissions Policy and Protocol (Policy). The Policy requires that certain projects undergoing review by the MEPA Office quantify the project's GHG emissions and identify measures to avoid, minimize, or mitigate such emissions. In addition to quantifying project-related GHG emissions, the GHG Policy also requires proponents to quantify the impact of proposed mitigation in terms of energy savings and GHG emissions.

The analysis provided herein focuses on emissions of carbon dioxide (CO_2). As noted in the GHG Policy, there are other GHGs, but CO_2 is the predominant contributor to global warming. Furthermore, CO_2 is by far the predominant GHG emitted from the types of sources related to the Projects and CO_2 emissions can be calculated for these source types with readily available data.

9.1.1 GHG Policy Summary

The GHG Policy requires the Proponent to calculate and compare the GHG emissions in two cases, each of which incorporates both stationary source and transportation components:

Case 1 is the baseline from which progress in energy use and GHG emissions reductions are measured. The Baseline case would be a building that is designed to meet the current Massachusetts Building Code (Code) 8th edition, which incorporates the building energy provisions of the International Energy Conservation Code (IECC) 2009. However, pursuant to the Green Communities Act, the Proponent anticipates that the IECC 2012 will be incorporated into the Code shortly. In this analysis, as agreed upon with the MEPA Office and DOER on December 11, 2012, IECC 2012 is used to define the Baseline.

Offsite transportation-related emissions would be modeled for the "build condition", without improvements or mitigation measures proposed by the Project, developed using the standard methodology outlined in the EEA/EOT Guidelines for EIR/EIS Traffic Impact Assessment. However, because the TDM program and other aspects of transportation planning and mitigation are in part prescriptive by City requirements, and in part negotiated, it is not practical to determine a build-without-mitigation case. Therefore, the baseline includes all of the Projects' proposed TDM measures. The transportation analysis and details of the mitigation measures are described in Chapters 3 and 4.

Case 2 represents the proposed Project, including measures incorporated into the building shell, its mechanical, electrical and plumbing (MEP) systems, lighting design, and other factors that go above and beyond those required for Code compliance.

Boston has elected to include the state's optional Stretch (Energy) Code into its building requirements and the Proponent anticipates that a new Stretch Code (SCII) will be adopted sometime in 2013 and be effective in 2014. Although SCII has not yet been proposed by the BBRS, it is anticipated that it will require energy use of new large buildings to be 12-15% below the baseline of IECC 2012. Therefore, since both buildings are expected to seek building permits in 2014 or later, this analysis utilizes compliance with the expected SCII to be the minimum criterion for energy, and hence GHG, performance.

Transportation analysis for Case 2 is the same as for Case 1 and includes the effects all of the TDM measures proposed as part of the Projects. That is, no additional traffic mitigation measures are proposed for either building.

In addition to these two cases, the Policy requires that all feasible mitigation measures that could reduce GHG emissions be considered. The Proponent has evaluated numerous stationary source GHG mitigation techniques comprised of design parameters and applied technologies, and construction and operating parameters, which are **generally referred to herein as "technologies" for convenience**. Some have been adopted, some designated for later evaluation for possible incorporation into the Projects as design progresses, and some have been eliminated from further consideration for one or both of the Projects.

9.1.2 Mitigation Technologies

The analysis addresses two independent buildings—essentially two GHG analyses, one for the BCCB and one for the 819 Beacon Street Project.

GHG mitigation techniques are a mix of design techniques, applied technologies and operating methodologies. The Proponent has examined approximately 40 mitigation technologies for application to one or both of the Projects. Each technology has been placed in one of four categories:

- "P" - Proposed as part of the Project (included in Case 2);
- "A" - Under study for possible inclusion, and briefly analyzed herein, but not committed to at this time;
- "S" - To be studied at some time in the future as design progresses;
- "X" - Rejected or not applicable.

A matrix of the technologies and buildings, and which category a technology falls into, is presented in Table 9-1. This matrix is indicative of the extensive and detailed efforts the Proponent is using to consider, early in the design of each building, various methods to maximize energy efficiency and mitigate GHG emissions.

Technologies grouped under Energy Use Reduction and Energy Generation are the heart of GHG mitigation measures. Other Related Technologies include additional measures that may indirectly affect GHG emissions, although their primary purpose is to accomplish other goals. For these measures, the GHG emissions reduction potentials are difficult to quantify with any reasonable accuracy and are numerically expected to be a small part of the overall mitigation. They are, therefore, not quantified in this analysis.

9.1.3 GHG Analysis

GHG emissions can be categorized into two groups: emissions related to activities that are stationary on the site and emissions related to transportation. Activities on the site can be further broken down into direct sources and indirect sources: direct sources include GHG emissions from fuel combustion and indirect sources include GHG emissions associated with electricity and other forms of energy that are used on the site and are imported from off-site power plants via the regional electrical grid or local steam distribution system.

Emissions from stationary sources are discussed in Sections 9.2 (BCCB) and 9.3 (819 Beacon Street), while emissions and mitigation measures related to transportation are discussed in Section 9.4. The two are combined into a summary GHG analysis in Section 9.5, including a summary of GHG emissions mitigation commitments. Supporting technical analyses and information are presented in Appendix H.

Table 9–1 GHG Mitigation Technologies Matrix

KEY: P = Proposed (Case 2) S = to be studied at later design phase
A = Examined as alternative X = Not applicable or not feasible

Mitigation Measure/Technology	New Bldgs		Remarks
Building Use	BCCB	819	
Energy Use Reduction			
Building Orientation	X	X	
High performance building envelope	P	P	
Green roof/podium areas ▲	P	S	
Light or reflective roof	P	P	
Exterior shading devices ▲	S	S	
Under-floor air distrib./displace.	na	S	
Chilled beam	S	P	
Heat or energy recovery	P	P	
Demand-controlled Ventilation	X	S	
Room occupancy sensor, lighting	P	P	
Natural lighting / Daylighting	X	S	
Daylight harvesting	X	X	
High performance lighting. Interior	P	P	
Reduced LPD interior	P	P	
High performance lighting, exterior	S	S	
Energy-Star appliances and electronics	P	P	
Advanced elevators	S	S	
Energy Generation			
High efficiency heating equipt.	P	P	
High efficiency cooling equipment	P	P	
Cogeneration, CHP	P	X	
District heating/cooling connection	S	X	
Fuel cell	X	X	
PV - roof	S	X	
3rd Party PV	X	X	
PV-ready construction	S	X	
Solar hot water generation	X	X	
Ground source heat pumps	X	X	
Wind turbines	X	X	
Purchased Green Energy	S	S	
Other Related (not quantified)			
LEED target	cert.	cert.	cert. = certifiable
Rainwater harvest	P	S	
Low flow fixtures, water conservation	P	P	
Recycling collection areas	P	P	
Enhanced refrigerant management	S	S	
Energy management system	P	P	
Enhanced building commissioning	P	P	
Construction waste recycling	P	P	
Recycled content materials	X	P	
Regional materials	X	P	

9.2 Boston Children's Clinical Building

9.2.1 Overview

Construction of the BCCB is expected to begin in 2014. Design of the BCCB is in the schematic stage. Commissioning will occur as the design progresses.

The Proponent will utilize the nationally recognized Leadership in Energy and Environmental Design program as administered by the US Green Building Council. LEED New Construction will be utilized to quantify the Project's various metrics relating to sustainability and "green" design. In accordance with Article 37 of the City of Boston Zoning Code, the BCCB will be designed to be LEED certifiable (see Section 5.10, Sustainability).

The primary elements of the building shell and mechanical component efficiencies are presented in Appendix H.1 for both the Code building and the proposed BCCB for comparison. Case 2 represents the proposed building, including measures incorporated into the building and MEP systems above and beyond those required for Code compliance. It must be noted, however, that the BCCB is in the earliest stage of conceptual design. Many features/components may change when design efforts are undertaken in future years. This analysis presents the best thinking at this time of how the building will be configured.

9.2.1.1 Energy Use Reduction

High Performance Building Envelope

A high efficiency building shell includes, among other components, greater insulation and glazing design that combines functionality and high insulating properties. Key building design elements that relate to the energy efficiency of the building envelope are compared to minimum Code values in Appendix H.1. As indicated, proposed roof, walls, and glazing, all meet or exceed Code requirements. Glazing has been kept to a minimum consistent with the uses of the building.

Green Roof

Some areas of green roofing will be used for various levels of roofing and the podium portion for aesthetic reasons and to assist with rainstorm drainage control. The contribution to energy use reduction is considered to be minimal and green roofing was not included in the building energy modeling.

Reflective Roofs

Light colored or reflective roofing materials will be utilized, aiding in minimizing summer urban heat island effects. It has little value in reducing building energy use.

Heat Recovery

Heat recovery from the building ventilation exhaust is incorporated into the BCCB design even though outside air makeup rate is expected to be approximately 30%.

Room Occupancy Sensor

Room occupancy sensors adjust the heating/cooling set point when rooms are unoccupied, thereby reducing the energy spent on heating/cooling unoccupied or vacant rooms. Sensors also turn off the artificial lights when a space is unoccupied. Occupancy sensors are proposed for the back-of-house spaces such as conference rooms, bathrooms, offices and storage areas.

High Performance Lighting

High-performance lighting (lower wattage per square foot than the Code minimum requirement) will be utilized. A 10% reduction in average lighting power density is expected to be achieved, reducing the amount of electricity consumed by the lighting system and the corresponding energy used by the HVAC system to remove the heat generated by the lights. Lower lighting power levels will be achieved by use of fluorescent and/or LED lighting fixtures and bulbs and by focused task lighting in office areas

Low Flow Fixtures

Several features of the BCCB will reduce water consumption, in turn reducing wastewater generation. Such reductions reduce indirect GHG emissions by reducing the MWRA's water pumping and wastewater treatment energy requirements. Only credit for low-flow fixtures has been included in the energy modeling, amounting to a 5% reduction in domestic hot water use.

Energy-Star Appliances

Energy Star appliances utilize less energy than other models of the same appliances. However, some of the types of equipment utilized in a clinical building are not part of the Energy-Star rating system. The commercial and special-purpose appliances utilized in the BCCB are high efficiency equipment. Where smaller, residential- or office-type equipment are utilized, such as refrigerators in employee lounges, Energy-Star equipment will be selected. However, no credit has been taken for this energy savings in the building energy modeling reported in Section 9.2.2.

9.2.1.2 Energy Generation

High Efficiency Mechanical Equipment

High efficiency HVAC systems are a combination of energy use reduction and energy generation technologies and include use of high efficiency boilers and chillers, premium electric motors, variable frequency drive motors, and variable flow hot water pumps. Appendix H.1 indicates proposed equipment, and boilers with high thermal efficiencies, better than Code and state-of-the-art for equipment of that size and type. Condensing boilers are not used because the uses require steam more than hot water.

Air handing units in the design are Variable Air Volume (VAV) which are similar to what is required by ASHRAE 90.1 in the base case. However, the design VAVs are designed to include the following attributes to improve energy efficiency:

- Oversized fans, ducts and coils resulting in reduced air velocity and static pressure. The primary energy benefit stems from reduced fan power per cfm.

- Dual enthalpy air economizer maximizes the benefit of using outdoor air to condition the building. Rather than simply using outdoor air up to a fixed temperature (70°F in the base case), the dual enthalpy economizer selects whether to maximize outdoor air or return air based on enthalpy in either airstream. The controls will determine which airstream will consume the least amount of energy to meet the required supply conditions. This becomes important when a building such as the BCCB is also humidifying.

- The AHUs have the ability to both reset the fans static pressure and reset the supply air temperature based on space load conditions. These controls reduce fan power, chiller energy and reheat energy.

Water loops in the design have been developed to be more efficient in the following ways:

- Since the chillers in the design are variable flow, the primary chiller water loop is variable flow resulting in improved part load chilled performance and reduced primary pumping power over the base case.

- Chilled water supply temperature is reduced from 44°F (base case) to 42°F. This puts an additional burden on the very efficient chillers but reduces the demand on the less efficient pumping and fan systems.

- The condenser loop will be sized for 2 gpm/ton in lieu of the base case's 3 gpm/ton. This puts an additional burden on the very efficient chillers but reduces the demand on the less efficient condenser water pumping system.

- Hot water and chilled water temperature resets have an improved control strategy which resets the temperatures based on system load and not outdoor air temperature as in the base case. This offers better control and eliminates times when load may not be coincident with outdoor air temperatures.

Combined Heat and Power

CHP can satisfy some of the building's electricity and heat needs while reducing the associated GHG emissions. Standard grid-connected power plants operate at approximately 30 to 55% efficiency. Because a CHP unit will use waste heat from the engine to provide steam and/or hot water for building heating, equipment sterilization, domestic hot water, and other uses, it can generate power and heat at 60% or greater thermal efficiency. The Proponent does not consider the efficiency and reliability of absorption chillers to be adequate for utilization in the hospital environment, and so chilled water production from waste heat has not been examined.

As described in Section 2.2.2 the Proponent is considering various options for both initial development of the BCCB and future expansions to serve other properties within the LMA. This analysis includes the fundamental CHP option that will serve the BCCB only.

With moderate base loads for electricity, steam and hot water, the BCCB will include in its Central Utilities Plant (CUP) both fossil-fuel fired boilers and a CHP unit. The CHP unit will consist of a 1,200 kW natural gas-fired engine-generator and a waste heat boiler. The engine is expected to operate in electric load-following mode to maximize the economic benefits. At times, the thermal output of the CHP is greater than the BCCB can utilize and some dumping of waste heat will occur, particularly in the summers during the first few years of operation. However, as design progresses, additional uses for waste heat will be examined. Furthermore, if Children's proceeds with expansion of service to other buildings in the Children's campus by or beyond 2021, there is expected to be ample use for all of the CHP unit's waste heat.

9.2.1.3 Other Related

Other Related technologies are divided into those that are associated with the operation of the buildings and those that are associated with the construction phases of the buildings.

Rainwater Harvest – Groundwater Recharge, Irrigation

A portion of the rainwater from the BCCB will be collected and stored for various uses, including groundwater recharge and irrigation. Using rainwater for cooling tower make-up water was evaluated, but the amount of available rainwater is not sufficient to significantly reduce the cooling tower water consumption and pumping this water to the roof adds energy use.

Recycling Areas

Recycling collection staging areas will be included in the BCCB design. The initial metric used to meet this requirement will be the LEED rating system, which requires the provision of collection facilities for paper, cardboard, metal, and plastic. Detailed discussions of recycling are provided in Section 5.8.1.

Energy Management System (EMS)

An EMS does not reduce the design energy utilization, but rather insures that actual operation comes as close to design optimum as practical. An EMS allows the building manager to monitor building energy performance, which aids in identifying maintenance needs to maintain optimum performance. An EMS should, therefore, be viewed as an insurance mechanism to aid the building manager in attaining the optimum efficiency inherent in the building design.

The BCCB will be provided with Energy Management Systems which will continuously monitor building mechanical equipment control points (air handlers, fans, cooling towers, chillers, boilers, etc.), including airflows, water flows, energy consumption, etc. This will allow building operators to optimize building energy usage and will notify operators when equipment is not functioning as desired (and thereby wasting energy). The EMS in the BCCB will be capable of remote monitoring as well as monitoring from a central operator's station.

Construction Waste Management

The Proponent will work with its Construction Manager to outline, develop, and implement a comprehensive construction staging and phasing plan. Part of this plan will involve the creation of a comprehensive construction waste management plan. The Proponent is currently anticipating at least a 50% reduction in construction debris diverted to landfill (by weight).

Building Commissioning

Enhanced Building Commissioning, as defined in LEED, begins the commissioning process earlier in the design stage, and also includes a post-occupancy follow-up visit to ensure that building systems have been operating properly in both the heating and cooling season.

9.2.2 *Building Energy Modeling*

Building energy modeling for the BCCB was conducted by BR+A, a nationally recognized engineering firm, using the eQUEST model, version 3.64. In accordance with the Stretch Code, ASHRAE 90.1 Appendix G protocol was applied in the modeling.

Results of the Baseline and Proposed cases are summarized in Table 9-2, based on site energy. Associated GHG emissions are calculated in accordance with the Policy. The eQUEST model output tables are provided in Appendix H.2.

The CHP unit has been included in the eQUEST modeling of the Proposed case. In the eQUEST output tables, the CHP unit's fuel (heat input) is distributed to the end uses that benefit from both the electricity and thermal output rather than as direct fuel use and thermal and electricity credits. However, to avoid double-counting of the associated GHG emissions, the electrical output of the CHP is credited in Table 9-2.

The energy efficiency technologies employed in the Proposed design, including CHP, will result in a 110% increase in natural gas use (almost exclusively to run the CHP unit) which is offset by a 62% reduction in imported electricity compared to the Baseline, resulting in approximately a 1,558 ton/year, 15% decrease in GHG emissions.

Table 9-3 presents similar information as source energy, using site/source conversion factors provided by DOER. Source energy, unlike site energy, takes into consideration that a Btu of electrical energy used requires about 3 Btus to be expended at an offsite power plant due to power plant efficiency as well as transmission losses. Similarly, a Btu of natural gas requires offsite expenditure of almost 1.1 Btus due to gas processing, transmission losses and gas transmission energy (compression) requirements. These conversion factors are not New England-specific.

Energy Use Index (EUI) is calculated from these source energy data. Source energy is used for this calculation because the more common method of calculation using site energy does not adequately reflect the impact of CHP within the Project. Table 9-3 indicates that the Proposed BCCB will require approximately 26% less energy use than the Baseline building, which is much better performance than is anticipated to be required by the next Stretch Code, SCII (12-15% reduction from IECC 2012 Baseline).

Table 9-2 BCCB Modeling Results – GHG Emissions Reduction

		Site Energy		
		Case 1 Baseline	Case 2 Proposed	1–>2 Difference
DIRECT (NATURAL GAS)		MMBtu/yr	MMBtu/yr	
Space Cooling		0	6,280	
Space Heating		34,900	3,740	
Heat Rejection		0	380	
Hot Water		1,600	1,360	
Vent Fans		0	17,990	
Pumps & Auxiliaries		12,750	13,000	
Ex Usage		0	260	
Misc Equipt.		0	42,620	
Area Lights		0	18,000	
CHP Engine Fuel Use		0	distributed	
CHP Thermal Credit		0	distributed	
	subtotal	49,250	103,630	110%
INDIRECT (ELECTRICITY)		MWh/yr	MWh/yr	
Space Cooling		2,020	1,370	
Cooling Tower (Heat Reject.)		40	80	
Ventilation and Fans		4,610	3,420	
Pumps & Auxiliary		600	1,160	
Extl Usage		50	40	
Area Lighting		3,960	3,570	
Misc. Equipment		8,280	8,280	
CHP Generation Credit			-10,512	
	subtotal	19,560	7,408	-62%
GHG EMISSIONS		tons/yr	tons/yr	
Direct	Gas-burning	2,881	6,062	110%
Indirect	Imported Electricity	7,628	2,889	-62%
	Total	10,510	8,951	**-15%**
			-1,558	**ton/yr**

CO_2 Emission Factors:

Electricity [1]	780	lb/MWh
Natural Gas [2]	117	lb/MMBtu

[1] 2011 New England Electric Generator Air Emissions Report, Table 5.4, 2011 value

[2] EIA Fuel Emissions Factors, Weighted National Average (1029 Btu/scf)

Table 9-3 BCCB Modeling Results – Source Energy and EUI

		Source Energy		
		Case 1	**Case 2**	**1–>2**
		Baseline	**Proposed**	**Difference**
DIRECT (NATURAL GAS)		MMBtu/yr	MMBtu/yr	
Space Cooling		0	6,845	
Space Heating		38,041	4,077	
Heat Rejection		0	414	
Hot Water		1,744	1,482	
Vent Fans		0	19,609	
Pumps & Auxiliaries		13,898	14,170	
Ex Usage		0	283	
Misc Equipt.		0	46,456	
Area Lights		0	19,620	
CHP Engine Fuel Use		0	distributed	
CHP Thermal Credit		0	distributed	
	subtotal	53,683	112,957	110%
INDIRECT (ELECTRICITY)		MMBtu/yr	MMBtu/yr	
Space Cooling		20,746	14,070	
Cooling Tower (Heat Reject.)		411	822	
Ventilation and Fans		47,345	35,124	
Pumps & Auxiliary		6,162	11,913	
Extl Usage		514	411	
Area Lighting		40,670	36,664	
Misc. Equipment		85,037	85,037	
CHP Generation Credit		0	-107,960	
	subtotal	200,884	76,081	-62%
ENERGY USE INDEX		569,788	gsf modeled	
		kBtu/sf/yr	kBtu/sf/yr	
		446.8	331.8	**-26%**

Source Energy Factors		Provided by DOER	
	Electricity	3.01	Btu source/Btu site
	Natural Gas	1.09	Btu source/Btu site

9.2.3 Technologies Not Currently in the Design

Orientation

The BCCB footprint is constrained by the existing street grid and adjacent buildings. In order to optimize floor plates for maximum construction efficiency, building façades will remain generally parallel to the existing street grid. The design of the exterior envelope will be evaluated on a façade-by-façade basis (each side of the building) for optimal configuration of glazing areas, opaque wall area, shading devices, overhangs, screens, balconies, operable windows, etc. However, such details will not be developed until the detailed design phase of the building.

Under-Floor Air Distribution (UFAD)

UFAD reduces energy consumption by extending the amount of time that the HVAC system can run in economizer cycle (i.e. using outside air to cool a space rather than mechanically cooled air) and by reducing the amount of air and the fan horsepower (and thus electrical energy) required to deliver the air. Implementation of UFAD requires a different architectural structure with raised floors and a different configuration and layout of air handling units compared to spaces served by conventional means. For these reasons, it is an applicable technology almost exclusively for large office and certain types of commercial buildings and is not typically applicable to the BCCB.

Daylighting

The majority of the space served by exterior windows will be patient rooms. Daylighting controls are not appropriate for this use.

Oversized Cooling Tower

Use of an over-sized cooling tower to lower return water temperature, thus increasing heat pump efficiency, may be added during subsequent design phases. However, at this stage the eQUEST model is allowed to size the cooling tower based on system loads, and so this refinement is not included in the modeling.

Advanced Elevators

Machine-roomless elevators allegedly require less energy to operate than conventional tractor-type elevators. However, their size and speed impose restrictions that may not be acceptable to the tower-type hospital environment. State of the art elevators will be examined during detailed design based upon then-current offerings in the market.

District Heating/Cooling

Currently, the Medical Area Total Energy Plant (MATEP) serves the Longwood Medical and Academic Area with steam and chilled water. In the future, the individual hospitals are planning independent, presumably more economical systems as the area continues to grow. As indicated in Section 2.2.2, the Proponent is considering either a limited or a more extensive district system development, but no decisions are expected for some time.

Fuel Cells

Fuel cells use methane (natural gas) in an electro-chemical process operating at low temperature to generate electricity. High-grade or low-grade waste heat recovery, or both, can make these units into a CHP technology.

Fuel cells have been used in limited applications for continuous power generation, but they are very expensive. Although the cost has apparently decreased considerably in recent years, it appears to remain well above $5,000 per kilowatt (kW). Even with tax incentives and the potential availability of Alternative Energy Renewable Energy Credits, the cost of fuel cells is considered to be too high for likely application to the residential building.

Ground-Source Heat Pumps (GSHP)

GSHPs take advantage of the relatively constant temperature and infinite mass of the ground to seasonally either extract or discharge heat in an efficient thermodynamic cycle. GSHP is deemed to be an infeasible technology as there is no room in a dense urban environment for the well field required to significantly compliment a large building.

Photovoltaics (PV)

The traditional PV installation on a building is an array of collectors mounted on a flat or sloped roof, angled to face south and with appropriate slope above horizontal. Given the tower structure of the BCCB, MEP equipment, emergency generators and elevator penthouses and ventilation exhausts will occupy the majority of the tower rooftop area. Additional area will be required for access ways to this equipment, and some of the remaining rooftop area will be at least partially shadowed by the equipment, penthouse, and curtain wall. Any area remaining that might be available for a PV array is expected to be very small. Any PV installation would be expected to only be able to offset a very small fraction of yearly electrical demand.

The actual degree to which rooftop equipment might be located so as to provide unshaded space for PV panels requires considerable design development and cannot be determined at this stage of design. Hence, the capability to utilize rooftop PV must be left to later stages of design. If it is determined that there is sufficient space for a modest PV array but it is not economically feasible at the time, consideration will be given to making the building PV ready so as not to inhibit the future adaptation of the technology if economics change or there is a break-through in the applicability of PV.

Furthermore, third-party PV installations have recently become commercially commonplace. In such an arrangement, a PV company may build, own and operate a PV array and system at a host facility, and sell the electricity produced to the host under a long term power purchase agreement (PPA). The Proponent would consider, amongst its other alternatives, hosting such a third party PV system, providing appropriate terms and commercial arrangements could be negotiated. However, it is expected that the space available, if any, will be insufficient to attract interest from such third parties.

Solar Hot Water (SHW)

For the same reason as PV, SHW is not expected to be a practical option. Furthermore, SHW would compete with CHP for hot water production and, as noted under CHP, there is insufficient load in the BCCB to accommodate additional hot water generation capacity.

Wind Turbines

There is no available land on the Project site for installation of a wind turbine. Due to the site's constraints, the proximity to high-rise buildings and other factors, it is expected that small building-integrated wind turbines will not be effective at this site. The decision was made, therefore, to not pursue building-integrated wind systems.

Green Energy

Massachusetts utilities offer options that allow the customer to purchase all or part of its electricity requirements from renewable energy sources. The Proponent cannot predict energy prices well into the future, but will include future examination of Green Energy as a potential option. Purchase of Green Energy will be the Proponent's decision once the building comes on line and based on then-available source options and rates.

Enhanced Refrigerant Management

Refrigerants, typically various compounds classified as hydrofluorocarbons (HFCs), are greenhouse gases of stronger effect than CO_2. Releases of HFC, however, are due to leaks or equipment failure and are not routine emissions. Nevertheless, use of low-CO_2-equivalent HFCs is beneficial, providing that the functionality of the refrigeration equipment is maintained.

LEED certification requires adopting a refrigeration management system that allows no chloro-fluorocarbon (CFC) use. The BCCB will be able to achieve this LEED refrigerant management criterion through the appropriate selection of refrigerants and efficient refrigeration systems.

Enhanced Refrigerant Management involves selection of refrigerants with the least ozone depletion potential. Inclusion of the most appropriate refrigerants with a reduced contribution to ozone depletion and reduced GHG-equivalent concentrations will be evaluated during detailed design based on the specific mechanical systems selected.

Regional Content Materials

The Proponent will encourage the specification of regionally-sourced materials wherever possible. Concrete aggregate/cement, wood, glass/glazing products, metals, masonry, and drywall will be evaluated for comparing the cost effectiveness of locally-sourced alternatives. At this time, it is believed that achieving 10% regional materials content (as defined in LEED) is beyond the ability of the BCCB.

Recycled Content Materials

The Proponent will encourage the specification of recycled-content materials wherever practical. Specifications will be written into Project documents requiring contractors and subcontractors to evaluate materials not only by cost, but also report recycled-materials content in relevant submittals provided to the owner or construction manager (CM). Concrete aggregate/cement, wood, glass/glazing products, metals, masonry, and drywall will be evaluated for cost effectiveness of recycled-content alternatives. As part of the LEED effort on the Project, the Proponent has a goal to achieve 20% sustainably sourced materials and products based on overall materials costs.

9.3 819 Beacon Street

The 819 Beacon Street Project will include approximately 202,950 sf of office space, 9,480 sf of retail space and approximately 496 structured parking spaces (199,974 sf) in an eight story structure. It will be constructed, owned and operated by the Proponent and will be designed to be LEED Certifiable. Building design is in the early conceptual stage.

9.3.1 Overview

As with the BCCB, the Baseline analysis utilizes the anticipated adoption of IECC 2012 into the 8^{th} edition of the Code.

The Proposed case includes measures incorporated into the building and MEP systems that are above and beyond those required for Code compliance with the goal of meeting or exceeding energy use reduction of 15% over the Baseline, a level expected to be in compliance with the anticipated, but not yet proposed, SC II. The 819 Beacon Street Project includes the energy efficiency measures indicated in Table 9-1 and described further herein.

The primary elements of the 819 Beacon Street building shell and HVAC components are presented, and are compared to Baseline elements, in Appendix H.1. The following describes the various technologies that are incorporated in the building design at this early point in its design. They are organized, similar to Table 9-1, into Energy Use Reduction, Energy Generation and Other Related.

9.3.1.1 Energy Use Reduction

Building Envelope

Key building design elements that relate to the energy efficiency of the building envelope are compared in Appendix H.1 to Code values for the same parameters. As indicated, proposed roof, walls, and glazing all exceed Code requirements.

Light / Reflective Roofs

Light colored or reflective roofing materials will be utilized to minimize summer urban heat island effects.

Chilled Beams

This technology improves the efficiency of distribution of heating and cooling for building conditioning, reducing fan power significantly.

Heat Recovery

Heat recovery transfers the heat in exhaust ventilation to the incoming fresh air, thus reducing the demand for heating boilers. Energy recovery from the building ventilation exhaust is incorporated into the design.

Room Occupancy Sensors

Room occupancy sensors that turn off the artificial lights when a space is unoccupied are proposed for the common spaces of the building.

High Performance Lighting

Lower lighting power levels are achieved by use of high performance fluorescent or LED lighting fixtures and lamps. Reductions in lighting power density (LPD) include 8% on a building average basis and 15% in the parking garage.

Energy-Star Appliances and Electronics

Energy Star appliances utilize less energy than other models of the same appliances. Kitchens and break rooms will be fit out with Energy Star appliances. Electronics, such as computers, servers, and printers are also expected to be Energy Star rated.

9.3.1.2 Energy Generation

High Efficiency Mechanical Equipment

High efficiency HVAC systems are a combination of energy use reduction and energy generation technologies and include use of high efficiency boilers and chillers, premium electric motors, and incorporating variable frequency drives (VFD) motors, above and beyond the requirements of the Code, where practical. Appendix H.1 presents proposed HVAC equipment and boilers with high thermal efficiencies, better than Code and state-of-the-art for equipment of that size and type.

The 819 Beacon Street Project has shown substantial savings in natural gas in the energy model (see Section 9.3.2) due to the use of a heat wheel and modular, efficient, condensing boilers.

9.3.1.3 Other Related

As described in Section 9.2.1 for the BCCB, 819 Beacon Street will utilize:

- low flow plumbing fixtures;
- recycling collection areas;
- a building energy management system;
- enhanced building commissioning; and
- construction waste management.

Rainwater Harvest

A portion of the rainwater from 819 Beacon Street will be collected and stored for various uses, including groundwater recharge and irrigation. Using rainwater for cooling tower make-up water or toilet flushing will be evaluated as the design progresses.

Regional Content Materials

The Proponent will encourage the specification of regionally-sourced materials for 819 Beacon Street wherever possible and is expected to achieve at least 10% regional materials content (as defined in LEED).

9.3.2 Building Energy Modeling

As with the BCCB, building energy modeling for 819 Beacon Street was conducted by BR+A, a full service consulting firm specializing in the engineering and design of heating, ventilation, air conditioning, electrical, plumbing, fire protection, fire alarm and energy management systems. The eQUEST model, version 3.64, was used in accordance with the ASHRAE 90.1 Appendix G protocol.

Results are summarized in Table 9-4. The eQUEST output tables for both cases are included in Appendix H.2. Modeling was conducted including a 150,000 sf parking garage and manually adjusted for a nearly 200,000 sf garage, as noted in Appendix H.2.

The energy efficiency technologies employed in the proposed design will result in a 35% decrease in natural gas use and 0.4% decrease in electricity use, resulting in a 119 ton/year, 10% decrease in GHG emissions compared to a Code-compliant (IECC 2012) building.

Electricity use savings are generated by reductions in interior area lighting, exterior lighting, and space cooling. These savings can be attributed to the reduced LPD both inside and outside the building as well as energy recovery ventilation, plate and frame heat exchanger, and chilled beams. Some of these items, however, can also cause an electric energy penalty. The chilled beams use year round chilled water, which creates more run hours for the pumps. The added pressure drop of the energy recovery ventilation creates extra fan static pressure which increases the fan energy required.

Actual equipment selections on fans and pumps as well as duct design will be made as the design progresses, and may further reduce the electrical energy use. For example, the chilled beams are currently modeled as constant volume as the Project is very early in the design. The option of variable chilled beams will be analyzed as the Project progresses in the design process. Larger ducts, if space utilization is not critical, could reduce duct pressure losses, hence reducing fan power.

Use of oversized cooling towers will also be addressed in later stages of design. An oversized tower results in better chiller performance at part load conditions. This early in the design, however, the eQUEST model is allowed to size the cooling tower based on maximum load.

Thus it is reasonable to expect that later design will result in further reductions in electricity use and, therefore, in GHG emissions.

EUI calculation, using site energy since CHP is not included in the design, is presented in Table 9-5 and indicates that even at this early stage of design, energy use reduction of 15%, in compliance with what is assumed to be the target requirement of the future SC II, is indicated.

Table 9-4 819 Beacon Street Modeling Results – GHG Emissions Reduction

		Site Energy		
		Case 1 Baseline	**Case 2 Proposed**	**Case 1–>2 Difference**
DIRECT (NATURAL GAS)		MMBtu/yr	MMBtu/yr	
Space Heating		4,990	3,079	
Hot Water		490	488	
Pumps & Auxiliary		50	0	
Solar Hot Water Credit		0	0	
CHP Engine Fuel Use		0	0	
CHP Thermal Credit		0	0	
	subtotal	5,530	3,567	-35%
INDIRECT (ELECTRICITY)		MWh/yr	MWh/yr	
Space Cooling		197	139	
Cooling Tower (Heat Reject.)		9	9	
Space Heating		0	6	
Hot Water		1	1	
Ventilation and Fans		394	509	
Pumps & Auxiliary		105	137	
Ext. Usage		23	22	
Misc. Equipment		815	815	
Area Lighting [1]		822	719	
Energy Star appliance credit		0	0	
CHP Generation Credit		0	0	
PV Generation Credit		0	0	
	subtotal	2,367	2,357	-0.4%

[1] Area lighting includes garage lighting which was manually increased from a 150 ksf area to 200 ksf. See Appendix H.2 of DEIR

GHG EMISSIONS		tons/yr	tons/yr	
Direct	Gas-burning	324	209	-35%
Indirect	Imported Electricity	923	919	0%
	Total	1,247	1,128	**-10%**
			119	**ton/yr reduction**

CO_2 Emission Factors:

Electricity [1]	780 lb/MWh
Natural Gas [2]	117 lb/MMBtu

[1] 2011 New England Electric Generator Air Emissions Report, Table 5.4, 2011 value

[2] EIA Fuel Emissions Factors, Weighted National Average (1029 Btu/scf)

Table 9-5 819 Beacon Street Modeling Results – Site Energy and EUI

		Site Energy		
		Case 1 Baseline	Case 2 Proposed	Case 1–>2 Difference
DIRECT (NATURAL GAS)		MMBtu/yr	MMBtu/yr	
Space Heating		4,990	3,079	
Hot Water		490	488	
Pumps & Auxiliary		50	0	
Solar Hot Water Credit		0	0	
CHP Engine Fuel Use		0	0	
CHP Thermal Credit		0	0	
	subtotal	5,530	3,567	-35%
INDIRECT (ELECTRICITY)		MMBtu/yr	MMBtu/yr	
Space Cooling		671	475	
Cooling Tower (Heat Reject.)		31	31	
Space Heating		0	19	
Hot Water		2	2	
Ventilation and Fans		1,346	1,736	
Pumps & Auxiliary		359	467	
Ext. Usage		79	76	
Misc. Equipment		2,782	2,782	
Area Lighting [1]		2,806	2,454	
Energy Star appliance credit		0	0	
CHP Generation Credit		0	0	
PV Generation Credit		0	0	
	subtotal	8,076	8,042	-0.4%

[1] Area lighting includes garage lighting which was manually increased from a 150 ksf area to 200

ENERGY USE INDEX	208,315 gsf conditioned space		
	kBtu/sf/yr	kBtu/sf/yr	difference
	65.3	55.7	**-15%**

9.3.3 Technologies Not Currently in the Design

Orientation

Building footprint is largely constrained by the existing street grid and adjacent buildings. In order to optimize floor plates for maximum construction efficiency, building façades will remain generally parallel to the existing street grid. The design of the exterior envelope will be evaluated later in design on a façade-by-façade basis (each side of the building) for optimal configuration of glazing areas, opaque wall area, shading devices, overhangs, screens, balconies, operable windows, etc. However, such details will not be developed until the detailed design phase of the building. Therefore, as only the basic characteristics of the envelope performance can be accounted for in this early evaluation stage, no credit has been taken at this time in the building energy modeling for overhangs, balconies, screens, or exterior shading devices.

Green Roof

Due to the constraints imposed by MBTA Green Line tunnel running diagonally across the site, the majority of the mechanical and electrical equipment has to be located on the rooftop thus limiting the area available for other uses. The 819 Beacon Street Project is currently contemplating an approximately 7,000 sf vegetated roof area on a portion of the garage roof.

Exterior Shading Devices

The Proponent will study the feasibility of using various forms of external shading during the detailed design phase of the building.

Under-Floor Air Distribution (UFAD)

UFAD reduces energy consumption by extending the amount of time that the HVAC system can run in economizer cycle (i.e., using outside air to cool a space rather than mechanically cooled air) and by reducing the amount of air and the fan horsepower (and thus electrical energy) required to deliver the air. Implementation of UFAD requires a different architectural structure with raised floors and a different configuration and layout of air handling units compared to spaces served by conventional means. For 819 Beacon Street, this creates difficulties marrying the building to the exterior parking garage. UFAD is also not an optimal system if it is anticipated that room partitions will be moved occasionally, which would require rebalancing of the system each time. Therefore, it is not being considered for 819 Beacon Street.

Radiant Heat – Lobby

The small lobby area and reduced traffic flow compared to a commercial building reduce the value of using radiant heat in this space.

Demand-controlled Ventilation

Ventilation systems that adjust flows in accordance with CO_2 levels, temperature, or humidity in a space will be considered during detailed design. The parking garage is open-air, and not forced ventilation.

Daylighting and Daylight Harvesting

Daylighting is the automated control of artificial lighting in response to the amount of natural daylight entering a room. Although it will be considered during detailed design for uses where possible, there is no building lighting design at this stage and so it has not been included in the building energy modeling presented herein.

Daylight harvesting is the design of the interior in a manner that allows natural light to penetrate deeply into the building interior; this strategy complements natural lighting. The 819 Beacon Street building will include large percentages of enclosed offices, making daylight harvesting impractical.

High Performance Exterior Lighting

Exterior use of LED lighting is beginning to be accepted commercially. The Proponent will consider its specific uses and the feasibility of such lighting when 819 Beacon Street reaches an appropriate stage of design.

Advanced Energy Efficient Elevators.

Advanced elevators incorporate belt-drive systems with regenerative braking technologies. The economics of this technology will be examined during the design development phase.

Cogeneration

To be financially feasible, a CHP unit needs to be run at or near full load continuously for most of the year, and there must be a use for the waste heat recovered as hot water or steam. An office building has very little thermal load at night or during the non-heating season and substantially reduced electrical load at night and on weekends. Therefore, CHP is not deemed to be feasible for 819 Beacon Street.

District Heating

There is no district heating distribution system available at this site.

Fuel Cells

Like CHP, fuel cells do not generally serve a need in an office building.

PV

Due to the constraints imposed by the MBTA Green Line tunnel running diagonally across the site, the majority of the mechanical and electrical equipment has to be located on the rooftop. Insufficient rooftop is therefore available for a meaningful contribution from PV.

SHW

An office building does not have a high or consistent demand for domestic hot water. Thus SHW does not generally serve a need.

GSHP and Wind

As described in Section 9.2.3, these technologies are not generally feasible in an urban project.

Green Energy

The Proponent will examine the feasibility of purchasing Green Energy as the Project approaches commissioning based upon available choices and then-current economics.

Refrigerant Management

LEED certification requires adopting a refrigeration management system that allows no CFC use. 819 Beacon Street will be able to achieve this LEED refrigerant management criterion through the appropriate selection of refrigerants and efficient refrigeration systems.

Enhanced Refrigerant Management involves selection of refrigerants with the least ozone depletion potential. Inclusion of the most appropriate refrigerants with a reduced contribution to ozone depletion and reduced GHG-equivalent concentrations will be evaluated during detailed design based on the specific mechanical systems selected for inclusion in the building.

9.4 Mobile Source Emissions

As part of the greenhouse gas evaluation, emissions of carbon dioxide from regional traffic associated with the BCCB (including the Patient and Family Parking Garage) and 819 Beacon Street Projects were evaluated.

9.4.1 *Traffic GHG Analysis*

In accordance with the MEPA GHG Policy, GHG emissions were estimated for mobile sources within the transportation study area (see Chapters 3 and 4 for the transportation analysis). For mobile source GHG emissions, the methodology follows the same methodology that is outlined in MassDEP guidance for mesoscale analyses.[1] The analysis includes a comparison of the future Build conditions to the No-Build condition. If emissions are greater for the Build conditions, reasonable and feasible mitigation measures will be evaluated. The methodology and parameters for the mesoscale analysis follow methodology approved by MassDEP.

The mesoscale analysis performed for these Projects predicts the change in regional CO_2 emissions due to the proposed Projects. The total vehicle pollutant burden was estimated for the 2012 existing conditions and the No-Build and Build conditions for year 2022 for both the BCCB Project and the 819 Beacon Street Project separately. Traffic conditions are described in more detail in Chapters 3 and 4.

The EPA's MOBILE6.2 computer program was used to estimate motor vehicle emission factors of CO_2 on the roadway network in the Project area. Conservatively, emission factors derived from MOBILE6.2 for CO_2 are based on the worst case of either wintertime or summertime conditions. Daily and yearly emission estimates were calculated using the vehicle count data, mileage between intersections, modeled signalized intersection delay times, and emission factors.

The traffic volumes provided in Chapters 3 and 4 form the basis of the study. Peak hour traffic volumes were provided by the transportation consultant. Estimates of Average Daily Trips (ADT) were made from the peak hour volumes assuming a 10% K-Factor. An average speed of 30 miles per hour was assumed for all city roadways. Distances for the links were estimated with mapping software.

Average per-vehicle idle times were based on SYNCHRO intersection modeling output reports provided by the transportation consultant (see Chapters 3 and 4) to calculate emissions from idling vehicles.

Case 1 represents the difference between the No-Build case and the Build case (i.e., traffic associated with the addition of the Project to the area without any Proponent-proposed mitigation).

While the Projects will not materially impact traffic operations in the area, the Proponent will work with the Massachusetts Department of Transportation (MassDOT) and Boston Transportation Department to improve traffic signal timing and phasing, measures which the transportation analysis identified as improving operations at study area intersections.

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1 MassDEP, Guidelines For Performing Mesoscale Analysis Of Indirect Sources, May 1991.

Traffic signal timing and phasing reports will be completed by the Proponent's transportation engineers to define signal timing and phasing improvements with MassDOT and BTD, if required. The Proponent will implement the approved traffic signal timing and phasing recommendations prior to receiving a Certificate of Occupancy, if appropriate.

In addition, the Proponent has developed a comprehensive TDM program presented in Chapters 3 and 4. The proposed TDM program for both Projects includes the following:

- Designating a Transportation Coordinator;
- Providing bicycle amenities in the form of bicycle storage and bicycle parking;
- Establishing a vehicle management and operations strategy which includes providing electric car charging stations; and
- Promoting travel alternatives.

Tables 9-6 and 9-7 present the results of the transportation GHG source analysis for the BCCB and the 819 Beacon Street Project, respectively. Case 1 results are presented for the study year 2022. All related calculations, including the 2012 Existing and 2022 emissions estimates, are presented in Appendix E.

Project mitigation measures do not include any physical roadway modifications. The TDM program will reduce trips and vehicle miles travelled (VMT); however, no credit has been taken for such a reduction. Since no intersection timing and use modifications are currently proposed, no reductions in GHG from traffic are realized. The BCCB would result in a net increase of 165 tons/year (1.7%) over future No Build from traffic operations while the 819 Beacon Street Project would result in a net increase of 90 tons per year (less than 1%) over future No Build traffic operations.

Table 9-6 Transportation-Related GHG Emissions - BCCB

	Case 1 - Baseline
	Build - No Build
Net VMT, miles/day	640
Net Delay, hrs/day	79
GHG Emissions, tons/yr	
Roadway	126
Intersection	39
Total	165

Table 9-7 Transportation-Related GHG Emissions - 819 Beacon Street

	Case 1 - Baseline
	Build - No Build
Net VMT, miles/day	143
Net Delay, hrs/day	126
GHG Emissions, tons/yr	
Roadway	28
Intersection	62
Total	90

9.5 Summary and Mitigation Commitments

9.5.1 Project GHG Summary

Table 9-8 presents a composite of the building and transportation GHG emissions profiles of the Baseline and Proposed cases.

Table 9-8 Project GHG Emissions Summary

	Baseline	Proposed	Difference	
	tons/yr			%
Stationary Sources				
BCCB	10,510	8,951	-1,558	-15%
819 Beacon	1,247	1,128	-119	-10%
Transportation				
BCCB	165	165	0	0%
819 Beacon	90	90	0	0%
Total	12,011	10,334	-1,677	-14%

9.5.2 Proponent's Commitments to GHG Reduction

The Proponent's commitments to mitigate Project GHG emissions from the stationary sources are extensive, as indicated in Sections 9.2 and 9.3. Numerous additional mitigation measures have not been quantified, primarily because the degree of accuracy or the reliability of the quantification method is uncertain.

Designs for the buildings are in the conceptual stages and only very preliminary information is available. As the Project develops, the Proponent expects that additional technologies described previously, or possibly new technologies developed in the interim period, will be adopted that will further decrease GHG emissions, but these are not yet ripe for selection. The Proponent will continue to evaluate energy efficiency measures as the design develops.

The Proponent is committed to the following mitigation elements for the entire Project or for individual buildings:

- High performance building envelopes;
- Green roof on portions of the BCCB;
- Light or reflective roofs;
- High-efficiency HVAC equipment;
- CHP unit for BCCB
- Energy recovery ventilation;
- Room occupancy sensors in the appropriate spaces of both buildings;
- High-efficiency interior lighting and reduced lighting power density wherever feasible;
- High-performance exterior lighting;
- Low-flow plumbing fixtures and water conservation measures;
- Energy Star appliances and electronics;
- Energy management systems;
- Recycling collection areas;
- Construction waste recycling;
- TDM program as described in Sections 3.1.2.6 for the BCCB and Sections 4.3.5 and 4.1.2.5 for the 819 Beacon Street Project.

The Proponent is committed to implementing the energy efficiency and GHG emission reduction measures presented in this analysis, but must retain an amount of design flexibility to allow for changes that will inevitably occur as design progresses. Case 2 provides a comprehensive estimate of the anticipated GHG reductions that can be achieved based on building energy modeling with preliminary design information. If, during the course of design for an individual building, a specific combination of design strategies proves more advantageous from an engineering, economic, or space utilization perspective, the design of that building may vary from what has been described as Case 2. Energy performance minima (and associated GHG emission reductions) by building, as shown in Tables 9-2 and 9-4, will be adhered to on an individual building design basis. The Proponent will submit a self-certification to the MEPA Office at the completion of each building. The certification will identify the GHG mitigation measures incorporated into the building and will illustrate the degree of GHG reductions from a Baseline case, as Baseline is defined herein, and how such reductions are achieved. Details of the owner's implementation of operational measures will be included.

Chapter 10.0

Response to Comments

10.0 RESPONSE TO COMMENTS

This Chapter provides responses to the BRA Scoping Determination, MEPA Certificate and the associated comment letters that were received on the IMPNF/PNF filed with the BRA October 12, 2012 and the ENF filed with MEPA on October 15, 2012. The letters have been reproduced and individual comments coded in the margins. Responses to the comments follow each individual letter and can be matched using the comment code numbers. Letters were received from the following State Agencies, City of Boston Departments, Organizations, and individuals:

BRA Scoping Determination, MEPA Certificate and Letters Received on the IMPNF/PNF and ENF
Boston Redevelopment Authority Comment Letters
Boston Redevelopment Scoping Determination
Boston Redevelopment Authority – David Grissino
Boston Transportation Authority
Boston Redevelopment Authority – Katie Pedersen
Boston Water and Sewer Commission
Boston Groundwater Trust
Boston Fire Department
City Councilor – Michael P. Ross
Beth Israel Deaconess Medical Center
Fenway CDC
Mary Ellen Bresciani and James Millea
Christian Tirella
MASCO
Mission Hill Neighborhood Housing Services
Andrei Ignash
Audubon Circle Neighborhood Association
Octagon Property Management Inc.
Michael Simons
Nicolette Gaglia
James L. Buechl
Sandeep Karnik
Boston Red Sox
Anna C. Gamble – Prouty Garden Petition
MEPA Comment Letters
MEPA Certificate
Department of Energy Resources
MassDEP – Northeast Regional Office
Massachusetts Historical Commission
Massachusetts Water Resources Authority
Boston Water and Sewer Commission
Friends of Historic Mission Hill

BOSTON REDEVELOPMENT AUTHORITY

SCOPING DETERMINATION
FOR
CHILDREN'S HOSPITAL BOSTON
INSTITUTIONAL MASTER PLAN NOTIFICATION FORM/PROJECT NOTIFICATION FORM

The Boston Redevelopment Authority ("BRA") is issuing this joint Scoping Determination pursuant to Section 80B-5.3 and Section 80D5.3 of the Boston Zoning Code ("Code") in response to an Institutional Master Plan Notification Form/Project Notification From ("IMPNF/PNF") submitted by Boston Children's Hospital ("BCH") on October 12, 2012. The IMPNF/PNF proposes three Projects: 1) an on-campus Project that includes an approximately 445,000 square foot Children's Clinical Building with clinical and medical support space with co-generation facilities, subject to Large Project Review ("Clinical Building"); 2) an approximately 29,370 square foot Patient and Family Parking Garage Addition that includes one new level of parking with approximately 86 parking spaces (76 net new due to the elimination of 10 parking spaces in connection with the Clinical Building), subject to Small Project Review ("Parking Garage Addition"); and 3) an off-campus Project comprised of an office building at 819 Beacon Street located in the Audubon Circle neighborhood that includes approximately 211,170 square feet of office space, ground floor retail space and approximately 526 parking spaces within a new garage, subject to Large Project Review (including 249 replacement spaces and 277 net new spaces of which 158 spaces will support the office space within 819 Beacon Street and 119 spaces will be available to support the needs of Children's employees working in the Longwood Medical Area) ("819 Beacon Street Project"), collectively referred to as the "Proposed Projects".

Notice of the receipt by the BRA of the IMPNF/PNF ("Notice") was published in the Boston Herald on October 12, 2012 initiating a public comment period ending on November 13, 2012. The Notice and the IMPNF/PNF, pursuant to Section

80A-2 of the Code, were sent to all public agencies of the City and to the members of the BCH Task Force and posted on both the BRA and BCH websites. Written comments in response to the Notice and the IMPNF/PNF that were received by the BRA prior to the end of the public comment period are included in the Appendices of this Scoping Determination. This Scoping Determination requests information that the BRA requires for its review of the Proposed Projects in connection with the following:

(a) Certification of Compliance and approval of the Proposed Projects pursuant to Article 80, Sections 80B and 80E of the Code; and

(b) Certification of Consistency with the BCH Institutional Master Plan pursuant to Article 80, Section 80D-10 of the Code.

The BRA is reviewing the Proposed Projects pursuant to multiple sections of the Code: Section 80B, Large Project Review, Section 80E, Small Project Review, and Section 80D, Institutional Master Plan Review which set out comprehensive procedures for project review and requires the BRA and relevant city agencies to examine the urban design, transportation, environmental, and other impacts of proposed projects. BCH is required to prepare and submit to the BRA an Institutional Master Plan Amendment ("IMPA") and Draft Project Impact Report ("DPIR") that meets the requirements of this Scoping Determination by detailing the Proposed Projects expected impacts and proposed measures to mitigate, limit, or minimize such impacts and responses to all comments attached in the Appendices. The DPIR shall contain the information necessary to meet the specifications of Section 80B-3 (Scope of Review; Content of Reports) and Section 80B-A (Standards for Large Project Review Approval) as required by this Scoping Determination.

Subsequent to the end of the forty-five (45) day public comment period for the DPIR, the BRA will issue a Preliminary Adequacy Determination ("PAD") that indicates the additional steps necessary for BCH to complete in order to satisfy the requirements of this Scoping Determination and all applicable sections of

Article 80 of the Code. If the BRA finds that the DPIR adequately describes the Proposed Projects impacts and, if appropriate, proposes satisfactory measures to mitigate, limit or minimize such impacts, the PAD will announce such a determination and that the requirements for the filing and review of a Final Project Impact Report ("FPIR") are waived pursuant to Section 80B-5.4(c)(iv) of the Code. Before reaching said findings, the BRA shall hold a public hearing pursuant to the Code. Sections 80B-6 and 80D-10 require the Director of the BRA to issue a Certification of Compliance and a Certification of Consistency, respectively, before the Commissioner of Inspectional Services can issue any building permit for the Proposed Projects.

PREAMBLE

The BRA has formulated a set of Interim Guidelines to govern proposed projects in the Longwood Medical and Academic Area ("LMA"). These Interim Guidelines have been established to ensure that projects apply good planning principles in the areas of transportation, urban design, and workforce development. They describe the physical character of the LMA and outline mutually beneficial public benefits that can be provided by project proponents to achieve project heights that are greater than those specified in the Interim Guidelines. Development projects within the LMA must demonstrate compliance with the Interim Guidelines for building height and setbacks, street networks, building character, environmental impacts, and transportation and workforce development. The DPIR shall outline how the Proposed Projects comply with the Interim Guidelines. BRA.1

In addition to the specific submission requirements outlined in the Appendices and sections below, the following general issues should be noted: the City of Boston views its medical institutions as important economic assets and as valuable partners in a wide range of public policy priorities. The IMP mechanism is intended to help City agencies and residents assess the cumulative impacts of institutional growth, and to facilitate a process by which those impacts can be addressed comprehensively. The BRA recognizes BCH's efforts to support the goals of the IMP mechanism by projecting its long-term needs and proposing projects to address those needs. However, while the benefits of Boston's medical institutions are felt across the city and even regionally, nationally, and globally, the impacts are generally limited to the immediate neighborhood. This dictates that both the BRA and medical institutions work to carefully balance the goals of vibrant institutions and healthy neighborhoods.

I. PROPOSED PROJECTS

BCH proposes three (3) projects:

1) Children's Clinical Building: BCH proposes a new Clinical Building on a portion of its Core Campus, on the site currently occupied by portions of Bader East and Farley, the Prouty Garden, the Wolbach Building, the Library and the Ida C. Smith building. The Clinical Building proposes to expand BCH"s core campus with approximately 445,000 square feet of space (403,411 sf of net new space) and will include approximately 22,250 sf of new and expanded green and gathering spaces around, and as part of, the building.
2) Patient and Family Parking Garage Addition: The proposed Patient and Family Parking Garage Addition includes one level of 85 parking spaces (76 new new) on top of the existing garage structure on Longwood Avenue.
3) 819 Beacon Street: BCH proposes a new 10-story building containing approximately 211,170 sf of office and retail space including 249 replacement parking spaces and 277 net new parking spaces within a 526 parking garage at 819 Beacon Street. The 819 Beacon Street site is currently used for surface parking.

II. SUBMSSION AND DEVELOPMENT REVIEW REQUIREMENTS

BCH's Institutional Master Plan Amendment ("IMPA") and DPIR should be documented in a report of appropriate dimensions and presentation material which supports the review and discussion of the IMPA and DPIR. Forty five copies of the full report, printed on both sides of the page, should be submitted to the BRA and additional copies should be made available for distribution to interested parties. In addition, the IMPA and DPIR should be posted on the BCH website and also made available in electronic format to post on the BRA website. A copy of this Scoping Determination must be included in the report submitted for review.

A. GENERAL INFORMATION BRA.2

1. Application Information

a. Development Team

(1) Names

(a) Proponent (including description of development entity and type of corporation)

(b) Attorney

(c) Project consultants and architect

(2) Business address, telephone number and email for each

(3) Designated contact for each

b. Legal Information

(1) Legal judgements or actions pending concerning the Proposed Projects

(2) History of tax arrears on property owned in Boston by BCH

(3) Evidence of site control over the Project Sites, including current ownership and purchase options of all parcels in the Proposed Projects, all restrictive covenants and contractual restrictions affecting the BCH's right or ability to accomplish the Proposed Projects, and the nature of the agreements for securing parcels not owned by BCH.

(4) Nature and extent of any and all public easements into, through or surrounding the Project Sites.

c. Disclosure of Beneficial Interests

Disclosure of Beneficial Interests in the Proposed Projects must be provided pursuant to Section 80 of the Code.

2. Project Area BRA.3

a. An area map identifying the location of the Proposed Projects

b. Description of metes and bounds of Project Sites or certified survey of Project Sites

3. Public Benefits BRA.4

a. Development Impact Project Contribution and Jobs Contribution specifying amount of housing linkage and jobs linkage contributions.

b. Estimated annual property taxes for each parcel, and estimated total property taxes during all construction and phased development years and after full occupancy.

c. Anticipated employment levels including the following:

(1) Estimated number of construction jobs

(2) Estimated number of permanent jobs

d. Current activities and programs which benefit adjacent neighborhoods and the city at large, such as: child care programs, scholarships, internships, elderly services, education and job training programs, etc.

e. Other public benefits, if any, to be provided.

4. Regulatory Controls and Permits BRA.5

a. Existing zoning requirements, zoning computation forms, and any anticipated requests for zoning relief should be explained.

b. Anticipated permits required from other local, state, and federal entities with a proposed application schedule should be noted.

c. A statement on the applicability of the Massachusetts Environmental Policy Act ('MEPA") should be provided. If the Proposed Projects are subject to MEPA, all required documentation should be provided to the BRA, including but not limited to, copies of the Environmental Notification Form, decisions of the Secretary of Environmental Affairs, and the proposed schedule for coordination with BRA procedure.

5. Community Groups BRA.6

a. Names and addresses of Project Sites area owners, abutters, and any community of business groups which, in the opinion of BCH, may be substantially interested in or affected by the Proposed Projects and the steps BCH is undertaking to address any concerns thereof.

b. A list of meetings held and proposed with interested parties, including public agencies, abutters, and community and business groups.

B. PROJECT DESCRIPTION AND ALTERNATIVES BRA.7

1. Project Description

The DPIR shall contain full descriptions of the Proposed Projects and its components, including their size, physical characteristics, development schedule, costs, and proposed uses. This section of the DPIR also shall present analysis of the development context of the Proposed Projects.

Appropriate site and building plans to illustrate clearly the Proposed Projects shall be required.

2. Project Alternatives BRA.8

A description of any alternatives to the Proposed Projects, including the No-Build alternative (not carrying out the Proposed Projects) and any alternative development proposals that were considered, shall be presented and the primary differences among the alternatives, particularly as they may affect environmental conditions, shall be discussed. The No-Build alternative shall establish the future baseline conditions to which the effects of the Proposed Projects are to be compared. Descriptions of alternatives specifically requested by the BRA Urban Design department are included in Appendix A. Full analyses of the requested alternatives, along with their impacts, should be included.

C. TRANSPORTATION COMPONENT BRA.9

The transportation section will describe the transportation-related components of the Proposed Projects. It will adhere to the Boston Transportation Department ("BTD") Transportation Access Plan Guidelines and Article 80 development review process. The transportation study will include:

- A discussion of planned area projects that will affect the area's transportation infrastructure; and
- An evaluation of existing site conditions, including parking demand, trip generation, transit proximity, pedestrian circulation, loading operations, and the estimated demand forecasts and changes to transportation facilities that result from the Proposed Projects.

The DPIR shall contain a Transportation Component as outlined in the comment letter authored by the Boston Transportation Department, attached in Appendix A.

D. <u>ENVIRONMENTAL PROTECTION COMPONENT</u> BRA.10

The DPIR shall contain an Environmental Protection Component as outlined in the comment letter authored by the BRA's Environmental Specialist, attached in Appendix A.

E. <u>URBAN DESIGN COMPONENT</u> BRA.11

The DPIR shall contain an Urban Design Component as outlined in the comment letter authored by the BRA's Urban Design department, attached in Appendix A. Issues of particular concern are: 1) height and massing of the Children's Clinical Building and 819 Beacon Street projects; 2) availability of open space, as particularly relates to the Prouty Garden, and 3) ensuring a significantly improved public realm.

F. <u>PUBLIC NOTICE</u>

BCH will be responsible for preparing and publishing in one or more newspapers of general circulation in the City of Boston a Public Notice of the submission of the IMPA and DPIR to the BRA as required by Section 80A-2. This Notice shall be published within five (5) days after the receipt of the IMPA and DPIR. Public comments shall be transmitted to the BRA within forty-five (45) days of the publication of this Notice.
Following publication of the Notice, Children's shall submit to the BRA a copy of the published Notice together with the date of publication.

BRA.1 Compliance with LMA Interim Guidelines

Section 3.0 of the 2013 Institutional Master Plan Amendment includes a discussion of compliance with LMA Interim Guidelines

BRA.2 General Information

Section 1.0, General Information includes applicant information and legal information.

BRA.3 Project area

Figure 1-2 identifies the location of the proposed Projects. Please also see Appendix B.

BRA.4 Public benefits

Public benefits are described in Section 1.3.

BRA.5 Regulatory controls and permits

Regulatory controls and permits are included in Tables 2-2, 2-3 and 2-4.

BRA.6 Community groups

A discussion of the community process to date is included in Section 1.6, Public Participation.

BRA.7 Project Description

Chapter 2.0 includes detailed Project Descriptions.

BRA.8 Project alternatives

Chapter 2.0, Sections 2.2.5 and 2.3.5 include discussions of the alternatives considered for the BCCB and 819 Beacon Street Projects respectively.

BRA.9 Transportation Component

Chapters 3.0 and 4.0 include detailed traffic studies of the proposed Boston Children's Clinical Building and 819 Beacon Street Projects respectively.

BRA.10 Environmental Protection Component

Chapter 5.0, Environmental Protection Component, addresses the environmental topics outlined in the BRA Scoping Determination and the BRA's Environmental Specialist.

BRA.11 Urban Design Component

Chapter 6.0, Urban Design Component, addresses the height and massing, open space and public realm.

BRA MEMORANDUM

TO:	Sonal Gandhi, Senior Manager
FROM:	David Grissino AIA, Senior Architect/Urban Designer
DATE:	November 14, 2012
SUBJECT:	**Boston Children's Hospital**
	2012 Institutional Master Plan Notification Form/Project Notification Form

URBAN DESIGN SCOPING DETERMINATION

Background

Boston Children's Hospital (Children's) filed their Institutional Master Plan Notification Form/ Project Notification Form (IMPNF/PNF) on October 12, 2012. The IMPNF/PNF described three IMP Projects; a 445,000 sf Children's Clinical Building (CCB), a Patient and Family Garage Addition of 86 parking spaces, and a 211,170 sf office building at 819 Beacon Street with 526 parking spaces. In addition, a potential Combined Heat and Power (CHP) facility was outlined in concept only, with many options and alternatives left unresolved.

This letter addresses many interrelated issues for these projects concerning height and massing, architectural design, public realm, open space, environmental impacts, and other urban design concerns. Following its incorporation into the Scoping Determination, we anticipate an on-going dialogue with Children's regarding responses to these questions and requested submissions.

The issues outlined here are framed within the context of two highly complex and dynamic urban environments, the Longwood Medical Area (LMA) and the Fenway. As with other medical institutions, the increasing demands on the very limited space within the core of the LMA has led to a strategy of relocating primary and secondary care, administration, and other non-critical uses to other locations in the city and surrounding areas. While this focus on the most specialized services within core of the LMA ensures high levels of patient care, it has also begun to have effects on the overall urban environment both within the institutional areas and the surrounding communities.

Due to their functional needs, the buildings required to address this more limited set of uses are designed with very large floor plates whose efficiencies and layouts result in a broad and bulky exterior massing with tall mechanical areas on the roof. The cumulative effect of this massive building type's continued development in the LMA demands that each project fully explores its individual impact relative to the broader urban context and investigate ways to mitigate those impacts. This trend also brings a large number of people to the LMA, typically by cars, who are less familiar with the area than those employed by the institutions. Vehicular and pedestrian wayfinding, institutional identity, and overall district identity will need to be clarified and enhanced in the future by improving the quality of the district's public realm.

Nearby, the development of Fenway Center (Parcel 7) presents a tremendous opportunity to redefine a portion of the city. As other projects come forward in the area, they need to be carefully reviewed to understand their relationship to Parcel 7 and how they can work together to create a lively, pedestrian friendly district which connects Kenmore Square to Audubon Circle and the Riverway.

Since the projects outlined in the IMPNF/PNF are seeking either Article 80B or Article 80E approval, they are discussed below individually in detail. We suggest submitting the following urban design materials for the schematic design massing and uses. These items are in addition to those described in the typical submission requirements outlined in the BRA Development Review Guidelines (subject to BRA Design Review Staff discussion) found at:

> http://www.bostonredevelopmentauthority.org/pdf/documents/Development Review Guidelines - Final Version (April 2006).pdf

Comments

Children's Clinical Building (CCB)

Height and Massing
As discussed above, the CCB is just one in a family of large clinical and research buildings built or proposed in recent years in the LMA. While it is similar in terms of scale and program, the CCB benefits from a location which is nestled within a large block of buildings with limited direct connections to public streets and sidewalks. The building is, however, located near the Harvard Medical School campus and quad at the terminus of Avenue Louis Pasteur, as well as other large projects at the Brigham and Women's Hospital.

A discussion should be provided of how the current proposal fits within the LMA's broader massing context. This should be supported by analytical diagrams, 3D models (physical and/or computer generated), and other methods which explain the relationship. All materials should incorporate the CCB into a context which extends south to Vining Street, west to Brookline Avenue, north to Emmanuel College, and east to include the main buildings surrounding the Harvard Medical School quad. The context should include all projects which have been built, permitted, or are currently in the development review process. DG.1

In addition, an alternative should be studied which breaks down the broad and bulky visual quality of the current proposal. The alternative should allow for greater sculpting and articulation of the overall mass by increasing the number of stories of the building and modifying the square footage of the uppermost floors. While there is additional height allowed within the parameters of the LMA Interim Guidelines, coordination with Boston Med Flight and BWH helipad operations should occur to understand the impacts of alternative massing concepts on the use of the emergency landing facility situated on the Conners Center for Women's Health. DG.2

Boston Redevelopment Authority

For both the current proposal and the alternative, several perspective views should be generated. Ground level perspective view studies (eye set to 5'-0" above grade) should be provided depicting current and future conditions. Locations should include, but not necessarily be limited to, points:

- From the north side of Longwood Avenue at the easterly intersection of Avenue Louis Pasteur looking southeast
- From the middle of the Harvard Medical School quadrangle looking west
- From Francis Street at the main entrance to the Brigham and Women's Hospital (BWH) looking north
- From the intersection of Huntington Avenue and Francis Street looking northwest

Several birds-eye views should be provided depicting the "future" condition only for both the current proposal and alternative.

A basswood massing model, at 1" = 100' scale, should be provided for the BRA Longwood Medical Area physical model.

Architectural Design

The use of architectural materials and creative composition can have a significant impact on the perceived massing of a building. Due to the issues relative to the massing of the proposed project, a set of graphic and narrative Architectural Design Guidelines and Principles should be provided which the building should follow when the final architectural design is developed. DG.3

The Guidelines should address, at a minimum, the following:

- How the use of materials should relate the proposed project to the specific architectural character and identity of the Children's campus and to the broader LMA district
- How the use of materials should relate to the building massing
- What the potential building materials could be
- How the materials and/or composition should highlight the special uses of the building, such as the healing gardens or sanctuary space, and how the materials relate to long-distanced views of the project
- How the anticipated Level 4/5 mechanical area will be treated architecturally
- How the tall rooftop mechanical systems will be treated architecturally
- How the building should meet the ground plane, particularly in areas which are pedestrian accessible
- How the use of materials, such as glass, could increase the connection between the outdoor and indoor spaces described in Figure 2-6 of the IMPNF/PNF (see also detailed discussion below in *Open Space*)

The guidelines should also include a graphic analysis of other built or proposed projects of a similar scale and use at BWH, Dana-Farber, Beth Israel Deaconess, and other nearby institutions. The analysis should focus on the range of architectural techniques used to address the issue of the massing of the buildings, as well as a recommendation of the DG.4

techniques that would be appropriate for the CCB site. Children's and their architectural team should meet with BRA Urban Design staff to review the approach and content of the Guidelines.

A diagrammatic ground floor plan/site plan should be provided, indicating the intended location of major building components such as service and loading areas, entries, connections to existing buildings or proposed outdoor spaces, and any active ground floor uses. A typical upper floor plan (any plan between Level 9 and Level 11) should also be provided. DG.5

Open Space

One of Children's core values described in the IMPNF/PNF is sensitivity. The ability to address the "compassionate awareness of the stress experienced by families of ill and injured children [and] the impact it can have on the emotions and behavior of the child and families" has been historically aided by the presence of the Prouty Garden.

The Prouty Garden serves as a natural oasis in an incredibly dense (and increasingly dense) urban environment. It provides a greatly needed respite from the technical and clinical world which dominates the long stays for patients and their families. The Garden provides a connection back to their everyday lives, from which they are so separated without the opportunity to experience simple everyday pleasures such as the feel of grass under their feet or the feel of sun and wind on their face. For many, the Garden is not only for the living, but also serves as a memorial for those who have passed away during their stay at the hospital. With the development of the CCB, the loss of this special place demands a detailed understanding of the qualities of the space that is being lost and much greater definition of the new spaces that will replace and enhance the role played by the existing Garden.

A scaled site plan should be submitted which describes in detail the layout and configuration of the existing Garden, along with square footage calculations for hardscaped and landscaped areas. A description should be provided of the range of uses and special elements in the current space, such as the many hidden animal statues that children try to find throughout the Garden. Similar plans should be submitted for the Berenberg Garden, Bader Garden, and Fegan Terrace, depicting the existing square footage and configuration (except for the new proposed Bader Garden space) as well as the proposed future condition. The net new areas in each space should be clearly highlighted. These spaces, which are located at grade, should be maximized in terms of their usable area and some space at the Fegan Terrace should become publically accessible due to its visibility and proximity to Longwood Avenue. DG.6

For the new spaces proposed within the CCB structure, more detail should be provided about the rationale behind their size and configuration, location within the building, relationship to adjacent spaces, and the role they will play relative to the spaces lost in the Prouty Garden. Discussion should address how the proposed spaces accommodate natural qualities such as sunlight, wind, fresh air, and sounds. To provide more insight about the intended use and character of each space, analogues and analysis of the best healing gardens and related spaces (local, regional, and national) should be provided. DG.7

A location should be selected for the development of a special place or contemplative space within the proposed CCB which can serve to specifically commemorate the original Prouty Garden as a memorial to those who lost their lives during their stay at the hospital. Opportunities should be investigated to preserve elements from the existing Garden.

Environmental Impact

Due to the location of the CCB site, there is limited public access by pedestrians. Many of the impacts are therefore not as great locally, but will be experienced at a distance from the project. Of particular concern will be wind and shadow impacts on Francis Street, Longwood Avenue, and the Harvard Medical School quad. However, local wind and shadow impacts will be critical to understand for all outdoor spaces at grade or at elevated locations within the project. Studies should allow for the clear understanding of the amount of sunlight able to reach these spaces and a quantitative wind tunnel analysis should provide multiple sensors in these locations. A daylight analysis will be required for the project, as described in the Development Review Guidelines (see above link). DG.8

For additional detail regarding environmental impacts, see comment letter by Katie Pedersen.

<u>819 Beacon Street</u>

Height and Massing

The area around 819 Beacon Street is undergoing change due to several permitted or anticipated projects. To fully evaluate the height and massing of the current proposal, more information will be required, through narrative and 3D analytical drawings, which places the project in the context of anticipated projects including Turnpike Air Rights Parcel 7 and Boston University Site EE (see BU IMP, August 2012), as well as the existing buildings in the area. All materials should incorporate the 819 Beacon project into a context which is roughly bound by Peterborough Street, Park Drive, and Commonwealth Avenue. The context should include all projects which have been built, permitted, or are currently in the development review process. DG.9

In addition, an alternative should be studied which investigates the opportunity to step back the building mass along the Beacon Street elevation to more closely align the perceived building height with the approved massing for Parcel 7. Redistribution of the massing should take into consideration the broader urban design concepts for Parcel 7 and the scale of the Audubon Circle neighborhood, as perceived from the major streets and public realm. DG.10

For both the current proposal and the alternative, several perspective views should be generated. Ground level perspective view studies (eye set to 5'-0" above grade) should be provided depicting current and future conditions and include the architectural design in its current level of development. Locations should include, but not necessarily be limited to, points: DG.11

- From Beacon Street at the midpoint of the Massachusetts Turnpike looking southwest
- From Beacon Street at Miner Street looking northeast
- From the north side of Beacon Street at Park Drive looking northeast
- From a point at the intersection of the pedestrian pathway and the end of Burlington Avenue

Several birds-eye views should be provided depicting the "future" condition only for both the current proposal and alternative.

Architectural Design DG.12

The proposed project will represent a significant transition from the primarily residential character and articulation along Beacon Street to the more mixed use nature of Kenmore Square and the Parcel 7 development. A discussion and graphic analysis should be provided which outlines how the exterior architectural design of the building responds to this condition and how the use of materials relates to the overall building massing.

Also of interest is how the project's architectural design will relate to the nearby residential properties, future open spaces, and future adjacent development. Special attention should be given to the exterior design of the parking structure.

Scaled elevations and renderings for all sides of the building and the parking structure should be provided which outline the major building materials, fenestration, and architectural details of the exterior design. A developed site plan should provide details regarding the ground floor configuration and location of major building components such as service and loading areas, entries, and the active ground floor uses. Elements which enhance the pedestrian experience along Beacon Street and the multi-use path should be highlighted.

Public Realm DG.13

The proposed Parcel 7 development will be making significant public realm improvements to the area, including new streets, walkways, and landscaped areas which will enable greater connectivity between the existing and future transit infrastructure and development. The southern edge of the 819 Beacon Street property will play a role in this new public realm system.

A developed landscape plan, which graphically includes the Parcel 7 improvements, should be provided which details the relationship and contributions of the proposed project to this future system. The site plan should include an area which extends from a point immediately west of Miner Street to the area behind Building 1 in the Parcel 7 development.

The site section (Figure 2-12) in the IMPNF/PNF should be updated, refined, and expanded to include the building on the north side of Beacon Street, proposed public realm improvements, and the five-story building at the end of Burlington Avenue.

<u>Patient and Family Garage Addition</u>

Architectural Design DG.14

The IMPNF/PNF states that the one-story addition to the existing garage will match seamlessly with the existing structure. Scaled and annotated elevations for all four sides of the garage should be submitted for review, highlighting the existing and proposed materials.

In addition, a scaled ground floor site plan should be submitted which more clearly describes the proposed redesign of the garage exit. An existing site plan should accompany any alternative redesign proposals and include more of the immediate area context.

Combined Heat and Power

The IMPNF/PNF outlines the concept of Children's developing a Combined Heat and Power Facility (CHP) which would consist of various components located in the CCB and other sites throughout the area. This concept is being studied by Children's and no detailed information has been provided to date. Therefore, any Scoping for the CHP must wait until there is a formal proposal regarding the configuration and extents.

As Children's investigates alternatives for the CHP, it should avoid locating elements of the system in sensitive locations, such as places where the public realm could be impacted or near sensitive open space areas such as the Riverway.

DG.1 Manner in which BCCB fits within the LMA's broader massing context

Please see Section 6.1.1 and Figures 6-1 and 6-2.

DG.2 Alternative massing to proposed BCCB and coordination with Boston Med Flight and BWH helipad operations

Please see Section 6.1.1 and Figures 6-3 through 6-13.

DG.3 Design Guidelines of proposed BCCB

Please see Section 6.1.2.

DG.4 Graphic analysis of other built or proposed projects of similar scale to proposed BCCB

Please see Section 6.1.1 and Figures 6-1 and 6-2. Children's will continue to meet with the BRA and BCDC as the design of the Project progresses.

DG.5 Diagrammatic ground floor site plan

Please see Figure 2-7 and floor plans in Appendix G.

DG.6 Open space

The sculptural elements found in the existing Prouty Garden will be preserved and repurposed throughout the green and gathering spaces planned in and around the new BCCB. Please see Section 2.2.2 and Figure 2-8 as well as Section 6.1.3 and Figures 6-14 to 6-18.

DG.7 Rationale of location and size of proposed spaces and analogues and analysis of similar spaces elsewhere

Please see Section 6.1.3, Figures 6-17 to 6-21, and Section 2.2.2. Sections 5.1 and 5.2 provide information on wind and shadow impacts on the spaces.

DG.8 Wind, shadow and daylight Impacts

Sections 5.1, 5.2 and 5.3 include detailed wind, shadow and daylight analyses.

DG.9 Materials to incorporate context

Please see Section 6.2.

DG.10 Alternative with redistributed massing

Section 6.2 includes a discussion of the redistributed massing.

DG.11 Perspectives and bird's eye views

Perspectives are included in Figure 2-11 and Figures 6-22 to 6-26.

DG.12 Architectural Design

Section 6.2 includes a discussion of the architectural design.

DG.13 Public Realm/landscaped plan and updated Figure 2-12

Please see Figure 6-30.

DG.14 Scaled and annotated elevations of all four sides of garage and ground floor plan

Please see Figure 2-14.

BOSTON
TRANSPORTATION
DEPARTMENT

ONE CITY HALL SQUARE • ROOM 721
BOSTON, MASSACHUSETTS 02201
617-635-4680 • FAX 617-635-4295

November 13, 2012

Sonal Gandhi
Boston Redevelopment Authority
One City Hall Square, 9th Floor
Boston, MA 02201

RE: Children's Hospital Boston - Institutional Master Plan Amendment/IMP

Dear Ms. Gandhi,

Thank you for the opportunity to comment on the Institutional Master Plan/Project Notification Form (IMP/PNF) for Children's Hospital Boston. The projects include: 1) the Children's Clinical building, a 445,000 square foot (sf) clinical building in the core campus; 2) an 86 space (76 net new) addition to the Patient and Family Parking Garage on Blackfan and Longwood; and 3) 819 Beacon Street, a 211,170 sf mixed-use building with office space and ground floor retail, and a 526 space (277 net new) parking garage.

Information and analysis provided by the proponent will lead to a Transportation Access Plan Agreement (TAPA), which will codify the projects' transportation-related elements, including mitigation items. To further the discussion that will lead to the TAPA, the following comments identify issues needing clarification, additional submissions, and proposed mitigation items.

Public Transportation

Children's Hospital in LMA is well served by public transportation, with ready access to buses along Brookline, Longwood and Huntington avenues and Green Line D and E branches. 819 Beacon will be equally well served, with the new Yawkey Commuter Rail Station (under construction) and Green Line C and D branches and buses in Kenmore Square.

As described in the IMPNF/PNF, Children's provides a 50 percent subsidy to the cost of MBTA and commuter rail passes for employees, and free transit passes to employees who give up their parking spots for three months under the "Three for Free/Cash Out" program.

THOMAS M. MENINO, Mayor
Thomas J. Tinlin, Commissioner

In addition, Children's operates a number shuttles between its campus, commuter rail stations, and satellite parking locations, and as a member of MASCO, Children's supports additional shuttle routes that provide service within one-half mile of the Children's LMA campus.

BTD commends the efforts of Children's Hospital to promote the use public transportation, and requests that they continue to push the envelope on this.

Traffic

While preliminary trip generation figures were provided in the IMPNF/PNF, detailed traffic analysis of the impacts of the proposed projects will be performed for the IMP. The analysis for the IMP will take into consideration the commuting pattern of hospital employees, which differs from typical commuting patterns and has less of an impact on peak hour demand. BTD.1

To address traffic congestion in the LMA and Fenway, a sustained effort is needed by the City, the State, the MBTA, and major employers and institutions including Children's Hospital, to encourage transportation by sustainable modes – walking, cycling, and transit – and to maximize the efficiency of existing roadways through signal timing adjustments and other operational improvements.

Toward this end, the City has made significant progress in improving conditions for cyclists on city streets, and Mayor Menino is about to release Boston's Complete Streets Guidelines to ensure that all modes are addressed in all street redesign projects. In addition, the City has been a supporter and advocate for transit improvements, including the MBTA's Key Routes initiative, construction of Yawkey Station, and efforts to preserve right-of-way for the Urban Ring. Recognizing the critical role transit and cycling can play in allowing for growth while reducing congestion, Children's Hospital and other LMA institutions through MASCO have been very supportive of these efforts.

In the IMPNF/PNF, Children's proposes a range of strategies to discourage commuting by single occupancy vehicle and encourage more sustainable modes of travel. Through the TAPA process, BTD will work with Children's Hospital to codify these commitments and to outline an ambitious TDM strategy to increase mode share for walking, cycling and transit in this area. BTD.2

Pedestrian Access

Given the high percentage of people who walk in the Fenway and LMA or combine transit with walking as part of their commute, providing safe and comfortable pedestrian access to the new facilities at 819 Beacon Street and the Clinical Building is critical.

Future submittals should include a site plan showing pedestrian access routes to these buildings on the streets and through the camps, and improvements to the public realm. Proposed sidewalk improvements should be consistent with the City's Complete Streets Guidelines, including goals for tree cover and sustainable stormwater management. BTD.3

Bicycle Access and Parking

With expanded bicycle facilities throughout the City and the successful launch of Hubway bike share, bicycle ridership in Boston has been increasing, and this trend is expected to continue. Children's main campus is located between two major links in the off-road bicycle network - the Southwest Corridor and the Emerald Necklace – and is well located for bicycle commuting.

The IMP provides a good opportunity to do comprehensive planning related to bike access and parking. As part of the IMP, Children's should provide a campus-wide bike parking and access plan, including a description of how the new buildings will meet the current City of Boston Bike Parking Guidelines. The plans must include on-site, secure covered bike parking spaces for employees, and covered or open outdoor bike parking spaces for patrons and visitors. BTD.4

The bike parking and access plans should also include existing and proposed Hubway stations. Given the proximity of 819 Beacon Street to the LMA campus and its location along the future Fenway-Yawkey multiuse path, 819 Beacon Street would be an ideal location for Children's to sponsor a new Hubway Station.

Parking

The parking ratio for the new development proposed in these projects is 0.59 new spaces per 1,000 sf of development, which is within the for the Fenway/Audubon Circle neighborhood of 0.75 spaces per 1,000 sf of development. However, the impacts of the parking on the Audubon Circle neighborhood merit special consideration, as described below.

1. 819 Beacon Street Garage

The garage at 819 Beacon Street includes 249 replacement spaces, 158 spaces to support the new building on site, and 119 spaces for Children's employees working in the LMA, including the proposed new 445,000 sf Clinical Building.

The design for the garage at 819 Beacon Street must include electric vehicle charging stations and priority spaces for car pool, car share, and low-emission (electric or hybrid) vehicles. Employees who park in the garage should be required to pay full market rate for parking as an incentive to switch to other modes. BTD.5

Impacts on Audubon Circle

While the overall parking ratio for the proposed new development is well within the guidelines for the area, the impacts of the parking fall disproportionately in the Audubon Circle neighborhood. To mitigate these impacts, Children's Hospital should participate in three projects that are designed to improve safety and encourage walking, cycling and transit in this neighborhood:

a) Audubon Circle Maintenance

The City of Boston is partnering with MassDOT to reconstruct Audubon Circle and a portion of Beacon Street on either side to reduce accidents and make the road safer and more conducive to walking and cycling. The improvements will create plazas that require ongoing maintenance.

Children's can contribute to this project by funding ongoing maintenance of streetscape improvements in Audubon Circle that will enhance the safety, sustainability, and livability of the neighborhood. We estimate the maintenance costs to be approximately $15,000 per year. BTD.6

b) Fenway-Yawkey Multiuse Path Righ-of-Way

The Fenway-Yawkey multiuse path is an off-road bicycle and pedestrian path that will connect Fenway and Yawkey stations and provide a low-stress alternative to crossing the Sears Rotary. The city is partnering with MassDOT to design this path and will be seeking construction funds. A portion of the path would encroach on the south side of the 819 Beacon Street parcel. Children's has agreed to provide a building setback to accommodate this path.

As part of the next submittal we request that Children's coordinate with BTD on the relationship of the path to the site design for the building. We would also request that Children's commit to maintaining the portion of the path adjacent to their site. BTD.7

c) The Urban Ring Right-of-Way

The Urban Ring is a circumferential transit project that would connect the Fenway neighborhood and LMA with locations in Cambridge, Somerville, East Boston and Roxbury. The preferred path for the Urban Ring encroaches on the 819 Beacon Street parcel along the south and east sides. The project is currently on hold due to lack of funding, however the City of Boston is committed to protecting the right-of-way from development that would preclude future implementation.

Preserving a path for the Urban Ring requires significant setbacks on the south and east sides of the 819 parcel. Children's Hospital has agreed to these setbacks.

As part of the next submittal, we request that Children's confirm with MassDOT and the Urban Ring Advisory Committee that the setbacks to be provided, in combination with CSX right-of-way, will be sufficient for the future Urban Ring. BTD.8

2. Patient and Family Garage

The addition of 76 spaces in the Patient and Family Garage in the Longwood Medical Area (LMA) serves an important need for short term parking by people who may not be able to travel by other modes. The redesign of the exit for this garage should clearly show any impacts on the sidewalk, and should minimize driveway openings. Please refer to Boston's Complete Street Guidelines for preferred driveway configurations. BTD.9

Service and Loading/Pickup and Dropoff

As noted in the IMPNF/PNF, hospital loading and service activities are handled at several off-street facilities in the LMA. Future submittals should provide details on how loading and service activities will be handled off-street in the new Clinical Building and at 819 Beacon Street. BTD.10

The IMPNF/PNF describes valet operations and passenger pickup/dropoff at the Main Entrance to Children's Hospital on Longwood Avenue, across from the Patient and Family Parking Garage. This area is congested at times, occasionally impacting traffic and pedestrians access on Longwood Avenue. The IMP should describe methods to improve the efficiency of this pickup and dropoff operation. In addition, Children's should consider making at-grade improvements to the pedestrian environment to facilitate passage from the Patient and Family Garage to the Main Entrance. BTD.11

Transportation Demand Management

The IMPNF/PNF outlines many of the measures Children's currently employs to minimize traffic and encourage employees to shift from single occupancy driving to other modes. BTD looks forward to reviewing more details of the program and any methods proposed to measure and improve its effectiveness. Using the existing program as a foundation, BTD will work with Children's to determine the specifics to be codified in the TAPA. BTD.12

Site Plan

The proponent needs to submit an engineered site plan within the context of the surrounding roadways at 1:20 scale depicting: BTD.13

- Vehicular Access and Circulation
- Parking Layout and Circulation
- Pedestrian Access and Circulation
- Bicycle Access and Circulation
- Shuttle/Van Pool Pickup and Dropoff
- Parking Spaces for Car Sharing services
- Service and Loading*
- Roadways and Sidewalks
- Building Layout
- Bicycle Parking Locations and Types (covered, indoor, bike share, etc)
- Transit Stops and Connections
- Electric Vehicle Charging Stations

* *Trash compactors/dumpsters need to be depicted as well.*

Construction Management Plan

As the project advances, the proponent will be required to develop and submit a detailed Construction Management Plan (CMP) to BTD for review and approval. The CMP will address TDM measures for construction workers, proposed street occupancies, equipment stating, sidewalk relocations and hours of construction work. BTD will work with the proponent to execute the CMP. BTD.14

We look forward to working cooperatively with Children's Hospital, the Audubon Circle neighborhood, and the LMA community to reach an agreement on the plans and mitigation measures to be codified in the TAPA.

Sincerely,

Charlotte Fleetwood

Charlotte Fleetwood
Transportation Planner

Cc: Vineet Gupta, Director of Policy and Planning
John DeBenedictis, Director of Engineering

BTD.1 Traffic analysis to include commuting patterns of employees

Chapters 3.0 and 4.0 of this DPIR/DEIR provide detailed traffic analyses of the proposed Projects. These analyses include the many employee trips that occur during peak hours via different mode shares (as calculated using the BTD's mode share guidelines).

BTD.2 Codify commitments to discourage single occupancy vehicles through TAPA

BCH looks forward to implementing the TDM strategies and programs discussed in Sections 3.1.2.6 and 4.1.2.5 with the BTD as part of the preparation, review and execution of a Transportation Access Plan Agreement in connection with this DPIR/DEIR.

BTD.3 Pedestrian access routes

Please refer to Section 3.2.6 and 4.3.3.5 for information regarding pedestrian access at each site, respectively. In addition, Figure 3-2 shows proposed BCCB pedestrian access. Figures 2-7 and 6-30 show public realm improvements including sidewalk improvements. Any improvements will be consistent with the City's Guidelines. Figure 4-1 shows proposed 819 Beacon Street pedestrian access.

BTD.4 Bicycle access and parking

Cyclist access to both Project sites is detailed in Cycling Sections in Chapters 3.0 and 4.0 of the DPIR/DEIR. BCH will discuss and finalize bicycle parking location and number of spaces with BTD as part of the preparation, review and execution of a TAPA. BCH will also continue to work with the BTD to collectively assess the viability of placing a new Hubway Station at the 819 Beacon Street site.

BTD.5 Electric vehicle charging stations, priority parking and parking rates

BCH is committed to exploring the feasibility of including preferential parking and electric charging stations in connection with the implementation of the proposed 819 Beacon Street Project. BCH looks forward to continuing these discussions with the BTD as part of the preparation, review and execution of a TAPA in connection with the 819 Beacon Street Project. Parking pricing at 819 Beacon Street will be offered at market rates commensurate with staff parking pricing in the Fenway area.

BTD.6 Audubon Circle Maintenance

Children's believes that a quality streetscape in front of the 819 Beacon Street Project is important for the City and Children's.

BTD.7 Relationship of multi-use path to the site design of 819 Beacon Street and maintenance

BCH has worked closely with the BRA and the BTD to develop an acceptable Project design that allows for the future implementation of the Multi-use path as well as the Urban Ring tunnel. Both of these future transportation improvements would be accommodated on BCH property under future conditions. These accommodations are also illustrated in Figure 4-13. Initially, the multi-use path with be located to the south of the BCH property within the confines of the former CSX right-of-way. In connection with the construction of other transportation improvements within the former CSX right-of-way, the City intends to shift the multi-use path northerly to be situated within the southerly portion of the BCH property. In connection with the shifting of the multi-use path on the BCH property, BCH will work with City agencies to enter into an agreement that, among other things, provides BCH with the right to maintain the portion of the multi-use path situated on the BCH property.

BTD.8 Setbacks provided for Urban Ring

BCH will continue to work with MassDOT on the 819 Beacon Street Project layout. Site constraints due to the Urban Ring, MBTA Green Line tunnel and City of Boston multi-use path have all been take into account into the proposed Project's design and are shown in Figure 4-13. Figure 2-13 shows the 819 Beacon Street site constraints.

BTD.9 Redesign of exit of Patient and Family Parking Garage

After careful consideration, Children's has decided not to pursue adding an additional egress lane from the Patient and Family Parking Garage. This space is a critical location for facilities equipment used to keep adjacent pedestrian access ways and sidewalks clear during inclement weather. It is also where Children's parking security is stationed – and they would have no alternative place to be stationed with the additional egress lane in place. Further, Children's recently invested in pay-on-foot (POF) revenue control for its Patient and Family Garage. POF requires parking payment transactions to occur in the lobby of the garage and in advance of motorists getting to their vehicle. This improvement has resulted in shorter wait times at the garage egress—as patients now only have to insert their paid parking ticket into the exit gate to leave the facility. This has helped to dramatically reduce queues and waiting times and has alleviated the need for an additional exit lane from the garage.

BTD.10 Loading and service for the BCCB and 819 Beacon Street

Please refer to Loading and Service in Sections 3.1.2.5 and 4.1.2.4 for a detailed discussion of future loading operations for both the BCCB and 819 Beacon Street Projects.

BTD.11 Efficiency of pick-up and drop-off at Main Entrance

Children's is renovating its lobby and Main Entrance to allow for more efficient processing of patient and visitor traffic. Drop-off areas will be reconfigured to provide for more efficient loading and unloading, a defined area for chair cars and oversized vehicles will be created, and a dedicated exit path will be put in place for these larger vehicles to Binney Street that does not conflict with exiting patient vehicles towards Longwood Avenue.

BTD.12 Transportation Demand Management

Please see Response to Comment BTD.2.

BTD.13 Engineered Site Plan

BTD will be provided with a 20-scale site plan under separate cover.

BTD.14 Construction Management Plan

A Construction Management Plan will be submitted for review prior to the issuance of a building permit. Section 5.9 includes a discussion of potential construction impacts and mitigation as well as Sections 3.3.6 and 4.3.6.

BRA MEMORANDUM

TO: Sonal Gandhi

FROM: Katie Pedersen

DATE: November 13, 2012

RE: Boston Children's Hospital
Boston, Massachusetts
Institutional Master Plan Notification Form/Project Notification Form

I have reviewed the Institutional Master Plan Notification Form/Project Notification Form (IMPNF/PNF) dated October 12, 2012 and submit the following comments for the Environmental Protection Component. The IMPNF/PNF Proposed Project consists of the following: the New Children's Clinical Building (CCB), the Patient and Family Parking Garage Addition and an office building to be located at 819 Beacon Street.

The proposed Children's Clinical Building construction involves the demolition of three buildings and portions of two others and will occupy a gross floor area of 445,000 square feet and is designed to be 161 feet in height and will have a net new building area of 403,311 square feet. The proposed Patient and Family Parking Garage Addition design includes 29,370 square feet (which will include 86 above-grade parking spaces) of gross floor area and is 79'-8" in height. The proposed 819 Beacon Street project is designed to have a gross floor area of 424,130 (including 526 above-grade parking spaces) and be 142 feet in height.

The environmental impacts of the proposed Children's Clinical Building project and the proposed 819 Beacon Street project shall be analyzed separately, in that, an individual wind tunnel analysis, shadow analysis, daylight analysis, solar glare analysis, air quality analysis, noise analysis shall be performed and the Proponent shall generate and submit individual LEED Checklists. The results will be examined both for their individual impacts as well as for the cumulative impact from the development of both (all three additions however, separate studies will not be required for the proposed Patient and Family Parking Garage Addition, unless otherwise noted).

Wind

In general, the Boston Redevelopment Authority (BRA) has adopted two standards for assessing the relative wind comfort of pedestrians. First, the BRA wind design criterion states that an effective gust velocity of 31 mph should not be exceeded more than one percent of the time. The second set of criteria used by the BRA to determine the acceptability of specific locations is based on the work of Melbourne. The placement of wind measurement locations shall be based on an understanding of the pedestrian use of the Proposed Project and the surrounding area. This set of criteria is used to determine the relative level of pedestrian wind comfort for activities such as sitting, standing or walking.

The Proponent shall be required to conduct wind tunnel analysis of the Proposed Project and all Project Alternative scenarios (as requested by the BRA) set forth in of the Scoping Determination to evaluate the Pedestrian Level Wind (PLW) impacts of each extending a minimum of 1,500 feet from the base of the Proposed Project. Measurement points for this PLW analysis should be placed at all building entrances, entrances to public transportation stations, crosswalks and public sidewalks, public plazas and gathering areas, parks and green spaces, at regular intervals. These PLW studies, which must be completed for all Project Alternatives, must conform to the following specifications: KP.1

- Customary Wind Roses based on aggregated Boston Wind data from Logan Airport 1945-1996

- Special test cases for conditions with sustained wind speeds of 30, 40, and 50 MPH; with gusts up to 1.5X sustained wind speed.

Shadow

A shadow analysis shall be performed for existing and build conditions for the hours 9:00 a.m., 12:00 noon, and 3:00 p.m. for the vernal equinox, summer solstice, autumnal equinox, and winter solstice and for 6:00 p.m. during the summer and autumn, it should be noted that due to the time differences (daylight savings v. standard), the autumnal equinox shadows would not be the same as the vernal equinox shadows and therefore separate shadow studies are required for the vernal and autumnal equinoxes. KP.2

The shadow impact analysis shall include net shadow as well as existing shadow and must clearly show the incremental impact of the Proposed Project. For purposes of clarity, new shadow should be shown in a dark, contrasting tone distinguishable from existing shadow. The shadow impact study area shall include, at a minimum, the entire area to be encompassed by the maximum shadow expected to be produced by the Proposed Project. The build condition(s) shall include all buildings under construction and any proposed buildings anticipated to be completed prior to the completion of the Proposed Project. Shadow from all existing buildings within the shadow impact study area shall be shown. A North Arrow shall be provided on all figures. Shadows shall be determined by using the applicable Boston Azimuth and Altitude data.

Particular attention shall be given to existing or proposed public open spaces and pedestrian areas, including, but not limited to, the existing sidewalks and pedestrian walkways within, adjacent to, and in the vicinity of the Proposed Project and the existing and proposed plazas, historic resources and open space areas within the vicinity of the Proposed Project

Daylight

(Please refer to Urban Design's comments)

Solar Glare

The Proponent has stated that the Proposed Project's exterior materials have yet to be determined. However, the Proponent has stated that the Proposed Project exterior is not likely to incorporate the use reflective glass and instead will include brick, stone, pre-cast concrete and glass. Thus, the Proponent does not anticipate the creation of either an adverse solar glare impact or a solar heat buildup in nearby buildings. However, should the design change and incorporate substantial glass-facades (reflective glass), a solar glare analysis shall be required. KP.3

The analysis shall measure potential reflective glare from the buildings onto potentially affected streets and public open spaces and sidewalk areas in order to determine the likelihood of visual impairment or discomfort due to reflective spot glare. Mitigation measures to eliminate any adverse reflective glare shall be identified.

Air Quality

The Proponent shall provide a description of the existing and projected future air quality in the Proposed Project vicinity and shall evaluate ambient levels to determine conformance with the National Ambient Air Quality Standards (NAAQS). Careful consideration shall be given to mitigation measures to ensure compliance with air quality standards.

A future air quality (carbon monoxide) analysis shall be required for any intersection (including garage entrance/exits) where the level of service (LOS) is expected to deteriorate to D and the Proposed Project causes a 10 percent increase in traffic or where the level of service is E or F and the Proposed Project contributes to a reduction in LOS. KP.4

The study shall analyze the existing conditions, future No-Build and future Build conditions, for all Project Alternatives. The methodology and parameters of the air quality analysis shall be approved in advance by the Boston Redevelopment Authority (BRA) and the Massachusetts Department of Environmental Protection (DEP). Mitigation measures to eliminate or avoid any violation of air quality standards shall be described.

There are currently two sets of National Ambient Air Quality Standards (NAAQS) for particle pollution; one for coarse particles (PM10) and the other for fine particles (PM2.5). KP.5

The health-based primary standard for PM10 is 150 micrograms per cubic meter (ug/m) averaged over a 24-hour period. The primary standards for PM2.5 are 15 ug/m averaged over an entire year and 35 ug/m averaged over a 24-hour period. The Proponent shall be required to demonstrate compliance.

A description of the Proposed Project's heating and mechanical systems including location of buildings/garage intake and exhaust vents and specifications, and an analysis of the impact on pedestrian level air quality and on any sensitive receptors from operation of the heating, mechanical and exhaust systems, including the building's emergency generator as well as the parking garage, shall be required. Measures to avoid any violation of air quality standards shall be described. KP.6

The Construction Management Plan (CMP) shall include mitigation measures to ensure the short-term air quality impacts from fugitive dust expected during the early phases of construction from demolition of existing buildings and site preparation activities are minimal. KP.7

Noise

KP.8

The Proponent shall be required to establish the existing noise levels at the Proposed Project site and vicinity based upon a noise-monitoring program and shall calculate future noise levels after the Proposed Project completion based on appropriate modeling and shall demonstrate compliance with the Design Noise Levels established by the U.S. Department of Housing and Urban Development for residential and other sensitive receptors and with all other applicable Federal, State and City of Boston noise criteria and regulations. The noise evaluation shall include the effect of noise generated by the area's traffic and other noise sources. Any required mitigation measures to minimize adverse noise impacts and to reduce interior noise levels of residential and other sensitive receptors to acceptable limits shall be described.

Analyses of the potential noise impacts from the Proposed Project's mechanical and exhaust systems and compliance with applicable regulations of the City of Boston shall be required. Descriptions of the Proposed Project's mechanical and exhaust systems and their location shall be included. Measures to minimize and eliminate adverse noise impacts on nearby sensitive receptors shall be described.

Groundwater

The Proponent has stated that the proposed Patient and Family Parking garage is located within the Groundwater Conservation Overlay District (GCOD). However, the proposed garage addition is simply the addition of one floor (to the existing garage) and thus not likely to create an impact that would trigger a threshold for GCOD applicability.

Despite the fact that two of the three proposed buildings are not within the GCOD, the Proponent has pledged that the Proposed Project will meet GCOD standards. In particular, the Proponent has stated that the proposed Children's Clinical Building, which is located outside of the GCOD, but, has an extremely deep basement, will be designed, so as to ensure that it will not have an adverse impact on the area groundwater levels both during construction, as well as during the operation of the building.

Sustainable Design/Green Buildings

The purpose of Article 37 of the Boston Zoning Code is to ensure that major buildings projects are planned, designed, constructed and managed to minimize adverse environmental impacts; to conserve natural resources; to promote sustainable development; and to enhance the quality of life in Boston. Any proposed project subject to the provisions of Article 37 shall be LEED Certifiable (U.S. Green Buildings Council) under the most appropriate LEED rating system. Proponents are encouraged to integrate sustainable building practices at the pre-design phase. Proposed Projects which are subject to comply with Section 80B of the Boston Zoning Code, Large Project Review, shall be subject to the requirements of Article 37.

The Proponent has provided LEED for New Construction 2009 checklists for Proposed Project buildings. However, the checklist for the proposed Children's Clinical Building is missing point scores (where the credits ask for a specific number within a given range) and instead simply has indicated "Y" or "N". The Proponent shall be required to amend the checklist and resubmit with the appropriate scores indicated. KP.9

The Proponent is encouraged to strive to attain additional points, such as those indicated as "maybes", as points may be dropped during the design and construction phases. The Proponent shall be required to continue to work with the Proposed Project team and research additional sustainable and energy-efficient measures to be incorporated into the Proposed Project design and as the building design develops, strive to achieve a higher level of LEED certification.

The Appendix G of Standard 90.1-2007 requires that the energy analysis done for the building performance rating method include all energy costs associated with the building project. To achieve points using this credit, the Proposed Project design must meet the following criteria: Comply with the mandatory provisions (Sections 5.4, 6.4, 7.4, 8.4, 9.4 and 10.4) in Standard 90.1-2007 (with errata but without addendum). Include all energy costs associated with the building project. Compare against a baseline building that complies with Appendix G of Standard 90.1-2007 (with errata but without addendum). The default process energy cost is 25% of the total energy cost for the baseline building. If the Proposed Project building's process energy cost is less than 25% of the baseline building energy cost, the LEED submittal must include documentation substantiating that process energy inputs are appropriate. All of which shall be included the Final Article 37 Submission Package.

The Proponent has stated that a minimum of a 20% improvement over a baseline building performance rating has been targeted for both the proposed Children's Clinical Building project as well as the proposed 819 Beacon Street project. The Proponent is reminded that the Proposed Project must demonstrate compliance with the Massachusetts Stretch Energy Code. The Proponent shall demonstrate that the designed energy use in the KP.10

Proposed Project is at least 20% below the use expected based on the energy modeling standards contained in ASHRAE 90.1 2007.14, which is the latest version of the national model code for commercial buildings. The Proponent shall be required to explore methods to achieve an even greater percentage better than the Massachusetts Stretch Energy Code.

The Proponent shall be required to revise and update the LEED checklist as the Proposed Project design advances. Prior to the Article 80B process completion the Proponent shall be required to submit a Final Article 37 Submission Package (for each building). This package shall include the most current and accurate LEED Checklists, together with a comprehensive narrative, detailing how each of the points will be achieved. Please refer to the USGBC guidelines as to what is deemed necessary to demonstrate that the point has been achieved (or will be).

Boston Redevelopment Authority – Katie Pedersen

KP.1 Wind Analyses

Section 5.1 includes detailed wind analyses.

KP.2 Shadow

Section 5.2 includes detailed shadow studies.

KP.3 Solar glare

As noted in the BRA Scoping Determination, a solar glare analysis is not required at this time because the proposed Projects' exteriors are not likely to incorporate the use of reflective glass. If the designs change, solar glare analyses may be required.

KP.4 Air quality - microscale

A microscale analysis is included in Section 5.5.

KP.5 Air quality – particle pollution

Both particulate matter less than 10 microns in diameter (PM10) and less than 2.5 microns in diameter (PM2.5) are analyzed as part of the stationary source analysis included in Section 5.5.

KP.6 Air quality – mechanical equipment

The stationary source analysis presented in Section 5.5 includes analysis of air quality impacts related to emissions from gas-fired engine, boilers, emergency generators, cooling towers, and other combustion equipment.

KP.7 Construction mitigation

A Construction Management Plan including short term air quality measures will be submitted to the BTD prior to issuance of the building permit.

KP.8 Noise

Section 5.6 of the DPIR/DEIR includes a detailed noise analysis.

KP.9 Update of BCCB LEED checklist

Section 5.10 of the DPIR/DEIR includes a discussion of the LEED updated checklist which is included in Appendix F.

KP.10 Compliance with Stretch Code

Compliance with the Stretch Code is addressed in Sections 9.2 and 9.3.

Boston Water and Sewer Commission

980 Harrison Avenue
Boston, MA 02119-2540
617-989-7000

November 13, 2012

Secretary Richard K. Sullivan
Executive Office of Energy and Environmental Affairs
Attention: MEPA Office
Deidre Buckley, EEA No. 14964
100 Cambridge Street
Suite 900
Boston, MA 02114

and

Sonal Gandhi
Senior Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Boston Children's Hospital
Institutional Master Plan Notification Form /
Project Notification Form
IMP Amendment

Dear Secretary Sullivan and Ms. Gandhi:

The Boston Water and Sewer Commission (Commission) has reviewed the Institutional Master Plan Notification Form (IMPNF) / Project Notification Form (PNF) and IMP Amendment for the Boston Children's Hospital (BCH). This letter provides the Commission's comments on the IMPNF/PNF and IMP Amendment.

The IMPNF/PNF and IMP Amendment proposes three projects: 1) an on-campus Project near 55 Shattuck Street that includes an approximately 445,000 square foot Children's Clinical Building (CCB) with clinical and medical support space with co-generation facilities (the Combined Heat and Power Facility); 2) an approximately 29,370 square foot Patient and Family Parking Garage Addition which will include one new level of parking with approximately 86 parking spaces (76 net new spaces due to the elimination of 10 surface spaces in connection with the construction of the Clinical Building); 3) an off-campus project comprised of an office building at 819 Beacon Street located in the Audubon Circle neighborhood which will include approximately 211,270 square feet of office space, ground floor retail, and approximately 526 parking spaces within a new garage, (including 249 replacement spaces and 277 net new spaces of which 158 spaces will support the office space within 819 Beacon Street and 119 spaces will be available to support the needs of the Children's employee working in the Longwood Medical Area).

For water service, the proposed CCB site is served by a 8-inch low service main in Shattuck Street. Children's Core campus is served by the following water mains: an 8-inch low service main in Binney Street, a 12-inch low service main in Blackfan Circle, an 8-inch and 12-inch main low service main in Children's Way and a 12-inch low service main in Longwood Avenue. The proposed 819 Beacon Site is served by a 12-inch low service water main in Beacon Street. The IMPNF/PNF and IMP Amendment states that the proposed CCB project will increase the water demand by approximately 85,278 gallons per day (gpd) and the proposed 819 Beacon Street building will require 17,181 gpd. If constructed, the Combined Heat and Power Facility will require approximately 150,000 gpd.

For sanitary sewer service, the proposed CCB site is served by the following sanitary sewer lines adjacent to the core campus: a 12-inch sanitary sewer in Binney Street, a 39-inch by 41-inch sanitary sewer in Blackfan Circle, a 12-inch sanitary sewer in Children's Way and a 15-inch and a 24-inch sanitary sewer in Longwood Avenue. The proposed CCB will generate approximately 77,525 gpd of wastewater. The proposed 819 Beacon Street site is served by a 20-inch sanitary sewer in Beacon Street. The proposed 819 Beacon Street building will generate approximately 15,619 gpd of wastewater. The CHP facility, if constructed, could generate up to 75,000 gpd of wasterwater during peak operations.

For drainage, the CCB site is served by a 15-inch and 24-inch storm drain in Longwood Avenue. The existing site is partially pervious. According to the IMPNF/PNF and IMP Amendment, the proponent plans to investigate and install measures which will mitigate the post development discharge volume and rate to maintain compliance with regulatory requirements. One option under consideration includes the use of stormwater holding tanks within the building which will reduce peak flows and volumes leaving the project site. The 819 Beacon Street site is served by a 24-inch storm drain in Beacon Street which flows into the MWRA combined system and a 12-inch drain in Maitland Street which discharges to SDO042. The proponent should investigate and evaluate in the DEIR the feasibility of sending excess stormwater flows (flows not infiltarated on site) to SDO 042 and not the MWRA transport system. BWSC.1

The Children's Hospital has reportedly experienced periodic drainage issues on its property. The Children's Hospital should continue to evaluate this issue and coordinate with the Commission's Engineering Department as their design of the CCB building moves forward. BWSC.2 In addition, the proponent should, as part of their master plan process, investigate drainage issues on other Children's Hospital properties. BWSC.3 The Commission encourages Children's Hospital to utilize Low Impact Development wherever possible including the installation of green roofs.

The Commission's general comments on the project are as follows:

General

1. BCH must submit a General Service Application and a site plan to the Commission for review and approval. Any new or relocated water mains, sewers and storm drains must be designed and constructed at BCH's expense. They must be designed and constructed in conformance with the Commission's design standards, Water Distribution System and Sewer Use Regulations, and Requirements for Site Plans. To assure compliance with the Commission's requirements, BCH, must submit a site plan to the Commission's Engineering Customer Service Department for review and approval when the design of any new water and wastewater systems and the proposed service connections to those systems are 50 percent complete. The site plan should include the locations of any new, relocated and existing water mains, sewers and drains which serve the site, proposed service connections as well as water meter locations. BWSC.4

2. Prior to demolition of any buildings, all water, sewer and storm drain connections to the buildings must be cut and capped at the main pipe in accordance with the Commission's requirements. The proponent must then complete a Termination Verification Approval Form for a Demolition Permit, available from the Commission and submit the completed form to the City of Boston's Inspectional Services Department before a demolition permit will be issued. BWSC.5

3. The Department of Environmental Protection, in cooperation with the Massachusetts Water Resources Authority and its member communities, are implementing a coordinated approach to flow control in the MWRA regional wastewater system, particularly the removal of extraneous clean water (e.g., infiltration/ inflow (I/I)) in the system. In this regard, DEP has been routinely requiring proponents proposing to add significant new wastewater flow to assist in the I/I reduction effort to ensure that the additional wastewater flows are offset by the removal of I/I. Currently, DEP is typically using a minimum 4:1 ratio for I/I removal to new wastewater flow added. The Commission supports the DEP/MWRA policy, and will require BCH to develop a consistent inflow reduction plan. BWSC.6

4. For any proposed masonry repair and cleaning, BCH will be required to obtain from the Boston Air Pollution Control Commission, a permit for Abrasive Blasting or Chemical Cleaning. In accordance with this permit, BCH will be required to provide a detailed description as to how chemical mist and run-off will be contained and either treated before discharge to the sewer or drainage system or collected and disposed of lawfully off site. A copy of the description and any related site plans must be provided to the Commission's Engineering Customer Service Department for review before masonry repair and cleaning commences. BCH is advised that the Commission may impose additional conditions and BWSC.7

requirements before permitting the discharge of the treated wash water to enter the sewer or drainage system.

5. BCH should be aware that the US Environmental Protection Agency issued a Remediation General Permit (RGP) for Groundwater Remediation, Contaminated Construction Dewatering, and Miscellaneous Surface Water Discharges. If the project involves any subsurface work and groundwater contaminated with petroleum products, for example, is encountered, BCH will be required to apply for a RGP to cover these discharges. BWSC.8

Water

1. In addition to the water conservation measures required by the Massachusetts Plumbing Code, BCH should also consider implementing other water saving measures, such as installing low flow toilets and flow-restricting faucets. The Commission suggests that any public restrooms also be equipped with sensor-operated faucets and toilets. BWSC.9

2. If a hydrant is to be used during construction, BCH will be required to obtain a Hydrant Permit for use of any hydrant during the construction phase of this project. The water used from the hydrant must be metered. BCH should contact the Commission's Operations Division for information on and to obtain a Hydrant Permit. BWSC.10

3. The Commission is utilizing a Fixed Radio Meter Reading System to obtain water meter readings. For new water meters, the Commission provides a Meter Transmitter Unit (MTU) and connects the device to the meter. For information regarding the installation of MTUs, BCH should contact the Commission's Meter installation Department. BWSC.11

Sewage / Drainage

1. A Total Maximum Daily Load (TMDL) for Nutrients has been established for the Lower Charles River Watershed by the Massachusetts Department of Environmental Protection (MassDEP). In order to achieve the reductions in Phosphorus loading required by the TMDL, phosphorus concentrations in the lower Charles River from Boston must be reduced by 64%. To accomplish the necessary reductions in phosphorus, the Commission is requiring developers in the lower Charles River watershed to infiltrate stormwater discharging from impervious areas in compliance with MassDEP. The proponent will be required to submit with the site plan a phosphorus reduction plan for the proposed developments. The proponent must fully investigate methods for retaining stormwater on-site before the Commission will consider a request to discharge stormwater to the Commission's system. Under no circumstances will stormwater be allowed to discharge to a sanitary sewer. BWSC.12

In conjunction with the Site Plan and the General Service Application the proponent will be required to submit a Stormwater Pollution Prevention Plan. The plan must: BWSC.13

- Identify best management practices for controlling erosion and for preventing the discharge of sediment and contaminated groundwater or stormwater runoff to the Commission's drainage system when the construction is underway.

- Include a site map which shows, at a minimum, existing drainage patterns and areas used for storage or treatment of contaminated soils, groundwater or stormwater, and the location of major control or treatment structures to be utilized during construction.

- Provide a stormwater management plan in compliance with the DEP standards mentioned above. The plan should include a description of the measures to control pollutants after construction is completed.

2. Developers of projects involving disturbances of land of one acre or more are required to obtain an NPDES General Permit for Construction from the Environmental Protection Agency and the Massachusetts Department of Environmental Protection. BCH is responsible for determining if such a permit is required and for obtaining the permit. If such a permit is required, it is requested that a copy of the permit and any pollution prevention plan prepared pursuant to the permit be provided to the Commission's Engineering Services Department prior to the commencement of construction. The pollution prevention plan submitted pursuant to a NPDES Permit may be submitted in place of the pollution prevention plan required by the Commission provided the Plan addresses the same components identified in item 1 above. BWSC.14

3. The Children's Hospital has reportedly experienced periodic drainage issues on its property. The Children's Hospital should continue to evaluate this issue and coordinate with the Commission's Engineering Department as their design of the CCB building moves forward. In addition, the proponent should, as part of their master plan process, investigate drainage issues on other Children's Hospital properties. The Commission encourages Children's Hospital to utilize Low Impact Development wherever possible including the installation of green roofs. BWSC.15

4. BCH must fully investigate methods for retaining stormwater on-site before the Commission will consider a request to discharge stormwater to the Commission's system. The site plan should indicate how storm drainage from roof drains will be handled and the feasibility of retaining their stormwater discharge on-site. Under no circumstances will stormwater be allowed to discharge to a sanitary sewer. BWSC.16

5. The Commission requests that BCH install a permanent casting stating "Don't Dump: Drains to Charles River" next to any catch basin that is created or modified as part of this BWSC.17

project. The proponent should contact the Commission's Operations Division for information regarding the purchase of the castings.

6. If a cafeteria or food service facility is built as part of this project, grease traps will be required in accordance with the Commission's Sewer use Regulations. BCH is advised to consult with the Commission's Operations Department with regards to grease traps. BWSC.18

7. The Commission requires that existing stormwater and sanitary sewer service connections, which are to be re-used by the proposed project, be dye tested to confirm they are connected to the appropriate system. BWSC.19

8. Sanitary sewage must be kept separate from stormwater and separate sanitary sewer and storm drain service connections must be provided. BWSC.20

9. If BCH seeks to discharge dewatering drainage to the Commission's sewer system, they will be required to obtain a Drainage Discharge Permit from the Commission's Engineering Customer Service Department prior to discharge. BWSC.21

Thank you for the opportunity to comment on this IMPNF/PNF and IMP Amendment.

Yours truly,

John P. Sullivan, P.E.
Chief Engineer

JPS/ah

c: C. Weinstein, BCH
P. Quan, BCH
C. Schlessinger, Epsilon
M. Zlody, BED
P. Larocque, BWSC

Boston Water and Sewer Commission

BWSC.1 Excess stormwater flows

The Proponent and design team will investigate various storm drain connection options. 819 Beacon Street may tie into either a 12-inch line located in Maitland Street and/or a 24-inch line located in Beacon Street.

BWSC.2 Children's Clinical Building drainage

The Proponent intends to coordinate with the BWSC regarding the proposed drainage design.

BWSC.3 Children's Hospital Campus drainage issues

The Proponent is exploring the use of low impact development features, such as rainwater harvesting and vegetated terrace areas, to reduce the rate and quantity of stormwater discharge into the drainage systems.

BWSC.4 General Services Application and site plan

The Proponent intends to complete a site plan review with the BWSC and its contractor will submit a GSA for each Project.

BWSC.5 Sewer and storm drain connections

The Proponent intends to complete the review process with the BWSC.

BWSC.6 Infiltration/Inflow

The Proponent will work with BWSC on an inflow reduction plan.

BWSC.7 Masonry repair and cleaning

The Proponent intends to comply with city standards for masonry repair and cleaning as noted.

BWSC.8 Remediation General Permit

The Proponent intends to comply with city, state, and federal regulatory standards as necessary.

BWSC.9 Water conservation measures

The Proponent has considered implementing water conservation measures into the design to meet LEED requirements. Through the use of low flow and high efficiency plumbing fixtures, the development will implement water use reduction strategies that use 20% less water than the water use baseline calculated for the building (not including irrigation) after meeting Energy Policy Act of 1992 fixture performance requirements. Additional details for both the BCCB and 819 Beacon Street Project are included in Section 5.10.

BWSC.10 Hydrant Permit

The Proponent intends to comply with city, state, and federal regulatory standards as necessary.

BWSC.11 Fixed Radio Meter Reading System

The Proponent intends to complete a review process with the BWSC including meter review.

BWSC.12 Phosphorus reduction

The Proponent intends to comply with city, state, and federal regulatory standards as necessary. The Proponent is exploring the use of rainwater harvesting, stormwater infiltration systems, and vegetated terrace areas in an effort to reduce the rate and quantity of stormwater discharge and improve water quality. The 819 Beacon Street Project is currently contemplating an approximately 7,000 sf vegetated roof area.

BWSC.13 Stormwater Pollution Prevention Plan

The Proponent will submit a Stormwater Pollution Prevention Plan.

BWSC.14 NPDES General Permit for Construction

The Proponent will obtain an NPDES General Permit for Construction for the BCCB and 819 Beacon Street Projects, if required.

BWSC.15 Drainage issues

The Proponent intends to coordinate with the BWSC regarding the proposed drainage design.

BWSC.16 On-site stormwater retention

The Proponent will investigate methods for on-site storm water retention. The 819 Beacon Street Project is currently contemplating an approximately 7,000 sf vegetated roof area.

BWSC.17 Catch basin signage

The Proponent will provide "Don't Dump: Drains to Charles River" plaques to any new and/or revised catch basins as part of the Projects.

BWSC.18 Cafeteria or food service on-site

The Proponent intends to coordinate with the BWSC regarding the proposed design.

BWSC.19 Dye testing

The Proponent will dye test existing connections that are to be re-used by the proposed Projects.

BWSC.20 Separate stormwater and sanitary sewer connections

Sanitary sewer connections will be kept separate from stormwater services.

BWSC.21 Drainage Discharge Permit

The Proponent will obtain a Drainage Discharge Permit from the BWSC Engineering Customer Service Department if dewatering drainage will drain into the BWSC sewer system.

Boston Groundwater Trust

229 Berkeley St, Fourth Floor, Boston, MA 02116
617.859.8439 voice – 617.266.8750 fax
www.bostongroundwater.org

October 26, 2012

Ms. Sonal Gandhi, Senior Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Subject: Boston Children's Hospital

Dear Ms. Gandhi:

Thank you for the opportunity to comment on the Institutional Master Plan Notification Form and Project Notification Form for Boston Children's Hospital. The Boston Groundwater Trust was established by the Boston City Council to monitor groundwater levels in sections of Boston where the integrity of building foundations is threatened by low groundwater levels and to make recommendations for solving the problem. Therefore, my comments are limited to groundwater related issues.

As noted in the IMPNF/PNF, a portion of the Boston Children's Hospital campus is located in the Groundwater Conservation Overlay District established under Article 32 of the Zoning Code. Of the three projects described in the PNF, only the parking garage expansion is in the area covered by the GCOD. Because this is an addition of just one floor on top of the existing garage, it may not trip any of the thresholds for GCOD applicability. I am pleased that the proponent has committed, both in the IMPNF/PNF and at the scoping session, that the project will meet GCOD standards if they are applicable.

While not in the GCOD, the planned Clinical Building is only a block outside the zone and includes a very deep basement. I am pleased at the commitment in the document that the project will be designed to have no negative impact on area groundwater levels during construction and at the commitment made during the scoping session that this will apply during operation of the building as well. The proponent promised during the scoping session to describe in the Draft Project Impact Report details on how they will meet this standard. I look forward to studying that information in the DPIR. BGT.1

The third project, an office and parking structure, is to be located in the Audubon Circle neighborhood. While there are wood piling supported structures in the area and some local groundwater levels are marginal, it is not part of the GCOD. The IMPNF/PNF notes that the project will include minimal below grade construction (precluded by the presence of the MBTA Green Line tunnel) and is therefore unlikely to have any negative impact on area groundwater levels.

I look forward to working with the proponent and the Authority to assure that there will be no reductions in area groundwater levels because of these projects.

Very truly yours,

Elliott Laffer
Executive Director

Cc: Kathleen Pedersen, BRA
Maura Zlody, BED

Boston Groundwater Trust

BGT.1 Impact on groundwater levels

The Patient and Family Parking Garage Addition is the only proposed Project within the Groundwater Conservation Overlay District. Construction or operation of the Addition will not impact groundwater levels. The 819 Beacon Street Project and the BCCB Project are not located within the GCOD, but the BCCB is adjacent to the district. Children's will contact the Boston Groundwater Trust to discuss the BCCB and measures to protect groundwater during construction. The Proponent will share details regarding construction and foundation methodology as the Project design progresses. Please see Section 5.7 for additional details.

Boston

Sonal Gandhi
Senior Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

October 16, 2012

Dear Ms. Gandhi:

Regarding the Project Notification Form for Boston Children's Hospital project submitted to the BRA on October 12, 2012 the Boston Fire Department requires the following issues addressed by a qualified individual.

1. Emergency vehicle site access to the new buildings as well as existing buildings that might be affected. BFD.1
2. Impact on availability and accessibility of hydrant locations for new buildings as well as for any existing buildings that might be impacted. BFD.2
3. Impact on availability and accessibility to siamese connection locations for new buildings as well as for any existing buildings that might be impacted. BFD.3
4. Impact that a transformer vault fire or explosion will have on the fire safety of the building. Particularly as it relates to the location of the vault. BFD.4
5. Need for Boston Fire Department permit requirements as outlined in the Boston Fire Prevention Code, the Massachusetts Fire Prevention Regulations (527 CMR), and the Massachusetts Fire Prevention Laws (MGL CH148). BFD.5
6. For projects involving air-supported structures, it is critical that the impact of the design has on fire safety relative to the interaction of the area underneath the structure to the structure as well as to the interaction of the structure to the area underneath the structure. BFD.6

These items should be analyzed for all phases of the construction as well as the final design stage. This project will need permits from the Boston Fire Department as well as the Inspectional Services Department.

Respectfully,

Bart J. Shea

Bart J. Shea
Fire Marshal

Cc: Paul Donga, FPE, Plans Unit, BFD

Boston Fire Department (BFD)

BFD.1 Emergency vehicle site access

As part of the City of Boston Article 80 review process, Boston Children's Hospital will enter into a negotiated Transportation Access Plan Agreement which will delineate the access of emergency vehicles to and from site.

The Proponent will consult with BFD regarding access.

BFD.2 Availability of and access to hydrant locations

The Proponent will consult with BFD regarding availability and accessibility of hydrants.

BFD.3 Availability of and access to siamese connections

The Proponent will consult with BFD regarding availability and accessibility of siamese connections.

BFD.4 Transformer vault

The transformer vault will be a fire-rated design that complies with Utility, Building Code, and Fire Code requirements. The Proponent will consult with BFD on the locations of transformer vaults as it relates to fire safety.

BFD.5 Boston Fire Department permit

Boston Children's Hospital will obtain the necessary permits.

BFD.6 Fire safety relative to area underneath structure

The Project will comply with Fire Code requirements.

MICHAEL P. ROSS
BOSTON CITY COUNCIL

December 20, 2012

Sonal Gandhi
Project Manager
Boston Redevelopment Authority
One City Hall Plaza
Boston, MA 02201

RE: Children's Hospital Institutional Master Plan IMPNF

Dear Ms. Gandhi:

I am writing to comment on the Institutional Master Plan Project Notification Form for Children's Hospital. I would like to take this opportunity to share some comments regarding this project since surrounding neighborhoods in my district will be impacted.

With regard to the proposed project at 809 Beacon Street, it would be preferable for development to reflect the residential quality of this community, thus an administrative building is out of character with this neighborhood. As the Fenway CDC suggested, a residential building can be used for employee supported housing. In addition, the proposed height is out of scale with nearby buildings and even the developer of the approved Parcel 7 project agreed to limit the height of the building closest to Audubon Circle to seven stories. Overall, while a residential use would be preferable I am happy to see the development of what currently is a surface parking lot. I encourage Children's Hospital to continue working with the community on issues relating to this site. MR.1 MR.2

Traffic impacts should be carefully studied during and after construction, since construction of the proposed building will have a direct impact in the Audubon Circle neighborhood. This will be an additional building and will therefore create greater constraints. The proposed 526 parking garage is concerning especially in light of the already approved 1200 car parking garage for nearby Parcel 7. MR.3

I respectfully request that Children's Hospital continue to work with the abutting Mission Hill and Fenway communities on training and hiring its residents. Agencies such as the Mission Hill Jobs Collaborative and the Fenway CDC work arduously to MR.4

DISTRICT 8
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(617) 635-4225 FAX: (617) 635-4203 MICHAEL.ROSS@CI.BOSTON.MA.US

provide workforce training services to increase employment of Mission Hill and Fenway residents at the LMA institutions.

Thank you for your attention to this letter and please do not hesitate to contact me if you have any questions or concerns.

Best regards,

Michael P. Ross
Boston City Council

DISTRICT 8
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City Councilor – Michael P. Ross

MR.1 Building Use

Boston Children's Hospital must both prioritize its clinical patient care in its Core Campus and ensure a functional relationship between its clinical and administrative functions. Therefore, as clinical needs at BCH grow and administrative space is displaced from the LMA, BCH must utilize proximate properties for its relocation. BCH is sensitive to the residential character of Audubon Circle and the Fenway neighborhoods. The 819 Beacon Street Project is a transition between the residential neighbors to the west and the planned Fenway Center and other commercial buildings to the east. BCH has developed a positive working relationship with the FCDC and will continue to work with the FCDC and the City Councilor's office on neighborhood housing and other initiatives of importance to the community.

MR.2 Height

The 819 Beacon Street Project has evolved since submission of the IMPNF/PNF in response, in part, to comments and input from the BRA, Boston Civic Design Commission and the community. The massing and materials have changed since the filing of the IMPNF/PNF. The Project has been revised to step back from Beacon Street and the height has been reduced from 10 stories to eight stories with a setback of the portion closest to Miner Street at the seventh and eighth stories. Building materials have been selected to bridge between the traditional residential construction to the west and the modern design of the buildings to the east. The lower mass will have a rounded corner to reference the existing building directly across Beacon Street. Please see Chapter 6.0, Urban Design for additional information.

MR.3 Traffic

Chapter 4.0 of the DPIR/DEIR includes a detailed transportation analysis of the proposed 819 Beacon Street Project.

MR.4 Jobs

BCH will continue to work with the Mission Hill and Fenway communities on training and hiring local residences.

Beth Israel Deaconess Medical Center

A teaching hospital of Harvard Medical School

November 13, 2012

BY EMAIL (with copy by mail)

Ms. Sonal Gandhi
Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201
sonal.gandhi@cityofboston.gov

RE: Comments on the Boston Children's Hospital (BCH) Institutional Master Plan Project Notification Form/Project Notification Form (IMPNF/PNF)

Dear Ms. Gandhi:

I write on behalf of the Beth Israel Deaconess Medical Center with comments regarding the IMPNF/PNF filed in October 2012 by Boston Children's Hospital (BCH). As outlined in the IMPNF/PNF, BCH proposes three projects: 1) the Children's Clinical Building, a 445,000 square foot building with clinical and medical support space and co-generation facilities; 2) the addition of a new level of parking on the Patient Family and Children's Garage on the north side of Longwood Avenue; and 3) the redevelopment of 819 Beacon Street. With this filing BCH is seeking a scope for its Institutional Master Plan, and one for Large Project Review for the Children's Clinical Building and the 819 Beacon Development.

BIDMC is supportive of BCH and its desire to upgrade and expand facilities, and especially understands the need for BCH to develop improved clinical facilities on its historic core campus south of Longwood Avenue to ensure its ongoing ability to provide state of the art pediatric care. We are also supportive of cogeneration alternatives being considered by BCH, potentially for joint institutional use. As a direct abutter to some Children's facilities and a near neighbor to the proposed Children's Clinical Building, the Patient and Family Garage, as well as to the 819 Beacon Street project (by virtue of BIDMC's ownership of the Research North Building at 99 Brookline Avenue), BIDMC is also keenly interested in gaining a thorough understanding of the three proposed projects and in the proposed IMP Amendment and its zoning controls.

As the City undertakes scoping for Large Project Review for all three BCH projects, BIDMC will be interested in learning more about a variety of issues, particularly those concerning access, transportation, parking and loading issues, and as well as pedestrian and vehicular studies and improvements. We encourage the study of a pedestrian bridge over Longwood Avenue to evaluate whether it can both improve pedestrian safety for BCH patients and families and improve operations (for BIDMC.1

pedestrians and all vehicular modes) on Longwood Avenue, as well as surrounding intersections and roadways.

We also would welcome additional information about the series of internal departmental moves and backfilling of existing space that BCH plans once the Children's Clinical Building is completed. This information is necessary in order to understand traffic and other impacts from such reallocation of Hospital uses, including High Impact subuses such as ambulatory clinical facilities. BIDMC.2

As a related matter, we note that the BCH IMPNF provides that BCH may reallocate gross floor area (gfa) among various Hospital Subuses, including all High Impact Subuses. In connection with the scoping for BCH's Institutional Master Plan, BIDMC respectfully asks that the BRA consider under what circumstances the reallocation of hospital uses, particularly High Impact Subuses, such as ambulatory clinical facilities, should be predicated on additional study and IMP review. BIDMC recognizes and supports that BCH and other hospitals need to have the flexibility to reallocate gfa among Hospital subuses, including High Impact Subuses, in order to meet operational needs. In campus environments, such as BCH's historic core campus south of Longwood Avenue (and BIDMC's East and West Campuses), such reallocations of gfa among Hospital uses can occur with few external impacts due to the availability of access, parking, service, loading and other support facilities that serve the campus area as a whole. However, in other locations where buildings were originally designed as stand-alone facilities for a certain use or mix of non-clinical uses, the substitution of some Hospital Subuses, such as in-patient and out-patient uses, could have far greater adverse impact on the operations of abutters and adjacent roadways than the original planned use(s). BIDMC.3

We are concerned, for instance, that there should be careful consideration and further IMP review and approval if in the future BCH proposes any change from the originally approved research and ancillary uses (as per PDA #61, as amended) for the Longwood Research Institute at 340 Brookline Avenue. We note that in addition to allowing unrestricted reallocation of Hospital uses, the IMPNF reflects that the Longwood Research Institute site is defined as part of the "Core Campus" for BCH IMP purposes, and thus a broad range of uses would be allowed on the site without additional IMP review, including clinical uses which were strictly limited by the original approval. BIDMC.4

Currently we understand BCH intends to develop the Longwood Research Institute primarily for research purposes, as reflected in Table 1-1 of the IMPNF which lists primary uses of BCH existing and approved facilities. Our concern is that the BCH IMP should be modified with respect to the Longwood Research Institute site to make clear that future IMP review will be required for proposed uses that are not consistent with the primary research use and other ancillary uses as approved by PDA #61, as amended. As you know, BIDMC participated with the original developer and the BRA in intensive planning and public review over a two year period to ensure that the project as originally approved would enhance the surrounding Longwood Medical and Academic Area and be compatible with BIDMC's existing uses and facilities. Great care was taken to make sure that this large and dense project (it has a 9.43 FAR) would not adversely impact BIDMC operations and its patient care drop-off and pick-up activities which are immediately adjacent to the Longwood Research Institute site. The use limitations incorporated into the PDA were carefully imposed to allow for the development of this site in a manner that is compatible with its context. While we fully support BCH in maintaining zoning flexibility regarding its uses and reallocation of uses on its historic core campus south of Longwood Avenue, we respectfully request that as part of the IMPNF and IMP Amendment review process that the BRA consider calibrating the zoning use provisions with respect to the Longwood Research Institute project and site. We note that the use provisions for One Autumn and 21-25 Autumn Street are delineated with more specificity than the sites defined as "Core Campus" and we suggest that similar treatment be given to the Longwood Research Institute.

Thank you for this opportunity to comment.

Sincerely yours,

Walter G. Armstrong

Walter G. Armstrong
Senior Vice President, Capital Engineering and Facilities

cc: Charles Weinstein, Boston Children's Hospital

Beth Israel Deaconess Medical Center

BIDMC.1 Study of pedestrian bridge

Children's has identified and is assessing potential opportunities to improve at grade traffic and pedestrian circulation at the Longwood Avenue/Blackfan Circle intersection. MASCO and Children's also continue to explore expansion of an elevated pedestrian pathway network throughout the LMA in the interests of LMA-wide efficiency and safety, including across Longwood Avenue, which would allow for valet operations at the Patient and Family Parking Garage.

BIDMC.2 Backfilling of existing space and internal department moves

BCH is engaged in a strategic planning study to identify the programs and services that will be provided over the next 20 years. In the case of the BCCB, this study will make recommendations for how the BCCB will be programmed. Those recommendations, when accepted, will drive decisions on other programs and a full evaluation of space requirements and relocations.

The 819 Beacon Street Project is intended to consolidate leases in the Fenway area for administrative and support departments into one location.

BIDMC.3 Reallocation of subuses

Sections 4.1 and 4.6.5 of the IMP Amendment address BIDMC's concerns regarding reallocation of subuses in the future Longwood Research Center Building.

BIDMC.4 Uses at Longwood Research Institute and modifications to IMP if use changes

Please see Response to Comment BIDMC.3.

FENWAY CDC

70 BURBANK STREET
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WWW.FENWAYCDC.ORG

November 13, 2012

Sonal Ghandi
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

RE: Comments on Boston Children's Hospital IMPNF/PNF

Dear Sonal:

Thank you for the opportunity to comment on Boston Children's Hospital Institutional Master Plan Notification Form and Project Notification form for 819 Beacon Street (IMPNF/PNF). We submit this letter on behalf of the Fenway Community Development Corporation (Fenway CDC), a 39-year-old, community-based organization that builds and preserves affordable housing and promotes projects that engage our full community in enhancing the neighborhood's diversity and vitality. We reviewed the IMP against our vision for the neighborhood as a smart-growth community that welcomes the broadest spectrum of residents.[1]

While we appreciate the goals and work of Children's Hospital, and understand their need to expand, we have concerns about the public process that was conducted, and the lack of resident input in the plan. We also have concerns with the proposed project at 819 Beacon Street, and its impact on Audubon Circle residents.

IMP Public Process

> The public process and meeting notice procedure for this institutional master plan did not give community members, particularly Audubon Circle residents, sufficient time to learn about the project. Children's Hospital presented plans to the Fenway CDC last spring, but did not hold a similar meeting with the Audubon Circle Neighborhood Association (ACNA). A preliminary meeting with ACNA was held last February, yet no plans or renderings were presented, and there was no subsequent outreach to ACNA until after the IMPNF/PNF was filed in October. Audubon Circle is the neighborhood most impacted by the proposed development at 819 Beacon Street, and those residents should have been involved in the planning process from the early stages. Other institutions have met frequently and regularly with community members *prior* to submitting their IMPNFs to the city. FCDC.1

[1] http://www.fenwaycdc.org/programs/urban-village

Furthermore, there was less than a week's notice for a specially-requested meeting on October 30 in Audubon Circle, and the meeting was then postponed due to weather, resulting in challenges for ACNA and other Audubon Circle residents to spread the word about the proposal.

The approval process for the 819 Beacon Street project is being conducted simultaneously with the overall IMP approval. While a PNF is frequently submitted with an IMPNF, and institutions are legally allowed to proceed this way, we request that more efforts be made to engage residents in understanding the project at 819 Beacon. Given its impact on Audubon Circle, and the lack of engagement with those residents thus far, the comment period should be extended and a meeting should be held in Audubon Circle with at least 10 days notice.

Hospitals are not stand-alone entities; they are part of the neighborhoods in which they are located, and their expansion has significant impacts on the surrounding community. The manner in which this IMP process has been conducted thus far leaves residents to believe that public input is merely a required step in the process, and not an integral component of developing the plan.

Sufficient and varied housing supply

A few years ago, Boston Children's Hospital approached the Fenway CDC to discuss a potential partnership to develop affordable housing and parking at the 819 Beacon site. With continual institutional expansion and private development in the Fenway, the percentage of affordable housing in the neighborhood has decreased from 17 percent to 14 percent in the last 4 years. The Fenway CDC is disappointed that the site will not provide any affordability for the neighborhood. A building that consists solely of office space reinforces the trend to push low-income residents and families out of the neighborhood. These families then lose access to important medical resources such as Children's Hospital. FCDC.2

While we understand the hospital's need to use this site for administrative uses, we request that BCH work with FCDC to identify and support alternative ways to produce affordable housing in the neighborhood. This could include employer-supported housing in the community.

Traffic impacts and mitigation measures

The number of cars proposed for the garage at 819 Beacon (526 spaces) will create significant traffic impacts along Brookline Avenue and Beacon Street. Given the high level of congestion already caused by Fenway Park, it is especially important for BCH to take traffic impacts into consideration and to outline clear mitigation measures before the IMP is approved. FCDC.3

We also encourage Boston Children's Hospital to continue to promote alternate modes of transportation for employees, such as subsidized T passes and high quality bike facilities, especially at the new buildings.

Community Benefits and Local Employment

Children's Hospital has provided crucial services and community benefits to the Boston area, and we appreciate the difference BCH has made in the lives of many young people. We especially appreciate the work BCH has done with the Fenway CDC to provide both health resources and FCDC.4

jobs to local residents. BCH is one of FCDC's largest partners with our "Walk to Work" program, and we hope BCH will continue to provide such community benefits to the Fenway-Kenmore/Audubon Circle neighborhood. We expect many of the proposed new jobs (approximately 200 new positions at 819 Beacon) to be sufficiently advertised to Fenway residents. BCH should work closely with Kris Anderson (kanderson@fenwaycdc.org), our Employment Specialist, to ensure local employment connections are made.

Thank you for the opportunity to submit comments on CHB's IMPNF/PNF. We trust these comments will be taken into consideration before final approval of the plan.

Sincerely,

Dharmena Downey

Manuel Delgado
Fenway CDC, Urban Village Committee Chair

Dharmena Downey
Executive Director, Fenway CDC

cc: Steve Wolf, FCDC Board President; Senator William Brownsberger; Senator Sonia Chang-Diaz; Representative Gloria Fox; Representative Byron Rushing; Representative Marty Walz; City Councilor Mike Ross; City Councilor Tito Jackson

Fenway Community Development Corporation

FCDC.1 Public process

From February 2012 to November 2012, Boston Children's Hospital engaged in a comprehensive public outreach process both in advance of and after filing its IMPNF/PNF. In this period, Boston Children's met with more than 20 community organizations and/or elected officials (or their staff) to brief them on the Hospital's proposal and to solicit feedback. During these meetings, Hospital representatives presented a high-level overview of the proposed Projects on both the Longwood campus and at 819 Beacon Street. The materials used in each of these meetings were substantively identical—including very preliminary renderings of the exterior design of 819 Beacon Street—and were consistent with the Project specifics ultimately proposed in the IMPNF/PNF filing.

Boston Children's Hospital met with and/or spoke to the following individuals and organizations with respect to the IMPNF/PNF that was filed on October 12, 2012:

State Senator William Brownsberger	February 7, 2012
Mission Hill Neighborhood Housing Services	February 8, 2012
Audubon Circle Neighborhood Association	February 21, 2012
Fenway CDC	February 28, 2012
State Senator Sonia Chang-Diaz (Staff)	February 29, 2012
City Councilor John Connolly	March 7, 2012
City Council President Stephen Murphy	March 8, 2012
City Councilor Ayanna Pressley	March 19, 2012
City Councilor Michael Ross	March 21, 2012
Jay Walsh, Keith Williams, Shaina Auborg (Mayor's Office of Neighborhood Services)	March 21, 2012
City Councilor Matt O'Malley	March 26, 2012
Fenway Civic Association	March 27, 2012
State Representative Jeffrey Sánchez	April 24, 2012
State Representative Martin Walsh	May 8, 2012
State Representative Michael Moran (Staff)	July 20, 2012
Sociedad Latina	August 21, 2012
Community Alliance of Mission Hill	September 19, 2012
MA Department of Public Health	September 28, 2012
State Representative Gloria Fox (Staff) *	October 19, 2012
Senator John Kerry (Staff)	October 31, 2012
Congressman Michael Capuano (Staff)	November 16, 2012

** Brief conversation upon delivery of IMPNF/PNF document.*

FCDC.2 Housing

Children's appreciates the support of the Fenway Community Development Corporation as the patient care and associated administrative needs are prioritized with respect to development of Children's properties. Children's has developed a positive working relationship with the FCDC and will continue to work with the FCDC on neighborhood housing and other initiatives of importance to the organization.

FCDC.3 Traffic

Please refer to Chapter 4.0, which includes a detailed transportation analysis of the 819 Beacon Street Project. See Section 4.3.1.2 for more detailed information about proposed mitigation measures and BCH's promotion of alternative modes of transportation.

FCDC.4 Community Benefits

Please see Section 1.3 for a discussion of community benefits. BCH will ensure that jobs are advertised to Fenway residents and will work with Kris Anderson of the Fenway CDC to ensure that local employment connections are made.

Gandhi, Sonal

From: Mary Ellen Bresciani [me.bresciani@verizon.net]
Sent: Tuesday, November 13, 2012 9:02 PM
To: Gandhi, Sonal
Subject: Comments on Proposed Children's Hospital Project at 819 Beacon Street

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Ms. Gandhi,

We have owned a house in Audubon Circle for over 25 years. We are very concerned about the height of the building and the number of parking spaces in the garage that Children's Hospital proposes for 819 Beacon Street.

As you know, John Rosenthal has obtained approval for a large project between Audubon Circle and Kenmore Square consisting of three buildings along Beacon Street and a large parking garage. The Audubon Circle Neighborhood Association, local officials, and others in the neighborhood spent a considerable amount of time negotiating with Mr. Rosenthal to limit the height of his building closest to Audubon Circle to seven stories which is similar to the height of the apartment building at the corner of Beacon Street and Munson Street. Mr. Rosenthal agreed to limit the height of the building closest to Audubon Circle although his other buildings on sites closer to Kenmore Square and further from Audubon Circle would be taller. The whole purpose of the negotiations was to have the building closest to Audubon circle be more in scale with the residential part of the neighborhood. If Children's hospital is allowed to put a 10 story building between the six story building on Munson Street and Mr. Rosenthal's seven story building, it would severely affect the neighborhood's character which had been essentially preserved through the agreement with Mr. Rosenthal. Moreover, this relaxation of the height restriction may lead Mr. Rosenthal to try to revise the agreement and increase the height of his buildings. MEB.1

In addition to the ten story building, Children's Hospital proposes to construct at 819 Beacon Street a garage with over 500 parking spaces. Currently, the site has 260 parking spaces. The 500 parking spaces are more spaces than are needed to serve the tenants of the building. We understand that part of the reason for so many parking spaces is that Children's Hospital is proposing construction of a new building in the Longwood area but does not want to add parking there because of the traffic congestion in Longwood. In effect, Children's Hospital wants to shift the parking to this building and the traffic congestion to our neighborhood. This makes no sense to us. Children Hospital's proposed building borders a residential neighborhood. We do not want the traffic problems of Longwood brought over to our neighborhood. Mr. Rosenthal's project already includes a huge parking garage. Our neighborhood cannot afford to have an extra 300 cars and the related traffic. We understand that the plan is to try to funnel a lot of the departing traffic to Mountfort Street and route the cars over to the BU Bridge. Right now the traffic on the BU Bridge starting around 4 PM is terrible and that is before the Rosenthal project is even built. Access for arriving traffic is even worse as anyone who has tried to drive in the area prior to a Red Sox game knows. We do not know how the neighborhood and the BU Bridge will deal with all this additional traffic. MEB.2

We believe that the project as proposed is too large for this neighborhood, especially in light of the Mr. Rosenthal's proposed project. The additional traffic will clog the neighborhood streets. Certainly, Children's Hospital has the right to use its property, but we believe that, at a minimum, the building's height should not exceed seven stories, as Mr. Rosenthal agreed to do with his project, and the number of parking spaces should not exceed the number needed for occupants in the building.

Thank You.

Mary Ellen and James Millea
464 Park Drive

Mary Ellen Bresciani and James Millea

MEB.1 Height of 819 Beacon Street

Please see Response to Comment MR.2.

MEB.2 Parking garage

Much of the parking provided at 819 Beacon Street will be off-campus parking for employees who will then be shuttled into the LMA. The majority of these employees work hours that require them to commute during off-peak times (i.e., not on the road from 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.). Please refer to Chapter 4.0 which includes a detailed transportation analysis of the 819 Beacon Street Project. The chapter discusses trip generation and impacts, proposed mitigation and BCH's promotion of alternative modes of transportation to limit single occupancy vehicle commuters.

Gandhi, Sonal

From: Christian Tirella [tirella12@gmail.com]
Sent: Tuesday, November 13, 2012 10:55 AM
To: Gandhi, Sonal
Subject: proposed building site

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Sonal,

Thank you again for the informational session on the proposed building for Children's hospital. I live at 16 Miner St. and the designs looked great. It is good to see the area improving near Audobon in my opinion.

I do have some concerns with the current proposal. Namely the following:

1. For residents at 16 Miner Street facing in that direction, a 5 story parking lot and 10 story building would be detrimental to the value of our property. I disagree with the man (I cannot recall his name) who asked if we expected that to be a parking lot for the distant future. Truthfully, if I knew Children's Hospital owned that parcel of area, I may have had second thoughts of purchasing a place at 16 Miner. I don't think many people at 16 Miner knew that was owned by Children's. We would like to see a shadow study to see how it would affect 16 Miner. CT.1

2. The parking structure will produce emissions that will enter into the condos and 16 Miner will be surrounded by parking on 3 sides - Landmark Center, Vanguard Healhcare and Children's Hospital. Decreasing the size of parking structure would be beneficial. If it means decreasing the size of the overall building, then I would recommend that too. Perhaps even move the entire parking structure away from 16 Miner (although I know this would be more difficult). CT.2

3. Building operations will produce significant noise pollution due to the loading docs, trucks, horns, etc. Move both the parking garage and loading docks to Maitland street, so that residents will not be disturbed. Garbage dumpsters will also cause unsightliness, odor, and noise. Moving to the Maitland Street side would minimize this. CT.3

4. Traffic, although good for the area in terms of getting people here, would be hugely detrimental if we don't know what's going to result from it. We need a traffic survey. We need to see how gridlock could occur. Point all traffic to the Maitland Street side and not 16 Miner. CT.4

5. Public Transportation / Shuttle Buses should be on the Maitland Street side. Again, avoiding traffic/noise on the 16 Miner side. CT.5

6. Ensure lighting isn't obtrusive to 16 Miner residences. CT.6

7. Construction will cause noise and traffic. Please perform construction ONLY during normal work hours (NOT 6AM or 7AM or after 6PM). It is bad enough that we hear the loading trucks at the landmark center at 11PM every night and have continuously told them to stop. CT.7

I hope by having these points you will be able to work with the residents of 16 Miner as well as the surrounding Audobon community in hopes that we can come to an agreement of what this structure would look like. I'm looking forward to your response or additional meetings.

Best,

Christian

Christian Tirella

CT.1 Shadow study

Section 5.2.3 of the DPIR/DEIR includes detailed shadow studies highlighting impacts from the proposed 819 Beacon Street Project.

CT.2 Parking

Since the filing of the IMPNF/PNF, the size of the 819 Beacon Street garage has decreased by 30 spaces. Of the 496 spaces currently proposed, approximately half are replacement spaces for those currently existing on the site. Measures have been taken to set the garage back from 16 Miner Street to the extent possible and the garage floor levels are separated from 16 Miner Street by at least 37 feet. As the design progresses, Children's will continue to work with abutters and residents regarding landscaping details between 16 Miner Street and the 819 Beacon Street Project. Most of the access and egress for the garage will occur on the opposite (Maitland Street) side of the building. As described in Section 5.5.3.2, the proposed 819 Beacon Street Project, including the parking garage will comply with the National Air Quality Ambient Air Quality Standards.

CT.3 Building operation impacts

The loading dock needs to be located in a relatively level location and must be proximate to the internal building core. The City will not allow loading on Beacon Street. The grade along Maitland Street is too steep for trucks to negotiate except adjacent to the CSX right-of-way which is not functional because it is the only viable ingress and egress location for the bulk of the garage traffic.

Sound from non-stationary equipment associated with the proposed loading dock at 819 Beacon Street are not considered to be steady sources of noise and will be consistent with typical city sources experienced in the existing background. Enclosing the dock inside the building will limit the noise associated with deliveries and the hauling of trash. Noise-related issues will be resolved through mutually agreeable adjustments in operational times.

Section 5.6.5 includes a detailed noise analysis of the 819 Beacon Street Project and the Project is anticipated to meet the applicable standards.

CT.4 Traffic study

Please refer to Chapter 4.0 which includes a detailed transportation analysis of the 819 Beacon Street Project.

CT.5 Shuttle bus location

BCH shuttle buses will use Maitland Street to access the 819 Beacon Street site. BCH will work with BTD to determine the best location for the bus stop/shelter as part of the preparation, review and execution of a Transportation Access Plan Agreement in connection with the Project.

CT.6 Lighting

Exterior lighting will be provided by fixtures with cut-off capability. These fixtures are designed to project light at a downward angle only and the parametrics can be selected to limit the "spillage" of light onto abutting properties.

CT.7 Construction hours

Section 5.9.3 includes information regarding construction hours. Typical construction hours will be from 7:00 a.m. to 6:00 p.m., Monday through Friday, with most shifts ordinarily ending at 3:30 p.m. No substantial sound-generating activity will occur before 7:00 a.m. If longer hours, additional shifts, or Saturday work is required, the construction manager will place a work permit request to the Boston Air Pollution Control Commission and BTD in advance.

MASCO

MEDICAL ACADEMIC AND SCIENTIFIC COMMUNITY ORGANIZATION, INC.

B.R.A. People / Places / Plans / Future

2012 NOV 16 P 5:14

November 12, 2012

Member Institutions

Beth Israel Deaconess Medical Center
Boston Children's Hospital
Brigham and Women's Hospital
Dana-Farber Cancer Institute
Emmanuel College
Harvard Medical School
Harvard School of Dental Medicine
Harvard School of Public Health
Isabella Stewart Gardner Museum
Joslin Diabetes Center
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Massachusetts College of Pharmacy and Health Sciences
Massachusetts Department of Mental Health
Simmons College
Temple Israel
Wentworth Institute of Technology
Wheelock College
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Associate Members

Blue Cross Blue Shield of Massachusetts
Harvard Vanguard Medical Associates
Merck Research Laboratories

Ms. Sonal Gandhi
Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

RE: Comments on Boston Children's Hospital's (BCH's) Institutional Master Plan Project Notification Form

Dear Ms. Gandhi:

MASCO is supportive of Boston Children's Hospital's proposed IMP plans. As the City undertakes a scoping for the three projects in the IMP, we respectfully request consideration of the following items for additional information or study in a DPIR or Supplemental Document filing.

Longwood Campus:

Urban Design/Open Space

We are supportive of Boston Children's Hospital's needs to expand its Longwood Campus footprint, despite what will mean the loss of privately owned open space at Prouty Garden. The creation of better floor plates, with better efficiencies, adjacencies, and larger rooms is critical to the ability of a modern pediatric hospital to offer the best treatment possible for the sickest children. The loss of Prouty Garden will be replaced by additional open space within the campus, some of which may actually be more usable more months of the year for patients. Additional design development of the new open spaces and a better sense of how and when patients and members of the hospital community will be able to access and use the space would be helpful information to see in the next filing. MASCO.1

Through additional design development it would be helpful to understand the building's height, setbacks and stepbacks particularly as they relate to Shattuck Street and Meadow Lane. Shattuck Street was master planned by MASCO and the abutters many years ago as a "pedestrianized" mall. MASCO.2

Investments were made, according to this plan, to remove scores of parking spaces, to reorganize remaining parking activities, and to install a granite plaza and "turnaround" with landscaping and seating areas at the terminus, which also serves as the front entry to the Harvard Medical School. Each abutter committed to implementing improvements on their frontage over time and many additional improvements were made, recognizing that the street would need to remain in use for service and ambulance access and could never become fully pedestrian in nature. As a result of the plan, Shattuck Street has a calmer more campus-like feel to it than other areas in the heart of the densest medical developments in the LMA. While its landscaping is looking a little tired, Shattuck's role as a quieter alternative pedestrian and cyclist route to Longwood Ave. and Francis Street, continues to be important to the area now and perhaps more so in the future, as well as its continued front door role for HMS and for service, delivery and ambulance vehicles for BWH. Because of the multiple roles that Shattuck will continue to serve, additional detail would be useful to see regarding the future sidewalk width, new street tree and landscaping plans, and accommodations that will be made for cyclists and pedestrians at and around the site. MASCO.3

Transportation/Parking/Loading

Loading and Deliveries:

Poorly designed loading docks and delivery practices elsewhere in the LMA have created traffic hotspots where loading and delivery are actually causes of considerable traffic delay and congestion. We hope, in the DPIR or MASCO.4 Supplemental filings, to understand what the plans will be for the number and location of loading docks or curbside areas intended to service the building, and anticipated volumes of trucks per day, types of trucks, and delivery time of day. A sense of truck delivery routes would also be helpful, as would turning templates at or around the new building's docks, and a sense of how this building dock will interface with the existing three-bay loading dock at the Hunnewell Building which stages on Meadow Lane. Off-peak or after hours loading activities should also be investigated to determine how to ameliorate spillover queues on Longwood Ave. or elsewhere in the area from existing or future operations.

Pedestrian/Vehicular Studies and Improvements:

We are supportive of Children's desire to improve pedestrian safety in an around their campus, with a particular emphasis on Longwood at Blackfan Street. We noted in the IMP/PNF a comment about the Hospital studying a second level pedestrian connection at this location. We have long supported a network of appropriately sited and designed pedestrian bridge alternatives between hospitals and other key functions, including their garages. We are particularly interested to know if a bridge, offset from the intersection further to the east, if connected to a patient discharge area on the top floor of the garage, could result in a reduction of the number of valet trips that cross through this intersection. We completely understand why patient drop-off is important for access by sick or handicapped children and their families; each drop-off requires four vehicular trips through the intersection, which causes additional traffic congestion and delay at the narrowest section of Longwood Avenue. We wonder if a study could be done to determine if there is a successful outcome that links a bridge development to a commitment to reduced valet trips at this intersection, pedestrian safety improvements and better operations on Longwood Avenue for all modes. MASCO.5

In addition, the IMPNF says that creation of a speed hump/pedestrian table in the middle of Longwood Ave. at Blackfan Street, and signal timing changes, are under consideration and may be helpful as a pedestrian safety improvement at this location. Since this is the LMA's "Main Street" serving multiple public and private buses, operating as one of the few available truck routes, as well serving as a high demand pedestrian, cyclist and auto corridor, we request a full evaluation in the next filings, on the potential positive and negative impacts on all modes of access – pedestrians, cyclists, autos, buses, trucks - and signalization – of a speed hump and signal timing changes and a second level pedestrian bridge. MASCO.6 Finally, pertaining to the parking garage, it would be helpful to further understand how the new exit lane from the garage will operate: is it right-turn only onto Blackfan Street north? MASCO.7

The IMPNF indicates that once the Inpatient Building is completed, there will be a series of internal departmental moves and backfilling of existing space. It would be helpful to ensure that the traffic impacts of the proposed project which will be analyzed in the next filing, include an analysis of the backfilled space and added valet operations, if any, as a result of the new building. MASCO.8

Energy and Infrastructure

We look forward to seeing additional detail on the cogeneration alternatives being considered by Children's Hospital in the new building, for their own or for area-wide use. The impacts on external design of the building and roof/mechanical penthouse would be useful to see. MASCO.9 It would also be interesting to see additional information on the infiltration systems, pervious pavement and rooftop vegetation planned to help minimize storm water run off from the building; and thoughts on design modifications, if any, to accommodate the State's organic waste recycling legislation requirements expected in 2014. MASCO.10 Congratulations to Children's for pursuing a LEED

Healthcare Certifiable rating. This is a relatively new rating and the hospital will be one of a few leaders in the hospital community to attempt this.

819 Beacon Street

Accommodations for Regional Multi-Modal Transportation Plans

We congratulate Children's for planning ahead to accommodate important neighborhood, City and State transportation plans for multi-modal access around and on your 819 Beacon Street property. Ensuring that your future building takes into account Urban Ring (or successor project) transit alignments, the City's Multi-Use pedestrian/cyclist Path and the reconstruction of Maitland Street to provide access to and from the new Yawkey Way, and also protect the underground Green Line tunnel (and the State's access for maintenance or emergency) are all vitally important public purposes. Because of the impacts of these plans on your property we are supportive of appropriate building dimension concessions. If the final design requires a cantilever over the Multi-Use Path and transit portal, it would be important for the City and State to ensure that the vertical and horizontal dimensions are adequate for those purposes and that the area in the short-term is safe, attractive, and well lighted. Addressing those questions and issues in the DPIR or Supplemental Filings would be helpful for everyone. MASCO.11

Alternative Massing and Design Studies

Recognizing that there may be structural issues that limit your design options for a building over the Green Line tunnel, in the DPIR or Supplemental Filings it would be helpful for the Audubon Circle neighbors on Miner and Munson Streets to see any alternative designs you have or will consider that might allow different building height and massing as well as shielding of the open air parking structure from nearby residents. MASCO.12

Relationship to Fenway Urban Village Plan and Area Goals for Parking and Transportation

In principle, the replacement of the 249-space surface parking lot at 819 Beacon Street with an appropriately scaled and well designed office building with ground floor retail and parking would fill in a gap in the streetscape, activate the street level and knit the neighborhood together. The final proposal will be developed through continued and successful dialogue with surrounding neighborhood, the city, and other stakeholders. The hospital has operated this as a surface parking lot for many years, consistent with the City's policies of: prioritizing patient/family and key medical staff parking on-site in the LMA; reducing demand for on- and off-site parking by offering robust incentives to employees to take public transportation or other alternative modes to work (Children's has achieved mode splits of 47% transit, 12% walk/bike, 33% drive alone, and 6% car/vanpool); and, operating off-site parking for that segment of Children's staff who cannot walk, bike, or use the MBTA. It would be important for the DPIR to show how the proposed project fits with the Fenway Urban Village plan and the City's goal to preserve a 4,000 space parking supply in the West Fenway to serve a combination of entertainment, Red Sox, housing, and institutional uses, as surface lots are redeveloped for mixed uses according to the plan. Finally, Children's IMPNF references doing a full traffic study on the proposed 819 Beacon project impacts. Based on city requirements, we assume that this study will build on outcomes of One Fenway Center and other Fenway area development traffic studies and look forward to seeing the results. MASCO.13 MASCO.14

Thank you for this opportunity to comment.

Sincerely,

Sarah J. Hamilton

Sarah J. Hamilton
Vice President, Area Planning and Development

Cc: Peter Meade, BRA Director
Thomas Tinlan, BTD Commissioner
Charles Weinstein, VP, Boston Children's Hospital

MASCO

MASCO.1 Access to open spaces

Please see Sections 2.2.2 and 6.1.3 for more information about the open spaces.

MASCO.2 Height, setbacks and stepbacks of the BCCB as they relate Shattuck Street and Meadow Lane

Please see Figures 6-1 and 6-2.

MASCO.3 Details for Shattuck Street

Please see Section 6.1.1 for details regarding Shattuck Street.

MASCO.4 Number and location of loading docks, volume, routes

Please refer to Section 3.3.4 for a detailed discussion of future loading operations relating to the Boston Children's Clinical Building.

MASCO.5 Pedestrian bridge and reduction in valet trips

Children's appreciates MASCO's support and is committed to working with MASCO on studies to evaluate implementation of an elevated pedestrian network. Children's continues to explore expansion of an elevated pedestrian pathway network throughout the LMA in the interests of LMA-wide efficiency and safety, including across Longwood Avenue, which would allow for valet operations at the Patient and Family Parking Garage.

Further studies would need to be done to understand the impacts if BCH were to pursue the bridge in the future.

MASCO.6 Speed hump and signal timings

BCH is not pursuing a speed hump or table modification at the intersection of Longwood Avenue and Blackfan Circle/Main Entrance Driveway.

MASCO.7 Exit lane from garage

Please see Response to Comment BTD.9.

MASCO.8 Analysis of backfilled space

As these existing spaces are currently occupied by similar type uses, they should not impact future vehicle trips. The existing program which will be moved to the proposed building is included in the square footage analyzed in the future conditions traffic analysis.

MASCO.9 CHP alternatives

Please see Section 2.2.2 for a discussion of the Central Utility Plant that is being proposed and several alternatives that are currently under consideration.

MASCO.10 Stormwater

The Proponent is currently exploring the use of rainwater harvesting, stormwater infiltration systems, and vegetated terrace areas as an effort to reduce the rate and quantity of stormwater discharge. The 819 Beacon Street Project is currently contemplating an approximately 7,000 sf vegetated roof area.

MASCO.11 Cantilever over multi-use path and transit portal

Please see Section 6.2.2 of the DPIR/DEIR for a discussion of the multi-use path interim and final condition.

MASCO.12 Design alternatives for 819 Beacon Street

Please see Response to Comment MR.2 and Section 6.2. In addition, Section 2.3.5 includes a discussion of previous alternatives studied.

MASCO.13 Manner in which 819 Beacon Street fits with Fenway Urban Village Plan and Area Goals for Parking and Transportation

Please see Sections 2.3.4.4 and 2.3.3 and of the DPIR/DEIR for a discussion of the consistency with the Fenway Urban Village Plan and goals for parking and transportation respectively.

MASCO.14 819 Beacon Street traffic study

Please refer to Chapter 4.0 which includes a detailed transportation analysis of 819 Beacon Street Project. As described in Section 4.3.1, Area Transportation Improvements, the study includes transportation infrastructure initiatives that are currently being put in place in connection with other nearby development projects by private developers, the City of Boston, Commonwealth of Massachusetts, and the MBTA.

MISSION HILL
NEIGHBORHOOD HOUSING SERVICES

Phone (617) 566-6565
Fax (617) 566-1440

November 12, 2012

Sonal Gandhi
Boston Redevelopment Authority
Boston City Hall
Boston, MA 02201

Re: Boston Children's Hospital Institutional Master Plan Amendment and
Project Notification Form dated October 12, 2012

Dear Ms Gandhi:

The Mission Hill Neighborhood Housing Services (MHNHS) Neighborhood Planning and Review Committee has reviewed Boston Children's Hospital Institutional Master Plan Amendment and Project Notification Form dated October 12, 2012. MHNHS is in support of Children's Clinical Building and Patient/Family Parking Garage Addition projects that are proposed to advance and sustain Children's mission in pediatric care, teaching and research.

MHNHS offers the following comments and requests related to these two projects. MHNHS encourages Children's Hospital to continue to work during the planning phase of the Clinical Building to resolve outstanding issues related to the proposed removal of the Prouty Garden. We understand from the IMP/PNF that the Hospital proposes to expand current open space and include new space to replace the Prouty Garden. We encourage Children's Hospital to work with the Prouty family and advocates of this garden to achieve a solution that will include their support. We also understand from the IMP/PNF that the proposed height of the Clinical Building can be achieved within the height zone of the BRA LMA Interim Guidelines by providing exceptional public benefits. MHNHS offers to participate with Children's Hospital and the City to help create these public benefits to make sure they are appropriate in scope and impact.

MHNHS.1

MHNHS.2

We thank you for the opportunity to participate in this process and provide comments. Please do not hesitate to contact us if you have any questions or if we can provide you any additional information.

Sincerely,

James Hoffman
Executive Director

cc: Representative Jeffrey Sanchez
Councilor Michael Ross
Shaina Aubourg, ONS

Mission Hill Neighborhood Housing Services

MHNHS.1 Prouty Garden

The Prouty Garden was originally established as a gift to the Hospital in the 1950s and its operation and upkeep has been maintained by a separate endowment under the control of the Prouty Garden Foundation. The Hospital has met with the leadership of that Board on several occasions over the past few years in an effort to update them, with particular regard to the proposed construction on the site. The President of the Prouty Garden Foundation has been briefed on the Hospital's strategic need to further its single bed inpatient philosophy and has reviewed all of the site options that the Hospital studied, prior to concluding that the Garden location was the optimal building site. The Foundation has expressed a willingness to work with the Hospital's planners and designers to incorporate the artifacts and memorabilia now within the garden, into one or more locations within the proposed BCCB, in an effort to keep the 'spirit' of the garden alive in its new environment.

MHNHS.2 Exceptional public benefits

Please see Chapter 3.0 of the 2013 IMP Amendment regarding consistency with the LMA Interim Guidelines and Exceptional Public Benefits provided.

Gandhi, Sonal

From: Andrei Ignash [andrei_ignash@yahoo.com]
Sent: Monday, November 12, 2012 3:23 PM
To: Gandhi, Sonal
Subject: 819 Beacon St Project

Dr Sonal Gandhi,

I am the resident owner at 16 Miner St Boston MA Apt 603. I am writing to you to express my great concern about the proposed construction project at 819 Beacon St. I think that the project is too massive for the size of the lot and out of proportion with the existing buildings and will increase traffic and overall negatively impact the quality of life in the area.

I strongly believe, that the project will increase the noise level in my unit, vehicle emissions, partially obstruct the view and day AI.1 light, and significantly reduce my property value. I hope that my opinion will be taken into account when BRA is considering the proposed project.

Best Regards

Andrei Ignachkin

Andrei Ignachkin

AI.1 Massing, traffic, noise and air quality impacts, and daylight

Chapter 5.0 of the DPIR/DEIR includes detailed noise, air quality and daylight analyses related to the 819 Beacon Street Project. In addition, Chapter 4 of the DPIR/DEIR includes a detailed analysis of the 819 Beacon Street Project transportation impacts. Please also see Chapter 6.0 as well as Section 1.3.10 for a discussion of Urban Design public benefits related to 819 Beacon Street.

audubon circle NEIGHBORHOOD ASSOCIATION

Nov. 12, 2012

Ms. Sonal Ghandi
Boston Redevelopment Authority
9th floor
City Hall
Boston, MA 02201

Re: 819 Beacon St., and Children's Hospital IMPNF

Dear Ms. Ghandi:

Thank you for the opportunity to comment on Children's Hospital's IMPNF, specifically their plans for 819 Beacon Street here in Audubon Circle. Because the Board of the Audubon Circle Neighborhood Association (ACNA) has not yet had the opportunity to meet to discuss this proposal since details of the project have been presented, this letter will be very preliminary. The ACNA Board will write a much more detailed letter to the BRA on this project during the next comment period.

We look forward to continuing discussions with the BRA and Children's Hospital on the proposed project for 819 Beacon St. (hereinafter, "the project"), and feel we can work successfully and collaboratively on this project to produce a building that benefits both the neighborhood and the Hospital. We've been very encouraged by our meetings and discussions to date. We do have a number of questions and concerns at this stage, which we will elaborate below.

First, we feel it's important for all parties involved to keep in mind that this project as proposed would be by far the largest and tallest building in Audubon Circle, a lovely small "pocket neighborhood" consisting almost entirely of 3 and 4 story residential buildings constructed in the 1890's through 1915 or so.

HEIGHT

Our first concern is the height of the project. As proposed, the height of this project is completely out of scale with nearby buildings. At 142 feet, it is twice the height of any building in Audubon Circle. It would dwarf the apartment buildings next door at 829-833 Beacon St., (60 ft. high) and the transition in height between the 2 properties would be abrupt. As currently designed, the project is not at all "human-scaled" with other properties are in Audubon Circle. ACNA.1

Also, a related question: as we understand it, since most residential and office buildings are about 10ft. per floor, if this building is 10 floors, it should be about 100 ft. high. Are the mechanicals on the roof 42 ft. high, or where does the extra height come from? ACNA.2

As the proponents are aware, Mr. John Rosenthal of Meredith Management agreed with the Board of ACNA several years ago to develop a new building on his property, adjacent and immediately east of the 819 Beacon St., site, at 7 stories to be more in scale with nearby Audubon Circle residential buildings. We hope that Children's Hospital will be equally
considerate of the context of the nearby properties and limit this building's height to 7 stories as well.

We are very aware that this site is within a "Planned Development Area" (PDA) of Audubon Circle, and as a PDA, local zoning laws concerning height will not be enforced. This situation makes it even more urgent, more imperative that the BRA, Children's Hospital and ACNA work collaboratively together to determine an appropriate height for the project and for the neighborhood.

TRAFFIC AND PARKING ISSUES

Our second major concern centers around traffic and parking. Because the Kenmore/Audubon Circle area is already so congested, any additional traffic is a major concern to local residents. We can have gridlock at the intersection of Park Drive and Beacon Street even when the Red Sox are out of town and when BU is not in session. The BRA has already permitted a 1200-car parking garage for Parcel 7 close to this project site; as a result, ACNA cannot support another garage bringing another 526 cars into the neighborhood. This garage would add more than twice the current 249 spaces available in the open lot on the project site. ACNA.3

Even if each space in both new garages turns over only twice a day, that would *add 3452 more cars coming through our neighborhood streets every day*. In addition, as you know, there are 3 other garages planned for Parcel 7 under Buildings 1, 2 and 3. When all these new parking spaces become available, we can only expect further traffic gridlock. Concern has been expressed by ACNA members about particulate emissions from cars using these large parking structures, and their effect on the health of nearby residents. Suggestions have included a reduction in the size of the garage, ventilation away from nearby residences, and green space to act as an air filter and visible barrier. ACNA.4

We urge a careful and *thorough traffic study which would include an area-wide evaluation of all parking garages, and open lots within a 1 mile radius of this site.* ACNA.5

It has been proposed that once Maitland St. is straightened and Mountfort St. becomes an artery, traffic from this new garage will be funneled to the BU Bridge, up and out of Audubon Circle. The ACNA considers this is an unrealistic solution, as a visit to the BU Bridge any time of day or night can attest. ACNA.6

Because we appreciate everything Children's Hospital and MASCO has done to diminish traffic in the Longwood Medical Area, we know they will understand why we don't want similar problems here in Audubon Circle.

QUESTIONS ABOUT OTHER POSSIBLE USES OF 819 BEACON

It has come to our attention that Children's Hospital owns property in Brookline Village that could also be used to consolidate its now-disparate administrative offices. Since Brookline Village is closer to the hospital than 819 Beacon, and has existing T and bus service, the ACNA wonders whether the hospital has considered using that property instead for office space? If not, what uses does the hospital anticipate for the property in Brookline Village? ACNA.7

Several years ago, Children's Hospital entered into discussions with the Fenway CDC concerning the possibility of building housing at 819 Beacon. New housing would be a welcome addition to Audubon Circle and is much needed here; obviously any new housing built at 819 Beacon could accommodate the staff of Children's Hospital as well. Given the vagaries of the economy, is there a possibility this site could be used for housing and the Brookline Village site used for office space? We're not opposed to office space, but are trying to see the bigger picture here. ACNA.8

ADDITIONAL CONCERNS

Other ACNA members have expressed concerns about:

1. The loading dock location and possible noise from delivery trucks. ACNA.9
2. Shadows cast by the property in the morning, esp. onto 16 Miner St. and 829 Beacon St. We request a detailed shadow study. ACNA.10
3. HVAC noise from the roof of the building, which may disturb nearby residents. ACNA.11
4. Lighting, which should be adequate and augment safety, but not produce glare into nearby residences. ACNA.12

As the project progresses, we look forward to working together with the BRA and representatives from Children's Hospital on the design of this project. Thank you and feel free to contact us anytime with questions on this letter.

Sincerely,

Patricia Johnson, Co-President, ACNA
Richard Ong, Co-President, ACNA
Katherine Greenough, Vice President, ACNA and Children's Hospital IMPNF Task Force member

Cc: Michael Ross, Boston City Council
Shaina Aubourg, Mayor's Office
State Rep. Gloria Fox
State Rep. Byron Rushing
State Senator William Brownsberger
Fredericka Veikley, Fenway Civic Association
Dharmena Downey, Fenway CDC
John Rosenthal, Meredith Management
David Lapidus, Octagon Properties
ACNA Board of Directors

Audubon Circle Neighborhood Association

ACNA.1 Height

The 819 Beacon Street Project has evolved since submission of the IMPNF/PNF in response, in part, to comments and input from the BRA, Boston Civic Design Commission and the community. The massing and materials have changed since the filing of the IMPNF/PNF. The Project has been revised to step back from Beacon Street and the height has been reduced from 10 stories to eight stories with a setback of the portion closest to Miner Street at the seventh and eighth stories. Building materials have been selected to bridge between the traditional residential construction to the west and the modern design of the buildings to the east. The lower mass will have a rounded corner to reference the existing building directly across Beacon Street. Please see Chapter 6.0, Urban Design for additional information.

ACNA.2 Floor heights

Please see response above. The height of the building has been reduced, in part, based on input from the community, the BRA and the BCDC. The building is 116 feet as defined by the Boston Zoning Code with a16-foot mechanical penthouse above. Modern office buildings require a 13-foot floor to floor height.

ACNA.3 Parking

Please refer to Chapter 4.0 which includes a detailed transportation analysis of the 819 Beacon Street Project. This chapter discusses trip generation and impacts and the need for the size of the proposed parking garage.

ACNA.4 Air quality

As described in Section 5.5, the proposed 819 Beacon Street Project will comply with the National Ambient Air Quality Standards.

ACNA.5 Traffic study

See Section 4.2.5 for detailed information about area-wide parking including both on- and off-street parking located within a walkable quarter mile from the 819 Beacon Street Project site.

ACNA.6 Routing traffic to BU Bridge

Many of the BCH employees that will park at 819 Beacon Street work hours that require them to commute during off-peak times (i.e., not on the road from 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.). This will help limit the impact on the area roadways. Please refer to Section 4.3.3 for a discussion on Project trip generation and distribution. Only a small portion (9%) is expected to access/egress via Mountfort Street.

ACNA.7 Use of Brookline Village property

Currently leased space or other off-campus owned space such as Brookline Place will likely continue to be necessary to accommodate Children's growing need for administrative space. Please see Section 2.3.5.1 for additional information.

ACNA.8 Housing at 819 Beacon Street

The office space at 819 Beacon Street will enable Children's to meet increasing clinical needs at its Core Campus by allowing expansion and decanting of some of its existing administrative services that must maintain a functional relationship to the Core Campus in a proximate location. The building in Brookline Village was designed and permitted and is being planned as a medical office building to accommodate outpatient clinicians, and other space need for the Hospital.

ACNA.9 Loading docks and noise

Sound from non-stationary equipment associated with the proposed loading dock at 819 Beacon Street are not considered to be steady sources of noise and will be consistent with typical city sources experienced in the existing background. Enclosing the dock inside the building will limit the noise associated with deliveries and the hauling of trash. Noise-related issues will be resolved through mutually agreeable adjustments in operational times.

ACNA.10 Shadow study

Section 5.2.3 of the DPIR/DEIR includes a detailed analysis of the shadow impacts of the proposed 819 Beacon Street Project.

ACNA.11 Mechanical equipment noise

Section 5.6 of the DPIR/DEIR includes a detailed analysis of noise impacts from the 819 Beacon Street Project's mechanical equipment.

ACNA.12 Lighting

Exterior lighting will be provided by fixtures with cut-off capability. These fixtures are designed to project light at a downward angle only and the parametrics can be selected to limit the "spillage" of light onto abutting properties.

Octagon Property Management Inc.
829 Beacon Street Suite B
Boston, MA 02215

Nov. 12, 2012

Ms. Sonal Ghandi
Boston Redevelopment Authority
9th floor
City Hall
Boston, MA 02201

Re: 819 Beacon St., and Children's Hospital IMPNF

Dear Ms. Ghandi:

Thank you for the opportunity to comment on Children's Hospital's IMPNF regarding their plans for 819 Beacon Street which is directly next to my property at 829-833 Beacon Street.

Although I am very optimistic that Children's Hospital will work with me and others in the neighborhood to create a beautiful and appropriate development I was a bit disappointed initially with the lack of communication to inform me (and others) about this project and the meeting schedules.
Now that I've been to a couple of the meetings I am looking forward to continue the discussions with the BRA and Children's Hospital on the proposed project.

The biggest concern I have with the project as it is proposed is the height and massing, which I believe is very out of scale with most of the buildings in the immediate area. OPM.1
At 142 feet, it is twice the height of any building in Audubon Circle. It would by far dwarf my apartment buildings directly to the right at 829-833 Beacon St., and the transition in height between the 2 properties would be abrupt. As currently designed, the project is not at all scaled with other properties are in Audubon Circle. In addition this project will even be taller than the proposed seven story Meredith Management building directly to the left of this development.

There are other issues that are of concern but at this time I do not feel I have enough information to comment on them. In the near future I hope to receive more information on the following issues:

1. Parking and traffic flow in and around the project, especially any possible impact on Munson Street and the south side of my property. OPM.2
2. The more than doubling of the parking for this site from 249 spaces to 526 spaces which is an excessive amount of parking for this project. *A question for Children's Hospital is if they would be willing to pay for an independent traffic study on behalf of the Audubon Circle Neighborhood?* OPM.3
3. Shadow studies showing the impact on my property and the neighborhood OPM.4
4. Location of the HVAC and other mechanicals so they will have minimal impact to the residential neighbors OPM.5

I look forward to working with the BRA and representatives from Children's Hospital on the design of this project so it can have a positive and lasting impact on the Audubon Circle neighborhood.

Sincerely yours,

David Lapidus

Cc via email:
Michael Ross, Boston City Council
Shaina Aubourg, Mayor's Office
State Rep. Gloria Fox
State Rep. Byron Rushing
State Senator William Brownsberger

Cc: Michael Ross, Boston City Council
Shaina Aubourg, Mayor's Office
State Rep. Gloria Fox
State Rep. Byron Rushing
State Senator William Brownsberger

Octagon Property Management Inc.

OPM.1 Height and Massing

The 819 Beacon Street Project has evolved since submission of the IMPNF/PNF in response, in part, to comments and input from the BRA, Boston Civic Design Commission and the community. The massing and materials have changed since the filing of the IMPNF/PNF. The Project has been revised to step back from Beacon Street and the height has been reduced from 10 stories to eight stories with a setback of the portion closest to Miner Street at the seventh and eighth stories. Building materials have been selected to bridge between the traditional residential construction to the west and the modern design of the buildings to the east. The lower mass will have a rounded corner to reference the existing building directly across Beacon Street. Please see Chapter 6.0, Urban Design for additional information.

OPM.2 Parking and traffic

Please refer to Chapter 4.0 which includes a detailed transportation analysis of 819 Beacon Street Project. This chapter discusses parking and traffic flow to and from the Project site.

OPM.3 Independent traffic study

Due to the immediate proximity of the 819 Beacon Street site to the ACNA, a virtually identical traffic study to the traffic study being prepared for the DPIR/DEIR would yield the same results. Chapter 4.0 includes a detailed transportation analysis of the 819 Beacon Street Project which will be reviewed by the BTD.

OPM.4 Shadow studies

Section 5.2.3 of the DPIR/DEIR includes a detailed analysis of the shadow impacts of the proposed 819 Beacon Street Project.

OPM.5 Location of HVAC equipment

Section 5.6 of the DPIR/DEIR includes a detailed analysis of noise impacts from the 819 Beacon Street Project's mechanical equipment and Section 5.6.5.3 includes a summary of the results.

Michael Simons
16 Miner Street #503
Boston, MA 02215
on behalf of the
Board of Trustees
and owners at
16 Miner Street

November 12, 2012

Ms. Sonal Gandhi
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Re: Boston Children's Hospital
Proposal for 819 Beacon Street

Dear Ms. Gandhi:

I am one of three Board of Trustee Members at 16 Miner Street representing fifty-three (53) property owners and the Board of Trustees. I write to offer my initial comments on behalf of the Board and on behalf of the owners regarding the proposed building to be constructed by Children's Hospital at 819 Beacon Street.

My comments generally pertain to five (5) aspects of the project.

1. <u>Excessive height.</u>

First, as currently proposed the project is excessively tall at ten (10) stories and should be reduced in height by a least four (4) stories. This would bring the project into scale with the proposed seven (7) story building to be constructed as part of the Rosenthal Fenway Center Project, to the East, and better match the scale of the five (5) story adjacent residential buildings at 829 and 833 Beacon Street, to the West and the six (6) story residential building at 16 Miner Street to the South West. Of note, the 819 Beacon Street site location sits on a street level elevation higher relative to the neighboring residential buildings—this will further accentuate the project's size and overhang onto the much smaller residential abutters. MS.1

2. Excessive parking.

I realize that by reducing the height of the building, without some other accommodation, the office space proposed may also be reduced. To address this concern and to address my second concern, which pertains to the excessive number of parking spaces provided by the project, I suggest the size of the parking garage and the number of spaces provided be significantly reduced and that any office space lost by reducing the height of the building be recaptured by areas currently designated for parking as office space. The present parking lot where the new building is to be constructed contains approximately 250 parking spaces. The new garage proposes to provide more than twice that number at approximately 525 parking spaces. Project representatives have indicated that employees at the proposed buildings will not even need the 250 spaces currently on the site. I would support the grant of appropriate waivers to reduce requirements for new parking stalls which if constructed will only attract more vehicles to the area. The number of parking spaces as proposed is greatly excessive and, when added to the approximately 1200 spaces to be included in the Rosenthal Fenway Center project, will undoubtedly lead to the same kind of detrimental traffic congestion in Audubon Circle as now affects the streets in the Longwood Medical area. MS.2

The garage, as proposed, also backs up to the residences at 16 Miner Street. I ask that the developer consider utilizing any reduction in the required parking spaces be to pull the office portion of the building away from the 16 Miner Street building—the reasons are multiple, including: noise, engine idling, pollution, light and aesthetics. As noted by a one individual, there are public parking garages available in the vicinity, including the underutilized Landmark Center parking structure. It seems completely unnecessary to add additional parking to what is already a dangerously congested area (and will undoubtedly become more so with the development of the Rosenthal Fenway Center project and the approximately 1200 parking spaces that are to accompany this development). MS.3 MS.4

3. Traffic Study.

Thus my second point leads to my third point of the need for a comprehensive traffic study to be conducted with regard to this building. Any study should also include the anticipated impacts of the new buildings (and parking) coming on-line with the Rosenthal project (including an Environmental Impact Report filed with the MEPA Office of the Executive Office of Environmental Affairs). Traffic exiting the 819 Beacon Street site onto Beacon Street will face an extremely dangerous intersection due to the traffic heading West from Kenmore Square. Additionally, Beacon Street, when crossing over the Mass. Turn Pike, exists as a crested road which makes stopping – and line of sight – both difficult and dangerous. It seems safety should be paramount when considering the entrance to the proposed Children's Hospital site. MS.5 MS.6

As an automobile owner, I can attest to the excessive amount of traffic and congestion that currently manifests on Beacon Street, particularly at the intersection of

Beacon Street and Park Drive. Excessive traffic congestion is experienced on Beacon Street in both the a.m. and p.m. hours and is accentuated (1) during rush hour, (2) before and after Red Sox games and more so, (3) during the combination of the two. I have personally borne witness to numerous automobile accidents on Beacon Street in the vicinity of this project and am gravely concerned for the likelihood of many, many more accidents given the additive mix of traffic load and pedestrians resulting from the projects size and scope. My concern especially holds true regarding the ever present danger of navigating traffic at the intersection of Beacon Street and Park Drive. A detailed accounting of the number of traffic accidents (and other relevant recorded information) should be obtained from Boston and Brookline Police Department records. I am particularly concerned with – what seems to be – an excessive number of automobile accidents at the intersection of Beacon Street and Park Drive. The Boston and Brookline Police traffic accident records should thus be shared with the neighborhood. MS.7

The BRA should take into consideration the proposed six (6) story fifty-plus (50+) unit residential apartment complex on Miner Street. This project is to be situated on 9-23 Miner Street directly across from 16 Miner Street and will have garage parking. The site was previously approved for construction of what was to be Boston's first retirement community catering specifically to gay men and lesbians. It filed for Chapter 11 bankruptcy protection. The newly proposed 9-23 Miner Street residential unit apartment project will further add to traffic and congestion and thus contribute to the traffic load on Beacon Street and add to the danger posed to traffic exiting Miner Street onto Beacon Street and vice-versa. MS.8

A detailed traffic study needs to be conducted and shared with the neighborhood in order to identify how traffic can safely enter and exit the 819 Beacon Street site and, at the same time, not fill the streets in Audubon Circle with the same volume of traffic that now congests the Longwood Medical area. MS.9

4. <u>Excessive Noise</u>. MS.10

The proposed structure locates loading docs and garage entrances / exits directly beside and behind the residential properties of 833 and 829 Beacon Street and 16 Miner Street—and will create a virtual echo chamber of noise. Excessive noise concerns include truck back-up sirens, commercial deliveries, trash pick up, recycling noise and automobile entrances and exits. Noise concern is not unfounded as this is an ongoing problem with the Landmark Center office-retail project in-light of 16 Miner Street being significantly further away from Landmark's loading docs, trash and recycling stations and garage. As currently proposed, a set of garage vehicular entrances and exits is on the 819 Beacon Street project side that abuts the residential neighbors of 829 and 833 Beacon Street and 16 Miner Street. I suggest that all vehicular entrances and exits, loading docs, commercial deliveries, trash pickup locations, recycling, etc., not be located on the Munson Street side of proposed building structure but on the Maitland Street side. Another alternative for consideration is locating the aforementioned on the Brookline Avenue side of the structure. Any project approvals should be carefully conditioned on appropriate restrictions on the timing of deliveries and pick ups. HVAC and mechanical placement should take into consideration neighboring residents, as well. MS.11 MS.12

5. Design/Architectural Comments. MS.13

Lastly, purely with the regard to the proposed design of the building, while the materials appear to be a reasonable choice, the facade of the building is far too abrupt a juxtaposition of office / commercial design into the existing residential neighborhood. I believe that this effect can be modified by resembling the bays in the adjacent residential building at 821 Beacon Street, would provide a more gradual transition from the residential portion of the neighborhood to the newly expanding commercial section of the neighborhood.

Obviously, Children's Hospital is a valued neighbor providing critical community services. While we welcome their investment in the neighborhood, additional planning and design coordination are warranted to insure that the project does not overwhelm the neighborhood. I look forward to participating in the public review process for the project and hope that my comments and observations are carefully considered.

Very truly yours,

Michael Simons on behalf
of the Board of Trustees
and owners at 16 Miner Street

cc: Pat Shea; Board of Trustee Member - 16 Miner Street, Boston MA, 02215
Sandeep Karnik; Board of Trustee Member - 16 Miner Street, Boston MA, 02215
Audubon Circle Neighborhood Association, Inc.

Michael Simons

MS.1 Height

Please See Response to Comment MR.2.

MS.2 Parking

Please refer to Chapter 4.0 which includes a detailed transportation analysis of the 819 Beacon Street Project. The chapter discusses trip generation and impacts and the need for the size of the proposed parking garage.

MS.3 Pulling building away from 16 Miner Street

Please see Response to Comment MR.2. Chapter 5.0 of the DEIR/DPIR includes detailed daylight, noise, air quality and construction impacts analyses of the proposed 819 Beacon Street Project. In addition, Chapter 6.0 of the DPIR/DEIR includes a discussion of urban design impacts of the proposed 819 Beacon Street Project.

MS.4 Need for additional parking

Please see response to Comment MS.2.

MS.5 Traffic study including other area projects

Please refer to Chapter 4.0 which includes a detailed transportation analysis of the 819 Beacon Street Project. As described in Section 4.3.1, Area Transportation Improvements, this study includes transportation infrastructure initiatives that are currently being put in place in connection with other nearby development projects by private developers, the City of Boston, Commonwealth of Massachusetts, and the MBTA.

MS.6 Traffic exiting 819 Beacon Street

As described in Section 4.3.1, a signalized intersection is proposed at the Beacon Street and Mountfort Street/Maitland Street intersection as part of the Fenway Center development. This signal will aid vehicles in safety and efficient access and egress from the Project site.

MS.7 Intersection of Beacon Street and Park Drive and accident history

Please refer to Section 4.2.3, Crash Analysis, for a discussion on vehicle accidents in the Project area. As provided in Appendix C, the intersection of Beacon Street and Park Drive experiences vehicle collision at a rate of 0.66 crashes per million vehicles entering the intersection. This rate is below both the state and MassDOT district averages of 0.81 and 0.77, respectively.

MS.8 Additional projects on Miner Street

Please see response to Comment MS.5.

MS.9 Detailed traffic study

A detailed traffic and parking study is included in Chapter 4.0 of this DPIR/DEIR.

MS.10 Location of loading docks, trash pick up area, garage entrances and exits and noise

The loading dock needs to be located in a relatively level location and must be proximate to the internal building core. The City will not allow loading on Beacon Street. The grade along Maitland Street is too steep for trucks to negotiate except adjacent to the CSX right-of-way which is not functional because it is the only viable ingress and egress location for the bulk of the garage traffic.

Sound from non-stationary equipment associated with loading docks, garbage dumpsters, and garage entrances/exits are not considered to be steady sources of noise and will be consistent with typical city sources experienced in the existing background. Noise-related issues will be resolved through mutually agreeable adjustments in operational times.

MS.11 Timing of deliveries

There will be appropriate restrictions on the timing of deliveries and pick ups in an effort to minimize impacts to abutters.

MS.12 Mechanical noise

Section 5.6.5 of the DPIR/DEIR includes a detailed noise analysis of the 819 Beacon Street Project.

MS.13 Design

Please see Chapter 6.0 for a discussion of the design of the proposed 819 Beacon Street Project.

Gandhi, Sonal

From: Nickolette Gaglia [nickolettep2@yahoo.com]
Sent: Sunday, November 11, 2012 3:58 PM
To: Gandhi, Sonal
Subject: Comments re: 819 Beacon St

Dear Ms. Ghandi,

We live at 16 Miner Street, and we'd like to provide some feedback regarding the proposed building at 819 Beacon Street. Here are our concerns:

1) We believe the building is out of proportion to the other buildings in the neighborhood—as if Children's Hospital is proposing a building better suited to the Longwood Medical Area than Audubon Circle. While we are supportive of the hospital's mission, we are concerned that the mass of the proposed building will detract from the "neighborhood" aesthetic of Audubon Circle. The proposed parking garage section alone is the same number of stories as the neighboring buildings. We are also concerned that the structure will severely block the amount of light for residents of 16 Miner Street. NG.1

2) Related to the above point of the overly large mass of the proposed building, we believe that the increase in parking spaces from 249 to 525 is also massively out of proportion with what is appropriate for the neighborhood. We feel that both the BRA and Children's Hospital should be encouraging the use of public transportation and walking/biking rather than bringing additional cars into the area. Our specific concerns regarding the number of parking spaces are as follows:

a) On November 7th 2012, a Children's Hospital representative stated at the neighborhood meeting that they didn't want to build more parking in the Longwood Medical Area because "it's too congested in the Longwood Medical Area." We don't feel that an appropriate action is to increase congestion in Audubon Circle. The roads are already extremely congested at the beginning and end of the work day, as well as on ball game days, and more than doubling the number of parking spots will only exacerbate this. With a massive number of parking spaces already being added to the area with the Rosenthal project, we fear that the additional cars going to and from these parking spots will make the gridlock in Audubon Circle even worse than in the Longwood Medical Area. NG.2

b) We are concerned about the air quality for the residents at 16 Miner St, since the parking garage is at the same level as the windows in the residences. NG.3

c) At the same meeting on November 7th, the Children's Hospital representative stated that one of the reasons why they need more parking is because a good portion of their staff works irregular hours. The noise from cars driving to and from work, not just from 9-5 but at all hours of the day and night, is concerning. Additionally, it was mentioned that the parking spaces might be rented out at night commercially for ball games or for people going to the bars/clubs on Landsdowne Street. We feel that this would bring in additional noise pollution to residents of 16 Miner Street. NG.4

3) So far there has been some attention given to the look of the building from Beacon St. It seems as though the city is planning for more pedestrian and vehicular traffic in the area with the straightening of Maitland Street and the addition of the Multi-Use Path. While we are perfectly fine with the outward appearance of the building from Beacon Street, when viewed from the other sides it seems like the building will primarily resemble a large parking garage. We believe that this is not aesthetically pleasing, and with the increase in both pedestrian and vehicular traffic around other sides of the building we feel that the appearance of the entire building should be taken into consideration. NG.5

We appreciate you taking the time to read about our concerns.

Best wishes,
Jason and Nickolette Gaglia

Nickolette Gaglia

NG.1 Scale of building

Please see Response to Comment MR.2 and Section 6.2 for additional information.

NG.2 Parking in Audubon Circle

Please refer to Chapter 4.0 which includes a detailed transportation analysis of the 819 Beacon Street Project. The chapter includes discussions on the Project trip generations and impact, BCH commitments to encouraging commuting via alternative modes of transportation, and the need for the size of the proposed parking garage.

NG.3 Air quality

Section 5.5.3.2 of the DPIR/DEIR includes a detailed air quality analysis of the anticipated air quality impacts of the 819 Beacon Street Project. The Project is anticipated to meet the National Ambient Air Quality Standards.

NG.4 Noise

Sound from non-stationary vehicles are not considered to be steady sources of Project noise and will be consistent with typical city sources experienced in the existing background.

NG.5 Design of building

Please see Section 6.0 for detailed information about the design of the building.

In coordination with the BRA and BCDC, the building exterior has been redesigned to respond to the existing and future architectural character of the area. The building facades have been modified to address the views from all four sides.

James L. Buechl
462 Park Drive
Boston, MA 02215

November 9, 2012

Ms. Sonal Gandhi
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Re: Boston Children's Hospital
Proposal for 819 Beacon Street

Dear Ms. Gandhi:

I am the owner of 462 Park Drive in Boston and I write to offer my initial comments on the building proposed to be constructed by Children's Hospital at 819 Beacon Street. My comments generally pertain to four (4) aspects of the project which I strongly advocate be modified as indicated below.

1. Excessive height.

First, I believe the project is too tall and should be reduced in height by three (3) stories. This would bring it into scale with the proposed new building to be constructed as a part of the Rosenthal Project and match the scale of the adjacent building at 821 Beacon Street. JB.1

2. Excessive parking.

I realize that by reducing the height of the building, without some other accommodation, the office space proposed may also be reduced. To address this concern and to address my second concern, which pertains to the excessive number of parking spaces provided by the project, I suggest that the size of the parking garage and the number of spaces provided be cut in half and that any office space lost by reducing the height of the building be compensated for by expanding office space above the parking garage. The present parking lot where the new building is to be constructed contains approximately 250 parking spaces. The new garage proposes to provide more than twice this number. Project representatives have indicated that employees at the proposed buildings will not even need the 250 spaces currently on the site. The number of parking spaces as proposed is greatly excessive and, when added to the twelve hundred spaces to be included in the Rosenthal Project, will undoubtedly lead to the same kind of traffic congestion in Audubon Circle as now affects the streets in the Longwood Medical area. JB.2

Ms. Sonal Gandhi
Boston Redevelopment Authority
November 9, 2012
Page Two

3. Traffic Study.

Thus my second point leads to my third point of the need for a comprehensive traffic study to be conducted with regard to this building and with regard to traffic patterns for vehicles entering and leaving the site. Traffic exiting this site onto Beacon Street will face an extremely dangerous intersection due to the traffic coming west from Kenmore Square over the bridge that crosses the Mass. Turnpike. A detailed study needs to be conducted and shared with the neighborhood in order to identify how traffic can safely enter and exit the site and at the same time not fill the streets in Audubon Circle with the same volume of traffic that now congests the Longwood Medical area. JB.3

4. Design/Architectural Comments.

Lastly, purely with the regard to the proposed design of the building, while the materials appear to be a reasonable choice, the facade of the building is far too abrupt an insertion of office/commercial design into the neighborhood. I believe that this effect can be modified by providing bays on the facade of the building which, while resembling the bays in the adjacent residential building at 821 Beacon Street, would provide a more gradual transition from the residential portion of the neighborhood to the newly expanding commercial section of the neighborhood. JB.4

Thank you for addressing each of these concerns in your review of this project and as the review proceeds, I will look forward to learning how my comments have been included in the responses of the Redevelopment Authority to this proposal.

Very truly yours,

James L. Buechl, Esq.

JLBL:don

cc: Audubon Circle Neighborhood Association, Inc.

James Buechl

JB.1 Height

Please see Response to Comment MR.2.

JB.2 Parking

Please refer to Chapter 4.0 which includes a detailed transportation analysis of the 819 Beacon Street Project. The chapter includes discussions on the Project trip generation and impact and the need for the size of the proposed parking garage.

JB.3 Traffic

Please see repose to Comment JB.2.

JB.4 Design

Please see Response to Comment NG.5. The building facades have been redesigned to respond to requested massing changes to relate to the existing fabric and the approved projects in the area. Please see Chapter 6.0 for additional information.

Gandhi, Sonal

From: Sandeep Karnik [sandeep.karnik@gmail.com]
Sent: Friday, November 09, 2012 4:25 PM
To: Gandhi, Sonal
Cc: Sandeep Karnik
Subject: Children's Hospital | Beacon Street | Resident Issues / Concern sTo Be Addressed

Dear Ms. Ghandi,
I am excited by the prospect of Children's Hospital making a building over the parking lot behind 16 Miner St. However, the market value and living quality of 16 Miner street will be adversely impacted by the building as currently proposed by Children's Hospital, unless several issues are explicitly addressed. Below, I've included the key issues and a proposed solution(s):
1. Blockage of sunlight for residents behind the building due to enormity of the building SK.1
Proposal: Conduct a shadow study to demonstrate the impact of shadows on 16 Miner residences. Decrease height of the building to preserve sunlight to residents and keep environmental impact low.
2. Parking structure will produce particulate emmissions that will enter into resident's homes.(3 sides of 16 Miner will have parking structures - Landmark Center, Vanguard Healhcare and Children's Hospital - we will be surrounded by parking) SK.2
Proposal: Examine precise impact of vehicular emmisions that will enter resident's homes. Decrease size of parking structure. Create green space closest to 16 Miner St. residences and allow for as much room as possible. Enclose parking structure with ventillation being on Maitland St.. Move parking structure to Maitland St with offices facing 16 Miner. SK.3
3. Building operations will produce significant noise pollution (due to truck back up sirens, horns, snow clearing, idling, truck hydraulics) SK.4
Proposal: Move both the parking garage and loading docks to Maitland street, so that residents will not be disturbed
4. Garbarge dumpsters will cause unsightliness, odour, and noise. SK.5
Dumpsters need to be moved to Maitland street side of the building so as not to impact residents
5. HVAC will produce noise that will disturb residences
Proposal: Ensure that HVAC is located no where near 16 Miner St. residences SK.6
6. Car / Loading dock traffic will adversely impact the area due to congestion, emissions and noise
Proposal: Ensure that all traffic points of entry and exit are located on Maitland st and not near the residences of 16 Miner SK.7
7. Structure adjacent to multi-use pathway behind building will need to be foot traffic friendly otherwise will be a neglected walking path SK.8
Proposal: Create restaurant or cafe space adjacent to footpath instead of simply parking. Ensure that landscaping investment augments value of the area
8. Public Transportation / Shuttle Buses
Buses will create inordinate additional noise and pollution in the area. SK.9
Proposal: Ensure all buses are routed to Maitland St and do not impact neighborhood. Llimit the number of buses
9. Security
Building will create security issues given the large structure. SK.10
Proposal: Additional security should be provided given the large size of the structure and the commercial nature of this property.
10. Lighting
Lighting should be adequate, attractive and should not disturb the residents of 16 miner at night. SK.11
Proposal: Ensure lighting does not bother residents, is appealing to the eyes, and adequate around the building
11. Building structure

In a marquee location, key themes should include kids, baseball and community in designing the structure. SK.12
Proposal: Incorporate these themes in design ideas.

12. Construction

Construction will cause noise and traffic inconvenience.

Proposal: Staging needs to happen on the Maitland St or Beacon St side due to noise. Also, provide noise proof sound proofing for windows of 16 Miner st. residences during construction. SK.13

Ms. Ghandi, thank you for allowing us to comment. We look forward to working with you. Please let me know if you have any further questions.

Sincerely,
Sandeep Karnik
Owner/Resident: 16 Miner St., Boston, MA
617 733 9662

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Sandeep Karnik

SK.1 Shadow

Section 5.2.3 of the DPIR/DEIR includes a detailed analysis of shadow impacts of the 819 Beacon Street Project.

SK.2 Air quality impacts

With the technological advances in passenger automobile technology, no adverse impacts of particulate emissions from parking garages on local air quality have been observed. Open air parking garages are typically adequately naturally vented such that additional mechanical ventilation is unnecessary. The natural dispersion of pollutants from the garage would likely result in ambient concentrations well below National Ambient Air Quality Standards.

SK.3 Location of parking structure, ventilation and green space

The dimensions of the parking structure are determined by the length of ramps required to move vehicles from level to level. The garage footprint as proposed meets the minimum dimensions. The parking structure is located at Maitland Street, the offices are concentrated toward Maitland Street in order to reduce the mass of the building immediately adjacent to 16 Miner Street. New open space has been delineated between the garage and 16 Miner Street.

SK.4 Noise impacts

Sound from non-stationary equipment associated with sirens, horns, snow-clearing, etc. are not considered to be steady sources of noise and will be consistent with typical city sources experienced in the existing background. Any noise-related issues will be resolved through mutually agreeable adjustments in operational times.

SK.5 Location of Garbage dumpsters

Please see Response to Comment ACNA.9. The dumpster will be located inside of the loading dock behind a roll-down overhead door. Maitland Street is not an option for loading or for the dumpster because trucks cannot access an indoor facility across the Maitland Street slope.

Sound from non-stationary equipment associated with garbage dumpsters are not considered to be steady sources of noise and will be consistent with typical city sources experienced in the existing background. Any noise-related issues will be resolved through mutually agreeable adjustments in operational times.

SK.6 Mechanical equipment

Section 5.6.5 of the DPIR/DEIR includes a detailed analysis of the noise impacts of the proposed mechanical equipment at the 819 Beacon Street Project.

SK.7 Car and loading dock traffic

Chapter 4.0 includes a detailed transportation analysis of the 819 Beacon Street Project. The chapter includes discussions on the Project trip generation and impact, and the need for the size of the proposed parking garage. Loading and service information specifically is addressed in Section 4.3.4.

SK.8 Structure next to multi-use pathway friendly to foot traffic

Please see Response to Comment MASCO.11.

The multi-use path will be located outside of the garage footprint on the CSX right-of-way until the implementation of the Urban Ring. The plan for the interim condition has been designed by the City of Boston. Please see Figure 6-31. The façade of the garage adjacent to the multi-use path will be lighted and enlivened through the use of metal or glass panels. Please see Figure 6-29.

SK.9 Bus traffic

BCH shuttle buses will use Maitland Street to access the 819 Beacon Street site. BCH will work with BTD to determine the best location for the bus stop/shelter as part of the preparation, review and execution of a Transportation Access Plan Agreement in connection with the 819 Beacon Street Project.

SK.10 Security

The current practice is for the general contractor to be responsible for 24/7 security of the building site. BCH will ensure that this requirement is in the contract.

SK.11 Lighting

Please see Response to Comment CT.6.

SK.12 Entrance

The canopy and graphics at the building entry will be designed to acknowledge Boston Children's Hospital in an appropriate manner.

SK.13 Construction impacts

Section 5.9 of the DPIR/DEIR includes a detailed description of potential construction impacts including construction noise mitigation and construction traffic. In addition, a Construction Management Plan will be submitted to the BTD prior to the issuance of a building permit.

November 5, 2012

Sonal Gandhi
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Dear Sonal,

The Boston Red Sox have reviewed and are in support of Boston Children's Hospital's Institutional Master Plan Notification Form/Project Notification Form for the following projects: BRS.1

1) Children's Clinical Building - an approximately 445,000 square foot clinical and medical support space building proposed on Children's campus

2) Several combined heat and power options

3) A patient and family parking garage addition, which will include one new level of parking with approximately 86 parking spaces; and

4) A 10-story office building at 819 Beacon Street, which will include approximately 211,170 square feet of office space, ground floor retail space and approximately 526 parking spaces within a new garage

The addition of 526 shared-use parking spaces, in the new garage on Maitland Street, which allows for convenient exiting via Mountfort Street to Storrow Drive and Memorial Drive, is consistent with community planning. The 526 parking spaces are in compliance with the terms of the agreement that was BRS.2
made between the city and Fenway residents and organizations to maintain 4,000 shared-use parking spaces within the neighborhood. This is a perfect location for the game-day parkers who are coming to Fenway and are looking for convenient egress options.

Boston Children's Hospital has always been a great longtime neighbor and partner of the Boston Red Sox. We believe that the projects mentioned above have been planned with the best interests of Children's Hospital and the surrounding neighborhoods in mind.

Please feel free to let me know if you have any questions. Thank you.

Sincerely,

Larry Cancro

Larry Cancro
Senior Vice President of Fenway Affairs
Boston Red Sox

BOSTON RED SOX | FENWAY PARK | 4 YAWKEY WAY | BOSTON, MA 02215 | 617.226.6000

Boston Red Sox

BRS.1 Support of project

The Boston Red Sox have expressed their support for the proposed Projects.

BRS.2 Compliance with agreement on parking

Children's appreciates the Red Sox's support of their 819 Beacon Street Project. Please see Section 2.3.3 for additional information regarding the use of parking spaces at 819 Beacon Street to support the Red Sox and other retail and entertainment uses in the Kenmore/Fenway area.

Anne C. Gamble
1010 Waltham Street #21
Lexington, MA 02421-8061
annegamble32@gmail.com

October 31, 2012

Sonal Gandhi
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Dear Ms. Gandhi,

With a great sense of resposibility, I write on behalf of over 3,880 devoted patients, families, and staff members, donors and friends of Boston Childrens Hospital. Through the petition to Preserve Prouty Garden, community members expressed their deep commitment to the institution and to the garden-the heart and soul of the hospital. Their comments reveal that the Prouty Garden is a haven of spiritual and emotional nourishment, restorative play, end-of-life care, and healing connections to the natural world. Most importantly, the Prouty Garden is a timeless beacon of hope. AG.1

I understand that you are accepting public feedback on this project, and in this packet you will find a copy of the Save the Prouty Garden petition, the entire list of more than 3,880 people who have signed to date along with some of their compelling comments explaining why this garden is a treasure that should be preserved for generations to come. This is a particularly important document since it is testimony to the deep concern of so many people despite the hospital's efforts to discourage staff from voicing their opinions on the matter.

I am also including a reprint of the March 2012 Scientific American article that cites the extraordinary value of the garden, comments from the Massachusetts Horticultural Society that awarded the garden a Gold Medal at the time of its opening, and a reprint of an article that appeared in August 2012 in "Loose Leaf" the official blog of American Forests.

Please let me know if you need any further information.

Yours truly,

Anne Gamble

This is how the petition appears on the internet

www.change.org/petitions/boston-children-s-hospital-preserve-prouty-garden

Sign this petition

State

SIGN

Petitioning Boston Children's Hospital

Boston Children's Hospital: Preserve Prouty Garden

Anne Gamble

The Prouty Garden is a priceless treasure. Designed by the Olmsted Brothers, it opened in 1956 as an endowed gift from Mrs. Prouty, who was a devoted friend and benefactor of Children's Hospital. Mrs. Prouty insisted on perpetually maintaining the garden "as a haven...for as long as Children's Hospital has patients, families and staff to enjoy it". Awarded a gold medal from the MA Horticultural Society in December 1958, it was recently featured in a Scientific American article (3/19/12) documenting the healing benefits of outdoor hospital gardens. Our garden was offered as the gold standard to which new hospitals should aspire.

Did you know that BCH is currently planning to bulldoze the Prouty Garden in order to build a new building? While alternate architectural designs that preserve the Prouty Garden have been offered, they are not deemed "as practical." "Alternate green spaces" will be included in the building's new design, say the architects, but how can potted plants on a rooftop or solariums replace the towering dawn redwood, the hundreds of flowering plants, the fresh air and blue sky, or the pathways that nurture the spirits and healing of our patients, families and staff? For many, this garden is the spiritual refreshment that sustains us through another day of hospitalization, the weeks away from home or a long 12 hour shift. Bulldozing the garden also violates our promise to Mrs. Prouty and the intent of her generous gift.

A Few Comments from the signers of the Preserve The Prouty Garden Petition

You have the power to help us keep the garden. Without the garden the children will cry and the parents will be sad and I will be very sad and Children's Hospital will lose an important treasure. I have come to Children's Hospital since I was 8 years old, and my doctors at Children's still care for me and are the best. I always look forward to going to the garden with my friends when I feel down after a hard appointment. I come from out of town for my appointments. I work in a healing plant garden for my job. I know how very important a garden is. Please understand me, and all the other patients who love and need the garden to feel well. We count on you....

Though it was years ago I still have a wonderful memory of my family and I sitting out in this garden with my sister. She was too weak to get out of bed and so the nurses pushed her in her bed out to the beautiful garden so she could enjoy it with us. This garden isn't just a sanctuary for the families but for the patients. A major part of what families love about BCH is the care and support you give to us. This garden is part of that. When families need a moment to of reflection, guidance and prayer they come to this garden. Destroying this garden would be a major loss to families, patients, staff and community. I hope you reconsider. In memory of Heidi Pratt.

After more than 40 years on staff at Children's, and after having used the garden therapeutically with hundreds of Children, I am deeply pained by this thoughtless plan. If it moves forward my planned bequest to the hospital will go elsewhere.

Our son has spent numerous long-term stays at CHB including one stay over 6 months. My wife and I were "living" at CHB for much of the time. One of our daily goals was get him out to "The Garden" no matter what the weather. Even to pop out just to check the weather. He would light-up at the mention of "going outside to the Prouty Garden!" Even hooked-up to pumps and tubes, we went to The Garden as much as possible as the nurses would let us. We even had a Dr. visit/follow-up exam in the Garden! We would sit under the trees in the shade on a hot summer day to marvel at the flowers and listen to the birds and the water fountain, or just visit the Garden in winter for a few minutes of fresh air and to soak up the sun. Nurses had our cell phone numbers and could summon us up to the floor in minutes. Without it we would not have been able to maintain our sanity throughout these long and difficult stays. It is the only way a patient can get outside without leaving the premises as an inpatient. DO NOT UNDERESTIMATE THE HEALING THAT HAPPENS OUTSIDE IN THAT GARDEN! It is a true treasure that we strongly believe should be maintained as it was initially intended, and is one reason that we believe that CHB is the best *pediatric hospital in the country/world! Thank you for your understanding and consideration.*

I am a clinician with a specialty in psycho-oncology. For someone dealing with a life-altering illness (patient or family) a garden can serve a very meaningful role as a source of emotional and spiritual enrichment that nurtures coping, healing, strength and faith. In a very real sense, particularly when medical care given is palliative not curative, immersion in nature is certainly part of the 'treatment' and may provide succor and healing not accessible through any other source. Considering a sick child who is isolated from nature and confined in a sterile and technological environment, what could be more healing than the lovely respite of a garden? The Prouty Garden is a treasure. The Olmsted Brothers are the royalty of landscape architecture. The notion of destroying a garden that shares a legacy with Central Park, Arnold Arboretum and so many more grand sites is very troubling. Coupled with the fact that the garden was a gift from a dedicated supporter makes the plan a betrayal. Sometimes the right decision is not the most "practical," and I respectfully submit that this is one of those times. I sincerely hope that alternate plans will be accepted.

My son and I have been coming to Boston Children's Hospital since December 2006. We came here from another hospital where he had been inpatient for seven months. Visits to the Prouty Garden were so uplifting for both of us who only had access to a parking lot or busy street at the other hospital. Over the years we have enjoyed this beautiful spot over and over again, in rain, snow, sun, cold, or heat. There are usually other people out in the garden too, regardless of the weather. My son and I visit the large trees, talk about the birds and squirrels, and the medical world melts away for that time. A trip to the Prouty Garden means more to my son that a visit to the Gift Shop, if that helps to put the importance of this garden into perspective. Please reconsider your plans to build here.

Please DO NOT bull doze the garden. I spent six months at Children's Hospital Boston for 6 months with my son recovering from multiple open heart surgeries. The Prouty Garden was the first place my son took his first breath of fresh air in April 2009 and felt the soft grass under his tiny baby feet. I also loved going out there with him when we were allowed to leave the floor. To feel the sun and air on our faces, and grass beneath our feet might seem insignificant to some people, but to us families that lived there and still do, it was and is our place where things didn't hurt and stress left us for just a little while. There are plenty of spaces you can put another building. PLEASE, PLEASE, do not take away from us the only place that gives us some sense of peace and tranquility while we are there. You have no idea how much this place means to us and it would be a tragedy to destroy it!!! I am in tears right now thinking that this amazing place that holds some of my most special memories could be taken away just like that! PLEASE PLEASE PLEASE save this place!!!!!

As a designer of a Hospital Healing Garden, I see first hand the healing serenity *that is spiritually exchanged between patient and nature. I strongly urge all supporters to take further action by voicing our collective disapproval directly to those who are considering such a terrible act of destruction and violation of trust. The inability to appreciate the important role of these green retreats must be addressed and contained here at Children's Hospital. The economic potential spread of further destruction to vulnerable hospital patient gardens, is simply not acceptable from all of us who care about our communities, and especially, on behalf of those in need of healing.*

Not only does the garden serve as a haven for patients and families, but it is the home to so many memories of loved ones who have spent time or lost battles at Children's Hospital. The proposal to destroy this garden, along with those memories, is unimaginable. In "Children's News" interview with Prouty gardener Peter Carlsen, Children's Hospital states, "In 1956, Olive Prouty, an American novelist, and her husband gave an endowment for the garden, with the stipulation that the land would NEVER be built on and remain a tranquil space for patients and families to visit." In addtition, in "Arthur's Guide to Children's Hospital," a WGBH/Children's Hospital Boston collaboration, it states, "It turns out that this woman named Olive Prouty saved this space from becoming a parking lot...Way to go, Olive!" I completely understand that BCH needs to grow to better serve its patients, but don't violate a promise, don't shatter thousands of cherished memories, and don't ignore the true healing powers of the Prouty Garden.

I am a frequent patient at CHOB and I have times when I am not allowed outside for weeks at a time. When I finally get the chance to go outside I need the fresh air and the peacefulness of the garden. Potted plants are just not the same. I need the REAL trees and the REAL blue sky. For some the garden is the only outside they get to see for months at a time. If you are not patient you don't know what it is like to be bedridden. Even for a parent to get the serenity from the garden after watching their child go through pain and suffering treatments to save their life. PLEASE KEEP THE GARDEN!

I am signing this petition in honor of a little girl name Brigitte and all of her friends that are/have been patients at CHB. Prouty Garden is a place where these families have had to spend too much time as their families endure the countless number of hours of waiting, hoping, praying for their loved ones. This garden is a haven for these families! It gives them a place outside of those hospital walls, the beeping and other noises of the machines, the bustling in the halls, the confinement of the rooms and the small space and a place to just breathe. It gives them a beautiful place to spend time regenerating their souls so that they can go back in and face their realities. Many of these families have other siblings and this gives a place for children to let out some energy. Can you imagine this on a rooftop? I certainly can't. Prouty Garden was built to be a timeless, enduring and sacred space for all families to use and enjoy forever. To take it out for a building would be disgraceful!

When my three-year-old son was diagnosed with cancer, his childhood changed in an instant. During our many, many weeks of hospital stays we visited the garden every day he was able. He would take a slice of bread and feed the birds. The birds came to recognize the sound of his carriage coming through the door and would come to greet us. It was the brightest moment of every day. For those few moments every day he was just a child playing, he was free. Last week we visited the garden again. He has now finished chemo and he wanted to show the birds how strong he is now! This garden is a place of peace for so many of us. An indoor or manufactured space could never create the natural environment of our special garden.

The Prouty Garden is a breathtaking piece of nature amidst cement, smoke, automobiles, and chaos. It has been a part of families' lives and of their deaths. It truly is sacred ground for many clinicians, patients and families. It is the place where many children "live" to go to when they are well enough or where families have chosen to say good-bye to their children when they will not live to see another sunrise. It is a safe place enclosed by the walls of Boston Children's Hospital and thus represents all that Boston Children's Hospital stands for. It represents the soul at the center of a world class and technologically advanced institution. I truly pray that you will find creative ways to continue to build around it.

I worked at Payette Associates when we designed the Medical Library which overlooks the Prouty Garden. We took extreme care to not take away from the garden and instead considered it as a valuable amenity for the library and BCH. It would be a great loss to lose this garden to development. Thank you for starting this petition, and let me know if I can do anything else to help. - Jerry Smith, FASLA

I had open heart surgery at Boston Children's Hospital in 1973. The garden was a magical place to me.. there was a tree in full bloom that I looked out at every day and went to when I was released because to me it symbolized hope. All the children loved that garden.. I cannot fathom it being destroyed.

I've spent many, many hours in the garden with my son and my family. It's a welcome change from the air conditioning in the summer and it makes for some nice winter pictures. CHB would not be the same without the garden. At other hospitals the only outside option is the parking lot or driveway. The Prouty Garden is CHB's Jewel. Something the nationally ranked hospital should not dismiss with a bulldozer. Many friendships have been made in the garden and moments of grief have been lessened on its benches. Parents take time to clear their heads from the stress of being "in the room". For patients a trip to the garden is often the highlight of their day. Sometimes it's the first outdoor experience a baby has, and sadly, I know, for some patients it's the last time being *outside before they pass away. I would cry if they cut down my beloved Ginko tree. This would go against Mrs Prouty's wishes. It's just so wrong. How could I ever explain to my son that the garden is "gone"?*

I have visited and studied many hospital gardens and this is one of the most beautiful, the most successful, and the most therapeutic for staff, visitors, and child patients. It was featured as an exemplary case study in a book I co-edited (C.Cooper Marcus and M.Barnes, "Healing Gardens: Therapeutic Benefits and Design Recommendations" New York: John Wiley, 1999). I am shocked and dismayed that the hospital is considering demolishing this important garden space at a time when healthcare organizations all over the country are recognizing the healing and stress-reducing power of nature, and adding garden spaces to new and renovated facilities. Please do the right thing and select an architectural alternative that preserves this healing oasis.

My daughter has spent countless days in the hospital. She is totally blind, and the only relief she gets is to go outside and feel the wind, hear the birds and feel the grass. Her siblings have spent many hours there with here, and alone, trying to ease the pain and heartache. To destroy beauty in the name of "progress" gives me pause to consider whether or not this is the best hospital for my child and family. How can the #1 rated hospital even consider such a thing??

A couple of potted plants on a concrete pad cannot replace the refuge that the Prouty Garden represents. This space allows you to escape the clinical, sterile hospital feel and get some fresh air. In the numerous times we have been there, it has allowed as a refuge not only for the patients but for the brothers, sisters, cousins and friends of patients. I have had a niece and a nephew in the hospital for several months. Without this space, you are losing a powerful connection to the outdoors.

My daughter has been a frequent flyer with Children's Hospital for 24 out of the last 25 years of her life. She will continue to be a patient there for the foreseeable future. Her Father and I have spent many hours in the Prouty Garden while she was in surgery or while she was an inpatient. The Garden is so much more than just a tranquil and beautiful space. It is steeped in the serenity and timelessness of nature. It has cradled so many distraught and worried parents who have left a little part of themselves behind to give strength to the newcomers. It is so much more than the sum of its parts. It is a testament to all the families who have suffered and won or lost there. Either way parents who sit quietly and tune in to the spirit of place which is abundant here, find solidarity with those who have gone before and leave a little piece of strength behind for those who come after.

Prouty Gardens is an invaluable treasure for the emotional refueling, recovery and healing of stressed parents, families and staff. It provides the opportunity to deal with pain, loss and grief and to offer recovering , ill and dying children a place for the much needed connection with nature, trees, wind, soil, sun and rain, and *brother normally. They sneak on to the grass and smell the flowers and watch the wildlife. This garden is helping my oldest deal with his brothers illness. The breeze and the sunshine and the open air lift my youngests spirits every time he is well enough to be outside. I cannot fathom not having this garden to take them to. There is talk of building a roof top garden, how would they salvage that ancient winding tree? Would a rooftop garden be safe for those patients on watch? There has got to be a Plan B here. Move the administrators to the top floor of the parking garage,Build around the perimiter of the garden in an octogon and go up, but leave it in tact. Some traditions are not made to be broken.*

Although I am no longer at Children's Hospital, I still speak of the Prouty Garden on a regular basis. It played a key role in my formative training, revealing the powers of simple nature, rain or shine, to improve the human condition and soothe the human spirit. It is where I learned the power of listening and stillness, the joy of rebirth and the hope that the sun will indeed rise again. I join those voices imploring CHB to find another solution, to not destroy such a simple thing of beauty and solace that sets it apart from other world-class pediatric facilities.

snow. It provides for the restoration of an inner equilibrium, and equipoise, for families and staff who work tirelessly in the most intense often highly stressful care situations. It is a place of healing, courage and hope and therefore an unequalled, highly treasured resource for our hospital that prides itself in being in the national leadership role in assuring the best care 'until every child is well'. Let us put our minds and creative thinking together and identify an alternative site for the much needed new clinical building and the single family room goal for all our patients including the NICU. We can do better than sacrificing such an outstanding, invaluable asset for another. Once Prouty Garden is gone it will never come back. It cannot be replaced by 'healing green spaces with planters', It is not acceptable and not in keeping with our commitment to excellence and integrity, our promise to our hospital community of children families and staff. I know we can and will do better. You may count and call on me for my full support to save Prouty Garden. A Garden is a terrible thing to lose.

This is one of the best healing gardens in the country, and it serves an important population in a critical metropolitan area. The hospital will be doing itself and the community a HUGE disservice by destroying it. No "replacement" garden will replace what has been created here. - Naomi Sachs, ASLA, EDAC; Founding Director, Therapeutic Landscapes Network

The garden is the only respite from the bustle, noise and chaos of the time we spend here at Children's, whether as a patient, family, or clinician. *Change and growth are not positive when something beautiful and irreplaceable is destroyed to achieve them. Please think about other solutions to the space problem and avoid making a short-sighted decision that will create acrimony and ill will within our community.*

Utilization of this sacred green space for healing of patients, families, and staff provides immeasurable healing and sustenance. Mrs. Prouty's intent is clearly displayed at the garden entrance. To dishonor her intent would jeopardize relations within the Children's community and introduce mistrust intothe minds of any potential equally generous benefactors. No space could replace the Prouty Garden. Please reconsider any plan to diminish or demolish the garden."

Please do not bulldoze Prouty Garden. I have been a Boston Children's patient for many many years and I consider it my second home. Every time I was medically stable my family would bring me to Prouty Garden to get fresh air, listen to the birds and view the lovely garden areas. I probably have been wheeled around Prouty Garden thousands and thousands of times in my wheelchair. It was our solace, it gave my family and I time to think of other things besides my medical condition, and it gave us a chance to see something other than the four walls of my hospital room. By sacrificing the garden you are taking away a safe place for all Boston Children's families, patients and employees.

The tree, the birds and the squirrels in the garden are a source of joy to both my boys, This garden is helping my 8 year old interact with his very ill 2 year old

List of names of people who have signed
the petition "Boston Children's Hospital: Preserve Prouty Garden"

Gayle Benson Haverhill MA 1832 US 7/26/12
Stephanie Crapsey Haverhill MA 1832 US 8/5/12
Maggie F Haverhill MA 1832 US 8/23/12
Thea-Sofie Andreassen askim 1832 Norway 10/20/12
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Alice Walsh Groveland MA 1834 US 7/27/12
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Sarah Nabel Haverhill MA 1835 US 7/31/12
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Kirsten Bacon Bradford MA 1835 US 8/4/12
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Julie Button Haverhill MA 1835 US 8/5/12
Griffin Woolbert Haverhill MA 1835 US 8/8/12
Colleen Pelczar Haverhill MA 1835 US 8/9/12
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Denise Murphy lowell MA 1851 US 10/21/12
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Lindsay Swanson Boston MA 2215 US 9/6/12
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Ian Alley Boston MA 2215 US 9/12/12
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Suzanne Rich Boston MA 2215 US 9/19/12
Teddy Salgado Boston MA 2215 US 9/19/12
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Sandrine Hulot Boston MA 2215 US 10/2/12
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April Minsky Boston MA 2215 US 10/12/12
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Sarah Giraldo Boston MA 2215 US 10/12/12
Molly Maidman Boston MA 2215 US 10/13/12
Rachel Woodcock Boston MA 2215 US 10/13/12
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Michelle Keene Brockton MA 2301 US 8/30/12
David Mezoff Brockton MA 2301 US 10/6/12
Orlando Ortiz Brockton MA 2302 US 7/12/12
Natasha Stinson Brockton MA 2302 US 7/30/12
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Delilah Hatch Brockton MA 2302 US 8/3/12
Karyn Anderson Brockton MA 2302 US 10/6/12
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Susanne MacLellan Bridgewater MA 2324 US 7/12/12
Paula Surrette Bridgewater MA 2324 US 7/26/12
Pam Hajjaj Duxbury MA 2331 US 8/9/12
Melissa Toffoloni Duxbury MA 2332 US 10/4/12
Haley Robinson Duxbury MA 2332 US 10/12/12
Jessica Logan East Bridgewater MA 2333 US 7/25/12
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Elise McCarthy East Bridgewater MA 2333 US 7/29/12
Lee Bombardier East Bridgewater MA 2333 US 9/10/12
Lenette Russo East Bridgewater MA 2333 US 9/16/12
Jill Melanson East Bridgewater MA 2333 US 10/19/12
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Kathy Slatt hanover MA 2339 US 7/27/12
Julienne Thornell Hanover MA 2339 US 8/1/12

Michele Richards Weymouth MA 2188 US 9/8/12
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Elaine Imbrogna Weymouth MA 2188 US 10/7/12
kim johnson Weymouth MA 2189 US 7/25/12
Claudia Baptista East Weymouth MA 2189 US 7/27/12
Jennifer Andrews Weymouth MA 2189 US 7/29/12
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Carol Goldfarb Boston MA 2205 US 9/10/12
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Libby Schaefer Boston MA 2215 US 7/24/12
Sarah Goodyear Boston MA 2215 US 7/25/12
Hojun Li Boston MA 2215 US 7/25/12
Nick McAllister Boston MA 2215 US 7/25/12
Lisa Tucker Boston MA 2215 US 7/26/12
Phaedra Thomas Boston MA 2215 US 7/26/12
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Jackie Riso Boston MA 2215 US 7/27/12
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Charles Contant Boston MA 2215 US 7/31/12
Christina Allcox Boston MA 2215 US 7/31/12
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Xi Chen Boston MA 2215 US 8/1/12
Jaclyn McKinstry Boston MA 2215 US 8/4/12

Brigette Borkowski Quincy MA 2171 US 8/2/12
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Jacqueline Seifart Quincy MA 2171 US 10/20/12
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Meghan Quigley Melrose MA 2176 US 7/27/12
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Dayna McCabe Braintree MA 2184 US 7/13/12
Virginia Grove Braintree MA 2184 US 7/24/12
Patrick Lacey Braintree MA 2184 US 7/27/12
Elizabeth Carroll Braintree MA 2184 US 8/1/12
Robert Morris Braintree MA 2184 US 8/1/12
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Vivian Deane Boston MA 2186 US 8/2/12
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Katharine R. Quincy MA 2186 US 9/5/12
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Kristin Franz Medford MA 2155 US 7/26/12
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Sam Butler Medford MA 2155 US 7/27/12
Valerie Miller Medford MA 2155 US 8/1/12
Patricia Davis Medford MA 2155 US 8/1/12
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Marie OKeefe Medford MA 2155 US 8/14/12
Brigitte Chen Medford MA 2155 US 8/15/12
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Kelly Prevost Medford MA 2155 US 10/2/12
Jennie Ankney Medford MA 2155 US 10/6/12
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Bonnie Denis Medford MA 2155 US 10/20/12
Elizabeth Gall Medford MA 2155 US 10/20/12
Janet Nguyen Medford MA 2155 US 10/21/12
mei wong Medford MA 2155 US 10/24/12
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megan murphy Quincy MA 2169 US 7/25/12
Lindsay Roache Quincy MA 2169 US 7/25/12
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Jessica Grundig quincy MA 2169 US 7/27/12
Stacey Tarrant Quincy MA 2169 US 7/31/12
Jill Beverly Quincy MA 2169 US 8/1/12
Renee Murphy Quincy MA 2169 US 8/1/12
victoria mmurphy quincy MA 2169 US 8/1/12
Colleen Griffin Quincy MA 2169 US 8/1/12
Renee Pritchard Quincy MA 2169 US 8/1/12
brenda villard quincy MA 2169 US 8/1/12
Carmen Giordano quincy MA 2169 US 8/1/12
Theresa Trapilo Quincy MA 2169 US 8/1/12
Sheryl Murphy Quincy MA 2169 US 8/1/12
Katie Driscoll Quincy MA 2169 US 8/3/12
Lisa Rooks Quincy MA 2169 US 8/6/12
maryanne davenport quincy MA 2169 US 9/5/12
Whitney Andrews'Branch Quincy MA 2169 US 9/6/12
Karen Vecchione Quincy MA 2169 US 9/8/12
sheryl mahoney Quincy MA 2169 US 9/8/12
Charlene Pascua quincy MA 2169 US 9/11/12
Emily O'Connell Quincy MA 2170 US 8/2/12
peter forbes quincy MA 2170 US 9/11/12
Heather MacWhinnie Quincy MA 2171 US 8/1/12
Marianne Palmer Quincy MA 2171 US 8/1/12
david macwhinnie Quincy MA 2171 US 8/1/12
sandy dreyer quincy MA 2171 US 8/1/12
David Dreyer Quincy MA 2171 US 8/1/12
Simone Forde Quincy MA 2171 US 8/1/12

Julie Schober Somerville MA 2145 US 10/20/12
Bertha Tang Somerville MA 2145 US 10/21/12
John Ranson Somerville MA 2145 US 10/21/12
renee miccichi Malden MA 2148 US 7/13/12
JoEllen Edson Malden MA 2148 US 7/25/12
Paige Wallis Malden MA 2148 US 7/25/12
Erin Fillion Malden MA 2148 US 7/25/12
John DiPasquale malden MA 2148 US 7/26/12
Ashley Pepoli Malden MA 2148 US 7/30/12
Janet Zimmer Malden MA 2148 US 8/3/12
Allison Sherman Malden MA 2148 US 8/10/12
Mary Hastings Malden MA 2148 US 8/16/12
Lory Etienne Malden MA 2148 US 8/23/12
Michael Hibarger Malden MA 2148 US 9/12/12
Cheryl Cantalupo Malden MA 2148 US 10/7/12
Erica Yep Malden MA 2148 US 10/9/12
chris Mccabe malden MA 2148 US 10/20/12
Jessica Liston Everett MA 2149 US 7/29/12
ETHEL SINATRA EVERETT MA 2149 US 8/10/12
BEVERLY HICKS EVERETT MA 2149 US 8/10/12
Amber Giove Everett MA 2149 US 8/23/12
Entela Parga Everett MA 2149 US 8/30/12
Britten Kilduff Everett MA 2149 US 10/23/12
Pan Greenwood Everett MA 2149 US 10/24/12
john bondola chelsea MA 2150 US 8/6/12
Estella Kanevsky Chelsea MA 2150 US 9/17/12
Andrea Abrams Revere MA 2151 US 7/13/12
Kayla Abrams Revere MA 2151 US 7/13/12
jen sasso Revere MA 2151 US 7/13/12
Jeanette Chavarin Revere MA 2151 US 7/26/12
Anthony Rossi Revere MA 2151 US 7/26/12
Herbert Belmonte Revere MA 2151 US 7/26/12
Rick Bourne Revere MA 2151 US 7/30/12
natalie bitar revere 2151 US Minor Outlying Islands 8/6/12
Sarah Caramanica Revere MA 2151 US 9/6/12
Katie Tucker Revere MA 2151 US 9/6/12
Michelle Merry Revere MA 2151 US 9/18/12
Jill Marshall Revere MA 2151 US 10/20/12
kerri francesconi Revere MA 2151 US 10/23/12
Alexis Flavin Winthrop MA 2152 US 7/13/12
Karen Gaeta Winthrop MA 2152 US 7/25/12
Stephanie Long Winthrop MA 2152 US 7/26/12
elizabeth tully winthrop MA 2152 US 7/28/12
Charles d'Hemecourt Winthrop MA 2152 US 8/1/12
Donna Giromini Winthrop MA 2152 US 8/1/12
Lina Beshere Winthrop MA 2152 US 8/3/12
Patricia Aloise Winthrop MA 2152 US 8/6/12
Kaitlin Murphy Winthrop MA 2152 US 8/17/12
xena herbert winthrop MA 2152 US 9/14/12
Kate Vanderbeck Winthrop MA 2152 US 10/20/12
Berenice Torres Medford MA 2155 US 7/12/12
samantha butler boston MA 2155 US 7/13/12
Jeanne Semrani Medford MA 2155 US 7/13/12
Meghan Wayne Boston MA 2155 US 7/13/12

Fr. Bob Nee Cambridge MA 2140 US 7/12/12
Andrea Mitter-Burke Cambridge MA 2140 US 7/25/12
Jennifer Corcoran Cambridge MA 2140 US 7/25/12
Debra Blanchard Cambridge MA 2140 US 7/26/12
Soul Brown Cambridge MA 2140 US 8/23/12
Peg McAdam Cambridge MA 2140 US 10/20/12
carmen . cambridge MA 2140 US 10/21/12
Lisa Schonberger Cambridge MA 2141 US 7/26/12
Alexander Freiherr von Gise Cambridge MA 2141 US 7/27/12
Christopher Cassa CAMBRIDGE MA 2141 US 9/6/12
Erin Collign Cambridge MA 2141 US 9/11/12
Mark Jaquith Cambridge MA 2141 US 9/27/12
Aubrey Wasser Cambridge MA 2142 US 7/30/12
Jesse Waites Cambridge MA 2142 US 9/15/12
Vanessa Pugh Somerville MA 2143 US 7/13/12
Cristin Lind Somerville MA 2143 US 7/25/12
Pamela Clements Somerville MA 2143 US 7/26/12
chloe green Somerville MA 2143 US 8/3/12
Jenna Englund Somerville MA 2143 US 8/23/12
Sarah Gumlak Somerville MA 2143 US 9/6/12
Brian Sharkey Somerville MA 2143 US 9/11/12
Julie Polvinen Somerville MA 2143 US 9/12/12
beatriz oropeza Cambridge MA 2143 US 9/13/12
Kristine OBrien Somerville MA 2143 US 10/5/12
DJ Gallagher Somerville MA 2143 US 10/19/12
Amber Schorr Somerville MA 2143 US 10/20/12
Lia Cowley Somerville MA 2143 US 10/20/12
Miriam Brody SOMERVILLE MA 2144 US 7/13/12
Katie McKee Somerville MA 2144 US 7/24/12
Ann Haywood-Baxter Somerville MA 2144 US 7/25/12
Richard Baxter Somerville 2144 US Minor Outlying Islands 7/26/12
Allison Boncek Boston MA 2144 US 7/26/12
laverne rose somerville MA 2144 US 7/27/12
JESSICA SZUBART Somerville MA 2144 US 7/27/12
Marla Wessland Somerville MA 2144 US 7/27/12
Jeremiah Neal Somerville MA 2144 US 7/31/12
Eimear Oconnor Somerville MA 2144 US 8/2/12
Meghan Sedita Somerville MA 2144 US 8/3/12
Randi Freundlich Somerville MA 2144 US 8/18/12
Alex Pirie Somerville MA 2144 US 8/18/12
Robert Smyth Somerville MA 2144 US 8/18/12
Ellie Botshon Somerville MA 2144 US 8/20/12
Susan Rosenkranz Somerville MA 2144 US 9/11/12
Emily Winkler Somerville MA 2144 US 10/8/12
Jennie Allain Somerville MA 2144 US 10/20/12
Laura Gould Somerville MA 2144 US 10/21/12
Nicole Dillon Somerville MA 2145 US 7/13/12
David Denison Somerville MA 2145 US 7/26/12
Stacey Tarpy Haverhill MA 2145 US 7/26/12
Caitlin Dowd Somerville MA 2145 US 7/26/12
Janna Wilkinson Somerville MA 2145 US 8/1/12
Eve Goggins Somerville MA 2145 US 10/19/12
Nicole Sullivan Somerville MA 2145 US 10/20/12
Marty Peck Somerville MA 2145 US 10/20/12

Chantelle Browne Cambridge MA 2138 US 8/1/12
Deborah Korn Cambridge MA 2138 US 8/2/12
Constance Keefer Cambridge MA 2138 US 8/2/12
Kathleen Rimer Cambridge MA 2138 US 8/3/12
dina zelleke Cambridge MA 2138 US 8/3/12
Amanda Deutsch Cambridge MA 2138 US 8/6/12
Evelyn H. Malkin Cambridge MA 2138 US 8/8/12
Elizabeth Shostak Cambridge MA 2138 US 8/17/12
skip schiel CAMBRIDGE MA 2138 US 8/17/12
Eleanor MacLellan Cambridge MA 2138 US 8/20/12
john bach cambridge MA 2138 US 8/20/12
Alex Meyer Cambridge MA 2138 US 8/22/12
Linda Dittmar Cambridge MA 2138 US 8/23/12
Cynthia Curtis Cambridge MA 2138 US 9/10/12
Ariel Kessler cambridge MA 2138 US 9/17/12
elena saporta cambridge MA 2138 US 9/27/12
Vicky Steinitz Cambridge MA 2138 US 9/28/12
Amy Truog Cambridge MA 2138 US 10/7/12
Miranda Moe Cambridge MA 2138 US 10/20/12
Maria Pilar Martinez Viedma Cambridge MA 2139 US 7/12/12
Karin Schlegelmilch Cambridge MA 2139 US 7/12/12
Walker Del Aguila Cambridge MA 2139 US 7/12/12
Benoit Scherrer Cambridge MA 2139 US 7/12/12
Lisa Scoppettuolo Cambridge MA 2139 US 7/13/12
Geri Landman Cambridge MA 2139 US 7/24/12
Elizabeth Brauns Cambridge MA 2139 US 7/25/12
H. F. Ray Cambride MA 2139 US 7/26/12
Willard Johnson Cambridge MA 2139 US 7/26/12
Ariel Botta Cambridge MA 2139 US 7/26/12
Edda Fiebiger cambridge MA 2139 US 7/29/12
Laurie Bittmann Cambridge MA 2139 US 7/30/12
Shanna Pringle Cambridge MA 2139 US 8/1/12
Dan Goulette Cambridge MA 2139 US 8/1/12
Claudia Lux Cambridge MA 2139 US 8/2/12
Robert Stickgold Cambridge MA 2139 US 8/2/12
Joanna Reinwald Cambridge MA 2139 US 8/3/12
Maitreyi Mazumdar Cambridge MA 2139 US 8/5/12
JUdith Morse Cambridge MA 2139 US 8/17/12
Helen Snively Cambridge MA 2139 US 8/20/12
Marie-Helene Gold Cambridge MA 2139 US 8/20/12
George Bard Cambridge MA 2139 US 8/20/12
Rachel Wyon Cambridge MA 2139 US 8/21/12
meredith cole Cambridge MA 2139 US 9/10/12
Andrea Marquardt Cambridge MA 2139 US 9/11/12
Alicyn Sconiers Cambridge MA 2139 US 9/15/12
Caroline Callahan Cambridge MA 2139 US 9/18/12
Lindsay Thomson Cambridge MA 2139 US 9/18/12
Kutay Deniz Atabay Cambridge MA 2139 US 9/22/12
marlene pedroza Cambridge MA 2139 US 9/27/12
Sahar Hakim-Hashemi Cambridge MA 2139 US 10/1/12
Theresa Condito Cambridge MA 2139 US 10/20/12
Karen Lecompte Cambridge MA 2139 US 10/20/12
Martin Vieira Cambridge MA 2139 US 10/20/12
anna Wilk Cqmbridge MA 2139 US 10/22/12

Kristina Guido Brighton MA 2135 US 7/28/12
Caitlin Mccarty Brighton MA 2135 US 7/29/12
sheri barnett boston MA 2135 US 7/30/12
Nicholas Coccoma Brighton MA 2135 US 7/30/12
Shana Coyne Brighton MA 2135 US 7/30/12
Julie Milone Brighton MA 2135 US 8/1/12
Meghan Sullivan Brighton MA 2135 US 8/3/12
Alex Downs Boston MA 2135 US 8/6/12
Nicole Goupil Brighton MA 2135 US 8/8/12
Denise Duclos Brigthon MA 2135 US 8/13/12
Chase Rose Brighton MA 2135 US 8/20/12
Dave Ortiz Brighton MA 2135 US 9/6/12
Elizabeth Noble Brighton MA 2135 US 9/6/12
Ally Eran Brighton MA 2135 US 9/6/12
Linda Leone Boston MA 2135 US 9/7/12
Christine Choi Brighton MA 2135 US 9/7/12
Anne Moskowitz Boston MA 2135 US 9/11/12
Lauren O'Keefe Brighton MA 2135 US 9/11/12
Joy Falk Brighton MA 2135 US 9/11/12
Mustafa Hameed Brighton MA 2135 US 9/11/12
Rebecca Waugaman Brighton MA 2135 US 9/12/12
Sally Persing Brighton MA 2135 US 9/13/12
Nemythe Lease Brighton MA 2135 US 9/13/12
caitlyn decastro brighton MA 2135 US 9/13/12
Megan Gallagher Brighton MA 2135 US 10/7/12
Thomas Allen Brighton MA 2135 US 10/9/12
Julia Bucchianeri brighton MA 2135 US 10/10/12
Olivia Gillham Boston MA 2135 US 10/20/12
Melanie Carrazzo Brighton MA 2135 US 10/21/12
Juanita Prosper Hyde Park MA 2136 US 8/1/12
Robin Rodriguez Hyde Park MA 2136 US 8/4/12
Andria Lema Hyde Park MA 2136 US 8/8/12
David Kantor Hyde Park MA 2136 US 8/18/12
lauren mednick hyde park MA 2136 US 8/19/12
Myrna M. G__mez-Soto Hyde Park MA 2136 US 8/22/12
adriana gomez hyde Park MA 2136 US 8/23/12
yvonne wright-daddieco hyde park MA 2136 US 8/24/12
Janet Molina Boston MA 2136 US 9/14/12
erin holmes readville MA 2136 US 10/8/12
Danielle Poulos Boston MA 2136 US 10/25/12
carole mansoor cambridge MA 2138 US 7/13/12
Emily Harrison Cambridge MA 2138 US 7/13/12
Christina Bognet Cambridge MA 2138 US 7/13/12
Christine Cheston Cambridge MA 2138 US 7/24/12
Amy Domini Cambridge MA 2138 US 7/25/12
Louise` Conant Cambridge MA 2138 US 7/25/12
Johnye Ballenger Cambridge MA 2138 US 7/26/12
Ned Rimer Cambridge MA 2138 US 7/27/12
Lucy Murray-Brown Cambridge MA 2138 US 7/27/12
Diane Silverman cambridge MA 2138 US 7/30/12
Francesca Holinko Cambridge MA 2138 US 7/31/12
Laura Nash Cambridge MA 2138 US 7/31/12
Rachel Nelson Cambridge MA 2138 US 8/1/12
Joseph Fritz Cambridge MA 2138 US 8/1/12

Lalla McHugh Roslindale MA 2131 US 8/23/12
Patricia Glidden Roslindale MA 2131 US 9/6/12
Laura Smeaton Roslindale MA 2131 US 9/11/12
Caroline Andrews Roslindale MA 2131 US 10/4/12
Alicia Burke Roslindale MA 2132 US 7/13/12
Denisse Miranda West Roxbury MA 2132 US 7/24/12
Gloria McAnulty Boston MA 2132 US 7/26/12
David McAnulty West Roxbury MA 2132 US 7/27/12
David Saslowsky West Roxbury MA 2132 US 7/29/12
Amit Grover West Roxbury MA 2132 US 7/29/12
Anne Wolf Boston MA 2132 US 7/29/12
mary pennelli W. Roxbury MA 2132 US 7/31/12
Karen May West Roxbury MA 2132 US 7/31/12
Donya Schermerhorn Boston MA 2132 US 8/1/12
Lisa Talayco Boston MA 2132 US 8/3/12
David Roberson West Roxbury MA 2132 US 8/3/12
Cindy Fox West Roxbury MA 2132 US 8/6/12
Karen Sutherland Roslindale MA 2132 US 8/9/12
Teresa Richards Boston MA 2132 US 8/14/12
Lisa Grossi West Roxbury MA 2132 US 8/18/12
Meghan Nelligan West Roxbury MA 2132 US 8/19/12
Letitia Riel West Roxbury MA 2132 US 8/29/12
Kathleen Brown West Roxbury MA 2132 US 8/29/12
Sara Chung Boston MA 2132 US 9/7/12
Kristen Whoriskey West Roxbury MA 2132 US 10/23/12
mary mills West roxbury MA 2132 US 10/24/12
Ashish George Allston MA 2134 US 7/12/12
Erin Horan Boston MA 2134 US 7/13/12
Elaine Racheotes Allston MA 2134 US 7/13/12
Nicole Lamontagne Allston MA 2134 US 7/24/12
Kellyn Mahan Allston MA 2134 US 7/24/12
Lilamarie Moko Allston MA 2134 US 7/25/12
Erin MacNeil boston MA 2134 US 7/26/12
Lily Guenther Allston MA 2134 US 7/26/12
Sara Walsh Allston MA 2134 US 7/27/12
Lianne Crossette Boston MA 2134 US 7/29/12
Courtney Arsenault Allston MA 2134 US 7/30/12
Nancy Kelly Allston MA 2134 US 8/1/12
Basanta Gurung Allston MA 2134 US 8/1/12
Mary ElizaBeth Peters Allston MA 2134 US 8/4/12
Melissa Wu Allston MA 2134 US 9/12/12
Anna Dupuis Allston MA 2134 US 9/13/12
Greg Padilla Allston MA 2134 US 10/1/12
Rachel Fitzmaurice Allston MA 2134 US 10/12/12
Troy Daniels Allston MA 2134 US 10/20/12
Charles Tsakrios allston MA 2134 US 10/20/12
Max Hazeltine Brighton MA 2135 US 7/13/12
John McNeil Boston MA 2135 US 7/24/12
Grace LeBlanc boston ma MA 2135 US 7/25/12
Eve Lyons Brighton MA 2135 US 7/25/12
Pat Bennett Brighton MA 2135 US 7/25/12
kali geddes Brighton MA 2135 US 7/25/12
Erin Hurley Brighton MA 2135 US 7/27/12
Kimberly Miller brighton MA 2135 US 7/28/12

Annu Thomas Jamaica Plain MA 2130 US 8/3/12
Janice Heil Jamaica Plain MA 2130 US 8/3/12
jonathan McLaughlin Jamaica Plain MA 2130 US 8/3/12
Huy Le Jamaica Plain MA 2130 US 8/3/12
Rebecca Beroukhim Jamaica Plain MA 2130 US 8/6/12
Eileen Brennan Boston MA 2130 US 8/6/12
Dave Chokshi Jamaica Plain MA 2130 US 8/7/12
Jennifer Kettell Boston MA 2130 US 8/10/12
sarena nichol Jamaica Plain MA 2130 US 8/16/12
Anne Erde Jamaica Plain MA 2130 US 8/17/12
leslie green JAMAICA PLAIN MA 2130 US 8/18/12
Andrea Rosen Jamaica Plain MA 2130 US 8/18/12
Apfel Roberta Jamaica Plain MA 2130 US 8/19/12
Gabrielle Cobbs Jamaica Plain MA 2130 US 8/20/12
Greg Williams Jamaica Plain MA 2130 US 8/20/12
Sara Valverde Boston MA 2130 US 8/23/12
Antigoni Sinanis Jamaica Plain MA 2130 US 8/23/12
lauren peter Boston MA 2130 US 8/23/12
Wayne Sentman Jamaica Plain MA 2130 US 8/24/12
Sarah Sinclair Jamaica Plain MA 2130 US 9/5/12
Adriana Flores Boston MA 2130 US 9/5/12
Anna Agan Jamaica Plain MA 2130 US 9/5/12
Margaret O'Connor Jamaica Plain MA 2130 US 9/6/12
dana ostberg jamaica plain MA 2130 US 9/6/12
Jennifer Partlow Boston MA 2130 US 9/6/12
Ann Bergin Jamaica Plain MA 2130 US 9/7/12
Margaret Schroeder Jamaica Plain MA 2130 US 9/8/12
Grace Montepiedra Jamaica Plain MA 2130 US 9/11/12
Xochitl Morgan Boston MA 2130 US 9/11/12
chenoa hogue boston MA 2130 US 9/12/12
Jane Craycroft Jamaica Plain MA 2130 US 9/12/12
Becca Lewis Jamaica Plain MA 2130 US 9/13/12
Jerel Calzo Boston MA 2130 US 9/14/12
John Graef Boston MA 2130 US 9/18/12
Maria Tejada-Youksee Jamaica Plain MA 2130 US 10/5/12
Jason Levy Jamaica Plain MA 2130 US 10/6/12
Norlyne Mondesir Jamaica Plain MA 2130 US 10/9/12
Kimberly Chandler Boston MA 2130 US 10/9/12
Julia Deanehan Boston MA 2130 US 10/9/12
Sam Spencer Boston MA 2130 US 10/10/12
Kristine Church Boston MA 2130 US 10/12/12
Charlotte Badler Boston MA 2130 US 10/20/12
Denise Warner ROSLINDALE MA 2131 US 7/26/12
Fran Hauck Boston MA 2131 US 7/28/12
Rui Santos Boston MA 2131 US 7/30/12
Brooke Nash Boston MA 2131 US 7/31/12
Donna Diamond Boston MA 2131 US 8/2/12
Diane Carter Duggan Roslindale MA 2131 US 8/2/12
Stephen Smith Roslindale MA 2131 US 8/2/12
Liza Green Roslindale MA 2131 US 8/2/12
Erica Max Roslindale MA 2131 US 8/3/12
Mitra Tummino Roslindale MA 2131 US 8/3/12
Jennifer Warren Roslindale MA 2131 US 8/18/12
Sheryl White Roslindale MA 2131 US 8/22/12

Daniel Kavanaugh Boston MA 2127 US 7/13/12
Debbie Whalen Boston MA 2127 US 7/13/12
Amanda Benevides Boston MA 2127 US 7/25/12
Theresa Adams south boston MA 2127 US 7/26/12
Stephen Garrity South Boston MA 2127 US 7/31/12
Kerry McGeoghan Boston MA 2127 US 8/1/12
Suzy Zaganjori south boston MA 2127 US 8/1/12
Lisa Bourgeault South Boston MA 2127 US 8/6/12
Anulfo Baez Boston MA 2127 US 8/18/12
lisa rezza South Boston MA 2127 US 8/23/12
Jamie Nimmons Boston MA 2127 US 8/24/12
Marie Lightowler Boston MA 2127 US 9/7/12
Yessenia Ibarra Boston MA 2127 US 9/18/12
Elyse Slayton Boston MA 2127 US 9/26/12
Nicole DeSourdis boston MA 2127 US 10/7/12
Maggie Malsch East Boston MA 2128 US 7/25/12
Marek Przetakiewicz East Boston MA 2128 US 7/30/12
Barbara Martin East Boston MA 2128 US 9/6/12
Diana Munera Boston MA 2128 US 9/11/12
Jessica Kelly Charlestown MA 2129 US 7/24/12
Stephen Griffin Boston MA 2129 US 8/2/12
Barbara Mackey Charlestown MA 2129 US 8/2/12
D'yana Delpero Charlestown MA 2129 US 8/2/12
Patricia Butler Charlestown MA 2129 US 8/10/12
Rebecca Smith Boston MA 2129 US 10/6/12
Jessica Finch Jamaica Plain MA 2130 US 7/12/12
elizabeth aguilar jamaica plain MA 2130 US 7/13/12
Rachel Tunick Boston MA 2130 US 7/13/12
Joanne Wolfe Jamaica Plain MA 2130 US 7/13/12
Sheila Spalding Boston MA 2130 US 7/13/12
Craig Platt Jamaica Plain MA 2130 US 7/13/12
Constance Dunn Jamaica Plain MA 2130 US 7/24/12
ESRA OZCAN Jamaica Plain MA 2130 US 7/24/12
Mei Elansary Jamaica Plain MA 2130 US 7/24/12
Renee Plastino Jamaica Plain MA 2130 US 7/24/12
Blanca Torres Jamaica Plain MA 2130 US 7/24/12
Shawna Howard Boston MA 2130 US 7/25/12
Elizabeth Eyerer Jamaica Plain MA 2130 US 7/25/12
Eli Zimbo Boston MA 2130 US 7/26/12
Ann Motl Taylor Jamaica Plain MA 2130 US 7/27/12
Judith Driscoll Jamaica Plain MA 2130 US 7/27/12
Janis Stoll JamiacaPlain MA 2130 US 7/29/12
Leslie Benson "Jamaica Plain," MA 2130 US 7/29/12
Xiomara Hart Jamaica Plain MA 2130 US 7/30/12
Analise Peleggi Boston MA 2130 US 7/30/12
Emily Achtenberg boston MA 2130 US 7/31/12
Dwan Horn Jamaica Plain MA 2130 US 7/31/12
Judy Neiswander Jamaica Plain MA 2130 US 7/31/12
Chris Mitchell Jamaica Plain MA 2130 US 7/31/12
Yael Tarshish Boston MA 2130 US 8/1/12
Rabbi Joseph Berman Jamaica Plain MA 2130 US 8/1/12
Jennifer Post Boston MA 2130 US 8/2/12
Elizabeth Peacock-Chambers Boston MA 2130 US 8/2/12
Rebecca Lekowski Boston MA 2130 US 8/2/12

Thomas Johnston Boston MA 2118 US 9/12/12
Jared Katsiane Boston MA 2118 US 9/12/12
Amanda Collins Boston MA 2118 US 9/17/12
Marie Callanan Roxbury MA 2119 US 7/13/12
Curtis Nordgaard Boston MA 2119 US 7/25/12
Elvin Burton Roxbury Mississippi 2119 US 7/26/12
Kumara Springer Roxbury MA 2119 US 8/6/12
Melissa Behrle Roxbury MA 2119 US 8/11/12
Natalia Mercado Boston MA 2119 US 9/1/12
Paul Arandia Boston MA 2120 US 7/13/12
Kirsten Nelson Boston MA 2120 US 7/24/12
Meenakshi Ganesh Boston MA 2120 US 7/29/12
Leanne Borden Boston MA 2120 US 7/30/12
Jacquelyn Minahan Boston MA 2120 US 7/31/12
Whitney Moberg Boston MA 2120 US 8/1/12
Marianna McCormick Boston MA 2120 US 8/3/12
Laura montgomery Boston MA 2120 US 8/20/12
R. Anthony Carpinelli Boston MA 2120 US 8/21/12
Dr. Catherine DeLorey Boston MA 2120 US 8/21/12
Alison Pultinas Roxbury MA 2120 US 8/21/12
Sara Gonzalez Boston MA 2120 US 9/19/12
David Wilhelmi Roxbury MA 2120 US 9/20/12
Lydia Pena MIssion hill MA 2120 US 10/8/12
Heather Quigley Boston MA 2121 US 8/1/12
Linda Badgett Boston MA 2121 US 9/10/12
Jelena Follweiler Dorchester MA 2121 US 9/11/12
Michele Landry Dorchester MA 2122 US 7/31/12
Paula Skalinski Boston MA 2122 US 8/1/12
Jennifer Pfeiffer Dorchester MA 2122 US 8/23/12
Thomas Klein Boston MA 2122 US 10/20/12
Josie Chavannes Dorchester MA 2124 US 7/13/12
Denise Gray-Hodge Boston MA 2124 US 7/13/12
Chris Ryan Boston MA 2124 US 7/25/12
Constance Stergiou Boston MA 2124 US 7/26/12
Kathleen Milster Dorchester MA 2124 US 7/30/12
Jamie Rainville Allston MA 2124 US 7/31/12
Bryanna Keane Boston MA 2124 US 8/1/12
Sylvia Noel-Fagan Dorchester MA 2124 US 9/5/12
erin mcdonough Boston MA 2124 US 9/18/12
johana pepin boston MA 2124 US 9/27/12
Fior Beltre Boston MA 2124 US 9/27/12
Ashley Deleon Boston MA 2124 US 10/12/12
Dermott McSorley Dorchester MA 2124 US 10/21/12
Neusa Rodrigues Boston MA 2125 US 7/13/12
Christine Dumais Dorchester MA 2125 US 7/13/12
Christine Horgan Dumais Dorchester MA 2125 US 7/29/12
Brian Abascal Dorchester MA 2125 US 8/3/12
Joannie Brown-Ortiz Boston MA 2125 US 9/1/12
Emily Parnanen Boston MA 2125 US 10/20/12
Aurora Martinez Mattapan MA 2126 US 7/13/12
Kamil Hernandez Mattapan MA 2126 US 7/13/12
Elizabeth Kimble Mattapan MA 2126 US 7/26/12
Stephanie Long Boston MA 2126 US 8/2/12
Shaunna Turner Boston MA 2126 US 9/7/12

Hayley Teich Boston MA 2115 US 10/7/12
Anahita Dioun Boston MA 2115 US 10/11/12
Sarah Lucas Boston MA 2115 US 10/12/12
Amy Thornton Boston MA 2115 US 10/12/12
Abby Field Boston MA 2115 US 10/12/12
Elisa Duguay Boston MA 2115 US 10/12/12
Ainsley Li Boston MA 2115 US 10/12/12
Mackenzie Lahousse Boston MA 2115 US 10/15/12
Nicole Barbour Boston MA 2115 US 10/15/12
Patrick B boston MA 2115 US 10/20/12
tamm sissac BOSTON MA 2115 US 10/23/12
Allen Bryan Boston MA 2115 US 10/23/12
Sarah Lantych Boston MA 2115 US 10/24/12
Marissa Hauptman Boston MA 2116 US 7/13/12
Ashley Atkins Boston MA 2116 US 7/24/12
Alla Smith Boston MA 2116 US 7/24/12
Andrew Miller Boston MA 2116 US 7/24/12
dana harrar Boston MA 2116 US 7/24/12
Katie Poltack Boston MA 2116 US 7/24/12
Alli O'Neill Boston MA 2116 US 7/25/12
stephanie warburg boston MA 2116 US 7/26/12
Amanda Growdon Boston MA 2116 US 7/26/12
Marilyn Liang boston MA 2116 US 7/26/12
Charlotte Odenall Boston MA 2116 US 7/30/12
Gretchen Doonan Boston MA 2116 US 7/31/12
Kathy Doherty Boston MA 2116 US 7/31/12
Skyler joshi Boston MA 2116 US 8/1/12
Miriam Carter Boston MA 2116 US 8/1/12
Florence Bourgeois Boston MA 2116 US 9/6/12
Kara Kimball Boston MA 2116 US 9/6/12
Kathryn Johnson Boston MA 2116 US 9/7/12
Lauren Sweetser Boston MA 2116 US 9/10/12
Marie-Abele Bind Boston MA 2116 US 9/11/12
Nicole Cantwell Boston MA 2116 US 9/11/12
Katherine Gross Boston MA 2116 US 9/11/12
Margaret Coit Boston MA 2116 US 9/13/12
robert scott boston MA 2116 US 9/13/12
Nan Rubin Boston MA 2116 US 10/5/12
Dan Kahn boston MA 2116 US 10/20/12
Matthew White Boston MA 2118 US 7/13/12
Ashley Lewis Boston MA 2118 US 7/13/12
Rachel Stein Boston MA 2118 US 7/24/12
Elizabeth Williams Boston MA 2118 US 7/25/12
Vanessa Lugo Boston MA 2118 US 7/26/12
Zameera Fida Boston MA 2118 US 7/29/12
Lauren Fiechtner Boston MA 2118 US 7/29/12
Stephanie Petruzzi Boston MA 2118 US 7/30/12
Beth Harper boston MA 2118 US 8/1/12
Blake Windsor Boston MA 2118 US 8/1/12
Jessica Strock Boston MA 2118 US 8/23/12
SM C Boston MA 2118 US 8/30/12
Antonio Perez-Atayde Boston MA 2118 US 9/5/12
Michele Folts Boston MA 2118 US 9/7/12
Lewis Wheeler Boston MA 2118 US 9/10/12

Sek Won Kong Boston MA 2115 US 9/6/12
Michele Hudak Boston MA 2115 US 9/6/12
Hongye Liu Boston MA 2115 US 9/6/12
Lora Pixley Boston MA 2115 US 9/6/12
Shannon Manzi North Smithfield Rhode Island 2115 US 9/7/12
Marlowe Miller Boston MA 2115 US 9/7/12
Myra LaVigne-Chalek Boston MA 2115 US 9/7/12
Elizabeth DeWitt Boston MA 2115 US 9/7/12
Linda Van Marter Boston MA 2115 US 9/10/12
Kathryn Levasseur Boston MA 2115 US 9/10/12
Lauren Bennett Boston MA 2115 US 9/10/12
Rona El-Hachem boston MA 2115 US 9/10/12
Brittany Iles Boston MA 2115 US 9/10/12
Rona E Boston MA 2115 US 9/10/12
Marcello Pagano Boston MA 2115 US 9/11/12
Kate Barnes Boston MA 2115 US 9/11/12
Winston Hide Boston MA 2115 US 9/11/12
Nadia Angelidou Boston MA 2115 US 9/11/12
Emily Blood Boston MA 2115 US 9/11/12
Jacqueline Z Boston MA 2115 US 9/11/12
Behzad Moghadaszadeh Boston MA 2115 US 9/12/12
Barbara Burr Boston MA 2115 US 9/12/12
John Triedman Boston MA 2115 US 9/12/12
Shaohui Zhang Boston MA 2115 US 9/13/12
Daniel Omphroy Boston MA 2115 US 9/13/12
Lillian Rodriguez boston MA 2115 US 9/13/12
Melissa Caldwell Boston MA 2115 US 9/14/12
Sabra KW Boston MA 2115 US 9/14/12
Alan Beggs Boston MA 2115 US 9/14/12
Betsy Navarro Boston MA 2115 US 9/14/12
Martin Kurtev Boston MA 2115 US 9/14/12
Katherine Engstler Boston MA 2115 US 9/14/12
Tammy Desrochers Boston MA 2115 US 9/16/12
Elizabeth Paik Boston MA 2115 US 9/17/12
Stephen Ciano Boston MA 2115 US 9/17/12
Hongyu Jiang Boston 2115 US Minor Outlying Islands 9/17/12
Aibin He Boston MA 2115 US 9/18/12
Zhiqiang Lin Boston MA 2115 US 9/18/12
Carmen Popovici Boston MA 2115 US 9/18/12
Stephanie Stotz Boston MA 2115 US 9/18/12
Ramon Espinoza boston MA 2115 US 9/18/12
Sangita Suresh Boston MA 2115 US 9/19/12
serdar uysal boston MA 2115 US 9/19/12
Ronald Neppl Boston MA 2115 US 9/19/12
Mariya Mollova Boston MA 2115 US 9/19/12
Elif Karaca Boston MA 2115 US 9/21/12
Marie Fukuda Boston MA 2115 US 9/26/12
Oana Nicoara boston MA 2115 US 9/27/12
Michelle St. Paul Boston MA 2115 US 9/27/12
Hannah Fraser Boston MA 2115 US 10/5/12
Lynne Foley Boston MA 2115 US 10/6/12
Robert Carter Boston MA 2115 US 10/6/12
Baruch Krauss Boston MA 2115 US 10/6/12
Joyce Li boston MA 2115 US 10/7/12

Brenna Cobleigh Boston MA 2115 US 8/1/12
Lauren Giancola Boston MA 2115 US 8/1/12
Leland Honda Boston MA 2115 US 8/1/12
Rosalind Brown MD Boston MA 2115 US 8/1/12
Norman Spack Boston MA 2115 US 8/1/12
Renetta Johnson Boston MA 2115 US 8/1/12
Sky Brubaker Boston MA 2115 US 8/1/12
Virginia Knowles Boston MA 2115 US 8/1/12
Donald Surette Charlestown MA 2115 US 8/1/12
Alan Leichtner Boston MA 2115 US 8/2/12
Patricia Rissmiller Boston MA 2115 US 8/2/12
Rhea Ghosh Boston MA 2115 US 8/2/12
James Lock Boston MA 2115 US 8/2/12
Craig Lillehei Boston MA 2115 US 8/3/12
Margaret Murphy Boston MA 2115 US 8/3/12
"Jane Newburger, M.D." Boston MA 2115 US 8/3/12
Tal Geva Boston MA 2115 US 8/3/12
Susan Saleeb Boston MA 2115 US 8/3/12
Puja Banka Boston MA 2115 US 8/3/12
Steven Colan Boston 2115 US Minor Outlying Islands 8/3/12
Jami Levine Boston MA 2115 US 8/3/12
Andrew Powell Boston MA 2115 US 8/3/12
Genevieve Briones Malden MA 2115 US 8/3/12
Debra Lee Boston MA 2115 US 8/3/12
Sepehr Sekhavat Boston MA 2115 US 8/3/12
Cheryl OBrien Boston MA 2115 US 8/3/12
Kimberly Faria Boston MA 2115 US 8/3/12
Nicole Ullrich Boston MA 2115 US 8/3/12
Bryce Moffett Boston MA 2115 US 8/4/12
Tracee Saslowsky Boston MA 2115 US 8/4/12
Susie Taylor Boston MA 2115 US 8/4/12
Deborah Johnson Boston MA 2115 US 8/5/12
Janet Feinberg Bosotn MA 2115 US 8/5/12
Elizabeth Hewett boston MA 2115 US 8/5/12
Renee Margossian Boston MA 2115 US 8/6/12
John Mulliken "Boston, MA" MA 2115 US 8/6/12
beka sfikas boston MA 2115 US 8/6/12
Miya Bernson-Leung Boston MA 2115 US 8/6/12
shekia golden boston MA 2115 US 8/7/12
Edward Walsh Boston MA 2115 US 8/8/12
Julia McSweeney Boston MA 2115 US 8/10/12
matt hersey boston MA 2115 US 8/11/12
Michele Rufo Boston MA 2115 US 8/11/12
Raisha Mahon Boston MA 2115 US 8/11/12
Sara Golden Boston MA 2115 US 8/13/12
Karen Costas Boston MA 2115 US 8/13/12
Kyle Koleoglou Boston MA 2115 US 8/15/12
Julie Barbour Boston MA 2115 US 8/16/12
Kelly Kristof boston MA 2115 US 8/20/12
Isaac Tharpe Boston MA 2115 US 8/23/12
Heather Tory Boston MA 2115 US 9/5/12
phyllis kerble boston MA 2115 US 9/5/12
Saraa Vargas Boston MA 2115 US 9/6/12
Rachel Ramoni Boston MA 2115 US 9/6/12

Bugsu Ovunc Boston MA 2115 US 7/27/12
Adam Riccio Boston MA 2115 US 7/27/12
Sandra Seymore Boston MA 2115 US 7/27/12
Ellen Cohen Boston MA 2115 US 7/27/12
Kathleen Gallivan Boston MA 2115 US 7/27/12
Doris Gina Boston MA 2115 US 7/27/12
Robert Cleveland Boston MA 2115 US 7/28/12
Paul Rufp Boston MA 2115 US 7/29/12
Dean Yimlamai Boston MA 2115 US 7/29/12
Roshan Raza Boston MA 2115 US 7/29/12
Kirsten Getchell Boston MA 2115 US 7/29/12
Terry Buchmiller Boston MA 2115 US 7/29/12
"Christopher Duggan, MD" Boston MA 2115 US 7/29/12
Naamah Zitomersky Boston MA 2115 US 7/29/12
Frederic Shapiro Boston MA 2115 US 7/29/12
Constantina Christodoulou Boston MA 2115 US 7/29/12
Debra Boyer Boston MA 2115 US 7/29/12
Lynne Helfand Boston MA 2115 US 7/29/12
Georg Hansmann Boston MA 2115 US 7/30/12
Sivan Kassiff Boston MA 2115 US 7/30/12
Carlotta Hayes Boston MA 2115 US 7/30/12
Camilla Richmond Boston MA 2115 US 7/30/12
Vanessa Kane-Alves Boston MA 2115 US 7/30/12
Kelly Stapleton boston MA 2115 US 7/30/12
Brenda I Garcia Boston MA 2115 US 7/30/12
"Rev. George Winchester, SJ" Boston MA 2115 US 7/30/12
paula lamagna boston MA 2115 US 7/30/12
Loretta Dickerson Boston MA 2115 US 7/30/12
Bonnie Snyder boston MA 2115 US 7/30/12
Susan Boudreau Boston MA 2115 US 7/30/12
margaret donahue boston MA 2115 US 7/30/12
Carolyn Snell Boston MA 2115 US 7/30/12
catherine suppan Boston MA 2115 US 7/30/12
Katherine Brustowicz Boston MA 2115 US 7/30/12
Adam Nasreddine Boston MA 2115 US 7/30/12
William Hennrikus Boston MA 2115 US 7/30/12
nancy Guilli Boston MA 2115 US 7/30/12
Adeline Hodge Boston MA 2115 US 7/30/12
Lisa Owens Boston MA 2115 US 7/31/12
Erin Keenan Boston MA 2115 US 7/31/12
AMY RYAN Boston MA 2115 US 7/31/12
Laura Amar-Dolan Boston MA 2115 US 7/31/12
Soundhari Balaguru Boston MA 2115 US 7/31/12
Norberto Alvarez 300 Longwood ave MA 2115 US 7/31/12
faith lesser boston MA 2115 US 7/31/12
Alice Melo Boston MA 2115 US 8/1/12
Jane Viera Boston MA 2115 US 8/1/12
Nidya Arsenault Boston MA 2115 US 8/1/12
Nedda Hobbs boston MA 2115 US 8/1/12
Stacy Roberts Boston MA 2115 US 8/1/12
Meenakshi Rao Boston MA 2115 US 8/1/12
peter wolff Boston MA 2115 US 8/1/12
Katherine Koniares Boston MA 2115 US 8/1/12
Beatrice Duvert Boston MA 2115 US 8/1/12

Phoebe Chase Boston MA 2115 US 7/13/12
Kirsten Getchell Boston MA 2115 US 7/13/12
Kristen Sullivan boston MA 2115 US 7/13/12
Dana Bernson Boston MA 2115 US 7/13/12
mary fallonsmith Boston MA 2115 US 7/13/12
Amanda Dean Boston MA 2115 US 7/13/12
Angela Monafo Boston MA 2115 US 7/13/12
Jenna Schreier Boston MA 2115 US 7/13/12
Judy Bond Boston MA 2115 US 7/13/12
Brooke Corder Boston MA 2115 US 7/13/12
Amanda Martino Boston MA 2115 US 7/13/12
Suzanne Jewett Boston MA 2115 US 7/13/12
Loren DAngelo Boston MA 2115 US 7/13/12
Allison Joyce Boston MA 2115 US 7/13/12
Lynette Carter Boston MA 2115 US 7/13/12
Mwaniki Mwangi Boston MA 2115 US 7/13/12
Sally Cheek Boston MA 2115 US 7/13/12
Eric Zwemer Boston MA 2115 US 7/13/12
Selin Tuysuzoglu Boston MA 2115 US 7/13/12
Jan Stryker Boston MA 2115 US 7/13/12
Annette Lewis boston MA 2115 US 7/13/12
Sarah Henrickson Boston MA 2115 US 7/13/12
Alon Geva Boston MA 2115 US 7/13/12
Anna Volerman Boston MA 2115 US 7/13/12
Umilta Eadie 300 Longwood Ave MA 2115 US 7/13/12
Alex Hirsch Boston MA 2115 US 7/13/12
Amanda Burns Boston MA 2115 US 7/13/12
Nancy Karthas Boston MA 2115 US 7/24/12
Maxime Taquet Boston MA 2115 US 7/24/12
Lynne Lewis Boston MA 2115 US 7/24/12
Alex Hirsch Boston MA 2115 US 7/24/12
Carly Winokur Boston MA 2115 US 7/24/12
Margaret Stefater Boston MA 2115 US 7/24/12
Stephanie Doupnik Boston MA 2115 US 7/24/12
Laura Johnson Boston MA 2115 US 7/24/12
Lisa Mahoney Boston MA 2115 US 7/24/12
Erica Kaye Boston MA 2115 US 7/25/12
Ethan Sanford Boston MA 2115 US 7/25/12
Alexi Wright Boston MA 2115 US 7/25/12
Aimee Baysinger Boston MA 2115 US 7/26/12
kenneth whittemore Boston MA 2115 US 7/26/12
Dascha Weir Boston MA 2115 US 7/26/12
Susan Kim boston MA 2115 US 7/26/12
Kenneth McIntosh Boston MA 2115 US 7/26/12
Carlos Rivera boston MA 2115 US 7/26/12
Christina Pacak Boston MA 2115 US 7/26/12
Laura Lynch Boston MA 2115 US 7/26/12
Peter Kang Boston MA 2115 US 7/26/12
Enrico Mezzacappa Boston MA 2115 US 7/26/12
JoAnn English Boston MA 2115 US 7/26/12
Cesar Lopez boston MA 2115 US 7/27/12
karen jones boston MA 2115 US 7/27/12
Melissa Parr Boston MA 2115 US 7/27/12
Sarita Chung Boston MA 2115 US 7/27/12

Lauraine Visconti Westwood MA 2090 US 8/1/12
Juanita Trigilio Westwood MA 2090 US 8/2/12
Glenna Boland Westwood MA 2090 US 9/1/12
Ann Morgan westwood MA 2090 US 9/12/12
Lisa Gravallese Wrentham MA 2093 US 7/27/12
Melanie Palmieri Wrentham MA 2093 US 8/1/12
Beth Winbourne Wrentham MA 2093 US 8/5/12
Rachel Hill wrentham MA 2093 US 8/8/12
Andrea Debaggis Madison Wisconsin 2094 US 9/6/12
Sandra Coombs Boston MA 2101 US 7/13/12
Elizabeth Kendrick Boston MA 2108 US 7/24/12
Milagros Lopez ramirez Boston MA 2108 US 8/1/12
Julie Joncas Boston MA 2108 US 8/1/12
Michele Brogan Boston MA 2109 US 8/6/12
Jeanine Maglione Boston MA 2110 US 7/26/12
Taylor Morson Boston MA 2110 US 8/28/12
Roxanne Reddington-Wilde Boston MA 2111 US 9/3/12
Elizabeth Colburn Boston MA 2111 US 10/20/12
Stefanie Mastromonaco Boston MA 2113 US 7/26/12
Catherine Coley Boston MA 2113 US 7/27/12
Kara Western Boston MA 2113 US 7/30/12
Alvin Kho Boston MA 2113 US 9/6/12
Kerry Landers Boston MA 2113 US 9/11/12
Mara Compagno Boston MA 2113 US 9/22/12
Laura Alice Boston MA 2114 US 7/12/12
Eleni Asimacopoulos Boston MA 2114 US 7/13/12
Amy Johnson Boston MA 2114 US 7/24/12
Megan Green Boston MA 2114 US 7/24/12
Jay Wessland Boston MA 2114 US 7/28/12
Bridget Hron Boston MA 2114 US 7/29/12
Jennifer Rein Boston MA 2114 US 7/30/12
Trudi Fondaren "Boston," MA 2114 US 7/31/12
Angelika Zollfrank Boston MA 2114 US 8/2/12
Anne Marie King Boston MA 2114 US 8/3/12
benjamin norton brookline ma MA 2114 US 8/6/12
Caterina Stamoulis Boston MA 2114 US 9/17/12
Hughes Burridge Somerville MA 2114 US 10/6/12
Melisa Oliva Boston MA 2115 US 7/12/12
Alison Clapp Boston MA 2115 US 7/12/12
Heidelise Als "Boston, MA" MA 2115 US 7/13/12
Robert Truog Boston MA 2115 US 7/13/12
Kristen McRae Boston MA 2115 US 7/13/12
Eileen Vazquez Boston MA 2115 US 7/13/12
Natasha Byars Boston MA 2115 US 7/13/12
Megan Gallery Boston MA 2115 US 7/13/12
Jamie Ambach boston MA 2115 US 7/13/12
Shana Swartz Boston MA 2115 US 7/13/12
Sandra Kosta Boston MA 2115 US 7/13/12
Ryan Cooney Boston MA 2115 US 7/13/12
Catherine Clark Boston MA 2115 US 7/13/12
Emily Holman Boston MA 2115 US 7/13/12
Kristen MacGlashing Boston MA 2115 US 7/13/12
Olga I. Perez Boston MA 2115 US 7/13/12
Kate Quint boston MA 2115 US 7/13/12

Dennis Doherty Norwood MA 2062 US 8/1/12
Patti Hackett-Hunter Norwood MA 2062 US 8/3/12
Andria Connors Norwood MA 2062 US 8/4/12
Esther Morales Norwood MA 2062 US 8/7/12
Keith Mccarthy Norwood MA 2062 US 8/9/12
Kristine Atiyeh Norwood MA 2062 US 9/17/12
Joseph Stec Norwood MA 2062 US 9/19/12
Cayla Kehaya Norwood MA 2062 US 9/20/12
Linda Lee Norwood MA 2062 US 10/1/12
William Magan Norwood MA 2062 US 10/24/12
Mary Trust North Scituate MA 2066 US 7/13/12
Bob Magner Scituate MA 2066 US 7/24/12
Robert Magner Sr Scituate MA 2066 US 7/25/12
VIKKI SINDONE SCITUATE MA 2066 US 7/27/12
Gina Marie Michaud Scituate MA 2066 US 9/8/12
Rob Michaud Scituate MA 2066 US 9/8/12
Nicole D'Ambrosio Scituate MA 2066 US 9/13/12
tanya ames scituate MA 2066 US 10/5/12
emma sullivan Scituate MA 2066 US 10/6/12
alanna osullivan-flynn scituate MA 2066 US 10/6/12
Jennifer Foley Scituate MA 2066 US 10/6/12
Natalia Pavlov Sharon MA 2067 US 7/13/12
Katie Levis Sharon MA 2067 US 7/25/12
Lynne Grady Sharon MA 2067 US 7/30/12
Andrea Hale Sharon MA 2067 US 8/1/12
Rita Johnson Sharon MA 2067 US 8/1/12
Gillian Pinkham Sharon MA 2067 US 8/29/12
Zoe Uvin Sharon MA 2067 US 10/20/12
Dawn Freiberger south walpole MA 2071 US 8/9/12
catherine kneut Stoughton MA 2072 US 7/24/12
Lisa Zeidman stoughton MA 2072 US 7/25/12
Nicole Salisbury Stoughton MA 2072 US 7/30/12
Maura Romaniak Stoughton MA 2072 US 8/1/12
David Golden Stoughton MA 2072 US 8/14/12
Jim Vlahos Stoughton MA 2072 US 8/17/12
genevieve wax stoughton MA 2072 US 8/30/12
Elisangela Rosa Stoughton MA 2072 US 9/5/12
Julianne Socha Stoughton MA 2072 US 9/17/12
Ann Carlson walpole MA 2081 US 7/26/12
regina sullivan "walpole,ma" MA 2081 US 7/30/12
Cathi Weeden Walpole MA 2081 US 8/1/12
Scott Weeden Walpole MA 2081 US 8/1/12
Maryann Jalkut Walpole MA 2081 US 8/3/12
Julie Sewell Walpole MA 2081 US 8/8/12
Denise Vandini Walpole MA 2081 US 8/8/12
Grace Sewell Walpole MA 2081 US 8/9/12
Michelle King Walpole MA 2081 US 8/9/12
Robert Sewell Walpole MA 2081 US 8/14/12
Matthew Chabot Walpole MA 2081 US 8/23/12
Susan Vlahos Walpole MA 2081 US 8/26/12
Eileen Heffernan Walpole MA 2081 US 9/16/12
Andrea Ciombor Walpole MA 2081 US 10/20/12
ELAINE STAHLHEBER FOXBOROUGH MA 2085 US 9/1/12
Ann Sargent Westwood MA 2090 US 7/13/12

Peter Ham Mansfield MA 2048 US 9/12/12
PAM DUNN MANSFIELD MA 2048 US 9/13/12
Lee Coscia "Marshfield," MA 2050 US 7/25/12
Mindie charlebois marshfield MA 2050 US 7/26/12
Beth Cook Marshfield MA 2050 US 8/3/12
Leigh Ray Marshfield MA 2050 US 8/6/12
Pamela Smith Marshfield MA 2050 US 8/6/12
mildred emanuel marshfield MA 2050 US 8/18/12
Dorothy Enos Marshfield MA 2050 US 8/18/12
ruth farrugia Marshfield MA 2050 US 8/23/12
Lauren Bombardier Marshfield MA 2050 US 9/7/12
Alene LaRosa Marshfield MA 2050 US 10/5/12
ellen vincent Marshfield MA 2050 US 10/7/12
LYNN Ellsworth Marshfield MA 2050 US 10/22/12
Nancy Tella Medfield MA 2052 US 7/27/12
Mary Jean Sullivan Medfield MA 2052 US 7/30/12
Laura Cannon Medfield MA 2052 US 8/1/12
katie henebry Medfield MA 2052 US 8/2/12
Barbaa Baker medfield MA 2052 US 8/3/12
Claire Wilson Medfield MA 2052 US 8/3/12
Benjamin Parker Medfield MA 2052 US 8/6/12
Debra Valente Medfield MA 2052 US 8/8/12
Maureen Beath Medfield MA 2052 US 10/7/12
Daniel Wallace Medway MA 2053 US 7/13/12
Jacky Steiding Medway MA 2053 US 8/1/12
Tracy Garber Medway MA 2053 US 8/3/12
Jacqueline Mansfield Medway MA 2053 US 8/9/12
Maggie Mansfield Medway MA 2053 US 8/9/12
Shannon Mansfield Medway MA 2053 US 8/9/12
Margaret Mansfield Medway MA 2053 US 8/9/12
Samantha Gignac Medway MA 2053 US 8/9/12
Elizabeth McElhiney Medway MA 2053 US 8/9/12
Michael Mansfield Medway MA 2053 US 8/9/12
Amanda Malin Medway MA 2053 US 8/24/12
Peter Wasielewski Medway MA 2053 US 9/18/12
Michael Finnegan Medway MA 2053 US 10/12/12
Jessica Weaver Boose millis MA 2054 US 7/24/12
Margie Burke Millis MA 2054 US 8/1/12
Peter Gudrais Millis MA 2054 US 8/6/12
heather bliss boston MA 2055 US 8/11/12
Pam Dockx Norfolk MA 2056 US 7/25/12
Laurence Magner Norfolk MA 2056 US 7/26/12
Carol Shuman Norfolk MA 2056 US 7/27/12
Kathleen Kee Norfolk MA 2056 US 8/3/12
Mary Beth White Norfolk MA 2056 US 8/4/12
Kate Joy Norfolk MA 2056 US 8/29/12
Sarah Singer Norfolk MA 2056 US 10/13/12
E H Norfolk MA 2056 US 10/23/12
Kristin MacCutcheon RN North Scituate MA 2060 US 8/1/12
Laurie Baxter Norwell MA 2061 US 9/13/12
Rachel Wollam Norwell MA 2061 US 10/5/12
Gabrielle Keaveney Norwell MA 2061 US 10/22/12
maura heckmann norwood MA 2062 US 7/30/12
Ruth Anne Shea Norwood MA 2062 US 7/31/12

Mallory Murphy Burlington MA 1803 US 7/25/12
Kathleen Austin Burlington MA 1803 US 7/26/12
Jacquelyn Dignan Burlington MA 1803 US 8/3/12
Phyllis DiNatale-Roussell Burlington MA 1803 US 8/7/12
Adrianna Merrill Burlington MA 1803 US 8/22/12
Sarah Basil Burlington MA 1803 US 9/11/12
Vinisha Patel Burlington MA 1803 US 10/10/12
Mehrzad Askari Burlington MA 1803 US 10/24/12
Chas Bicking Andover MA 1810 US 7/25/12
Lisa Keeler Andover MA 1810 US 7/26/12
Ann Johnson Andover MA 1810 US 7/31/12
Madison Lawler Andover MA 1810 US 8/5/12
Molly Bicking Andover MA 1810 US 8/10/12
deb drake Andover MA 1810 US 8/10/12
yvonne allen Andover MA 1810 US 8/18/12
Karen Trudeau Woburn MA 1813 US 8/6/12
Deb Anderson Billerica MA 1821 US 7/12/12
Catherine murphy Billerica MA 1821 US 7/13/12
Corinne Hanney Billerica MA 1821 US 7/25/12
Elizabeth Swift Billerica MA 1821 US 7/25/12
mary soloski billerica MA 1821 US 7/26/12
Jean Morrison Billerica MA 1821 US 7/27/12
Nicole DiRocco Billerica MA 1821 US 7/29/12
jamie mcnelis billerica MA 1821 US 7/30/12
Scott Leavitt Billerica MA 1821 US 8/1/12
Maura Berkeley Billerica MA 1821 US 8/23/12
Adrienne McCarthy Billerica MA 1821 US 8/30/12
Karen Farmer Billerica MA 1821 US 9/19/12
Preetam Cholli Chelmsford MA 1824 US 7/12/12
Heather Luce Chelmsford MA 1824 US 7/25/12
Sheila Morehouse Chelmsford MA 1824 US 7/30/12
Judith Mahoney Chelmsford MA 1824 US 7/31/12
Kara Tassinari Chelmsford MA 1824 US 8/23/12
Sarah Rau Chelmsford MA 1824 US 8/31/12
Paul Mitchell Chelmsford MA 1824 US 9/17/12
Lynn Gregory Chelmsford MA 1824 US 9/17/12
Laura Muollo Dracut MA 1826 US 7/25/12
Mary Mottolo Dracut MA 1826 US 7/25/12
Kate Middlemiss Dracut MA 1826 US 7/25/12
Cate Tressy- Murphy Dracut MA 1826 US 8/3/12
Steven Beauvais Dracut MA 1826 US 8/3/12
Patti MacGillivray Dracut MA 1826 US 8/6/12
Karin ware dracut MA 1826 US 8/9/12
susan dowling dracut MA 1826 US 8/10/12
Karen Beaupre Dunstable MA 1827 US 7/13/12
Mary Carleton Dunstable 1827 Albania 7/13/12
Julie Carleton Dunstable MA 1827 US 7/13/12
Alex Mooney Dunstable MA 1827 US 7/27/12
Laura Wrisley Haverhill MA 1830 US 7/26/12
Jillregin Mencis Haverhill MA 1830 US 7/30/12
Susan Rostosky Haverhill MA 1830 US 7/30/12
wilma june sterritt haverhill MA 1830 US 7/30/12
Suzette DiTonno Haverhill MA 1830 US 7/30/12
Nathan DiGlori Haverhill MA 1830 US 8/17/12

Marie Lindholm Dedham MA 2026 US 8/10/12
Janet Myers Dedham MA 2026 US 8/12/12
Lucy Copeland Dedham MA 2026 US 8/22/12
Kerry matthews dedham MA 2026 US 8/23/12
Lynn Pittsinger Dedham MA 2026 US 9/5/12
Gwendolyn Wright Dedham MA 2026 US 9/13/12
Tasha Roberts-Coombs Dedham MA 2026 US 10/23/12
Sarah Teele Dover MA 2030 US 7/31/12
Leslie Moore Dover MA 2030 US 8/1/12
Paula Granofsky dover MA 2030 US 8/3/12
Rita Krolak Dover MA 2030 US 8/19/12
Kerri Cerrato East Walpole MA 2032 US 8/8/12
Dorothy Gillmor Foxboro MA 2035 US 8/15/12
patrick keaveney foxborough MA 2035 US 8/16/12
sean whyte foxboro MA 2035 US 8/23/12
Bridget Whyte foxborough MA 2035 US 8/23/12
Lori Cavanaugh Foxboro MA 2035 US 8/23/12
Cynthia Kahler Foxboro MA 2035 US 9/8/12
Craig Nally Foxborough MA 2035 US 10/8/12
Bethany Northardt Franklin MA 2038 US 7/25/12
Meghan Brewer Franklin MA 2038 US 7/25/12
Nancy Lear Franklin MA 2038 US 7/28/12
Matthew Minahan Franklin MA 2038 US 7/31/12
Mary Williams Franklin MA 2038 US 7/31/12
Robert Sacco Franklin MA 2038 US 8/1/12
Julia Perkins Franklin MA 2038 US 8/2/12
Dawn Savaria Savaria Franklin MA 2038 US 8/4/12
Tamara Pacher Franklin MA 2038 US 8/14/12
Amy Rucki Franklin MA 2038 US 8/22/12
Sarah Gagnon Franklin MA 2038 US 8/23/12
Heather Honekamp Franklin MA 2038 US 8/29/12
Anne Vaccaro Franklin MA 2038 US 9/18/12
Stefanie Karwin Franklin MA 2038 US 9/19/12
sharon johnson green harbor MA 2041 US 8/10/12
janet weaver holleran RN hingham MA 2043 US 7/26/12
Tricia Ashe Hingham MA 2043 US 8/1/12
mixhawl ashe Hingham MA 2043 US 8/1/12
Marielle Thorne Hingham MA 2043 US 8/14/12
Jennifer Finnerty Hingham MA 2043 US 8/22/12
Terri H. Hingham MA 2043 US 8/30/12
Melissa Rizzotto Hingham MA 2043 US 9/9/12
Jane Joyce Hingham MA 2043 US 9/11/12
Elizabeth Kirpas Hingham MA 2043 US 9/14/12
Cheryl Russo Hingham MA 2043 US 10/5/12
Sarah Shaughnessy Hingham MA 2043 US 10/5/12
eileen coyle hull MA 2045 US 8/1/12
Marie Bell-Manchester Hull MA 2045 US 8/10/12
Susan Armenia Hull MA 2045 US 9/12/12
Heather O'Leary Mansfield MA 2048 US 7/13/12
Sarah Flinn Mansfield MA 2048 US 7/29/12
Patricia Cavanaugh Mansfield MA 2048 US 7/29/12
kala danca mansfield MA 2048 US 7/30/12
Jane Alland Mansfield MA 2048 US 8/1/12
j brooks mansfield MA 2048 US 8/12/12

Lisa Riordon Newburyport MA 1950 US 10/20/12
Nicole True Salisbury MA 1952 US 7/25/12
Nicole Oliveira Salisbury MA 1952 US 7/26/12
Pam Oliveira Salisbury MA 1952 US 7/30/12
Samantha Swankowski Peabody MA 1960 US 7/13/12
Karen Ann Waitt Peabody MA 1960 US 7/25/12
elizabeth mantsourani peabody MA 1960 US 7/26/12
maryellen leeman peabody MA 1960 US 7/26/12
marcy belliveau Peabody MA 1960 US 8/14/12
SANDRA WOOLDRIDGE PEABODY MA 1960 US 9/6/12
Gail Cavignano Peabody MA 1960 US 9/11/12
Christine Ameral Peabody MA 1960 US 10/7/12
Nicole Altieri Rockport MA 1966 US 7/25/12
Anastasia Brown Rockport MA 1966 US 8/5/12
Carol Powers Rowley MA 1969 US 7/31/12
Kathleen Bucci Salem MA 1970 US 7/13/12
Michelle Nigro Salem MA 1970 US 7/27/12
Marcia Morrison Salem MA 1970 US 8/2/12
Linda Girard Salem MA 1970 US 8/2/12
Flora Tonthat Salem MA 1970 US 8/3/12
Michelle Cirioni Salem MA 1970 US 8/14/12
dale lausier Salem MA 1970 US 9/10/12
Rayna Fontana Salem MA 1970 US 10/5/12
David Bowie Salem MA 1970 US 10/20/12
Abbey Kulhavy South Hamilton MA 1982 US 10/20/12
Amy Sullivan Wenham MA 1984 US 8/18/12
Christine Jillett "West Newbury, MA 01985" MA 1985 US 8/7/12
Rosamond Veator West Newbury MA 1985 US 8/12/12
Richard Kenney Accord MA 2018 US 7/28/12
Sarah Doyle Bellingham MA 2019 US 8/30/12
Liz Rinfrette Bellingham MA 2019 US 9/1/12
Julie Worthington Bellingham MA 2019 US 9/6/12
Laura Tirocchi Canton MA 2021 US 7/13/12
Lisa Mullen Canton MA 2021 US 7/26/12
Maureen Amicangelo Canton MA 2021 US 7/30/12
Donna Kendall Canton MA 2021 US 8/3/12
Fran Carleton Canton MA 2021 US 8/3/12
John Carleton Canton MA 2021 US 8/3/12
john carr canton MA 2021 US 8/10/12
zhong huang Canton MA 2021 US 8/22/12
Heather Fairfield Canton MA 2021 US 8/30/12
Christy Driscoll Cohasset MA 2025 US 7/25/12
Jane Tyler Cohasset MA 2025 US 7/29/12
Lillian Sestito Cohasset MA 2025 US 8/8/12
Barbara O'Pray Cohasset MA 2025 US 8/20/12
Kim Lehner dedham MA 2026 US 7/13/12
Elizabeth Tov Dedham MA 2026 US 7/25/12
April Wilmar Dedham MA 2026 US 7/25/12
Teresa DeCoste Dedham MA 2026 US 7/26/12
nancy kleiman Dedham MA 2026 US 7/29/12
Claire Morley Dedham MA 2026 US 7/30/12
Dawn Leider dedham MA 2026 US 8/1/12
Patricia Cariofiles Dedham MA 2026 US 8/3/12
Mary Burton Dedham MA 2026 US 8/9/12

Lindsay Greenberg Amesbury MA 1913 US 8/23/12
Susan Grant Amesbury MA 1913 US 8/24/12
John Iacobucci Amesbury MA 1913 US 8/24/12
Christine Monterio Beverly MA 1915 US 7/13/12
Ali Spillane Beverly MA 1915 US 7/13/12
M. Johnson Beverly MA 1915 US 7/26/12
Karen Gendall Beverly MA 1915 US 7/27/12
Katherine Litterer Beverly MA 1915 US 7/30/12
Sara Barnum Beverly MA 1915 US 9/4/12
Christopher Hunt beverly MA 1915 US 10/6/12
melissa Burton Boxford MA 1921 US 8/1/12
Peter Nelson Boxford MA 1921 US 8/1/12
Patricia Hojnowski-Diaz Boxford MA 1921 US 8/3/12
s currierdevos boxford MA 1921 US 8/3/12
beverly small boxford MA 1921 US 8/3/12
sandra stewart boxford MA 1921 US 8/6/12
patricia mento danvers MA 1923 US 7/26/12
Melissa Beaton Danvers MA 1923 US 7/26/12
susan stone Danvers MA 1923 US 7/30/12
Valerie Harris Danvers MA 1923 US 8/3/12
Nicole Dansereau Danvers MA 1923 US 9/11/12
Meghan Weir Danvers MA 1923 US 10/6/12
Jennifer Amero Gloucester MA 1930 US 7/13/12
Quincy Carvino gloucester MA 1930 US 7/28/12
Dianne Gardner Gloucester MA 1930 US 7/30/12
Elinor Teele Gloucester MA 1930 US 7/31/12
David Teele Gloucester MA 1930 US 8/2/12
joan wardwell gloucester MA 1930 US 8/19/12
Ruth Lackie Hathorne MA 1937 US 8/10/12
Kerri Tinney Ipswich MA 1938 US 7/25/12
James Pignataro Ipswich MA 1938 US 7/25/12
Heather Lynne Westcott Ipswich MA 1938 US 7/26/12
Virginia Hemani Ipswich MA 1938 US 7/29/12
Anna Kleinfeldt Ipswich MA 1938 US 8/1/12
Richard M. Miles Ipswich MA 1938 US 8/5/12
Susan Iannitto Ipswich MA 1938 US 8/20/12
Mary Eliopoulos Ipswich MA 1938 US 8/27/12
donna casaletto lynnfield MA 1940 US 7/26/12
Lori Kennedy Lynnfield MA 1940 US 8/1/12
linda carmichael lynnfield MA 1940 US 8/6/12
Lyrel Gillette Lynnfield MA 1940 US 8/26/12
Brian Page Lynnfield MA 1940 US 9/11/12
Katrina Coukos lynnfield MA 1940 US 10/20/12
Alyssa LeBel Marblehead MA 1945 US 7/27/12
Paul Nightingale Marblehead MA 1945 US 7/30/12
Judith Mitiguy Marblehead 1945 US Minor Outlying Islands 8/1/12
amsler-rinaldi sabina marblehead MA 1945 US 10/6/12
Karen Gruskin Marblehead MA 1945 US 10/7/12
John Cunningham Middleton MA 1949 US 8/6/12
Priscilla B. Bellairs Newburyport MA 1950 US 7/25/12
marc cendron newburyport MA 1950 US 7/26/12
Jodi Paciulan Newburyport MA 1950 US 8/3/12
Paul Mendelson Newburyport MA 1950 US 8/15/12
Amy Anderson Newburyport MA 1950 US 10/20/12

Frances Rohr West Boxford MA 1885 US 7/30/12
Donna chadwick westford MA 1886 US 7/25/12
Linda Arsenault Westford MA 1886 US 7/26/12
Heather Leary Westford MA 1886 US 9/5/12
marie keohan Wilmington MA 1887 US 7/13/12
Traci McCauley Wilmington MA 1887 US 7/25/12
Mary Messina Wilmington MA 1887 US 7/25/12
Emma Ceres Wilmington MA 1887 US 7/25/12
carol tate wilmington MA 1887 US 7/26/12
Laurene Dalton Wilmington MA 1887 US 7/26/12
Andrea Dipasquale Wilmington MA 1887 US 7/26/12
REGINA CAHILL MORICONI WILMINGTON MA 1887 US 8/10/12
Linda Foley Wilmington MA 1887 US 8/22/12
Nicole Santangelo Winchester MA 1890 US 7/13/12
Carol Berne Winchester MA 1890 US 7/13/12
Peter Rosenberger Winchester MA 1890 US 7/26/12
Colleen McColgan Winchester MA 1890 US 7/30/12
Kevin Nolan Winchester MA 1890 US 8/1/12
Beth Norton Winchester MA 1890 US 8/1/12
Babu Koka Winchester MA 1890 US 8/2/12
Cherry Oman Winchester MA 1890 US 8/6/12
Michelle Murray-Ross Winchester MA 1890 US 8/9/12
Cleo Hereford North Shore MA 1902 US 7/13/12
Emma Breault Lynn MA 1902 US 7/27/12
Jacqueline Ring Lynn MA 1904 US 7/13/12
Pamela Liu Lynn MA 1904 US 7/27/12
Melissa Bobbitt Lynn MA 1905 US 8/11/12
Susan Trahan Lynn MA 1905 US 9/13/12
Donna Donati Saugus MA 1906 US 7/13/12
Allison Donovan Saugus MA 1906 US 7/13/12
Maureen Beaton Saugus MA 1906 US 7/26/12
Laura Eisener Saugus MA 1906 US 8/3/12
Phyllis Costa Saugus MA 1906 US 8/9/12
Patricia Doucette Saugus MA 1906 US 8/13/12
Fiona Rice Saugus MA 1906 US 8/20/12
Michelle Martin Saugus MA 1906 US 9/24/12
Juliette St.Laurent Saugus MA 1906 US 10/20/12
Natali Masarskaya Swampscott MA 1907 US 7/25/12
Carolyn Cwalinski Swampscott MA 1907 US 8/22/12
Linda Kantanas Swampscott MA 1907 US 10/6/12
Angela Bardgett Nahant MA 1908 US 7/13/12
Victoria Waite Nahant MA 1908 US 8/18/12
Stacy Vater Amesbury MA 1913 US 7/26/12
John Vater Amesbury MA 1913 US 7/26/12
Melissa Takvorian-Bene Amesbury MA 1913 US 7/27/12
maryellen lawler amesbury MA 1913 US 7/27/12
Arthur Lawler Amesbury MA 1913 US 7/27/12
Caitlin Grogan Amesbury MA 1913 US 8/3/12
Cathy Morrison Amesbury MA 1913 US 8/3/12
Becky Schalck Amesbury MA 1913 US 8/3/12
Adrienne Harris Amesbury MA 1913 US 8/3/12
Martha Jean AMESBURY MA 1913 US 8/6/12
MaryAnn Wall Amesbury MA 1913 US 8/9/12
Ann Knowles Iacobucci Amesbury MA 1913 US 8/20/12

michael white west hartford Connecticut 6119 US 7/26/12
Jeanne Young West Hartford Connecticut 6119 US 7/27/12
Philip Weyl Grahamstown 6139 South Africa 8/3/12
Maryann Marrotte Willimantic Connecticut 6226 US 8/22/12
Kathryn Stellitano Brooklyn Connecticut 6234 US 7/24/12
bryan parsons Brooklyn Connecticut 6234 US 7/24/12
Stacy Williams Brooklyn Connecticut 6234 US 7/25/12
heather ethier danielson Connecticut 6239 US 7/26/12
Hollie Levesque Dayville Connecticut 6241 US 7/24/12
Tina Whiteley Dayville Connecticut 6241 US 7/24/12
Elizabeth Fracchia Hebron Connecticut 6248 US 8/3/12
mellisa fortier Pomfret Connecticut 6259 US 7/24/12
Joel Almquist Putnam Connecticut 6260 US 7/24/12
Kristen Brown Putnam Connecticut 6260 US 7/24/12
Derrick Desaulnier Putnam Connecticut 6260 US 7/24/12
Michelle Doulette Putnam Connecticut 6260 US 7/24/12
Susan Calaman Putnam Connecticut 6260 US 7/24/12
Amanda Upton Putnam Connecticut 6260 US 7/24/12
Margery Mosher "Putnam, CT" Connecticut 6260 US 7/24/12
Keith Mosher Putnam Connecticut 6260 US 7/25/12
Nicole Bushey putnam Connecticut 6260 US 7/25/12
Karen Neumann Storrs Connecticut 6268 US 7/24/12
BENJAMIN SACHS STORRS Connecticut 6268 US 8/17/12
Jacqueline Sachs Storrs Connecticut 6268 US 8/22/12
Sara Dumas Storrs Connecticut 6269 US 10/19/12
Nancy Grteen Woodstock Connecticut 6281 US 7/24/12
Sara Van der Voort Woodstock Connecticut 6281 US 7/24/12
Michelle Salvas Woodstock Connecticut 6281 US 7/24/12
Karin Cournoyer Woodstock Connecticut 6281 US 7/24/12
Victoria Despres Woodstock Connecticut 6281 US 7/24/12
Angela Young Woodstock Connecticut 6281 US 7/24/12
Erin DeCarli Woodstock Connecticut 6281 US 7/24/12
Stephanie Charette Woodstock Connecticut 6281 US 7/24/12
ann peckham woodstock Connecticut 6281 US 7/24/12
Barbara Plasse Woodstock Connecticut 6281 US 7/24/12
Lorna Kay Murdock Woodstock Connecticut 6281 US 7/24/12
Robin Smith Woodstock Connecticut 6281 US 7/25/12
Christine Walley Woodstock Connecticut 6281 US 7/25/12
Amy Kollbeck Woodstock Connecticut 6281 US 7/25/12
Katrina St. Jean Woodstock Connecticut 6281 US 7/25/12
Ellen StJean Woodstock Connecticut 6281 US 7/25/12
Megan St. Jean Woodstock Connecticut 6281 US 7/26/12
Karen St. Jean Woodstock Connecticut 6281 US 7/26/12
Nancy Sherman Woodstock Connecticut 6281 US 7/26/12
Sara Hart Woodstock Valley Connecticut 6282 US 7/24/12
David Payne Woodstock Valley Connecticut 6282 US 7/25/12
Tom Hayden Woodstock valley Connecticut 6282 US 7/28/12
pamela ertel Canterbury Connecticut 6331 US 7/25/12
Terri Frazier Canterbury Connecticut 6331 US 7/26/12
Bettina Vaclavik Canterbury Connecticut 6331 US 9/10/12
Donna Lessard Groton Connecticut 6340 US 9/6/12
Brittany Bonchuk Griswold Connecticut 6351 US 7/24/12
Stephanie Davis Griswold Connecticut 6351 US 7/27/12
Shailyn Metcalfe Jewett City Connecticut 6351 US 7/31/12

Lois DeBlois Warwick Rhode Island 2888 US 8/6/12
JoAnn McGuire Warwick Rhode Island 2888 US 10/3/12
Barbara mCkERRACHER Warwick Rhode Island 2889 US 8/3/12
Erin Ferrazza Warwick Rhode Island 2889 US 8/7/12
Elaine Army Westerly Rhode Island 2891 US 7/24/12
Nicholas Blazensky Westerly Rhode Island 2891 US 8/6/12
Derek Ferris Westerly Rhode Island 2891 US 8/7/12
Francene Lamb Westerly Rhode Island 2891 US 9/6/12
Ceara Hayes Westerly Rhode Island 2891 US 9/18/12
Candita Gerzevitz West Warwick Rhode Island 2893 US 8/13/12
Rachel Santiago West Warwick Rhode Island 2893 US 8/21/12
Ron Mailloux West Warwick Rhode Island 2893 US 9/6/12
Mariah Tuma West Warwick Rhode Island 2893 US 10/20/12
Bella Noka Wood River Junction Rhode Island 2894 US 10/3/12
Randy Noka Wood River Junction Rhode Island 2894 US 10/3/12
Patricia Papa North Smithfield Rhode Island 2896 US 9/10/12
Nancy Tortolani Wyoming Rhode Island 2898 US 8/9/12
Marc Mainville North Providence Rhode Island 2904 US 7/24/12
Nicole Calkins north providence Rhode Island 2904 US 9/12/12
Marissa Lopes Providence Rhode Island 2904 US 10/4/12
Elaine Meyer Cranston 2905 US Minor Outlying Islands 7/12/12
Jennifer Wimmer Providence Rhode Island 2905 US 7/25/12
Dr. Barry Prizant Cranston 2905 US Minor Outlying Islands 7/26/12
Noah Prizant Cranston Rhode Island 2905 US 8/31/12
Jeanette Rolon Providence Rhode Island 2905 US 10/3/12
Dakota Thomas Providence Rhode Island 2905 US 10/4/12
rhonda ruggiero Providence Rhode Island 2905 US 10/4/12
Kristen Stoere Providence Rhode Island 2906 US 7/25/12
Alvan Kaunfer Providence Rhode Island 2906 US 7/29/12
sarah howe providence Rhode Island 2906 US 8/3/12
Margaret Wool Providence Rhode Island 2906 US 9/10/12
Aminah Cooper Providence Rhode Island 2906 US 10/4/12
Pamela Hughes Providence Rhode Island 2906 US 10/4/12
Fiona Smith Providence Rhode Island 2906 US 10/20/12
Joe McCoy N. Providence Rhode Island 2908 US 9/6/12
Joseph santomaro Providence Rhode Island 2908 US 9/6/12
Kaitlyn McCoy North Providence Rhode Island 2908 US 9/8/12
Anthony Ciampanelli North Providence Rhode Island 2908 US 9/9/12
Kathryn Priestley North Providence Rhode Island 2908 US 9/9/12
Lorna McCoy No. Prov. Rhode Island 2908 US 9/11/12
Jaclyn McCoy McCoy north providence Rhode Island 2908 US 9/12/12
barbara andrews providence Rhode Island 2908 US 10/3/12
William Shavers Providence Rhode Island 2908 US 10/3/12
Mary Scannell North Providence Rhode Island 2911 US 9/7/12
Maryann Fonseca East Providence Rhode Island 2914 US 10/3/12
Susan Thomas Riverside Rhode Island 2915 US 7/26/12
Preston Short Riverside Rhode Island 2915 US 10/4/12
laura tirrell johnston Rhode Island 2919 US 7/25/12
Tonia O'Brien Johnston Rhode Island 2919 US 8/3/12
Caldy and David shire Cranston Rhode Island 2920 US 7/28/12
Reggie Bircher Berne 3007 Switzerland 10/24/12
Krystle North Amherst New Hampshire 3031 US 9/7/12
Eileen Kalinowski Amherst New Hampshire 3031 US 10/22/12
Jim Kalinowski Amherst New Hampshire 3031 US 10/22/12

walter zembo westport MA 2790 US 9/10/12
Caroline Robertson Barrington Rhode Island 2806 US 7/25/12
Jill Hughes Barrington Rhode Island 2806 US 8/20/12
Robert Miller Barrington Rhode Island 2806 US 9/10/12
Jack Nassau Barrington Rhode Island 2806 US 9/10/12
Lea Manning Bradford Rhode Island 2808 US 8/24/12
Rebecca Leuchak Bristol Rhode Island 2809 US 9/10/12
Johanna Wolke CAROLINA Rhode Island 2812 US 8/7/12
Kelly Francoeur Carolina Rhode Island 2812 US 8/9/12
nancy beretta carolina Rhode Island 2812 US 8/9/12
Michelle Maynard Carolina Rhode Island 2812 US 8/9/12
Mark Reynolds Carolina Rhode Island 2812 US 8/10/12
Amy Dickerman Carolina Rhode Island 2812 US 8/10/12
Marjorie Foer Charlestown Rhode Island 2813 US 7/13/12
Marcia West Charlestown Rhode Island 2813 US 7/29/12
lynn fairweather charlestown Rhode Island 2813 US 8/7/12
Scott Keeley Charlestown Rhode Island 2813 US 9/20/12
Maddy Parmenter Coventry Rhode Island 2816 US 7/25/12
Nick Gonsalves Coventry Rhode Island 2816 US 10/3/12
Louise Dinsmore Coventry Rhode Island 2816 US 10/20/12
Maryellen Matteson East Greenwich Rhode Island 2818 US 8/3/12
Beth Brown East Greenwich Rhode Island 2818 US 8/6/12
Joan O'connell Hope Valley Rhode Island 2832 US 8/6/12
Mary E Brian Jamestown Rhode Island 2835 US 8/9/12
Audrey Macleod-Pfeiffer Middletown Rhode Island 2842 US 7/30/12
Megan Brown Middletown Rhode Island 2842 US 8/22/12
alishia young North Kingstown Rhode Island 2852 US 10/4/12
Kathleen Thornton N. Scituate Rhode Island 2857 US 8/6/12
Elizabeth Farrell Pascoag Rhode Island 2859 US 7/26/12
Barbara Zdravesky Pawtucket Rhode Island 2860 US 9/10/12
Cheryl Adamick Cumberland Rhode Island 2864 US 7/13/12
Emily Breguet Cumberland Rhode Island 2864 US 7/27/12
Cris Doderer Cumberland Rhode Island 2864 US 7/30/12
Leah Brouillard Cumberland Rhode Island 2864 US 7/30/12
Sarah McKnight Cumberland Rhode Island 2864 US 9/13/12
Melissa Grylls Cumberland Rhode Island 2864 US 10/8/12
Eileen Raposa Portsmouth Rhode Island 2871 US 8/22/12
Laurie Ducey Saunderstown Rhode Island 2874 US 10/25/12
Jennifer Gallant Tiverton Rhode Island 2878 US 8/3/12
susannah blair wakefield Rhode Island 2879 US 8/1/12
marilyn mora wakefield Rhode Island 2879 US 8/6/12
Patricia Lyon Wakefield Rhode Island 2879 US 8/7/12
jp greenwell wakefild Rhode Island 2879 US 8/7/12
Judy Marak Wakefield Rhode Island 2879 US 8/20/12
Robert Hefner South Kingstown Rhode Island 2879 US 9/11/12
Cali Babbitt Wakefield Rhode Island 2879 US 10/3/12
Audra Johnson Wakefield Rhode Island 2879 US 10/3/12
Nancy Holland Kingston Rhode Island 2881 US 8/3/12
deborah harte kingston Rhode Island 2881 US 8/8/12
India Reels Kingston Rhode Island 2881 US 10/3/12
Paul Lange Narragansett Rhode Island 2882 US 8/6/12
Ann Sullivan Narragansett Rhode Island 2882 US 9/6/12
jo-anne krikorian warwick Rhode Island 2886 US 8/7/12
Robert Dileonardo Warwmicj R.I. Rhode Island 2886 US 9/11/12

Trevor Reid South Yarmouth MA 2664 US 9/12/12
Carol Fraser South Yarmouth MA 2664 US 10/4/12
Lori Bechard West Barnstable MA 2668 US 7/29/12
Charles Goetz West Barnstable MA 2668 US 7/31/12
Mary Lou Fenuccio West Barnstable MA 2668 US 10/5/12
Geri Medeiros West Barnstable MA 2668 US 10/24/12
Charles Spillane West harwich MA 2671 US 7/13/12
Norma Hancock West Yarmouth MA 2673 US 7/25/12
Lindsey moriarty West Yarmouth MA 2673 US 9/11/12
Cara winslow yarmouth port MA 2675 US 7/29/12
Carolyn Millett Attleboro MA 2703 US 8/3/12
James Koepfler Attleboro MA 2703 US 8/6/12
Randi Sullivan Attleboro MA 2703 US 8/7/12
Jennifer Grady Attleboro MA 2703 US 8/22/12
nini banks Attleboro MA 2703 US 10/3/12
Brailyn Frye Attleboro MA 2703 US 10/4/12
maureen carney e taunton MA 2718 US 8/4/12
Nicole Pacheco fairhaven MA 2719 US 8/23/12
Alyssa Graca Somerset MA 2726 US 10/26/12
Scotlyn Adler Mattapoisett MA 2739 US 10/13/12
Mary Viera-Bourassa New Bedford MA 2740 US 8/10/12
Stephen Wixon New Bedford MA 2740 US 10/3/12
Lynn Rayner Acushnet MA 2743 US 7/25/12
Kelly Gagliardi South Dartmouth MA 2748 US 9/13/12
Jonathan Allen North Attleboro MA 2760 US 7/26/12
Kerri Fournier North Attleboro MA 2760 US 7/30/12
Nancy McNeil North Attleboro MA 2760 US 8/8/12
James Cronin North Attleboro MA 2760 US 10/5/12
Lumarys MontijO Plainville MA 2762 US 8/1/12
Jamie Sullivan Plainville MA 2762 US 9/20/12
Renee Roy North Dighton MA 2764 US 8/3/12
Olivia Dole Norton MA 2766 US 7/13/12
Michelle Tautkus Norton MA 2766 US 7/25/12
Amy Frias Norton MA 2766 US 8/1/12
gary bradwin norton MA 2766 US 8/3/12
Susan Bradwin Norton MA 2766 US 8/3/12
Johanna Medeiros (Macaione) Norton MA 2766 US 8/8/12
Colleen Swanson Raynham MA 2767 US 7/31/12
Mary Elizabeth Sargent Raynham MA 2767 US 10/20/12
mary Seccareccia Rehoboth MA 2769 US 9/5/12
Robert Williams Brown Rehoboth MA 2769 US 9/10/12
Wally Spiegler Rehoboth MA 2769 US 9/10/12
Carol Entin Rehoboth MA 2769 US 9/11/12
Shauna Makuch Rochester MA 2770 US 9/13/12
Barbara Domingue Swansea MA 2777 US 9/10/12
Lisa Ulianelli Berkley MA 2779 US 7/25/12
Angela Corriveau Berkley MA 2779 US 8/30/12
timothy thomas taunton MA 2780 US 7/25/12
Sheila Fiske Taunton MA 2780 US 7/31/12
Jean Silvia Taunton MA 2780 US 8/1/12
Lola Moore Taunton MA 2780 US 8/3/12
John Tourkantonis Taunton MA 2780 US 10/4/12
Martha Crimmins Westport MA 2790 US 8/1/12
Cynthia Zembo Westport MA 2790 US 9/10/12

Stephen Robbins Needham MA 2492 US 8/3/12
Jennifer Sexton Needham MA 2492 US 8/8/12
Estherann Grace Needham MA 2492 US 8/20/12
Rebecca Costello Needham MA 2492 US 9/6/12
Rachel Reynolds Needham MA 2492 US 10/5/12
Sue King Needham MA 2492 US 10/5/12
Celeste Maisel Needham California 2492 US 10/26/12
susan harris weston MA 2493 US 7/24/12
Laurie Fishman Weston MA 2493 US 7/27/12
Elizabeth Kramer Weston MA 2493 US 8/2/12
Toby Kramer Weston MA 2493 US 8/2/12
T. Alex Shimada-Brand Weston 2493 US Minor Outlying Islands 8/3/12
Liliana Goumnerova Weston MA 2493 US 9/13/12
Nadeen Abuhasan Weston MA 2493 US 10/12/12
Jamie Palaganas Heath needham MA 2494 US 8/6/12
Bernadette Vallely needham MA 2494 US 8/24/12
Kim Fallon Buzzards Bay MA 2532 US 7/25/12
Antonia Perry Bourne MA 2532 US 7/26/12
Marguerite Sullivan Bourne MA 2532 US 7/27/12
Meaghan Walsh Bourne MA 2532 US 8/3/12
Cynthia Flanders Bourne MA 2532 US 9/10/12
Dianne Steele Buzzards Bay MA 2532 US 9/13/12
Laura Neale East Falmouth MA 2536 US 10/21/12
michelle parker east sandwich MA 2537 US 10/7/12
michelle kelley EAST WAREHAM MA 2538 US 9/13/12
Ruth Ambrozaitis Edgartown MA 2539 US 7/24/12
Hannah VanDerlaske Edgartown MA 2539 US 10/12/12
Jean Canty Schwartz Falmouth MA 2540 US 8/4/12
SUSAN PETERSON FALMOUTH MA 2540 US 8/22/12
Joanne Macedo Falmouth MA 2540 US 10/21/12
Kelly Miller Nantucket MA 2554 US 7/26/12
Kelsey DeBettencourt Oak Bluffs MA 2557 US 10/12/12
colleen sullivan Sagamore Beach MA 2562 US 7/12/12
Serret Samson Sagamore Beach MA 2562 US 10/23/12
Kristen Young Sandwich MA 2563 US 8/2/12
Regina Fitzpatrick Sandwich MA 2563 US 8/19/12
Ashley Gwynn Vineyard Haven MA 2568 US 10/12/12
Martha Tardif West Tisbury MA 2575 US 9/18/12
Sharon Hawkins Centerville MA 2632 US 9/11/12
Catherine Portrie Dennis MA 2638 US 8/17/12
Karen Moriarty Dennisport MA 2639 US 9/9/12
Kelley Moriarty Dennis Port MA 2639 US 9/9/12
Grady Scholl Eastham MA 2642 US 7/31/12
Joan Kingsbury Eastham MA 2642 US 8/4/12
Christine Costa Eastham MA 2642 US 10/4/12
Sylvia Burnie Harwich MA 2645 US 8/3/12
Ringaile Valciukaite K__benhavn 2650 Denmark 10/10/12
Jean Johnson North Eastham MA 2651 US 10/24/12
heather kotel South Dennis MA 2660 US 9/19/12
Cathleen DeSouza South Yarmouth MA 2664 US 7/13/12
Jane Sheehan South Yarmouth MA 2664 US 8/20/12
Bambi White Yarmouth MA 2664 US 9/9/12
Tammy Horne South Yarmouth MA 2664 US 9/11/12
Kathleen Thomas South Yarmouth MA 2664 US 9/11/12

Sarah Froio Arlington MA 2474 US 8/1/12
blake moloney Arlington MA 2474 US 8/1/12
Melissa MacIntyre (nee Weisshaus) Arlington MA 2474 US 10/5/12
Lori D. Arlington MA 2474 US 10/12/12
Jennifer Hope Arlington MA 2474 US 10/20/12
Julie Rikeman Arlington MA 2474 US 10/22/12
reta rae arlington MA 2474 US 10/22/12
Shelby-Lynn Rikeman Arlington MA 2474 US 10/22/12
Debora Case Arlington MA 2476 US 7/13/12
Peter Hunt Arlington MA 2476 US 7/27/12
liliane nienstedt Arlington MA 2476 US 7/30/12
Kim Baker Arlington MA 2476 US 8/2/12
Jane Foley Arlington MA 2476 US 9/8/12
Marilyn Ritholz Arlington MA 2476 US 9/10/12
dan williams arlington MA 2476 US 9/12/12
Cristin Berkey Arlington MA 2476 US 10/20/12
Barbara Byfield Arlington MA 2476 US 10/20/12
Miriam Weil Belmont MA 2478 US 7/25/12
Carrie Palmer Belmont MA 2478 US 7/25/12
Robert Kitts belmont MA 2478 US 7/30/12
Nancy Shotola Belmont MA 2478 US 7/31/12
Patti Galvin Belmont MA 2478 US 8/1/12
pamela Levy Belmont MA 2478 US 8/3/12
Carole Arenge belmont MA 2478 US 8/3/12
Caleb Stewart Belmont MA 2478 US 8/5/12
Katherine Henry Belmont MA 2478 US 8/7/12
Brigid O'Connor "Belmont," MA 2478 US 8/28/12
Elena Caplan Belmont MA 2478 US 9/27/12
Lynn Hoyer Belmont MA 2478 US 9/27/12
Mike Gleba Belmont MA 2478 US 10/20/12
Kathy Macdonald Wellesley MA 2481 US 7/25/12
Benjamin Kahrl Wellesley MA 2481 US 7/26/12
judith Boucher Frager Wellesley MA MA 2481 US 7/29/12
Sara Bachman Wellesley MA 2481 US 8/3/12
Corrie Martin Wellesley Hills MA 2481 US 8/6/12
Robert Whitehill Wellesley MA 2482 US 7/13/12
David Dusenbury Wellesley MA 2482 US 7/25/12
Bob Pascucci Wellesley MA 2482 US 7/26/12
Julia Dunbar Wellesley MA 2482 US 7/27/12
Lois Lee Wellesley MA 2482 US 7/29/12
Dawn Ericson Woods Wellesley MA 2482 US 7/29/12
Ann Wessel Wellesley MA 2482 US 7/30/12
George Taylor Wellesley MA 2482 US 8/2/12
David Waisel Wellesley MA 2482 US 8/2/12
David Clapham Wellesley MA 2482 US 8/3/12
Susan Clapham Wellesley MA 2482 US 9/19/12
Nadege Briancon Wellesley MA 2482 US 10/2/12
Anne Marchant Needham MA 2492 US 7/13/12
Linda Gudas Needham MA 2492 US 7/27/12
Annemarie Fayemi Needham MA 2492 US 7/27/12
Alan Stern Needham MA 2492 US 7/27/12
jane brown needham MA 2492 US 7/27/12
Mary Ellen Pierce Needham MA 2492 US 7/30/12
Carrie Braverman Needham MA 2492 US 7/30/12

David Harris Auburndale MA 2466 US 9/13/12
Julia Kajen Auburndale MA 2466 US 10/14/12
Jeannie McEleney Chestnut Hill MA 2467 US 7/13/12
Sthuthi David Chestnut Hill MA 2467 US 7/13/12
Roberta Hoffman Boston MA 2467 US 7/13/12
Beth Kemler Chestnut Hill MA 2467 US 7/13/12
Linda Baer Newton MA 2467 US 7/13/12
valerie Lowenstein Newton MA 2467 US 7/13/12
marsha joselow chestnut hill MA 2467 US 7/24/12
Gerald Koocher Chestnut Hill MA 2467 US 7/26/12
Elizabeth Laurencot Chestnut Hill MA 2467 US 7/30/12
rhonda gropman newton MA 2467 US 8/1/12
Saida Abdi Chestnut Hill MA 2467 US 8/1/12
Gordon Harper Brookline MA 2467 US 8/2/12
Susan Edgman-Levitan Chestnut Hill MA 2467 US 8/2/12
Kim Garcia Newton MA 2467 US 8/3/12
Mich_©le Charbit Chestnut hill MA 2467 US 8/5/12
Christopher Hug Chestnut Hill MA 2467 US 8/5/12
Linda Lopas Newton MA 2467 US 8/9/12
Anna Thornton Brookline MA 2467 US 8/14/12
Miranda Guardiani Chestnut Hill MA 2467 US 8/21/12
Heather Burris Chestnut Hill MA 2467 US 9/10/12
Stephanie Walker Chestnut HIll MA 2467 US 9/18/12
Paul DeCaeb Newton MA 2467 US 9/18/12
Annapurna Poduri Chestnut Hill MA 2467 US 9/19/12
chari dalsheim needham MA 2467 US 9/21/12
Kit Yuen Newton MA 2467 US 10/4/12
Regina Sohn Chestnut Hill MA 2467 US 10/6/12
Olesiya Drachuk Chestnut Hill MA 2467 US 10/15/12
Anjna Shrivastava Chestnut Hill MA 2467 US 10/20/12
stephen gellis newton MA 2468 US 7/26/12
Corinne Ertel Weston MA 2468 US 7/31/12
Shoshana Friedman Waban MA 2468 US 7/31/12
Arne Hans Watertown MA 2472 US 7/13/12
Suzanne Giroux Watertown MA 2472 US 7/30/12
Allyson Reed Watertown MA 2472 US 7/31/12
Norah Davis Watertown MA 2472 US 8/1/12
Sharon Bauer Watertown MA 2472 US 8/2/12
Anne Donahue Watertown MA 2472 US 8/12/12
Kathy Felgran Watertown MA 2472 US 8/20/12
Courtney Dolan Watertown MA 2472 US 8/24/12
Louise Civetti Watertown MA 2472 US 10/5/12
Julie White Watertown MA 2472 US 10/16/12
Ashley Primavera Watertown MA 2472 US 10/20/12
Lynne Biziewski Watertown MA 2472 US 10/20/12
Tina Morello Arlington MA 2474 US 7/25/12
Joanne Paul Arlington MA 2474 US 7/25/12
Denise Lotufo Arlington MA 2474 US 7/26/12
Steven Coletti Arlington MA 2474 US 7/27/12
wendy elverson arlington MA 2474 US 7/28/12
marga graci arlington MA 2474 US 7/30/12
Lori Hartigan Arlington MA 2474 US 7/30/12
Carole Allen Arlington MA 2474 US 7/31/12
Ben Potter Arlington MA 2474 US 7/31/12

Kay Kane newton MA 2458 US 7/26/12
Meredith Bois Newton MA 2458 US 7/27/12
John Zupancic Newton MA 2458 US 7/31/12
Helen christou Newton MA 2458 US 8/3/12
judith murad newton MA 2458 US 8/4/12
Sylvia Abelow Newton MA 2458 US 8/8/12
Lisa Wong Newton MA 2458 US 9/9/12
Robert Cavicchi Newton MA 2459 US 7/13/12
Ludwik Szymanski Newton MA 2459 US 7/26/12
Krysia Bereday Burnham Newton MA 2459 US 7/27/12
nancy smith Newton MA 2459 US 7/29/12
Roger Spingarn Newton Centre MA 2459 US 7/30/12
Evelyn Dixit Newton Center MA 2459 US 7/30/12
Heidi Ward Newton Centre MA 2459 US 7/30/12
Sarah Gillespie Newton Center MA 2459 US 7/31/12
Beau Rivers Newton Centre MA 2459 US 7/31/12
Karen Sandison Newton MA 2459 US 8/10/12
Samuel Nurko Newton MA 2459 US 8/19/12
jess wilson newton MA 2459 US 8/22/12
Carolyn Evan Newton MA 2459 US 8/23/12
David Evan Newton Center MA 2459 US 8/24/12
Beth Naditch Newton MA 2459 US 9/3/12
Michael Landzberg Boston MA 2459 US 9/12/12
Roberta Leviton Newton MA 2459 US 9/20/12
Kate Basile Newton Center MA 2459 US 10/6/12
Eman Khadra Newton Center MA 2459 US 10/6/12
Elinor Yeo Newtonville MA 2460 US 7/24/12
melissa prudhomme newton MA 2460 US 7/26/12
Sally Modest Newtonville MA 2460 US 7/31/12
Steven Joffe Newton MA 2460 US 8/2/12
Mary Summers Newton MA 2460 US 8/21/12
Melynda Cotten Newton MA 2460 US 9/11/12
Robert Lebowitz Newton MA 2461 US 7/13/12
Helen Lebowitz Newton MA 2461 US 7/13/12
Courtney Goldwasser Newton MA 2461 US 7/25/12
Alice Newton Newton MA 2461 US 7/27/12
Patricia Walt Newton MA 2461 US 8/24/12
Adam Lipson Newton MA 2461 US 9/5/12
Noam S. Brookline MA 2461 US 9/7/12
Meredith Warshaw Boston MA 2461 US 9/17/12
Ann Rich Newton MA 2461 US 10/5/12
Matthew Harris Newton MA 2464 US 9/14/12
Sara Gravatt Newton Upper Falls MA 2464 US 10/20/12
Leslie Lehmann Newton MA 2465 US 7/29/12
michael mcgrath newton MA 2465 US 8/1/12
Cynthia Levim West Newton MA 2465 US 8/7/12
Ann Teuber West Newton MA 2465 US 8/18/12
Sarah Hickey newton MA 2465 US 9/12/12
Francie Mandel Auburndale MA 2466 US 7/13/12
"Laurence Sloss, MD" Auburndale MA 2466 US 7/25/12
Sarah Harney Newton MA 2466 US 7/30/12
Annie Levine Newton MA 2466 US 7/30/12
GWENDOLINE THORNBLADE Auburndale MA 2466 US 8/3/12
Barbara Thompson Auburndale MA 2466 US 8/24/12

gabrielle whitcombe brookline MA 2446 US 9/18/12
Ana Babic Brookline MA 2446 US 9/18/12
Ingrid Carvacho Boston MA 2446 US 9/18/12
Andrea Patricelli Malizia Brookline MA 2446 US 9/18/12
Amanda Tong Brookline MA 2446 US 9/19/12
Ronnie Yoo Brookline MA 2446 US 9/22/12
Chiara Pighi Brookline MA 2446 US 9/27/12
Cecilia Martin Brookline MA 2446 US 10/2/12
Rachel Levy Brookline MA 2446 US 10/4/12
Caitlin Farrell Brookline MA 2446 US 10/6/12
Sarah Wingerter Brookline MA 2446 US 10/8/12
Patricia Pierce Brookline MA 2446 US 10/8/12
Robyn Lewis Brookline MA 2446 US 10/9/12
Patti Singleton Brookline MA 2446 US 10/16/12
Michelle Kats Brookline MA 2446 US 10/19/12
Carla Robinson Brookline MA 2446 US 10/19/12
Kitty Scott Waltham MA 2451 US 7/13/12
Veronica Kemeny-Weinstock Waltham MA 2451 US 7/13/12
Doris McWhinnie Waltham MA 2451 US 7/13/12
Sarah Allen Waltham MA 2451 US 7/26/12
Susie Charl Waltham MA 2451 US 8/1/12
Anthony Falone Waltham MA 2451 US 8/1/12
Barb Ernisse Waltham MA 2451 US 8/14/12
Valerie Schumacher Waltham MA 2451 US 9/11/12
Jessie Booher-Hendrick Waltham MA 2451 US 9/13/12
Lily Ciaramitaro Waltham MA 2451 US 10/20/12
Emily Rosenfield Waltham MA 2452 US 7/24/12
joanne donnelly waltham MA 2452 US 7/30/12
Wendell Gallagher Waltham MA 2452 US 7/31/12
Susan Baccari Waltham MA 2452 US 8/17/12
Rosalie Wilbur Boston MA 2452 US 8/22/12
Tiana Babigian Waltham MA 2452 US 9/13/12
Jocelyn Aguirre Waltham MA 2452 US 9/14/12
Svetlana Gapon Waltham MA 2452 US 9/19/12
Allyson McCrary Waltham MA 2453 US 7/13/12
Hope Kellman Waltham MA 2453 US 7/13/12
Karen Murphy Waltham MA 2453 US 7/13/12
jen buxton Waltham MA 2453 US 7/24/12
Emily Athas Waltham MA 2453 US 7/25/12
Kelly Lavin Waltham MA 2453 US 7/25/12
Michelle Gouthro Waltham MA 2453 US 7/30/12
kait kacavich waltham MA 2453 US 7/30/12
Kristen Leavitt Waltham MA 2453 US 8/1/12
Lisa Buckley Waltham MA 2453 US 8/6/12
John Walters Waltham MA 2453 US 8/6/12
Rebecca Strauss waltham MA 2453 US 8/18/12
Beth Welty Waltham MA 2453 US 8/18/12
Stephanie Barros Waltham MA 2453 US 8/23/12
Marie Boyle Waltham MA 2453 US 9/6/12
Melisa Osborne Waltham MA 2453 US 9/11/12
Miriam Chernoff Waltham MA 2453 US 9/12/12
Cecilia Matos Newton MA 2458 US 7/13/12
diane richler newton MA 2458 US 7/13/12
Lisa Wong Newton MA 2458 US 7/25/12

meredith deveney brookline MA 2445 US 10/6/12
Sara Schutzman Brookline MA 2445 US 10/8/12
Jaleh Darling Brookline MA 2445 US 10/12/12
Laura Iversen Brookline MA 2445 US 10/20/12
Ann Congleton Brookline MA 2445 US 10/20/12
Adam Alden Brookline MA 2445 US 10/21/12
Jonathan Chow Brookline MA 2446 US 7/12/12
Rev. Jen Dillinger Brookline MA 2446 US 7/13/12
Victoria Ochoa Boston MA 2446 US 7/13/12
Rachel Moritz Brookline MA 2446 US 7/13/12
Katelyn Laracy brookline MA 2446 US 7/13/12
J Chao Brookline MA 2446 US 7/13/12
Kristin Castillo Brookline MA 2446 US 7/13/12
Charlotte Mao Brookline MA 2446 US 7/24/12
Craig McClain Brookline MA 2446 US 7/24/12
Chris Yuskaitis Brookline MA 2446 US 7/24/12
catherine distler brookline MA 2446 US 7/25/12
Paulina Ortiz-Rubio Brookline MA 2446 US 7/25/12
Joel Ives Brookline MA 2446 US 7/25/12
Marian Clouse Brookline MA 2446 US 7/25/12
Kezia Shirkey Brookline MA 2446 US 7/25/12
Susie L'Abbe brookline MA 2446 US 7/26/12
Katie Davidson Brookline MA 2446 US 7/26/12
Maryann Kurkjian Brookline MA 2446 US 7/26/12
Nancy Cahners Brookline MA 2446 US 7/28/12
Katharine Rooney Brookline MA 2446 US 7/30/12
Tracy Myers Brookline MA 2446 US 7/30/12
Nicole Heinz Brookline MA 2446 US 7/30/12
Janine Amirault Brookline MA 2446 US 7/30/12
beth sands brookline MA 2446 US 7/30/12
Lorri Marek-Kagan Brookline MA 2446 US 7/30/12
Jon Kagan Brookline MA 2446 US 7/30/12
Alison Rosenberg Brookline MA 2446 US 7/30/12
Amir Amir Brookline MA 2446 US 7/31/12
Raymond cunningham Brookline MA 2446 US 8/1/12
Sarah Lawler Brookline MA 2446 US 8/1/12
Gabriel Dabscheck Brookline MA 2446 US 8/1/12
angela christiana Brookline MA 2446 US 8/3/12
Gillian M Brookline MA 2446 US 8/3/12
Anne Elperin Brookline MA 2446 US 8/5/12
Brian Abaluck Brighton MA 2446 US 8/6/12
Daniel Hames Brookline MA 2446 US 8/7/12
Lawrence de Koning Brookline MA 2446 US 8/7/12
Sarah Savage Brookline MA 2446 US 9/6/12
Matt Glynn brookline MA 2446 US 9/7/12
Cathy DeLucca Brookline MA 2446 US 9/7/12
Sebastien Haneuse Brookline MA 2446 US 9/11/12
Natalie Exner Brookline MA 2446 US 9/11/12
Morgan Esperance Brookline MA 2446 US 9/11/12
Kathriel Brister Brookline MA 2446 US 9/12/12
Michael Freed Brookline MA 2446 US 9/12/12
Jean-Ju Chung Brookline MA 2446 US 9/16/12
Byoung-il Bae Brookline MA 2446 US 9/16/12
Emily Price Brookline MA 2446 US 9/18/12

Nicolina Calfa Brookline MA 2445 US 7/13/12
margie leitner brookline MA 2445 US 7/24/12
Susan Snider Brookline MA 2445 US 7/24/12
Caitlain Kelley Brookline MA 2445 US 7/24/12
Amber Platt Brookline MA 2445 US 7/25/12
Keshini Abeyaratne Brookline MA 2445 US 7/25/12
evelyn berde Brookline MA 2445 US 7/26/12
Karen Ambrose Boston MA 2445 US 7/26/12
Rohan Abeyaratne Brookline MA 2445 US 7/26/12
Rev. Mary Martha Thiel Brookline MA 2445 US 7/27/12
Jennifer Ortiz Brookline MA 2445 US 7/27/12
Kathleen Theisen Brookline MA 2445 US 7/27/12
Kasia Stabach Brookline MA 2445 US 7/27/12
Thea Brennan-Krohn Brookline MA 2445 US 7/27/12
Morvarid Mohseni Brookline MA 2445 US 7/29/12
Kerri Gosselin Brookline MA 2445 US 7/29/12
Sarah Weber Brookline MA 2445 US 7/30/12
sharon foldy brookline MA 2445 US 7/30/12
James Ojo Brookline MA 2445 US 7/31/12
Claudio De Gusmao Brookline MA 2445 US 8/1/12
Marcie Alkema Brookline MA 2445 US 8/1/12
Simona Rits Brookline MA 2445 US 8/1/12
Rajat Moman Brookline MA 2445 US 8/1/12
Jane Perich Brookline MA 2445 US 8/2/12
Marilyn Ray Smith Brookline MA 2445 US 8/3/12
ceci king brookline MA 2445 US 8/3/12
Lyvia Gaewsky Brookline MA 2445 US 8/3/12
Evelyn Berde Brookline MA 2445 US 8/11/12
Samantha Rudofsky Brookline MA 2445 US 8/13/12
Christine Stewart Brookline MA 2445 US 8/20/12
Sarah Robinson Brookline MA 2445 US 8/20/12
Gannon Hasting Brookline MA 2445 US 8/20/12
Adrienne Sharigian brookline MA 2445 US 8/21/12
meaghan sullivan brookline MA 2445 US 8/22/12
Hannah Rimm Brookline MA 2445 US 8/22/12
Nancy Ruggiero Brookline MA 2445 US 8/24/12
Jonathan Abbett Brookline MA 2445 US 9/6/12
Alisha Bouzaher Brookline MA 2445 US 9/6/12
Ryan Sullivan Brookline MA 2445 US 9/7/12
DIANE DAVIS brookline MA 2445 US 9/7/12
Dmitry Dukhovny Brookline MA 2445 US 9/10/12
Tamar Winter Brookline MA 2445 US 9/11/12
Elizabeth Allred Brookline MA 2445 US 9/11/12
johanna lepeule Brookline MA 2445 US 9/11/12
Kathy Rozek Brookline MA 2445 US 9/11/12
Dale Flecker Brookline MA 2445 US 9/11/12
Jaylyn Olivo Brookline MA 2445 US 9/11/12
Lisa Tse Brookline MA 2445 US 9/12/12
Alyssa Mauriello Brookline MA 2445 US 9/13/12
Huaqun Chen Brookline MA 2445 US 9/18/12
Benjamin Hills Brookline MA 2445 US 9/20/12
evelyn lankester boston MA 2445 US 9/21/12
Umbereen Nehal Brookline MA 2445 US 10/6/12
Lise Nigrovic Brookline MA 2445 US 10/6/12

Nancy Campbell Plymouth MA 2362 US 7/26/12
Susan Chamberlain Kingston MA 2364 US 7/25/12
Megan Owren Kingston MA 2364 US 10/7/12
lisa tura kingston MA 2364 US 10/22/12
karen nugent-brennan randolph MA 2368 US 7/13/12
Karen Farrell Randolph MA 2368 US 8/8/12
Kathleen Jalkut Randolph MA 2368 US 8/10/12
Elizabeth Smith Randolph MA 2368 US 8/10/12
Cecille Valliere Randolph MA 2368 US 8/10/12
Melissa Centeio Randolph MA 2368 US 9/5/12
Kerri Wike Rockland MA 2370 US 7/31/12
Kristin Leonard Rockland MA 2370 US 8/1/12
Juliann Kuja Rockland MA 2370 US 8/3/12
Alicia Ramponi Rockland MA 2370 US 8/9/12
MaryAnn Garland Rockland MA 2370 US 8/14/12
Nikki Ortiz-Tatarka Rockland MA 2370 US 8/23/12
Sandra Jackson Rockland MA 2370 US 9/12/12
Caitlin Imbrogna Rockland MA 2370 US 10/6/12
Erin Morris Rockland MA 2370 US 10/7/12
Mary Ellen Bouve South Easton MA 2375 US 7/27/12
Lisa Resca South Easton MA 2375 US 8/9/12
Michael Resca South Easton MA 2375 US 8/11/12
Robert Doiron Easton MA 2375 US 9/21/12
Robyn Brooker South Easton MA 2375 US 10/4/12
Laurie Naughton West Bridgewater MA 2379 US 8/7/12
Lynn Butler Whitman MA 2382 US 7/25/12
kelli mcpherson whitman MA 2382 US 7/25/12
Joseph Burns Whitman MA 2382 US 7/30/12
Leslie Leary Whitman MA 2382 US 8/10/12
Michael Keaveney Whitman MA 2382 US 8/17/12
Dafne Preskins Whitman MA 2382 US 9/18/12
Debbie O Broin Whitman MA 2382 US 10/19/12
Sara Reinstein "Lexington, MA" MA 2420 US 7/27/12
Kudret Usmani Lexington MA 2420 US 7/31/12
Beth Zonis Lexington MA 2420 US 9/12/12
Gloria Wallace Lexington MA 2420 US 9/15/12
Lauren Blackington Watertown MA 2421 US 7/13/12
N. Thorne Griscom Lexington MA 2421 US 7/25/12
Mary Jane Ertman Lexington MA 2421 US 7/26/12
fiona paul Lexington MA 2421 US 7/27/12
Robert Frank Lexington MA 2421 US 7/30/12
Wendy Wornham Lexington MA 2421 US 7/31/12
Mary Parker Lexington MA 2421 US 8/10/12
Ehsan Afkhami Lexington MA 2421 US 9/18/12
Isadora Goldman Leviton lexington MA 2421 US 9/19/12
michael leviton lexington MA 2421 US 9/20/12
Karyn Cohen Lexington MA 2421 US 9/20/12
Burton Cohen Lexington MA 2421 US 9/23/12
Robert Lee Lexington MA 2421 US 10/19/12
Dinah Super Lexington MA 2421 US 10/20/12
maria virginia caballero Brookline MA 2445 US 7/12/12
Gwennaelle Wilson Brookline MA 2445 US 7/13/12
Kerri Connors Brookline MA 2445 US 7/13/12
Jessica Bratt Brookline MA 2445 US 7/13/12

Kelly Cummings Hanover MA 2339 US 8/2/12
elle dee hanover MA 2339 US 8/7/12
karen brandt Hanover MA 2339 US 10/5/12
Kevin Mckenna Hanson MA 2341 US 8/7/12
Kimberly Derosier HANSON MA 2341 US 9/9/12
Julie DiBona Holbrook MA 2343 US 7/25/12
Marjorie Costa Holbrook MA 2343 US 7/26/12
Beverly Andrea Holbrook MA 2343 US 7/28/12
Kim Leblanc Holbrook MA 2343 US 10/8/12
Neil Rood Holbrook MA 2343 US 10/20/12
Mark Zipeto Holbrook MA 2343 US 10/20/12
Matthew Boudreau Middleborough MA 2346 US 8/3/12
Colleen O'Shaughnessy Middleboro MA 2346 US 10/19/12
Marie Nolan Lakeville MA 2347 US 7/13/12
Mark Sullivan Abington MA 2351 US 7/25/12
Paula magnasco abingotn MA 2351 US 7/25/12
Stacy Cooper Abington MA 2351 US 7/27/12
Ashley Rober Abington MA 2351 US 9/6/12
Naomi Jennings North Easton MA 2356 US 7/30/12
dianne cella North Easton MA 2356 US 7/30/12
Jacqueline Hazel North Easton MA 2356 US 8/4/12
Cindy Keane north easton MA 2356 US 8/5/12
Carol Levinsky North Easton MA 2356 US 8/14/12
Alyssa D'Arcy North Easton MA 2356 US 9/5/12
Brian Switzer Easton MA 2356 US 9/20/12
Lori Thomas Pembroke MA 2359 US 7/25/12
Julia Swartz Pembroke MA 2359 US 7/26/12
Allyson Stazinski Pembroke MA 2359 US 9/5/12
Kathleen Kiley Pembroke MA 2359 US 10/6/12
Penny Nuttall Plymouth MA 2360 US 7/13/12
Brian Kimball Plymouth MA 2360 US 7/24/12
Brendan Kimball Plymouth MA 2360 US 7/25/12
Christine Kimball Plymouth MA 2360 US 7/25/12
JUSTIN DELOACH PLYMOUTH MA 2360 US 7/25/12
Elissa Davis Plymouth MA 2360 US 7/25/12
Sean Kimball Plymouth MA 2360 US 7/27/12
Kerry Duncan Plymouth MA 2360 US 7/27/12
Tyler Gallahue Plymouth MA 2360 US 8/1/12
Lynne Showers Plymouth MA 2360 US 8/1/12
Debra Baird Plymouth MA 2360 US 8/9/12
Karol Timmons Plymouth MA 2360 US 9/12/12
Nicole Keough Plymouth MA 2360 US 9/13/12
Stephanie Lopes Plymouth MA 2360 US 9/13/12
Nate Wiest Plymouth MA 2360 US 9/13/12
Kate Coleman Plymouth MA 2360 US 9/13/12
Judi Steele Plymouth MA 2360 US 9/13/12
Katelynn Bradley Plymouth MA 2360 US 9/13/12
amy steele Plymouth MA 2360 US 9/13/12
Margo Raymond Plymouth MA 2360 US 9/13/12
Kelly O'Day Plymouth MA 2360 US 9/13/12
Donna Mello Plymouth MA 2360 US 9/13/12
Susan Cody Plymouth MA 2360 US 9/15/12
Lisa Acampora Plymouth MA 2360 US 10/22/12
steve acampora plymouth MA 2360 US 10/22/12

Shannon Reedy colcchester Vermont 5446 US 8/4/12
Jessica Dewes East Fairfield Vermont 5448 US 9/17/12
Ben Smyth East Fairfield Vermont 5448 US 9/17/12
Joanne Finnegan Essex Junction Vermont 5452 US 8/31/12
Sara Mitchell Ferrisburgh Vermont 5456 US 10/6/12
lionel smith Owen 5460 Australia 10/21/12
Rachel Perkins Jericho Vermont 5465 US 9/26/12
Nicole Lantery "MOntgomery, ctr" Vermont 5471 US 8/3/12
Amanda Davey North Ferrisburg Vermont 5473 US 8/1/12
Lucy Cooney Shelburne Vermont 5482 US 8/3/12
David Diaz Shelburne Vermont 5482 US 8/7/12
Amelia Briggs Shelburne Vermont 5482 US 8/30/12
Jeneva Burroughs Williston Vermont 5495 US 8/30/12
Brenda Perkins Williston Vermont 5495 US 8/30/12
Stuart Burroughs Williston Vermont 5495 US 8/31/12
Christine Martin Barre Vermont 5641 US 9/8/12
Esta Brayton Eden Vermont 5652 US 8/31/12
John McEntee Morrisville Vermont 5661 US 7/12/12
Helene Lundberg Stowe Vermont 5672 US 8/30/12
Helen Bridgewater Warren Vermont 5674 US 8/18/12
Carrie Morrissey Rutland Vermont 5701 US 8/1/12
Ami Frappier Rutland Vermont 5701 US 8/3/12
Laura Basili Cornwall Vermont 5753 US 7/25/12
Benjamin Kramer Middlebury Vermont 5753 US 8/4/12
Irene Jakubiak West Rutland Vermont 5777 US 8/3/12
Shelley Carleton West Rutland Vermont 5777 US 8/4/12
Judith Crowley West Rutland Vermont 5777 US 8/18/12
jill kozieradzki Bristol Connecticut 6010 US 7/26/12
Ranses Rodriguez Bristol Connecticut 6010 US 8/22/12
Mary Louise Braney Farmington Connecticut 6032 US 8/19/12
melinda st. amant Glastonbury Connecticut 6033 US 7/26/12
Krista Hanlon Berlin Connecticut 6037 US 7/26/12
char perez Manchester Connecticut 6040 US 7/26/12
Mary Young Manchester Connecticut 6040 US 8/22/12
Darcy McBride Manchester Connecticut 6042 US 7/26/12
Marisa Veloccia New Britain Connecticut 6053 US 9/7/12
Tracy Tardiff New Hartford Connecticut 6057 US 8/30/12
Katie Gagnon Plainville Connecticut 6062 US 9/7/12
Claudia Horwatt Plainville Connecticut 6062 US 9/7/12
Heather Mogielnicki barkhamsted Connecticut 6063 US 8/22/12
Julie Hinkley Somers Connecticut 6071 US 7/26/12
"Maggie Carchrie, MA, MT-BC" South Windsor Connecticut 6074 US 7/25/12
Deborah Sackett south windsor Connecticut 6074 US 7/25/12
chris mckinstry South Windsor Connecticut 6074 US 7/26/12
Katie Lepak South Windsor Connecticut 6074 US 7/27/12
Aglaea (valkanas) Vranos S. Windsor Connecticut 6074 US 8/18/12
Anna Chinsky South Windsor Connecticut 6074 US 10/12/12
maryann cabral Stafford Springs Connecticut 6076 US 7/26/12
Lynne Mazzeo Tolland Connecticut 6084 US 7/26/12
Casey L East Windsor Connecticut 6088 US 7/24/12
kristen cummings east windsor Connecticut 6088 US 10/27/12
Stacy Brenner West Hartford Connecticut 6110 US 7/29/12
Vanessa Pergolizzi Hartford Connecticut 6114 US 7/25/12
Molly James West Hartford Connecticut 6119 US 7/26/12

susan maasch portland Maine 4101 US 7/25/12
catherine field portland Maine 4102 US 7/26/12
Kirsten Steinbach Portland Maine 4103 US 10/20/12
Laura Rich Falmouth Maine 4105 US 9/13/12
Kathleen Hiscock Falmouth Maine 4105 US 9/14/12
Carolyn Riker Cape Elizabeth Maine 4107 US 10/9/12
Catherine Dionne Auburn Maine 4210 US 10/19/12
Kathie MacLellan Hebron Maine 4238 US 9/14/12
Mary Pat Mirabella New Gloucester Maine 4260 US 8/3/12
Pat McCoy Otisfield Maine 4270 US 9/6/12
Justin Sherman Poland Maine 4274 US 7/27/12
Guy Schumacher 4300 Australia 10/21/12
johanna barrett bangor Maine 4401 US 7/26/12
Adrienne Leppold Veazie Maine 4401 US 8/7/12
Patience Wilson Brewer Maine 4412 US 7/27/12
Megan Wibberly Winterport Maine 4496 US 7/25/12
Julia Kahrl Arrowsic Maine 4530 US 7/26/12
William Brune georgetown Maine 4548 US 7/25/12
Mary Swain Gorgetown Maine 4548 US 7/30/12
Julia Reid Simmons Phippsburg Maine 4562 US 7/26/12
Katherine Mead-von Huene Woolwich Maine 4579 US 7/25/12
Fred Kahrl Woolwich Maine 4579 US 7/29/12
Audrey Beal Seal Cove Maine 4674 US 9/11/12
jesse downer Thomaston Maine 4861 US 7/25/12
Patricia Jonason warren Maine 4864 US 7/25/12
Katherine Kent Farmington Maine 4938 US 7/24/12
Seth Dallaire Farmington Maine 4938 US 7/26/12
marian schmidt rome Maine 4963 US 9/5/12
Christine Bailey Pittsfield Maine 4967 US 8/3/12
Roswitha Strasser Salzburg 5020 Austria 8/24/12
Hali Issente Bridgewater Vermont 5034 US 7/25/12
Debra Stickney Fairlee Vermont 5045 US 9/26/12
Ann Walker Fairlee Vermont 5045 US 9/28/12
fiona davis hartland Vermont 5048 US 7/26/12
Jana Bryan Chester Vermont 5143 US 8/3/12
Mary stevens springfield Vermont 5156 US 9/14/12
Shannon Luscia Bennington Vermont 5201 US 8/1/12
Heather Strohl Bennington Vermont 5201 US 8/2/12
Kimberly Polhemus Pownal Vermont 5261 US 7/31/12
barbara luscia pownal Vermont 5261 US 7/31/12
courtney burrington pownal Vermont 5261 US 8/1/12
Elizabeth Hubby Stamford Vermont 5352 US 7/31/12
heather McArthur west townshend Vermont 5359 US 7/27/12
Warren Kimberly wilmington Vermont 5363 US 9/12/12
Andrew Calder Burlington Vermont 5401 US 9/6/12
Alyce Furlani Burlington Vermont 5401 US 9/13/12
Sandra Schlosser Burlington Vermont 5401 US 9/17/12
Diane Blais South Burlington Vermont 5403 US 10/6/12
Jennifer Andrews Winooski Vermont 5404 US 8/3/12
Jennifer Andrews Winooski Vermont 5404 US 8/4/12
Nicole Marshall Winooski Vermont 5404 US 9/19/12
Eric Bradford Burlington Vermont 5408 US 9/12/12
Shanta Eastman Burlington Vermont 5408 US 9/13/12
Danielle Poirier Colchester Vermont 5446 US 7/27/12

Michael Gagnon Dover New Hampshire 3820 US 8/3/12
Kyla McCabe-Corrow Madbury New Hampshire 3823 US 10/12/12
Dr Tom and Mimi Adams Exeter New Hampshire 3833 US 7/25/12
Sarah Oxnard Exeter New Hampshire 3833 US 8/6/12
Terence Moran Exeter New Hampshire 3833 US 8/20/12
Kathleen Ullrich Exeter New Hampshire 3833 US 8/24/12
Jessica Matson Brentwood New Hampshire 3833 US 10/18/12
Penelope Bardell Exeter New Hampshire 3833 US 10/20/12
Haydee Parella brentwood New Hampshire 3833 US 10/22/12
tania perry rochester New Hampshire 3839 US 7/28/12
Anne Nelson Greenland New Hampshire 3840 US 8/22/12
Adam Knowlton Hampstead New Hampshire 3841 US 7/25/12
Ashley Harry Hampstead New Hampshire 3841 US 7/26/12
Kelsey Conley Hampstead New Hampshire 3841 US 10/12/12
Casey Gilman Boston MA MA 3841 US 10/12/12
Meighan Rowlee Hampton New Hampshire 3842 US 7/25/12
melissa glockner Hampton New Hampshire 3842 US 7/27/12
Nancy Luba Hampton New Hampshire 3842 US 8/10/12
elaine prestipino kingston New Hampshire 3848 US 7/25/12
Lynette Rogers Kingston New Hampshire 3848 US 10/5/12
Sabrina Velandry New Castle New Hampshire 3854 US 8/19/12
Kelly Coderre Newmarket New Hampshire 3857 US 7/27/12
Kelsey Sobel Newmarket New Hampshire 3857 US 9/12/12
Jean Vincent North Hampton New Hampshire 3862 US 9/2/12
Catherine Maranian Plaistow New Hampshire 3865 US 7/26/12
Jessica Aprile Plaistow New Hampshire 3865 US 7/27/12
Alexandra Pecci Plaistow New Hampshire 3865 US 7/27/12
Allison Morin seabrook New Hampshire 3874 US 7/25/12
Deirdre Kurland Seabrook New Hampshire 3874 US 8/3/12
Jessica Moaratty Seabrook New Hampshire 3874 US 8/10/12
Jenna Lynes Strafford New Hampshire 3884 US 7/24/12
Rob Tourville Stratham New Hampshire 3885 US 8/6/12
Joan Goulet Milton New Hampshire 3891 US 7/25/12
Janet Ducar York Maine 3909 US 7/25/12
gail marshall York Maine 3909 US 8/19/12
Allison Foran Brownfield Maine 4010 US 8/1/12
nancy bliss Brunswick Maine 4011 US 8/2/12
Margaret Sylvester Casio Maine 4015 US 7/30/12
Catherine Collinson   4019 Australia 10/21/12
Deborah LeBlanv East Waterboro Maine 4030 US 10/8/12
Hamish Patterson   4030 Australia 10/21/12
Bonnie Clement Kennebunk Maine 4043 US 7/27/12
Janet Bither Kennebunk Maine 4043 US 7/27/12
James Bither Kennebunk Nebraska 4043 US 7/29/12
Gretchen Grannell-Martin Kennebunk Maine 4043 US 8/7/12
Gregg Dinino Kennebunk Maine 4043 US 10/2/12
Gary Coyne Parsonsfield Maine 4047 US 9/29/12
Theresa Gaetjens Limerick Maine 4048 US 8/3/12
Samantha Badger Pownal Maine 4069 US 10/22/12
Juliane Richards Raymond Maine 4071 US 10/27/12
Melanie Gilligan Scarborough Maine 4074 US 9/6/12
Sandra Mullins Shapleigh Maine 4076 US 7/24/12
Vivian Mikhail Topsham Maine 4086 US 7/27/12
Janice Douglas Wells Maine 4090 US 8/6/12

Terry Magner Salem New Hampshire 3079 US 7/26/12
Marybeth Murphu Salem New Hampshire 3079 US 7/26/12
Carrie Wieland Salem New Hampshire 3079 US 8/1/12
MICHAEL MULLOY SALEM New Hampshire 3079 US 8/22/12
Dawn Knight Salen New Hampshire 3079 US 9/13/12
cynthia healy Wilton New Hampshire 3086 US 7/25/12
Emma Rae Healy Wilton New Hampshire 3086 US 7/25/12
Tony Barbaro Windham New Hampshire 3087 US 7/25/12
Mary Sheys Manchester New Hampshire 3101 US 8/3/12
bryan daneault manchester New Hampshire 3103 US 10/20/12
Karen Daneault Manchester New Hampshire 3103 US 10/21/12
Nicole Gallant manchester New Hampshire 3104 US 7/25/12
Teresa Cataldo Manchester New Hampshire 3104 US 7/27/12
Catherine Kimionakis Hooksett New Hampshire 3106 US 9/11/12
nicole harrington Bedford New Hampshire 3110 US 7/25/12
candice croteau Bedford New Hampshire 3110 US 7/25/12
Martine Harrington Bedford New Hampshire 3110 US 7/26/12
Melinda Chen Bedford New Hampshire 3110 US 7/26/12
Dianne Kashiwabara Bedford New Hampshire 3110 US 7/26/12
Taylor Harrington Bedford New Hampshire 3110 US 7/26/12
Sheila MacDonald Bedford New Hampshire 3110 US 8/1/12
Giulia Mezzacappa Jamaica Plain MA 3130 US 8/18/12
Regina Knowlton Belmont New Hampshire 3220 US 10/20/12
Katie Henderson Bradford New Hampshire 3221 US 7/25/12
tess smith center barnstead New Hampshire 3225 US 8/1/12
Eve Porter-Zuckerman Center Sandwich New Hampshire 3227 US 8/3/12
Judith L. Brewer Danbury New Hampshire 3230 US 8/6/12
Diane De Luca Deering New Hampshire 3244 US 8/7/12
robyn cameron pembroke New Hampshire 3275 US 7/25/12
Rosanne Buck Northfield New Hampshire 3276 US 7/31/12
Sharon Zimmermann Concord New Hampshire 3301 US 7/13/12
Heidi Carlson Concord New Hampshire 3301 US 8/30/12
Sarah Henry Concord New Hampshire 3301 US 10/11/12
Laura Kostko Concord New Hampshire 3301 US 10/11/12
Tracy Webb penacook New Hampshire 3303 US 8/31/12
daisy hope Keene New Hampshire 3431 US 7/26/12
april tacy ashuelot New Hampshire 3441 US 7/26/12
Virginia Clark gilsum New Hampshire 3448 US 8/1/12
michael stafford hinsdale New Hampshire 3451 US 8/23/12
Mary Murphy Troy New Hampshire 3465 US 8/19/12
kim skidmore Littleton New Hampshire 3561 US 8/22/12
Stefan Zoellig Thun 3600 Switzerland 10/25/12
Michelle Pettinato Claremont New Hampshire 3743 US 10/4/12
Alexys Wilbur Cornish New Hampshire 3745 US 7/25/12
J Wilbur Cornish New Hampshire 3745 US 7/26/12
Gladys Curtis Enfield New Hampshire 3748 US 8/31/12
brenda barry Georges Mills New Hampshire 3751 US 9/19/12
Marianne Alverson Lyme New Hampshire 3768 US 7/25/12
craig weeden Portsmouth New Hampshire 3801 US 8/1/12
Logan Seely Portsmouth New Hampshire 3801 US 8/1/12
Emily Lebiedz Atkinson New Hampshire 3811 US 7/25/12
Laura Kenney Atkinson New Hampshire 3811 US 8/8/12
Judith Waldron Center Ossipee New Hampshire 3814 US 8/11/12
john b watkins Chocorua New Hampshire 3817 US 7/31/12

Albert Fritchy Jr. Auburn New Hampshire 3032 US 10/20/12
Sarah Giles Candia New Hampshire 3034 US 7/25/12
Nancy Webb Chester New Hampshire 3036 US 8/1/12
Mary Jo Dalton Derry New Hampshire 3038 US 7/12/12
kim dunham Derry New Hampshire 3038 US 7/25/12
judy kuczwara derry New Hampshire 3038 US 7/26/12
Jennifer Lubao Derry New Hampshire 3038 US 7/27/12
betsy klardie Derry New Hampshire 3038 US 7/27/12
Steven Cronin Derry New Hampshire 3038 US 7/30/12
kevin johns derry New Hampshire 3038 US 8/5/12
Patricia Hicks Derry New Hampshire 3038 US 8/22/12
Kara Zaniboni Derry New Hampshire 3038 US 8/31/12
Kelly Hayden-Wimpory Greenfield New Hampshire 3047 US 7/26/12
Sarah Hartley Greenville New Hampshire 3048 US 7/25/12
Maria Perini Hollis New Hampshire 3049 US 7/25/12
Michelle Etchells Hollis New Hampshire 3049 US 7/25/12
stephanie nye Hudson New Hampshire 3051 US 7/26/12
Barbara O'Beirne Hudson New Hampshire 3051 US 10/5/12
Roberta Bromley Hudson New Hampshire 3051 US 10/20/12
Meghan Blundon Litchfield New Hampshire 3052 US 8/31/12
john winnett Londonderry New Hampshire 3053 US 7/25/12
Michael Bartlett Londonderry New Hampshire 3053 US 7/25/12
Karen Livernois Londonderry New Hampshire 3053 US 7/25/12
Kerri Stanley Londonderry New Hampshire 3053 US 7/25/12
Kim McKinnon Londonderry New Hampshire 3053 US 7/25/12
jessica howard Londonderry New Hampshire 3053 US 7/25/12
Diana Marshall Londonderry New Hampshire 3053 US 7/26/12
Sarah Fegan Londonderry New Hampshire 3053 US 7/26/12
Irene Montminy lononderry New Hampshire 3053 US 7/26/12
Jennifer Morin Londonderry New Hampshire 3053 US 7/26/12
Brenna Kaiser Londonderry New Hampshire 3053 US 7/27/12
tracy berube Milford New Hampshire 3055 US 7/25/12
Tara Groblewski Milford New Hampshire 3055 US 7/25/12
Ryan McEntee Milford New Hampshire 3055 US 7/25/12
joseph Traficante Milford New Hampshire 3055 US 7/25/12
Jennifer O'Brien-Traficante Milford New Hampshire 3055 US 7/25/12
Jennifer Nickerson Milford New Hampshire 3055 US 7/26/12
Lauren Voelker Milford New Hampshire 3055 US 7/27/12
Meredith Borgioli Nashua New Hampshire 3060 US 8/3/12
Tim Nickerson Nashua New Hampshire 3060 US 9/27/12
Catherine Hebert Nashua New Hampshire 3062 US 7/29/12
laura conrad Nashua New Hampshire 3062 US 9/13/12
Debbie Christianson Nashua New Hampshire 3063 US 7/26/12
Timothy Barnes Nashua New Hampshire 3063 US 7/27/12
lori pearlo nashua New Hampshire 3063 US 7/31/12
Mike Vicchitto Nashua New Hampshire 3063 US 8/1/12
Donna Arias Nashua New Hampshire 3064 US 8/30/12
Carolyn Fine Nashua New Hampshire 3064 US 10/22/12
Rebecca Chapman   3066 Australia 10/21/12
Donna Marie Travis New Boston New Hampshire 3070 US 7/26/12
Karen Cruz New Ipswich New Hampshire 3071 US 8/3/12
Iris O'Donnell Pelham New Hampshire 3076 US 7/25/12
Lisa Paquette Pelham New Hampshire 3076 US 7/25/12
Julie Wilkins Pelham New Hampshire 3076 US 9/5/12

Cynthia Semmens Somers New York 10589 US 8/22/12
Lisa Keller Yorktown Heights New York 10598 US 8/22/12
Garth Swenson White Plains New York 10606 US 7/27/12
Kim Green Yonkers New York 10705 US 7/27/12
Pera Flood Great Neck New York 11021 US 9/6/12
Josephine Raffalli New Hyde Park New York 11040 US 7/29/12
s schreiber lic New York 11101 US 10/5/12
HIBA TANVIR aastoria New York 11203 US 8/23/12
Bryn Retherford Brooklyn New York 11218 US 10/20/12
Bronwyn Lewis New York New York 11221 US 10/20/12
Becky Hanger Brooklyn New York 11238 US 7/13/12
Richard C. Perl Forest Hills New York 11375 US 10/19/12
Muhammad Islam Jamaica New York 11432 US 8/9/12
Nancy Quijano Jamaica New York 11432 US 10/20/12
Kate Tyler Belle Harbor New York 11694 US 9/6/12
Andres Ramirez Brightwaters New York 11718 US 7/27/12
Jacqueline Rodriguez East Northport New York 11731 US 9/19/12
Kery D'Amico Holbrook New York 11741 US 8/22/12
Amy Baker Huntington New York 11743 US 7/25/12
David Mckay Huntington New York 11743 US 8/30/12
Linda Rich Dix Hills New York 11746 US 9/17/12
Diane Cahill Lindenhurst New York 11757 US 8/22/12
michelle waller East Patchogue New York 11772 US 7/25/12
Korin Monz rocky point New York 11778 US 8/5/12
Sunshine Gumbs Southampton New York 11969 US 10/3/12
william montanari Wainscott New York 11975 US 7/27/12
Jill Flinton Charlton 12019 US Minor Outlying Islands 8/3/12
Iain Holmes Ballston Spa New York 12020 US 8/2/12
Lisa Stanley Ballston Spa New York 12020 US 8/18/12
Laura Pfeifer Ballston Spa New York 12020 US 8/22/12
Cynthia Curtin Ballston Spa New York 12020 US 10/21/12
Debbie Eckert East Nassau New York 12062 US 8/4/12
Stephanie Siciliano Latham New York 12110 US 8/2/12
katie dastoli Taconic Lake New York 12138 US 7/31/12
Jessica Herrington Troy New York 12180 US 8/2/12
Colin Tory Troy New York 12180 US 9/5/12
Kellie Spore Colonie New York 12205 US 8/1/12
Alicia Wein kansas New York 12207 US 8/2/12
Nathan Natale Loudonville New York 12211 US 10/22/12
Helen Eggenberger Scotia New York 12302 US 8/18/12
Sara Gast New York 12411 US 9/10/12
Ida Hakkila Woodstock New York 12498 US 7/24/12
David Balogh Beacon New York 12508 US 8/17/12
Linda Law Beacon New York 12508 US 8/17/12
Joan Martorano Beacon New York 12508 US 8/18/12
Stowe Boyd Beacon New York 12508 US 8/18/12
Christopher Duffy Copake New York 12516 US 8/25/12
Joan Pirie Fishkill New York 12524 US 7/25/12
Susan DeMark New Paltz New York 12561 US 8/21/12
Eli Dow POUGHKEEPSIE New York 12601 US 8/3/12
Barbara Holstein Montague New Jersey 12771 US 9/11/12
nicole rogerson woodbourne New York 12788 US 7/24/12
Carolyn Percio Moreau New York 12831 US 8/3/12
Pam Legault Hudson Falls New York 12839 US 8/4/12

Christopher Mansfield Salem New York 12865 US 8/11/12
Sonya Martin Saratoga Springs New York 12866 US 8/2/12
Patrick Mansfield Saratoga Springs New York 12866 US 8/11/12
Laura Mansfield Saratoga Springs New York 12866 US 8/11/12
Lisa Cech plattsburgh New York 12901 US 7/26/12
Valerie Henry Plattsburgh New York 12901 US 7/26/12
Jennifer Steenberge Plattsburgh New York 12901 US 7/26/12
Erin St. Denis Plattsburgh New York 12901 US 7/27/12
bridget flynn plattsburgh New York 12901 US 7/29/12
kathi latour plattsburgh New York 12901 US 8/1/12
Maureen Stacey Plattsburgh New York 12901 US 8/3/12
Maria MacKay Altona New York 12910 US 8/21/12
Tana Hare Bloomingdale New York 12913 US 8/3/12
Carissa Wilson Brushton New York 12916 US 7/27/12
Jay Clookey Brushton New York 12916 US 8/3/12
Tiffany Parker Burke New York 12917 US 7/27/12
wendy dibble chateaugay New York 12920 US 7/27/12
heidi south Constable New York 12926 US 7/26/12
Audra Buchanan Constable New York 12926 US 7/27/12
Jackie Shepard Constable New York 12926 US 7/28/12
alice christian crown point New York 12928 US 8/21/12
robert burroughs crown point New York 12928 US 9/15/12
Kristina Fleury dannemora New York 12929 US 7/27/12
Bonnie Favaro Dannemora New York 12929 US 7/27/12
matthew maneely fort covington New York 12937 US 7/27/12
April Wood Fort Covington New York 12937 US 7/29/12
Traci Maneely Fort Covington New York 12937 US 7/29/12
Phil Giddings Keeseville New York 12944 US 7/27/12
Erin Maneely Malone New York 12953 US 7/26/12
Desiree Marlowe Malone New York 12953 US 7/26/12
Sabrina Hammons Malone New York 12953 US 7/26/12
Andrea Dumas Malone New York 12953 US 7/27/12
Colleen Reville-Stone Malone New York 12953 US 7/27/12
Rachel Thursby Malone New York 12953 US 7/27/12
sandi smith malone ny New York 12953 US 7/27/12
Shelley Wright Malone New York 12953 US 7/27/12
Logan Gravel Malone New York 12953 US 7/27/12
Nicole Manley Malone New York 12953 US 7/27/12
Maria Bourgeois Malone New York 12953 US 7/27/12
Candace Gadway Malone New York 12953 US 7/27/12
Corey Maneely Malone New York 12953 US 7/27/12
Wendy Cappiello Malone New York 12953 US 7/27/12
Laurie Shova Plant City Florida 12953 US 7/27/12
Sheila Boyea Malone New York 12953 US 7/27/12
becky Gronquist Malone New York 12953 US 7/27/12
Beth Buchanan Malone New York 12953 US 7/27/12
Corey Monette Malone New York 12953 US 7/27/12
Jennifer Hutchins malone New York 12953 US 7/27/12
nicole reyome malone New York 12953 US 7/28/12
Eileen LePine Malone New York 12953 US 8/6/12
alex beitz Malone New York 12953 US 8/9/12
Ian Genser Moira New York 12957 US 7/29/12
Linda Mero Morrisonville New York 12962 US 7/26/12
Debbie Durward north bangor New York 12966 US 7/26/12

Theresa Tavernia N.Bangor New York 12966 US 7/27/12
Amanda Boyea North Bangor New York 12966 US 7/27/12
amanda hill Tupper Lake New York 12986 US 7/31/12
Elizabeth Tvorak Tupper Lake New York 12986 US 7/31/12
Julie Hill Tupper Lake New York 12986 US 7/31/12
Emily Sanford Tupper Lake New York 12986 US 7/31/12
Shelly Gadway Tupper Lake New York 12986 US 7/31/12
Bob Hill Tupper Lake New York 12986 US 7/31/12
Donna Burrows Tupper Lake New York 12986 US 8/3/12
Mike Dufort Whippleville New York 12995 US 7/27/12
Valerie Suwanseree Ayuthaya 13000 Thailand 9/14/12
Michele George Canastota New York 13032 US 9/11/12
S. Davis Liverpool New York 13090 US 7/30/12
Michele Hager Memphis New York 13112 US 7/26/12
Jill Slocum Mexico New York 13114 US 7/25/12
Courtney Finkbeiner Syracuse New York 13225 US 8/3/12
Caritia Abell Berlin 13357 Germany 10/20/12
Billie Gadway Morrisville New York 13408 US 7/31/12
Holly Darrah rome New York 13440 US 7/31/12
Jeremy Seaman Fort Drum New York 13602 US 7/31/12
Nicole LaRue Black River New York 13612 US 8/2/12
Amanda Hill Calcium New York 13616 US 7/31/12
Randi Buckley Canton New York 13617 US 8/2/12
tiffany barton Hammond New York 13646 US 8/3/12
Lauren Briggs Madrid New York 13660 US 7/31/12
jessica hill massena New York 13662 US 7/31/12
Doug Hamilton Massena New York 13662 US 8/2/12
Mackenzie Banks Massena New York 13662 US 8/2/12
Suzanne Binion Massena New York 13662 US 8/2/12
Lisa Jones Massena New York 13662 US 8/2/12
Sean Lynch Massena New York 13662 US 8/2/12
Rosanne Morin massena New York 13662 US 9/11/12
Alyssa Matthews Norwood New York 13668 US 8/2/12
amanda witherell norwood New York 13668 US 8/3/12
Debra Ormasen ogdensburg New York 13669 US 7/31/12
Stephanie Bowman Ogdensburg New York 13669 US 8/1/12
Amy Raven Ogdensburg New York 13669 US 8/1/12
tricia joanette ogdensburg New York 13669 US 8/2/12
Aaron Friot Ogdensburg New York 13669 US 8/2/12
Danielle Barton Ogdensburg New York 13669 US 8/2/12
charlotte bleau ogdensburg New York 13669 US 8/3/12
Jennifer Pratt Ogdensburg New York 13669 US 8/3/12
richard lockwood Ogdensburg New York 13669 US 8/3/12
Michael Vincelette Ogdensburg New York 13669 US 8/3/12
Vanessa Kronyak Ogdensburg New York 13669 US 8/3/12
Ginnie Demers Ogdensburg New York 13669 US 8/4/12
Kari Ritchie Ogdensburg New York 13669 US 8/8/12
shawn sunderland ogdensburg New York 13669 US 8/18/12
carolyn bjork ogdensburg New York 13669 US 8/18/12
Carol Huckle Potsdam New York 13676 US 8/3/12
Julie Murray Parishville New York 13676 US 8/3/12
desiree sharpstene Theresa New York 13691 US 8/1/12
Lori Greene Hamburg New York 14075 US 8/20/12
Joy Kuebler North Tonawanda New York 14120 US 8/20/12

sharif hamdy North Tonawanda New York 14120 US 8/20/12
Maria Arza Buffalo New York 14209 US 8/20/12
Melissa Leopard Buffalo New York 14216 US 8/20/12
Crystal Surdyk Buffalo New York 14217 US 9/11/12
Leanne Puccio Buffalo New York 14221 US 8/20/12
Janice Rogers Williamsville New York 14221 US 8/20/12
catherine faust buffalo New York 14222 US 8/20/12
Barbara Riso Buffalo New York 14222 US 8/20/12
sarah courtney Buffalo New York 14225 US 8/30/12
Adrienne Navarroli Niagara Falls New York 14305 US 8/3/12
Christine LaMonica Honeoye Falls New York 14472 US 8/3/12
Sarah Wright Rochester New York 14611 US 10/21/12
Diane Pearson Rochester New York 14618 US 9/6/12
Danielle Scofield Lansing New York 14882 US 10/20/12
Nancy Solla Trumansburg New York 14886 US 10/20/12
Rhiannon Griffin Pittsburgh Pennsylvania 15145 US 10/20/12
CHRISTINA BAKA ATHENS 15341 Greece 9/18/12
Tracie Crable Uniontown Pennsylvania 15401 US 7/27/12
Jill Alicea Erie Pennsylvania 16506 US 7/26/12
Jessica Rivera York Pennsylvania 17403 US 7/25/12
Dawn Rettew Lititiz Pennsylvania 17543 US 7/24/12
Michelle Diffenbach Lititz Pennsylvania 17543 US 7/27/12
Lori Slone Lancaster Pennsylvania 17601 US 8/30/12
Carolyn Thayer Lancaster Pennsylvania 17603 US 7/27/12
Samantha Pink Sunbury Pennsylvania 17801 US 10/20/12
Mary O'Connor Kingston Pennsylvania 18704 US 7/27/12
jocelyn bascomb Kingston Pennsylvania 18704 US 8/22/12
Katie Custer Doylestown Pennsylvania 18902 US 7/25/12
Liz Kennerley Solebury Pennsylvania 18963 US 7/26/12
eileen glah Ambler Pennsylvania 19002 US 8/22/12
Emmett Schmidt Ambler Pennsylvania 19002 US 9/12/12
Jennifer Lee Brookhaven Pennsylvania 19015 US 8/1/12
Julie Bartolomeo Horsham Pennsylvania 19044 US 8/30/12
Steve kuttruff jenkintown Pennsylvania 19046 US 8/22/12
Karahrahrah Weiser Havertown Pennsylvania 19083 US 9/11/12
Karen Sherman WYNCOTE Pennsylvania 19095 US 8/30/12
Meredith Jalkut "Philadelphia," Pennsylvania 19102 US 8/9/12
Gil Wernovsky Philadelphia Pennsylvania 19106 US 7/26/12
Gil Cnaan Philadelphia Pennsylvania 19107 US 10/20/12
Juliana Perry Philadelphia Pennsylvania 19107 US 10/27/12
Karen McCormick Philadelphia Pennsylvania 19136 US 10/21/12
Jessica Ratner Philadelphia Pennsylvania 19146 US 9/24/12
Kathryn Michalski Nottingham Pennsylvania 19362 US 8/23/12
victoria lapoint eagleville Pennsylvania 19403 US 8/30/12
Carol Galford Collegeville Pennsylvania 19426 US 8/22/12
Rose Lee Lanet Lansdale Pennsylvania 19446 US 8/6/12
Marlene Rossman Lansdale Pennsylvania 19446 US 8/6/12
Amanda Lahiff Lansdale Pennsylvania 19446 US 8/23/12
Suzanne Gerard North Wales Pennsylvania 19454 US 8/6/12
Lisa Napadensky Newark Delaware 19702 US 10/21/12
Lauren Nelson Wilmington Delaware 19808 US 7/26/12
Meg Comeau Milton Delaware 19968 US 8/3/12
Gavin Hilgemeier Washington District Of Columbia 20009 US 8/2/12
Richard Ferber Washington District Of Columbia 20010 US 7/26/12

Sarah Epstein Washington District Of Columbia 20015 US 7/25/12
Giulia Lamiani Milan 20143 Italy 7/13/12
Giovanni Ursino Milan 20143 Italy 7/13/12
Sherry Boswell Sterling Virginia 20165 US 10/21/12
Bethe Almeras Reston Virginia 20191 US 8/20/12
Kristie Fugich Bowie Maryland 20715 US 8/22/12
Lindsay M collegepark Maryland 20740 US 7/28/12
Catherine Jameson-Hardy Germantown Maryland 20874 US 10/20/12
Shirley A Cartwright Owings Mills Maryland 21117 US 10/3/12
Joshua Liebow-Feeser Baltimore Maryland 21209 US 10/20/12
Lydia Kimball Baltimore Maryland 21211 US 8/20/12
Ulrich Willi Baltimore Maryland 21231 US 8/5/12
Stephanie Simpson Queenstown Maryland 21658 US 8/17/12
Ernest J.P. Muhly Walkersville Maryland 21793 US 8/18/12
Alicia Summe Quantico Virginia 22134 US 8/5/12
Jennifer Crigger Springfield Virginia 22153 US 7/26/12
Elizabeth Beaulac Woodbridge Virginia 22192 US 8/4/12
Julia Rosenfield Arlington Virginia 22203 US 7/25/12
Lee Jennings Arlington Virginia 22203 US 9/25/12
Heather Morris arlington Virginia 22206 US 7/25/12
Keri Parker Alexandria Virginia 22302 US 8/5/12
Connor LaVecchia Richmond Virginia 23229 US 10/20/12
Wiliam Pope Norfolk 23504 US Minor Outlying Islands 7/25/12
Joan Loewus Newport News Virginia 23602 US 7/25/12
Daniel Babbage Chester Virginia 23831 US 8/31/12
Deborah Miller Roanoke Virginia 24018 US 7/25/12
Diana George Blacksburg Virginia 24060 US 7/24/12
Lynn Satalino "Wirtz," Virginia 24184 US 7/25/12
virginia king charleston West Virginia 25302 US 10/21/12
Kathryn Godbey Mt Hope West Virginia 25880 US 10/20/12
Tara Gilpatrick grafton West Virginia 26354 US 7/25/12
Jane Williams Winston Salem North Carolina 27101 US 7/29/12
David Yoder Pittsboro North Carolina 27312 US 9/10/12
Beth Simoncini Greensboro North Carolina 27410 US 8/31/12
David Starmer Greensboro North Carolina 27455 US 8/3/12
Nancy Allred Cary North Carolina 27511 US 9/11/12
Karen mendys Chapel Hill North Carolina 27516 US 7/13/12
Micael Naiman chapel hill North Carolina 27517 US 7/25/12
Shoshanah Naiman CHAPEL HILL North Carolina 27517 US 7/25/12
Paula Sharp Cary North Carolina 27519 US 8/22/12
Tara Bastek Raleigh North Carolina 27615 US 7/31/12
Gina Young Raleigh North Carolina 27615 US 7/31/12
Nancy McGilvary Durham North Carolina 27705 US 10/25/12
Louise Baraw Southern Shores North Carolina 27949 US 8/2/12
Nathalie Fabbricatore Cornelius North Carolina 28031 US 7/25/12
shanna warren Gastonia North Carolina 28054 US 10/21/12
Alana Cox Monroe North Carolina 28110 US 7/31/12
Elizabeth teeter fayetteville North Carolina 28312 US 10/20/12
Rob Gerardi Fayetteville North Carolina 28314 US 10/19/12
nancy holland Aberdeen North Carolina 28315 US 9/11/12
christina santos Hope Mills North Carolina 28348 US 7/31/12
shedy berrios jacksonville nc North Carolina 28540 US 7/13/12
Tameira Taylor Snow Hill North Carolina 28580 US 10/21/12
Stacy Knight Winterville North Carolina 28590 US 7/13/12

Tawnya Reynolds Moosup Connecticut 6354 US 7/25/12
kate day Stonington Connecticut 6355 US 9/6/12
kate day mystic Connecticut 6355 US 9/6/12
Phillip Day Mystic Connecticut 6355 US 9/6/12
william thomas niantic Connecticut 6357 US 7/28/12
Heather Fonner Preston City Connecticut 6365 US 7/25/12
Kimberly Leonard Plainfield Connecticut 6374 US 7/26/12
Nina S Ansonia Connecticut 6401 US 7/26/12
Jamesd McCoy Beacon Falls Connecticut 6403 US 8/22/12
Dawn Dittberner Branford Connecticut 6405 US 8/22/12
Valerie Strange Cheshire Connecticut 6410 US 8/22/12
Sheila Pulaski Cheshire Connecticut 6410 US 8/22/12
Lisa Rosenfield Clinton Connecticut 6413 US 7/24/12
Ellen Lowe Clinton Connecticut 6413 US 8/22/12
Adam Rettig Colchester Connecticut 6415 US 7/24/12
ian hawes Colchester Connecticut 6415 US 7/25/12
Joan Levy Hepburn Killingworth Connecticut 6419 US 8/22/12
Jane Marolda (Simmons) Salem Connecticut 6420 US 9/20/12
Caitlin Parker Durham Connecticut 6422 US 8/3/12
Richard Lammlin East Haddam Connecticut 6423 US 7/26/12
Judith Simmons Essex Connecticut 6426 US 9/9/12
Hristina Borisova Harmanli 6450 Bulgaria 9/1/12
Kellie Hougasian Middletown Connecticut 6457 US 7/28/12
christine penney Middletown Connecticut 6457 US 9/6/12
Kim Sussman Newtown Connecticut 6470 US 8/22/12
heli GAZOLI NEWTOWN Connecticut 6470 US 10/20/12
Penny Michaud Old Saybrook Connecticut 6475 US 10/3/12
Jennifer Gowen Southbury Connecticut 6488 US 8/22/12
Valerie Rutledge Southbury Connecticut 6488 US 8/22/12
Amanda Lee Southbury Connecticut 6488 US 8/22/12
Karen Fimmano Southbury Connecticut 6488 US 8/22/12
Carolyn Windover Loudonville New York 6488 US 8/22/12
melissa windover Southbury Connecticut 6488 US 8/22/12
Laura Araujo Southbury Connecticut 6488 US 8/22/12
Aggie Karich Southbury Connecticut 6488 US 8/22/12
Robin Calvert Southbury Connecticut 6488 US 8/22/12
Marge Mullen Southbury Connecticut 6488 US 8/22/12
Michelle Doyle Southbury Connecticut 6488 US 8/22/12
Marianne Pendergast Southbury Connecticut 6488 US 8/22/12
Erika Fry Southbury Connecticut 6488 US 8/22/12
JoAnn Witek Southbury Connecticut 6488 US 8/22/12
Susan DeWitt Southbury Connecticut 6488 US 8/22/12
Kathy Brush Southbury Connecticut 6488 US 8/22/12
Christine Bruce Southbury Connecticut 6488 US 8/22/12
Bonnie Mather Southbury Connecticut 6488 US 8/22/12
Frances Tepperman Southbury Connecticut 6488 US 8/22/12
Donna Matula Southbury Connecticut 6488 US 8/22/12
M Albino Southbury Connecticut 6488 US 8/22/12
Bethany Stango Southbury Connecticut 6488 US 8/22/12
Tara Tomas Southbury Connecticut 6488 US 8/22/12
Michele Pangle Southbury Connecticut 6488 US 8/22/12
Amanda Wicel Southbury Connecticut 6488 US 8/22/12
Dorie Kelly Southbury Connecticut 6488 US 8/22/12
Sandra Hall Southbury Connecticut 6488 US 8/22/12

M Skinger Southbury Connecticut 6488 US 8/22/12
Tucker Gowen Southbury Connecticut 6488 US 8/22/12
Candace Platt Southbury Connecticut 6488 US 8/22/12
Martina Smelsberg Southbury Connecticut 6488 US 8/22/12
Heather Salzo Southbury Connecticut 6488 US 8/22/12
Paula Manning Southbury Connecticut 6488 US 8/22/12
sue cummings Southbury Connecticut 6488 US 8/22/12
Barbara m southbury Connecticut 6488 US 8/22/12
Jennifer Wilson Southbury Connecticut 6488 US 8/22/12
Katie Slawitschek Southbury Connecticut 6488 US 8/22/12
Nancy Kowalski Southbury Connecticut 6488 US 8/22/12
PENNY MALONEY SOUTHBURY Connecticut 6488 US 8/22/12
dawn Kowalski Southbury Connecticut 6488 US 8/22/12
Faith Clifford southbury Connecticut 6488 US 8/22/12
Tami Wityak Southbury Connecticut 6488 US 8/22/12
Diana Cincogrono Southbury Connecticut 6488 US 8/22/12
Deirdre Johnson Southbury Connecticut 6488 US 8/23/12
Keith Frering Southbury Connecticut 6488 US 8/23/12
Amy King Southbury Connecticut 6488 US 8/23/12
Maria Hornak-Houle Southbury Connecticut 6488 US 8/23/12
Kathleen Bragg Southbury Connecticut 6488 US 8/23/12
Megan Beecher Southbury Connecticut 6488 US 8/23/12
Judy York Southbury Connecticut 6488 US 8/24/12
Heidi Kossakowski Southbury Connecticut 6488 US 8/24/12
Andrew Manville Kaphaem Southbury Connecticut 6488 US 10/20/12
Linda Manville-Kaphaem southbury Connecticut 6488 US 10/20/12
Leigh Pechillo Southington Connecticut 6489 US 7/26/12
Meredith Menton Southington Connecticut 6489 US 8/24/12
Karen Hedberg Southington Connecticut 6489 US 9/14/12
Katharine Eglee Wallingford Connecticut 6492 US 7/26/12
Marley Anderson Wallingford Connecticut 6492 US 8/23/12
John Hay New Haven Connecticut 6511 US 8/3/12
J. Wellington West Haven Connecticut 6516 US 7/25/12
Roxanne Luciani Woodbridge Connecticut 6525 US 8/22/12
marie murgatroyd trumbull Connecticut 6611 US 8/22/12
Susan Neil Trumbull Connecticut 6611 US 8/22/12
Nancy Milewski Trumbull Connecticut 6611 US 8/22/12
john fox trumbull Connecticut 6611 US 8/22/12
Tamara Woodmansee Trumbull Connecticut 6611 US 9/2/12
Tara Navara Stratford Connecticut 6614 US 7/25/12
Justin Benoit WATERBURY Connecticut 6704 US 10/20/12
Samantha Fernandes Waterbury Connecticut 6705 US 8/6/12
Marlene Longo Waterbury Connecticut 6705 US 8/22/12
Lillian Johnson Waterbury Connecticut 6708 US 7/26/12
Jamie Fortin Waterbury Connecticut 6708 US 7/28/12
april strang waterbury Connecticut 6708 US 8/22/12
Brooke noreikis wolcott Connecticut 6716 US 8/22/12
Nancy N wolcott Connecticut 6716 US 8/26/12
Scott Savner behlehem Connecticut 6751 US 7/25/12
Jessica Yagid Gaylordsville Connecticut 6755 US 7/25/12
Michael Yagid Gaylordsville Connecticut 6755 US 7/25/12
Nancy-Ellen Sexton Gaylordsville Connecticut 6755 US 8/22/12
Laura Mazeika Middlebury Connecticut 6762 US 8/22/12
Nicole Kett Middlebury Connecticut 6762 US 8/22/12

Sarah Proulx Middlebury Connecticut 6762 US 8/22/12
Chris Mulhall Middlebury Connecticut 6762 US 8/22/12
Justin Ouellette Middlebury Connecticut 6762 US 8/22/12
Melanie Butler Middlebury Connecticut 6762 US 8/22/12
Tyler Anderson Middlebury Connecticut 6762 US 8/22/12
AJ Paolino Middlebury Connecticut 6762 US 8/22/12
Griffin Blazi Middlebury Connecticut 6762 US 8/22/12
Mary Ragonesi Middlebury Connecticut 6762 US 8/22/12
Jennifer Bona Middlebury Connecticut 6762 US 8/22/12
Jessica Ouellette Middlebury Connecticut 6762 US 8/22/12
Maty Tesch Middlebury Connecticut 6762 US 8/22/12
Casey Longo Middlebury Connecticut 6762 US 8/22/12
Sandra Lavallee Middlebury Connecticut 6762 US 8/22/12
Lisa Jewell Middlebury Connecticut 6762 US 8/22/12
Zachary Bona Middlebury Connecticut 6762 US 8/22/12
Robert Bona Middlebury Connecticut 6762 US 8/22/12
Kathy Bona Middlebury Connecticut 6762 US 8/22/12
Christine Cooke MIDDLEBURY Connecticut 6762 US 8/22/12
Rebecca Schneider Middlebury Connecticut 6762 US 8/22/12
Erin Hawker Middlebury Connecticut 6762 US 8/22/12
Barbara Cook Middlebury Connecticut 6762 US 8/22/12
Amanda Hermonot Middlebury Connecticut 6762 US 8/22/12
Cameron Cook Middlebury Connecticut 6762 US 8/22/12
Susan Ubaldi Middlebury Connecticut 6762 US 8/23/12
sarah anderson middlebury Connecticut 6762 US 8/28/12
Lisa Paola Middlebury Connecticut 6762 US 9/1/12
Eileen Mariano Naugatuck Connecticut 6770 US 8/23/12
Tamara Grabner New Milford Connecticut 6776 US 8/22/12
Elizabeth Maker New Milford Connecticut 6776 US 8/23/12
Jennifer Cathcart Oakville Connecticut 6779 US 8/22/12
Pat Marsden Oakville Connecticut 6779 US 8/22/12
Abigail Parker South Kent Connecticut 6785 US 8/3/12
Heather Patchell Thomaston Connecticut 6787 US 8/22/12
Amanda Hill Washington depot Connecticut 6794 US 8/22/12
Amanda Hill Washington Depot Connecticut 6794 US 8/22/12
Rosemary Adams Watertown Connecticut 6795 US 8/23/12
Jim DeMarest watertown Connecticut 6795 US 8/26/12
Susan Vitone Watertown Connecticut 6795 US 9/13/12
D Frost Woodbury Connecticut 6798 US 8/22/12
Tiffany Cooper Woodbury Connecticut 6798 US 8/22/12
James Cipriano Woodbury Connecticut 6798 US 8/22/12
Tim Tremaglio Bookfield Connecticut 6804 US 8/22/12
Christine Sloan Brookfield Connecticut 6804 US 8/22/12
Michelle Behling Brookfield Connecticut 6804 US 8/22/12
Tom Burkhart brookfield Connecticut 6804 US 8/22/12
Cindy p Stimmel Brookfield Connecticut 6804 US 8/23/12
Stacey Bielert Danbury Connecticut 6811 US 8/22/12
Mary Kate Sullivan New fairfield Connecticut 6812 US 8/24/12
Hester Smith Darien Connecticut 6820 US 8/25/12
Christina Fernandez Ridgefield Connecticut 6877 US 7/27/12
Robert Dolliver Westport Connecticut 6880 US 9/10/12
Killian Jampierre Redding Connecticut 6896 US 9/12/12
Judith Kaufman Stamford Connecticut 6902 US 7/31/12
Jennifer Cheng Stamford Connecticut 6902 US 10/20/12

Regina Plumb Stamford Connecticut 6905 US 7/27/12
Roz S Fairview New Jersey 7022 US 10/20/12
Monica Betancur Kenilworth New Jersey 7033 US 9/2/12
Alicia Colella Lake Hiawatha New Jersey 7034 US 10/21/12
Nikki G. Maplewood New Jersey 7040 US 10/20/12
Mary lee Joseph Montclair New Jersey 7042 US 8/3/12
Bethany Harris-Cooper 7050 Australia 10/21/12
alanna bianculli Parsippany New Jersey 7054 US 8/14/12
Victoria MacStoker Scotch Plains New Jersey 7076 US 10/21/12
Anschel Schaffer-Cohen Jersey City New Jersey 7302 US 10/20/12
Amy Lalonde Mahwah New Jersey 7430 US 7/24/12
Vicky Sedano Paterson New Jersey 7503 US 8/30/12
Jeff Mach Hackensack New Jersey 7601 US 10/20/12
Jacqueline Hart Little Ferry New Jersey 7643 US 10/20/12
Karin Tsokanos Oradell New Jersey 7649 US 8/22/12
Daniel Holder Freehold New Jersey 7728 US 7/27/12
Kelley Taptich Freehold New Jersey 7728 US 8/23/12
Caryn Fins Basking Ridge New Jersey 7920 US 7/25/12
Elizabeth Gardner Bedminster New Jersey 7921 US 7/29/12
Brigitta Schmid Cape Town 7925 South Africa 8/3/12
Amanda Alfano Millington New Jersey 7946 US 10/9/12
Jack Carman Medford New Jersey 8055 US 8/20/12
Thea Mariano Mullica Hill New Jersey 8062 US 8/23/12
Erica Fitzpatrick Jackson New Jersey 8527 US 7/12/12
Abby Jaroslow Pennington New Jersey 8534 US 8/18/12
Michael Strauss Princeton New Jersey 8540 US 8/18/12
C Lester Monroe Twp. New Jersey 8831 US 8/30/12
Valerie Leonard monroe New Jersey 8831 US 9/20/12
Kelly Vanasse Martinsville New Jersey 8836 US 8/23/12
Jacqueline Margarett Lang Dunedin Alabama 9012 US 10/20/12
Serena Van Rensselaer New York New York 10002 US 8/20/12
Nicole Tingir New York New York 10003 US 7/13/12
M Raffalli New York New York 10003 US 7/29/12
Ben Elgart New York New York 10003 US 9/29/12
Georgia Seamans NY New York 10012 US 8/18/12
Leslie Byron New York New York 10013 US 8/7/12
Lori Isaac New York New York 10016 US 7/25/12
Zachary Baer New York New York 10019 US 7/13/12
Jane Rosen MD/PhD New York New York 10021 US 10/20/12
Julie Boor New York New York 10023 US 7/13/12
David Weinstein New York New York 10023 US 10/24/12
Jane Medeiros New York New York 10023 US 10/24/12
kaitlin fine New York City New York 10025 US 7/13/12
francine matalon-degni NY New York 10025 US 8/5/12
robert degni new york New York 10025 US 8/5/12
Melissa Kleinman New York New York 10065 US 7/27/12
Edgenie Rice New York New York 10128 US 8/23/12
arlene fried Staten Island New York 10302 US 10/20/12
Sara Feldman Staten Island New York 10304 US 7/24/12
Rebecca Lloyd Carmel New York 10512 US 8/3/12
Lauren Brown Elick Chappaqua New York 10514 US 7/24/12
Damian Kennedy Mahopac New York 10541 US 8/22/12
Sue Nestro Millwood New York 10546 US 8/22/12
John Raffalli Pleasantville New York 10570 US 7/29/12

Kaitlyn Brock cincinnati Ohio 45243 US 8/1/12
KathleenThis Decker Dayton Ohio 45410 US 10/20/12
Trishia White Kettering Ohio 45440 US 10/20/12
Sara Ney Indianapolis Indiana 46224 US 10/20/12
Jenelle Dorner Bloomington Indiana 47401 US 7/26/12
Clifton Cummings Terre Haute Indiana 47807 US 10/20/12
Louise Caldwelle Birmingham Michigan 48009 US 8/23/12
Jana Von Stein Ann Arbor Michigan 48109 US 8/3/12
chrystal white Wyandotte Michigan 48192 US 8/22/12
Heather Mayo Waterford Michigan 48328 US 7/26/12
Nellda Walters Farmington Hills Michigan 48336 US 8/20/12
Joan Toth Swartz Creek Michigan 48473 US 8/22/12
DD Unsel Flint Michigan 48504 US 10/21/12
Andrea Jenkins Midland Michigan 48641 US 10/21/12
Michael Steele Morrice Michigan 48857 US 8/15/12
Mary Turcotte Williamston Michigan 48895 US 10/21/12
ashley hanson buchanan Michigan 49107 US 7/13/12
Phyllis Betz Grant Michigan 49327 US 8/22/12
Sara Vork Hudsonville Michigan 49426 US 9/11/12
Chuck Roberts Kentwood Michigan 49548 US 10/20/12
Veronica Lane Sault Sainte Marie Michigan 49783 US 8/22/12
Christi McKeag Ankeny Iowa 50023 US 7/26/12
Shannon Arbuckle Urbandale Iowa 50323 US 8/23/12
Rachel Scott Whitewater Wisconsin 53190 US 8/1/12
shohreh & Robert Moldenhauer Middleton Wisconsin 53562 US 9/4/12
Audrey Van Dam New Richmond Wisconsin 54017 US 10/21/12
Kimberly Gruttadaurio Manitowoc Wisconsin 54220 US 10/21/12
Heather Rajotte Eau Claire Wisconsin 54703 US 10/20/12
Amber Heller Altoona Wisconsin 54720 US 10/21/12
Michelle Anderson-Weierbach Spooner Wisconsin 54801 US 10/21/12
Jessica Wheaton Menasha Wisconsin 54952 US 8/30/12
Beth Ullem Neenah Wisconsin 54956 US 8/13/12
theresa hein Stanton Minnesota 55018 US 7/29/12
Melissa Jansma Lakeville Minnesota 55044 US 7/26/12
Kaytie Pieper Inver Grove Heights Minnesota 55077 US 7/27/12
Kari Ulrich Oak Park Heights Minnesota 55082 US 7/25/12
Bonita Hill Chaska Minnesota 55318 US 8/6/12
Jennifer Burress Minneapolis Minnesota 55407 US 8/22/12
kerri thornton parkers prairie Minnesota 56361 US 9/17/12
Amanda Ryherd Mitchell South Dakota 57301 US 10/21/12
Yvette Leidorf Helena Montana 59601 US 10/20/12
Stephanie Sisk Stevensville Montana 59870 US 9/11/12
Amelia Simmons Hurt Glencoe Illinois 60090 US 8/17/12
Therese Schmieg Wilmette Illinois 60091 US 8/18/12
Cailee Sallee Elgin Illinois 60120 US 7/24/12
Caitlin Kozlowski Forest Park Illinois 60130 US 7/25/12
Alysa Guyer St. Charles Illinois 60174 US 10/21/12
Bill Babiarz Wheaton Illinois 60187 US 9/11/12
Maureen Lynch Evanston Illinois 60201 US 8/2/12
Stephanie Mixen Lockport Illinois 60441 US 10/21/12
Noelle Polk Westmont Illinois 60559 US 8/22/12
Bucky Polk Westmont Illinois 60559 US 8/22/12
Beth De La Cruz Naperville Illinois 60564 US 7/26/12
Pat Senerchia Chicago Illinois 60608 US 8/30/12

Melissa Jefferies Land O Lakes Florida 34638 US 8/2/12
jennifer rains New Port Richey Florida 34654 US 8/2/12
Alice LaBeau Port Richey Florida 34668 US 8/24/12
_ñule Erdemir ü_stanbul 34744 Turkey 9/23/12
Anne Ring Saint Cloud Florida 34772 US 8/22/12
Tricia Carnovali windermere Florida 34786 US 9/11/12
Donita Enright PALM CITY Florida 34990 US 7/25/12
jeremy snyder pelham Alabama 35124 US 7/31/12
Haley Snyder Pelham Alabama 35124 US 7/31/12
Brittney Lake Birmingham Alabama 35205 US 10/20/12
Judith Dugan birmingham Alabama 35214 US 9/13/12
Stephanie Fitzpatrick Tuscaloosa Alabama 35401 US 8/22/12
Steve Collins Huntsville Alabama 35899 US 10/21/12
Diane Bennardo Spanish Fort Alabama 36527 US 7/24/12
stephanie kennison Clarksville Tennessee 37042 US 7/27/12
Cathy Smotherman College Grove Tennessee 37046 US 8/22/12
ANNE GIELISSE FRANKLIN Tennessee 37064 US 8/27/12
SUZANNE MATTOX JOHNSON CITY Tennessee 37601 US 8/7/12
Robert Oakes Collierville Tennessee 38017 US 8/2/12
Leo Chang Memphis Tennessee 38112 US 7/24/12
Bryan Lemieux Memphis Tennessee 38125 US 10/5/12
Steve Brown Germantown Tennessee 38139 US 8/14/12
Willow Woods Martin Tennessee 38237 US 10/21/12
Laura P. Keeton Bruceton Tennessee 38317 US 8/30/12
Laura Keeton Bruceton Tennessee 38317 US 9/1/12
Rebecca Mattox Byhalia Mississippi 38611 US 8/3/12
Carra Powell Horn Lake Mississippi 38637 US 7/27/12
Erin Ayscue Clinton Mississippi 39056 US 8/2/12
Horace McMillon Jackson Mississippi 39211 US 8/3/12
Georgina Barnard Vine Grove Kentucky 40175 US 8/2/12
Aaron Calhoun Louisville Kentucky 40245 US 7/26/12
Barbara Pruitt Georgetown Kentucky 40324 US 8/23/12
Jessica Morgan Mt Sterling Kentucky 40353 US 8/2/12
Margaret Moody Winchester Kentucky 40391 US 8/17/12
Jessicah Hohman lexington Kentucky 40502 US 10/21/12
Tracey Melin Lexington Kentucky 40505 US 8/22/12
faye godbold Lexington Kentucky 40505 US 10/20/12
Cher Villalobos Lexington Kentucky 40510 US 8/30/12
Andrew Hampton Barbourville Kentucky 40906 US 10/20/12
bethany hensley HEIDRICK Kentucky 40949 US 10/21/12
Jamie Barnes Elizabethtown Kentucky 42701 US 8/2/12
Matthew Barnes Elizabethtown Kentucky 42701 US 8/3/12
Robin Ouellette Johnstown Ohio 43031 US 9/9/12
"Jerry Smith, FASLA" Columbus Ohio 43206 US 8/17/12
Brendon Fox COLUMBUS Ohio 43215 US 10/21/12
Sara Roth TOLEDO Ohio 43613 US 8/22/12
Kalyn Peck Medina Ohio 44256 US 10/20/12
Kristen spyker Wadsworth Ohio 44281 US 7/31/12
Heather Piatt Canton Ohio 44708 US 8/30/12
ANA ISABEL MARCHAL MARTINEZ Toledo 45007 Spain 7/12/12
Carianne Fearn Hamilton Ohio 45011 US 8/22/12
Mary mainwaring Fairfield Ohio 45014 US 8/22/12
michael marshall West Chester Ohio 45069 US 8/22/12
melissa gregory cincinnati Ohio 45205 US 10/21/12

Allison Fonzo Altamonte Springs Florida 32714 US 8/4/12
Marcell DeMeo Deland Florida 32724 US 7/25/12
Linda Kraus Mount Dora Florida 32757 US 7/26/12
Kristin Karnecki Orlando Florida 32817 US 7/26/12
Pablo L. Torres Orlando Florida 32822 US 8/23/12
Eriane Hiorns Orlando Florida 32835 US 10/20/12
Harry and Kathy Brownfield Merritt Island Florida 32953 US 8/16/12
Karoline Jimenez Dania Beach Florida 33004 US 7/31/12
Leena Davis Pompano Florida 33060 US 8/30/12
Jason Adams Pompano Beach Florida 33064 US 7/31/12
Myra Gurvis Pompano Beach Florida 33065 US 8/29/12
Angela Ford North Lauderdale Florida 33068 US 7/27/12
George Ruddy Fort Lauderdale Florida 33308 US 8/7/12
Darla Haskell Fort Lauderdale Florida 33309 US 7/26/12
Marylee Optekar Fort Lauderdale Florida 33315 US 8/30/12
noel reis tamarac Florida 33319 US 8/22/12
Eileen Parente Plantation Florida 33323 US 8/30/12
miguel dip davie Florida 33324 US 8/23/12
Alexandra Castellanos Weston Florida 33326 US 9/4/12
Katherine Viola Cooper City Florida 33328 US 10/21/12
Gayle Johnston Palm Beach Gardens Florida 33418 US 7/30/12
Angela Grimes Boynton Beach Florida 33436 US 10/20/12
Keith Hammond Delray Beach Florida 33445 US 10/3/12
elizabeth white Brandon Florida 33510 US 8/2/12
audrey moore Tampa Florida 33602 US 7/31/12
Bradford Patrick Tampa Florida 33604 US 8/2/12
Amy Lee Tampa Florida 33604 US 8/2/12
Helen Harmon Tampa Florida 33604 US 8/2/12
Sara Delli Fraine Tampa Florida 33615 US 8/2/12
Becky Becky FL Florida 33647 US 8/20/12
Andrea Smith St Petersburg Florida 33711 US 9/15/12
Julius Cruise Clearwater Florida 33761 US 8/2/12
Anne Cruise Clearwater Florida 33761 US 8/2/12
William Catton Largo Florida 33771 US 8/4/12
maureen gallagher dever largo Florida 33774 US 8/22/12
Shirley Martin Lakeland Florida 33803 US 8/3/12
Michelle Crockett Lakeland Florida 33803 US 8/6/12
Gregory Esteve Lake Wales Florida 33898 US 7/27/12
Kathleen Muronda "Ft. Myers," Florida 33908 US 8/4/12
Nancy Curtin Fort Myers Florida 33908 US 8/22/12
Sara Stevens Cape Coral Florida 33909 US 9/13/12
Marianne Nyhan Ravenna Sanibel Florida 33957 US 8/18/12
Bonnie Scheurer Naples Florida 34103 US 9/28/12
Amy Caudill Naples Florida 34110 US 8/22/12
Michelle Kamen Naples Florida 34119 US 7/26/12
Jennie West Naples Florida 34119 US 8/3/12
Fran McAlister Bonita springs Florida 34135 US 8/6/12
Patricia Brand Marco Island Florida 34145 US 10/15/12
Donna Feathers Parrish Florida 34219 US 7/31/12
Courtney Branch Sarasota Florida 34233 US 10/21/12
Marie Wood Nokomis Florida 34275 US 8/2/12
Fran Gregory North Port Florida 34286 US 8/6/12
Jerry Gregory North Port Florida 34286 US 8/6/12
Carole Kasper Weeki Wachee Florida 34613 US 7/13/12

Jennifer Wright BOONE North Carolina 28607 US 10/20/12
Kristin Smith Arden North Carolina 28704 US 10/21/12
Andrew Atherton Candler North Carolina 28715 US 8/2/12
Teresa Bivins Marion North Carolina 28752 US 8/6/12
Adriane Ledford Marion North Carolina 28752 US 8/7/12
Lloyd Wallace Lexington South Carolina 29072 US 10/24/12
Jacqueline Williams Lexington South Carolina 29073 US 7/24/12
Rachel Snowden Columbia South Carolina 29205 US 9/19/12
Mark Scheurer Charleston South Carolina 29401 US 7/31/12
Bill Hayes Charleston South Carolina 29407 US 10/21/12
Jordan Miraglia Charleston South Carolina 29412 US 7/13/12
Misty Sanders North Charleston South Carolina 29420 US 8/30/12
Jessica LeBlanc Goose Creek South Carolina 29445 US 8/1/12
Kandace Tanner Conway South Carolina 29526 US 7/26/12
Cathy Bacon Easley South Carolina 29642 US 8/1/12
Terisa Brakefield Rock Hill South Carolina 29730 US 7/27/12
Susan Paltrineri Auburn Georgia 30011 US 8/7/12
Meghan Tracewski Decatur Georgia 30033 US 8/1/12
Pam Roe Marietta Georgia 30062 US 7/24/12
Cam Villar Marietta Georgia 30062 US 8/17/12
Brian Stewart acworth Georgia 30101 US 10/5/12
Christin Collins Atlanta Georgia 30306 US 8/3/12
Emily Hayden Atlanta Georgia 30318 US 7/24/12
Elizabeth Curry Atlanta Georgia 30319 US 8/25/12
Stacia Sexton Atlanta Georgia 30324 US 8/22/12
Michael Walden Atlanta Georgia 30342 US 10/20/12
Shelina Merali Atlanta Georgia 30345 US 7/24/12
A Friend Who Likes USA Georgia 30530 US 8/3/12
Jill Bond Peachtree City Georgia 30629 US 8/22/12
geoge brooks washington Georgia 30673 US 8/17/12
Susan Davis Dalton Georgia 30720 US 7/27/12
Emily Wetteland Harrison Georgia 31035 US 8/1/12
Tracy Voyles Shady Dale Georgia 31085 US 10/20/12
Kimberly Hayes Richmond Hill Georgia 31324 US 8/11/12
Nadia Torred saint marys Georgia 31558 US 10/20/12
Kate Rosser St Marys Georgia 31558 US 10/20/12
Simon Shimshon Rubin Haifa 31905 Israel 7/31/12
Christine Shepard Branford Florida 32008 US 8/3/12
David Shepard Branford Florida 32008 US 8/3/12
Bruce Harkness saint augustine Florida 32086 US 7/29/12
carl Warner Daytona Beach Florida 32118 US 9/15/12
David Taylor port orange Florida 32128 US 8/4/12
Shannan Wierzbicki Port Orange Florida 32129 US 8/4/12
Carol Saez "The villages," Florida 32162 US 8/4/12
Pamela Urciuolo- Hurd The Villages Florida 32162 US 8/18/12
Mary-Alice Wildasin The Villages Florida 32162 US 8/18/12
Zack Johnson Jacksonville Florida 32207 US 7/27/12
Danielle Weitzel Jacksonville Florida 32216 US 10/21/12
Dana Bliss Jacksonville Florida 32224 US 10/4/12
marsha farnham st johns Florida 32259 US 8/6/12
Natalia Jimenez Tallahassee Florida 32301 US 10/20/12
thomas campbell Pensacola Florida 32514 US 8/2/12
kristin clark Pensacola Florida 32514 US 8/2/12
betty williams archer Florida 32618 US 9/13/12

Sam Volchenboum Chicago Illinois 60637 US 9/6/12
Barry McDewell Gibson City Illinois 60936 US 9/19/12
Jessica Lindberg Caledonia Illinois 61011 US 7/31/12
Kathleen Bean Highland Illinois 62249 US 7/31/12
Andrew Murtha Clayton Missouri 63105 US 7/13/12
Emilie Overberg St Louis Missouri 63123 US 8/30/12
Elizabeth Perry St Charles Missouri 63301 US 7/27/12
Laura Routh Hannibal Missouri 63401 US 7/13/12
Julie Ayers Kirksville Missouri 63501 US 7/13/12
melissa miller Milan Missouri 63556 US 7/13/12
Tiffany Miller Malden Missouri 63863 US 10/20/12
Kelly Taula Independence Missouri 64055 US 7/13/12
Pauletta Feagans Indepencence Missouri 64055 US 8/30/12
Sarah Brozovich Independence Missouri 64057 US 8/2/12
Rebekah Schreckenghaust Lees summit Missouri 64081 US 8/30/12
Jennifer Linebarger Kansas City Missouri 64108 US 8/1/12
Courtney Campbell Kansas City Missouri 64118 US 7/26/12
Melissa Manthie Kansas City Missouri 64131 US 7/26/12
Amanda Johnston Kansas City Missouri 64151 US 7/13/12
Karina Ortiz Kansas City Missouri 64151 US 7/13/12
Jake Mazeitis Kansas CIty Missouri 64156 US 7/25/12
Bethany Davis Kansas City Missouri 64157 US 7/13/12
David Miller Saint Jospeh Missouri 64503 US 7/13/12
Bobbi Keller Saint Joseph Missouri 64506 US 7/13/12
jennifer oshel Trenton Missouri 64683 US 7/13/12
Caina Chapman Trenton Missouri 64683 US 7/13/12
Hannah Bartholomew Noel Missouri 64854 US 8/31/12
Julie Colvin Lawrence Kansas 66044 US 7/26/12
Teri Chrislip Olathe Kansas 66061 US 7/25/12
Debby Brookstein Olathe Kansas 66061 US 8/30/12
Mark Brookstein Olathe Kansas 66061 US 8/30/12
Megen Stringer-Horpinjuk Kansas City Kansas 66106 US 10/5/12
Christine Panus Overland Park Kansas 66223 US 10/5/12
Lynette Clemons Wichita Kansas 67208 US 10/3/12
Nicole Chramosta Omaha Nebraska 68137 US 8/24/12
AMAL BEJJANI LINCOLN Nebraska 68505 US 8/16/12
Niki Mendow Covington Louisiana 70433 US 8/6/12
Tammie Landry Covington Louisiana 70433 US 9/13/12
P. Nicole Primeaux Kaplan Louisiana 70548 US 10/21/12
Anna Varnado Baton Rouge Louisiana 70816 US 7/25/12
Hillary Kleck North Little Rock Arkansas 72117 US 8/30/12
Amanda Rodgers Little Rock Arkansas 72201 US 10/5/12
Tammy Ross Norman Oklahoma 73026 US 9/11/12
Kenneth Meador Moore Oklahoma 73160 US 7/30/12
Renata S Richardson Texas 75081 US 9/13/12
Karen Polvinen Plano Texas 75093 US 9/13/12
Courtney Hambright Cedar Hill Texas 75104 US 7/27/12
James Moore Dallas Texas 75225 US 7/31/12
Sofie Hall Uppsala 75442 Sweden 10/21/12
Lisa Ricketts Texarkana Texas 75501 US 8/9/12
Carey Clark Tyler Texas 75707 US 8/3/12
Natalie Dossey Arlington Texas 76018 US 8/2/12
Amber Hilliard Keene Texas 76059 US 8/18/12
Jim Briggs Belton Texas 76513 US 8/31/12

Jennifer Burk Ft.Hood Texas 76544 US 10/20/12
Sarah Downs Waco Texas 76710 US 8/1/12
Ann Westby Houston Texas 77007 US 9/8/12
Suzanne Sippel Houston Texas 77019 US 7/25/12
Clint Cunningham Houston Texas 77057 US 7/31/12
Leann Haas Houston Texas 77057 US 9/11/12
Julie Nicholson Houston Texas 77096 US 8/3/12
Erica Eaton Spring Texas 77379 US 9/28/12
Kelly Fox Spring Texas 77388 US 8/3/12
Naomi Sachs College Station Texas 77840 US 8/16/12
Tamara Masters New Braunfels Texas 78130 US 10/20/12
Amy Pratt Canyon Lake Texas 78133 US 7/13/12
Bailey McCracken San Antonio Texas 78232 US 8/22/12
Marilyn Sintes san Antonio Texas 78249 US 10/20/12
Stephanie Kincaid San Antonio Texas 78250 US 8/22/12
Sarah Berg Round Rock Texas 78665 US 8/2/12
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Maureen Foley Austin Texas 78713 US 8/3/12
Angela Carver ustin Texas 78741 US 8/17/12
RachaeL Howard Austin Texas 78745 US 9/1/12
Jessica Mosqueda Austin Texas 78745 US 9/12/12
Heather Ferguson Lubbock Texas 79407 US 7/31/12
Kathy Blattenberg Aurora Colorado 80016 US 8/22/12
Kelly Mayr Highlands Ranch Colorado 80129 US 7/25/12
Rupi Legha Denver Colorado 80211 US 7/25/12
Katy Hall Lakewood Colorado 80228 US 8/3/12
Seth Mukai Golden Colorado 80403 US 7/27/12
Joan Hutchinson Newell Evergreen Colorado 80439 US 7/29/12
jean-luc pelchat Firestone Colorado 80504 US 7/29/12
Julia Hefner Bayfield Colorado 81122 US 7/27/12
Wendy Pulkrabek Center Colorado 81125 US 8/30/12
Holly White Grand Junction Colorado 81501 US 9/11/12
Ashley Conklin Gypsum Colorado 81637 US 7/29/12
Jennifer Childers Buffalo Wyoming 82834 US 9/28/12
Rebecca Long Rock Springs Wyoming 82901 US 10/23/12
Cindy Keresztes Wilson Wyoming 83014 US 8/5/12
Kendra Golenor Boise Idaho 83646 US 7/26/12
Anita Yoder New Plymouth Idaho 83655 US 9/15/12
Darlan Burns Boise Idaho 83705 US 7/25/12
Kerry Leavell Boise Idaho 83713 US 7/25/12
Julia McAllister Boise Idaho 83713 US 7/25/12
Laurie Payne Alpine Utah 84004 US 9/2/12
Candice Gonzalez Draper Utah 84020 US 8/30/12
Melissa McKrola Heber City Utah 84032 US 8/30/12
Adrienne Knighton Orem Utah 84058 US 8/30/12
Jordan Ouderkirk Salt LAke City Utah 84103 US 9/28/12
Julie Slaugh Salt Lake City Utah 84109 US 8/22/12
Joyce Stout West valley Utah 84120 US 9/2/12
Amy Peedle Tremonton Utah 84337 US 8/6/12
Christie Winters Provo Utah 84604 US 8/30/12
Susan Record Provo Utah 84606 US 8/30/12
LeAnne Herdman Provo Utah 84606 US 8/30/12
Lynn Stallard Provo Utah 84606 US 8/30/12
Elizabeth Seager Provo Utah 84606 US 8/30/12

Hannah Stallard Provo Utah 84606 US 8/30/12
Justin Record Provo Utah 84606 US 9/1/12
Robert Ortiz Phoenix Arizona 85008 US 7/29/12
Emily Clyde Curtis Phoenix Arizona 85018 US 8/6/12
Leslie Gilbert Casa Grande Arizona 85122 US 7/25/12
robert gabriele mesa Arizona 85207 US 9/11/12
Joseph Trombley Chandler Arizona 85226 US 7/27/12
Karen Beddow Scottsdale Arizona 85260 US 8/22/12
Roxi Moore Tempe Arizona 85281 US 10/20/12
Randi Wyatt Tempe Arizona 85282 US 10/20/12
Sarah Hottel Bisbee Arizona 85603 US 10/21/12
BA Else Tucson Arizona 85750 US 7/25/12
Melody Bonilla Tucson Arizona 85756 US 7/26/12
Lauren Robinson Sedona Arizona 86336 US 8/23/12
Johanna Cooper Zuni New Mexico 87327 US 9/11/12
Cheryl Nelsen Santa Fe New Mexico 87501 US 7/30/12
nancy Chambers Santa Fe New Mexico 87501 US 8/17/12
Patricia Jenney Santa Fe New Mexico 87501 US 10/16/12
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Nancy Dickenson Santa Fe New Mexico 87506 US 7/30/12
Raquel Casillas Santa Fe New Mexico 87508 US 7/30/12
Sharon Morris Santa Fe New Mexico 87508 US 7/30/12
Alexis Higginbotham Santa Fe New Mexico 87508 US 7/30/12
Mary Sjoberg Santa Fe New Mexico 87508 US 8/2/12
Jane Engel Taos New Mexico 87571 US 8/17/12
Barbara Paul Taos New Mexico 87571 US 9/16/12
mary beth hanagan roswell New Mexico 88201 US 9/27/12
Cassandra Alejandro Alamogordo New Mexico 88310 US 7/27/12
Courtney Causey Henderson Nevada 89012 US 10/21/12
StepHanie Velilla Henderson Nevada 89074 US 7/29/12
Dan Sullivan Las Vegas Nevada 89143 US 9/16/12
Kevin Scales Las Vegas Nevada 89148 US 9/6/12
Brandi Richmond Reno Nevada 89509 US 8/30/12
Megan Wilder Los Angeles California 90006 US 10/20/12
Gabrielle P Los Angeles California 90017 US 7/25/12
Kelly Raila Los Angeles California 90019 US 10/20/12
Joel Collins Los Angeles California 90028 US 7/25/12
Kevin Varanai Los Angeles California 90028 US 8/22/12
Kelly Pratt Los Angeles California 90038 US 7/25/12
marlene breene Palos Verdes Estates California 90274 US 8/18/12
Cynthia Hartman Whittier California 90604 US 7/25/12
Natassia Stucka Santa Fe Springs California 90670 US 10/20/12
noelle morrison Lakewood California 90713 US 8/22/12
Amelia Esstee San Pedro California 90732 US 10/22/12
Heather Cleckler Long Beach California 90808 US 8/30/12
Kate Sharron Reseda California 91335 US 7/26/12
Annie Li Alhambra California 91803 US 9/21/12
Jennelyn Luna National City California 91950 US 7/25/12
danielle perkins spring valley California 91977 US 8/22/12
Diane Bock Encinitas California 92024 US 8/1/12
bob mcdowell lakeside California 92040 US 8/2/12
marie mckenna Lakeside California 92040 US 8/2/12
Cherie Devine Lakeside California 92040 US 8/3/12
Ron Martinez Ramona California 92065 US 9/29/12

Valerie Ugrinow San Diego California 92103 US 8/3/12
Elizabeth Herrington San Diego California 92108 US 8/2/12
val pleym Indio California 92201 US 8/2/12
Jessica Martinez El Centro California 92243 US 7/27/12
Clinton Neely colton California 92324 US 10/20/12
Jennifer Mccrary Redlands California 92373 US 10/21/12
Jonathon Showalter Temecula California 92591 US 10/20/12
Donald Salisbury Temecula California 92592 US 8/6/12
Jeannie Durian Irvine California 92618 US 8/2/12
David St. Jean Huntington Beach California 92647 US 7/25/12
Jessica Elisabeth Whittier California 92805 US 10/21/12
Lisa Dome Orange California 92869 US 8/22/12
Tara Cuff Corona California 92882 US 10/20/12
Nancy menefee ARVIN California 93203 US 8/30/12
Xondria Gaitan Hanford California 93230 US 7/27/12
Sophie Espinoza Lemoore California 93245 US 7/29/12
Janna Espinoza Salinas California 93907 US 7/28/12
Dana Eggett Monterey California 93940 US 8/30/12
"James Krossa, RN" Monterey California 93940 US 10/22/12
David Giver Pacific Grove California 93950 US 10/20/12
nancyjo nunez Sunnyvale California 94086 US 10/3/12
Strata Chalup Sunnyvale California 94089 US 10/22/12
Robert Holgate San Francisco California 94103 US 8/24/12
Susan George San Francisco California 94110 US 8/28/12
Todd Snyder San Francisco California 94115 US 7/25/12
Alvin Baum San Francisco California 94115 US 8/23/12
Marie Morrison Walnut Creek California 94595 US 8/18/12
Jean Pauline Oakland California 94602 US 8/3/12
Louise Dunlap Oakland California 94609 US 8/17/12
Aparna Krishnamoorthy Berkeley California 94703 US 9/18/12
Priscilla Thomas Berkeley California 94704 US 8/17/12
Clare Cooper Marcus Berkeley California 94705 US 8/17/12
Alison Sung Corte Madera California 94925 US 7/26/12
Marsha Grant Novato California 94947 US 8/18/12
Susan Whipple Casselman Brookdale California 95007 US 9/6/12
Valerie Strilko Campbell California 95008 US 10/21/12
Stephanie Miller Cupertino California 95014 US 8/27/12
Camden Drew Tausworthe Santa Clara California 95051 US 10/20/12
Patrick Salsbury Santa Cruz California 95060 US 10/20/12
Kenneth Garges Santa Cruz California 95060 US 10/22/12
Meagan Ingerman Santa Cruz California 95066 US 10/21/12
Jeff Hakanson Turlock California 95382 US 7/26/12
jillian foley Santa Rosa California 95404 US 7/13/12
sheila madden Santa Rosa California 95409 US 8/17/12
Pauline Olney Santa Rosa California 95409 US 9/27/12
Mara Lee Ebert Sonoma California 95476 US 8/30/12
Mark Francis Davis California 95616 US 8/20/12
Karan Hatzenbeler Rancho Cordova California 95670 US 8/17/12
Evelyn Street Elk Grove California 95758 US 8/30/12
Holly capelli Sacramento California 95838 US 7/26/12
Karen Green Honolulu Hawaii 96818 US 10/21/12
Sharon Slattery Beaverton Oregon 97006 US 8/30/12
Freya Poller Sandy Oregon 97055 US 10/21/12
Molly (Buhlman) Gearn Dundee Oregon 97115 US 8/8/12

Bodil Muller Hillsboro Oregon 97124 US 7/30/12
Shalee Hellman Lafayette Oregon 97127 US 8/30/12
Patty Cassidy Portland Oregon 97215 US 8/20/12
Cathy Frost Portland Oregon 97219 US 8/22/12
ashley Molinar Portland Oregon 97223 US 8/1/12
Lori Moseley Tigard Oregon 97224 US 7/31/12
Chelsie Lago tigard Oregon 97224 US 8/1/12
michaela clardy tigard Oregon 97224 US 8/1/12
Amalan Sunder Tigard 97224 Canada 8/1/12
Stephanie Crone Tigard Oregon 97224 US 8/1/12
Kelly Carson Portland Oregon 97224 US 8/2/12
Bethany Wilson Portland Oregon 97225 US 9/11/12
Elizabeth Parker Monmouth Oregon 97361 US 8/3/12
Nan Lanson Eugene Oregon 97403 US 10/21/12
Melissa Padgett Blachly Oregon 97412 US 10/20/12
michelle parkins Springfield Oregon 97477 US 8/17/12
Dawna Phillips coos bay Oregon 97702 US 8/31/12
Heather Mack Baker City Oregon 97814 US 10/20/12
nelli sudbrock La Grande Oregon 97850 US 8/30/12
Sally Ann penney Kirkland Washington 98033 US 8/7/12
Kathleen Grube Woodinville Washington 98077 US 8/17/12
Sunil Saluja Seattle Washington 98103 US 8/4/12
lori twietmeyer seattle Washington 98107 US 8/18/12
Mark Epstein Bainbridge Island Washington 98110 US 8/17/12
Bill Cooney Seattle Washington 98115 US 8/3/12
Amy Lewandowski Seattle Washington 98122 US 7/26/12
Anne-Marie Herron Seattle Washington 98136 US 8/16/12
brett herron Seattle Washington 98136 US 8/16/12
Betty Pouliot Sedro-Woolley Washington 98284 US 9/18/12
Ellen Dennis Sedro-Woolley Washington 98284 US 10/20/12
Stephanie Holloway Lacey Washington 98513 US 8/30/12
Jacob Bobay Vancouver Washington 98685 US 8/22/12
Cathi Lamoreux Spokane Washington 99223 US 8/18/12
jen vidmar Kennewick Washington 99338 US 10/20/12
Sheila Burke Anchorage Alaska 99508 US 10/20/12
Hilda Jordan Anchorage Alaska 99510 US 8/19/12
Emily Kalafarski Anchorage Alaska 99515 US 9/13/12
Emily Mleko Eagle River Alaska 99577 US 7/25/12
Leah Stoehr Eagle River Alaska 99577 US 9/1/12
Maggie Fuger Wasilla Alaska 99654 US 9/28/12
Roger Snyder Lillington North Carolina 127546 US 8/1/12
Sabrina Dawn Tan Singapore 560414 560414 Singapore 10/21/12
Stanciu Cristina Emilia Galati 800475 Romania 10/5/12
Elise Solloway MANCHESTER New Hampshire 31095958 US 7/27/12
Jessica varey Beaconsfield h9w1s5 Canada 10/20/12
Nancy Grimaldi Westfield MA 01085-4135 US 9/17/12
Laura Todd Lunenburg MA 01462-1918 US 7/25/12
Sara Arnold Clinton MA 01510-1120 US 10/20/12
Alex Pelletier Marlborough MA 01752-1080 US 8/4/12
Susan Holden Rockport MA 01966-1739 US 8/21/12
Annette Wells Medfield MA 02052-1516 US 9/18/12
Peg Hewitt Roxbury Crossing MA 02120-2248 US 9/11/12
Jesse Waites Boston MA 02120-2826 US 9/11/12
Marie Duggan Roslindale MA 02131-1934 US 7/25/12

Paulette Fontaine Brighton MA 02135-2543 US 9/11/12
Loring Conant Cambridge MA 02138-1602 US 7/25/12
"Robert Petersen, M.D." Cambridge 02138-5753 US Minor Outlying Islands 7/26/12
Martin Federman Cambridge MA 02140-1901 US 8/21/12
patricia hoover Everett MA 02149-2102 US 8/1/12
Vanessa Edouard Quincy MA 02171-2206 US 7/25/12
"Walter J. Gamble, M.D." "Lexington," MA 02421-8061 US 7/28/12
Hildegard Cummings Lexington MA 02421-8062 US 7/28/12
Shannon Mitchell Brookline MA 02446-2415 US 10/6/12
Alexander Boison Brookline MA 02446-5130 US 9/13/12
Harriet C.B.   Laing R.N.C. N.P. Newton Ctr. MA 02459-1738 US 8/12/12
Phuong Tang NEWTON UPPER FALLS MA 02464-1136 US 8/1/12
NAncy Schon West Newton MA 02465-2531 US 8/23/12
Christine Carney Arlington MA 02474-2950 US 10/22/12
Robert Stymeist Arlington MA 02474-3206 US 8/8/12
Katharine Gerne Weston MA 02493-2723 US 7/25/12
Meredith HAMILTON Harwich MA 02645-1559 US 8/20/12
Tamar Sofer Providence Rhode Island 02906-1811 US 9/11/12
Trudi Griswold Nottingham New Hampshire 03290-0035 US 8/9/12
Katie Onge Rochester New Hampshire 03839-5663 US 9/1/12
Sehar Khalid Beacon Falls Connecticut 06403-1409 US 10/13/12
tory sansing new haven Connecticut 06511-3913 US 7/25/12
Kate Gurvis Rotterdam 0654AA Netherlands 8/22/12
Nathan Cockrell New York New York 10031-4429 US 7/12/12
Sharon Mosse New York New York 10065-5955 US 7/13/12
Concerned Citizen New City New York 10956-2406 US 7/30/12
Nancy J Kamble Snyder New York 14226-3514 US 7/30/12
Cri-Cri Gorycki Chestertown Maryland 21620-2723 US 8/3/12
Laura MacKay Alexandria Virginia 22313-1035 US 10/3/12
Roel van Meer Den Haag 2516 XB Netherlands 10/20/12
Peter Karlsson Helsingborg 252 32 Sweden 8/6/12
Marilyn Racine Little River North Carolina 28766-9758 US 9/9/12
nikk conneman rotterdam 3024EZ Netherlands 7/13/12
Audra Lofton Athens Georgia 30602-1845 US 8/20/12
Lindsay McGowan North liberty Iowa 52317-4707 US 7/26/12
Yasiu Kruszynski Chicago Illinois 60613-0011 US 10/21/12
Anne van de Wiel Nijmegen 6512AK Netherlands 10/20/12
Marc Smith Phoenix Arizona 85014-5183 US 7/27/12
Joanna G__rniak Lodz 94-056 Poland 10/20/12
Velma deSelby-Bowen Seattle Washington 98103-8151 US 10/20/12
Hayley Cameron Aberdeen AB22 8RP United Kingdom 10/20/12
Jeanne Brian St. Peters B0E 3B0 Canada 8/3/12
Kathleen Truelove Baltimore Maryland Because I live in an US 8/3/12
John Gardner Bristol BS10 6DJ United Kingdom 10/23/12
NEIL McILQUHAM CARDIFF CF14 7BJ United Kingdom 10/27/12
Liz Howard SUDBURY CO10 2TY United Kingdom 10/23/12
Ben Pirrie Derby DE1 2NT United Kingdom 10/20/12
Jeremy Whittaker Derby DE249GS United Kingdom 10/20/12
Hannah Trenear Derby DE55 1DT United Kingdom 10/20/12
Clement Agbatar Newton Hall Utah DH1 5YR US 7/25/12
Diane Young Key Largo Florida DKey Largo US 8/3/12
candy engel Montreal h3s2w4 Canada 8/3/12
Louise Tremblay Montreal H3X 1V4 Canada 10/21/12

Lorna Innes Laval H7P 1M1 Canada 10/5/12
Simi Shah London HA1 2PF United Kingdom 10/21/12
Daniela Tiboaca Hull HU6 United Kingdom 9/18/12
Wilfred Griffiths Saint-Eustache J7P 4R4 Canada 10/5/12
maureen ferguson coalhall ka6 6pq United Kingdom 10/20/12
Rebecca Janzen Niagara Falls L2g2g8 Canada 10/20/12
Ben Yee Mississauga L5R 3X1 Canada 10/6/12
Andy Philpot Hamilton L9A 1M9 Canada 7/25/12
Maggie Schweig Lima Lima27 Peru 10/21/12
Karen evansKarenEvans Wrexham ll114ug United Kingdom 10/21/12
Luka Marcinkute Leeds ls9 8aq United Kingdom 10/9/12
Mike Warham Manchester M270GJ United Kingdom 10/20/12
sally ebbs toronto m4c1l5 Canada 8/31/12
Kevin Weingarten Toronto M5P1E8 Canada 7/24/12
Nancy Wilber Boston MA MA US 7/31/12
Jaeyoung Choi Boston MA MA02139 US 8/1/12
Rita Teele Queenstown N/A New Zealand 7/31/12
James Warham London N8 8RJ United Kingdom 10/19/12
Jennifer Mathewson Windsor N9B 1H3 Canada 10/21/12
Krystie Lennon Tyne and Wear NE29 6HH United Kingdom 10/21/12
Saire May North Shields NE29 6HH United Kingdom 10/21/12
Dawn Chappell Earls Barton NN6 0NQ United Kingdom 10/21/12
Nedra Westwater "Albemarle Road, Norwich, Norfolk" NR2 2EF United Kingdom 8/17/12
Sami Sage london nr50kik United Kingdom 10/21/12
Susan Harris Natick MA 01760 US 8/8/12
Cluny Macpherson Wantage OX12 9GT United Kingdom 10/21/12
Ingrid Warren Oxford OX4 4BX United Kingdom 10/21/12
rowan farmer Callingotn PL17 7DE United Kingdom 10/20/12
elaine farmer Plympton PL7 4JU United Kingdom 10/20/12
Angelynn Nicholls Portage la Prairie R1N 1G2 Canada 7/26/12
stacey fussell barnsley s70 4eb United Kingdom 10/20/12
john sheldon newcastle st5 9bp United Kingdom 10/21/12
tracey Polak Rochester T0G 1Z0 Canada 7/25/12
Samantha Harder Lethbridge T1h0n6 Canada 10/21/12
Alicia Storvold High River T1v1l4 Canada 10/20/12
Virginia Bury Calgary T3K 5W1 Canada 10/21/12
Marcy Minty Airdrie T4A 0B5 Canada 8/3/12
Joey Shaughnessy Edmonton T5H 3N5 Canada 10/20/12
Vicki Anderson Edmonton T5H 3N5 Canada 10/20/12
Lizette Austin West Newton MA This garden is such US 8/24/12
Anne Kowalczyk "Ivoryton," Connecticut This is a space of d US 7/27/12
Melissa Searle Tonbridge TN12 6YA United Kingdom 10/21/12
patricia braniff Golden V0A 1H1 Canada 8/3/12
Margot Pleym North Vancouver V7K1R3 Canada 8/3/12
R. Larabie North Vancouver V7L 3H4 Canada 10/20/12
Mary Millerd "West Vancouver, B.C." V7W 2K3 Canada 8/3/12
Deborah LeFrank Victoria V8Z 5N8 Canada 8/19/12
Anne Gamble   7/24/12
Judith Johnson Winchester MA US 8/2/12

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See Inside

How Hospital Gardens Help Patients Heal

Hospital gardens turn out to have medical benefits

By Deborah Franklin | Monday, March 19, 2012 | 4 comments

To get an inkling of what a well-designed hospital garden can mean to a seriously ill child, watch the home video posted on YouTube last August of Aidan Schwalbe, a three-year-old heart-transplant recipient. The toddler is shown exploring the meandering paths, sun-dappled lawn and gnarled roots of a branching shade tree in the Prouty Garden at Children's Hospital Boston. "He loves to be out in the garden feeding the birds and squirrels," wrote Aidan's grandmother in an August blog entry. "They will all weigh 30 lbs. each by the time we leave here!"

Image: Illustration by Shaw Nielsen

The garden that Aidan loves—with its vibrant greenery, shaded places to sit and walk, and small, half-hidden animal sculptures that fascinate visitors of all ages—is "one of the most successful hospital gardens in the country," says Clare Cooper Marcus, an emeritus professor in landscape architecture at the University of California, Berkeley.

Dismissed as peripheral to medical treatment for much of the 20th century, gardens are back in style, now featured in the design of most new hospitals, according to the American Society of Landscape Architects. In a recent survey of 100 directors and architects of assisted-living residences, 82 percent agreed that "the design of outdoor space should be one of the most important considerations in the design." But can gardens, in fact, promote healing? It turns out that they often can. Scientists around the world are now digging into the data to find out which features of gardens account for the effect.

Common Sense Put to the Test

The notion that the fresh breezes, dappled sunlight and fragrant greenery of a garden can be good for what ails us has its roots in ancient tradition and common sense. But a much cited study, published in 1984 in the journal *Science* by environmental psychologist Roger Ulrich, now at Texas A&M University, was the first to use the standards of modern medical research—strict experimental controls and quantified health outcomes—to demonstrate that gazing at a garden can sometimes speed healing from surgery, infections and other ailments.

Ulrich and his team reviewed the medical records of people recovering from gallbladder surgery at a suburban Pennsylvania hospital. All other things being equal, patients with bedside windows looking out on leafy trees healed, on average, a day faster, needed significantly less pain medication and had fewer postsurgical complications than patients who instead saw a brick wall.

Esther Sternberg, a physician and neuroimmunologist at the National Institute of Mental Health, calls Ulrich's work "groundbreaking." At the time, studies showing that loud sounds, disrupted sleep and other chronic stressors can have serious physical consequences were only just beginning. "In 1984 we all took it for granted that hospitals were noisy, smelly, disorienting mazes," says Sternberg, who details the history in her book *Healing Spaces: The Science of Place and Well-Being*. "But it hadn't occurred to us that stress could affect a patient's healing—or that we could do anything about that."

Fortunately, as the evidence implicating hospitals as major engines of stress builds, the stack of data suggesting that gardens and planted alcoves can encourage healing has grown, too. Just three to five minutes spent looking at views dominated by trees, flowers or water can begin to reduce anger, anxiety and pain and to induce relaxation, according to various studies of healthy people that measured physiological changes in blood pressure, muscle tension, or heart and brain electrical activity.

Indeed, the benefits of seeing and being in nature are so powerful that even pictures of landscapes can soothe. In 1993 Ulrich and his colleagues at Uppsala University Hospital in Sweden randomly assigned 160 heart surgery patients in the intensive care unit to one of six conditions: simulated "window views" of a large nature photograph (an open, tree-lined stream or a shadowy forest scene); one of two abstract paintings; a white panel; or a blank wall. Surveys afterward confirmed that patients assigned the water and tree scene were less anxious and needed fewer doses of strong pain medicine than those who looked at the darker forest photograph, abstract art or no pictures at all.

"Let's be clear," Cooper Marcus says. "Spending time interacting with nature in a well-designed garden won't cure your cancer or heal a badly burned leg. But there is good evidence it can reduce your levels of pain and stress—and, by doing that, boost your immune system in ways that allow your own body and other treatments to help you heal."

Growing Insight

Still, research shows that not all gardens are equally effective. In 1995 Cooper Marcus and landscape architect Marni Barnes received a grant from the nonprofit Center for Health Design to analyze the physical layout and daily use of several hospital gardens in northern California. In 32 hours of observations, which included taking detailed notes and interviewing users (who collectively made 2,140 visits), the researchers noticed several patterns that have been borne out in subsequent studies of other sites.

Among their findings: users mostly visited gardens seeking relaxation and restoration from mental and emotional fatigue. Tree-bordered vistas of fountains or other water features, along with lush, multilayered greenery of mature trees and flowering plants, appealed most. Those results are consistent with Ulrich's findings of the healing power of a "window view" and also correspond with the theories of evolutionary biologists that people prefer views that are reminiscent of the savannas where humans evolved. Throughout human history, trees and water have signaled an oasis, and flowering plants have been a sign of possible food. Open views deter surprises by predators, and shaded alcoves offer a safe retreat.

The more greenery versus hard surfaces, the better. "We found that a ratio of at least 7:3 seems to work best," Cooper Marcus says. Less greenery signals a "plaza or shopping mall courtyard" and is not as relaxing.

What you can do in the garden is as important as what you see. The results of "behavioral maps" tracking visitors' actions while in a garden suggested a need for private conversation areas; smooth, tree-lined paths that invite strolls but that will not trip wheelchairs or intravenous poles; lightweight furniture that can be tugged into the shade or sun; and naturalistic landscaping that lures birds, squirrels and other wildlife.

One finding, in particular, surprised Cooper Marcus and Barnes. Stressed hospital employees accounted for as many visits to hospital gardens as stressed patients, and interviews confirmed that staffers depend on the greenery. "I feel like one of the Mole People," an employee who works in the basement radiology department of a Berkeley, Calif., hospital told the researchers. She said she comes to sit amid the trees of the rooftop garden daily to relax and meditate. "It's a big mental, emotional lift."

Different generations seem to value the same things in gardens, but research has turned up differences, too. In 2005 clinical psychologist Sandra A. Sherman and her colleagues conducted a study of three gardens at a children's cancer center in San Diego to try to figure out what worked and what did not. Some of the findings made intuitive sense. A mosaic turtle sculpture that small children could climb, for example, was more alluring than a crane sculpture the kids could only look at. Other results were less obvious. A riverlike water feature where kids and parents could splash and float boats together was twice as popular with the kids as a child-size playhouse that adults could not enter.

Focusing on the other end of the age spectrum, Susan Rodiek of Texas A&M has looked at long-term care institutions. In her studies, published in 2009, of a random sampling of 68 assisted-living facilities, Rodiek talked to 1,100 residents and 430 employees. "Older people," she found, "need and benefit from outdoor space and greenery just as much as the young."

But the adults desire some different features. Middle-aged adults, for example, tend to look for peace and quiet in the garden, and older adults are more likely to seek stimulation. At one new senior residence Rodiek studied, the facility's architect had created a lovely, secluded lawn and pond at the back of the apartment building. But every afternoon, the researchers noticed, at around the same time, the elderly residents dragged their lightweight aluminum chairs to the front of the building to be part of the community of commuters passing by. "You can only watch a pond for so long," Rodiek says. "And a grass lawn doesn't change much."

The Search for Standards

To help ensure that outdoor areas promote as much healing as possible, Rodiek has recently created a checklist, drawing on the evidence described above, that administrators of long-term care facilities and others can use to evaluate their garden design. And she is working on one geared specifically to hospitals so that hospital-accrediting agencies can set standards.

Codified standards are needed because therapeutic gardens are becoming so popular. "New hospitals are now competing on the basis of whether they have a 'healing garden' or not," Cooper Marcus says. "But when you go to look, some are not much more than a rooftop with a chaise lounge and a few potted plants." Designing a good garden for health care settings "isn't rocket science," she adds. Yet basing the design on good science instead of whim will strengthen the healing nature of nature.

What Makes a Garden Healing?

The following checklist, based on research, shows what works:

Keep it green

Lush, layered landscapes with shade trees, flowers and shrubs at various heights should take up roughly 70 percent of the space; concrete walkways and plazas about 30 percent.

Keep it real

Abstract sculptures do not soothe people who are sick or worried.

Keep it interesting

Mature trees that draw birds and chairs that can be moved to facilitate private conversation foster greater interaction.

Engage multiple senses

Gardens that can be seen, touched, smelled and listened to soothe best. But avoid strongly fragrant flowers or other odors for patients undergoing chemotherapy.

Mind the walkways

Wide, meandering paths that are tinted to reduce glare allow patients with low eyesight, wheelchairs or walkers to get close to nature. Paving seams must be narrower than one eighth of an inch to prevent trips by patients trailing wheeled IV poles.

Water with care
Fountains that sound like dripping faucets, buzzing helicopters or urinals do not relax anyone, and neither does the strong smell of algae.

Make entry easy
Gardens should not be far away or behind doors that are too heavy for a frail or elderly person to open.

This article was published in print as "Nature That Nurtures."

Leaflet - August 2012

Saving a Small Garden

For anyone who has ever visited Children's Hospital in the Longwood Medical Center, the small 'pocket' garden behind the main building is a quiet oasis. Invisible from the surrounding streets but accessible once inside, it is a visual treat for families as well as a place of contemplation. For the young patients, it is a tangible reminder of a green and colorful world beyond hospital walls.

And it is in danger of disappearing.

Prouty Garden

The Prouty Memorial Garden as it is formally known, was designed by the Olmsted Brothers landscape design firm. A gift of Olive Higgins Prouty (1882-1974), a well-known author in the first decades of the twentieth century, the garden was dedicated in October 1956. It is modeled after the terrace and garden at the Museum of Modern Art in New York City.

In a letter to the Olmsted Brothers, Mrs. Prouty described her hope that it would benefit not only the children who were patients at Children's Hospital, but also that it would provide a place for "brief periods of refreshment and relaxation" for the staff.

But in space-limited Boston, Children's Hospital has proposed putting a building on the site. According to Anne Gamble of Lexington, who is collecting signatures on a petition to urge the hospital to save the garden, "Alternate architectural designs that preserve the Prouty Garden have been offered, but they are not deemed 'as practical.' Instead, what are called 'alternate green spaces' will be included in the building's design. How can potted plants on a rooftop or solariums replace the towering dawn redwood, the hundreds of flowering plants, the fresh air and blue sky, or the pathways that nurture the spirits and healing of our patients, families and staff?"

One person who signed the on-line petition left this note on the petition website: *My young son is a brain tumor patient at Children's/Dana Farber and this garden has been the one green space we both could access during his hospital stays. There is sufficient and peer-reviewed data available that speaks to the need for access to nature during times of stress, the healing power of the outdoors, etc. That an architect whose priorities are markedly different than those of patients, their families and caregivers would deem the garden 'impractical' is not a good enough reason to destroy such a vital asset. Please, please do consider the views of those of us who have to visit this hospital, and those who choose to spend their time there helping us. Don't wipe out this invaluable resource.*

To sign the petition, follow [illegible] or go to: [illegible]

A Hospital Oasis Under Threat

Like 21

August 30th, 2012 by Michelle Werts

Sometimes — oftentimes — it feels as though nature and development are locked in an eternal battle. Cities and communities are continually running out of space, while trees, flowers and shrubs need lots of precious space to thrive. So what is one to do when more space is needed for infrastructure, but the only way to get it is to destroy a greenspace? That's the question currently facing Boston Children's Hospital.

Boston Children's Hospital is one of the largest pediatric medical centers in the U.S. and services almost 25,000 inpatient admissions each year. It has more than 1,100 scientists producing research and is one of the best pediatric hospitals in the country according to *U.S. News & World Report*. It also has "one of the most successful hospital gardens in the country," as Clare Cooper Marcus, an emeritus professor in landscape architecture at the University of California, Berkeley, tells *Scientific American*.

Prouty Memorial Garden, Boston Children's Hospital. Credit: schickr/Flickr

Tucked between the Wolbach and Farley buildings on the hospital's campus is the green oasis known as the Prouty Memorial Garden. The garden is the brainchild of Olive Prouty, who set up an endowment for the creation and maintenance of the garden back in the 1950s.

The famed Olmsted Brothers architecture firm designed the restful place — modeling it on the terrace and garden at the Museum of Modern Art in New York City — and it's become a treasured part of the hospital. But that may soon change.

A column in *The Boston Globe* earlier this month details that the location-strapped hospital is currently exploring ways to increase its space, and one idea on the table is building new facilities where Prouty Garden currently offers respite for patients, visitors and staff. Margaret Coughlin, a Children's Hospital senior vice president in charge of marketing and communications, tells the *Globe* that "as we look at what we have to do to be a clinical and innovative leader, we have to look at all our space, and there is no new space in this area."

On the flip side are the patients and parents who have viewed the garden as a sanctuary over the years. A petition has been started to try to help preserve the garden. Signatory Jennifer Lubao writes that "The garden was such a place of peace for me the four months I stayed with my infant son at the hospital. The chapel was the only other place where I felt such peace. Both gave me the strength to deal with the chaos surrounding my infant son's extended illness and death. I can't imagine a proposal to tear down the chapel so why the garden where so many of us pray and meet one another as a community?"

The *Globe* reports that any action regarding Prouty Memorial Garden is a few years down the road. Let's hope that the famed hospital is able to figure out a way to preserve such a vital, recuperative space, while also advancing its other work. We need new research to battle disease, but as research tells us, we also need green oases to fight and recovery from those diseases.

Comments

One Response to "A Hospital Oasis Under Threat"

Serena Vann says:

[illegible]

When i was in nursing, really wasn't anyplace where family could go to be alone with their thoughts. Hospital finallly had a small chapel type area but some days had to be used for babies who needed a room. I have been a family member who needed these quiet areas. Would be a shame if this garden will be sacrificed. Not easy being with a loved one and try to save it for families.

Reply

Leave a Reply

Name (required)

Mail (will not be published) (required)

Website

Submit Comment

Anne Gamble – Prouty Garden Petition

AG.1 Prouty Garden

The Prouty Garden has had an important place in the overall healing environment of Boston Children's Hospital. Although a recent survey indicates that the predominant user of the garden is the Hospital staff (for lunches and small gatherings), there is no doubt that the quiet respite provided by the green space has been a part of the Hospital's pioneering approach in pediatrics of 'healing the entire family'. However, the primary mission of the Hospital is to deliver excellent clinical care to those in need and in order to continue to be faithful to this Mission, the Hospital now finds it necessary to create: (i) an all-private room environment (thereby reducing the possibility of mistake and infection and further reducing the 'average length of stay' for the patients), (ii) programmatic space for Centers of Excellence, (iii) space capacity for up to 180 inpatient beds and additional interventional radiology or other clinical needs. After exhaustive operational studies, the Hospital has concluded that the optimal location (both in terms of co-located services and reducing overall costs) is the currently proposed site for the Boston Children's Clinical Building. Every effort will be made to work with the stakeholders and users of the garden to create 'new green space' that will be more accessible, for more staff, patients and families and during a longer period (all-seasons approach) of the year. Through a new restorative approach, the Boston Children's Hospital is creating a "green" master plan with both indoor and outdoor gardens for contemplation and play. This regenerative approach offers a new paradigm for healthcare design and integrates healing gardens into the complete health care experience. The commitment to these green spaces is built upon a growing body of solid scientific research which links access to the natural world to directly reduced patient recover time.

Section 2.2.2 includes a detailed discussion of the proposed green and gathering spaces.

The Commonwealth of Massachusetts

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November 21, 2012

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS ON THE ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME	: Boston Children's Hospital IMP Amendment
PROJECT MUNICIPALITY	: Boston
PROJECT WATERSHED	: Charles River
EEA NUMBER	: 14964
PROJECT PROPONENT	: The Children's Hospital Corporation and affiliated entities
DATE NOTICED IN MONITOR	: October 22, 2012

Pursuant to the Massachusetts Environmental Policy Act (G. L. c. 30, ss. 61-62I) and Section 11.03 of the MEPA regulations (301 CMR 11.00), I have reviewed the Environmental Notification Form (ENF) and hereby determine that this project **requires** the preparation of a mandatory Environmental Impact Report (EIR).

Project Description

As described in the ENF, three projects are proposed as part of the Boston Children's Hospital (BCH) Institutional Master Plan (IMP) Amendment. The projects include the Children's Clinical Building (CCB) with a combined heat and power (CHP) plant, an addition to the Patient and Family Parking Garage, and the construction of a building at 819 Beacon Street.

CCB

The CCB will include a 161-ft tall building (as measured for City of Boston zoning) that will provide 445,000 square feet (sf) of gross floor area (gfa) for patient rooms, a Neonatal Intensive Care Unit, and clinical support space. The CCB will be connected to existing buildings within the Core

Campus on its lower outpatient, support and surgical levels. In addition, it will connect an upper inpatient floor (Floor 9) with Main South over the Farley/Bader Pavilion. The CCB will require demolition or partial demolition of existing buildings within the Core Campus and will eliminate the Prouty Garden.

BCH is considering incorporation of a CHP facility into the basement of the CCB to provide an economical and efficient form of power. BCH is currently served by the Medical Area Total Energy Plant (MATEP). The ENF indicates that several options are being considered and include a stand-alone facility to serve the CCB, a larger facility to serve the BCH Core Campus, or a facility that could serve the Core Campus and other institutions within the LMA. The CHP facility is in the conceptual planning phase. BCH will continue to study the feasibility of alternatives including siting, sizing, permitting and financing issues.

Patient and Family Parking Garage Addition

The Patient and Family Parking Garage will be expanded by one level to provide an additional 86 parking spaces. The ENF describes challenges associated with parking within the Longwood Medical and Academic Area (LMA) and at BCH. It notes that valet service at the main entrance is heavily used during peak times when other parking facilities are not available. The addition of parking at the garage is intended to reduce congestion at the main entry and along Longwood Avenue.

819 Beacon Street

The 819 Beacon Street project consists of construction of a ten-story 142-ft tall building (as determined by the Boston Zoning Code) that will include 202,430 sf of office space, 8,740 sf of retail space and will provide 526 parking spaces (including 277 net new spaces) within a six-level parking garage. Street-level retail space is proposed along Beacon Street.

<u>Project Site</u>

Projects are proposed at three separate sites. The CCB and Patient and Family Parking Garage Addition are located within the LMA of Boston and the main BCH campus. The LMA is a dense, highly congested area marked by continued development and expansion of medical institutions, facilities and associated infrastructure. The CCB is proposed on a 1.2-acre site bounded by Shattuck Street to the south, Meadow Lane and Harvard Medical School facilities to the east, the Fegan building to the north and the Bader and Farley buildings to the west. The site includes the Prouty Garden, Wolbach Building, Library, Ida C. Smith building, and portions of the Bader East and Farley buildings.

The Patient and Family Parking Garage Addition is proposed on a 1.1-acre site that supports an existing parking garage with 643 parking spaces. It is located within the Core Campus on the corner of Longwood Avenue and Blackfan Circle.

The 819 Beacon Street building is proposed on a 1.6-acre parcel that is used for surface parking for BCH employees and public parking for Fenway park events. It is bounded by Beacon Street to the north, surface parking to the east, and commercial and residential buildings to the south and west. The Massachusetts Turnpike (Interstate-90) and Air Rights Parcel 7 development (EEA #14163) are located to the north.

Jurisdiction and Permitting

The IMP Amendment is undergoing MEPA review and is subject to preparation of a Mandatory Environmental Impact Report (EIR) pursuant to 301 CMR 11.03 (6)(a)(6) because it may include State Financial Assistance and will generate more than 3,000 average daily vehicle trips (adt) on roadways providing access to a single location. The project requires a land transfer from the Massachusetts Bay Transportation Authority (MBTA), a Non-Major Comprehensive Plan Approval and a Sewer Extension/Connection Permit from the Massachusetts Department of Environmental Protection (MassDEP), and a Determination of Need from the Department of Public Health (DPH). It may require an Amended Sewer Use Discharge Permit and a Construction Dewatering Permit from the Massachusetts Water Resources Authority (MWRA). The project is subject to the MEPA Greenhouse Gas (GHG) Emissions Policy and Protocol (revised May 2010). The project will require a National Pollutant Discharge Elimination System (NPDES) General Permit for Construction Activities from the U.S. Environmental Protection Agency (EPA).

The projects are subject to Institutional Master Plan Review under Article D of the Boston Zoning Code, including a Map Amendment to extend the IMP Overlay District to the 819 Beacon Street site. The CCB and 819 Beacon Street projects are subject to Large Project Review under Article 80B of the Boston Zoning Code. The Patient and Family Garage Addition is subject to the Design Component of Small Project Review under Article 80E of the Boston Zoning Code. The projects require multiple permits and approvals from the City of Boston including approval of Construction Management Plans (CMP) and Transportation Access Plan Agreements (TAPA).

The project may include State Financial Assistance from the Commonwealth, consisting of bonds issued by MassDevelopment. Therefore, MEPA jurisdiction is broad in scope and extends to all aspects of the project that may cause Damage to the Environment, as defined in the MEPA regulations.

Environmental Impacts

Potential environmental impacts associated with the project include: generation of air emissions, including GHG emissions, creation of 0.6 acres of new impervious surfaces (CCB only); traffic generation, wastewater generation and construction-period impacts (including demolition). The CCB will increase unadjusted average daily vehicle trips (adt) by approximately 4,118 to 30,033 adt and 819 Beacon Street will increase unadjusted adt by 2,296 to a total of 2,978 adt. Total unadjusted trip generation is estimated at 33,011 adt. When adjusted to reflect City of Boston mode shares, traffic generated by the CCB will increase by 1,358 adt to 9,910 adt and 819 Beacon Street will increase by 1,136 adt to 1,818. Total adjusted trips are estimated at 11,278. Water use associated with CCB will increase by 81,838 gallons per day (gpd) to a total of 85,278 gpd. The associated CHP facility could increase water demand by 150,000 gpd. Water use associated with 819 Beacon Street is estimated at 17,181 gpd. Total water demand will increase by a maximum of 249,019 for 252,459 gpd. Wastewater generation associated with the CCB will increase by 74,398 and related CHP facility could increase generation by 75,000 gpd. Wastewater generation associated with the 819 Beacon Street project will increase by 15,619 gpd. Total wastewater generation is estimated at 168,144 gpd.

The project avoids many environmental impacts associated with development by reusing an existing site in a densely populated area with access to neighborhoods and mass transit. To avoid, minimize and mitigate impacts associated with the project, the proponent has proposed to incorporate sustainability measures into the project design, including Low Impact Development (LID) measures, to expand upon its existing Transportation Demand Management (TDM) program through participation in the Medical, Academic and Scientific Organization (MASCO) Commute Works, incorporation of an efficient CHP facility to meet electrical demands and construction-period mitigation measures. In addition, the ENF indicates that the project will include expansion of existing open space and construction of new open space to mitigate elimination of the open space associated with the Prouty Garden. It indicates that it will provide more visible and accessible all-season spaces consisting of at-grade gardens, interior gardens and roof-terrace gardens.

SCOPE

General

The Draft EIR (DEIR) should follow the general guidelines for outline and content found in Section 11.07 of the MEPA regulations as modified by this Scope.

Because the project is subject to Article 80 review, the planning for this project would be well served by a coordinated review and the submission of a single set of documents to satisfy the requirements of both MEPA (Section 11.09 (4)(c)) and the BRA (Section 80–6). MEPA.1

Project Description and Permitting

The DEIR should provide a detailed project description that identifies all major project components (buildings, CHP systems, etc.) and operating parameters. It should include information on proposed lighting, vegetative plantings or buffers, materials containment/storage areas, and the proposed stormwater drainage system. It should include plans, at a readable scale, for each of the sites. The description should identify any changes proposed since the filing of the ENF. In addition, it should describe project phasing associated with each project and how permitting will be addressed within the context of this phasing. It should identify all state permits and approvals required for the project and identify how the project will be developed consistent with associated regulatory standards and requirements. The DEIR should include plans (existing and proposed conditions) for each of the project sites. MEPA.2 MEPA.3 MEPA.4 MEPA.5

The DEIR should provide a discussion of the objectives and anticipated benefits of the project and address the consistency of the project with any applicable policies and plans, including Executive Order 385 Planning for Growth, the Commonwealth Sustainable Development Principles, the Metropolitan Area Planning Council (MAPC) Metro Future (2010-2030). In addition, it should provide an update on the status of the City of Boston review and approval process. MEPA.6 MEPA.7 MEPA.8

Alternatives Analysis

The purpose of the alternatives analysis is to provide the necessary context for evaluating the environmental impacts of the proposed project. The ENF identifies the purpose of the CCB as replacement of semi-private inpatient beds and expansion of surgical, clinical, and medical support spaces. The purpose of the 819 Beacon Street building is to provide office and administrative space and employee parking. The ENF does not quantify the demand or space requirements of the above-referenced goals. The DEIR should clearly identify project goals and quantify needs, including demand MEPA.9 for private rooms, surgical space, clinical space, outpatient services and diagnostic facilities to provide an accurate context for understanding the ability of each alternative to meet the objectives of the project.

The DEIR should expand on the alternatives discussion provided in the ENF to identify BCH MEPA.10 facilities that were considered for replacement or demolition and provide a comparative analysis that clearly presents environmental impacts associated with each of the alternatives. The ENF indicates that consideration of alternative BCH Campus building sites including location of a clinical building at the Feldberg Parking Garage with primary access and egress on Brookline Avenue, 333 Longwood Avenue and the main entry and drop-off court at Perlmutter and Enders sites near the main entrance. Constraints associated with these options are identified as relocation of significant program space (i.e. 80,000 sf from 333 Longwood Avenue), proximity to Main Building, and construction logistics (e.g. congestion at Longwood Avenue/Brookline Avenue intersection). The alternatives analysis should include other facilities owned by BCH that are proposed for expansion and/or replacement (e.g. Brookline Place project (EEA # 14522)) and were not identified in the alternatives discussion. It should address whether and how project needs could be supported within these projects.

The DEIR should identify zoning constraints for each of the project sites and describe required MEPA.11 zoning relief, where applicable. The alternatives analysis should include discussion of alternatives that MEPA.12 are consistent with existing zoning and that could reduce impacts, with an emphasis on traffic generation. The EIR should include a comparative analysis that clearly shows the difference between the MEPA.13 environmental impacts associated with each alternative.

The DEIR should evaluate changes to proposed site designs that could further avoid, minimize and mitigate impacts and support redevelopment of the site consistent with City goals. MEPA.14

Greenhouse Gas Emissions MEPA.15

The GHG Policy requires identification of GHG emissions associated with the project and adoption of all feasible measures to avoid, minimize and mitigate these increases. The analysis should quantify the direct and indirect GHG emissions associated with the project's energy use and transportation-related emissions. Direct emissions include on-site stationary sources, including the CHP facility, and other sources that typically emit GHGs by burning fossil fuel for heat, hot water, steam and other processes. Indirect emissions result from the consumption of energy, such as electricity, that is generated off-site by burning of fossil fuels, and from emissions associated with vehicle use by employees, vendors, customers and others.

The DEIR should include a GHG emissions analysis that calculates and compares GHG emissions associated with: 1) a Massachusetts Building Code-compliant baseline and, 2) the

Massachusetts Energy Stretch Code (adopted by the City of Boston) for the CCB and the 819 Beacon Street projects. The Policy requires use of energy modeling software to quantify projected energy usage from stationary sources and energy consumption. The DEIR should outline and commit to mitigation measures to reduce GHG emissions.

The GHG analysis should clearly demonstrate consistency with the objectives of MEPA review, one of which is to document the means by which damage to the environment can be avoided, minimized and mitigated to the maximum extent feasible. The Proponent should identify the model used to analyze GHG emissions, clearly state modeling assumptions, and explicitly note which GHG reduction measures have been modeled. The DEIR should include the modeling printout for each alternative and emission tables that compare base case emissions in tons per year (tpy) with the preferred alternative showing the anticipated reduction in tpy and percentage by emissions source (direct, indirect and transportation). Other tables and graphs may also be included to convey the GHG emissions and potential reductions associated with various mitigation measures as necessary.

Comments from the Department of Energy Resources (DOER) identify the following measures MEPA.16
to reduce the GHG impacts of the proposed projects:

- Maintain the window area at less than or equal to 40% of total wall area;
- Use high-performance double glazed low-e glazing;
- Minimize uncontrolled infiltration of outside unconditioned air though the careful and coordinated design of windows, doors, vents, louvers, and the HVAC system;
- Use high-albedo roofing materials;
- Increase R-values of roof and wall insulation to minimize heat loss;
- Install high-efficiency HVAC systems;
- Use of over-sized cooling towers;
- Use of condensing boilers and/or furnaces;
- Use of water source heat pumps in combination with a low temperature condensing hydronic boiler and cooling tower;
- Use Energy Recovery Ventilation (ERV);
- Use of Variable Frequency Drives (VFD) for pumps, fans and compressors;
- Incorporate lighting motion sensors, climate control and building energy management systems (with sufficient number of thermal zones);
- Use advanced variable flow controls for lab fume hoods;
- Reduce lighting power density (LPD) through installation of energy efficient interior lighting;
- Use energy efficient exterior lighting; and,
- Use water conserving fixtures that exceed building code requirements;

The DEIR should present an evaluation of the feasibility of each of the mitigation measures outlined above, and if feasible, GHG emissions reduction potential associated with major mitigation elements to evaluate the relative benefits of each measure. Comments from DOER include a reference to the Green Guide for Health Care (version 2.2) (http://www.gghc.org/documents/Version2.2/GGHC_v2-2.pdf) for further identification and explanation of potential mitigation measures. The DEIR should explain, in reasonable detail, why certain measures, which could provide significant GHG reductions, were not selected - either because it is not applicable to the project or is considered technically or financially infeasible. I note that some of the measures may not be applicable to both of the buildings (i.e., 819 Beacon Street would not include diagnostic or clinical space and use of CHP for the CCB may eliminate other typical energy efficiency measures).

I applaud the Proponent's intention to incorporate a CHP facility into the project and encourage BCH to strongly consider alternatives that can serve other institutions. Comments from DOER note that that the Stretch Code does not properly credit the efficiencies of CHP systems and that an alternative analysis may be required to develop appropriate GHG analysis for the CCB and the CHP system. DOER recommends that the analysis incorporate both site-energy and source-energy estimates and GHG emissions in the DEIR to ensure the project is reviewed in the proper context. In addition, DOER notes that the incorporation of energy efficiency measures into the CCB (and/or other buildings served by the CHP) can lower design loads of the CHP system, thereby resulting in a smaller, lower cost CHP system. MEPA.17

I strongly encourage the Proponent to schedule a pre-filing GHG consultation with MEPA, MassDEP and DOER staff prior to submission of the DEIR to ensure that requirements for the GHG analysis are clear, particularly in regards to incorporation of the CHP. MEPA.18

Air Quality

The CCB will require a Non-Major Comprehensive Plan Approval from MassDEP. The Proponent also indicated, in an email dated November 8, 2012, that the size of the CHP facility and addition of boilers could trigger the requirement for a Title V operating permit. In addition, it indicates that expansion of the system to serve other buildings within the Core Campus or other institutions is not planned in the short-term and, if proposed, will be addressed through a Notice of Project Change (NPC). The ENF provides a summary of the system and identifies its benefits in terms of reliability, costs and efficiencies. It does not provide a description of the system or associated infrastructure.

The DEIR should include conceptual plans for the CHP system and associated infrastructure. It should describe the structural design, power generation process and its parameters including equipment efficiencies and air pollution control systems. The DEIR should address regulatory requirements and performance standards identified in the MassDEP comment letter and identify how system will be designed to meet applicable requirements and standards. In addition, the Proponent should consult with MassDEP prior to filing the DEIR to discuss level of air quality impact analysis and modeling that should be included in the DEIR. MEPA.19

Traffic and Transportation

The project will increase traffic generation within the LMA and Fenway area. The ENF indicates that separate traffic studies, prepared consistent with the Scoping Determination that will be issued by the BRA and the Boston Transportation Department (BTD), will be included for the CCB and the 819 Beacon Street projects to identify specific transportation issues and impacts for each location.

These studies should identify existing and future conditions, assess impacts on traffic, pedestrians and cyclists and include the development of appropriate mitigation measures including long-term project impact monitoring, roadway/intersection improvements, reduction in parking spaces, MEPA.20

intelligent transportation technology and transportation demand management (TDM). It should identify roadway, traffic signal and transit improvements recently completed or proposed by others and describe the impacts of these projects on traffic conditions and circulation within the LMA and Kenmore Square/Fenway Park area.

The EIR should provide an overview of the proponent's existing TDM program and identify measures to increase its effectiveness including consideration of an increase in transit subsidies. The Proponent should coordinate with Boston and Brookline officials and the MASCO regarding ongoing efforts to coordinate traffic, transit and parking in the LMA. The EIR should discuss how the project can contribute to these efforts. MEPA.21 MEPA.22

The DEIR should describe, and show on site plans, proposed access and egress, pedestrian, bicycle and vehicular circulation, and identify constraints (e.g. CSX right-of-way, MBTA Green Line easement). In addition, it should identify planned improvements (BRA multi-use pedestrian path, Urban Ring, reconstruction of Maitland Street). MEPA.23

Stormwater Management

The ENF indicates that deep sump hooded catch basins, sump cleaning, and oil and gas separators will be included in the project design to meet stormwater standards. It indicates that the Proponent is considering use of holding tanks and/or stormwater infiltration systems to reduce the rates and quantity of discharge. The DEIR should include readable plans that clearly delineate drainage areas, stormwater flow patterns, best management practices (BMP) designs, and discharge points. The DEIR should evaluate stormwater runoff impacts during construction and post-construction, and demonstrate that source controls, pollution prevention measures, erosion and sediment controls, and the post-development drainage system will be designed in compliance with the stormwater standards. MEPA.24 MEPA.25

The DEIR should identify existing drainage infrastructure and identify ownership, capacity of each of the storm drains, and describe the paths of stormwater flow within the public collection systems. MEPA.26

Comments from BWSC indicate that BCH has experienced periodic drainage issues on its property and must carefully design drainage infrastructure to improve existing conditions. In addition, BWSC recommends that drainage associated with the 819 Beacon Street project discharge to the 12-inch drain in Maitland Street, rather than storm drain in Beacon Street (which flows into the MWRA combined system). MEPA.27

Wastewater

Wastewater will continue to be discharged into the Boston Water and Sewer Commission (BWSC) system, which flows into the Massachusetts Water Resources Authority (MWRA) system and ultimately to the Deer Island Wastewater Treatment Facility. The EIR should identify wastewater flows and how the Proponent will contribute to the removal of extraneous clean water (e.g., infiltration/ inflow (I/I)) in the system to ensure that additional flows are offset by the removal of I/I. MassDEP standards require a minimum 4:1 ratio for I/I removal to new wastewater flow added and BWSC has indicated that the Proponent will be required to develop an inflow reduction plan consistent with this policy. MassDEP comments recommend that the Proponent consult with MassDEP and BWSC regarding I/I mitigation. MEPA.28

The DEIR should describe wastewater infrastructure and identify ownership and capacity of sewer collection systems as well as paths of wastewater flow within public collection systems. It should indicate how I/I requirements will be met and describe consultations with MassDEP and BWSC. MEPA.29

The ENF indicates that the CHP facility will include an underground distribution system throughout the campus and could produce up to 75,000 gpd of wastewater during peak operations. Water demand and wastewater generation will be influenced by the Scope of the CHP facility. If a CHP alternative has not been identified prior to filing of the DEIR, the DEIR should identify water use and wastewater estimates for each of the alternative scenarios. MEPA.30

Historic Resources

The project proposes demolition of 41,689 sf, including the Wolbach Building which is included on the Massachusetts Inventory of Historic and Archaeological Resources (MHC# BOS.7513). The parking garage addition is located adjacent to the Hunnewell Building (formerly known as the BCH Administration Building) (BOS.7513) and several buildings associated with Harvard Medical School (BOS.7516, BOS.7508-7012) that are also included in the MHC Inventory. The 819 Beacon Street site is located near several properties and districts that are included in the State and National Registers of Historic Places and/or Local Historic Districts.

The DEIR should identify historic properties and districts in the vicinity of the CCB and 819 Beacon Street, identify potential impacts, including demolition and partial demolition, and identify measures to avoid, minimize and mitigate these impacts. The DEIR should describe consultations with MHC, the Boston Landmarks Commission (BLC) and the Boston Preservation Alliance (BPA). MEPA.31

Comments from MHC indicate that the addition to the parking garage will have "no adverse effect" on the Hunnewell Building and the Harvard Medical School buildings. It indicates that it does not have sufficient information to determine the effect of the CCB and 819 Beacon Street project on surrounding historic properties and requests drawings and renderings for the proposed construction, including photosimulations of the new construction from various vantage points.

Construction Period Impacts

The EIR should include a discussion of construction phasing, evaluate potential impacts associated with construction and demolition activities (including but not limited to erosion and sedimentation, noise, vibration and dust) and propose feasible measures to avoid or eliminate these impacts. MEPA.32

The DEIR should identify temporary construction laydown areas, equipment storage and construction worker parking, construction access routes (on and off-site) and discuss how associated impacts will be minimized, including adequate protections for pedestrians. MEPA.33 The project must comply with MassDEP's Solid Waste and Air Quality Control regulations during demolition and construction. I note that the project will result in the generation of demolition waste, portions of which may contain asbestos. MEPA.34 Removal or abatement of regulated asbestos-containing material must be completed consistent with the requirements of 310 CMR 7.15 and the Proponent must provide an asbestos notification form

(ANF 001) to MassDEP. The Proponent should develop a construction waste management plan that establishes a minimum reuse/recycling goal of 50 percent. MEPA.35

The DEIR should reiterate the Proponent's commitment to require installation of after-engine emission controls such as diesel oxidation catalysts (DOCs) or diesel particulate filters (DPFs) on construction vehicles and use of ultra low sulfur diesel (ULSD) fuel in off-road engines. MEPA.36

Mitigation

The DEIR should include a separate chapter that identifies all mitigation measures and draft Section 61 Findings for each State Agency that will issue permits for the project. The draft Section 61 Findings should contain clear commitments to implement mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and include a schedule for implementation. MEPA.37

Comments

The DEIR should contain a copy of this Certificate and a copy of each comment letter received. To ensure that the issues raised by commenters are addressed, the DEIR should include responses to comments. This directive is not intended to, nor shall it be construed to, enlarge the scope of the DEIR beyond what has been expressly identified in this certificate.

Circulation

The Proponent should circulate the DEIR to the individuals and organizations who commented on the ENF, to any State Agencies from which the Proponent will seek permits or approvals and to any parties specified in section 11.16 of the MEPA regulations. A copy should be provided at the Boston Public Library (BPL) and the Parker Hill Branch of the BPL. MEPA.38

The Proponent may circulate the DEIR in CD-ROM format to individual commenters, although the Proponent should make available a reasonable number of hard copies available on a first-come, first-served basis. A hard copy should be submitted to State Agencies and to the BPL and branch library.

November 21, 2012
Date

Richard K. Sullivan Jr.

Comments received:

11/18/12	Department of Energy Resources (DOER)
1/13/12	Massachusetts Department of Environmental Protection (MassDEP)/Northeast Regional Office (NERO)
11/13/12	Massachusetts Historical Commission (MHC)

11/13/12	Massachusetts Water Resources Authority (MWRA)
11/13/12	Boston Water and Sewer Commission (BWSC)
11/14/12	Friends of Historic Mission Hill

RKS/CDB/cdb

MEPA Certificate

MEPA.1 Joint filing

Because the Project is subject to both MEPA review and Article 80 review, the Proponent has submitted a joint DPIR/DEIR for review.

MEPA.2 Project description.

Please see Chapters 2.0 and 6.0 for a detailed Project Description of each of the Projects. Section 8.3 includes a discussion of water quality and stormwater standards.

MEPA.3 Site plans

Please see Figure 2-6 for the BCCB's proposed site plan and Figures 6-30 and 6-31 for 819 Beacon Street site plans.

MEPA.4 Project changes and phasing

Construction of the BCCB is expected to begin in 2014 with completion in 2017. Construction of 819 Beacon Street is expected to begin in 2016 with completion in 2019. The construction of the additional level of parking on the Patient and Family Parking Garage is anticipated to commence in the first quarter of 2014 and anticipated to be completed within 12 months. The permitting for each Project will occur as each Project moves forward.

Sections 6.1 and 6.2 include information about the evolution of the Projects.

As described in the ENF, Children's was considering several CHP options whose primary facilities would be located in the sub-basement of the BCCB. The options ranged in size from a stand-alone CHP facility that would serve only the BCCB to larger CHP facilities that, working in conjunction with CHP facilities on adjoining institutional campuses, would serve the Core Campus as well as several buildings of other institutions. Children's was also considering an option that would serve only the Core Campus.

Children's has continued to consider and evaluate these and other options and alternatives as its planning evolves. In connection with construction of the BCCB, Children's will develop a CUP in the sub-basement of the BCCB that will include a 1,200 kW gas-fired reciprocating engine and waste heat boiler (together a CHP unit) and two 30 thousand pound per hour (kpph) dual-fuel fire tube boilers. In addition, electrically-operated chiller units will be placed in the sub-basement of the BCCB and will be sized to reliably provide 100% of the chilled water needs for the BCCB. At this point, the CUP serving the BCCB only is the only proposed option at this time for purposes of the DPIR/DEIR.

MEPA.5 State permits and approvals

Please see Sections 2.2.6 and 2.3.6 for lists of permits that may be required for each Project. The Patient and Family Parking Garage is not anticipated to require any state permits or approvals.

MEPA.6 Public benefits

Please see Section 1.3 for a discussion of public benefits associated with the Projects.

MEPA.7 Consistency with planning

Please see Sections 2.2.4, 2.3.4 and 2.4.2 for a discussion of the Projects' consistency with relevant plans.

MEPA.8 Updated status of City of Boston review

Please see Section 1.2 for an update of the City of Boston review and approval process.

MEPA.9 Project objectives and needs

Please see Sections 2.1, 2.2.3 and 2.3.3 regarding Children's need for the Projects and Sections 2.2.5 and 2.3.5 for a discussion of alternatives.

MEPA.10 Comparative analysis of alternatives

Sections 2.2.5 and 2.3.5 include detailed alternatives analyses for the BCCB and 819 Beacon Street Projects.

MEPA.11 Zoning Constraints

BCCB and Patient and Family Parking Garage Addition: The underlying zoning of the core campus was the H-3 District, although a portion of the area south of Longwood Avenue was in the B-4 District and a portion of the core campus north of Longwood was in the Beth Israel Institutional District under Article 70 of the Boston Zoning Code. The Core Campus was then rezoned into Planned Development Areas No. 29, as amended, No. 61, Phase 2, and No. 16. Since 2008, the zoning of the Core Campus (which includes the areas of the BCCB and Patient and Family Parking Garage) has been determined by the Children's Hospital Boston Institutional

Master Plan, as amended, approved under the Boston Zoning Code. The Institutional Master Plan has approved the existing improvements at the Core Campus, and will be amended in connection with the currently proposed Projects.

819 Beacon Street Building: The underlying zoning of 819 Beacon Street is established by zoning for the Audubon Circle Neighborhood District (in part in the Local Convenience Subdistrict and in part in a Multi-Family Residential Subdistrict). Office and parking use require zoning relief. Permitted height is 45 feet and FAR is 2.0, and in a PDA in this area the permitted height is 120 feet (65 feet within 125 feet of the street line of Beacon Street) and FAR is 4.0. Zoning relief will be achieved through inclusion of this site in the Institutional Master Plan.

MEPA.12 Project alternatives consistent with zoning

BCCB and Patient and Family Parking Garage: Since zoning is established by the existing Institutional Master Plan which reflects the existence of the current improvements, there is no Project alternative consistent with zoning which would be permitted without amendment of the Institutional Master Plan.

819 Beacon Street Building: 819 Beacon Street currently is a surface parking lot for 249 vehicles. No construction could be undertaken which would be economically and functionally feasible consistent with zoning.

MEPA.13 Comparative analysis of the difference between the environmental impacts of each alternative

Sections 2.2.5 and 2.3.5 include a discussion of the environmental impacts of the alternatives.

MEPA.14 Alternative site designs

As described in Chapter 6.0, the Projects' designs have been revised in response to city and community input. The 819 Beacon Street Project has decreased in height and the massing has been revised to complement the existing and future area context. The BCCB has been revised to break up the massing. Please also see Section 2.2.5 for a discussion of alternatives related to the existing Wolbach Building.

MEPA.15 Greenhouse gas analysis

Chapter 9.0 includes a GHG analysis for the BCCB and 819 Beacon Street Projects.

MEPA.16 Possible greenhouse gas mitigation measures identified by the Department of Energy Resources

Please refer to the Response to Comment DOER.4.

MEPA.17 Combined Heat and Power (CHP) facility

Please refer to Section 9.2.3.

MEPA.18 Greenhouse gas consultation with MEPA, MassDEP and DOER

The Proponent and its design team met with MEPA and DOER on December 11, 2012. MassDEP did not attend.

MEPA.19 Details about CHP facility and related infrastructure

In connection with construction of the BCCB, Children's will develop a Central Utility Plant (CUP) in the sub-basement of the BCCB that will include a 1,200 kilowatt (kW) gas-fired reciprocating engine and waste heat boiler (together a combined heat and power (CHP)unit) and two 30 thousand pound per hour (kpph) dual-fuel fire tube boilers. In addition, electrically operated chiller units will be placed in the sub-basement of the BCCB and will be sized to reliably provide 100% of the chilled water needs for the BCCB.

The CHP unit engine, with a heat input of approximately 10.5 MMBtu/hr (HHV), will be natural gas-fired only and will be equipped with Selective Catalytic Reduction (SCR) to minimize oxides of nitrogen (NOx) emissions and an oxidation catalyst to minimize carbon monoxide (CO) and volatile organic compounds (VOC). The reciprocating engine will meet all the emissions and design requirements for the engine and turbine Industrial Source Category (310 CMR 7.26(43)), and will comply with the Environmental Results Program (ERP) (310 CMR 70).

The CHP waste heat boiler will be unfired (i.e., is not a combustion source) and will generate approximately 1,500 pounds per hour of steam to provide hot water and space heating for the hospital.

The CHP unit will provide a portion of the electrical energy needs of the BCCB with the majority being purchased from the grid. All electricity will be purchased from the grid when the CHP unit is out of service for maintenance. The CHP unit will simultaneously provide a portion of the hot water and steam needs of the BCCB. The CHP unit is expected to have an annual average thermal efficiency of approximately 67%.

The boilers will supplement the thermal output of the CHP unit so that 100% of the BCCB's thermal demands, which vary with ambient conditions and time of day, will be met at all times. The CUP will contain sufficient redundancy so that, in the event of outage of one boiler or the CHP unit, thermal demands are reliably met.

The two firetube boilers will be capable of firing natural gas as the primary fuel, with Ultra Low Sulfur Distillate Oil (ULSD) as the backup. The heat input for these boilers will be approximately 37 MMBtu/hr (HHV) each and emissions control is provided by low-NOx burners, and flue gas recirculation and combustion control. These boilers will comply with all the emissions and design requirements of the boiler Industrial Source Category (310 CMR 7.26(33)-(37)) and with the Environmental Results Program (ERP) (310 CMR 70).

The Proponent consulted with Mr. Marc Altobelli of the MassDEP on January 22, 2013. During the consultation, it was determined that a permitting-level air quality analysis will be performed at the appropriate time during the ERP process, confirming compliance with all National Ambient Air Quality Standards.

MEPA.20 Transportation study

Please refer to Chapters 3.0 and 4.0 for complete transportation analyses for the BCCB (including the additional trips to the Patient and Family Parking Garage) and 819 Beacon Street Projects.

MEPA.21 Transit Demand Management (TDM)

BCH is committed to reducing single occupant vehicle commuters through active TDM programs and policies. Descriptions of BCH's TDM plan can be found in Sections 3.1.2.6 and 4.1.2.5 of this DPIR/DEIR.

MEPA.22 Coordination on transportation issues

BCH has been and will continue to coordinate its efforts relating to these Projects with State Agencies, City of Boston Departments, and Neighborhood Organizations. Children's will specifically be minimizing the traffic impacts within the LMA due to the proposed BCCB with the minimal additional parking provided on campus.

MEPA.23 Circulation plans including planned area improvements

Please refer to Chapters 3.0 and 4.0 for a detailed discussion of the existing and future site conditions in relation to access/egress, pedestrian and bicycle circulation, and any site constraints.

MEPA.24 Plans showing drainage areas, stormwater flow patterns, best management practices (BMP) designs, and discharge points

The Proponent and design team are evaluating various storm drain and sewer connection options. They will be further developed for review by BWSC as the respective Projects' designs advance further. For each proposed connection to the BWSC system, the Proponent will provide estimates on stormwater discharges as well as a narrative and calculations detailing stormwater BMPs intended to remove nutrients and suspended solids as well as stormwater BMPs (such as green roof and rainwater harvesting) intended to reduce flows. Given the extreme density of the Project's site, it is likely that the BCCB will use several BMPs including green roofs, infiltration (either subsurface or bioretention areas), rainwater harvesting in addition to other stormwater management devices such as proprietary filters. In terms of storm drainage, the BCCB may tie into a 15-inch and/or a 24-inch storm drain line in Longwood Avenue or a 12-inch storm drain in Shattuck Street. The BCCB design is not advanced to the point where specific discharge points have been identified. However, since the Project objective (see Chapter 8.0) is to maintain or reduce discharge rates, there will be no further impact on system capacity.

819 Beacon Street may tie into either a 12-inch storm drain located in Maitland Street and/or a 24-inch storm drain located in Beacon Street. The 819 Beacon Street design is not advanced to the point where specific discharge points have been identified. However, since the Project objective (see Chapter 8.0) is to maintain or reduce discharge rates, there will be no further impact on system capacity. For each proposed connection to the BWSC system, the Proponent will provide estimates on stormwater discharges as well as a narrative and calculations detailing stormwater BMPs intended to remove nutrients and suspended solids as well as stormwater BMPs (such as green roof and rainwater harvesting) intended to reduce flows. Given the extreme density of the Project's site, it is likely that the 819 Beacon Street Project will use several BMPs including green roofs, infiltration (either subsurface or bioretention areas), rainwater harvesting in addition to other stormwater management devices such as proprietary filters. The 819 Beacon Street Project is currently contemplating an approximately 7,000 sf vegetated roof area.

In terms of sanitary sewer, the BCCB may tie into one of numerous sanitary sewer lines located in the adjacent streets.

819 Beacon Street may tie into a 12-inch and/or 20-inch sanitary sewer line located in Beacon Street.

See Chapter 8.0 of the DPIR/DEIR for pre-development and targeted post-development stormwater discharge rates.

MEPA.25 Stormwater runoff impacts during construction and compliance with stormwater standards

For each Project, the Proponent's Construction Manager will be required to submit a Stormwater Pollution Prevention Plan (SWPPP) as part of the NPDES Construction General Permit process. This submittal will include the specific measures the Contractor will take to manage stormwater and prevent erosion and sedimentation during construction. Typical urban measures include fractionalization tanks, sediment traps, street sweeping, dust control, etc. Given the highly developed existing condition of the Projects' sites, significant changes to the rate and volume of runoff are not expected.

MEPA.26 Existing drainage infrastructure including ownership, capacity, and stormwater flow paths within the public collection systems

In terms of storm drain, the BCCB may tie into a BWSC 15-inch and/or a BWSC 24-inch storm drain line in Longwood Avenue. 819 Beacon Street may tie into either a BWSC 12-inch line located in Maitland Street and/or a BWSC 24-inch line located in Beacon Street. Wherever possible, stormwater will be discharged into Maitland Street. As noted in Chapter 8.0, the Projects are intending to maintain or reduce discharge rates, therefore creating no additional demand on existing systems. As part of the design process and in conjunction with stormwater management and sustainability objectives, the Proponent will be exploring means to beneficially re-use stormwater, reducing discharge rates. The 819 Beacon Street Project is currently contemplating an approximately 7,000 sf vegetated roof area.

MEPA.27 Main Campus and 819 Beacon Street discharge

The Proponent intends to complete a review process with the BWSC. The Proponent intends to comply with applicable city, state, and federal regulatory standards.

MEPA.28 Infiltration/Inflow

The Proponent will work with BWSC on an inflow reduction plan.

MEPA.29 Ownership and capacity of sewer collection system

In terms of sanitary sewer, the BCCB may tie into one of numerous sanitary sewer lines located in the adjacent streets. 819 Beacon Street may tie into a 12-inch and/or 20-inch sanitary sewer line located in Beacon Street. For all projects, BWSC owns and maintains a separated sanitary sewer system. As outlined in Chapter 8.0, additional sanitary flows are expected. At this time the Proponent is unaware of any capacity constraints in these sanitary sewer systems.

MEPA.30 Water use and wastewater estimates for CHP

Comment noted. Under the current design, the CHP facility is not expected to have appreciable water demands or generate sewerage.

MEPA.31 Impacts on historic resources

Chapter 7.0 identifies historic properties and districts in the vicinity of the BCCB and 819 Beacon Street Project sites, potential Project-related impacts and alternatives that have been considered to avoid, minimize and mitigate impacts to historic resources. Children's is committed to further consultations with MHC and interested parties, such as BLC and the Boston Preservation Alliance, and anticipates developing a Memorandum of Agreement with MHC and the interested parties to formalize measures to mitigate project impacts on historic resources.

MEPA.32 Construction phasing and potential impacts associated with construction and demolition

Section 5.9 includes a detailed discussion of construction impacts.

MEPA.33 Construction logistics and pedestrian safety

Section 5.9 includes information on construction impacts. A Construction Management Plan will be submitted to BTD prior to issuance of a building permit. The Construction Management Plan will provide information on laydown areas, equipment storage, worker parking, truck routes, etc.

MEPA.34 MassDEP's Solid Waste and Air Quality Control during construction

For those materials that cannot feasibly be recycled, solid waste will be transported in covered trucks to an approved solid waste facility, per MassDEP Regulations for Solid Waste Facilities (310 CMR 16.00). This requirement will be specified in the disposal contract documents. Construction will be conducted so that materials that may be recycled are segregated from those materials not recyclable to enable disposal at an approved solid waste facility. Prior to conducting demolition activities, Massachusetts-licensed abatement contractors will be retained to remove the ACM and other materials in compliance with applicable regulations. Section 5.9.5 includes air quality mitigation measures.

MEPA.35 Construction waste management plan

BCH has committed to the implementation of a construction waste management plan that establishes a minimum reuse/recycling goal of 50%. Please see Section 5.9.8.

MEPA.36 **Installation of after-engine emission controls**

BCH has committed to the installation of after-engine emission controls such as diesel oxidation catalysts or diesel particulate filters on construction vehicles and use of Ultra Low Sulfur Diesel fuel in off-road engines. Please see Section 5.9.5.

MEPA.37 **Section 61 findings**

Please see Chapter 11.0 for the proposed Section 61 Findings.

MEPA 38 **Circulation**

Appendix I includes the MEPA Circulation List.

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In the event that the proposed project is required to provide an EIR, the MEPA Policy and Protocol (the Protocol) requires that it include an analysis and quantification of the projected greenhouse gas (GHG) emissions generated from stationary direct and indirect sources as required by and in compliance with the requirements of the Protocol.

In the main, the Protocol requires that a project provide that the analysis of stationary GHG sources for any proposed building project include the following: DOER.1

- A description of each building or other source, including: Size (sf), occupancy by area; description of envelope; building systems (HVAC, lighting, any other system or feature that will be a major energy load).
- A quantification of the projected annual energy usage both electric and other fuel (e.g. natural gas) using an approved building energy computer simulation model for both the baseline and as-proposed (i.e. mitigated building), both of which must be compliant with the current effective Mass. building energy codes.
- A quantification of the projected annual GHG emissions for both the baseline and the as-proposed cases to be determined by the application of the appropriate fuel specific CO2 emission factors to the projected energy usage as determined by the modeling performed.
- A detailed description of all mitigation measures considered with a clear distinction between those which are proposed, under study, or not to be included.
- A tabulated list of the performance related values (e.g. R and U values, EERs, LPDs, etc.) used in both the baseline and as-proposed models.
- A copy of the computer model files

The DOER strongly recommends that the proponent review the Protocol for all relevant details.

Effective Code:

As the City of Boston applied for, and has been certified by the DOER, as a Green Community, the Mass. Stretch Energy Code (the MSC) is the effective building energy code.

The Code provides both a prescriptive and performance compliance pathways for proposed building projects between 5,000 and 100,000 sf. However, in order to comply with the requirements of the Protocol, the performance path must be used.

The performance path option compares a baseline and an as-proposed design established and modeled in conformance with ASHRAE 90.1 2007 Appendix G (energy only). In DOER.2

order to comply with the MSC this case there is a minimum threshold of a 20% reduction in the energy usage of the as-proposed design when compared with the baseline case.

Energy Design Mitigation Measures: (EDMs)

Combined Heat and Power (CHP): DOER.3

The DOER commends the proponent for the inclusion of CHP in the design of the as-proposed CCB project. When properly sized, designed and operated, CHP can deliver many benefits to the host facility including savings, resiliency to power outages, as well as a substantial reduction in source greenhouse gas (GHG) emissions, where source energy reduction is defined as the reduction in the GHG emitted by CHP system as compared with the emissions that would occur if that same amount of electricity and thermal energy were to be supplied separately from the utility electrical grid and a conventional thermal conversion unit such as a boiler.

However, the DOER would like to alert the proponent to an issue with the application of the current version of the MSC to projects that include CHP in the design. The current MSC requires that the quantification of the projected site energy usage for both the baseline and as-proposed cases. As the fuel usage associated with meeting the as-proposed building load will include the fuel input to the CHP unit to meet both the electrical loads as well as the thermal loads, the site energy usage appears to be large, resulting in a penalty to the building in being able to attain the 20% reduction when compared with the baseline non-CHP building, which does not include the fuel required by the utility grid to supply the electricity. Because of this, the current MSC does not properly credit the efficiency attribute of the CHP system.

In order to address this problem, the DOER has proposed a revision to a draft version of the next version of the MSC which will allow projects to choose between using a performance path based on site energy or one that is based on source energy. Selection of this option does not require additional modeling to the modeling required to comply with the Protocol, only the application of DOE approved source fuel factors to the electricity and gas usage as projected by the modeling. However, the performance of the as-proposed CHP system will have to be modeled, and the DOER can provide guidance and tools to assist the project with this task.

As the project is committed to serious consideration of incorporating some measure of CHP, the DOER suggests the proponent should consider including both the site and source energy based quantifications of projected energy usage and GHG emissions in a DEIR.

At the time of this letter, the DOER does not have a version of the as-proposed source energy path protocol which has been approved for release use by a project prior to approval by the MA Board of Building Regulations and Standards. However, if the project is interested in pursuing this option, contact John Ballam, DOER Engineering Manager, at 1-617-626-1070 and the DOER will be glad to work with the project to see if this can be done and to discuss the relevant details.

<u>Suggested EDMs</u> DOER.4

The DOER recommends consideration of the following EDMs which can potentially achieve significant reductions in both the projected energy usage and related GHG emissions: (Note incorporation of many of the EDMs below into the CCB could result in a significant reduction in the design loads to be met by the CHP system resulting in a smaller, lower cost CHP system)

Building Envelope:

- Maintain the window area at less than or equal to 40% of total wall area.
- Use high performance double glazed low e glazing.
- Minimize uncontrolled infiltration of outside unconditioned air though the careful and coordinated design of windows, doors, vents, louvers, and the HVAC system.
- Energy Recovery Ventilation: Increase R-values of roof and walls by at least 20% beyond the code required minimum.

HVAC:

- Energy Recovery Ventilation (ERV): ERV systems significantly reduce HVAC loads through preconditioning of the fresh air supply by transfer of heat from the building exhaust air stream. Where possible incorporate a complete ERV system. Where prevented by safety concerns from using an ERV with a regenerative desiccant for the control of latent cooling loads, incorporate a sensible heat transfer only ERV system.
- Use of highly efficient AC units (DX and Chillers)
- Use of oversized cooling towers
- Use of VFD drives for pumps, fans and compressors and any additional large rotating equipment.
- Use of condensing boilers and/or furnaces.
- Use of water source heat pumps (WSHP) in combination with a low temperature condensing hydronic boiler and cooling tower.
- Incorporation of a sufficient number of thermal zones to allow for a level of EMS control that will allow the HVAC system to maintain building-wide comfort while minimizing the energy usage.
- Lab Fume Hoods: Incorporate advanced variable flow controls.

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Lighting:

- Include access to and automatic control of natural daylight.
- Achieve at least a 20% reduction of lighting power density (LPD) below code maximum by use of daylight, automatic dimmer controls, efficient fixtures and a system layout which is tailored to the specific usage for each programmed space.
- Incorporation of Solar Photovoltaic renewable energy systems wherever applicable (Note: All buildings should be designed to be "solar ready").

Plug Loads

- Use Energy Star rated office equipment and appliances throughout. Provide auto-off outlets for equipment that can be safely turned off when not in use.

Process Loads:

- Develop energy efficiency criteria for the selection and procurement of all equipment to be used for diagnostic (e.g. imaging) purposes and the treatment, care and monitoring of patients so as to ensure that minimization of both the associated electrical and mechanical loads and related building energy consumption will be achieved.

Commissioning:

- The buildings should be commissioned by an independent, qualified commissioning agent.

Energy Management System (EMS):

- Include and EMS with sufficient capacity, functionality, level of status reporting, and user operability to ensure that the building systems can be centrally operated and controlled to at least be able to realize the as-designed energy consumption.

Sub-metering:

- Provide sufficient interval type meters for the sub-metering of major individual electrical and thermal loads as well fuel consumption.

For additional suggested measures:

- Consult the Green Guide for Health Care version 2.2
  http://www.gghc.org/documents/Version2.2/GGHC_v2-2.pdf
  with particular attention to the Energy and Atmosphere section (beginning on page 8-1)

Department of Energy Resources

DOER.1 Analysis of stationary greenhouse gas sources

A greenhouse gas analysis in accordance with the MEPA Greenhouse Gas Emissions Policy and Protocol is provided in Chapter 9.0.

DOER.2 A comparison of the energy usage of the proposed design and the baseline case

As agreed with DOER and the MEPA Office during a December 11, 2012 meeting, the Proponent has voluntarily modeled, using ASHRAE 90.1 Appendix G protocol, with IECC 2012 as the Baseline and a minimum criterion of 15% energy use reduction from Baseline in anticipation of the BBRS adopting IECC into the MBC and also adopting a revised Stretch Code in the near future.

DOER.3 Combined Heat and Power (CHP)

Please refer to the response to comment DOER.2 and to Section 9.2.2.

DOER.4 Suggested EDMs

Please refer to Chapter 9.0 and Appendix H and recognize that both buildings are in very early phases of design whereas some of the EDMs suggested will be addressed later as design progresses.

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

RICHARD K. SULLIVAN JR.
Secretary

KENNETH L. KIMMELL
Commissioner

November 13, 2012

Richard K. Sullivan Jr., Secretary
Executive Office of
Energy & Environmental Affairs
100 Cambridge Street
Boston MA, 02114

RE: Boston
300 Longwood Avenue and 819 Beacon Street
EEA # 14964

Attn: MEPA Unit

Dear Secretary Sullivan:

The Massachusetts Department of Environmental Protection (MassDEP) has reviewed the Environmental Notification Form (ENF) submitted by the Children's Hospital Corporation and its affiliated entities to demolish existing building space totaling about 41,689 square feet (sf) in order to construct a 445,000 square foot, Children's Clinical Building on a 1.2 acre site with approximately 22,250 sf of new and expanded green space. On a separate, 1.6 acre site at 819 Beacon Street, a 424,130 sf building is proposed for office, retail, and parking. New parking and the expansion of the Patient and Family Parking Garage will add 277 net new parking spaces to Children's Hospital facilities in Boston (EEA #14964). The project is categorically included for the preparation of an environmental impact report. The Department provides the following comments.

Wastewater

The ENF states that there is sufficient capacity in the existing collection system to accommodate the estimated 165,017 gallons per day (gpd) of new wastewater flow, which will increase the wastewater discharge to 168,144 gpd from the project. Since new flows from the site will be greater than 50,000 gpd, a sewer extension/connection permit will be required for the project. Additional information on the sewer extension and connection regulations is available on the MassDEP website: http://www.mass.gov/dep/service/regulations/314cmr07.pdf. Flows from the entire project must be included in the MassDEP Sewer Connection Permit Application. Wastewater generated by the project will discharge into the City of Boston's sewer system and ultimately flow to the MWRA's Deer Island Wastewater Treatment Facility.

MassDEP collaborates with MWRA and its member communities, (including Boston), in implementing a flow control program in the MWRA regional wastewater system to remove extraneous clean water, which is referred to as infiltration/inflow (I/I) from the sewer system.

Proponents adding significant new wastewater flow participate in the I/I reduction effort to ensure that the additional wastewater flows from their projects are offset by the removal of I/I. In accordance with the provisions of the MassDEP policy on I/I mitigation requirements in MWRA communities (available at http://www.mass.gov/dep/water/laws/mwraii09.pdf), I/I mitigation is a required element of a MassDEP sewer connection permit for projects which generate greater than 15,000 gallons per day of wastewater flow where a project exceeds any MEPA threshold for an EIR or if the project has a significant risk of creating conditions leading to a sanitary sewer overflow. Given the scope and impacts of the proposed project, and the need for I/I mitigation, the proponent should arrange to meet with MassDEP and the City of Boston to develop a plan to meet the mitigation requirements of the MassDEP I/I Policy. DEP.1

Greenhouse Gas Emissions

This project is categorically included for the preparation of an environmental impact report and therefore, the project is subject to the MEPA Greenhouse Gas Emissions Policy and Protocol. Since the ENF did not provide a GHG analysis, MassDEP will review the GHG analysis in the EIR for consistency with the policy, and in particular will be looking for an understanding of the approach and objectives to reducing greenhouse gas emissions for this project. Sufficient information should be presented to demonstrate that the project has avoided, minimized, and mitigated CO_2 emissions in conformance with the MEPA regulatory and policy standards.

The policy requires the proponent to use energy modeling software to quantify projected energy consumption and the related GHG emissions from direct and indirect stationary sources. The policy allows the proponent to select a model but, DEP and DOER recommend using EQUEST for stationary source modeling. The EIR should include the modeling printout for each of the three scenarios: base case, preferred alternative case, and preferred alternative with greater GHG mitigation case. In addition, the EIR should include emission tables that compare base case emissions in tons with the mitigation alternatives showing the reduction in tons and percentage by emissions source, direct, indirect and transportation. Other tables or graphs that show the tonnage and percentage reduction of major mitigation elements are also very useful in comparing the value added of different measures. The EIR should explain, in reasonable detail, any measure not selected- either because it is not applicable to the project or is considered technically or financially infeasible- that would result in a significant reduction of GHG. DEP.2 DEP.3 DEP.4

The Department recognizes this project for the proposal to incorporate a combined head and power (CHP) facility into the project. At this stage of the review, the feasibility of various options are under consideration, including a stand-alone CHP facility for the Children's Clinical Building or a larger facility that would cork with CHP facilities nearby. Based upon a review of the ENF by staff from the Bureau of Waste Prevention regarding construction of a CHP system at your facility and air quality issues, MassDEP offers the following comments:

1. The proponent shall ensure that the EIR documents compliance with the applicable MassDEP regulations in 310 CMR 7.26(43) and 310 CMR 7.26(45) as described below. DEP.5

(43) Engines and Turbines
(a) Applicability. 310 CMR 7.26(43) in its entirety shall apply to any person who owns or operates engines with a rated power output equal to or greater than 50kW and to turbines with a rated power output less than or equal to ten MW that are constructed, substantially reconstructed, or altered on or after March 23, 2006.

(45) *Combined Heat and Power (CHP)*
The purpose of 310 CMR 7.26(45) is to encourage the installation of CHP systems. A methodology is set forth whereby emission credits are utilized in determining compliance of a CHP installation with the emission limitations contained in 310 CMR 7.26(43)(b).
(a) Eligibility. CHP installations shall meet the following requirements to be eligible for emission credits related to thermal output:

1. The power-to-heat ratio must be between 4.0 and 0.15.
2. The design system efficiency must be at least 55 percent.
3. The CHP project must comply with the requirements of 310 CMR 7.02(5)(c).
4. The engine has a rated power output equal to or greater than 50 kW or the turbine has a rated power output less than or equal to ten MW.

2. The proponent shall ensure that the proposal documents are in compliance with 310 CMR 7.01 (generally "do not create a condition of air pollution"), 310 CMR 7.02 (plan approval and Best Available Control Technology for all criteria pollutants including greenhouse gases), if the proposal will employ 310 CMR 7.26(45), 310 CMR 7.06 (visible emissions), 310 CMR 7.09 (dust, odor, construction, and demolition), 310 CMR 7.10 (noise), 310 CMR 7.12 (source registration), 310 CMR 7.13 (stack testing), 310 CMR 7.14 (monitoring devices and reports), 310 CMR 7.15 (asbestos - if asbestos removal will be required as part of construction), and 310 CMR 7.71 (reporting of greenhouse gas emissions). DEP.6

3. The proponent shall employ the most technologically advanced sound suppression/noise abatement systems for all of the proposed sound emitting equipment to be installed at the proposed site location. In no event should the sound from the project, combined with the existing equipment at the site exceed the noise levels contained in MassDEP's noise policy. DEP.7

4. The proponent also shall ensure that the proposal documents compliance with all applicable federal regulations under 40 CFR Part 60, Standards of Performance for New Stationary Sources; 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants; and 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories. DEP.8

5. The proponent shall provide all applicable air emission rate calculations which should include the proposed air contaminant emission factors and details on any air pollution control equipment that will be proposed for the project. DEP.9

6. The proponent shall complete an air quality impact analysis and air quality modeling protocol to document that the air emissions from the proposal will not result in an exceedance of any applicable National Ambient Air Quality Standard. Please contact MassDEP's Boston Air Modeling Branch for guidance concerning the air quality modeling protocol. DEP.10

Construction Period Air Quality Mitigation Measures DEP.11

MassDEP recommends that the proponent work with its staff to implement construction-period diesel emission mitigation, which could include the installation of after-engine emission controls such as oxidation catalysts or diesel particulate filters. Additional information is available on the MassDEP website: http://www.mass.gov/dep/air/diesel/conretro.pdf. In addition, project contractor(s) are required to use ultra low diesel fuel (ULSD) in their off-road construction equipment in conjunction with after-engine emission controls.

Recycling Issues

The project includes demolition and reconstruction, which will generate amount of construction and demolition (C&D) waste. Although the commitment to recycling construction debris has not yet been quantified, MassDEP encourages the project proponent to incorporate significant C&D recycling activities as a sustainable measure for the project. In addition, the proponent is advised that demolition activities must comply with both Solid Waste and Air Pollution Control regulations, pursuant to M.G.L. Chapter 40, Section 54, which provides: DEP.12

"Every city or town shall require, as a condition of issuing a building permit or license for the demolition, renovation, rehabilitation or other alteration of a building or structure, that the debris resulting from such demolition, renovation, rehabilitation or alteration be disposed of in a properly licensed solid waste disposal facility, as defined by Section one hundred and fifty A of Chapter one hundred and eleven. Any such permit or license shall indicate the location of the facility at which the debris is to be disposed. If for any reason, the debris will not be disposed as indicated, the permittee or licensee shall notify the issuing authority as to the location where the debris will be disposed. The issuing authority shall amend the permit or license to so indicate."

For the purposes of implementing the requirements of M.G.L. Chapter 40, Section 54, MassDEP considers an asphalt, brick, and concrete (ABC) rubble processing or recycling facility, (pursuant to the provisions of Section (3) under 310 CMR 16.05, the Site Assignment regulations for solid waste management facilities), to be conditionally exempt from the site assignment requirements, if the ABC rubble at such facilities is separated from other solid waste materials at the point of generation. In accordance with 310 CMR 16.05(3), ABC can be crushed on-site with a 30-day notification to MassDEP. However, the asphalt is limited to weathered bituminous concrete, (no roofing asphalt), and the brick and concrete must be uncoated or not impregnated with materials such as roofing epoxy. If the brick and concrete are not clean, the material is defined as construction and demolition (C&D) waste and requires either a Beneficial Use Determination (BUD) or a Site Assignment and permit before it can be crushed.

Pursuant to the requirements of 310 CMR 7.02 of the Air Pollution Control regulations, if the ABC crushing activities are projected to result in the emission of one ton or more of particulate matter to the ambient air per year, and/or if the crushing equipment employs a diesel oil fired engine with an energy input capacity of three million or more British thermal units per hour for either mechanical or electrical power which will remain on-site for twelve or more months, then a plan application must be submitted to MassDEP for written approval prior to installation and operation of the crushing equipment.

In addition, if significant portions of the demolition project contain asbestos, the project proponent is advised that asbestos and asbestos-containing waste material are a special waste as defined in the Solid Waste Management regulations, (310 CMR 19.061). Asbestos removal notification on permit form ANF 001 and building demolition notification on permit form AQ06 must be submitted to MassDEP at least 10 working days prior to initiating work. Except for vinyl asbestos tile (VAT) and asphaltic-asbestos felt and shingles, the disposal of asbestos containing materials within the Commonwealth must be at a facility specifically approved by MassDEP, (310 CMR 19.061). No asbestos containing material including VAT, and/or asphaltic-asbestos felts or shingles may be disposed at a facility operating as a recycling facility, (310 CMR 16.05). The disposal of the asbestos containing materials outside the jurisdictional boundaries of the Commonwealth must comply with all the applicable laws and regulations of the state receiving the material. DEP.13

The demolition activity also must conform to current Massachusetts Air Pollution Control regulations governing nuisance conditions at 310 CMR 7.01, 7.09 and 7.10. As such, the proponent should propose measures to alleviate dust, noise, and odor nuisance conditions, which may occur during the demolition. Again, MassDEP must be notified in writing, at least 10 days in advance of removing any asbestos, and at least 10 days prior to any demolition work. The removal of asbestos from the buildings must adhere to the special safeguards defined in the Air Pollution Control regulations, (310 CMR 7.15 (2)). DEP.14

Facilitating future waste reduction and recycling and integrating recycled materials into the project are necessary to minimize or mitigate the long-term solid waste impacts of this type of development. The Commonwealth's waste diversion strategy is part of an integrated solid waste management plan, contained in The Solid Waste Master Plan that places a priority on source reduction and recycling. Efforts to reduce waste generation and promote recycling have yielded significant environmental and economic benefits to Massachusetts' residents, businesses and municipal governments over the last ten years. Waste diversion will become even more important in the future as the key means to conserve the state's declining supply of disposal capacity and stabilize waste disposal costs. DEP.15

As the lead state agencies responsible for helping the Commonwealth achieve its waste diversion goals, MassDEP and EEA have strongly supported voluntary initiatives by the private sector to institutionalize source reduction and recycling into their operations. Adapting the design, infrastructure, and contractual requirements necessary to incorporate reduction, recycling and recycled products into existing large-scale developments has presented significant challenges to recycling proponents. Integrating those components into developments such as the Boston Children's Hospital 2012 Institutional Master Plan Amendment project at the planning and design stage will enable the project's management and occupants to establish and maintain effective waste diversion programs. For example, facilities with minimal obstructions to trash receptacles and easy access to main recycling areas and trash chutes allow for implementation of recycling programs and have been proven to reduce cleaning costs by 20 percent to 50 percent. Other designs that provide sufficient space and electrical services will support consolidating and compacting recyclable material and truck access for recycling material collection.

By incorporating recycling and source reduction into the design, the proponent has the opportunity to join a national movement toward sustainable design. Sustainable design was endorsed in 1993 by the American Institute of Architects with the signing of its *Declaration of Interdependence for a Sustainable Future.* The project proponent should be aware there are several organizations that provide additional information and technical assistance, including WasteCap, the Chelsea Center for Recycling and Economic Development, and MassRecycle.

Massachusetts Contingency Plan/M.G.L. c.21E DEP.16

The ENF indicates that there have not been releases of contamination previously on site. However, the project proponent is advised that excavating, removing and/or disposing of contaminated soil, pumping of contaminated groundwater, or working in contaminated media must be done under the provisions of MGL c.21E (and, potentially, c.21C) and OSHA. If permits and approvals under these provisions are not obtained beforehand, considerable delays in the project can occur. The project proponent cannot manage contaminated media without prior submittal of appropriate plans to MassDEP, which describe the proposed contaminated soil and groundwater handling and disposal approach, and health and safety precautions. If contamination at the site is known or suspected, the appropriate tests should be conducted well in advance of the start of construction and professional environmental consulting services should be readily available to provide technical guidance to facilitate any necessary permits. If dewatering activities are to occur at a site with contaminated groundwater, or in proximity to contaminated groundwater where dewatering can draw in the contamination, a plan must be in place to properly manage the groundwater and ensure site conditions are not exacerbated by these activities. Dust and/or vapor monitoring and controls are often necessary for large-scale projects in contaminated areas. The need to conduct real-time air monitoring for contaminated dust and to implement dust suppression must be determined prior to excavation of soils, especially those contaminated with compounds such as metals and PCBs. An evaluation of contaminant concentrations in soil should be completed to determine the concentration of contaminated dust that could pose a risk to health of on-site workers and nearby human receptors. If this dust concentration, or action level, is reached during excavation, dust suppression should be implemented as needed, or earthwork should be halted.

Potential Indoor Air Impacts: Parties constructing and/or renovating buildings in contaminated areas should consider whether chemical or petroleum vapors in subsurface soils and/or groundwater could impact the indoor air quality of the buildings. All relevant site data, such as contaminant concentrations in soil and groundwater, depth to groundwater, and soil gas concentrations should be evaluated to determine the potential for indoor air impacts to existing or proposed building structures. Particular attention should be paid to the vapor intrusion pathway for sites with elevated levels of chlorinated volatile organic compounds such as tetrachloroethylene (PCE) and trichloroethylene (TCE). MassDEP has additional information about the vapor intrusion pathway on its website at http://www.mass.gov/dep/cleanup/laws/vifs.htm.

New Structures and Utilities: Construction activities conducted at a disposal site shall not prevent or impede the implementation of likely assessment or remedial response actions at the site. Construction of structures at a contaminated site may be conducted as a Release Abatement Measure if assessment and remedial activities prescribed at 310 CMR 40.0442(3) are completed within and adjacent to the footprint of the proposed structure prior to or concurrent with the construction activities. Excavation of contaminated soils to construct clean utility corridors should be conducted for all new utility installations.

Air Quality

DEP.17

Pre-installation approval from MassDEP is required, pursuant to 310 CMR 7.02, if the project will include installation of any boiler sized above the levels contained in 310 CMR 7.26(30)-(37), inclusive. Natural gas or distillate fuel oil fired boilers with an energy input capacity less than 10,000,000 British thermal units per hour are exempt from the above listed regulations. In addition, if the project will be equipped with emergency generators equal to or greater than 37 kW, then each of those emission units must comply with the regulatory requirements in 310 CMR 7.26(42).

The MassDEP appreciates the opportunity to comment on this proposed project. Please contact Jim.Belsk@state.ma.us at (978) 694-3288 for air quality impacts, and Kevin.Brander@state.ma.us at (978) 694-3236 for further information on the wastewater issues. If you have any general questions regarding these comments, please contact Nancy.Baker@state.ma.us , MEPA Review Coordinator at (978) 694-3338.

Sincerely,

John D. Viola
Deputy Regional Director

cc: Brona Simon, Massachusetts Historical Commission
Jim Belsky, Kevin Brander, Marc Altobelli, Ed Braczyk, MassDEP-NERO
John Ballam, DOER
John Sullivan, BWSC
Marianne Connelly, MWRA

Department of Environmental Protection, Northeast Regional Office

DEP.1 MassDEP I/I Policy

The Proponent will work with BWSC on an inflow reduction plan.

DEP.2 Building energy model

Please refer to Chapter 9.0. The eQUEST model has been used.

DEP.3 Greenhouse gas modeling printout and tables

Please refer to Sections 9.2 and 9.3 and Appendix H. The MEPA Greenhouse Gas Emissions Policy and Protocol revision in May 2010 deleted the "preferred alternative with greater GHG mitigation case," replacing it with a requirement to address additional measures that may further reduce GHG emissions.

DEP.4 Greenhouse gas mitigation measures not selected

Please refer to Chapter 9.0.

DEP.5 EIR documents compliance with the applicable MassDEP regulations in 310 CMR 7.42(43) and 310 CMR 7.26(45)

Boston Children's Hospital anticipates that it will comply with the design requirements at 310 CMR 7.26(43), Engines and Turbines, for its 1,200 kW natural gas-fired engine. The requirements include meeting the emission limits, after controls, of 0.15 lb/MW-hr NOx, 1 lb/MW-hr CO and 1,650 lb/MW-hr CO_2. The engine will meet these limitations with a Selective Catalytic Reduction (SCR) and an oxidation catalyst. At this time, it is not expected that the special CHP provisions of 310 CMR 7.26(45) will be utilized.

Other design requirements are listed below.

- Discharging to a vertical stack, a minimum of 10 feet above the rooftop or the turbine enclosure, and performing air quality modeling demonstrating compliance with all National Ambient Air Quality Standards. The air quality modeling analysis is to be submitted within 60 days of installation of the unit.
- Meeting all state noise requirements.
- Certifying that the engine and pollution control devices will meet the emission limitations for 15,000 hours of operation or the first three years of operation.

- Maintaining records including:
  - Information on type, make and model and maximum power output;
  - Monthly log of hours of operation, fuel used, fuel type, heating value, sulfur content, monthly calculation of the total hours operated and fuel used in the previous 12 months;
  - Purchase orders, invoices and other documents to support the information in the monthly log; and
  - Copies of certificates and documentation from the engine and control device manufacturers.

Boston Children's Hospital will also comply with 310 CMR 7.26(33)-(37) for the two dual-fueled firetube boilers with heat inputs of approximately 37 MMBtu/hr, each. The emissions requirements for these dual fuel boilers are as follows:

Pollutant	Natural Gas (lb/MMBtu)	ULSD (lb/MMBtu)
NOx	0.035	0.15
PM	0.01	0.02
CO	0.08	0.08
VOC	0.03	0.03

The sulfur dioxide emissions are limited using ULSD, which has a sulfur content of 0.0015%.

Other requirements include:

- Operating the boiler as required per the manufacturer's Standard Operating and Maintenance Procedures.
- Performing a boiler tune-up on an annual basis.
- Only using fuel additives in accordance with manufacturer's instructions.
- Stack requirements will be confirmed using an EPA Guideline air quality model to document that operation of the boilers does not create a condition of air pollution.
- Vertically exhausting the stack and not equipping the stack with any restriction on the exhaust.

- Recordkeeping including: dates of boiler installation and first operation, monthly record of fuel type, additives, fuel usages, sulfur content (by fuel supplier), written record of all tune-ups, inspections and results of efficiency tests, and purchase orders to document fuel use.

- Maintaining up-to-date records such that year-to-date information is readily available and will be maintained for the last three calendar years.

- Reporting the boilers' emissions to MassDEP via the Emissions Statement program at 310 CMR 7.12.

DEP.6 Compliance with a variety of Commonwealth regulations

During the design process, the Proponent will confirm that the design of the facility will comply with the following regulations:

- 310 CMR 7.01 Do not create a condition of air pollution.

- 310 CMR 7.02 Plan Approvals are not required since this Project will comply with the Environmental Results Program at 310 CMR 7.26(43).

- 310 CMR 7.06 Visible emissions will be limited as follows:

    - Limit smoke emissions to $<$ No. 1 of Chart , except No. 1 to $<$ No. 2 of Chart for $\leq$ 6 minutes during any one hour per 310 CMR 7.06(1), and

    - Limit opacity to $<$ 20%, except 20% to $<$ 40% for $\leq$ 2 minutes during any one hour per 310 CMR 7.06(2).

- 310 CMR 7.09 Dust, odor, construction and demolition – The CHP will comply with all appropriate methods to minimize dust, odor, construction and demolition (if applicable).

- 310 CMR 7.10 Noise – The CHP will comply with the MassDEP's Noise Policy and therefore the CHP will not increase sound levels by more than 10 dBA over ambient background, nor will it generate a pure tone.

- 310 CMR 7.12 Source Registration – BCH will add the new units (engine, two boilers, tanks, and stacks), to its next Emission Statement.

- 310 CMR 7.13 Stack Testing – If required by the MassDEP, the Project will conduct stack testing using all appropriate levels.

- 310 CMR 7.14 Monitoring – The CHP will monitor fuel use for the combustion equipment and opacity.

- 310 CMR 7.15 Asbestos – The CHP will dispose of any asbestos generated during construction in compliance with applicable regulations.

- 310 CMR 7.26(33)-(37) and (43) are discussed in in DEP.5.

- 310 CMR 7.26(45) will not apply since the Project will be permitted under the ERP Program.

- 310 CMR 7.71 Reporting of Greenhouse Gas Emissions - If the CHP exceeds the appropriate thresholds for the reporting of greenhouse gas emissions, the Proponent will report its emissions.

DEP.7 Noise mitigation

Section 5.6 of the DPIR/DEIR includes a detailed analysis of noise impacts from the 819 Beacon Street and BCCB Projects' mechanical equipment and associated noise control.

DEP.8 Compliance with applicable federal regulations

The CHP will also comply with applicable federal regulations. Specifically, the Project will need to meet New Source Performance Standards (NSPS) Subpart IIII at 40 CFR 60 for the engine and NSPS Subpart Dc at 40 CFR 60 for the new boilers. The ERP regulations for engines at 310 CMR 7.26(42) are more restrictive than the NSPS requirements for new engines. The NSPS for natural gas and oil-fired boilers are limited to using no more than 0.5% fuel oil.

40 CFR 61 is the beginning of the Hazardous Air Pollutant (HAP) requirements – Children's is a minor source of HAPs. 40 CFR 63 Subpart ZZZZ is for engines but the ERP requirements at 310 CMR 7.26(42) are more restrictive than these requirements for engines. 40 CFR 63 Subpart DDDDD is for boilers at major sources of HAPs only.

DEP.9 Air emission rate calculations

The air emission rate calculations for the engine and the boilers are as follows:

Emissions Summary

Unit Type		1200 kW Engine*	Boilers*	Emergency Generators	Total Project
Fuel	Units	Nat Gas	Nat Gas	ULSD	Emissions
# Units		1	2	4	
Heat Input	MMBtu/hr	10.5	37	23.7	
NOx	lb/MW-hr	0.15			
	lb/MMBtu		0.035	1.69	
	tpy	0.8	11.3	24.1	36.1
CO	lb/MW-hr	0.99			
	lb/MMBtu		0.036	0.14	
	tpy	5.21	11.6	2.0	
CO2	lb/MW-hr	952			
VOC	lb/MMBtu	0.14	0.006	0.03	
	tpy	5.70	1.9	0.5	
PM10/PM2.5	lb/MMBtu	0.010	0.007	0.012	
	tpy	0.45	2.3	0.2	
* assumes 8,760 hr/yr nat gas					

DEP.10 Air quality impact analysis

Since the proposed CHP will be permitted using an engine and boilers that are subject to the MassDEP's ERP for engines and boilers, BCH will file the applications at the appropriate time, within 60 days of installation for the engines and prior to construction for the boilers. The air quality analyses required for the engine and the boilers will both be performed prior to design in order to confirm that the CHP will meet all NAAQS.

DEP.11 Construction-period diesel emission mitigation

Please see Response to Comment MEPA.36.

DEP.12 Recycling

Please see Response to Comment MEPA.34 and MEPA.35.

DEP.13 Asbestos removal (if necessary)

Prior to conducting demolition activities, Massachusetts-licensed abatement contractors will be retained to remove the ACM and other materials in compliance with applicable regulations. Please see Section 5.9.11.1 for additional information.

DEP.14 Demolition activity conforming to current Massachusetts Air Pollution Control regulations

Please see Sections 5.9.4 and 5.9.11.1 for information about construction mitigation and demolition.

DEP.15 Waste diversion

Sections 5.8.1.3 and 5.8.2.3 include information about recycling.

DEP.16 Hazardous Wastes On-site

Please see Sections 5.8.1.1 and 5.8.1.2.

DEP.17 MassDEP approval related to boilers and emergency generators

BCH will comply with all appropriate regulations for the boilers at 310 CMR 7.26(33)-(37) and 310 CMR 7.26(43) for the installation of any new emergency generators.

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

November 13, 2012

Secretary Richard K. Sullivan, Jr.
Executive Office of Energy and Environmental Affairs (EEA)
100 Cambridge Street, Suite 900
Boston MA 02114

ATTN: Deirdre Buckley

RE: Children's Hospital 2012 IMP, Children's Clinical Building (CCB), Combined Heat & Power (CHP) Plant (300 Longwood Ave), Parking Garage Addition, & New Construction at 819 Beacon Street, Boston (Fenway), MA; MHC# RC.53231; EEA# 14964

Dear Secretary Sullivan:

Staff of the Massachusetts Historical Commission (MHC) have reviewed the Environmental Notification Form (ENF) for the project referenced above, received October 16, 2012. The staff of the MHC has reviewed the information submitted and has the following comments.

The MHC understands that the Institutional Master Plan (IMP) Amendment submitted includes projects at three separate locations in the Fenway area, as described below.

The IMP proposes a one-story addition to the existing Patient and Family Parking Garage on Longwood Avenue. This location is immediately adjacent to the Hunnewell Building, formerly known as the Children's Hospital Administration Building (BOS.7513), several buildings associated with Harvard Medical School (BOS.7516, BOS. 7508-7012), which are included in MHC's Inventory of Historic and Archaeological Assets of the Commonwealth. After review of the information submitted, I have determined that the proposed one-story addition will have "no adverse effect" (950 CMR 71.07(2)(b)(2)) MHC.1 on the Hunnewell Building/former Children's Hospital Administration Building and the Harvard Medical School buildings.

The IMP also proposes construction of a new 10-story mixed retail and office building at 819 Beacon Street. The site is currently vacant and used as a surface parking lot. This site is nearby to several properties and districts that are included in the State and National Registers of Historic Places and/or are Local Historic Districts, including the Sears Roebuck and Company Mail Order Store Building (BOS.7563), Fenway Park (BOS.ZT), the Emerald Necklace/Olmsted Park System (BOS.JE/IO), the Charles River Basin Historic District (BOS.CA), the Bay State Road-Back Bay West Architectural Conservation District (BOS.JC), and numerous inventoried properties within the Audubon Circle Area (BOS.XB). The MHC does not have sufficient information to determine the effect of the proposed new construction on the surrounding historic properties. Please submit drawings and renderings for the proposed new construction when they are available. Please also be sure to include photosimulations of MHC.2 the proposed new construction from various vantage points, including Fenway Park.

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(617) 727-8470 • Fax: (617) 727-5128
www.sec.state.ma.us/mhc

Lastly, the IMP proposes partial or full demolition of several existing structures on the main campus, including the Wolbach Building (BOS.7683), which is included in MHC's *Inventory of Historic and Archaeological Assets of the Commonwealth* and historically known as the Thomas M. Rotch, Jr. Memorial Hospital for Infants, at 55 Shattuck Street. Boston Children's Hospital proposes the construction of a new Children's Clinical Building (CCB) with a Combined Heat and Power plant (CHP) at this site. The MHC understands that Boston Children's Hospital requires additional critical care capable beds, improved technology, and expanded surgery, clinic, and medical support spaces in order to meet the needs of a rapidly growing patient population.

The MHC notes that the ENF states that Children's plans to consult with the MHC as the projects advance. The MHC also understands that Children's plans to consult with the MHC and other interested parties, such as the Boston Landmarks commission (BLC) and the Boston Preservation Alliance (BPA) as necessary to mitigate potential impacts to significant historic resources. The MHC looks forward to continued consultation with Children's, the BLC and BPA as plans develop. MHC.3

These comments are offered to assist in compliance with M.G.L. Chapter 9, Section 26-27C, (950 CMR 71.00) and MEPA (301 CMR 11). Please do not hesitate to contact Brandee Loughlin of my staff if you have any questions.

Sincerely,

fr. Brona Simon
State Historic Preservation Officer
Executive Director
Massachusetts Historical Commission

xc: Boston Children's Hospital
Boston Landmarks Commission
Boston Preservation Alliance
Geoff Starsiak, Epsilon Associates, Inc.

Massachusetts Historical Commission

MHC.1 No adverse effect

MHC has determined that the proposed one-story addition to the existing Patient and Family Parking Garage on Longwood Avenue will have "no adverse effect" on historic resources in the Project's vicinity.

MHC.2 Drawings, renderings, and photo simulations of the Project from various vantage points including Fenway Park

Chapters 2.0 and 6.0 include drawings, renderings, massing diagrams and photo simulations from various vantage points of the 819 Beacon Street Project. With the anticipated construction of the Fenway Center project, the 819 Beacon Street Project will only be minimally visible from Fenway Park. Chapter 6.0 includes simulations of the 819 Beacon Street Project as viewed from Fenway Park.

MHC.3 Consultation with the MHC, the Boston Landmarks Commission, and the Boston Preservation Alliance

Children's will consult with MHC in accordance with M.G.L. Chapter 9, Sections 26-27C (950 CMR 71.00), to assess potential impacts to significant historic resources. Children's is committed to further consultations with MHC and interested parties, such as BLC and the Boston Preservation Alliance, and anticipates developing a Memorandum of Agreement (MOA) with MHC and the interested parties to formalize measures to mitigate project impacts on historic resources.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Charlestown Navy Yard
100 First Avenue, Building 39
Boston, MA 02129

Frederick A. Laskey
Executive Director

Telephone: (617) 242-6000
Fax: (617) 788-4899
TTY: (617) 788-4971

November 13, 2012

Richard K. Sullivan Jr., Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge St., Suite 900
Attn: MEPA Office, Deirdre Buckley
Boston, MA 02114

Subject: EOEEA #14964 - Environmental Notification Form
Children's Hospital 2012 Institutional Master Plan Amendment,
Boston, MA

Dear Secretary Sullivan:

The Massachusetts Water Resources Authority (MWRA) appreciates the opportunity to comment on the Environmental Notification Form (ENF) filed by Children's Hospital (the "Proponent") for the 2012 Institutional Master Plan Amendment ("Project"). Future plans call for three proposals described below:

The first proposal is the construction of the Children's Clinical Building (CCB) to be connected to the existing building on the Core Campus. This addition will provide support for outpatient needs, surgical areas, medical support areas, clinics, green, and expanded family and staff gathering spaces. The second proposal will be the addition of one level for 86 new above-grade parking spaces to the Patient and Family Parking Garage and to modify the garage exit area to accommodate one additional exit lane. Lastly, the third proposal is to redevelop the property at 819 Beacon Street, to include a 10-story building that contains approximately 211,170-sf of office/retail and includes 249 replacement spaces and 277 net new parking spaces, of which 168 spaces will support the uses within 819 Beacon Street and of which 119 spaces will be available to support the needs of Children's employee.

MWRA offers the following comments so that these comments and issues will be presented in the Proponent's Draft Environmental Impact Report (DEIR). These comments focus on issues related to stormwater and wastewater flows that could trigger Combined Sewer Overflow (CSO) discharges and the need to offset those flows to ensure that the new sanitary flows will not contribute to higher CSOs, and the need for discharge permitting within MWRA's Toxic Reduction and Control (TRAC) Department.

Stormwater and Wastewater

The DEIR should describe the proposed means of stormwater and sanitary flow collection from the three project sites, and should also identify the ownership and capacity of each of the storm drains and sanitary sewers that the Proponent proposes to use at each site. The DEIR should also describe the paths of stormwater and sanitary flow within the public (MWRA and Boston Water and Sewer Commission ("BWSC")) collection systems, including potential or combined sewer overflows ("CSOs"), to the point of treatment and/or disposal. Any site stormwater presently entering a combined sewer system at or downstream from the site should be removed from the sewer system. Proposed stormwater systems or stormwater overflow systems serving the project should be connected to municipal storm drains that drain to a surface water (e.g. BWSC's Muddy River Conduit to the Charles River) and not to a combined sewer system. From a review of BWSC's storm drain and sewer maps, it appears that all of the project sites are served or can be served by separate storm drain and sewer systems. MWRA.1

BWSC sanitary sewers serving the three project sites carry flows to BWSC combined sewers and MWRA sewer interceptors that can overflow to the Charles River in large storms. The ENF reports that the projects will increase wastewater flow generated on each of the project sites, with a total estimated increase of 165,017 gallons per day (gpd), a 5,177% increase over the current 3,127 gpd wastewater flow generated on these sites in total.

MWRA is implementing an $862 million program of local and regional wastewater system improvements to control CSOs and improve receiving water quality. New sanitary flows to the local sewers and MWRA facilities should be fully offset to help ensure that the benefits of CSO control, including water quality improvements in the Charles River, will be realized and sustained for the long term. To avoid increasing CSO discharges or otherwise compromising CSO control goals, the Proponent should fully offset new flows to the sewer system with infiltration/inflow ("I/I") removal or sewer separation (i.e. stormwater inflow reduction) in a hydraulically related sewer system(s). Any net increase of flow should be mitigated in strict compliance with MassDEP's Policy on Managing Infiltration and Inflow in MWRA Community Sewer Systems (BRP 09-01) and with BWSC policy and regulations. BWSC has offset requirements that should be satisfied to ensure that the new sanitary flows will not contribute to higher CSOs. The DEIR should describe how the Proponent will satisfy these requirements for each of the project sites. MWRA.2

Groundwater and Sewer Use Discharge Permitting

The MWRA prohibits the discharge of groundwater to the sanitary sewer system, pursuant to 360 C.M.R. 10.023(1) except in a combined sewer area when permitted by the Authority and the municipality. The proposed construction of Children's Clinical Building has access to a storm drain and it is not located in a combined sewer area; therefore, the discharge of groundwater to the sanitary sewer system associated with this project is prohibited. Children's Hospital must secure a USEPA-NPDES General Permit for Storm Water Discharges from its construction activities. MWRA.3

The Proponent currently holds an MWRA Sewer Use Discharge Permit #45005920. If the Proponent intends to change its current operation(s) and/or discharge(s) such as increasing its daily wastewater discharge flow the Proponent must provide at least 30 days advance written notification to Mr. Stephen Buczko, Industrial Coordinator, within MWRA's TRAC Department. Mr. Buczko can be reached at (617) 305-5619 to assist the Proponent during this process. The notification is required before MWRA can take any action which may substantially change the volume or nature of its discharge including an increase of daily discharge flow or character of pollutants in its discharge, from any compliance measurement location or any sewer connection.

Also, the Proponent must also comply with 360 C.M.R. 10.016, if it intends to install gas/oil separator(s) in its parking garages. In addition to complying with 360 C.M.R. 10.000, the Proponent must conform to the regulations of the Board of State Examiners of Plumbers and Gas Fitters, 248 C.M.R. 2.00 (State Plumbing Code), and all other applicable laws. The installation of the proposed gas/oil separator(s) will require MWRA approval and may not be back filled until inspected and approved by the MWRA and the Local Plumbing Inspector. For assistance in obtaining an inspection the Proponent should contact Mr. Thomas J. Coffey, Source Coordinator with MWRA's TRAC Department at (617) 305-5624. MWRA.4

Should you require further information on these comments, please contact me at (617) 788-1165.

Very truly yours,

Marianne Connolly

Marianne Connolly
Sr. Program Manager,
Env. Review and Regulatory Compliance

cc: David Kubiak, MWRA Engineering & Construction
Kattia Thomas, MWRA, Toxic Reduction and Control (TRAC)
Adam Horst, Boston Water & Sewer Commission (BWSC)

C: MEPA/14964Children'sHopsitalMasterPlan.docx

Massachusetts Water Resources Authority

MWRA.1 Stormwater and wastewater

In terms of storm drains, the BCCB may tie into a 15-inch and/or a 24-inch storm drain line in Longwood Avenue, and 819 Beacon Street may tie into either a 12-inch line located in Maitland Street and/or a 24-inch line located in Beacon Street. In terms of sanitary sewer, the BCCB may tie into one of numerous sanitary sewer lines located in the adjacent streets, and 819 Beacon Street may tie in a 12-inch and/or 20-inch sanitary sewer line located in Beacon Street. For both Projects, the building sites are adjacent to separated systems. There has been no indication from BWSC that there are capacity restraints on the existing public system. However, the Proponent and design team will coordinate with BWSC when designs are further developed.

MWRA.2 Infiltration/Inflow

The Proponent will work with BWSC on an inflow reduction plan.

MWRA.3 Groundwater discharge

The Proponent will obtain an NPDES General Permit for Storm Water Discharges from its construction activities for the discharge of groundwater to the sanitary sewer system associated with the Projects, if required.

MWRA.4 Gas/oil separators

Comment noted. Gas and oil separators will be installed where appropriate and will comply with applicable regulations.

Boston Water and
Sewer Commission

980 Harrison Avenue
Boston, MA 02119-2540
617-989-7000

November 13, 2012

Secretary Richard K. Sullivan
Executive Office of Energy and Environmental Affairs
Attention: MEPA Office
Deidre Buckley, EEA No. 14964
100 Cambridge Street
Suite 900
Boston, MA 02114

and

Sonal Gandhi
Senior Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Boston Children's Hospital
Institutional Master Plan Notification Form /
Project Notification Form
IMP Amendment

Dear Secretary Sullivan and Ms. Gandhi:

The Boston Water and Sewer Commission (Commission) has reviewed the Institutional Master Plan Notification Form (IMPNF) / Project Notification Form (PNF) and IMP Amendment for the Boston Children's Hospital (BCH). This letter provides the Commission's comments on the IMPNF/PNF and IMP Amendment.

The IMPNF/PNF and IMP Amendment proposes three projects: 1) an on-campus Project near 55 Shattuck Street that includes an approximately 445,000 square foot Children's Clinical Building (CCB) with clinical and medical support space with co-generation facilities (the Combined Heat and Power Facility); 2) an approximately 29,370 square foot Patient and Family Parking Garage Addition which will include one new level of parking with approximately 86 parking spaces (76 net new spaces due to the elimination of 10 surface spaces in connection with the construction of the Clinical Building); 3) an off-campus project comprised of an office building at 819 Beacon Street located in the Audubon Circle neighborhood which will include approximately 211,270 square feet of office space, ground floor retail, and approximately 526 parking spaces within a new garage, (including 249 replacement spaces and 277 net new spaces of which 158 spaces will support the office space within 819 Beacon Street and 119 spaces will be available to support the needs of the Children's employee working in the Longwood Medical Area).

For water service, the proposed CCB site is served by a 8-inch low service main in Shattuck Street. Children's Core campus is served by the following water mains: an 8-inch low service main in Binney Street, a 12-inch low service main in Blackfan Circle, an 8-inch and 12-inch main low service main in Children's Way and a 12-inch low service main in Longwood Avenue. The proposed 819 Beacon Site is served by a 12-inch low service water main in Beacon Street. The IMPNF/PNF and IMP Amendment states that the proposed CCB project will increase the water demand by approximately 85,278 gallons per day (gpd) and the proposed 819 Beacon Street building will require 17,181 gpd. If constructed, the Combined Heat and Power Facility will require approximately 150,000 gpd.

For sanitary sewer service, the proposed CCB site is served by the following sanitary sewer lines adjacent to the core campus: a 12-inch sanitary sewer in Binney Street, a 39-inch by 41-inch sanitary sewer in Blackfan Circle, a 12-inch sanitary sewer in Children's Way and a 15-inch and a 24-inch sanitary sewer in Longwood Avenue. The proposed CCB will generate approximately 77,525 gpd of wastewater. The proposed 819 Beacon Street site is served by a 20-inch sanitary sewer in Beacon Street. The proposed 819 Beacon Street building will generate approximately 15,619 gpd of wastewater. The CHP facility, if constructed, could generate up to 75,000 gpd of wasterwater during peak operations.

For drainage, the CCB site is served by a 15-inch and 24-inch storm drain in Longwood Avenue. The existing site is partially pervious. According to the IMPNF/PNF and IMP Amendment, the proponent plans to investigate and install measures which will mitigate the post development discharge volume and rate to maintain compliance with regulatory requirements. One option under consideration includes the use of stormwater holding tanks within the building which will reduce peak flows and volumes leaving the project site. The 819 Beacon Street site is served by a 24-inch storm drain in Beacon Street which flows into the MWRA combined system and a 12-inch drain in Maitland Street which discharges to SDO042. The proponent should investigate and evaluate in the DEIR the feasibility of sending excess stormwater flows (flows not infiltarated on site) to SDO 042 and not the MWRA transport system. BWSC.1

The Children's Hospital has reportedly experienced periodic drainage issues on its property. The Children's Hospital should continue to evaluate this issue and coordinate with the Commission's Engineering Department as their design of the CCB building moves forward. In addition, the proponent should, as part of their master plan process, investigate drainage issues on other Children's Hospital properties. The Commission encourages Children's Hospital to utilize Low Impact Development wherever possible including the installation of green roofs. BWSC.2 BWSC.3

The Commission's general comments on the project are as follows:

General

1. BCH must submit a General Service Application and a site plan to the Commission for review and approval. Any new or relocated water mains, sewers and storm drains must be designed and constructed at BCH's expense. They must be designed and constructed in conformance with the Commission's design standards, Water Distribution System and Sewer Use Regulations, and Requirements for Site Plans. To assure compliance with the Commission's requirements, BCH, must submit a site plan to the Commission's Engineering Customer Service Department for review and approval when the design of any new water and wastewater systems and the proposed service connections to those systems are 50 percent complete. The site plan should include the locations of any new, relocated and existing water mains, sewers and drains which serve the site, proposed service connections as well as water meter locations. BWSC.4

2. Prior to demolition of any buildings, all water, sewer and storm drain connections to the buildings must be cut and capped at the main pipe in accordance with the Commission's requirements. The proponent must then complete a Termination Verification Approval Form for a Demolition Permit, available from the Commission and submit the completed form to the City of Boston's Inspectional Services Department before a demolition permit will be issued. BWSC.5

3. The Department of Environmental Protection, in cooperation with the Massachusetts Water Resources Authority and its member communities, are implementing a coordinated approach to flow control in the MWRA regional wastewater system, particularly the removal of extraneous clean water (e.g., infiltration/ inflow (I/I)) in the system. In this regard, DEP has been routinely requiring proponents proposing to add significant new wastewater flow to assist in the I/I reduction effort to ensure that the additional wastewater flows are offset by the removal of I/I. Currently, DEP is typically using a minimum 4:1 ratio for I/I removal to new wastewater flow added. The Commission supports the DEP/MWRA policy, and will require BCH to develop a consistent inflow reduction plan. BWSC.6

4. For any proposed masonry repair and cleaning, BCH will be required to obtain from the Boston Air Pollution Control Commission, a permit for Abrasive Blasting or Chemical Cleaning. In accordance with this permit, BCH will be required to provide a detailed description as to how chemical mist and run-off will be contained and either treated before discharge to the sewer or drainage system or collected and disposed of lawfully off site. A copy of the description and any related site plans must be provided to the Commission's Engineering Customer Service Department for review before masonry repair and cleaning commences. BCH is advised that the Commission may impose additional conditions and BWSC.7

requirements before permitting the discharge of the treated wash water to enter the sewer or drainage system.

5. BCH should be aware that the US Environmental Protection Agency issued a Remediation General Permit (RGP) for Groundwater Remediation, Contaminated Construction Dewatering, and Miscellaneous Surface Water Discharges. If the project involves any subsurface work and groundwater contaminated with petroleum products, for example, is encountered, BCH will be required to apply for a RGP to cover these discharges. BWSC.8

Water

1. In addition to the water conservation measures required by the Massachusetts Plumbing Code, BCH should also consider implementing other water saving measures, such as installing low flow toilets and flow-restricting faucets. The Commission suggests that any public restrooms also be equipped with sensor-operated faucets and toilets. BWSC.9

2. If a hydrant is to be used during construction, BCH will be required to obtain a Hydrant Permit for use of any hydrant during the construction phase of this project. The water used from the hydrant must be metered. BCH should contact the Commission's Operations Division for information on and to obtain a Hydrant Permit. BWSC.10

3. The Commission is utilizing a Fixed Radio Meter Reading System to obtain water meter readings. For new water meters, the Commission provides a Meter Transmitter Unit (MTU) and connects the device to the meter. For information regarding the installation of MTUs, BCH should contact the Commission's Meter installation Department. BWSC.11

Sewage / Drainage

1. A Total Maximum Daily Load (TMDL) for Nutrients has been established for the Lower Charles River Watershed by the Massachusetts Department of Environmental Protection (MassDEP). In order to achieve the reductions in Phosphorus loading required by the TMDL, phosphorus concentrations in the lower Charles River from Boston must be reduced by 64%. To accomplish the necessary reductions in phosphorus, the Commission is requiring developers in the lower Charles River watershed to infiltrate stormwater discharging from impervious areas in compliance with MassDEP. The proponent will be required to submit with the site plan a phosphorus reduction plan for the proposed developments. The proponent must fully investigate methods for retaining stormwater on-site before the Commission will consider a request to discharge stormwater to the Commission's system. Under no circumstances will stormwater be allowed to discharge to a sanitary sewer. BWSC.12

In conjunction with the Site Plan and the General Service Application the proponent will be required to submit a Stormwater Pollution Prevention Plan. The plan must: BWSC.13

- Identify best management practices for controlling erosion and for preventing the discharge of sediment and contaminated groundwater or stormwater runoff to the Commission's drainage system when the construction is underway.

- Include a site map which shows, at a minimum, existing drainage patterns and areas used for storage or treatment of contaminated soils, groundwater or stormwater, and the location of major control or treatment structures to be utilized during construction.

- Provide a stormwater management plan in compliance with the DEP standards mentioned above. The plan should include a description of the measures to control pollutants after construction is completed.

2. Developers of projects involving disturbances of land of one acre or more are required to obtain an NPDES General Permit for Construction from the Environmental Protection Agency and the Massachusetts Department of Environmental Protection. BCH is responsible for determining if such a permit is required and for obtaining the permit. If such a permit is required, it is requested that a copy of the permit and any pollution prevention plan prepared pursuant to the permit be provided to the Commission's Engineering Services Department prior to the commencement of construction. The pollution prevention plan submitted pursuant to a NPDES Permit may be submitted in place of the pollution prevention plan required by the Commission provided the Plan addresses the same components identified in item 1 above. BWSC.14

3. The Children's Hospital has reportedly experienced periodic drainage issues on its property. The Children's Hospital should continue to evaluate this issue and coordinate with the Commission's Engineering Department as their design of the CCB building moves forward. In addition, the proponent should, as part of their master plan process, investigate drainage issues on other Children's Hospital properties. The Commission encourages Children's Hospital to utilize Low Impact Development wherever possible including the installation of green roofs. BWSC.15

4. BCH must fully investigate methods for retaining stormwater on-site before the Commission will consider a request to discharge stormwater to the Commission's system. The site plan should indicate how storm drainage from roof drains will be handled and the feasibility of retaining their stormwater discharge on-site. Under no circumstances will stormwater be allowed to discharge to a sanitary sewer. BWSC.16

5. The Commission requests that BCH install a permanent casting stating "Don't Dump: Drains to Charles River" next to any catch basin that is created or modified as part of this BWSC.17

project. The proponent should contact the Commission's Operations Division for information regarding the purchase of the castings.

6. If a cafeteria or food service facility is built as part of this project, grease traps will be required in accordance with the Commission's Sewer use Regulations. BCH is advised to consult with the Commission's Operations Department with regards to grease traps. BWSC.18

7. The Commission requires that existing stormwater and sanitary sewer service connections, which are to be re-used by the proposed project, be dye tested to confirm they are connected to the appropriate system. BWSC.19

8. Sanitary sewage must be kept separate from stormwater and separate sanitary sewer and storm drain service connections must be provided. BWSC.20

9. If BCH seeks to discharge dewatering drainage to the Commission's sewer system, they will be required to obtain a Drainage Discharge Permit from the Commission's Engineering Customer Service Department prior to discharge. BWSC.21

Thank you for the opportunity to comment on this IMPNF/PNF and IMP Amendment.

Yours truly,

John P. Sullivan, P.E.
Chief Engineer

JPS/ah

c: C. Weinstein, BCH
P. Quan, BCH
C. Schlessinger, Epsilon
M. Zlody, BED
P. Larocque, BWSC

Boston Water and Sewer Commission

Please see responses to the BWSC letter submitted to the BRA.

DB

Friends of Historic Mission Hill
c/o 81 Lawn St. Roxbury, MA 02120

Nov. 14, 2012

RECEIVED
NOV 15 2012
MEPA

Sonal Gandhi, Project Manager
Boston Redevelopment Authority
Boston City Hall 02120

Secy. Richard K. Sullivan, Jr.
EEA
Attn: MEPA office
Analyst Deidre Buckley, EEA# 14964
100 Cambridge St., Boston 02114

Re: Boston Children's Hospital Clinical Building

Dear Reviewers:

The organization Friends of Historic Mission Hill (FHMH) advocates for preservation of our neighborhood's historic buildings and streetscapes, and works collaboratively to educate the broader community about the value of its local heritage, a history that includes the Longwood area institutions.

The following are comments regarding Children's Hospital's IMPNF filed in October.

The expansions planned in Children's Hospital's IMPNF are extensive and have devastating impacts on Longwood campus historic resources. These impacts can and should be avoided; the current proposal should be withdrawn.

The 2008 Institutional Master Plan (IMP) included other large projects that are either temporarily shelved or stalled. Every year in fact there seems to be another project or plan. It is inconceivable that this new clinical building and co-gen plant would be approved and yet the older plans still are land banked. In at least two locations Boston Children's Hospital has approved projects that have received permit extensions: 2 and 4 Brookline Place (252,00SF) in Brookline Village and the future Longwood Research Institute (LRI, 440,000SF) on the site of the current 340 Brookline Avenue garage purchased in 2006. The LRI's anticipated completion was expected to free up room for clinical functions by replacing Children's 1970's era Enders Laboratory, "one of Boston's true horrors of architecture" according to Robert Campbell (B.Globe, 10/9/90). Instead the Hospital is proposing to squeeze in another tall structure sited on the footprints of the Wolbach building, the Ida Smith and the Prouty Garden. FHMH.1

In an interview in *Chidren's World*, Rudman Ham, former Director of Operations at Children's and MASCO's Board chair emeriti, described the Prouty Garden as one of the Hospital's most important attributes. The loss of this natural environment, dedicated to be a serene place in perpetuity (!) for patients, families, visitors and staff would be a tragic waste. As stated in the 2008 IMP, the Garden is the Hospital's primary quiet space, an oasis of flowers, trees, sculpture and fountains that provide a peaceful respite for patients, families and staff. And "there are birds", significantly something that cannot be duplicated in indoor play space. With a dearth of green space in the Longwood Medical Area, the Prouty Garden generously opens up the sky in a surprisingly spacious location, accessible on the ground level. FHMH.2

The second historic resource that would be lost is 55 Shattuck Street, the Rotch Memorial building, renamed in the 1980s for William Wolbach, former chair of Children's Board of Trustees. There is no information in the IMPNF about this significant building and its important history. Quoting from the 2008 IMP," A fine example of Classical Revival architecture by one of Boston's most prominent architectural firms"; 55 Shattuck is a smaller version of the adjacent white marble Beaux Art Harvard Medical School Quadrangle buildings and was originally constructed (1910-1914) as the Thomas Morgan Rotch Jr. Memorial Hospital for Infants. "By 1921 it was obvious that the Infant's Hospital building was ill-suited to patient care... The planners of the new School of Public Health began to focus their hopes on this building as the first home of the School." (Jean Alonzo Curran, *Founders of the Harvard School of Public Health*, p.27) The Rockefeller Foundation pledged $2 million to enable Harvard University to reorganize its health classes into the new school, $500,000 was for the building acquisition and equipment (Rockefeller Foundation Annual Reports 1921-1923). For fifty years, Rotch Memorial housed the headquarters for the Harvard School of Public Health (HSPH) and for fifty years (1923-1973), a photograph of the Shattuck façade was the frontispiece for the annual Register. FHMH.3

The School of Public Health expanded exponentially by the 1970's and sold the former administration building in 1976 to Children's for office space. The sunlit steps on Shattuck are such an anomaly in the medical area that the Hospital posts "Please do not sit on the stairs" signs.

Preserving 55 Shattuck and the Prouty Garden would hold back for a half block or so the " grotesque miniature Manhattan" that Robert Campbell feared, crowding more and more buildings into the already packed medical area. Meadow Lane (the Harvard owned small side street) borders the east edge of the Prouty Garden and turns the corner to Shattuck between 55 and the Medical School's Laboratory for Human Reproduction and Reproductive Biology (LHRRB). In the 2008 Children's IMP, Meadow Lane and Shattuck are highlighted pedestrian routes. The most recent Boston Redevelopment Authority review of Harvard's Longwood Campus Master Plan asked for a discussion of the feasibility of Meadow Lane becoming a more established street. Promoting the goal of expanding the pedestrian network in the medical area and preserving historic character and scale whenever possible will help stave off the canyonization of the LMA.

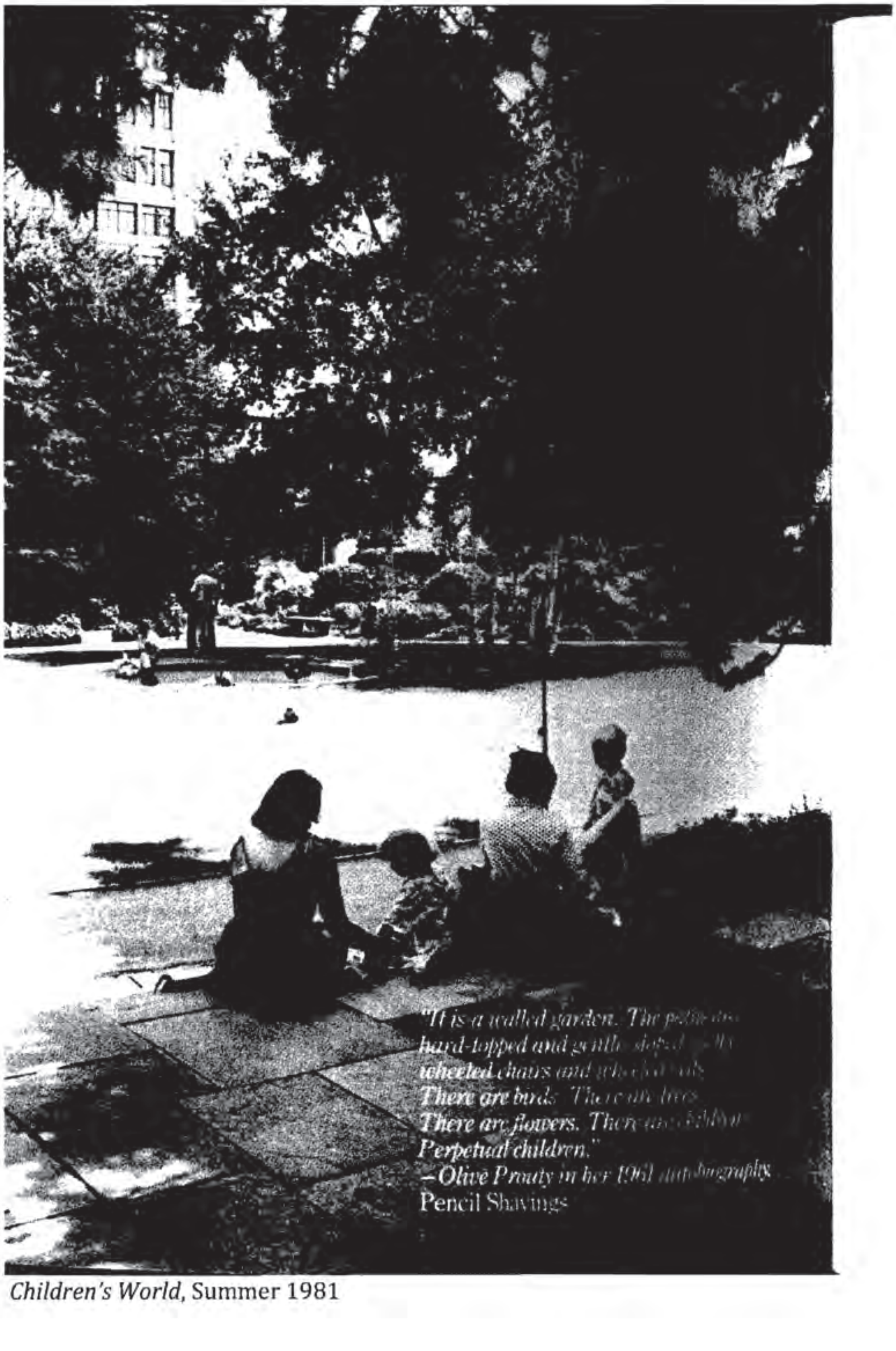
A potential skywalk bridge over Longwood Avenue connecting to Children's garage is mentioned several times in the IMPNF. This would violate the traditional mixed scale Longwood Avenue view corridor and negatively impact the public realm. The vitality of the flow of diverse pedestrians along Longwood is an urban asset. The crosswalk at Blackfan and Longwood can accommodate pedestrians coming from the garage, many visitors appreciate fresh air after a tedious car ride, and patient families also can be served with valet parking at the main entrance. Adding height to the garage to accommodate additional vehicles should be carefully considered for impacts on the adjacent historic Vanderbilt Hall. FHMH.4

We ask the Hospital to reconsider this current proposal that destroys core campus assets and look to the previously approved projects for their expansion needs. The Hospital's long range planning has been confused and vague, a much more in depth analysis should be encouraged.

Sincerely,

Alison Pultinas
Friends of Historic Mission Hill

cc: Brona Simon/ Massachusetts State Preservation Officer/MHC
Boston Preservation Alliance



Children's World, Summer 1981

A Living Legacy

In late summer a tall, stately woman, bearing the weight of her years regally, paid her last visit to a garden that was truly a reflection of her own personality. She paused, as she had so many times in the past, to speak quietly with a parent and child. Then strolling on, she meticulously plucked a withered leaf from a shrub. Perhaps, in her mind's eye, she was seeing how the courtyard had looked nearly 20 years ago, covered with construction debris. How the suggestion to create a garden had taken root in her mind. How, with her continuing support and determination, the clutter had given way to the artful arrangement of nature. We cannot know it. Upon leaving the garden, her glance lingered on a small bronze plaque which reads "This Terrace and Garden in Memory of Anne and Olivia Prouty" – her daughters.

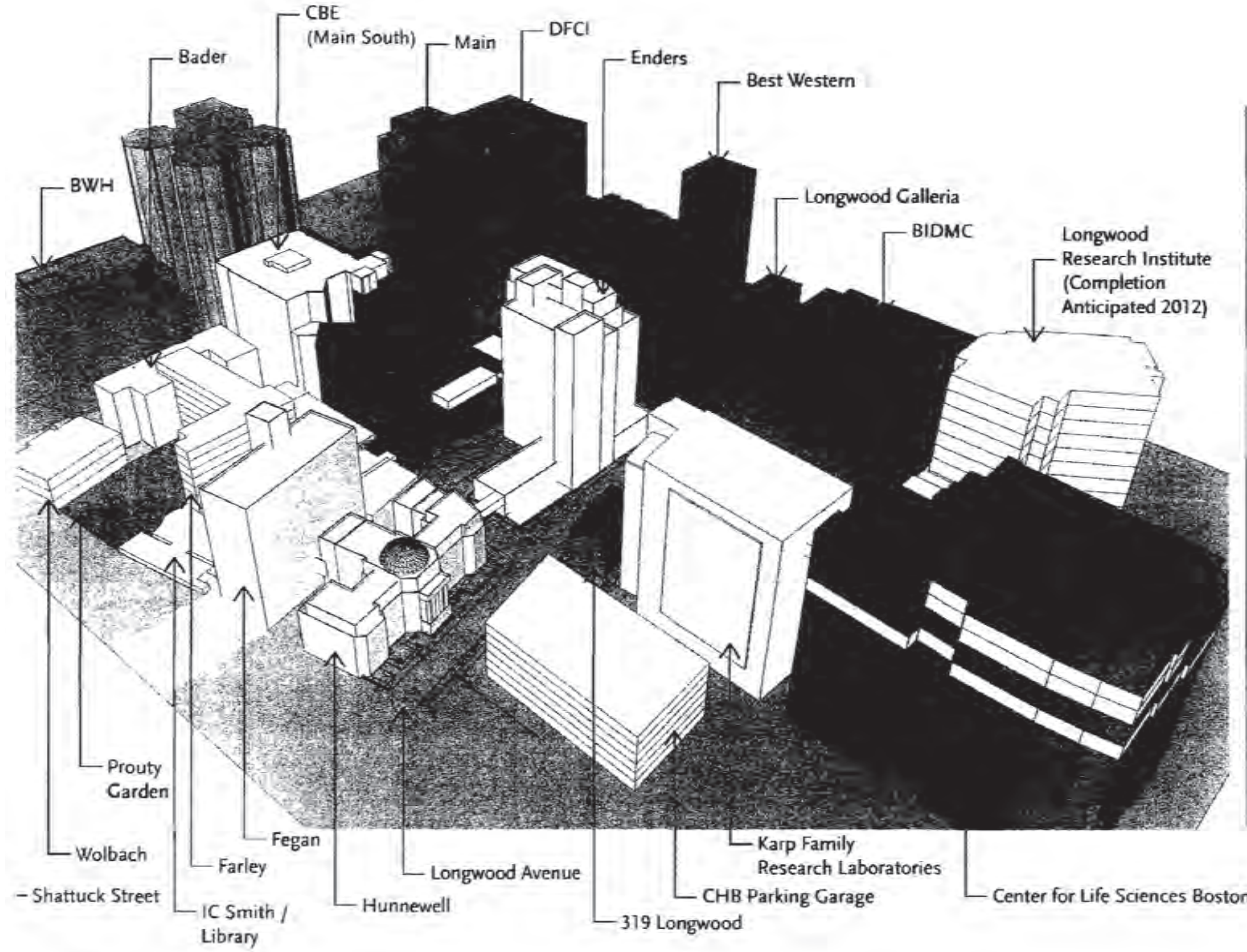
What we do know is that Mrs. Lewis I. Prouty has left behind a living legacy that will continue to enrich the lives of all who step into the walled-in beauty of the Prouty Garden. A woman who believed that serenity and quiet meditation were necessary ingredients in life, Mrs. Prouty sought to build those qualities into a garden which would provide both refuge and delight to the children, parents, and staff of Children's. To see how well she succeeded, one has only to watch the faces of young patients as they discover the animal sculptures tucked artfully amid the

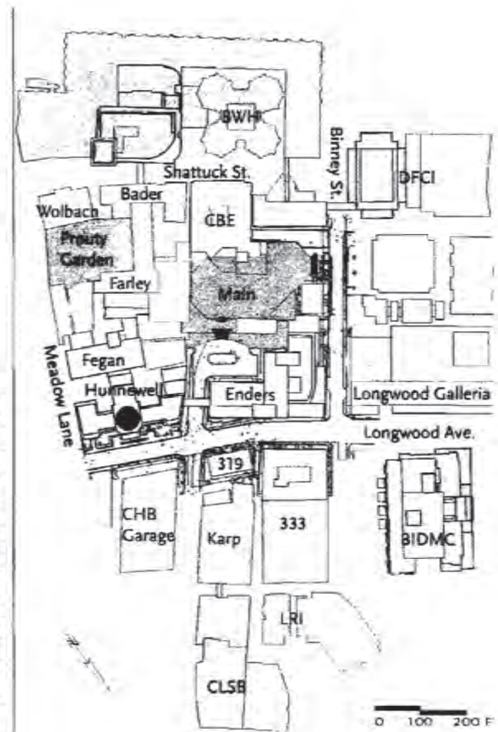
plantings, or to listen to the laughter of siblings as they visit with their hospitalized brother or sister in the garden. One can see it as an anxious parent relaxes for a moment on a bench, watching the sunlight on the fountain.

To insure that her legacy will continue to flourish and provide a haven unique to Children's, the Board of Trustees, of which Mrs. Prouty had been a member for many years, recently formed the Prouty Garden and Terrace Committee. Mrs. Prouty's daughter, Mrs. Mason Smith, will serve on the committee with Trustees F. Murray Forbes, Jr. and Mrs. David Wilder to see to it that the Prouty Garden exists as long as the Hospital has children to enjoy it.

Children's World

Volume 1 Number 6





Children's Hospital Boston

FIGURE 1-2 EXISTING CAMPUS

ELKUS | MANFREDI
January 2008

PRIMARY PEDESTRIAN ROUTES

CHB

SOURCES:
BRA
MASCO
BWH IMP
DFCI IMP
BIDMC IMP 08.03
HARVARD IMP 02.03
EMMANUEL IMPNF/ (NOTICE OF PROJECT CHANGE 05.07)
SIMMONS DPIR 11.05
WHEELOCK DPIR 03.07

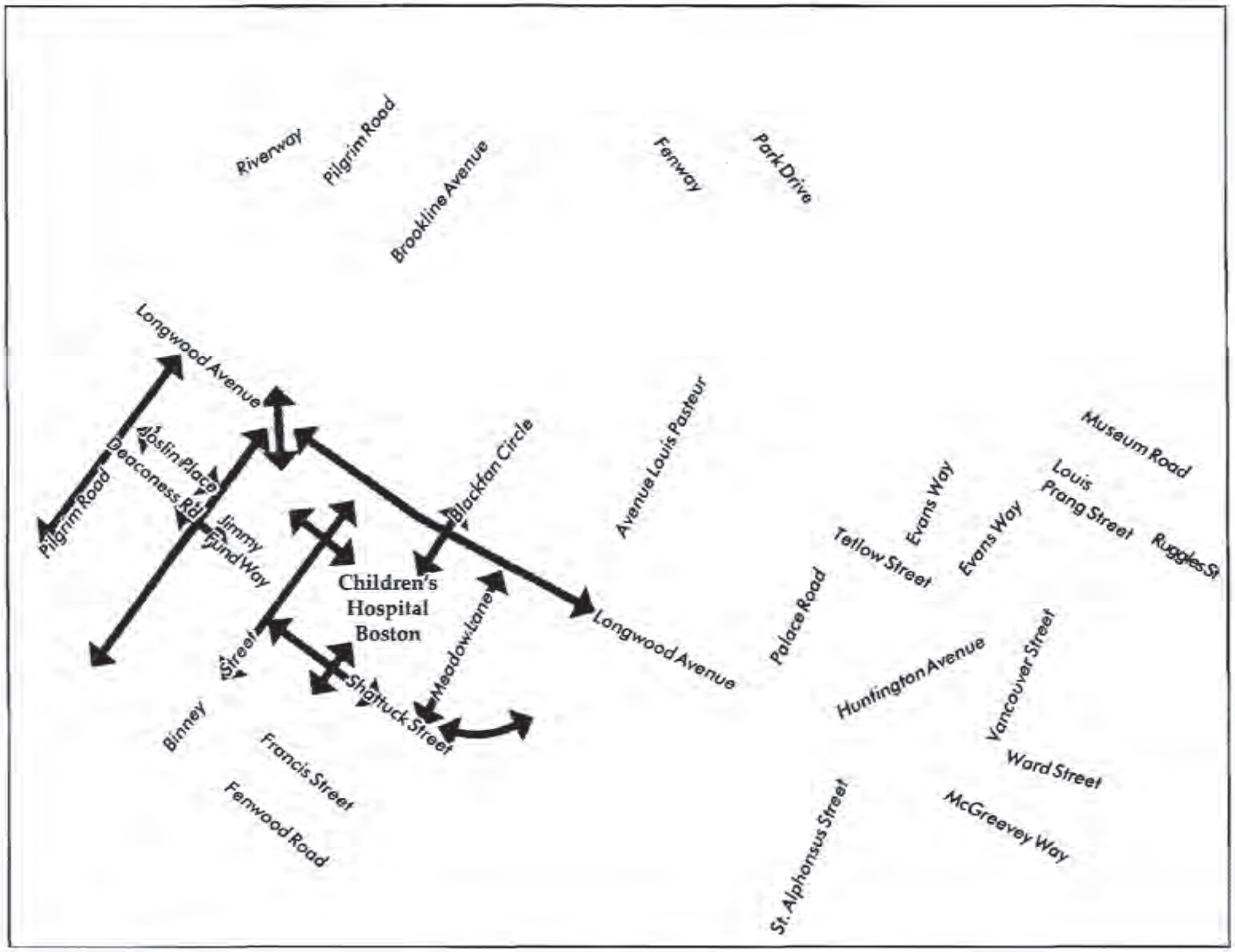
N

Children's Hospital Boston

FIGURE 2-8 LMA PEDESTRIAN ACCESS

ELKUS MANFREDI ARCHITECTS

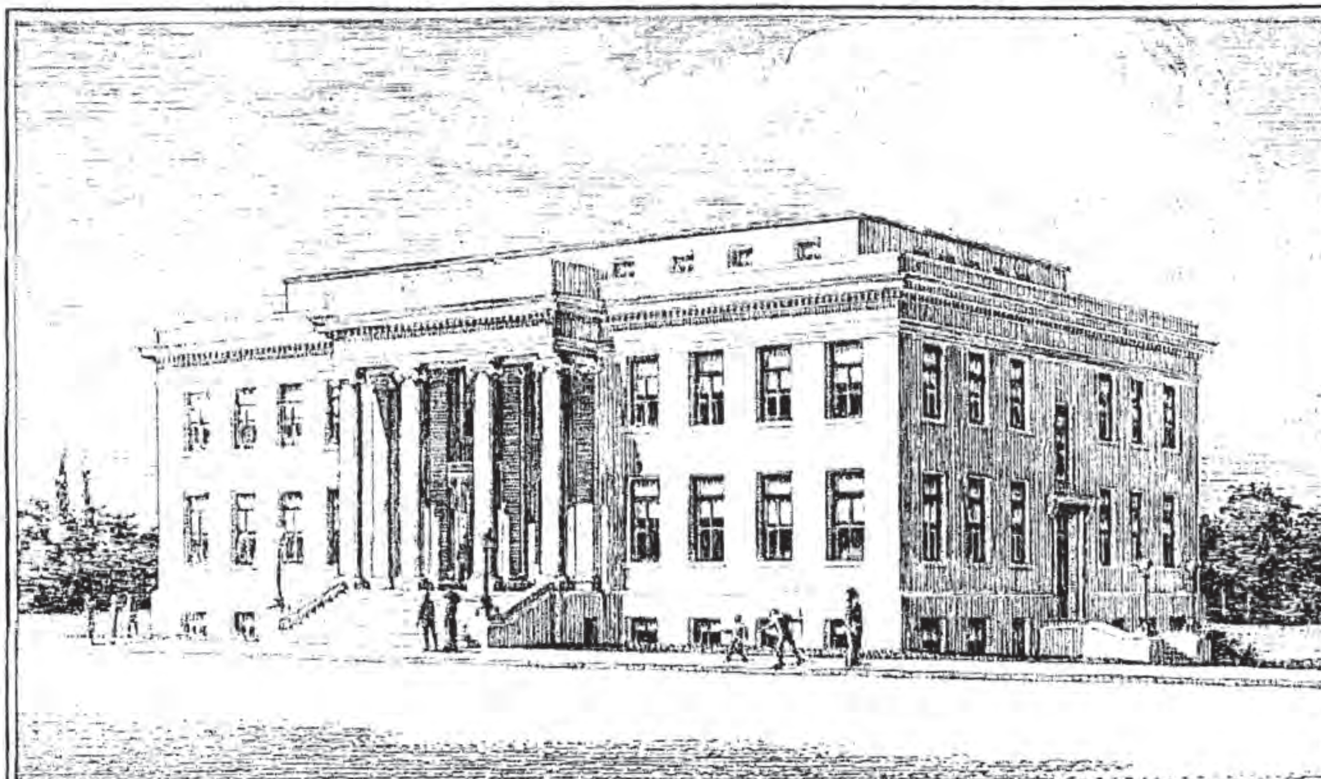
January 2008



Children's Hospital Boston

Figure 2-9 Primary Pedestrian Circulation Routes

January 2008



A VIEW OF THE NEW BUILDING FOR THE INFANTS' HOSPITAL
VANDYKE STREET, NEAR VILA STREET, BOSTON · MDCCCCXI

1922

The Rockefeller Foundation

61 Broadway, New York

Fig. 3.—Administration Building, School of Public Health, Harvard University

1/2012

Friends of Historic Mission Hill

FHMH.1 Unbuilt projects

The only Children's site in the LMA that has been approved and remains unbuilt is the Longwood Research Institute project (located at Binney and the South Service Drive), and that was specifically designed and zoned for 'research and laboratory' use. The continued uncertainty around the federal funding for research from the NIH has compelled the Hospital to postpone the start of this project for the near term. The need for clinical space is immediate and critical requiring construction of the BCCB prior to the construction of the LRI.

FHMH.2 Green and Gathering Spaces

The BCCB will provide Children's with the opportunity to, among other things, re-prioritize the use of green and gathering spaces for patients and family members by replacing current green space in the Prouty Garden with a variety of visible and accessible green and gathering spaces that are available during all seasons and to a variety of users. The proposed BCCB will create more patient and family-focused green and gathering spaces by providing more diversity in types and uses. A true healing environment will benefit the user according to his or her own needs. The green and gathering spaces, both exterior and interior, will serve staff, patients and families year-round, bringing light, nature, and places for respite and activity into the clinical environment, even during Boston's winter months. It should be noted that while the Prouty Garden and Terrace Fund was established by the will of Olivia Higgins Prouty for the purposes of providing funds for the maintenance and operation of the Prouty Garden, the use of the land which presently contains the Prouty Garden has not been restricted, or otherwise perpetually dedicated, to use as open space as suggested by the comment letter.

FHMH.3 55 Shattuck Street

Chapter 7.0 contains information about the historic resources in the vicinity of the BCCB Project, including the Wolbach Building, 55 Shattuck Street; as well as alternatives that have been considered to retain the building either in whole or in part.

FHMH.4 Pedestrian Bridge/Patient and Family Parking Garage

MASCO and Children's continue to explore expansion of an elevated pedestrian pathway network throughout the LMA in the interests of LMA-wide efficiency and safety, including across Longwood Avenue, which would allow for valet operations at the Patient and Family Parking Garage.

MHC has determined that the proposed one-story addition to the existing Patient and Family Parking Garage on Longwood Avenue will have "no adverse effect" on historic resources in the Project's vicinity.

Chapter 11.0

Section 61 Findings

11.0 SECTION 61 FINDINGS

11.1 Introduction

M.G.L. c. 30, s. 61 requires that "[a]ll authorities of the commonwealth ... review, evaluate, and determine the impact on the natural environment of all works, projects or activities conducted by them and ... use all practicable means and measures to minimize [their] damage to the environment. ... Any determination made by an agency of the commonwealth shall include a finding describing the environmental impact, if any, of the project and a finding that all feasible measures have been taken to avoid or minimize said impact." Each state agency that issues a permit for either the Boston Children's Clinical Building or 819 Beacon Street Project shall issue a Section 61 Finding in connection with permit issuance, identifying mitigation that is relied upon to satisfy the Section 61 requirement. A proposed Section 61 Finding is provided for both the BCCB Project and 819 Beacon Street Project, and a table of mitigation measures related to each Project is included as part of each Section 61 Finding. All mitigation will be the responsibility of the Proponent.

11.2 BCCB – Anticipated State Permits and Approvals

Table 11-1 identifies the Agencies that are expected to take Agency Action on the proposed BCCB and, therefore, issue Section 61 Findings. It also identifies the Agency Actions anticipated to be required.

Table 11-1 Agency Actions Required for the Boston Children's Clinical Building

AGENCY	APPROVAL
State	
Department of Public Health	Determination of Need Plan Review
Department of Environmental Protection Division of Water Pollution Control	Sewer extension/connection permit(s) (if applicable)
Department of Environmental Protection Division of Air Quality	Fossil Fuel Utilization Approval (if required)
Massachusetts Water Resources Authority	Sewer Use Discharge Permit Construction Dewatering Permit (if required)
Department of Environmental Protection Division of Air Quality	Either (i) Establish a 50% Emissions Cap for NOx per 710 CMR 7.02 (11); or (ii) Obtain Restricted Emissions Status per 310 CMR 7.02 (9)

11.3 Boston Children's Clinical Building - Proposed Section 61 Finding

Project Name:	Boston Children's Clinical Building
Project Location:	Boston, MA
Project Proponent:	Boston Children's Hospital
EEA Number:	14964
Date Noticed in Monitor:	[DATE]

The potential environmental impacts of the Project have been characterized and quantified in the ENF dated October 15, 2012, the DEIR dated June 17, 2013, and the FEIR dated [date to be inserted], which are incorporated by reference into this Section 61 Finding. Throughout the planning and environmental review process, the Proponent has been working to develop measures to mitigate significant impacts of the Project. With the mitigation proposed and carried out in cooperation with state agencies, the [Agency] finds that there are no significant unmitigated impacts.

The Proponent recognizes that the identification of effective mitigation, and implementation of that mitigation throughout the life of the Project, is central to its responsibilities under the Massachusetts Environmental Policy Act (MEPA). The Proponent has accordingly prepared the annexed Table of Mitigation that specifies, for each potential state permit category, the mitigation that the Proponent will provide.

Now, therefore, [Agency], having reviewed the MEPA filings for the Project, including the mitigation measures itemized on the annexed Table of Mitigation Measures, finds pursuant to M.G.L. C. 30, S. 61 that with the implementation of the aforesaid measures, all practicable and feasible means and measures will have been taken to avoid or minimize potential damage from the Project to the environment.

____

[AGENCY]

____

By

____

[Date]

To be attached: Table A, describing the measures to be implemented to mitigate the effects of the Project related to the required state permits and the schedule for implementation.

Table A Boston Children's Clinical Building - Summary of Impacts and Mitigation Measures

Mitigation	Schedule	Cost
Transportation		
Children's will renovate its lobby and Main Entrance to allow for more efficient processing of patient and visitor traffic. Drop-off areas will be reconfigured to provide for more efficient loading and unloading, a defined area for chair cars and oversized vehicles will be created, and a dedicated exit path will be put in place for these larger vehicles to Binney Street that does not conflict with exiting patient vehicles towards Longwood Avenue.	During construction	Included in overall Project cost
Inpatient discharges will be accommodated at Children's Way (off of Shattuck Street). These families typically require more time to load their vehicle, in particular for those children that have been infirmed at Children's for an extended period of time. Accommodating these families at Children's Way will help to support more efficient vehicle flow at the Main Entrance.	During construction	Included in overall Project cost
The existing BCH Main Entrance driveway will be widened to provide for a three-lane cross-section. This will allow for two approach lanes exiting towards the Longwood Avenue/Blackfan Circle/BCH Main Entrance intersection (an exclusive left-turn lane and a shared through/right-turn lane). This will help to better manage the queues of exiting traffic.	During construction	Included in overall Project cost
The Longwood Avenue/Blackfan Circle/BCH Main Entrance intersection will be modified into a compliant accessible pedestrian signal (APS) with compliant pedestrian push buttons.	During construction	Included in overall Project cost
The new BCCB loading dock will be located off of Shattuck Street, and is intended to reduce materials management activities at other BCH locations, in particular the main loading facility near the intersection of Binney Street and Jimmy Fund Way. As currently planned, the BCCB will be served by three bays, two dedicated to the removal of soiled linens and a second intended to house a compactor for the building.	During construction	Included in overall Project cost
Children's will reconstruct portions of Shattuck Street and Meadow Lane adjacent to the BCCB site.	During construction	Included in overall Project cost
Children's will continue to promote walking and bicycling as alternative modes of travel for employees. Through the CommuteFit program, employees are rewarded based on the mileage they register.	During operation	Part of operating costs
Children's will increase its bicycle storage capacity on-site to comply with the City of Boston Bicycle Guidelines.	During construction	Included in overall Project cost
Children's will continue to proactively manage its drop-off and valet parking operation at its Main Entrance as a means to reduce traffic activity on area streets, particularly along Longwood Avenue.	During operation	Included in overall Project cost

Table A Boston Children's Clinical Building - Summary of Impacts and Mitigation Measures (Continued)

Mitigation	Schedule	Cost
Transportation		
Children's is committed to implementing Transportation Demand Management (TDM) measures to encourage the use of alternative modes of transportation, including offering a 50 percent transit subsidy to its staff and physicians. In addition, Children's will continue to expand its proactive TDM measures to its employees to encourage the use of transit and other alternative forms of transportation. Many actions to support this goal are actively employed by Children's today, including the following: ♦ Providing an Employee Transportation Advisor; ♦ Membership in the Medical Academic and Scientific Community Organization, Inc.'s (MASCO) CommuteWorks TMA; ♦ Full support of MASCO's other on-going transportation initiatives; ♦ 50 percent transit pass subsidy for employees; ♦ Carpool assistance and incentives; ♦ Emergency ride home; ♦ Bicycling/walking incentives and amenities;. ♦ Location-priced parking (i.e.; offering competitive-rate parking on-campus and subsidized parking off-campus); ♦ Telecommuting and compressed workweeks, when feasible; and ♦ Promotional efforts.	During operation	Part of operating costs
Air Quality		
The Proponent will implement a TDM program to reduce traffic trips.	During operation	Part of operating cost
Noise		
Sound levels from the rooftop cooling towers will be partially attenuated by louvered screening walls to the north and south.	During construction	Included in overall Project cost
The gas-fired CHP will be located below-grade within the sub-basement of the proposed BCCB, exhausted vertically approximately 30 feet above roof level. Mechanical noise from this unit is expected to be well-controlled within the basement and is not expected to be a major contributor to outdoor sound levels.	During construction	Included in overall Project cost
The CHP exhaust duct will be treated with a hospital grade exhaust silencer and further attenuated by a downstream heat recovery steam generator. It is assumed that sound levels from at-grade inlet air plenum(s) for the CHP will be adequately controlled using acoustical louvers and/or inlet silencers.	During construction	Included in overall Project cost

Table A Boston Children's Clinical Building - Summary of Impacts and Mitigation Measures (Continued)

Mitigation	Schedule	Cost
Air Quality		
Four emergency diesel generators exhausted vertically approximately 30 feet above roof level, as well as several air handling units will be located within a mechanical penthouse minimizing any noise impact. Mechanical noise from the generators and air handling units in the penthouse and on Level 4/5 are assumed to be well-controlled within the enclosed structures and considered negligible as compared to larger rooftop contributors. Noise from generator exhaust ducts will be controlled using hospital-grade exhaust silencers. Furthermore, it is assumed that the generators will only operate during the day for brief, routine testing when the background sound levels are higher, or during an interruption of the electrical grid, in which case the rooftop mechanical equipment will not be operating.	During construction	Included in overall Project cost
Geotechnical/Groundwater		
The BCCB proposes below-grade space that is below site groundwater levels, and therefore, preliminary information suggests an underdrain system and waterproofing of the below grade space would be utilized. The site is not located within the Groundwater Conservation Overlay District, but is adjacent to the district. Children's will contact the Boston Groundwater Trust to discuss the BCCB and measures to protect groundwater during construction as the design progresses.	During construction	Included in overall Project cost
Solid/Hazardous Waste		
Prior to the commencement of construction of the BCCB, Children's will undertake a soil pre-characterization on the site that will include chemical testing on soil samples obtained from borings and test pits. If Children's encounters contaminated soils during its pre-characterization activities or, thereafter, during the construction of the Project at the site, it will ensure that such soils are handled, managed and, if necessary, disposed of in a manner that is consistent with applicable law.	During construction	Included in overall Project cost
Management of hazardous waste is highly regulated for the safety of the public, the environment and the hospital community. Children's has an existing hazardous waste collection program, which will be used to handle and dispose of all wastes generated by existing and proposed hospital facilities in accordance with applicable laws and regulations.	During Construction	Included in overall Project cost
Regulated medical waste (excluding pathological/antineoplastic) will be staged in waste rooms in large leak-proof, dedicated, labeled waste carts. These carts will be transported to the Hospital's main waste processing area. Medical waste is rendered non-infectious in Children's on-site autoclave, shredded, and disposed of as solid waste.	During operation	Part of operating costs

Table A Boston Children's Clinical Building - Summary of Impacts and Mitigation Measures (Continued)

Mitigation	Schedule	Cost
Solid/Hazardous Waste		
Pathological/antineoplastic-contaminated waste will be contained in cartons labeled "Regulated Medical Waste". The cartons will be lined, sealed, marked for incineration and staged pending removal by a licensed vendor for offsite incineration. The pathological waste generated in the Operating Rooms is sent to the Clinical Pathology Laboratory for examination and disposal. The items are placed in lined bio-hazardous-labeled totes. Environmental Services Department staff transport the biohazard totes daily to the Hospital's waste treatment area, where biohazardous waste is rendered non-infectious by steam sterilization. Treated waste is shredded on-site prior to disposal as solid waste.	During operation	Part of operating costs
Children's performs regular twice a week biological monitoring to ensure that hazardous infectious waste is effectively decontaminated through autoclaving.	During operation	Part of operating costs
Sharps waste is segregated at the point of use from other wastes and placed in rigid, puncture resistant, leakproof, shatterproof biohazard sharps containers immediately following use. Sharps containers are sealed and transported by Environmental Services Department staff to the Hospital's waste treatment area to be rendered non-infectious by steam sterilization. Treated waste is shredded on-site prior to disposal as solid waste.	During operation	Part of operating costs
All waste is transported separately and disposed of in accordance with local, state and federal regulations.	During operation	Part of operating costs
The Project may increase the volume of hazardous waste generated at BCH. However, as a Large Quantity Generator, BCH has a plan to assess areas of need and ensure appropriate support following all documented regulatory requirements. The materials will be stored on-site and removed as part of the current chemical waste removal procedure.	During operation	Part of operating costs
All chemical waste will be characterized for chemical composition, packaged, transported and disposed of in accordance with local, state and federal regulations, utilizing a Massachusetts Licensed Hazardous Waste Contractor.	During operation	Part of operating costs
Children's currently recycles white paper, cardboard, Styrofoam, bottles, cans, computer monitors, TVs, beds, dressers, medical equipment and other furniture and old electronics. The Hospital will extend its existing policy to the proposed Project and will recycle as much solid waste as is feasible from the proposed BCCB.	During operation	Part of operating costs

Table A Boston Children's Clinical Building - Summary of Impacts and Mitigation Measures (Continued)

Mitigation	Schedule	Cost
Solid/Hazardous Waste		
Cardboard generation is expected to be minimal on-site because case receiving and case breakdown will occur at central receiving. The minimal quantities generated within the building will be collected and transported with the solid waste to the Hospital's main waste facility, where it will likewise be baled and stored for pickup by the recycling vendor.	During operation	Part of operating costs
Paper will be disposed of in secure confidential data bins, removed by a vendor who will shred the paper before the pulp is recycled. Labeled paper recycling collection containers will be located throughout the building at collection points. These will be emptied nightly to larger totes on each floor which will be transported to the main hospital facility collection dumpster for pickup by the recycling vendor.	During operation	Part of operating costs
Glass and metal containers will be rinsed by food service staff and placed into collection totes, which, when full, will be transported to Children's main waste processing facility for pickup by the recycling vendor.	During operation	Part of operating costs
Construction Impacts		
Children's will follow City and MassDEP guidelines that direct the evaluation and mitigation of construction impacts. As part of this process, Children's and its construction team will evaluate the Commonwealth's Clean Air Construction Initiative.	During construction	Included in overall Project cost
CMPs will be submitted to BTD for review and approval prior to issuance of a Building Permit for any of the Projects. The CMPs will include detailed information on specific construction mitigation measures and construction methodologies to minimize impacts to abutters and the local communities. The CMPs will also define truck routes which will help in minimizing the impact of trucks on City and neighborhood streets. "Don't Dump - Drains to Charles River" plaques will be installed at storm drains that are replaced or installed as part of the Projects.	During construction	Included in overall Project cost
Plans for controlling fugitive dust during excavation and construction include mechanical street sweeping, wetting portions of the Project sites during periods of high wind, and removal of debris in covered trucks. The construction contract documents will provide for a number of strictly enforced measures to be used by contractors to reduce potential emissions and minimize impacts, pursuant to Article 80 of the Boston Zoning Code. These measures are expected to include: ♦ Using wetting agents on areas of exposed soil on a scheduled basis; ♦ Using covered trucks;	During construction	Included in overall Project cost

Table A Boston Children's Clinical Building - Summary of Impacts and Mitigation Measures (Continued)

Mitigation	Schedule	Cost
Construction Impacts		
♦ Minimizing spoils on the construction sites; ♦ Monitoring of actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized; ♦ Minimizing storage of debris on the Project sites; and ♦ Periodic street and sidewalk cleaning with water to minimize dust accumulations. In addition, BCH has committed to the installation of after-engine emission controls such as diesel oxidation catalysts or diesel particulate filters on construction vehicles and use of Ultra Low Sulfur Diesel fuel in off-road engines.		
Children's is committed to mitigating noise impacts from the construction of the Project. Increased community sound levels, however, are an inherent consequence of construction activities. Construction work will comply with the requirements of the City of Boston Noise Ordinance. Every reasonable effort will be made to minimize the noise impact of construction activities. Mitigation measures are expected to include: ♦ Instituting a proactive program to ensure compliance with the City Noise Standards; ♦ Using appropriate mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers; ♦ Muffling enclosures on continuously running equipment, such as air compressors and welding generators; ♦ Replacing specific construction operations and techniques with less noisy ones where feasible; ♦ Selecting the quietest of alternative items of equipment where feasible; ♦ Scheduling equipment operations to keep average noise levels low, to synchronize the noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels; ♦ Turning off idling equipment; and ♦ Locating noisy equipment at locations that protect sensitive locations by shielding or distance.	During construction	Included in overall Project cost

Table A Boston Children's Clinical Building - Summary of Impacts and Mitigation Measures (Continued)

Mitigation	Schedule	Cost
Construction Impacts		
Means and methods for performing work at the Project site will be evaluated for potential vibration impacts on adjoining property, utilities, and existing structures. Acceptable vibration criteria will be established prior to construction, and vibration will be monitored, if required, during construction to ensure compliance with the agreed-upon standard.	During construction	Included in overall Project cost
Children's will take an active role with regard to the reprocessing and recycling of construction waste. The disposal contract will include specific requirements that will ensure that construction procedures allow for the necessary segregation, reprocessing, reuse and recycling of materials when possible. For those materials that cannot feasibly be recycled, solid waste will be transported in covered trucks to an approved solid waste facility, per MassDEP Regulations for Solid Waste Facilities (310 CMR 16.00). This requirement will be specified in the disposal contract documents. Construction will be conducted so that materials that may be recycled are segregated from those materials not recyclable to enable disposal at an approved solid waste facility. Children's will have a construction waste management plan which will include a commitment to 50% reuse/recycling of construction waste.	During construction	Included in overall Project cost
Existing public and private infrastructure located within the public right-of-way and within easements across the properties will be protected during construction. The installation of proposed utilities within public ways will be in accordance with the MWRA, BWSC, Boston Public Works, Dig Safe, and the governing utility company requirements. Required permits will be obtained before the commencement of the specific utility installation. Specific methods for constructing proposed utilities where they are near to, or connect with, existing water, sewer and drain facilities will be reviewed by BWSC as part of its site plan review process.	During construction	Included in overall Project cost
Rodent inspection monitoring and treatment will be carried out before, during, and at the completion of all construction work for each phase of the Project, in compliance with the City's requirements.	During construction	Included in overall Project cost
The demolition debris will be disposed of at a properly licensed solid waste disposal facility. Concrete, brick, and asphalt will be separated for crushing and possible re-use on site. During demolition, provisions will be made for the use of water spray to control the generation of dust. An Asbestos and Hazardous Material Evaluation was conducted in 2009, and additional asbestos investigations in 2010. Several types of common asbestos containing (ACM) and hazardous materials were identified to be present in various building materials. The identified ACM, lead,	During construction	Included in overall Project cost

Table A Boston Children's Clinical Building - Summary of Impacts and Mitigation Measures (Continued)

Mitigation	Schedule	Cost
Construction Impacts		
and hazardous materials were in generally good condition. Prior to conducting demolition activities, Massachusetts-licensed abatement contractors will be retained to remove the ACM and other materials in compliance with applicable regulations.		
To reduce vehicle trips to and from the construction sites, minimal construction worker parking will be available at the BCCB and the Patient and Family Parking Garage Addition sites and all workers will be strongly encouraged to use public transportation and ridesharing options. The general contractor will work aggressively to ensure that construction workers are well informed of the public transportation options serving the area. Space onsite will be made available for workers' supplies and tools so they do not have to be brought to the site each day.	During construction	Included in overall Project cost
The construction team will manage deliveries to the site during morning and afternoon peak hours in a manner that minimizes disruption to traffic flow on adjacent streets. Construction truck routes to and from the site for contractor personnel, supplies, materials, and removal of excavations required for the development will be coordinated with BTD. Traffic logistics and routing will be planned to minimize community impacts. Truck access during construction will be determined by the BTD as part of the CMPs. These routes will be mandated as a part of all subcontractors' contracts for the development. The construction team will provide subcontractors and vendors with Construction Vehicle & Delivery Truck Route Brochures in advance of construction activity. "No Idling" signs will be posted at the loading, delivery, pick-up and drop-off areas.	During construction	Included in overall Project cost
Access to the sites and construction staging areas will be identified in the CMP. Although specific construction and staging details have not been finalized, Children's and its construction management consultants will work to ensure that staging areas are located to minimize impacts to pedestrian and vehicular flow. Secure fencing and barricades will be used to isolate construction areas from pedestrian traffic adjacent to the sites. Construction procedures will be designed to meet all Occupational Safety and Health Administration (OSHA) safety standards for specific site construction activities.	During construction	Included in overall Project cost
Sustainability		
The Project will aim to reduce greenhouse gases, maximize energy efficiency, maximize recycling during construction and operations, and meet stated LEED goals.	During construction & operation	Included in overall Project cost as well as operation costs

Table A Boston Children's Clinical Building - Summary of Impacts and Mitigation Measures (Continued)

Mitigation	Schedule	Cost
Infrastructure		
The Proponent is exploring the use of rainwater harvesting tanks and/or stormwater infiltration systems as well as vegetated terrace areas on the BCCB site. The potential infiltration stormwater management options will promote the infiltration of stormwater runoff into the ground and evapotranspiration and reduce the rate and quantity of stormwater discharge to the drainage system. Rainwater harvesting would reduce both runoff and domestic water demand.	During construction & operation	Included in overall Project cost as well as operation costs
Stormwater management controls will be established in compliance with BWSC standards, and the Projects will reduce peak flows, pollutants, or sediments that would potentially impact the Charles River.	During construction & operation	Included in overall Project cost as well as operation costs
The buildings will employ energy-efficient and water-conservation features for mechanical, electrical, architectural, and structural systems, assemblies, and materials where possible.	During construction	Included in overall Project costs
In connection with construction of the BCCB, Children's will develop a CUP in the sub-basement of the BCCB that will include a 1,200 kilowatt (kW) gas-fired reciprocating engine and waste heat boiler (together a CHP unit) and two 30 thousand pound per hour (kpph) dual-fuel fire tube boilers. In addition, electrically operated chiller units will be placed in the sub-basement of the BCCB and will be sized to reliably provide 100% of the chilled water needs for the BCCB. CHP is the simultaneous production of electrical or mechanical energy (power) and useful thermal energy from a single energy source. By capturing and using heat energy from an effluent stream that otherwise would be discharged to the environment, CHP systems can operate at efficiencies that are not achieved when heat and power are produced through separate processes.	During construction & operation	Included in overall Project cost as well as operation costs
The existing BCCB site is currently 68% impervious and includes little to no stormwater controls. Much of the site's runoff discharges untreated to the drainage system in the surrounding streets. Construction of the proposed Project is expected to result in a decrease in the rate and quantity of stormwater runoff from the site. As part of the BWSC's review process, the Proponent will consider measures wherever applicable to minimize flows from the site.	During construction	Included in overall Project costs

Table A Boston Children's Clinical Building - Summary of Impacts and Mitigation Measures (Continued)

Mitigation	Schedule	Cost
Greenhouse Gas		
The following greenhouse gas mitigation technologies are anticipated to be included in the Project. A full breakdown of the Project's mitigation technologies can be found in Table 9-1. ♦ Energy Use Reduction o High performance building envelope o Green roof/podium areas o Light reflective roof o Heat or energy recovery o Room occupancy sensor, lighting o High performance lighting, interior o Reduced LPD interior o Energy-Star appliances and electronics ♦ Energy Generation o High efficiency heating equipment o High efficiency cooling equipment o Cogeneration, CHP ♦ Other Related o LEED certifiable o Rainwater harvest o Low flow fixtures, water conservation o Recycling collection areas o Energy management system o Enhanced building commissioning o Construction waste recycling	During construction & operation	Included in overall Project cost as well as operation costs

11.4 819 Beacon Street – Anticipated State Permits and Approvals

Table 11-2 identifies the Agencies that are expected to take Agency Action on the proposed 819 Beacon Street Project and, therefore, issue Section 61 Findings. It also identifies the Agency Actions anticipated to be required.

Table 11-2 Anticipated Permits and Approvals

AGENCY	APPROVAL
State	
Department of Environmental Protection Division of Water Pollution Control	Sewer extension/connection permit(s) (if applicable)
Department of Environmental Protection Division of Air Quality	Fossil Fuel Utilization Approval (if required)
Massachusetts Water Resources Authority	Sewer Use Discharge Permit Construction Dewatering Permit (if required)

11.5 819 Beacon Street - Proposed Section 61 Finding

Project Name: 819 Beacon Street

Project Location: Boston, MA

Project Proponent: Boston Children's Hospital

EEA Number: 14964

Date Noticed in Monitor: [DATE]

The potential environmental impacts of the Project have been characterized and quantified in the ENF dated October 15, 2012, DEIR dated June 17, 2013, and FEIR dated [Date to be inserted], which are incorporated by reference into this Section 61 Finding. Throughout the planning and environmental review process, the Proponent has been working to develop measures to mitigate significant impacts of the Project. With the mitigation proposed and carried out in cooperation with state agencies, the [Agency] finds that there are no significant unmitigated impacts.

The Proponent recognizes that the identification of effective mitigation, and implementation of that mitigation throughout the life of the Project, is central to its responsibilities under the Massachusetts Environmental Policy Act (MEPA). The Proponent has accordingly prepared the annexed Table of Mitigation that specifies, for each potential state permit category, the mitigation that the Proponent will provide.

Now, therefore, [Agency], having reviewed the MEPA filings for the Project, including the mitigation measures itemized on the annexed Table of Mitigation Measures, finds pursuant to M.G.L. C. 30, S. 61 that with the implementation of the aforesaid measures, all practicable and feasible means and measures will have been taken to avoid or minimize potential damage from the Project to the environment.

____

[AGENCY]

____

By

____

[Date]

To be attached: Table B, describing the measures to be implemented to mitigate the effects of the Project related to the required state permits and the schedule for implementation.

Table B 819 Beacon Street - Summary of Impacts and Mitigation Measures

Mitigation	Schedule	Cost
Transportation		
Children's has worked proactively with MassDOT to develop a roadway plan for Maitland Street that supports the ongoing redesign of Yawkey Station and connection of this dead-end street to Overland Street. These improvements will provide for increased commuter rail use in the area (including the Project), as well as improved vehicle access to the Fenway/Kenmore area.	During operation	Included in overall Project cost
Children's is committed to providing an easement through the 819 Beacon Street Project site to the City of Boston to support the future design and construction of the proposed Multi-Use Path, a shared pedestrian/bicycle corridor connecting the Emerald Necklace to the Fenway MBTA Green Line Station, the redesigned Yawkey Commuter Rail Station and onward to the future Fenway Center project.	During operation	Included in overall Project cost
Children's is committed to providing an easement of land to support the potential future construction of a below-grade tunnel for MassDOT's Urban Ring project.	During operation	Included in overall Project cost
Children's is committed to providing an easement of land along Maitland Street to support improved bus access and intersection alignment with Mountfort Street to support the future signalization of this intersection.	During operation	Included in overall Project cost
Children's will provide bicycle storage capacity on-site to comply with the City of Boston Bicycle Guidelines.	During operation	Included in overall Project cost
Children's will continue to expand its proactive transportation demand management measures to its employees to encourage the use of transit and other alternative forms of transportation.	During operation	Included in overall Project cost
The Project will also reconstruct sidewalks adjacent to the site on both Beacon and Maitland streets.	During operation	Included in overall Project cost
Children's will manage loading operations at its loading docks to ensure timely operations and reduce impacts to surrounding streets.	During operation	Included in overall Project cost
Children's is committed to continuing to offer a wide array of TDM incentives as a means to reduce single occupant driving and increase use of alternative forms of transportation to access the workplace. Children's actively supports efforts to reduce auto use for employees traveling to the Hospital. Many actions to support this goal are actively employed by Children's today, including the following: ♦ Providing an Employee Transportation Advisor; ♦ Membership in MASCO's CommuteWorks TMA; ♦ Full support of MASCO's other on-going transportation initiatives; ♦ 50 percent transit pass subsidy for employees; ♦ Carpool assistance and incentives;	During operation	Included in overall Project cost

Table B 819 Beacon Street - Summary of Impacts and Mitigation Measures (Continued)

Mitigation	Schedule	Cost
Transportation		
♦ Bicycling/walking incentives and amenities; ♦ Location-priced parking (i.e.; offering competitive-rate parking on-campus and subsidized parking off-campus); ♦ Telecommuting and compressed workweeks, when feasible; and ♦ Promotional efforts. Children's is committed to maintaining its employee transit subsidy of 50 percent in connection with the construction of the 819 Beacon Street Project. Children's will also continue to promote and improve its TDM programs to benefit its employees and reduce traffic impacts to roadway and parking facilities within Fenway neighborhoods.		
Children's will continue to promote walking and bicycling as alternative modes of travel for employees. Through the CommuteFit program, employees are rewarded based on the mileage they register.	During operation	Included in overall Project cost
Air Quality		
The Proponent will implement a TDM program to reduce traffic trips.	During operation	Part of operating cost
Noise		
The rooftop emergency generator noise will be controlled using an exhaust silencer and weather-proof enclosure.	During construction	Included in the overall Project cost
Sound emissions from the AHU discharge ducts will be attenuated by internal sound traps.	During construction	Included in the overall Project cost
The cooling towers will be fitted with "quiet" fans.	During construction	Included in the overall Project cost
Additional mitigation may include the selection of quieter units, acoustical louvers, screening walls, mufflers, or equipment enclosures, as needed.	During design	Included in the overall Project cost
Results of the noise analysis indicate that noise levels from the 819 Beacon Street Project at the nearest receptors, with appropriate noise control, will be equal to or below the City of Boston Noise Zoning requirements based on land-use, and will comply with all MA DEP A-weighted and tonal noise limits. The results in Section 5.6.5.2.3 indicate that the proposed 819 Beacon Street Project can operate without significant impact on the existing acoustical environment.	During construction	Included in the overall Project cost

Table B 819 Beacon Street - Summary of Impacts and Mitigation Measures (Continued)

Mitigation	Schedule	Cost
Geotechnical/Groundwater		
Groundwater is anticipated at approximately El. 7 to 10 + BCB per historical data. The 819 Beacon Street Project does not include the construction of any below-grade space that will be below site groundwater levels. The site is not located within the Groundwater Conservation Overlay District. Children's will contact the Boston Groundwater Trust to discuss the 819 Beacon Street Project and measures to protect groundwater during construction.	During Construction	Included in the overall Project cost
Solid Waste/Hazardous Materials		
Children's expects that very little excavation work will be undertaken in connection with the construction of the Project on the site given the fact that the MBTA Green Line tunnel runs under the site. As a result, Children's does not expect to generate a significant amount of excess soil on the site that would require off-site disposal. With regard to soils excavated from the site, Children's will pre-characterize the soil for proper disposal, which pre-characterization will include chemical testing performed on samples obtained from borings and test pits. If Children's encounters contaminated soils during its pre-characterization activities or during the construction of the Project at the site, it will ensure that the soils are handled and, if necessary, disposed of in a manner that is consistent with applicable law.	During construction	Included in the overall Project cost
The 819 Beacon Street Project will have solid waste typical of most commercial office buildings. Children's will provide adequate areas throughout the 819 Beacon Street Project for recycling.	During operation	Part of operational costs
Children's currently recycles white paper, cardboard, Styrofoam, bottles, cans, computer monitors, and other furniture and old electronics. Children's will extend its existing policy to the proposed Project and will recycle as much solid waste as is feasible from the Project.	During operation	Part of operational costs
Paper will be disposed of in secure confidential data bins, removed by a vendor who will shred the paper before the pulp is recycled. Labeled paper recycling collection containers will be located throughout the building at collection points. These will be emptied nightly to larger totes on each floor which will be transported to the building's trash area at the loading dock.	During operation	Part of operational costs
Construction Impacts		
Children's will follow City and MassDEP guidelines that direct the evaluation and mitigation of construction impacts. As part of this process, Children's and its construction team will evaluate the Commonwealth's Clean Air Construction Initiative.	During construction	Included in overall Project cost

Mitigation	Schedule	Cost
Construction Impacts		
CMPs will be submitted to BTD for review and approval prior to issuance of a Building Permit for any of the Projects. The CMPs will include detailed information on specific construction mitigation measures and construction methodologies to minimize impacts to abutters and the local communities. The CMPs will also define truck routes which will help in minimizing the impact of trucks on City and neighborhood streets. "Don't Dump - Drains to Charles River" plaques will be installed at storm drains that are replaced or installed as part of the Projects.	During construction	Included in overall Project cost
Short-term air quality impacts from fugitive dust may be expected during excavation and the early phases of construction. Plans for controlling fugitive dust during excavation and construction include mechanical street sweeping, wetting portions of the Project sites during periods of high wind, and removal of debris in covered trucks. The construction contract documents will provide for a number of strictly enforced measures to be used by contractors to reduce potential emissions and minimize impacts, pursuant to Article 80 of the Boston Zoning Code. These measures are expected to include: ♦ Using wetting agents on areas of exposed soil on a scheduled basis; ♦ Using covered trucks; ♦ Minimizing spoils on the construction sites; ♦ Monitoring of actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized; ♦ Minimizing storage of debris on the Project sites; and ♦ Periodic street and sidewalk cleaning with water to minimize dust accumulations. In addition, BCH has committed to the installation of after-engine emission controls such as diesel oxidation catalysts or diesel particulate filters on construction vehicles and use of Ultra Low Sulfur Diesel fuel in off-road engines.	During construction	Included in overall Project cost
Children's is committed to mitigating noise impacts from the construction of the Projects. Increased community sound levels, however, are an inherent consequence of construction activities. Construction work will comply with the requirements of the City of Boston Noise Ordinance. Every reasonable effort will be made to minimize the noise impact of construction activities. Mitigation measures are expected to include: ♦ Instituting a proactive program to ensure compliance with the City Noise Standards;	During construction	Included in overall Project cost

Mitigation	Schedule	Cost
Construction Impacts		
♦ Using appropriate mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers; ♦ Muffling enclosures on continuously running equipment, such as air compressors and welding generators; ♦ Replacing specific construction operations and techniques by less noisy ones where feasible; ♦ Selecting the quietest of alternative items of equipment where feasible; ♦ Scheduling equipment operations to keep average noise levels low, to synchronize the noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels; ♦ Turning off idling equipment; and ♦ Locating noisy equipment at locations that protect sensitive locations by shielding or distance.		
Means and methods for performing work at the Project site will be evaluated for potential vibration impacts on adjoining property, utilities, and existing structures. Acceptable vibration criteria will be established prior to construction, and vibration will be monitored, if required, during construction to ensure compliance with the agreed-upon standard.	During construction	Included in overall Project cost
Children's will take an active role with regard to the reprocessing and recycling of construction waste. The disposal contract will include specific requirements that will ensure that construction procedures allow for the necessary segregation, reprocessing, reuse and recycling of materials when possible. For those materials that cannot feasibly be recycled, solid waste will be transported in covered trucks to an approved solid waste facility, per MassDEP Regulations for Solid Waste Facilities (310 CMR 16.00). This requirement will be specified in the disposal contract documents. Construction will be conducted so that materials that may be recycled are segregated from those materials not recyclable to enable disposal at an approved solid waste facility. Children's will have a construction waste management plan which will include a commitment to 50% reuse/recycling of construction waste.	During construction	Included in overall Project cost
Existing public and private infrastructure located within the public right-of-way and within easements across the properties will be protected during construction. The installation of proposed utilities within public ways will be in accordance with the MWRA, BWSC, Boston Public Works, Dig Safe, and the governing utility company requirements. Required permits will be obtained before the commencement of the specific utility installation. Specific methods	During construction	Included in overall Project cost

Mitigation	Schedule	Cost
Construction Impacts		
for constructing proposed utilities where they are near to, or connect with, existing water, sewer and drain facilities will be reviewed by BWSC as part of its site plan review process.		
Rodent inspection monitoring and treatment will be carried out before, during, and at the completion of all construction work for each phase of the Projects, in compliance with the City's requirements.	During construction	Included in overall Project cost
To reduce vehicle trips to and from the construction sites, minimal construction worker parking will be available at the 819 Beacon Street site and all workers will be strongly encouraged to use public transportation and ridesharing options. The general contractor will work aggressively to ensure that construction workers are well informed of the public transportation options serving the area. Space onsite will be made available for workers' supplies and tools so they do not have to be brought to the site each day.	During construction	Included in overall Project cost
Truck traffic will vary throughout the construction period, depending on the activity. The construction team will manage deliveries to the site during morning and afternoon peak hours in a manner that minimizes disruption to traffic flow on adjacent streets. Construction truck routes to and from the site for contractor personnel, supplies, materials, and removal of excavations required for the development will be coordinated with BTD. Traffic logistics and routing will be planned to minimize community impacts. Truck access during construction will be determined by the BTD as part of the CMPs. These routes will be mandated as a part of all subcontractors' contracts for the development. The construction team will provide subcontractors and vendors with Construction Vehicle & Delivery Truck Route Brochures in advance of construction activity. "No Idling" signs will be posted at the loading, delivery, pick-up and drop-off areas.	During construction	Included in overall Project cost
Access to the sites and construction staging areas will be identified in the CMP. Although specific construction and staging details have not been finalized, Children's and its construction management consultants will work to ensure that staging areas are located to minimize impacts to pedestrian and vehicular flow. Secure fencing and barricades will be used to isolate construction areas from pedestrian traffic adjacent to the sites. Construction procedures will be designed to meet all Occupational Safety and Health Administration (OSHA) safety standards for specific site construction activities.	During construction	Included in overall Project cost
Sustainability		
The Project will aim to reduce greenhouse gases, maximize energy efficiency, maximize recycling during construction and operations, and meet stated LEED goals.	During construction & operation	Included in overall Project cost as well as operation costs

Table B 819 Beacon Street - Summary of Impacts and Mitigation Measures (Continued)

Mitigation	Schedule	Cost
Infrastructure		
The Proponent is exploring the use of rainwater harvesting tanks and/or stormwater infiltration system on the 819 Beacon Street site. These potential infiltration stormwater management options will promote the infiltration of stormwater runoff into the ground and evapotranspiration and reduce the rate and quantity of stormwater discharge to the drainage system. Rainwater harvesting would reduce both runoff and domestic water demand.	During construction & operation	Included in overall Project cost as well as operation costs
With the potential implementation of these stormwater management options, the construction of the proposed 819 Beacon Street Project is expected to result in a decrease in the rate and quantity of stormwater runoff from the site. As part of the BWSC's review process, the Proponent will consider measures wherever applicable to minimize flows from the site.	During construction	Included in overall Project costs
The buildings will employ energy-efficient and water-conservation features for mechanical, electrical, architectural, and structural systems, assemblies, and materials where possible.	During construction & operation	Included in overall Project cost as well as operation costs
Greenhouse Gas		
The following greenhouse gas mitigation technologies are anticipated to be included in the Project. A full breakdown of the Project's mitigation technologies can be found in Table 9-1. ♦ Energy Use Reduction o High performance building envelope o Light reflective roof o Under-floor air distribution/displacement o Chilled beam o Heat or energy recovery o Room occupancy sensor, lighting o High performance lighting, interior o Reduced LPD interior o Energy-Star appliances and electronics ♦ Energy Generation o High efficiency heating equipment o High efficiency cooling equipment ♦ Other Related o LEED certifiable o Low flow fixtures, water conservation o Recycling collection areas o Energy management system o Enhanced building commissioning o Construction waste recycling o Recycled content materials o Regional materials	During construction & operation	Included in overall Project cost as well as operation costs

Appendix A

Spotlight April 2012

The Office of Child Advocacy's

spotlight

childrenshospital.org/community

2012 Annual Report | Boston Children and Families

Home Field Advantage:

Children's therapists team up with schools to improve mental health where kids live and learn


Cheryl Watson-Harris, principal, Tobin K–8 School; CHNP social workers, Karen Capraro-Gentuso, LICSW, EdM and Mwaniki Mwangi, MSW, LICSW

By the Numbers >

Children's Hospital Neighborhood Partnerships Program

1,961 students received services from CHNP in 15 partner schools during the 2010–2011 school year

293 teachers participated in professional development workshops by CHNP

756 families who participated in parent workshops and community events

10 number of days students wait for CHNP therapy services in the schools, as compared with 42 days in outpatient settings

90% of teachers feel that CHNP services contribute to their students' ability to do well in the classroom

Five years ago, Kevin was struggling academically and acting up in class. Joanne Cox, MD, his primary care provider at Children's Hospital Boston suggested he see the school-based therapist, Shella Dennery, PhD, LICSW, who directs Children's Hospital Neighborhood Partnerships (CHNP), the community mental health program in Children's Department of Psychiatry. As part of CHNP, Dennery worked in Boston area schools to provide free-of-charge mental health services to children and their families. "Many students in urban schools are unable to receive the mental health care they need—not because families don't want it, but because access to services and navigating the mental health system is challenging," says Dennery.

Established in 2002, CHNP has 15 school partnerships throughout Boston. By offering services in environments that are familiar to children and their families, CHNP aims to increase access to care, promote social-emotional development, build the capacity of partnering schools to address mental health and reduce the stigma associated with mental health needs. This model allows clinicians to work with students from preschool through high school providing a range of services from individual therapy, crisis management, group counseling, family engagement and classroom interventions.

The need for such services is huge: Nationwide, one in five kids has a mental health problem, and only 20 to 30 percent receive the proper care. In low-income, urban settings, these numbers are much higher, since issues like poverty, exposure to violence and systemic discrimination put children at greater risk for developing mental health problems. These problems manifest in the classroom, where teachers struggle to help children with self-regulation, family stress and behavioral problems. Two of CHNP clinicians, Mwaniki Mwangi, LICSW and Karen Capraro-Gentuso, LICSW, EdM have seen Kevin and two of his siblings at the Maurice J. Tobin K–8 school in Roxbury for years. "At first, I was nervous," says Maria, a single mother of four. *continued p.6 >*

Children's Hospital Boston

About the OCA

The Office of Child Advocacy (OCA) is a leader in bringing together hospital and community resources to advance solutions that address the health needs of Boston's children.

Waiting to Exhale

Reducing asthma triggers through home visits and family education

Susan Sommer, NP, CAI clinical director; Margarita Lorenzi, asthma educator and home visitor

Miguel's asthma troubles started at an exceptionally early age. Whereas most children aren't diagnosed with asthma until they're older than 2, at just 22 months old, Miguel had already had several asthma attacks severe enough to require aggressive treatment in the Emergency Department (ED). Living in a run-down apartment in an urban Boston neighborhood didn't help; in fact, this was a significant contributing factor.

Poorly controlled asthma can lead to severe, even life-threatening attacks, according to Susan Sommer, NP, clinical director of the Children's Hospital Boston Community Asthma Initiative (CAI). What's more, when a child has poorly controlled asthma, the frequent trips to the ED tax both his family and the health care system. "A child's asthma can impact his whole family's life in multiple ways," says Sommer. "A child can't run and play, which further affects his health. The child, his siblings and his parents don't sleep well at night because he's coughing or wheezing. And the child misses a lot of school and his parents have to miss work, which causes a host of related problems."

Children's developed the CAI in 2005 to find a cost-effective way to help families directly address problems like these, which affect an alarmingly high number of children who live in Boston's urban neighborhoods. While asthma is a widespread chronic disease that affects millions of kids, it's most prevalent in low-income areas and among Latino and Black children, whose rate of hospital admissions is three to five times higher than for white children.

Soon after Miguel was referred to CAI by a nurse practitioner in Children's primary care clinic, Sommer traveled to his apartment complex to meet his family and provide one-on-one assistance. Sommer's case management takes myriad forms, depending on a family's medical and social needs, but it always includes a home assessment, asthma management and medication education, working with the child's health care providers and helping the family remove barriers to improving the child's asthma control.

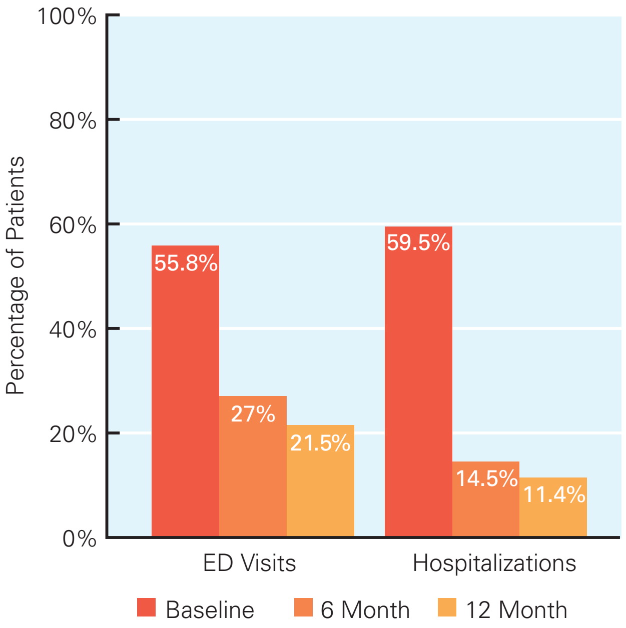
Providing direction on how to reduce asthma-inducing conditions in homes is a major part of her work, and one that can be much more complex than it might seem. "It can be hard for some families to have someone they don't know come into their home," says Sommer. "I appreciate that, and I always approach my work, not from a judgmental place, but from the perspective of working together to make the home more "asthma-friendly."

When Sommer met Miguel at his home in April, he'd had a tough year, including several ED visits due to asthma attacks. Little storage space in the family's small apartment had led to some problems with clutter, which attracted dust and pests—two big asthma triggers. But the unit's general state of disrepair was a larger problem. "There were so many holes, and they were so big, there was no way for the family to repair them," she says. "Parts of the bathroom walls and tiles were falling off, and a plastic sheet covered a window that didn't close."

One of the biggest triggers, unfortunately, was the family cat, to which, it was recently discovered, Miguel was allergic. While the family was receptive to his doctor's recommendation to find the cat a new home, they worried that the apartment's mouse problem would worsen without it. Over the years they'd lived there, the family had had a hard time getting the landlords to repair the holes where the mice came in.

During the home visit, Sommer showed Miguel's family how to minimize mice by blocking entry points, tightly sealing trash, storing food in sealed plastic containers, reducing sources of water and

Reduction in the Percentage of Patients Who Experienced Any Emergency Department Visits and Hospitalizations*



* Based on parent-reported data about their child and themselves in the past 6 months.

areas where rodents can nest. She also supplied them with pest management materials, a HEPA vacuum cleaner and dust mite proof bedding encasements.

Sommer also made a referral to Inspectional Services Department (ISD), the city housing inspectors, since there was a clear need for the property management to repair the bathroom and many holes, as well as professional pest control services. "We're lucky in Boston, in that there's a simple referral process for medical providers to refer apartments for inspection if they think there are code violations that are asthma triggers," she says. "It's a great tool because families are often reluctant to call ISD themselves because they're afraid the landlord will retaliate."

Soon, ISD visited the home and cited the landlord for numerous code violations. The property management company quickly responded to the citation, and by May, many improvements were made. Sommer was also quick to partner with Miguel's primary care provider to identify a medication combination that controlled his symptoms.

For Sommer, the unusually fast pace at which this case progressed was hugely gratifying. CAI follows families for a year, in general, but longer, if needed, until a child's asthma is under good control—that is, the child can sleep through the night, play as much as he wants, attend school regularly and isn't requiring ED visits for acute symptoms. "Miguel is so young, and a lot may still evolve with his asthma," she says. "But I'm happy to say that by eliminating the mice and the need for a cat, as well as making sure that the parents understand his asthma medications, we seem to have made a lot of progress in keeping his asthma well under control."

For more information on CAI, visit
childrenshospital.org/community

By the Numbers >

Community Asthma Initiative

800 patients enrolled since 2005

81% drop in percentage of patients who have had any asthma-related hospitalizations

62% drop in percentage of patients who have had any emergency department visits

41% decrease in the percentage of children who have had any missed school days

46% decrease in the percentage of parents/caregivers who have had any missed work days

Providing a Safety Net for Young Parents

The Young Parents Program (YPP), a specialty clinic within the Children's Hospital Boston's Primary Care Center (CHPCC), provides comprehensive medical care, mental health services and advocacy to high-risk, urban teen parents and their young children. Launched in 1980, YPP deploys a multidisciplinary team of experts in medical, social and developmental issues of adolescence and early childhood who serve approximately 250 teenage mothers, 75 young fathers and 300 babies annually. In 2011 alone, YPP had 1,534 appointments. "Young parents must flourish physically, mentally and socially for their children to succeed," says Joanne Cox, MD, director of CHPCC. "That's why YPP provides specialized services to meet the unique needs of this vulnerable population."

> "Everyone thinks I'm the exception, I've beaten the odds. But I had extraordinary help. If everyone had help, achievement like mine could be the norm."
>
> — Former YPP mother, Advisory Board member, college graduate and master's degree candidate

Ensuring access to care, support and services

Embedded within the YPP teen-tot medical clinic, Project Connect recently completed its fourth year of a five-year federal grant from the Department of Health and Human Services. Project Connect serves mothers 18 and younger, fathers under the age of 25, and their children. Its goals are three-fold: to provide comprehensive pediatric and adolescent care; to integrate social services, primary care and health education with case management; and to provide linkages to community services, including teen living programs, schools, daycares, home visiting and job training. By remaining focused on these goals, Project Connect improves parenting knowledge and skills—lessening the chances of subsequent pregnancies and promoting adolescents' growth toward healthy, self-sufficient adulthood. To date, 220 individuals have participated in Project Connect: 152 mothers and 68 fathers.

Focusing on fathers

"A father's connection to his child is important to the child's long-term health and well being. Yet, young fathers often lack parenting knowledge and confidence or may have high levels of conflict with the child's mother," says Cox. To address these issues, Project Connect developed fathers' groups that focused on parenting knowledge, self-efficacy and relationship skills. Fathers were included in all of their child's medical visits to emphasize the importance of being an equal partner and parent. During these visits, the young fathers and staff discussed co-parenting, employment, health and relationships. Fathers reported that gentle persistence from YPP staff helped them become comfortable seeking support with medical care, mental health services and vocational assistance.

Reaching out to the community

The YPP team provides outreach and support to the community in several ways. Families can access educational workshops focused on children over the age of one. Workshops are open to extended family members and friends in order to benefit anyone caring for the child. Topics include developmental milestones, playing with your toddler and setting limits.

In addition to participating in health fairs and other community functions, YPP staff has disseminated findings from YPP and Project Connect at various conferences such as the Society for Adolescent Health and Medicine and Pediatric Academic Societies. Manuscripts were also accepted with the Journal of Maternal and Child Health and the American Journal of Public Health.

"YPP staff and patients are strong voices advocating for change and influencing policy as well," says Cox. YPP is a member of Massachusetts Alliance on Teen Pregnancy, a policy group for organizations and agencies working with pregnant and parenting teens, and participates in their annual event to bring together teen parents and their children and supporters to advocate for young parent programs. YPP also recently supported and helped to establish S.T.E.P.P.S. (Summit for Teen Empowerment Progress and Parenting Success), a joint project with Children's, Massachusetts Alliance on Teen Pregnancy, Brigham and Women's Hospital, Northeastern University, March of Dimes and the Mt. Pleasant Fund. Workshops focused on child development, stress management, budgeting and raising a child in someone else's home. More than 85 young parents, including YPP families, attended to share stories and learn how to access resources.

For more information on YPP, visit:
childrenshospital.org/ypp

Responding to Violence

Making Boston neighborhoods safer for children and families

The Jamaica Plain Violence Intervention and Prevention Collaborative (JP VIP) was created in response to numerous incidents of violence in the neighborhood immediately surrounding Martha Eliot Health Center (MEHC). Mildred Hailey, former executive director of the Bromley Heath-Tenant Management Corporation and Jim Cote, former executive director of MEHC took the lead in bringing together the community organizations to create a coalition to address this violence.

Since its inception in 2008, the mission of the JP VIP has been to help youth and families of Jamaica Plain and neighboring communities live safe and healthy lives by providing education about mental health services and helping families to access resources. In 2011, JP VIP responded to 19 fatal incidents. “By intervening in the immediate aftermath of a traumatic event, we want to reduce the long term effect of trauma on youth and family members,” says Patricia Knight, JP VIP Trauma Response coordinator.

Recognizing the strong correlation between mental health issues and violence, the JP VIP wanted to get feedback from community residents. “We know that families are faced with intense socioeconomic pressures such as poverty, lack of education or housing issues and this stress can lead to feelings of hopelessness.” says Deborah Dickerson, director of Community Health Initiatives for the Office of Child Advocacy at Children’s. Focus groups with over 100 residents from Jamaica Plain and Roxbury were held to get the community’s input on mental health issues and their experiences with access to available resources. “The focus groups confirmed our belief that some of the resources available to families are not culturally sensitive and that more education about mental health is needed,” says Dickerson.

The JP VIP is planning to take the information they learned from these focus groups and plan a community-wide forum in the spring. The goal of the forum will be to further educate families on mental health and resources available.

JP VIP Community Partners

- Academy, Bromley, Egleston Safety Task Force
- Boston Public Health Commission
- Bromley-Heath Tenant Management Corporation
- Brookside Community Health Center
- Children’s Hospital Boston
- The Dimock Center
- Ecumenical Social Action Committee, Inc. (ESAC)
- Family Service of Greater Boston
- JP Unidos/United
- Martha Eliot Health Center
- MassHousing
- New Academy Estates
- Southern Jamaica Plain Health Center
- Spontaneous Celebrations/Beantown Society
- West Roxbury Courthouse


COACH students from the 2011 program

By the Numbers >

Children’s Workforce Development Efforts

72 students were hired last summer as part of Children’s COACH Program (Community Opportunities Advancement Children’s Hospital); 70 were from Boston

17 students participated in SCOOP (Student Career Opportunity Outreach Program) to learn about nursing careers; 6 were from Boston

5 students from Sociedad Latina were hired for after-school jobs at Children’s

30% of Children’s 9,500 employees reside in Boston

Home Field Advantage *(continued from p.1)*

"I didn't know how much to share, and what they'd think of my situation. But they made us feel comfortable and my son wanted to talk to his therapist—and even looked forward to it. He needed that time to express himself and ended up loving them. We all did." Soon, the CHNP team was meeting regularly with Maria's whole family. "Our therapists help us express ourselves and come up with ideas on how to solve problems, whether they're about home or school matters," says Maria. "Family sessions are amazing; we find out what's at the heart of an issue and what we can we do better." Maria finds her own relationship with the therapists to be an invaluable outlet. "It can be overwhelming to juggle a full-time job, going to school at night and the kids, and it helps to have someone just listen."

The consistent, ongoing relationships that the clinicians have developed with Maria's family have allowed her children to feel comfortable talking to them about nearly any topic. "My teenage daughter is more comfortable talking about peer pressure and sex with her therapist than with me, and her therapist fills that communication gap for us," she says. Maria has seen the direct relationship between having mental health services and her children's performance at school. Concerned phone calls about Kevin's academics and behavior have given way to glowing report cards. "Now, teachers say how wonderfully he's doing, and that has a lot to do with the help he gets from Children's," she says. "He does his homework, and he's on the honor roll."

What makes CHNP unique is its integration into the fabric of the school and how closely its clinicians work with teachers. In working hand in hand with schools, the program builds the capacity of schools to address students' mental health. The partnership's benefits—to students, teachers and the community —are clear to Cheryl Watson Harris, principal of the Tobin K–8 school. "Because the clinicians are school-based, the supports are aligned with school-wide practices, and the children and parents feel as though the approach is more holistic and comprehensive," she says. "Many of my colleagues have marveled at this partnership, as the support from CHNP helps create a comprehensive care program that maintains open communication among school staff, parents and CHNP. Most students served by CHNP have made tremendous improvements—classes have been turned around."

For Maria, the effects are long-lasting. "My children are good influences on each other," she says. "In our family sessions, we've cried together and we've laughed together, and that has made us stronger. And having people who care about us and help us cope with things differently, we've become like a family. These are people my kids will never forget. I know I won't."

Q&A with Mwaniki F. Mwangi, MSW, LICSW, and Karen Capraro-Gentuso, LICSW, EdM, clinical social workers in CHNP

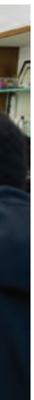
Why is CHNP important to the schools you work in?
MM: We're extremely flexible and can help each student, teacher, classroom and school with the specific issues they're facing each day. This lets us provide our services in a meaningful, comprehensive way. When a class was having a particular issue, we taught a curriculum empowering the kids to make healthy, safe choices. If there's a class struggling, we go in and work to help the children learn new behaviors, like social skills and anti-bullying behavior.

How is CHNP different?
KC: We don't just come in, do therapy and leave. We're in the school with the teachers and kids every day. We're a regular presence and we make sure we're seen by students and parents. Teachers really value that we're part of the school. It's also less stigmatizing for the kids to talk to us if they're having problems since we're seen as part of the school community.

How does CHNP help teachers?
MM: Teachers find it helpful to get our perspective on difficulties they're having in the classroom. For example, my consultation with a teacher who has a student with ADHD included setting up a plan for the first 10 minutes of the class to help the student focus on a routine for starting class. We talked about the student's behavior not from a disciplinary perspective but from a mental health perspective.

What made you want to be a part of CHNP?
KC: When you treat children's mental health issues in a hospital, you don't see the kids in their natural environment. School is where they're really comfortable it's their second home. Since the kids are comfortable, it breaks down barriers.

For more information on this story, visit:
childrenshospital.org/community/stories



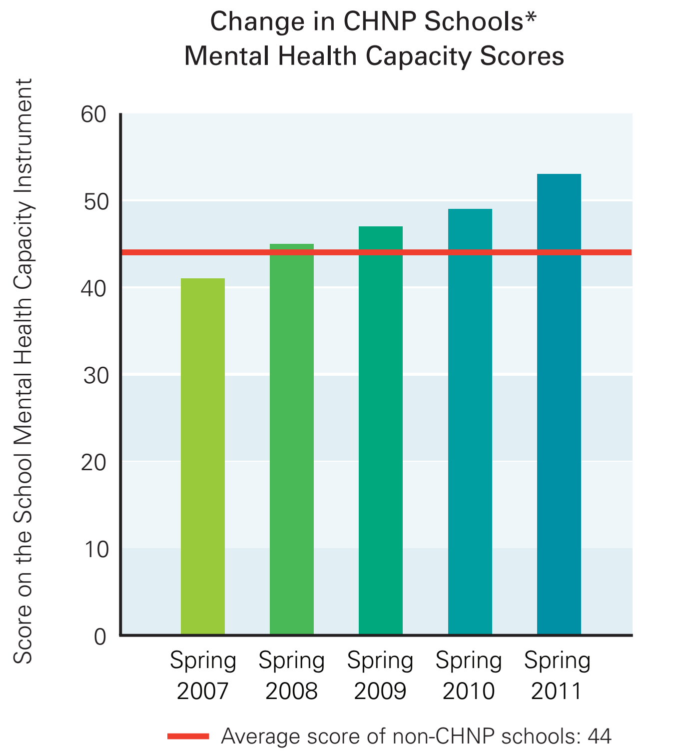
Innovation in
Mental Health Service Delivery

Founded in 2002, the Children's Hospital Neighborhood Partnerships (CHNP) began as a program to partner with individual schools. Now in its 10th year, the program has evolved into a model that is positioned to help schools across the city and state build the necessary internal capacity to proactively address student behavioral health issues that impact academic and life success. (See chart.)

Based on lessons learned through the CHNP and the hospital's psychiatry program, Children's has identified the need to address pediatric mental health issues on a much broader scale. In 2006, Children's partnered with the Massachusetts Society for the Prevention of Cruelty to Children (MSPCC) to co-found the Children's Mental Health Campaign (CMHC) in an effort to change how children's mental health services are provided in Massachusetts. CMHC's work resulted in the enactment of three landmark laws that together improved access to mental health services, spurred early identification of children with mental health needs, increased schools' capacity to address the mental health needs of students, expanded insurance coverage for children in need of mental healthcare services and reduced the number of kids "stuck" in inappropriate care settings.

CHNP was a leader in the development of the approach to reforms in education and children's mental health. CHNP's founding director was instrumental in drafting the legislative language that created the Task Force on Behavioral Health and Public Schools. With representation from Children's and CHNP, the Task Force created a Safe and Supportive Schools Framework, which would require all schools to develop action plans for creating safe and supportive environments by 2017. From testifying in support of the legislation to chairing the CMHC Workgroup on Education and Mental Health, CHNP continues to be involved in the advocacy efforts to pass this pending legislation.

Eager to implement this proposal, the Boston Public Schools (BPS) has invited CHNP to be its main partner in the development of a district wide behavioral health model that will pilot many of the bill's elements and will serve as a model for school districts across the country. The model will enable schools to provide a comprehensive system of care that integrates appropriate levels of behavioral support for all students. In preparation for these changes, CHNP is also playing a larger role in BPS's professional development practices. Drawing on its experience at the school level, CHNP is co-sponsoring and leading monthly professional development workshops for teachers and administrators district-wide. This presents yet another opportunity to promote systemic change by building capacity within BPS.



* Teachers rate the extent to which systems, procedures and policies to address mental health are integrated into the school.

CHNP currently reaches almost 2,000 children in 15 Boston schools. Yet, the program's model and relationships it has developed with education agencies and policy makers offer the potential to impact the lives of Boston's 57,000 students and students across the Commonwealth.

For more information on CHNP, visit:
childrenshospital.org/chnp

Bridging the Gap

Between Research and the Community

The Children's Hospital Boston Collaborative Center for Community Research (C-CORE) was created in 2010 with funding from the National Institutes of Health and Children's. C-CORE aims to reduce child health disparities in Boston through an innovative partnership among four local cornerstones of child health and education — Children's, the Boston Public Health Commission, Boston Public Schools and the Boston Conference of the Massachusetts League of Community Health Centers. "Our goal is to support folks from Children's and the Boston community in conducting research to improve the health of Boston's youth, families and communities," says Mark Schuster, MD, PhD, chief of General Pediatrics at Children's, William Berenberg Professor of Pediatrics at Harvard Medical School and C-CORE's director.

C-CORE activities are guided by the principles of community-based participatory research (CBPR), an approach that engages community members and researchers in a partnership throughout the research process. "Our team is dedicated to ensuring that research represents community interests and that results have the potential to lead to sustainable programs and policies," says General Pediatrics research director Laura Bogart, PhD, associate professor of Pediatrics and C-CORE's associate director. To ensure that C-CORE is responsive to community needs, its activities are informed by a 40-member Community-Academic Advisory Board of stakeholders from local community organizations and researchers from Children's and other academic institutions. C-CORE also receives input from the Mayor's Youth Council, a group composed of high school students representing every Boston neighborhood.

C-CORE facilitates collaborations between researchers and community partners, identifies community health priorities and research opportunities and works to design, implement and evaluate new projects. In December 2011, with funds made available by Children's, C-CORE provided two grants to community organizations conducting CBPR pilot projects in partnership with Children's faculty.

In an effort to fill a gap in understanding health and health disparities among Boston's youth, C-CORE is supporting partners at the BPHC to conduct the Boston Child Health Study. This study, another project funded by Children's, will create the first comprehensive inventory of child health and health disparities in Boston using phone surveys, Medicaid claims data, and resource assessments of local neighborhoods. In addition, C-CORE will be completing a needs assessment of Children's researchers this spring to better understand their community-based research experiences and interests, as well as their need for resources to foster and maintain community research partnerships.

As part of its teaching mission, C-CORE aims to educate academic and community partners about child health issues and CBPR. Activities include a planned June 2012 Community-Academic Forum entitled, "Misunderstanding & Mistrust of Health Research and Health Care: Opening a Dialogue in Boston."

Disseminating C-CORE's work through community outreach and a public website is an important function as it will reinforce the use of community-based research in addressing child health disparities. In the long-term, dissemination activities will strengthen capacity for conducting high-quality community research that improves the health and well-being of Boston's children and youth.

For more information on C-CORE, visit:
childrenshospital.org/ccore

C-CORE Leadership

Mark Schuster, MD, PhD, General Pediatrics, Children's (Director)

Laura Bogart, PhD, General Pediatrics, Children's (Associate Director)

Deborah Allen, ScD, Boston Public Health Commission (Community Research Associate)

April Allen, MPA, MA, General Pediatrics, Children's

Jill Carter, EdM, MA, Boston Public Schools

Paula McNichols, Massachusetts League of Community Health Centers and Brookside Community Health Center

Shari Nethersole, MD, Office of Child Advocacy, Children's

John Riordan, MCRP, Office of Child Advocacy, Children's

Diana Santiago, JD, MPH, Boston Public Health Commission

Snehal Shah, MD, MPH, Boston Public Health Commission

Shanna Shulman, PhD, General Pediatrics, Children's

Children's first Annual

William L. Boyan Award Honors Sociedad Latina

Back row, from left, Giovanny Martinez, Sociedad Latina; William L. Boyan, former Children's Board of Trustees chair and chair of Children's Board Committee on Community Service; James Mandell, MD, Children's chief executive officer; Joseph Monge, Sociedad Latina; Alexandra Oliver-Dávila, executive director, Sociedad Latina and Stephen R. Karp, chairman Children's Board of Trustees. **Front row, from left,** Giovanna Franco, Joel Colon and Marcos Suares of Sociedad Latina.

On November 14, 2011, Children's Hospital Boston awarded the first annual William L. Boyan Award for Excellence in Community Health to Sociedad Latina, a youth development organization located in Roxbury. The William L. Boyan Award honors a community organization for their work and commitment to the children and families of Boston. Each year, the theme of the award will change. The focus for the 2011 award was to support a program within a community organization, health center, city agency or Boston school that addressed the mental health needs of children.

The $50,000 award will help Sociedad Latina to expand their mental health services by hiring a full time case manager. Sociedad Latina will be an internship site for Boston College social work students who will provide weekly mental health workshops for families. These workshops will help Sociedad families access resources, better understand mental health and work together to promote good mental health in the Latino community.

For more information on Sociedad Latina, visit:
sociedadlatina.org

Children's helps celebrate the launch of the

Madison Park Recreation Center

On December 10, 2011, Boston Centers for Youth and Families (BCYF) launched the Recreation Center at Madison Park, a re-purposed facility that will allow BCYF's Recreation Division to expand and enhance its current program offerings as well as to develop new initiatives to improve the quality and accessibility of recreation, sports and fitness programs citywide. The Recreation Center, which is shared space with Madison Park High School, features two gymnasiums, a swimming pool, football field, dance studio, tennis courts, running track and a workshop training room.

"This is all about individuals and organizations from across the city coming together to improve people's lives," said Mayor Thomas M. Menino, who attended the event. "Madison Park is going to be a great conveyor for youth sports in our city, and I am looking forward to seeing the programs and activities that are going to come out of here that really help people."

Healthy Kids, Healthy Futures (HKHF), a partnership between Northeastern and Children's Hospital Boston, holds its Saturday Open Gym free play program at Madison Park. HKHF provides education and training to prevent childhood obesity in the neighborhoods of Fenway, Mission Hill, Jamaica Plain and Roxbury with its cornerstone being the Saturday Open Gym for Boston families with young children.

For more information on HKHF, visit:
northeastern.edu/healthykids

Shari Nethersole, MD, medical director for community health, Children's Hospital Boston; Daphne Griffin, executive director, Boston Centers for Youth and Families; Mayor Thomas M. Menino, City of Boston; Ryan Fitzgerald, director of recreation and sport, Boston Centers for Youth & Families; Dr. Carol R. Johnson, superintendent, Boston Public Schools; Councilor Tito H. Jackson, Boston City Councilor, District 7; Robert Gittens, vice president, Government Relations and Community Affairs, Northeastern University and member, Children's Board Committee for Community Service.

Making a Difference, Big Time

Proven Community Health Programs Move toward Systemic Change
By M. Laurie Cammisa, Esq., vice president for Child Advocacy

Nearly 20 years ago, Children's Hospital Boston was among the first in the country to expand the traditional academic missions of patient care, teaching and research to embrace a fourth core mission: community health.

Back then, our community health mission consisted of a few programs that provided services to Boston children and families. Over the years, our approach to improving community health has evolved and matured. We've embraced partnerships. We've proactively engaged our communities. We've concentrated our community health programs in core areas where we have the expertise and resources to make the most difference and where significant public health needs exist.

This gradual evolution has resulted in what is today a wholly strategic approach to improving child health. We have two key aims — focusing on the most pressing health care needs of children and providing services through program models that not only work but can lead to systemic change.

Along the way, our strategy evolution has included taking a critical look at how we are organized. We developed a clear operating model that defines our work and a performance measurement system that guides our activities — things like measuring and tracking performance, reporting progress and results and learning from data to make informed decisions. We developed a program evolution model, which is a framework that informs the development and growth of our programs in our four core health areas (asthma, obesity, mental health and child development) and ensures that these programs are making progress toward systemic change.

A Portfolio of Programs

The hospital views four key programs (Advocating Success for Kids, Children's Hospital Neighborhood Partnerships, Community Asthma Initiative and Fitness in the City) as a portfolio, and we manage this portfolio with a triple focus.

One focus is to guarantee that the hospital's investment of resources (human and financial) is targeted to programs that address local needs, alleviate health disparities, partner and engage with our community and provide services through models that lead to systemic change. For Children's, systemic change encompasses a range of activities: taking a program to scale, replicating the program, ensuring needed public policy changes, building capacity and sharing knowledge that leads to changes in pediatric practice.

Another is to ensure that, by employing a uniform set of standards and criteria, these programs measure value and social impact—things like improving health outcomes and quality of life, proving cost-effectiveness and building community capacity.

A third is to align with the hospital's overall need to excel in a changing health care environment. The hospital fits our focus areas and interventions into a continuum of care model that looks for ways to prevent short- and long term illness and eliminate or avoid medical costs. By doing so, we are setting the stage for a number of key elements of national health care reform, including reductions in medical costs, the patient-centered medical home and population health management.

Working toward Systemic Change

The portfolio approach allows us to measure progress and demonstrate quantitatively that our programs work. But how can we make a difference on a larger scale? There are two answers, both of which the hospital is employing to work toward systemic change.

In the first place, we are building community capacity—to arm our community partners with the tools they need to broaden the programs we have created together. An example is Fitness in the City (see page 14), which our health center partners have adapted in a variety of ways to involve more children and families in addressing obesity through nutrition education and exercise opportunities.

Secondly, we are taking our programs "to scale" by bringing the proven model to a larger population through public policy advocacy. The hospital's approach to community mental health programming, through the Children's Hospital Neighborhood Partnerships (CHNP,) is one example of scalability and advocacy working together toward systemic change (see page 1). Asthma care is another.

Children's developed its Community Asthma Initiative (CAI) in 2005. CAI provides case-management and home visits, offers education to caregivers and providers, distributes asthma control supplies and connects families to resources.

Rigorous evaluation of the program demonstrated that CAI has improved health outcomes for children and also is cost-effective. Armed with quantitative measures of success, the hospital worked with the Asthma Regional Council of New England to make a business case for replication locally, state-wide and regionally, urging payers to ensure that all children have access to these types of asthma services. Using this business case, we worked with an even broader coalition of local and state asthma organizations in Massachusetts to advocate for public policy changes.

The coalition has been successful. The state legislature earmarked $3 million in its FY11 Medicaid budget for a demonstration project that will provide case management services to children with asthma. The Centers for Medicare and Medicaid Services (CMS) approved Massachusetts' Medicaid waiver renewal proposal, including this pilot program. Soon, we expect the state's Medicaid program to issue a request for proposals and select six pediatric practices to participate in the asthma pilot.

Working on another front — sharing lessons learned — to expand the impact of the CAI, we partnered with the Boston Public Health Commission as they created the Boston Home Visiting Collaborative. This collaborative has developed tools, standards and processes for asthma home visits across the city, with a universal referral system and training of community health workers to expand capacity. Significant portions of this work are based on what we have learned through the CAI.

So, while the hospital's CAI program has reached 800 Boston children with moderate to severe asthma since its inception, it is building a model that has the potential to reach every child in Massachusetts who suffers from asthma.

I'd say that is making a difference, big-time.

For more information on Children's community mission, visit: childrenshospital.org/community

Leading the Community Mission

Board Committee for Community Service

Members of the Board Committee for Community Service offer insight and review the hospital's strategy for its community mission. The Board provides insight into the needs of the community as well as approves the hospital's community benefits plan.

Winston Henderson, JD, chair
Nano Terra, Inc.

Zamawa Arenas
ARGUS Communications

Tristram Blake
formerly of South End Community Health Center

Sandra L. Fenwick (ex-officio)
Children's Hospital Boston

Robert Gittens
Northeastern University

Steven Gortmaker, PhD
Harvard School of Public Health

James Mandell, MD (ex-officio)
Children's Hospital Boston

Margaret M. Noce
Chair of the Community Advisory Board
Jamaica Plain Coalition: Tree of life/Arbol de Vida

Robert Restuccia
Community Catalyst

Marta T. Rosa, MEd
Wheelock College

Mark Schuster, MD, PhD
Children's Hospital Boston

Adita Vazquez
Chair of the Martha Eliot Health Center Advisory Board
Salem District Court

Wendy A. Watson
formerly of State Street Bank

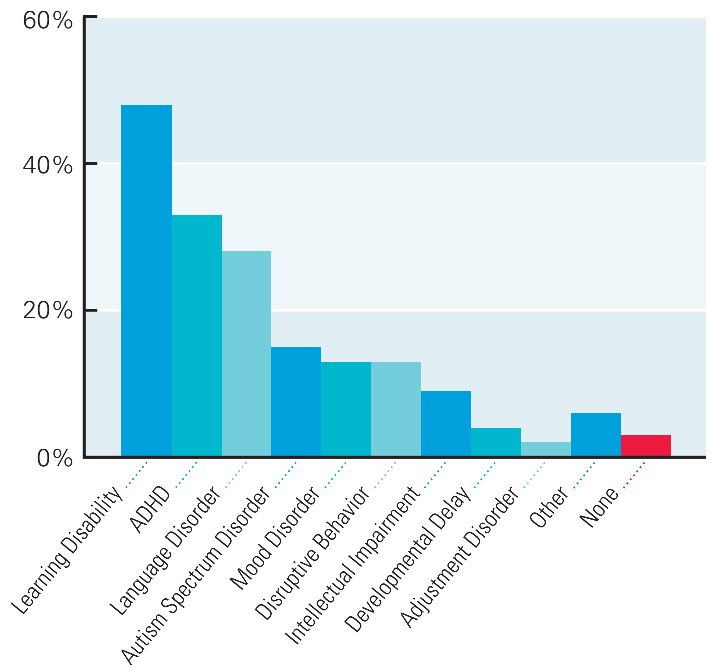
Gregory J. Young, MD
Pediatric Physician's Organization at Children's Hospital

M. Laurie Cammisa, Esq., staff
Children's Hospital Boston

Going to ASK for Answers

Through Children's support, a family finds a path to a brighter future

Common Diagnosis for ASK Patients



Theresa left her home and family in Cape Verde for Boston when she was 10, and grew up in DSS custody. So when learning difficulties left her unable to finish high school, she didn't have many people to turn to for help. Then, when her own young daughter, Claudia, showed similar signs of learning difficulties, she felt alone, all over again. "I'm a young parent—I'm 26—and I just finished high school only a few years ago," she says. "Watching my daughter have the same problems at school is the hardest part of being a mother, since all I want is for her to succeed in school."

Claudia, now 7, showed signs of having learning disabilities when she started kindergarten, and her primary care provider at Dorchester's Bowdoin Street Health Center referred her to the Advocating Success for Kids (ASK) Program for an evaluation. Started in 2000, Children's Hospital Boston formed ASK to address primary care physicians' concerns about many of their patients' unmet learning, developmental, emotional or behavioral needs.

Today, ASK is staffed by two physicians, a psychologist, a nurse practitioner, three pediatric fellows, two post-doctoral psychology fellows, four social workers and an educational specialist, who work together to evaluate children referred from Children's primary care team, as well as from three community health centers. The families they see, like Theresa's, are mostly low-income minority families living in urban areas who otherwise wouldn't have access to such a comprehensive developmental service. While the program has grown tremendously over the years, ASK retains its core approach: developing an understanding of a child's unique challenges in school and at home, proposing interventions (such as school evaluation and in-school and/or home-based supports), working with parents to get those interventions in place and advocating on their child's behalf. Its goal also remains the same: to optimize children's health and success at school, positioning them for a brighter future.

"Parents have so much on their plates already, that it can be overwhelming to find ways to address their children's learning or behavioral challenges," says ASK social worker Casey Walsh, LICSW, who has worked with Theresa's family for years. "Kids like Claudia with unclear learning needs may not get adequate support in the classroom, and parents need help figuring out how to access the right resources."

This kind of help can take many forms, including connecting families to community specialty services, setting up medical appointments, referring to specialty education programs and coordinating with a child's teachers. For Claudia, it centered on first completing a comprehensive evaluation, communicating with her teachers and observing her in school. Then the team documented the nature of her learning issues so that an appropriate Individualized Education Program (IEP) for her school could be developed. But ASK didn't leave it at that: Walsh stayed involved to see the plan through, and to act as a source of support for Theresa. "That's the great thing about ASK," says Walsh. "Our program allows us to partner with parents so they better understand their child's diagnostic concerns and special education rights. When parents are armed with this knowledge they develop the confidence to advocate for their kids."

Theresa had tried everything to get her daughter the extra help she needed at school, to no avail. "I work hard and my husband works hard just to make a living, and it's challenging to get to the IEP meetings and constantly follow up about them," she says. "It was too much, and so I called Casey. Within a week, she had an IEP on my doorstep. It was amazing."

Over the years, Walsh has worked with Theresa on everything from finding a new school for her daughter and attending the IEP meetings with her, to coordinating appointments for specialty care for Claudia. Once, when a school failed to implement Claudia's IEP, the ASK team arranged a lawyer to represent the family and helped Theresa through the ensuing due process, including testifying on Claudia's behalf.

"Casey has been wonderful," says Theresa. "If I attend a school meeting that I don't understand, she's always willing to explain it. She gives me the motivation and the ability to organize so I can be there for my kids."

Last year, Theresa brought her now 3-year-old son, Richard, for an ASK evaluation because he still wasn't talking, and the team recommended early intervention to address his developmental delays. They set up appointments for speech therapy and hearing tests and coordinated his placement in a nutrition program at Children's.

Claudia is still followed by ASK and Theresa relies on Walsh to support her at school meetings to ensure Claudia is making progress. "If I'm having a rough day, Casey will sit on the phone and talk, and I like knowing I have that support," she says. Theresa sees ASK as a valuable resource to other struggling parents. "Like me, some of them don't have anybody. The help I got in the past five years has transformed me from a teen mom into a grown woman who takes care of my own house and my small, but great, family," she says. "There are lots of hardworking people who get left behind, and who need some help. ASK stepped in and helped me and I don't know where I'd be without it."

For more information on ASK, visit:
childrenshospital.org/ask

By the Numbers >

Advocating Success for Kids

356 children served by ASK each year

67% have public insurance

7.5 average age of ASK children

48% of children in the program have a learning disability

33% have ADHD

15% are on the autism spectrum

Providing a Community Voice

Community Advisory Board

Community Advisory Board (CAB) members identify opportunities for partnership, serve as advocates and ambassadors and help connect hospital experts with local organizations.

Margaret Noce, chair
Jamaica Plain Coalition: Tree of life/Arbol de Vida

Dorys Alarcon
Children's Hospital Boston

M. Laurie Cammisa, Esq.
Children's Hospital Boston

Jill Carter, EdM, MA
Boston Public Schools

Yi Chin Chen
Hyde Square Task Force

Katherine Cook, NP
Bowdoin Street Health Center

Lauren Dewey-Platt
Fenway Resident

Patricia Flaherty
Mission Hill Resident

Alexandra Oliver-Dávila
Sociedad Latina

Sheneal Parker
Fenway Resident

Laurie Sherman
Mayor Thomas Menino's Office

Christopher Sumner
Wheelock College

Roland Tang, MD
South Cove Community Health Center

Michelle Urbano
Boston Public Health Commission

Andrea Swain
Yawkey Club of Roxbury

May Vaughn-Ebanks
Roxbury YMCA

John Riordan, staff
Children's Hospital Boston

Fitness in the City:

A low-tech, community-based, highly effective approach to weight management

Katherine Cook, NP, Bowdoin Street and Roland Tang, MD, South Cove

Watching fewer hours of television. Drinking fewer cans of soda. Increasing the amount of time spent exercising. Lowering body mass index (BMI). What's this a prescription for? Reducing obesity among children aged 6–18 who are seen in 11 Boston community health centers.

That's the goal of Fitness in the City (FIC), a partnership between Children's Hospital Boston and the health centers, which is supported by Kohl's Cares. Launched in 2005, FIC relies on nutrition services, education, and physical activity opportunities coordinated at each site by a case manager. Over 900 obese and overweight children are referred by their health center-based primary care provider to participate every year.

"The case manager is the program's secret weapon," said Shari Nethersole, MD, medical director for community health in the Office of Child Advocacy at Children's. "He or she serves as a 'coach' to participants –providing motivation and connecting them with culturally appropriate, accessible and affordable resources. Case managers are the main link with the child's primary care provider and parents."

Case managers conduct intake and follow-up surveys with participants, engage parents to help develop wellness goals, support participants through nutrition and physical activity referrals, educate health center staff about available local resources, perform data management and meet to share best practices.

Grassroots approach helps health centers build capacity

While Children's has a well-established and highly successful hospital-based obesity management program, OWL (Optimal Weight for Life) is only able to reach a fraction of the overweight and obese children in Boston's urban core neighborhoods. So the hospital explored a more grassroots, community-based approach and capitalized on its longstanding relationships with community health centers.

"Many obesity initiatives focus on schools, but we felt that the participation of family members was vital to a child's success in managing overweight and obesity," said Nethersole. "Health centers were chosen because family members would be more likely to be engaged in a child's treatment program if it was located in their health center. In addition, health centers know their populations intimately, can address cultural and linguistic needs, and can mold the program to address barriers and leverage resources in their own communities."

FIC has become an integral part of the health centers' obesity efforts. "We have benefited greatly from our participation in regular meetings convened by Children's with other health centers in the program," says Roland Tang, MD, a pediatrician at South Cove Community Health Center in Chinatown. "The meetings often include best-practice presentations, and the open exchange of ideas about what works and what doesn't for other health centers. It has helped us make informed decisions about the direction of our own program." The program also has helped centers develop or improve their data collection systems. "Prior to having Fitness in the City, we were not collecting BMI data on all our young patients," said Katherine Cook, PNPC, MSN, at Bowdoin Street Health Center in Dorchester. "Today, through Children's evaluation support, we're able to track BMI measures as well as other important behavioral change indicators."

FIC's grassroots approach has proven to be a "low-tech" solution to a vexing and increasing child health problem.

For more information on FIC, visit:
childrenshospital.org/community

FIC Participating Health Centers

- Martha Eliot Health Center, Jamaica Plain
- Bowdoin Street Health Center, Dorchester
- Brookside Community Health Center, Jamaica Plain
- The Dimock Center, Roxbury
- Joseph M. Smith Community Health Center, Allston
- Roxbury Comprehensive Community Health Center
- South Cove Community Health Center, Chinatown
- South End Community Health Center
- Southern Jamaica Plain Health Center
- Upham's Corner Health Center, Dorchester
- Whittier Street Health Center, Roxbury

By the Numbers >

Fitness in the City

60% of children in FIC decreased or maintained their Body Mass Index (BMI)

245 scholarships were awarded to motivated FIC participants to join local gyms or other physical activity resources

Number of weekend TV-hours watched by FIC kids decreased from **4.3** to **3.54**

Numbers of cans of soda or juice consumed per day decreased from **2.5** to **2.3**

Number of days per week FIC kids exercised 30 minutes or more increased from **3.2** to **3.5**

Improving a Community's Odds

When two of Maria Baker's three sons, Arthur 12, and Michael, 6, went from a healthy weight to overweight, with one bordering on obese, their pediatrician knew they needed help.

They're not alone. Childhood obesity is on the rise nationwide, with Black and Latino children affected at a higher rate than white children. Some suffering from conditions once considered strictly adult diseases, such as type 2 diabetes, hypertension and sleep apnea — obese children may face shorter life spans than their parents. And overweight children are more than twice as likely to be hospitalized.

The odds weren't in her sons' favor, but that's changing with the help of Fitness in the City (FIC). Living in public housing, Maria felt there were few outlets for her boys to be active. Through FIC, the case manager gave them a free YMCA membership. Now Maria takes the boys to the Y three times a week for karate and swimming, and she works out too. FIC keeps costs low by connecting families to existing community resources, such as the Y.

The family's also making healthier nutrition choices. "I used to eat anything," says Arthur, referring to the junk food he often bought after school. "Now, I'm healthy. I even feel more focused on school."

Martha Eliot Health Center

A resource for teens and families

Located in Jamaica Plain, the Martha Eliot Health Center (MEHC) was established in 1966 to address the needs of inner-city children, adolescents and families. Many of Martha Eliot's patients reside in the neighborhoods surrounding the health center— Jamaica Plain, Mission Hill, Roxbury and Dorchester—all parts of Boston hit by violence and persistent poverty. Many patients are recent immigrants to Boston from countries as varied as the Dominican Republic, Somalia and Haiti. As Children's Hospital Boston's community health center, MEHC embodies more than 40 years of commitment to provide and ensure that families can access the highest quality of health care.

Adolescent Services Program (ASP)

In addition to poverty and violence, MEHC's adolescent patients struggle with pregnancy, sexually transmitted diseases, chemical or alcohol dependency, as well as school and behavioral problems. These adolescent patients find many obstacles to treatment—too old for pediatricians, too young for adult providers and striving for independence from their parents. Addressing the urgent needs of these vulnerable young adults is challenging. The MEHC's Adolescent Services Program (ASP) has been essential to supporting these teens and meeting their unique needs. ASP reaches across multiple disciplines, combining the efforts of the mental health, medical and youth development staff at MEHC. Together, the team helps these at-risk youth build confidence, develop crucial decision-making skills and enhance their ability to resolve conflicts. What's the ultimate goal? To ensure these adolescents grow into healthy, productive adult members of their community.

Just in Time (JIT)

A key component of the Adolescent Services Program, Just in Time (JIT) is a mental health and crisis intervention service for urban youth who struggle with the effects of violence and poverty. JIT's structure incorporates the services of a mental health counselor with expertise in issues related to adolescents within the primary care setting. This innovative model enables the JIT social worker to handle mental health issues as they arise. As most adolescents are unlikely to schedule separate counseling appointments, JIT prevents adolescents in crisis from becoming lost.

Last year, the JIT social worker handled 95 referrals and was able to provide each teen with a short-term intervention to address concerns such as educational stressors or the challenges of pregnancy and parenting. For others, JIT handled issues related to both domestic and community violence. Through JIT, 37 adolescents received referrals to longer-term therapy last year. A referral to longer-term therapy allowed these adolescents to benefit from continued support around their stressors. To ensure that adolescents adhered to recommendations for long-term treatment, JIT staff worked closely with Adolescent Services to follow up on these referrals and get at-risk youth the help they so desperately needed.

For more information on MEHC, visit
childrenshospital.org/mehc

Helping Youth in Crisis

Luz, 17, came to MEHC anxious and depressed. During her meetings with the JIT social worker, Luz revealed that her life had been deeply affected by gang violence. Luz's father was incarcerated for gang-related activities. Her boyfriend had been a gang member who was shot and killed in 2010 during a fight with a rival gang; sadly, the same fate had befallen her mother's boyfriend several years earlier. JIT paired Luz with a home-based therapist who worked intensively with her on anxiety, grief and plans for the future—something Luz had never before been able to envision. Today Luz is entering her last year of high school and is preparing to attend college. She still meets regularly with her home-based therapist and for the first time in her life, is feeling hopeful about what lies ahead.

Children's and the Boston Public Schools

Working together to build the capacity of families and schools

Children Hospital Boston's overarching goal in its work with the Boston Public Schools (BPS) has been to help support students while building the capacity of families and individual schools to address the health-related issues that can impact a student's ability to focus on learning. For over 10 years, Children's has partnered with the BPS in a variety of ways, including efforts to prepare families for their preschoolers' entrance into the BPS system, promote positive child health and development, offer training for school staff as well as help students overcome barriers that may prevent them from functioning in school.

Supporting students

For more than 10 years, the Children's Hospital Neighborhood Partnership (CHNP) has been in Boston schools providing a comprehensive array of mental health services to youth. In SY10–11, CHNP provided prevention, early intervention and clinical intervention services to over 1900 students in 15 CHNP partner schools. (For more information on CHNP, see page 1.)

Bolstering school personnel

- Beyond supporting students, CHNP has facilitated professional development opportunities for 293 teachers and was successful in supporting schools to better address student mental health issues, as measured by steady increases in capacity over time. (See chart page 7.)
- BPS school nurses are eligible for hospital-funded scholarships to assist their professional development. Since 2005, Children's has invested approximately $25,000 to offer 340 scholarships to 75 BPS nurses. Additional programs provide training and support to teachers and staff on topics such as asthma, autism and social, emotional and behavioral health.
- Children's has provided support to convert the school paper medical records to an electronic medical record format that allows school medical personnel to better track individual student health issues.

Encouraging parents

- Children's experts lead workshops at BPS' Parent University, which helps parents to better understand the connection between health and school success, enhance their ability to address health issues such as asthma and support their children's ability to develop self-regulation skills.
- Since its inception, Children's has supported Countdown to Kindergarten, a program to help children and families with the transition to kindergarten, as well as the initiative's Play to Learn program at the Hennigan School in Jamaica Plain, which serves as a bridge between pre-school and the BPS system.

Moving forward

BPS is eager to begin implementation of the Safe and Supportive Schools Framework developed by the Massachusetts Task Force on Behavioral Health and Public Schools and has invited CHNP to be its partner in the development of a district-wide behavioral health model that will pilot many of the elements in the framework. As BPS prepares for these changes, CHNP is co-sponsoring and leading monthly district-wide workshops for teachers and administrators in support of BPS's professional development practice. (For more details, see page 7.)

Community Health Centers:

Partners in health and access for local children

In 1965, the first community health center in the U.S. was founded at Columbia Point in Dorchester. Today, 52 health centers at 280 sites serve one of every nine Massachusetts residents.

The idea initially was to bring quality health care to low- and moderate-income people in inner cities and rural communities, who often had limited access to primary care services and limited means to pay for them. In a way, health centers were ahead of their time. The array of services they provide – primary, preventive and dental care, plus mental health, substance abuse and other services – mirrors many of the building blocks for the "medical home" concept, as do other health center hallmarks such as team-based care and care management and coordination. In addition, health centers often are cited as part of the solution to rising health costs.

Working with community health centers, Children's Hospital Boston focuses on two goals: 1) ensuring that pediatric care at health centers is able to grow, thrive and evolve; and 2) having a greater impact on child health and health disparities by ensuring accessible, high quality prevention and treatment services.

In pursuit of those goals, Children's supports community health centers to:

- build capacity to provide a full range of services and position themselves as part of the solution to managing health care costs through the use of a pediatric medical home model
- provide pediatric services that address the most pressing health issues affecting children
- demonstrate their value through effective assessment and reporting of quality outcomes

Building capacity

Health centers are essential partners in Children's efforts to increase access to preventive care, manage chronic disease and provide treatment for some of the most prevalent health issues facing Boston children and youth. Because of the important role centers play, Children's supports their efforts both to ensure the quality of pediatric care they deliver and to help them expand their range of services as part of a patient-centered medical home.

In today's economy, one of the greatest resources Children's can bring to health centers is financial support. In FY11, Children's provided more than $1 million in grants and services to its partner health centers. Half of this funding was flexible, allowing the centers to use it as needed to support their pediatric needs. For more than a decade, Children's has been providing this type of support to 10 Boston community health centers. In December 2011, Children's formed a new affiliation with MattapanCommunity Health Center. Together, these centers provide primary care and support services to an estimated 33,000 Boston children and their families in urban core neighborhoods.

The hospital has also provided significant capital funds to help health centers with needed construction or renovation, such as new projects at the Whittier Street and Mattapan Health Centers.

Addressing health needs

Additional funding supports specific services and programs in community health centers that allow them to address high-priority health needs consistent with Children's community mission. For example, to help combat childhood obesity, 11 centers are part of the Fitness in the City Program (see page 14) and four host "OWL on the Road" a mobile version of the hospital-based OWL (Optimal Weight for Life) clinic that provides medical obesity treatment services by subspecialty clinicians. Three health centers participate in the hospital's Advocating Success for Kids (ASK) program (see page 12) for children experiencing school-functioning problems. To increase access to much-needed mental health services, part-time psychiatrists are available at five health centers through Children's Hospital Neighborhood Partnerships (CHNP), the hospital's community mental health program (see page 1). As a result of these programs, health centers are able to reach nearly 1500 children each year.

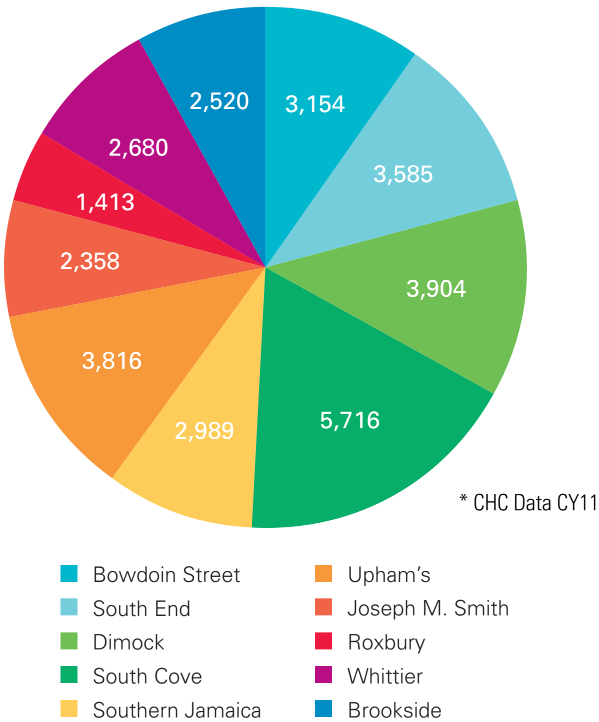
The Dimock Center in Roxbury participates in Fitness in the City, OWL on the Road and CHNP. "For us, this means support for our nutritionist and a Children's endocrinologist who comes once a month. These professionals are invaluable in helping us work with young patients who are, or are at risk for, obesity," says Myechia Minter-Jordan, MD, MBA, chief medical officer at Dimock. "We also benefit from the weekly presence of a bilingual child psychiatrist who works with the social worker and therapist in our pediatric clinic team. Children's commitment to the mental health needs of children and adolescents has been critical to our ability to address these issues locally."

Focusing on quality and outcomes

While funding is imperative, the role that Children's has in supporting the quality initiatives at partner community health centers is equally important. As an increasing number of payers

Total Pediatric Population in 10 Affiliated Community Health Centers (CHCs*)

N = 32,135 for 10 health centers



adopt quality reporting requirements, Children's and its affiliated health centers have been developing and sharing best practices to assess, report and monitor pediatric quality data.

In 2009, Children's provided additional funding to support more robust reporting and analysis of quality data. The centers now have three years of experience in collecting data and using the information to track their progress in areas such as asthma care, immunization rates, obesity and child development. "The health centers came together to discuss results and share best practices for improvement," says Shari Nethersole, MD, medical director for community health in the Office of Child Advocacy at Children's. "The centers also collect demographic information such as volume of patients, age, gender, race and ethnicity, plus payer, staff and other data and can track the prevalence of health issues such as asthma, depression and ADHD." This allows them to assess needs on an ongoing basis and adapt their approaches and staffing to provide more efficient, timely, patient centered and comprehensive services, all necessary requirements of the medical home model.

Improving access

While Children's has affiliation agreements with 11 health centers, the hospital also supports the Boston Public Health Commission and the Massachusetts League of Community Health Centers in their efforts to promote better utilization and coordination of care with health centers.

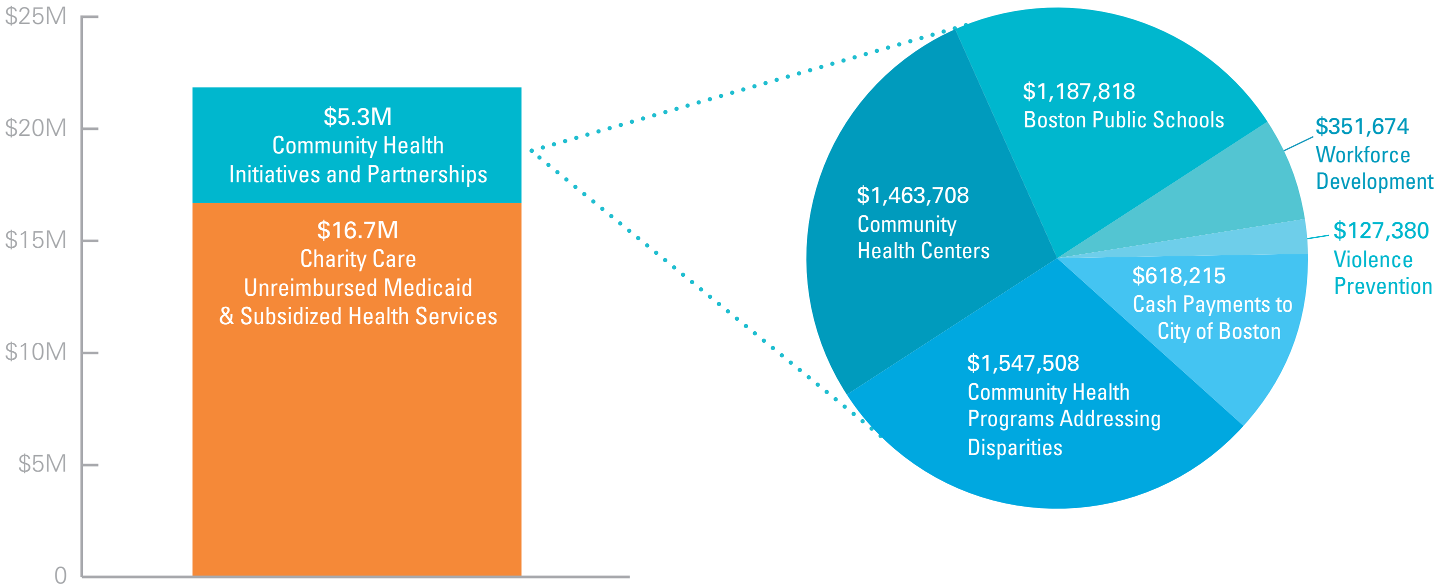
And finally, health centers and Children's share a desire to address children's health issues on a broader level. Children's works with community organizations, health centers and city, state and federal policy-makers to bring attention to children's health issues, such as improved access to asthma care or needed reforms in the state's mental health system. Minter-Jordan said, "Bringing to light issues that affect our community and being a voice for those who don't often get heard is important, and the hospital does an excellent job in advocating for children's issues."

Children's-Affiliated Community Health Centers

- Bowdoin Street Health Center, Dorchester
- Brookside Community Health Center, Jamaica Plain
- The Dimock Center, Roxbury
- Joseph M. Smith Community Health Center, Allston
- Martha Eliot Health Center, Jamaica Plain *
- Mattapan Community Health Center, Mattapan
- Roxbury Comprehensive Community Health Center
- South Cove Community Health Center, Chinatown
- South End Community Health Center
- Southern Jamaica Plain Health Center
- Upham's Corner Health Center, Dorchester
- Whittier Street Health Center, Roxbury

* Children's owned and operated.

FY11 Investment in Boston Children and Families



Invested to Benefit the Heath & Well-Being of Boston Children and Families: **$22 Million Total**

$5.3 Million Invested to Support Community Health Initiatives and Partnerships

spotlight

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Children's Hospital Boston's community programs are made possible in part through the generosity of BJ's Charitable Fund, Covidien, Josephine and Louise Crane Foundation, Kohl's Department Stores, Newman's Own Foundation, People's Federal Savings Bank, The Boston Foundation, The Thoracic Foundation, The Ludcke Foundation and many others. Our sincerest thanks!

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childrenshospital.org/community

Children's Listens and Learns From Residents and Stakeholders

Everything Children's Hospital Boston does in fulfilling its community mission is based on how it can best utilize its expertise and resources to address the critical health issues families face today. A comprehensive assessment helps the hospital to identify and understand the current issues. "Children's uses both formal and informal methods to listen and learn from our community," says Christine Healey, manager for Program and Community Partnerships in the Office of Child Advocacy at Children's. This process involves continued community engagement—seeking input and having ongoing conversations with families and community leaders including key partners like the City of Boston, the Boston Public Health Commission (BPHC) and the Boston Public Schools.

Guided by Children's Community Advisory Board, Children's conducts a formal health assessment every three years to "takes the pulse" in Boston neighborhoods surrounding the hospital. Focus groups with residents, interviews with key stakeholders and an analysis of data and best practice literature provides an in-depth view of not just concerns and needs, but also the strengths and assets of the community. "Our goal is to use the information gathered to develop the hospital's action plan which aims to leverage resources and find synergies," says Healey.

The results also impact Children's community mission which is focused on: 1) improving access to care and serving as a safety net hospital, 2) implementing programs to improve health in four key areas (asthma, obesity, mental health and child development) and achieve systemic change, and 3) supporting partners to address the social determinants of health that affect the entire community.

Children's last formal report was completed in 2009 and the hospital is now preparing for its next assessment. The data collection process is underway as the hospital embarks on the Boston Child Health Study, in partnership with the BPHC. (See page 8.)

For more details on the needs assessment process, visit childrenshospital.org/community

Appendix B

Surveys

LEGAL DESCRIPTION

300 LONGWOOD AVENUE & 55 SHATTUCK STREET

A certain parcel of land situated in the City of Boston, Roxbury District, Suffolk County, Commonwealth of Massachusetts, being bounded and described as follows:

Beginning at the intersection of the southwesterly sideline of Longwood Avenue and the southeasterly sideline of former Blackfan Street;

Thence running southeasterly, a distance of 233.23 feet along said sideline of Longwood Avenue to the centerline of a passageway, 16 feet wide;

Thence turning and running southwesterly, a distance of 629.81 feet along said centerline to a point on the centerline of Shattuck Street;

Thence turning and running northwesterly, a distance of 30.46 feet along said centerline of Shattuck Street to a point of curvature;

Thence turning and running along a curve to the right, having a radius of 504.35 feet and an arc length of 119.64 feet, along said centerline to a point of tangency;

Thence running northwesterly, a distance of 276.64 feet to a point at the intersection of the centerline of Shattuck Street with the northwesterly sideline of former Blackfan Street;

Thence turning and running northeasterly, a distance of 168.60 feet along said sideline to a point;

Thence turning and running southeasterly, a distance of 25.00 feet to a point on the centerline of former Blackfan Street;

Thence turning and running northeasterly, a distance of 287.11 feet along said centerline to a point;

Thence turning and running northwesterly, a distance of 25.00 feet to a point on the northwesterly sideline of former Blackfan Street;

Thence turning and running northeasterly, a distance of 110.54 feet along said sideline to a point on the southwesterly sideline of Longwood Avenue;

Thence turning and running southeasterly, a distance of 51.44 feet along said sideline to the point of beginning.

All distances being more or less.

Containing an area of 4.74 acres, more or less, said parcel is described in Book 10178 Page 178 recorded in Suffolk County Registry of deeds (Parcel One and Parcel Two) and shown on plans recorded in Book 3058 Page 145, plan recorded in Book 8863 Page 103 in said registry and Lot 2 shown on Land Court Case 22999A.

REFERENCES

SUFFOLK COUNTY REGISTRY OF DEEDS

BOOK	PAGE
13260	217
8862	205
42968	185
16400	129
7446	246
2176	544 PLAN)
7580	29 (PLAN)
7580	38 (PLAN)
7446	246 (PLAN)

MASSACHUSETTS LAND COURT
LCC 3674A
3870B
5745A
CERTIFICATE OF TITLE 112429
100375

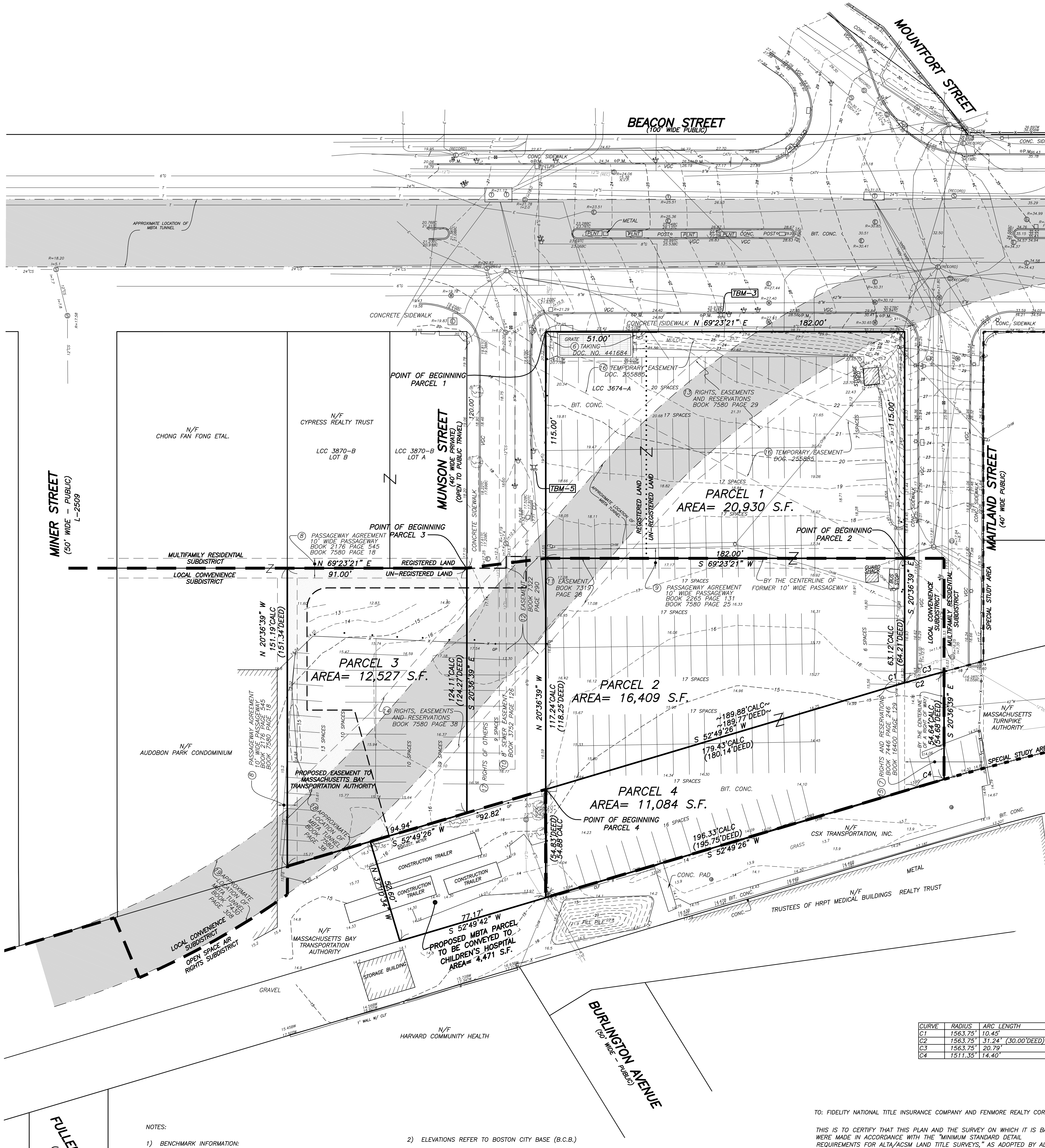
PLAN ENTITLED "PLOT PLAN OF LAND BOSTON, MASS., PREPARED BY HARRY R. FELDMAN INC., DATED JUNE 15, 1988.

DIMENSIONAL REGULATIONS
AUDUBON CIRCLE NEIGHBORHOOD DISTRICT, DESIGN OVERLAY DISTRICT, PDA PERMITTED, NEIGHBORHOOD BUSINESS SUBDISTRICT AND LOCAL CONVENIENCE SUBDISTRICT

MAXIMUM FLOOR AREA RATIO____2.0
MAXIMUM BUILDING HEIGHT____45 FEET
MINIMUM LOT SIZE____NONE
MINIMUM LOT AREA PER DWELLING UNIT____NONE
MINIMUM USABLE OPEN SPACE PER DWELLING UNIT____50 S.F.
MINIMUM LOT WIDTH____NONE
MINIMUM LOT FRONTAGE____NONE
MINIMUM FRONT YARD____NONE
MINIMUM SIDE YARD____NONE
MINIMUM REAR YARD____25 FEET

RESIDENTIAL SUBDISTRICTS
MULITFAMILY RESIDENTIAL
"SEE TABEL B OF ARTICLE 61

THE PROPERTY LIES WITHIN THE RESTRICTED PARKING OVERLAY DISTRICT



LEGEND:

- SEWER MANHOLE
- DRAIN MANHOLE
- TELEPHONE MANHOLE
- ELECTRIC MANHOLE
- WATER MANHOLE
- HANDICAP RAMP
- GAS SHUT OFF
- WATER SHUT OFF
- BOSTON WATER VALVE
- CATCH BASIN
- LIGHT POLE
- UTILITY POLE
- HYDRANT
- SIGN
- P.M. PARKING METER
- BOLLARD
- BIT. BITUMINOUS
- CONC. CONCRETE
- DECIDUOUS TREE
- VGC VERTICAL GRANITE CURB
- CLF CHAIN LINK FENCE
- BW BOTTOM OF WALL
- TW TOP OF WALL
- N/F NOW OR FORMERLY
- BC BOTTOM OF CURB
- TC TOP OF CURB
- R= RIM ELEVATION
- I= INVERT ELEVATION
- TT TOP OF TRAP
- N.V.P. NO VISIBLE PIPES
- X FENCE
- S SEWER
- D DRAIN
- CS COMBINED SEWER
- W WATER
- G GAS
- E ELECTRIC
- T TELEPHONE
- CATV CABLE TELEVISION
- OHW OVERHEAD WIRE
- ZONING LINE
- SPECIAL STUDY AREA

NOTES:

1) BENCHMARK INFORMATION:

BENCHMARK USED:
LEFT OUTER CORNER OF DOOR SILL NO. 109
BROOKLINE AVENUE
ELEVATION = 17.37

TEMPORARY BENCH MARKS SET:

TBM-3: X-CUT SET ON RIGHT FRONT BOLT OF A HYDRANT LOCATED APPROXIMATELY 90 FEET WEST OF THE INTERSECTION OF BEACON STREET AND MAITLAND STREET AS SHOWN ON PLAN.
ELEVATION = 28.78

TBM-5 X-CUT ON HYDRANT BOLT LOCATED ON THE EASTERLY SIDE OF MUNSON STREET, AS SHOWN ON PLAN.
ELEVATION = 20.65

2) ELEVATIONS REFER TO BOSTON CITY BASE (B.C.B.)

3) CONTOUR INTERVAL EQUALS ONE (1) FOOT.

4) UTILITY INFORMATION SHOWN IS BASED ON BOTH A FIELD SURVEY AND THE LATEST PLANS OF RECORD. THE LOCATIONS OF UNDERGROUND PIPES AND CONDUITS HAVE BEEN DETERMINED FROM THE AFOREMENTIONED RECORD PLANS AND ARE APPROXIMATE ONLY. WE CANNOT ASSUME RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES THAT ARE OMITTED OR INACCURATELY SHOWN ON SAID RECORD PLAN, SINCE SUB-SURFACE UTILITIES CANNOT BE VISIBLY VERIFIED. BEFORE PLANNING FUTURE CONNECTIONS, THE PROPER UTILITY ENGINEERING DEPARTMENT SHOULD BE CONSULTED AND THE ACTUAL LOCATION OF SUB-SURFACE STRUCTURES SHOULD BE DETERMINED IN THE FIELD. CALL, TOLL FREE, THE DIG SAFE CALL CENTER AT 1-888-344-7233 SEVENTY TWO HOURS PRIOR TO EXCAVATION.

5) THIS DOCUMENT IS AN INSTRUMENT OF SERVICE OF HARRY R. FELDMAN, INC. ISSUED TO OUR CLIENT FOR PURPOSES RELATED DIRECTLY AND SOLELY TO HARRY R. FELDMAN INC.'S SCOPE OF SERVICES UNDER CONTRACT TO OUR CLIENT FOR THIS PROJECT. ANY USE OR REUSE OF THIS DOCUMENT FOR ANY REASON BY ANY PARTY FOR PURPOSES UNRELATED DIRECTLY AND SOLELY TO SAID CONTRACT SHALL BE AT THE USER'S SOLE AND EXCLUSIVE RISK AND LIABILITY, INCLUDING LIABILITY FOR VIOLATION OF COPYRIGHT LAWS, UNLESS WRITTEN CONSENT IS PROVIDED BY HARRY R. FELDMAN, INC.

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	1563.75'	10.45'	10.45'	S 53°00'55" W	00°22'58"
C2	1563.75'	31.24' (30.00'DEED)	31.24'	N 53°23'46" E	01°08'40"
C3	1563.75'	20.79'	20.79'	S 53°35'15" W	00°45'42"
C4	1511.35'	14.40'	14.40'	N 53°09'02" E	00°32'45

TO: FIDELITY NATIONAL TITLE INSURANCE COMPANY AND FENMORE REALTY CORPORATION

THIS IS TO CERTIFY THAT THIS PLAN AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS," AS ADOPTED BY ALTA AND NSPS IN 2005, AND INCLUDES ITEMS 2, 3, 4, 5, 6, 8, 9, 10, 11(b), 13, 14 AND 16 OF TABLE A THEREOF. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NSPS AND IN EFFECT ON THE DATE OF THIS CERTIFICATION, I FURTHER CERTIFY THAT IN MY PROFESSIONAL OPINION, AS A LAND SURVEYOR REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS, THE RELATIVE POSITIONAL ACCURACY OF THIS SURVEY DOES NOT EXCEED THAT WHICH IS SPECIFIED THEREIN.

I CERTIFY THAT THE PARCELS SHOWN HEREON LIE WITHIN A ZONE "C", AREA OF MINIMAL FLOODING, AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR THE CITY OF BOSTON, MASSACHUSETTS, COMMUNITY PANEL NO. 250286 0004 C EFFECTIVE DATE: APRIL 1, 1982

I CERTIFY THAT THERE ARE NO GAPS OR GORES BETWEEN PARCELS 1, 2 AND 4 AND NO GAPS OR GORES BETWEEN PARCEL 3 AND THE PROPOSED PARCEL TO BE ACQUIRED FROM THE MBTA.

BOUNDARY DESCRIPTION PER SURVEY

PARCEL 1

A CERTAIN PARCEL OF LAND SITUATED IN BOSTON, SUFFOLK COUNTY, COMMONWEALTH OF MASSACHUSETTS, BEING BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE SOUTHERLY SIDELINE OF BEACON STREET AND THE EASTERLY SIDELINE OF MUNSON STREET;
THENCE RUNNING ALONG SAID SIDELINE OF BEACON STREET N 69°23'21" E, A DISTANCE OF 182.00' TO A POINT ON THE WESTERLY SIDELINE OF MAITLAND STREET;
THENCE RUNNING ALONG SAID SIDELINE OF MAITLAND STREET S 20°36'39" E, A DISTANCE OF 115.00' TO A POINT;
THENCE TURNING AND RUNNING S 69°23'21" W, A DISTANCE OF 182.00' TO A POINT ON SAID SIDELINE OF MUNSON STREET;
THENCE RUNNING BY SAID SIDELINE OF MUNSON STREET N 20°36'39" W, A DISTANCE OF 115.00' TO THE POINT OF BEGINNING.

CONTAINING AN AREA OF 20,930 SQUARE FEET.

PARCEL 2

A CERTAIN PARCEL OF LAND SITUATED IN BOSTON, SUFFOLK COUNTY, COMMONWEALTH OF MASSACHUSETTS, BEING BOUNDED AND DESCRIBED AS FOLLOWS: COMMENCING AT THE INTERSECTION OF THE SOUTHERLY SIDELINE OF BEACON STREET AND THE WESTERLY SIDELINE OF MAITLAND STREET;

THENCE RUNNING ALONG MAITLAND STREET S 20°36'39" E, A DISTANCE OF 115.00' TO THE POINT POINT OF BEGINNING;
THENCE RUNNING S 20°36'39" E A DISTANCE OF 63.12' TO A POINT;
THENCE TURNING AND RUNNING SOUTHWESTERLY ALONG A CURVE TO THE LEFT WITH AN ARC LENGTH OF 10.45', A RADIUS OF 1563.75', A CHORD BEARING OF S 53°00'55" W AND A CHORD LENGTH OF 10.45' TO A POINT OF TANGENCY;
THENCE RUNNING S 52°49'26" W, A DISTANCE OF 179.43' TO A POINT ON THE EASTERLY SIDELINE OF MUNSON STREET;
THENCE RUNNING ALONG SAID SIDELINE OF MUNSON STREET N 20°36'39" W A DISTANCE OF 117.24' TO A POINT;
THENCE TURNING AND RUNNING N 69°23'21" E A DISTANCE OF 182.00' TO THE POINT OF BEGINNING.

CONTAINING AN AREA OF 16,409 SQUARE FEET.

PARCEL 3

A CERTAIN PARCEL OF LAND SITUATED IN BOSTON, SUFFOLK COUNTY, COMMONWEALTH OF MASSACHUSETTS, BEING BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE WESTERLY SIDELINE OF MUNSON STREET;
THENCE RUNNING ALONG SAID SIDELINE OF MUNSON STREET S 20°36'39" E, A DISTANCE OF 124.11' TO A POINT;
THENCE TURNING AND RUNNING S 52°49'26" W, A DISTANCE OF 94.94' TO A POINT;
THENCE TURNING AND RUNNING N 20°36'39" W, A DISTANCE OF 151.19' TO A POINT;
THENCE TURNING AND RUNNING N 69°23'21" E, A DISTANCE OF 91.00' TO THE POINT OF BEGINNING.

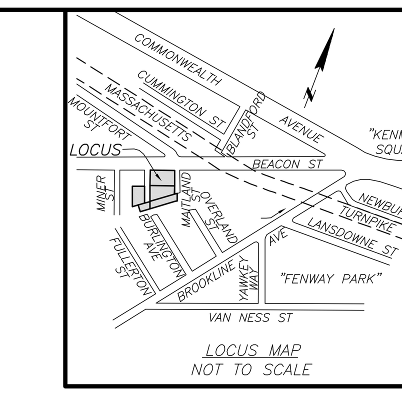
CONTAINING AN AREA OF 12,527 SQUARE FEET.

PARCEL 4

A CERTAIN PARCEL OF LAND SITUATED IN BOSTON, SUFFOLK COUNTY, COMMONWEALTH OF MASSACHUSETTS, BEING BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE EASTERLY SIDELINE OF MUNSON STREET;
THENCE TURNING AND RUNNING N 52°49'26" E, A DISTANCE OF 179.43' TO A POINT OF CURVATURE;
THENCE RUNNING ALONG A CURVE TO THE RIGHT WITH AN ARC LENGTH OF 31.24', A RADIUS OF 1563.75', A CHORD BEARING OF N 53°23'46" E, AND A CHORD LENGTH OF 31.24' TO A POINT ON THE CENTERLINE OF MAITLAND STREET;
THENCE TURNING AND RUNNING BY SAID CENTERLINE S 20°36'39" W A DISTANCE OF 54.64' TO A POINT;
THENCE RUNNING NORTHEASTERLY ALONG A CURVE TO THE LEFT WITH AN ARC LENGTH OF 14.40', A RADIUS OF 1511.35', A CHORD BEARING OF S 53°09'02" W AND A CHORD LENGTH OF 14.40' TO A POINT OF TANGENCY;
THENCE RUNNING S 52°49'26" W, A DISTANCE OF 196.33' TO A POINT;
THENCE TURNING AND RUNNING N 20°36'39" W, A DISTANCE OF 54.88' TO THE POINT OF BEGINNING.

CONTAINING AN AREA OF 11,084 SQUARE FEET.



LOCUS MAP
NOT TO SCALE

TITLE COMMITMENT ISSUED BY FIDELITY NATIONAL TITLE INSURANCE COMPANY
MMOG OFFICE FILE NO. 08-38658
EFFECTIVE DATE: NOVEMBER 18, 2008

6. TAKING BY THE MASSACHUSETTS BAY TRANSPORTATION AUTHORITY FOR SUBWAY PURPOSES DATED AUGUST 10, 1988 AND FILED AS DOCUMENT NO. 441684, AS SHOWN ON PLAN.

7. RIGHTS AND RESERVATIONS AS SET FORTH IN DEED FROM THE BOSTON AND ALBANY RAILROAD TO EMERSON-SWAN INCORPORATED DATED OCTOBER 26, 1959 AND RECORDED IN BOOK 7446, PAGE 246, AS SHOWN ON PLAN.

8. PASSAGEWAY AGREEMENT DATED JANUARY 24, 1894 AND RECORDED IN BOOK 2176, PAGE 545; AS RECREATED BY AGREEMENTS DATED MARCH 22, 1961 AND RECORDED IN BOOK 7580, PAGES 18 AND 25, AS SHOWN ON PLAN.

9. PASSAGEWAY AGREEMENT DATED DECEMBER 20, 1894 BY AND BETWEEN AMORY A. LAWRENCE ET AL, TRUSTEES UNDER THE WILL OF SARAH E. LAWRENCE AND GEORGE MAITLAND AND RECORDED IN BOOK 2265, PAGE 131; AS RECREATED BY AGREEMENT DATED MARCH 22, 1961 AND RECORDED IN BOOK 7580, PAGE 25, AS SHOWN ON PLAN.

10. SEWER EASEMENT UNDER MUNSON STREET IN FAVOR OF BOARD OF STREET COMMISSIONERS OF THE CITY OF BOSTON DATED AUGUST 11, 1913 AND RECORDED IN BOOK 3752, PAGE 126, AS SHOWN ON PLAN.

11. TAKING OF EASEMENT FOR UNDERGROUND SUBWAY BY THE METROPOLITAN TRANSIT AUTHORITY DATED JUNE 23, 1958 AND RECORDED IN BOOK 7319, PAGE 283, AS SHOWN ON PLAN.

12. TAKING OF EASEMENT FOR UNDERGROUND SUBWAY BY THE METROPOLITAN TRANSIT AUTHORITY DATED JUNE 13, 1958 AND RECORDED IN BOOK 7322, PAGE 290, AS SHOWN ON PLAN.

13. RIGHTS, EASEMENTS AND RESERVATIONS SET FORTH IN A DEED FROM METROPOLITAN TRANSIT AUTHORITY TO THE 819 BEACON STREET TRUST DATED JULY 10, 1961 AND RECORDED IN BOOK 7580, PAGE 29 AND FILED AS DOCUMENT NO. 249955, AS SHOWN ON PLAN.

14. RIGHTS, EASEMENTS AND RESERVATIONS SET FORTH IN A DEED FROM METROPOLITAN TRANSIT AUTHORITY TO THE 819 BEACON STREET TRUST DATED JULY 10, 1961 AND RECORDED IN BOOK 7580, PAGE 38, AS SHOWN ON PLAN.

15. RIGHT OF WAY AS RESERVED IN DEED FROM JOSEPH E. SWAN ET AL, TRUSTEES OF 1255 BOYLSTON REALTY TRUST TO THE CHILDREN'S MEDICAL CENTER CORPORATION DATED JULY 23, 1990 AND RECORDED IN BOOK 16400, PAGE 129, AS SHOWN ON PLAN

16. TAKING BY THE MASSACHUSETTS TURNPIKE AUTHORITY FOR THE PURPOSE OF CONSTRUCTING AN EXPRESS TOLL HIGHWAY DATED AUGUST 21, 1962 FILED AS DOCUMENT NO. 255885, AS SHOWN ON PLAN.

17. RIGHTS OF OTHERS IN MUNSON STREET, AS SHOWN ON PLAN.

18. PLAN RECORDED AT BOOK 7580, PAGE 38 ACCOMPANYING DEED BY METROPOLITAN TRANSIT AUTHORITY TO THE 819 BEACON STREET TRUST DATED APRIL 28, 1961 AND RECORDED IN BOOK 7580, PAGE 38, SHOWS SUBWAY TUNNEL EXTENDING UNDER INSURED PREMISES, AS SHOWN ON PLAN.

19. PLAN RECORDED AT BOOK 7430, PAGE 308 ACCOMPANYING DEED BY METROPOLITAN TRANSIT AUTHORITY TO THE BOSTON CAB COMPANY DATED OCTOBER 1, 1959 AND RECORDED IN BOOK 7430, PAGE 308 SHOWS SUBWAY TUNNEL EXTENDING UNDER INSURED PREMISES, AS SHOWN ON PLAN.

BOUNDARY DESCRIPTION
PER TITLE COMMITMENT
MMOG OFFICE FILE NO. 08-38658, ISSUED BY FIDELITY NATIONAL TITLE INSURANCE COMPANY, HAVING AN EFFECTIVE DATE OF NOVEMBER 18, 2008

PARCEL ONE
THE LAND IN BOSTON, SUFFOLK COUNTY, MASSACHUSETTS SHOWN AS THE LAND BETWEEN POINTS A, B, C AND D ON A PLAN ENTITLED "METROPOLITAN TRANSIT AUTHORITY PLAN OF LAND ON BEACON STREET, BOSTON, MASS. BETWEEN MAITLAND ST. AND MUNSON ST.," METROPOLITAN TRANSIT AUTHORITY PLAN NO. L-C16880, DATED JUNE 10, 1959, RECORDED WITH SUFFOLK REGISTRY OF DEEDS IN BOOK 7580, PAGE 29, BOUNDED AND DESCRIBED AS FOLLOWS:
NORTHWESTERLY BY BEACON STREET, 182 FEET;
NORTHEASTERLY BY MAITLAND STREET, 115 FEET;
SOUTHEASTERLY BY THE CENTERLINE OF A FORMER PASSAGEWAY 10 FEET IN WIDTH, BEING THE DIVISION LINE BETWEEN THIS PARCEL 1 AND PARCEL 2 HEREIN DESCRIBED, 182 FEET; AND
SOUTHWESTERLY BY MUNSON STREET, 115 FEET.
CONTAINING 20,930 SQUARE FEET OF LAND MORE OR LESS.
INCLUDED WITHIN SAID PARCEL ONE IS A REGISTERED PARCEL OF LAND, BEING BOUNDED. AND DESCRIBED AS FOLLOWS:
NORTHERLY BY BEACON STREET, 51 FEET;
EASTERLY BY LAND NOW OR FORMERLY OF THOMAS M. BASSETT, 115 FEET;
SOUTHERLY BY LAND NOW OR FORMERLY OF JOHN J. SHEA, BEING THE MIDDLE LINE OF A PASSAGEWAY 10 FEET WIDE, 51 FEET; AND
WESTERLY BY MUNSON STREET, 115 FEET.

PARCEL TWO:
THE LAND IN BOSTON, SUFFOLK COUNTY, MASSACHUSETTS MARKED "EZRA WOLFSON" ON A PLAN ENTITLED "METROPOLITAN TRANSIT AUTHORITY PLAN OF EASEMENT TAKING FOR A PORTION OF RAPID TRANSIT FACILITIES, BOSTON, MASS. FROM EZRA WOLFSON, MUNSON ST." DATED JUNE 23, 1958 AND RECORDED WITH SUFFOLK DEEDS IN BOOK 7319, PAGE 283, BOUNDED AND DESCRIBED AS FOLLOWS:
NORTHEASTERLY BY MAITLAND STREET, 64.21 FEET;
SOUTHEASTERLY BY LAND NOW OR FORMERLY OF BOSTON & ALBANY RAILROAD, 189.77 FEET;
SOUTHWESTERLY BY MUNSON STREET, 118.25 FEET; AND
NORTHWESTERLY BY THE CENTERLINE OF A FORMER PASSAGEWAY 10 FEET WIDE, BEING THE DIVISION LINE BETWEEN THIS PARCEL 2 AND PARCEL 1 HEREINBEFORE DESCRIBED 182 FEET.

PARCEL THREE:
THE LAND IN BOSTON, SUFFOLK COUNTY MASSACHUSETTS SHOWN AS THE LAND BETWEEN POINTS A, B, C AND D ON THE PLAN ENTITLED "METROPOLITAN TRANSIT AUTHORITY PLAN OF LAND AT NO. 11 MUNSON ST., BOSTON, MASS." DATED JUNE 10, 1959, PLAN NO. L-C-16881, RECORDED WITH SUFFOLK DEEDS IN BOOK 7580, PAGE 38, BEING BOUNDED AND DESCRIBED AS FOLLOWS:
NORTHEASTERLY BY MUNSON STREET, 124.27 FEET;
SOUTHEASTERLY BY LAND NOW OR FORMERLY OF THE METROPOLITAN TRANSIT AUTHORITY, 94.94 FEET;
SOUTHWESTERLY BY THE CENTERLINE OF A FORMER PASSAGEWAY 10 FEET IN WIDTH BEING THE DIVISION LINE BETWEEN THIS PARCEL 3 AND LAND NOW OR FORMERLY OWNED BY THE BOSTON CAB CO., 151.34 FEET; AND
NORTHWESTERLY BY THE CENTERLINE OF A FORMER PASSAGEWAY 10 FEET IN WIDTH BEING THE DIVISION LINE BETWEEN THIS PARCEL 3 AND LAND NOW OR FORMERLY OWNED BY JENNARO CAPONE, 91.00 FEET.

PARCEL FOUR:
A CERTAIN PARCEL OF LAND CONTAINING ABOUT 11,067 SQUARE FEET IN THAT PART OF THE CITY OF BOSTON, COUNTY OF SUFFOLK, AND COMMONWEALTH OF MASSACHUSETTS KNOWN AS BROOKLINE JUNCTION, BOUNDED AND DESCRIBED AS FOLLOWS:
SOUTHWESTERLY BY LAND NOW OR FORMERLY OF THE METROPOLITAN TRANSIT AUTHORITY FIFTY-FOUR AND EIGHTY-THREE HUNDREDTHS (54.83) FEET; NORTHWESTERLY BY LAND NOW OR FORMERLY OF EZRA WOLFSON, ONE HUNDRED EIGHTY AND FOURTEEN HUNDREDTHS (180.14) FEET AND BY LAND OF SAID WOLFSON AND MAITLAND STREET THIRTY AND NO HUNDREDTHS (30.00) FEET; NORTHEASTERLY BY THE CENTERLINE OF A RIGHT OF WAY FORTY (40') FEET IN WIDTH FIFTY-FOUR AND SIXTY-EIGHT HUNDREDTHS (54.68) FEET; AND SOUTHEASTERLY BY OTHER LAND NOW OR FORMERLY OF THE BOSTON AND ALBANY RAILROAD COMPANY BY TWO (2) COURSES THE FIRST BEING FOURTEEN AND FORTY HUNDREDTHS (14.40) FEET AND THE SECOND BEING ONE HUNDRED NINETY-FIVE AND SEVENTY-FIVE HUNDREDTHS (195.75) FEET; ALL AS SHOWN WITHIN THE LINES TINTED BLUE, UPON A PLAN RECORDED IN BOOK 7446, PAGE 246, ENTITLED "BOSTON & ALBANY R.R. . . . BOSTON LAND CONVEYED BY B. & A. R.R. CO. TO EMERSON-SWAN INCORPORATED", DATED OCTOBER 2, 1959, AND SIGNED BY E. M. SKELTON, DIVISION ENGINEER. TOGETHER WITH THE BENEFIT OF NOTICE TO PREVENT EASEMENT RECORDED ON JUNE 1, 2007 IN BOOK 41904, PAGE 335.

ALTA/ACSM LAND TITLE SURVEY
CHILDREN'S HOSPITAL
819 BEACON STREET
BOSTON, MASS.

SCALE: 1"= 20' DECEMBER 8, 2008

HARRY R. FELDMAN, INC. LAND SURVEYORS
112 SHAWMUT AVENUE PHONE: (617)357-9740
BOSTON, MASS. 02118 WWW.HARRYRFELDMAN.COM

FELDMAN
Professional Land Surveyors

GRAPHIC SCALE
20 0 10 20 40 80

RESEARCH	FIELD CHIEF JA	CHECKED	APPROVED	FILE NAME 12190-ALTA
CALC	CADD BLH	FIELD CHECKED	CRD FILE 12190	JOB NO. 12190

Appendix C

Transportation

Transportation Appendix

- Traffic Counts
  - Turning Movement Counts (TMCs)
- Synchro Level of Service (LOS) Analysis
  - Children's Clinical Building (CCB)
    - Existing 2012
    - No-Build 2022
    - Build 2022
  - 819 Beacon Street
    - Existing 2012
    - No-Build 2022
    - Build 2022
- Trip Generation
  - Children's Clinical Building
  - 819 Beacon Street
- Trip Distribution
  - Children's Clinical Building
  - 819 Beacon Street
- Crash/Accident Analysis
  - Vehicular Crash Summary (2008 – 2010)

Turning Movement Counts (TMCs)

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

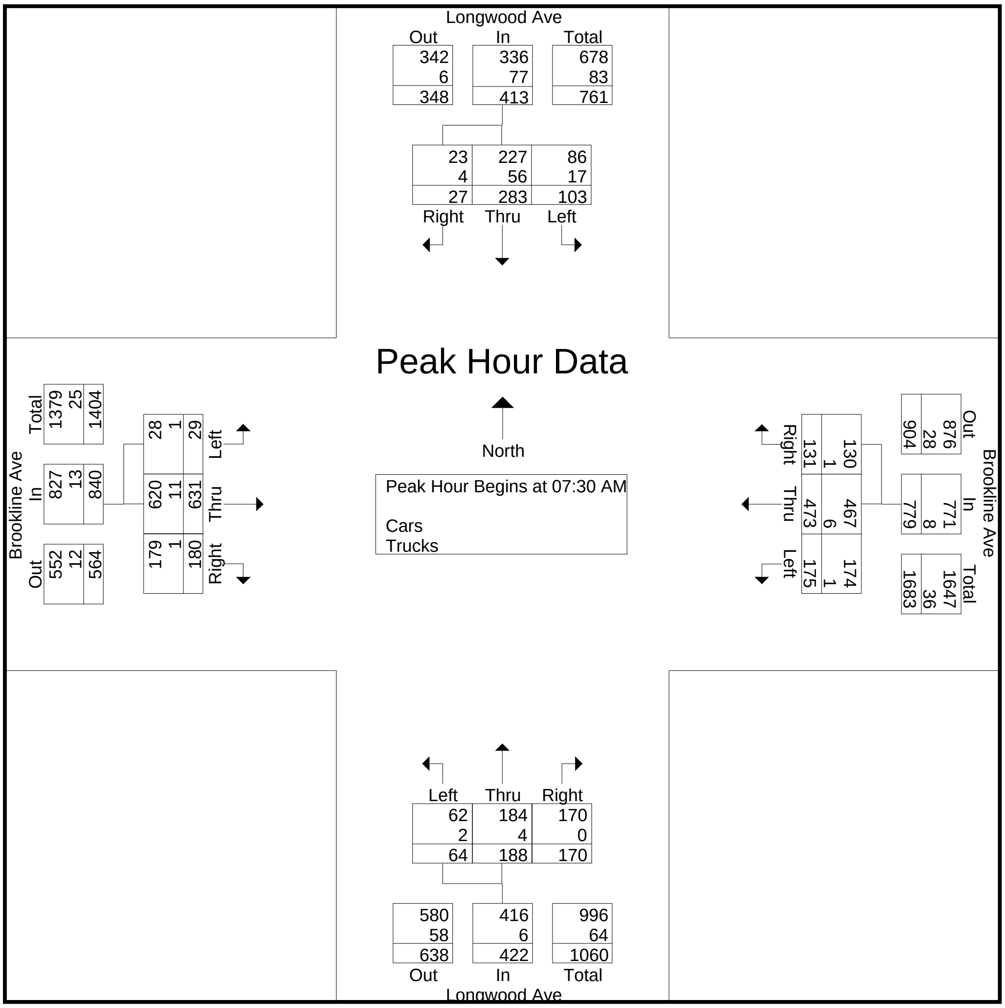
	Longwood Ave From North			Brookline Ave From East			Longwood Ave From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	25	54	6	31	114	30	14	33	20	7	121	48	503
07:15 AM	23	50	3	40	120	39	20	50	31	5	129	52	562
07:30 AM	22	65	5	44	122	39	20	70	59	5	154	50	655
07:45 AM	28	71	9	33	135	32	21	59	37	5	174	39	643
Total	98	240	23	148	491	140	75	212	147	22	578	189	2363
08:00 AM	31	71	5	41	119	32	13	25	38	11	155	47	588
08:15 AM	22	76	8	57	97	28	10	34	36	8	148	44	568
08:30 AM	30	74	4	53	112	35	6	36	36	9	108	34	537
08:45 AM	28	71	4	42	107	37	19	36	34	11	128	64	581
Total	111	292	21	193	435	132	48	131	144	39	539	189	2274
Grand Total	209	532	44	341	926	272	123	343	291	61	1117	378	4637
Apprch %	26.6	67.8	5.6	22.2	60.2	17.7	16.2	45.3	38.4	3.9	71.8	24.3	
Total %	4.5	11.5	0.9	7.4	20	5.9	2.7	7.4	6.3	1.3	24.1	8.2	
Cars	181	437	39	338	915	269	120	331	291	59	1098	373	4451
% Cars	86.6	82.1	88.6	99.1	98.8	98.9	97.6	96.5	100	96.7	98.3	98.7	96
Trucks	28	95	5	3	11	3	3	12	0	2	19	5	186
% Trucks	13.4	17.9	11.4	0.9	1.2	1.1	2.4	3.5	0	3.3	1.7	1.3	4

	Longwood Ave From North				Brookline Ave From East				Longwood Ave From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	22	65	5	92	44	122	**39**	**205**	20	**70**	**59**	**149**	5	154	**50**	209	**655**
07:45 AM	28	71	**9**	**108**	33	**135**	32	200	**21**	59	37	117	5	**174**	39	**218**	643
08:00 AM	**31**	71	5	107	41	119	32	192	13	25	38	76	**11**	155	47	213	588
08:15 AM	22	**76**	8	106	**57**	97	28	182	10	34	36	80	8	148	44	200	568
Total Volume	103	283	27	413	175	473	131	779	64	188	170	422	29	631	180	840	2454
% App. Total	24.9	68.5	6.5		22.5	60.7	16.8		15.2	44.5	40.3		3.5	75.1	21.4		
PHF	.831	.931	.750	.956	.768	.876	.840	.950	.762	.671	.720	.708	.659	.907	.900	.963	.937
Cars	86	227	23	336	174	467	130	771	62	184	170	416	28	620	179	827	2350
% Cars	83.5	80.2	85.2	81.4	99.4	98.7	99.2	99.0	96.9	97.9	100	98.6	96.6	98.3	99.4	98.5	95.8
Trucks	17	56	4	77	1	6	1	8	2	4	0	6	1	11	1	13	104
% Trucks	16.5	19.8	14.8	18.6	0.6	1.3	0.8	1.0	3.1	2.1	0	1.4	3.4	1.7	0.6	1.5	4.2

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 2



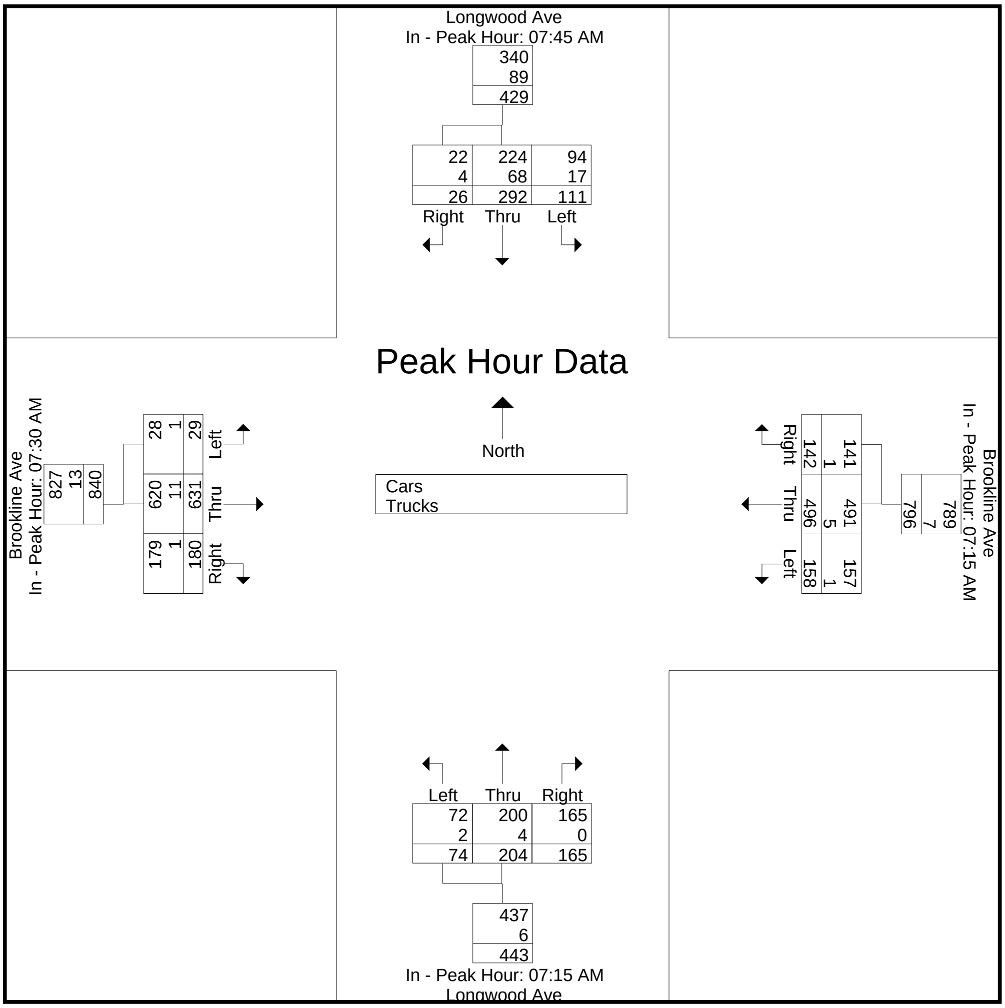
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:15 AM				07:15 AM				07:30 AM			
+0 mins.	28	71	**9**	**108**	40	120	**39**	199	20	50	31	101	5	154	**50**	209
+15 mins.	**31**	71	5	107	**44**	122	39	**205**	20	**70**	**59**	**149**	5	**174**	39	**218**
+30 mins.	22	**76**	8	106	33	**135**	32	200	**21**	59	37	117	**11**	155	47	213
+45 mins.	30	74	4	108	41	119	32	192	13	25	38	76	8	148	44	200
Total Volume	111	292	26	429	158	496	142	796	74	204	165	443	29	631	180	840
% App. Total	25.9	68.1	6.1		19.8	62.3	17.8		16.7	46	37.2		3.5	75.1	21.4	
PHF	.895	.961	.722	.993	.898	.919	.910	.971	.881	.729	.699	.743	.659	.907	.900	.963
Cars	94	224	22	340	157	491	141	789	72	200	165	437	28	620	179	827
% Cars	84.7	76.7	84.6	79.3	99.4	99	99.3	99.1	97.3	98	100	98.6	96.6	98.3	99.4	98.5
Trucks	17	68	4	89	1	5	1	7	2	4	0	6	1	11	1	13
% Trucks	15.3	23.3	15.4	20.7	0.6	1	0.7	0.9	2.7	2	0	1.4	3.4	1.7	0.6	1.5

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

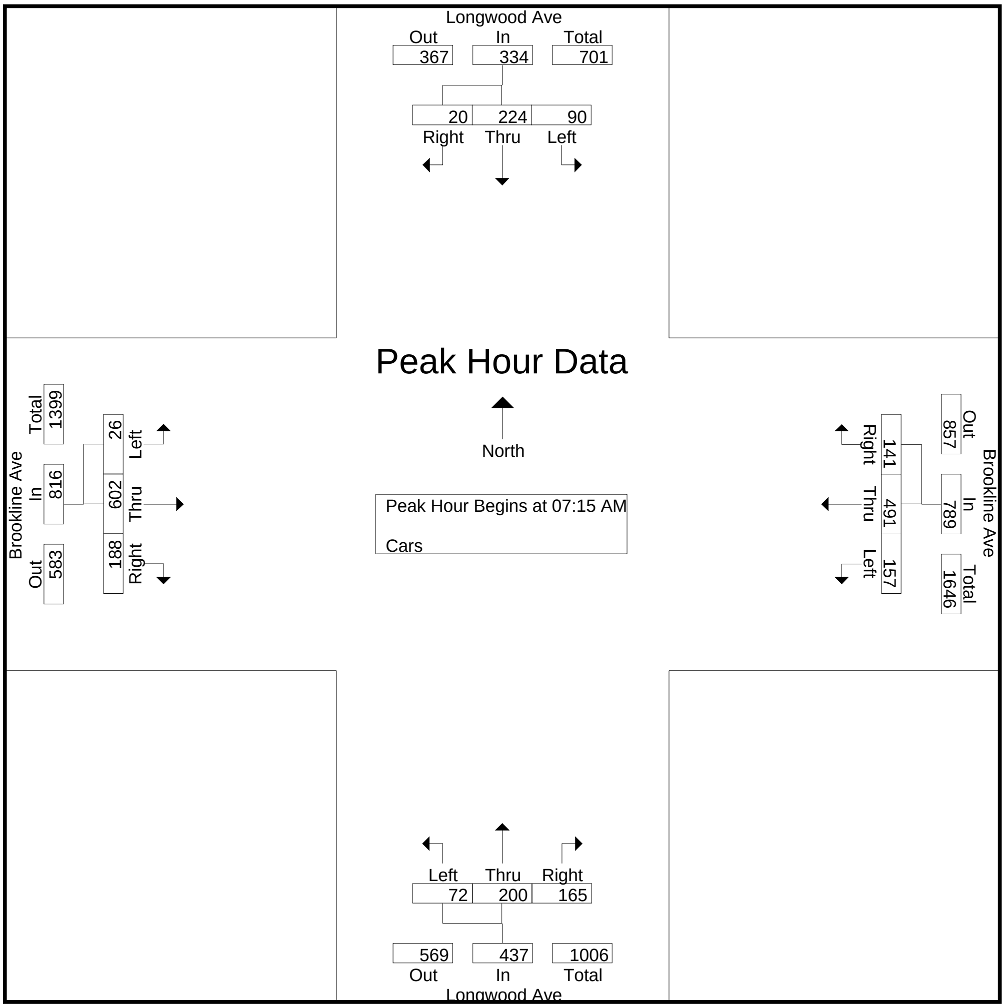
	Longwood Ave From North			**Brookline Ave From East**			**Longwood Ave From South**			**Brookline Ave From West**			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	20	52	5	30	114	29	13	31	20	7	119	46	486
07:15 AM	22	47	3	40	118	39	20	48	31	5	127	52	552
07:30 AM	19	59	5	44	122	38	19	70	59	5	152	50	642
07:45 AM	23	58	7	32	133	32	21	57	37	5	170	39	614
Total	84	216	20	146	487	138	73	206	147	22	568	187	2294
08:00 AM	26	60	5	41	118	32	12	25	38	11	153	47	568
08:15 AM	18	50	6	57	94	28	10	32	36	7	145	43	526
08:30 AM	27	56	4	53	111	34	6	34	36	9	105	34	509
08:45 AM	26	55	4	41	105	37	19	34	34	10	127	62	554
Total	97	221	19	192	428	131	47	125	144	37	530	186	2157
Grand Total	181	437	39	338	915	269	120	331	291	59	1098	373	4451
Apprch %	27.5	66.5	5.9	22.2	60.1	17.7	16.2	44.6	39.2	3.9	71.8	24.4	
Total %	4.1	9.8	0.9	7.6	20.6	6	2.7	7.4	6.5	1.3	24.7	8.4	

	Longwood Ave From North				**Brookline Ave From East**				**Longwood Ave From South**				**Brookline Ave From West**				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	22	47	3	72	40	118	**39**	197	20	48	31	99	5	127	**52**	184	552
07:30 AM	19	59	5	83	**44**	122	38	**204**	19	**70**	**59**	**148**	5	152	50	207	**642**
07:45 AM	23	58	**7**	88	32	**133**	32	197	**21**	57	37	115	5	**170**	39	**214**	614
08:00 AM	**26**	**60**	5	**91**	41	118	32	191	12	25	38	75	**11**	153	47	211	568
Total Volume	90	224	20	334	157	491	141	789	72	200	165	437	26	602	188	816	2376
% App. Total	26.9	67.1	6		19.9	62.2	17.9		16.5	45.8	37.8		3.2	73.8	23		
PHF	.865	.933	.714	.918	.892	.923	.904	.967	.857	.714	.699	.738	.591	.885	.904	.953	.925

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 2



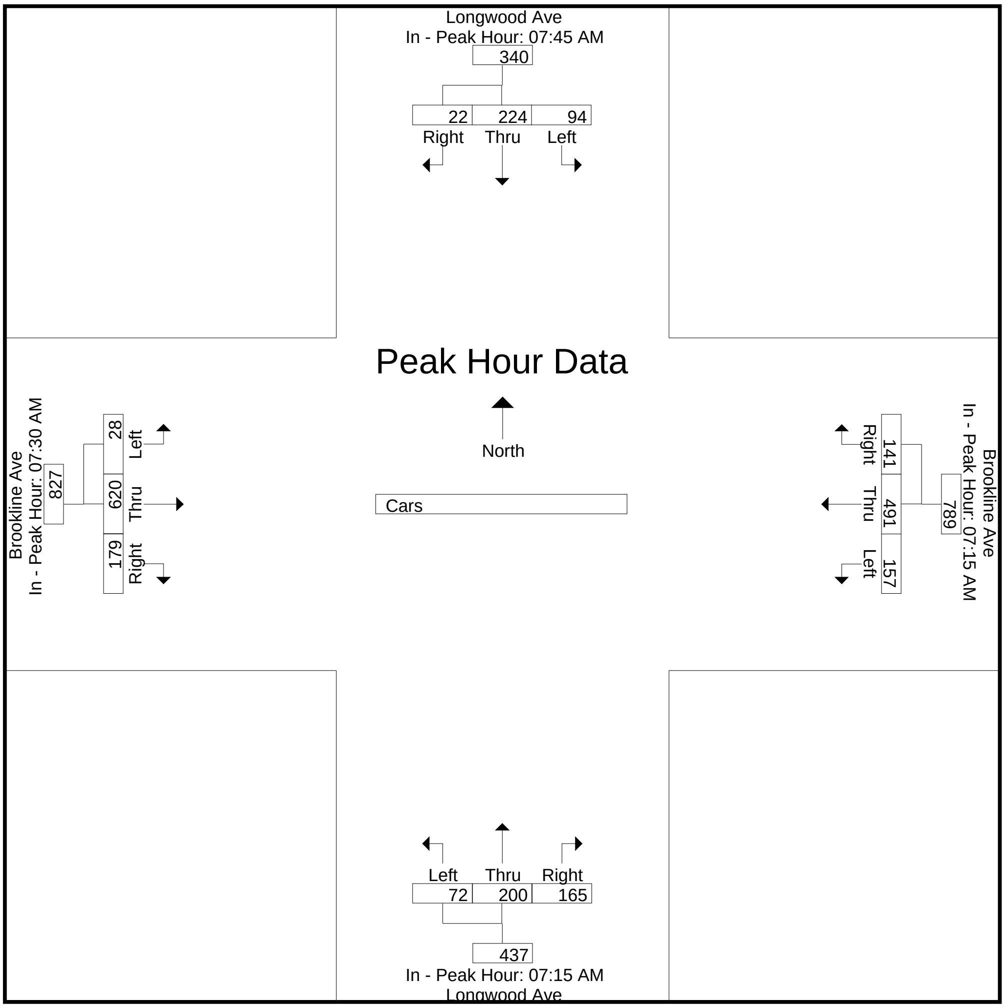
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:15 AM				07:15 AM				07:30 AM			
+0 mins.	23	58	**7**	88	40	118	**39**	197	20	48	31	99	5	152	**50**	207
+15 mins.	26	**60**	5	**91**	**44**	122	38	**204**	19	**70**	**59**	**148**	5	**170**	39	**214**
+30 mins.	18	50	6	74	32	**133**	32	197	**21**	57	37	115	**11**	153	47	211
+45 mins.	**27**	56	4	87	41	118	32	191	12	25	38	75	7	145	43	195
Total Volume	94	224	22	340	157	491	141	789	72	200	165	437	28	620	179	827
% App. Total	27.6	65.9	6.5		19.9	62.2	17.9		16.5	45.8	37.8		3.4	75	21.6	
PHF	.870	.933	.786	.934	.892	.923	.904	.967	.857	.714	.699	.738	.636	.912	.895	.966

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

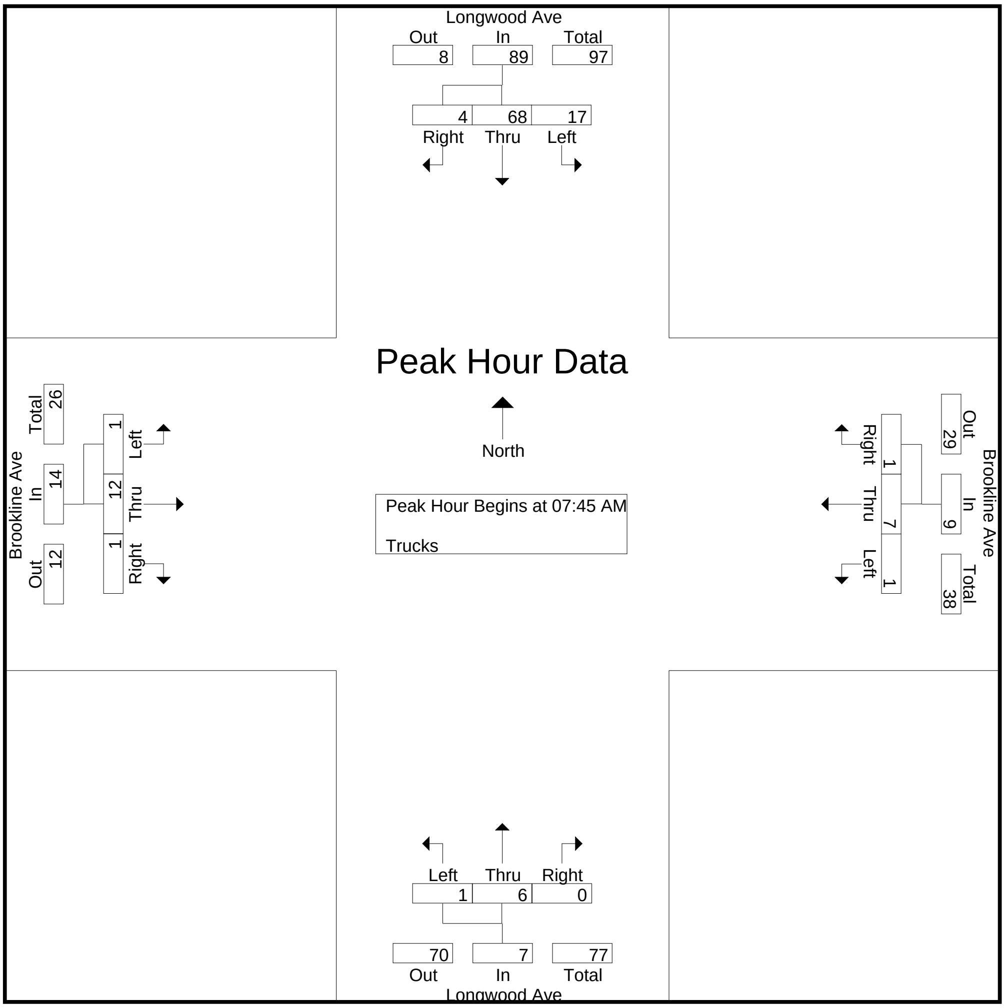
	Longwood Ave From North			**Brookline Ave From East**			**Longwood Ave From South**			**Brookline Ave From West**			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	5	2	1	1	0	1	1	2	0	0	2	2	17
07:15 AM	1	3	0	0	2	0	0	2	0	0	2	0	10
07:30 AM	3	6	0	0	0	1	1	0	0	0	2	0	13
07:45 AM	5	13	2	1	2	0	0	2	0	0	4	0	29
Total	14	24	3	2	4	2	2	6	0	0	10	2	69
08:00 AM	5	11	0	0	1	0	1	0	0	0	2	0	20
08:15 AM	4	26	2	0	3	0	0	2	0	1	3	1	42
08:30 AM	3	18	0	0	1	1	0	2	0	0	3	0	28
08:45 AM	2	16	0	1	2	0	0	2	0	1	1	2	27
Total	14	71	2	1	7	1	1	6	0	2	9	3	117
Grand Total	28	95	5	3	11	3	3	12	0	2	19	5	186
Apprch %	21.9	74.2	3.9	17.6	64.7	17.6	20	80	0	7.7	73.1	19.2	
Total %	15.1	51.1	2.7	1.6	5.9	1.6	1.6	6.5	0	1.1	10.2	2.7	

	Longwood Ave From North				**Brookline Ave From East**				**Longwood Ave From South**				**Brookline Ave From West**				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	**5**	13	**2**	20	**1**	2	0	**3**	0	**2**	0	**2**	0	**4**	0	4	29
08:00 AM	5	11	0	16	0	1	0	1	**1**	0	0	1	0	2	0	2	20
08:15 AM	4	**26**	2	**32**	0	**3**	0	3	0	2	0	2	**1**	3	**1**	**5**	**42**
08:30 AM	3	18	0	21	0	1	**1**	2	0	2	0	2	0	3	0	3	28
Total Volume	17	68	4	89	1	7	1	9	1	6	0	7	1	12	1	14	119
% App. Total	19.1	76.4	4.5		11.1	77.8	11.1		14.3	85.7	0		7.1	85.7	7.1		
PHF	.850	.654	.500	.695	.250	.583	.250	.750	.250	.750	.000	.875	.250	.750	.250	.700	.708

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 2



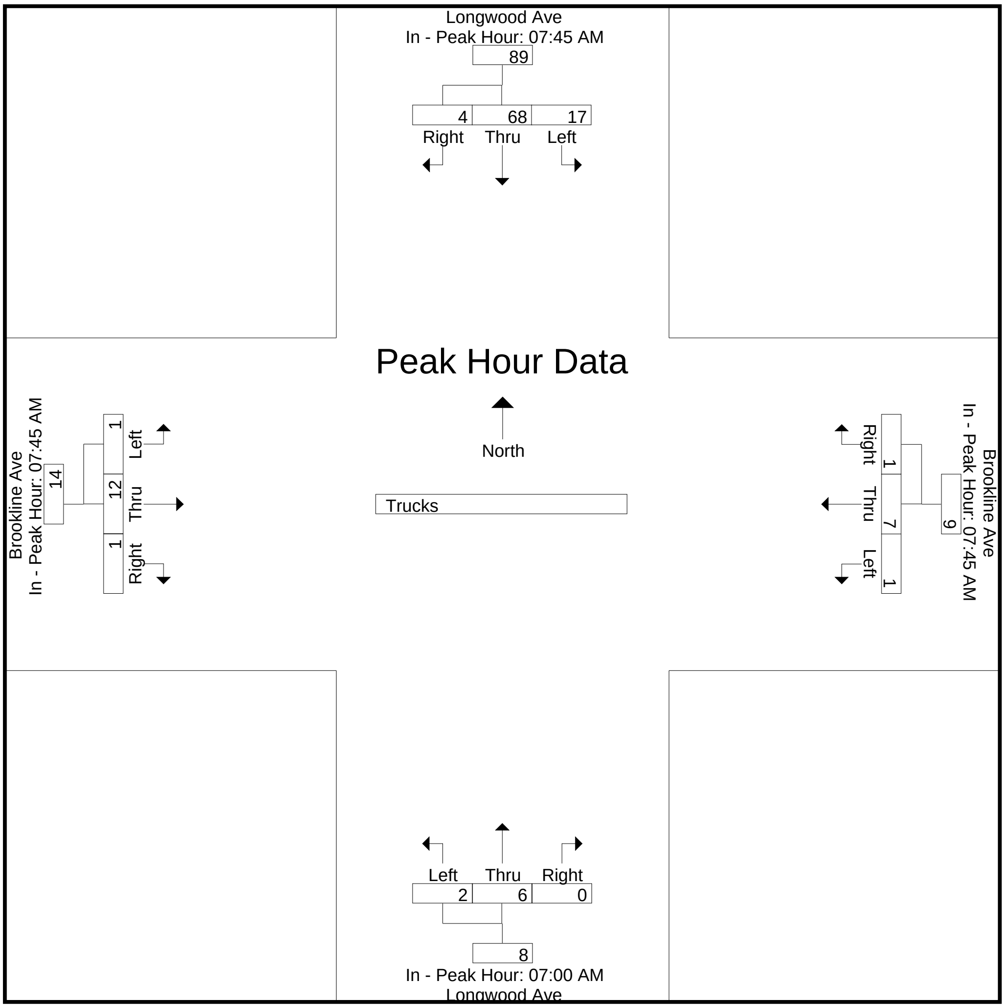
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:45 AM				07:00 AM				07:45 AM			
+0 mins.	**5**	13	**2**	20	**1**	2	0	**3**	**1**	**2**	0	**3**	0	**4**	0	4
+15 mins.	5	11	0	16	0	1	0	1	0	2	0	2	0	2	0	2
+30 mins.	4	**26**	2	**32**	0	**3**	0	3	1	0	0	1	**1**	3	**1**	**5**
+45 mins.	3	18	0	21	0	1	**1**	2	0	2	0	2	0	3	0	3
Total Volume	17	68	4	89	1	7	1	9	2	6	0	8	1	12	1	14
% App. Total	19.1	76.4	4.5		11.1	77.8	11.1		25	75	0		7.1	85.7	7.1	
PHF	.850	.654	.500	.695	.250	.583	.250	.750	.500	.750	.000	.667	.250	.750	.250	.700

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes

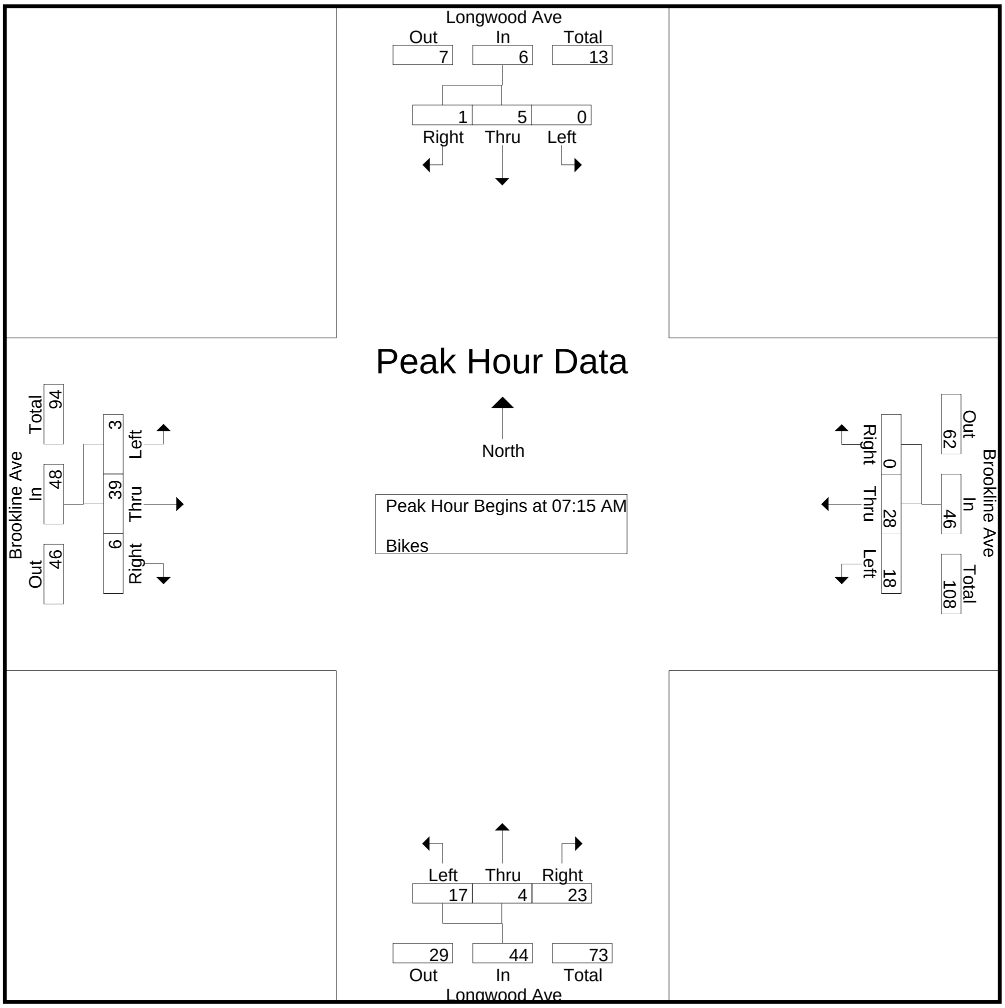
	Longwood Ave From North			Brookline Ave From East			Longwood Ave From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	1	0	4	8	0	2	0	5	1	6	1	28
07:15 AM	0	1	0	4	7	0	6	0	6	0	6	3	33
07:30 AM	0	3	0	4	9	0	4	1	3	2	13	0	39
07:45 AM	0	1	0	4	6	0	4	1	6	1	12	1	36
Total	0	6	0	16	30	0	16	2	20	4	37	5	136
08:00 AM	0	0	1	6	6	0	3	2	8	0	8	2	36
08:15 AM	0	1	0	3	6	0	3	1	5	0	6	0	25
08:30 AM	0	2	0	6	7	2	6	0	4	0	9	1	37
08:45 AM	0	2	0	8	8	0	3	1	6	0	7	1	36
Total	0	5	1	23	27	2	15	4	23	0	30	4	134
Grand Total	0	11	1	39	57	2	31	6	43	4	67	9	270
Apprch %	0	91.7	8.3	39.8	58.2	2	38.8	7.5	53.8	5	83.8	11.2	
Total %	0	4.1	0.4	14.4	21.1	0.7	11.5	2.2	15.9	1.5	24.8	3.3	

	Longwood Ave From North				Brookline Ave From East				Longwood Ave From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	1	0	1	4	7	0	11	**6**	0	6	12	0	6	**3**	9	33
07:30 AM	0	**3**	0	**3**	4	**9**	0	**13**	4	1	3	8	**2**	**13**	0	**15**	**39**
07:45 AM	0	1	0	1	4	6	0	10	4	1	6	11	1	12	1	14	36
08:00 AM	0	0	**1**	1	**6**	6	0	12	3	**2**	**8**	**13**	0	8	2	10	36
Total Volume	0	5	1	6	18	28	0	46	17	4	23	44	3	39	6	48	144
% App. Total	0	83.3	16.7		39.1	60.9	0		38.6	9.1	52.3		6.2	81.2	12.5		
PHF	.000	.417	.250	.500	.750	.778	.000	.885	.708	.500	.719	.846	.375	.750	.500	.800	.923

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 2



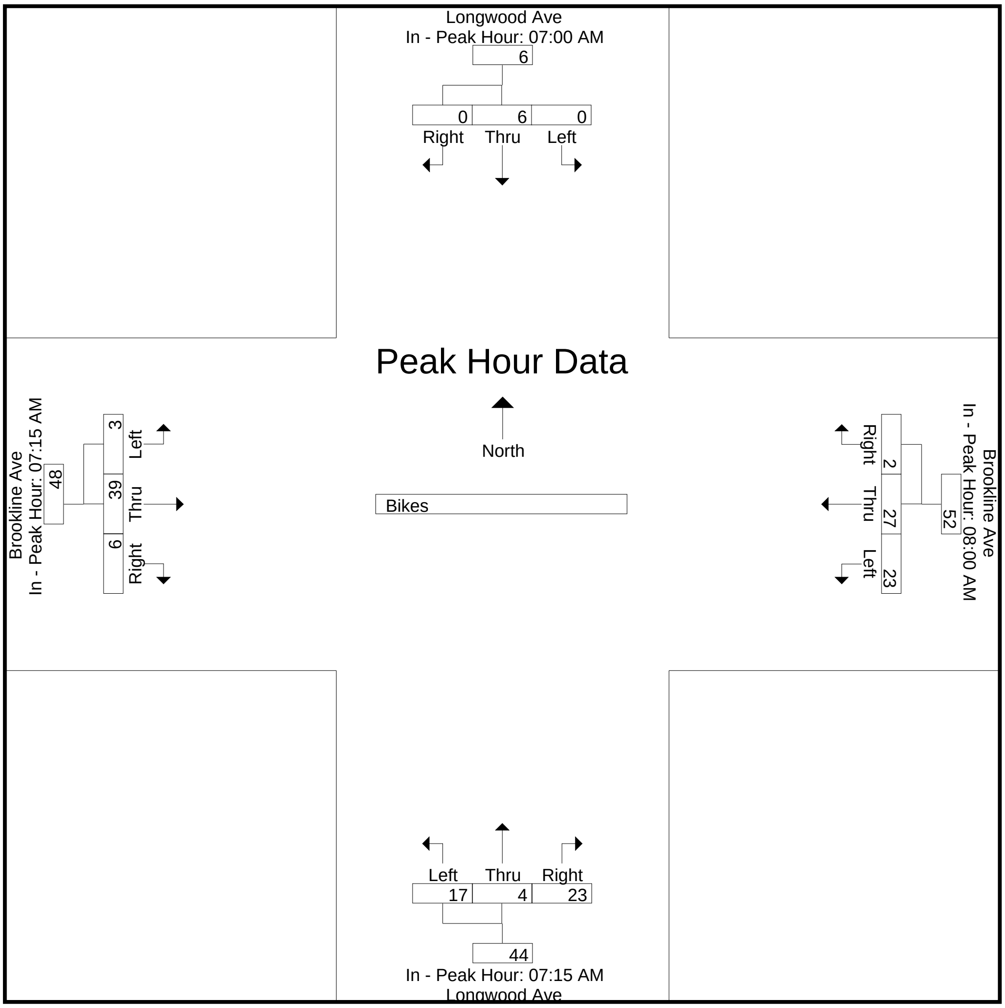
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				08:00 AM				07:15 AM				07:15 AM			
+0 mins.	0	1	0	1	6	6	0	12	**6**	0	6	12	0	6	**3**	9
+15 mins.	0	1	0	1	3	6	0	9	4	1	3	8	**2**	**13**	0	**15**
+30 mins.	0	**3**	0	**3**	6	7	**2**	15	4	1	6	11	1	12	1	14
+45 mins.	0	1	0	1	**8**	**8**	0	**16**	3	**2**	**8**	**13**	0	8	2	10
Total Volume	0	6	0	6	23	27	2	52	17	4	23	44	3	39	6	48
% App. Total	0	100	0		44.2	51.9	3.8		38.6	9.1	52.3		6.2	81.2	12.5	
PHF	.000	.500	.000	.500	.719	.844	.250	.813	.708	.500	.719	.846	.375	.750	.500	.800

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 1

Groups Printed- Peds

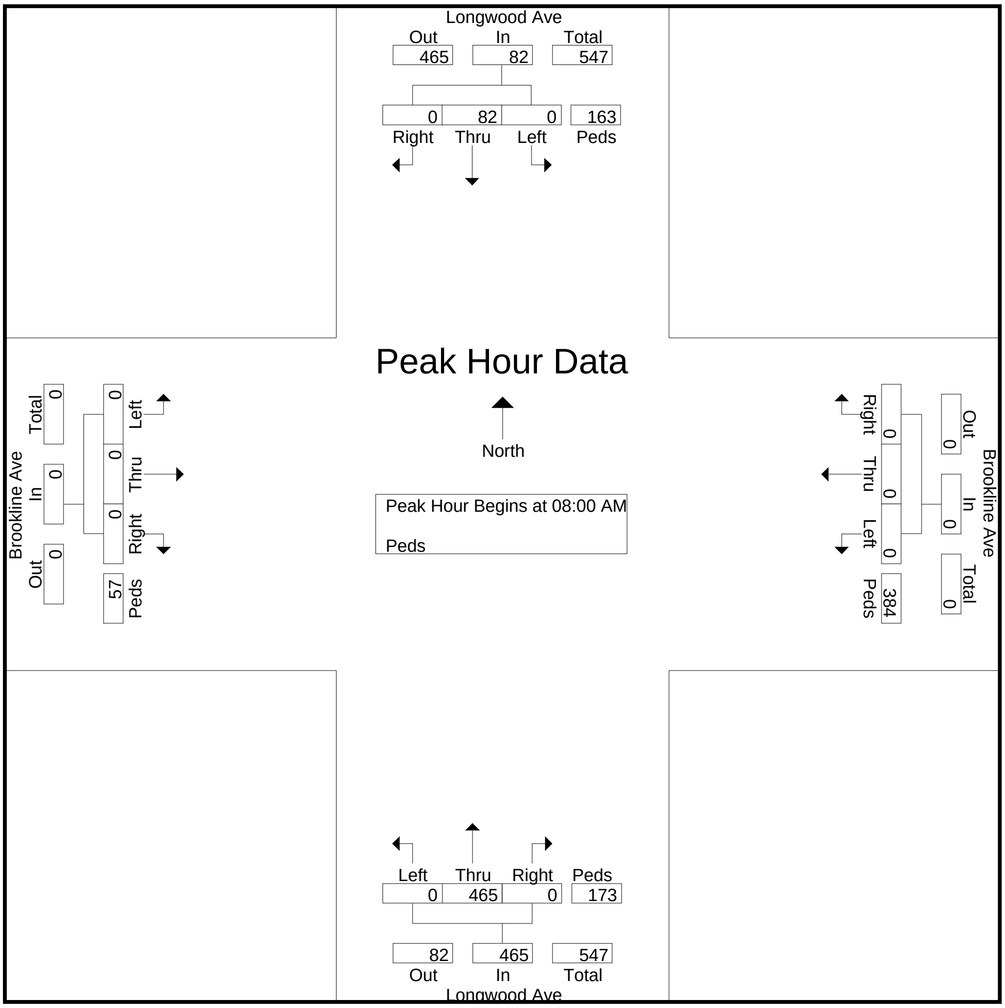
	Longwood Ave From North				**Brookline Ave From East**				**Longwood Ave From South**				**Brookline Ave From West**				
Start Time		NW / SE		Peds				Peds		NE / SW		Peds				Peds	Int. Total
07:00 AM	0	13	0	10	0	0	0	47	0	38	0	24	0	0	0	18	150
07:15 AM	0	16	0	16	0	0	0	59	0	50	0	31	0	0	0	13	185
07:30 AM	0	18	0	15	0	0	0	62	0	53	0	30	0	0	0	6	184
07:45 AM	0	22	0	34	0	0	0	92	0	73	0	54	0	0	0	15	290
Total	0	69	0	75	0	0	0	260	0	214	0	139	0	0	0	52	809
08:00 AM	0	14	0	23	0	0	0	76	0	91	0	39	0	0	0	10	253
08:15 AM	0	30	0	40	0	0	0	124	0	128	0	30	0	0	0	13	365
08:30 AM	0	24	0	49	0	0	0	105	0	122	0	43	0	0	0	21	364
08:45 AM	0	14	0	51	0	0	0	79	0	124	0	61	0	0	0	13	342
Total	0	82	0	163	0	0	0	384	0	465	0	173	0	0	0	57	1324
Grand Total	0	151	0	238	0	0	0	644	0	679	0	312	0	0	0	109	2133
Apprch %	0	38.8	0	61.2	0	0	0	100	0	68.5	0	31.5	0	0	0	100	
Total %	0	7.1	0	11.2	0	0	0	30.2	0	31.8	0	14.6	0	0	0	5.1	

	Longwood Ave From North					**Brookline Ave From East**					**Longwood Ave From South**					**Brookline Ave From West**					
Start Time		NW / SE		Peds	App. Total				Peds	App. Total		NE / SW		Peds	App. Total				Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	14	0	23	37	0	0	0	76	76	0	91	0	39	130	0	0	0	10	10	253
08:15 AM	0	**30**	0	40	70	0	0	0	**124**	**124**	0	**128**	0	30	158	0	0	0	13	13	**365**
08:30 AM	0	24	0	49	**73**	0	0	0	105	105	0	122	0	43	165	0	0	0	**21**	**21**	364
08:45 AM	0	14	0	**51**	65	0	0	0	79	79	0	124	0	**61**	**185**	0	0	0	13	13	342
Total Volume	0	82	0	163	245	0	0	0	384	384	0	465	0	173	638	0	0	0	57	57	1324
% App. Total	0	33.5	0	66.5		0	0	0	100		0	72.9	0	27.1		0	0	0	100		
PHF	.000	.683	.000	.799	.839	.000	.000	.000	.774	.774	.000	.908	.000	.709	.862	.000	.000	.000	.679	.679	.907

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 2



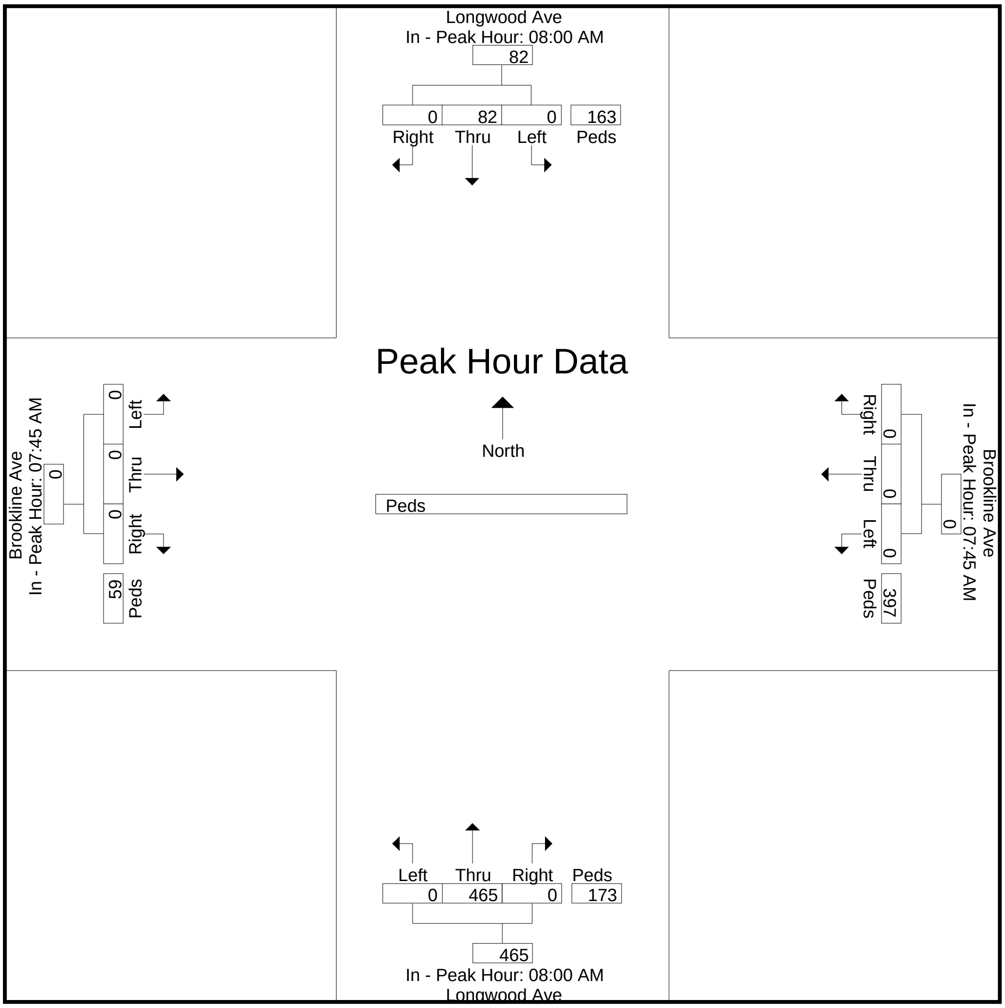
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM					07:45 AM					08:00 AM					07:45 AM				
+0 mins.	0	14	0	23	37	0	0	0	92	92	0	91	0	39	130	0	0	0	15	15
+15 mins.	0	**30**	0	40	70	0	0	0	76	76	0	**128**	0	30	158	0	0	0	10	10
+30 mins.	0	24	0	49	**73**	0	0	0	**124**	**124**	0	122	0	43	165	0	0	0	13	13
+45 mins.	0	14	0	**51**	65	0	0	0	105	105	0	124	0	**61**	**185**	0	0	0	**21**	**21**
Total Volume	0	82	0	163	245	0	0	0	397	397	0	465	0	173	638	0	0	0	59	59
% App. Total	0	33.5	0	66.5		0	0	0	100		0	72.9	0	27.1		0	0	0	100	
PHF	.000	.683	.000	.799	.839	.000	.000	.000	.800	.800	.000	.908	.000	.709	.862	.000	.000	.000	.702	.702

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

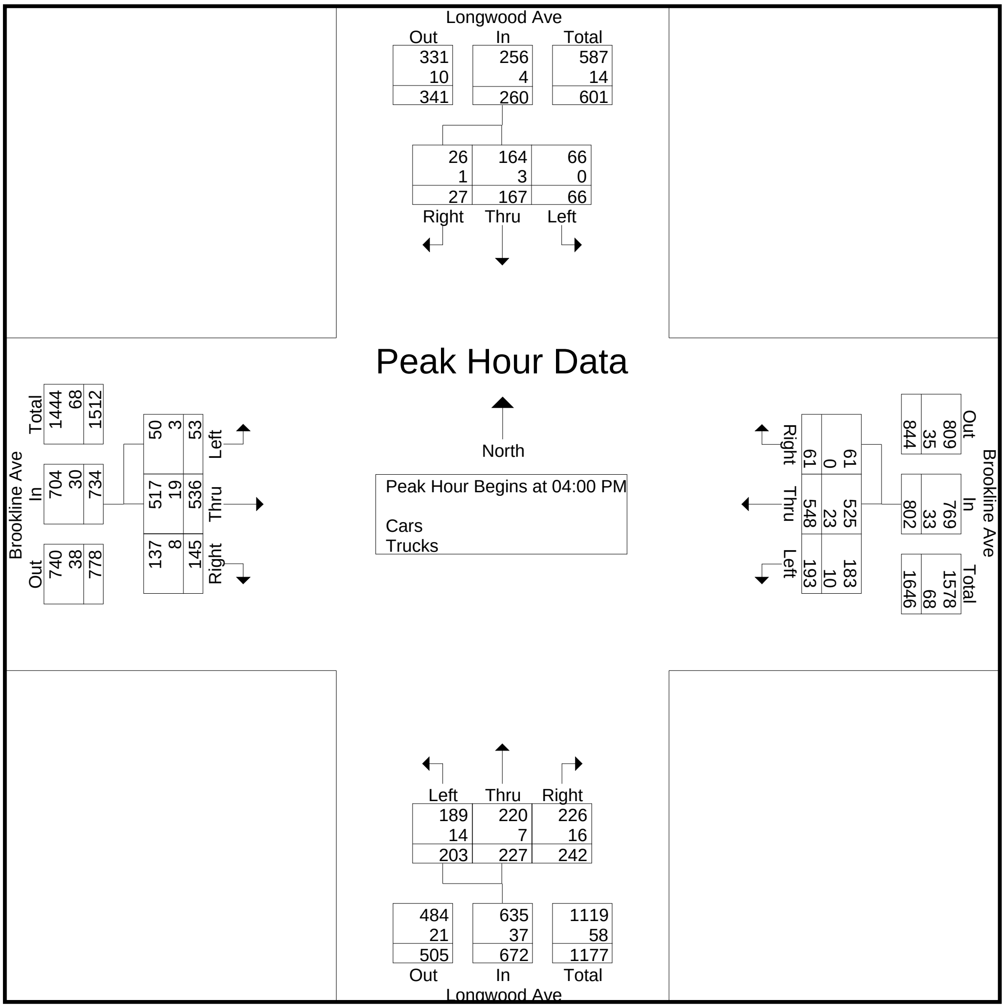
	Longwood Ave From North			Brookline Ave From East			Longwood Ave From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	14	39	5	45	123	13	63	49	59	10	131	43	594
04:15 PM	20	47	5	50	131	19	38	56	57	16	150	34	623
04:30 PM	13	37	11	57	137	13	53	72	65	14	118	37	627
04:45 PM	19	44	6	41	157	16	49	50	61	13	137	31	624
Total	66	167	27	193	548	61	203	227	242	53	536	145	2468
05:00 PM	10	39	8	41	110	12	54	52	63	11	107	36	543
05:15 PM	19	33	5	47	167	20	56	65	50	15	146	39	662
05:30 PM	10	48	5	31	136	19	47	70	62	9	127	31	595
05:45 PM	18	44	6	38	176	13	46	45	46	12	161	38	643
Total	57	164	24	157	589	64	203	232	221	47	541	144	2443
Grand Total	123	331	51	350	1137	125	406	459	463	100	1077	289	4911
Apprch %	24.4	65.5	10.1	21.7	70.5	7.8	30.6	34.6	34.9	6.8	73.5	19.7	
Total %	2.5	6.7	1	7.1	23.2	2.5	8.3	9.3	9.4	2	21.9	5.9	
Cars	118	327	50	330	1096	124	376	441	432	95	1039	274	4702
% Cars	95.9	98.8	98	94.3	96.4	99.2	92.6	96.1	93.3	95	96.5	94.8	95.7
Trucks	5	4	1	20	41	1	30	18	31	5	38	15	209
% Trucks	4.1	1.2	2	5.7	3.6	0.8	7.4	3.9	6.7	5	3.5	5.2	4.3

	Longwood Ave From North				Brookline Ave From East				Longwood Ave From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	14	39	5	58	45	123	13	181	**63**	49	59	171	10	131	**43**	184	594
04:15 PM	**20**	**47**	5	**72**	50	131	**19**	200	38	56	57	151	**16**	**150**	34	**200**	623
04:30 PM	13	37	**11**	61	**57**	137	13	207	53	**72**	**65**	**190**	14	118	37	169	**627**
04:45 PM	19	44	6	69	41	**157**	16	**214**	49	50	61	160	13	137	31	181	624
Total Volume	66	167	27	260	193	548	61	802	203	227	242	672	53	536	145	734	2468
% App. Total	25.4	64.2	10.4		24.1	68.3	7.6		30.2	33.8	36		7.2	73	19.8		
PHF	.825	.888	.614	.903	.846	.873	.803	.937	.806	.788	.931	.884	.828	.893	.843	.918	.984
Cars	66	164	26	256	183	525	61	769	189	220	226	635	50	517	137	704	2364
% Cars	100	98.2	96.3	98.5	94.8	95.8	100	95.9	93.1	96.9	93.4	94.5	94.3	96.5	94.5	95.9	95.8
Trucks	0	3	1	4	10	23	0	33	14	7	16	37	3	19	8	30	104
% Trucks	0	1.8	3.7	1.5	5.2	4.2	0	4.1	6.9	3.1	6.6	5.5	5.7	3.5	5.5	4.1	4.2

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 2



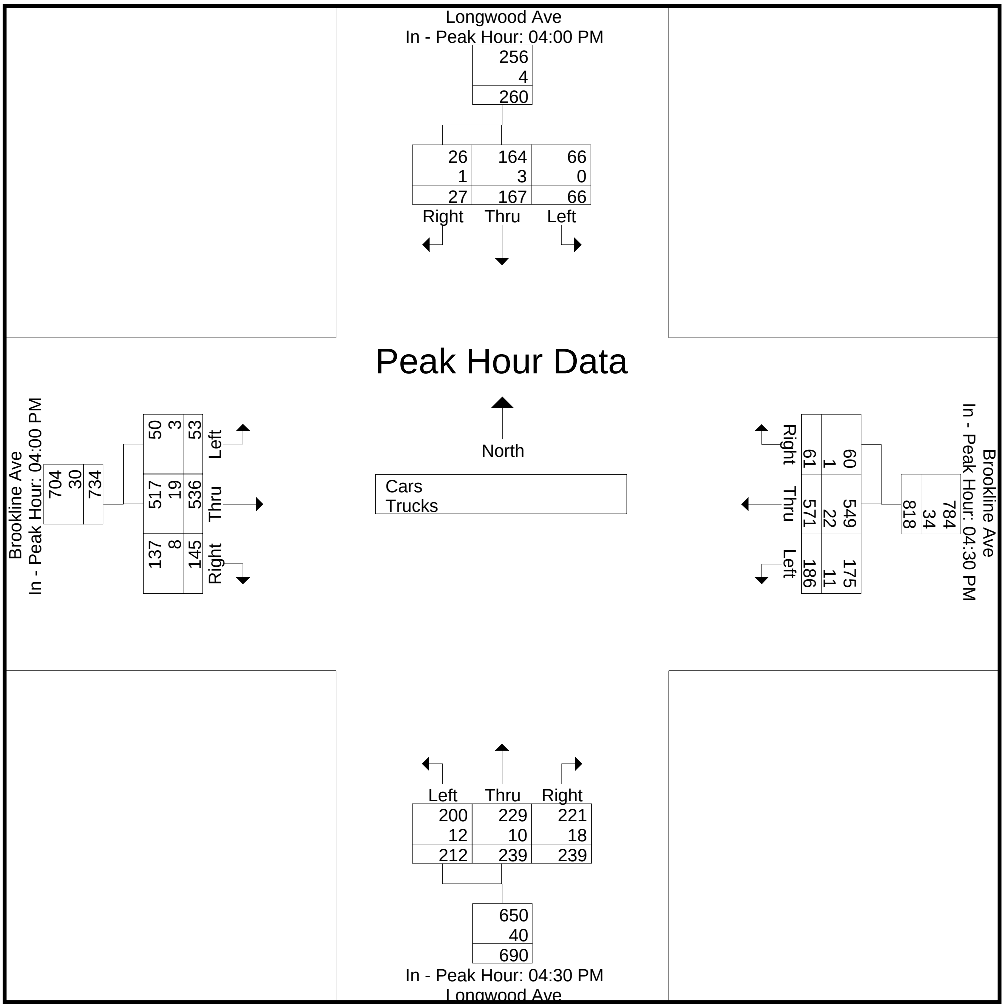
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:30 PM				04:00 PM			
+0 mins.	14	39	5	58	**57**	137	13	207	53	**72**	**65**	**190**	10	131	**43**	184
+15 mins.	**20**	**47**	5	**72**	41	157	16	214	49	50	61	160	**16**	**150**	34	**200**
+30 mins.	13	37	**11**	61	41	110	12	163	54	52	63	169	14	118	37	169
+45 mins.	19	44	6	69	47	**167**	**20**	**234**	**56**	65	50	171	13	137	31	181
Total Volume	66	167	27	260	186	571	61	818	212	239	239	690	53	536	145	734
% App. Total	25.4	64.2	10.4		22.7	69.8	7.5		30.7	34.6	34.6		7.2	73	19.8	
PHF	.825	.888	.614	.903	.816	.855	.763	.874	.946	.830	.919	.908	.828	.893	.843	.918
Cars	66	164	26	256	175	549	60	784	200	229	221	650	50	517	137	704
% Cars	100	98.2	96.3	98.5	94.1	96.1	98.4	95.8	94.3	95.8	92.5	94.2	94.3	96.5	94.5	95.9
Trucks	0	3	1	4	11	22	1	34	12	10	18	40	3	19	8	30
% Trucks	0	1.8	3.7	1.5	5.9	3.9	1.6	4.2	5.7	4.2	7.5	5.8	5.7	3.5	5.5	4.1

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

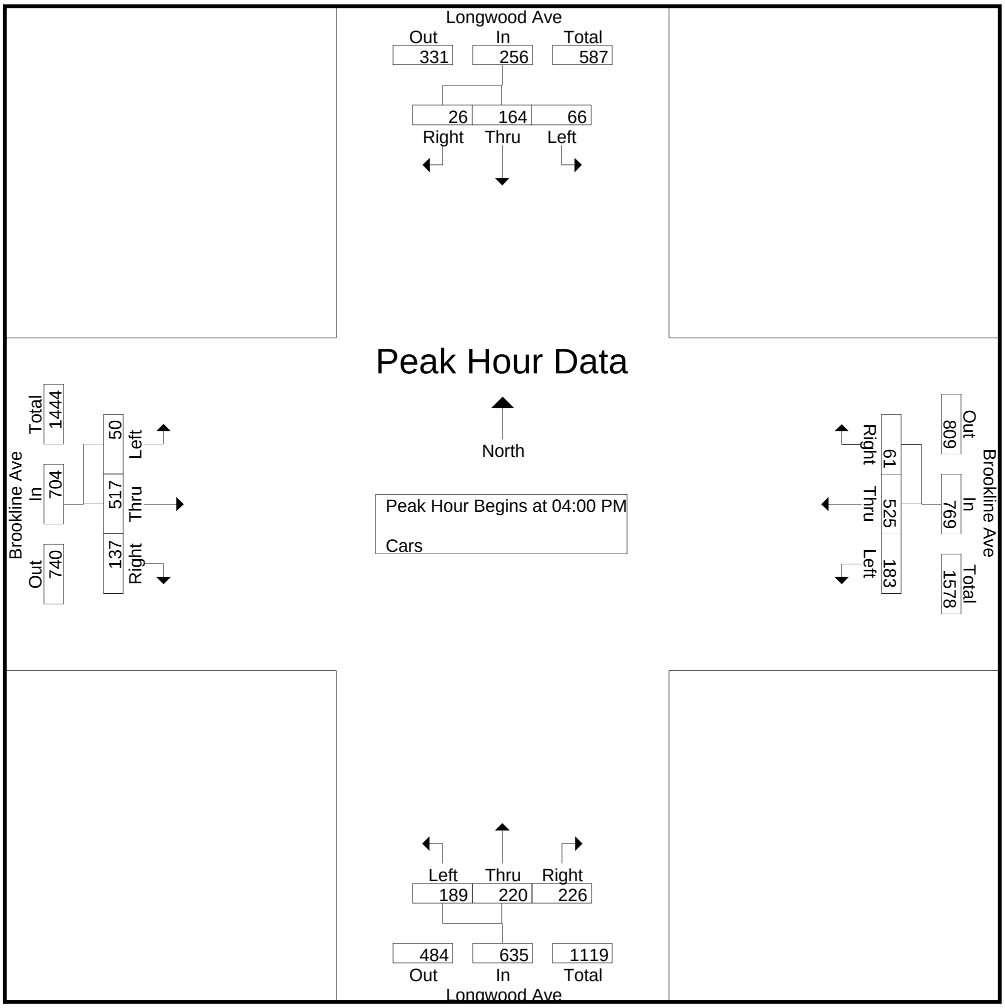
	Longwood Ave From North			Brookline Ave From East			Longwood Ave From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	14	38	5	43	119	13	60	48	53	9	127	41	570
04:15 PM	20	47	5	48	126	19	34	53	56	14	146	32	600
04:30 PM	13	35	11	54	132	13	50	71	63	14	113	34	603
04:45 PM	19	44	5	38	148	16	45	48	54	13	131	30	591
Total	66	164	26	183	525	61	189	220	226	50	517	137	2364
05:00 PM	10	39	8	38	107	11	51	49	59	9	103	34	518
05:15 PM	19	33	5	45	162	20	54	61	45	15	142	38	639
05:30 PM	10	48	5	27	132	19	42	68	60	9	121	28	569
05:45 PM	13	43	6	37	170	13	40	43	42	12	156	37	612
Total	52	163	24	147	571	63	187	221	206	45	522	137	2338
Grand Total	118	327	50	330	1096	124	376	441	432	95	1039	274	4702
Apprch %	23.8	66.1	10.1	21.3	70.7	8	30.1	35.3	34.6	6.7	73.8	19.5	
Total %	2.5	7	1.1	7	23.3	2.6	8	9.4	9.2	2	22.1	5.8	

	Longwood Ave From North				Brookline Ave From East				Longwood Ave From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	14	38	5	57	43	119	13	175	**60**	48	53	161	9	127	**41**	177	570
04:15 PM	**20**	**47**	5	**72**	48	126	**19**	193	34	53	56	143	**14**	**146**	32	**192**	600
04:30 PM	13	35	**11**	59	**54**	132	13	199	50	**71**	**63**	**184**	14	113	34	161	**603**
04:45 PM	19	44	5	68	38	**148**	16	**202**	45	48	54	147	13	131	30	174	591
Total Volume	66	164	26	256	183	525	61	769	189	220	226	635	50	517	137	704	2364
% App. Total	25.8	64.1	10.2		23.8	68.3	7.9		29.8	34.6	35.6		7.1	73.4	19.5		
PHF	.825	.872	.591	.889	.847	.887	.803	.952	.788	.775	.897	.863	.893	.885	.835	.917	.980

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 2



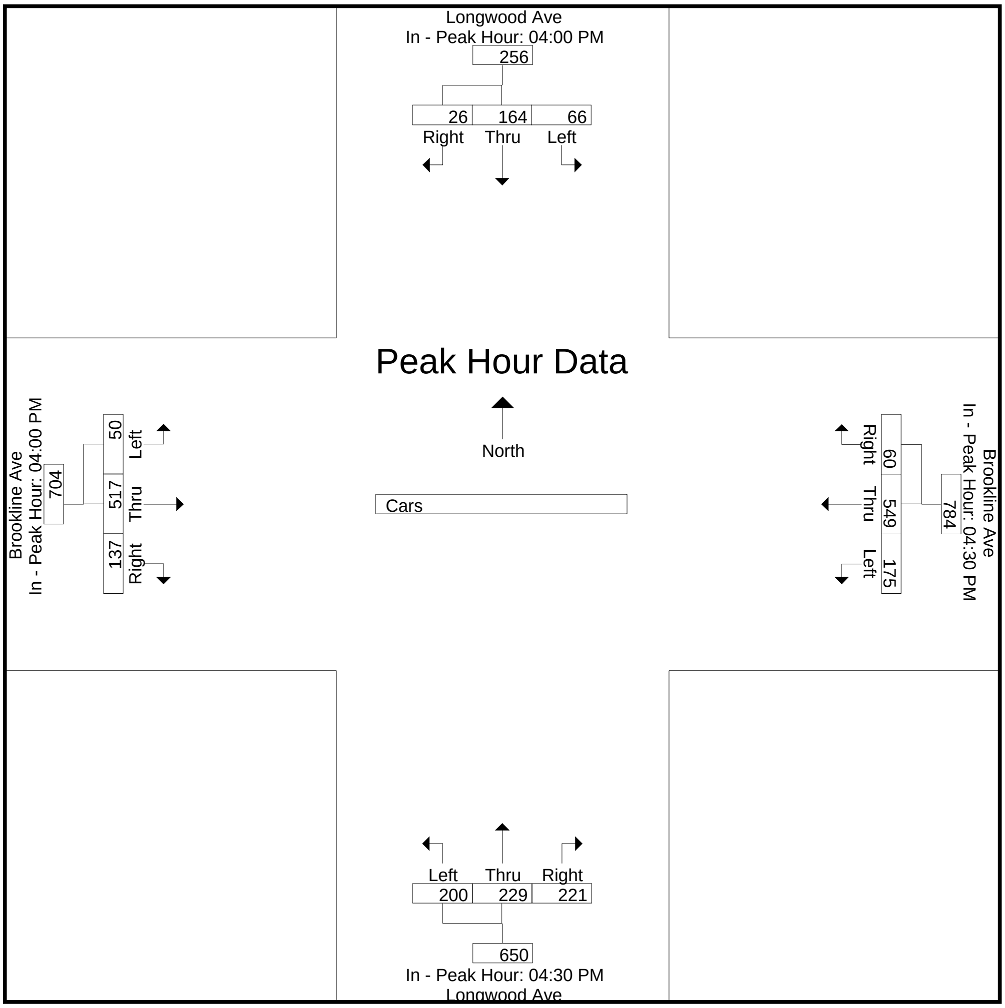
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:30 PM				04:00 PM			
+0 mins.	14	38	5	57	**54**	132	13	199	50	**71**	**63**	**184**	9	127	**41**	177
+15 mins.	**20**	**47**	5	**72**	38	148	16	202	45	48	54	147	**14**	**146**	32	**192**
+30 mins.	13	35	**11**	59	38	107	11	156	51	49	59	159	14	113	34	161
+45 mins.	19	44	5	68	45	**162**	**20**	**227**	**54**	61	45	160	13	131	30	174
Total Volume	66	164	26	256	175	549	60	784	200	229	221	650	50	517	137	704
% App. Total	25.8	64.1	10.2		22.3	70	7.7		30.8	35.2	34		7.1	73.4	19.5	
PHF	.825	.872	.591	.889	.810	.847	.750	.863	.926	.806	.877	.883	.893	.885	.835	.917

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

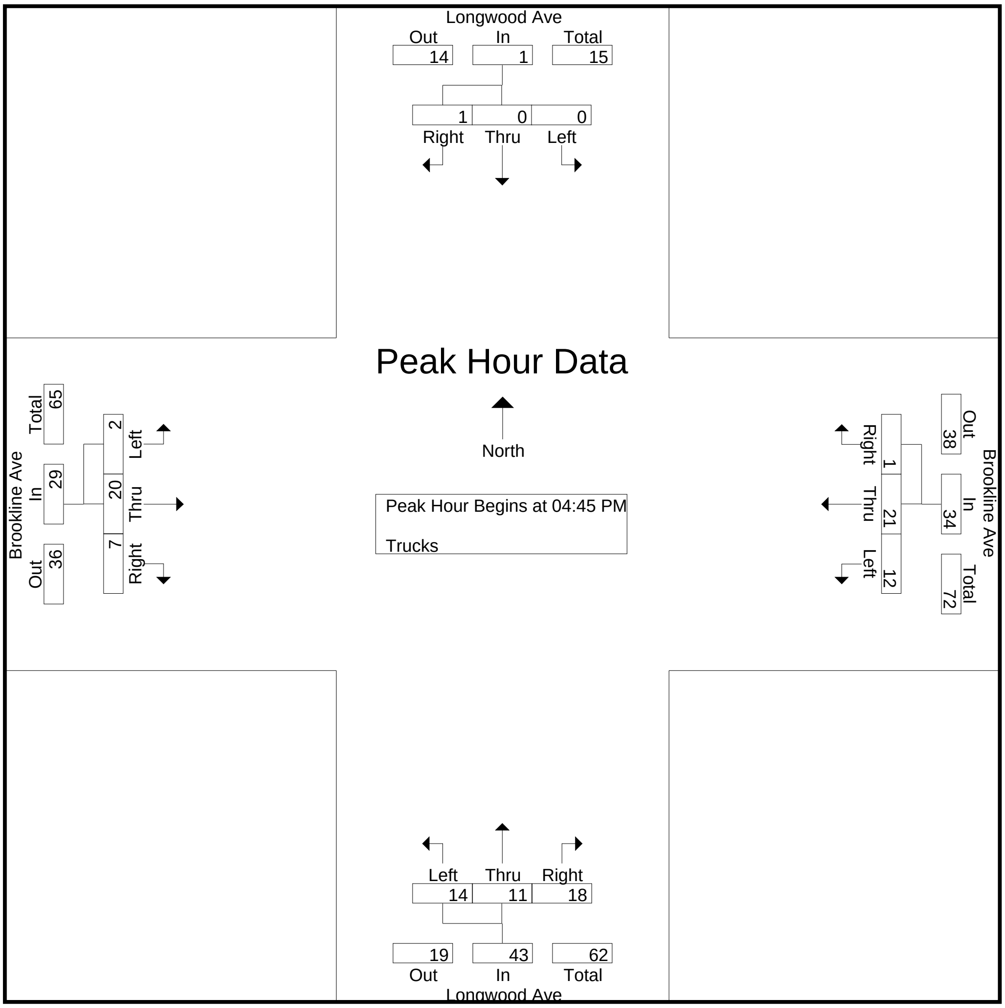
	Longwood Ave From North			Brookline Ave From East			Longwood Ave From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	1	0	2	4	0	3	1	6	1	4	2	24
04:15 PM	0	0	0	2	5	0	4	3	1	2	4	2	23
04:30 PM	0	2	0	3	5	0	3	1	2	0	5	3	24
04:45 PM	0	0	1	3	9	0	4	2	7	0	6	1	33
Total	0	3	1	10	23	0	14	7	16	3	19	8	104
05:00 PM	0	0	0	3	3	1	3	3	4	2	4	2	25
05:15 PM	0	0	0	2	5	0	2	4	5	0	4	1	23
05:30 PM	0	0	0	4	4	0	5	2	2	0	6	3	26
05:45 PM	5	1	0	1	6	0	6	2	4	0	5	1	31
Total	5	1	0	10	18	1	16	11	15	2	19	7	105
Grand Total	5	4	1	20	41	1	30	18	31	5	38	15	209
Apprch %	50	40	10	32.3	66.1	1.6	38	22.8	39.2	8.6	65.5	25.9	
Total %	2.4	1.9	0.5	9.6	19.6	0.5	14.4	8.6	14.8	2.4	18.2	7.2	

	Longwood Ave From North				Brookline Ave From East				Longwood Ave From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	**1**	**1**	3	**9**	0	**12**	4	2	**7**	**13**	0	**6**	1	7	**33**
05:00 PM	0	0	0	0	3	3	**1**	7	3	3	4	10	**2**	4	2	8	25
05:15 PM	0	0	0	0	2	5	0	7	2	**4**	5	11	0	4	1	5	23
05:30 PM	0	0	0	0	**4**	4	0	8	**5**	2	2	9	0	6	**3**	**9**	26
Total Volume	0	0	1	1	12	21	1	34	14	11	18	43	2	20	7	29	107
% App. Total	0	0	100		35.3	61.8	2.9		32.6	25.6	41.9		6.9	69	24.1		
PHF	.000	.000	.250	.250	.750	.583	.250	.708	.700	.688	.643	.827	.250	.833	.583	.806	.811

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 2



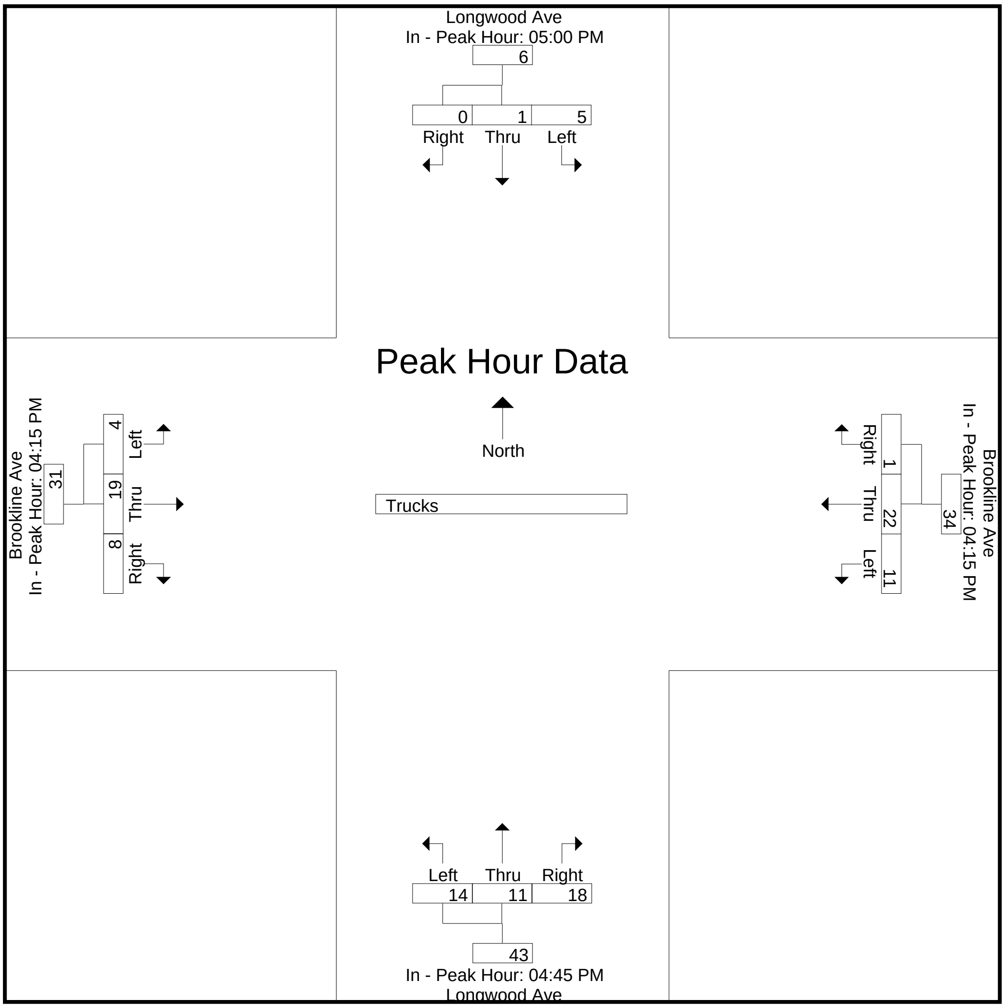
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:15 PM				04:45 PM				04:15 PM			
+0 mins.	0	0	0	0	2	5	0	7	4	2	**7**	**13**	**2**	4	2	**8**
+15 mins.	0	0	0	0	**3**	5	0	8	3	3	4	10	0	5	**3**	8
+30 mins.	0	0	0	0	3	**9**	0	**12**	2	**4**	5	11	0	**6**	1	7
+45 mins.	**5**	**1**	0	**6**	3	3	**1**	7	**5**	2	2	9	2	4	2	8
Total Volume	5	1	0	6	11	22	1	34	14	11	18	43	4	19	8	31
% App. Total	83.3	16.7	0		32.4	64.7	2.9		32.6	25.6	41.9		12.9	61.3	25.8	
PHF	.250	.250	.000	.250	.917	.611	.250	.708	.700	.688	.643	.827	.500	.792	.667	.969

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes

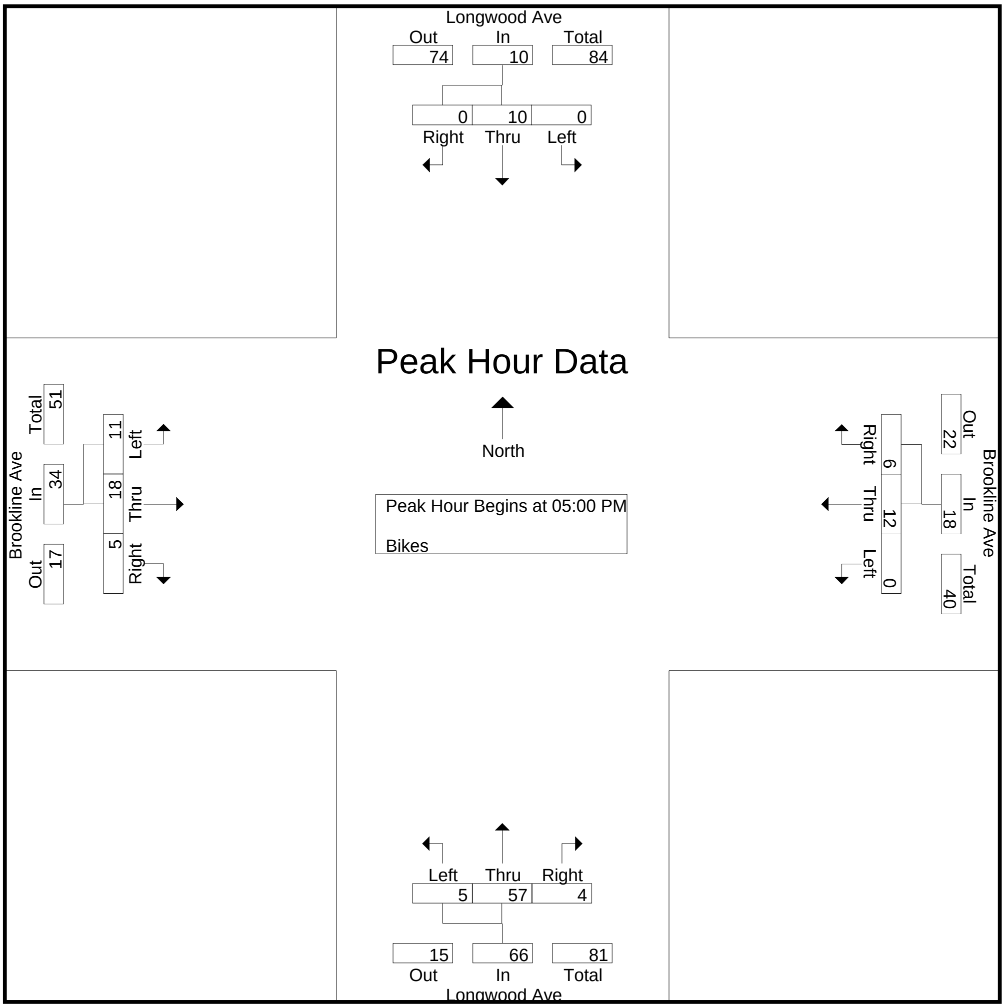
	Longwood Ave From North			Brookline Ave From East			Longwood Ave From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	3	0	0	0	2	0	4	0	0	5	1	15
04:15 PM	0	2	0	0	2	0	0	7	0	0	1	0	12
04:30 PM	0	1	1	0	3	3	0	9	0	2	3	1	23
04:45 PM	0	2	1	0	0	3	0	9	1	1	3	0	20
Total	0	8	2	0	5	8	0	29	1	3	12	2	70
05:00 PM	0	3	0	0	1	1	3	20	0	2	5	0	35
05:15 PM	0	1	0	0	1	0	0	11	1	3	3	2	22
05:30 PM	0	4	0	0	5	3	2	10	3	5	3	0	35
05:45 PM	0	2	0	0	5	2	0	16	0	1	7	3	36
Total	0	10	0	0	12	6	5	57	4	11	18	5	128
Grand Total	0	18	2	0	17	14	5	86	5	14	30	7	198
Apprch %	0	90	10	0	54.8	45.2	5.2	89.6	5.2	27.5	58.8	13.7	
Total %	0	9.1	1	0	8.6	7.1	2.5	43.4	2.5	7.1	15.2	3.5	

	Longwood Ave From North				Brookline Ave From East				Longwood Ave From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	3	0	3	0	1	1	2	**3**	**20**	0	**23**	2	5	0	7	35
05:15 PM	0	1	0	1	0	1	0	1	0	11	1	12	3	3	2	8	22
05:30 PM	0	**4**	0	**4**	0	**5**	**3**	**8**	2	10	**3**	15	**5**	3	0	8	35
05:45 PM	0	2	0	2	0	5	2	7	0	16	0	16	1	**7**	**3**	**11**	**36**
Total Volume	0	10	0	10	0	12	6	18	5	57	4	66	11	18	5	34	128
% App. Total	0	100	0		0	66.7	33.3		7.6	86.4	6.1		32.4	52.9	14.7		
PHF	.000	.625	.000	.625	.000	.600	.500	.563	.417	.713	.333	.717	.550	.643	.417	.773	.889

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 2



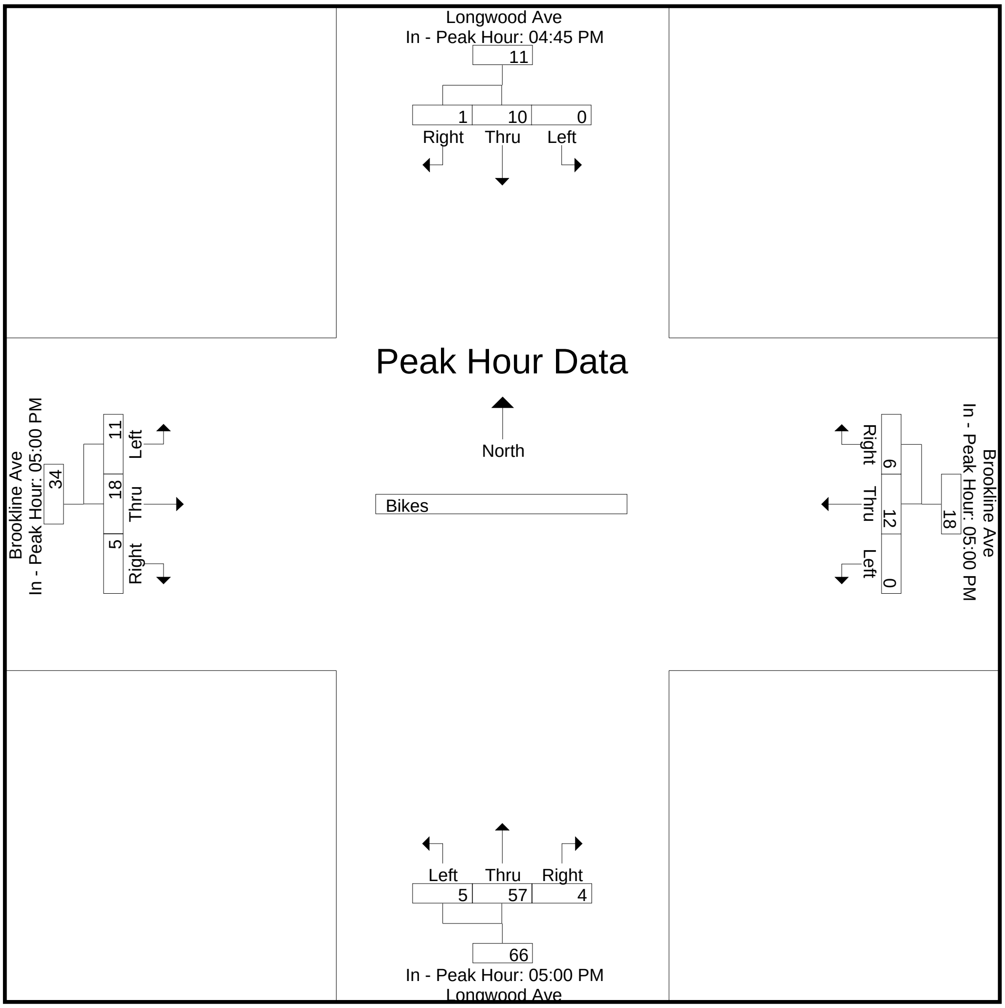
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	2	**1**	3	0	1	1	2	**3**	**20**	0	**23**	2	5	0	7
+15 mins.	0	3	0	3	0	1	0	1	0	11	1	12	3	3	2	8
+30 mins.	0	1	0	1	0	**5**	**3**	**8**	2	10	**3**	15	**5**	3	0	8
+45 mins.	0	**4**	0	**4**	0	5	2	7	0	16	0	16	1	**7**	**3**	**11**
Total Volume	0	10	1	11	0	12	6	18	5	57	4	66	11	18	5	34
% App. Total	0	90.9	9.1		0	66.7	33.3		7.6	86.4	6.1		32.4	52.9	14.7	
PHF	.000	.625	.250	.688	.000	.600	.500	.563	.417	.713	.333	.717	.550	.643	.417	.773

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 1

Groups Printed- Peds

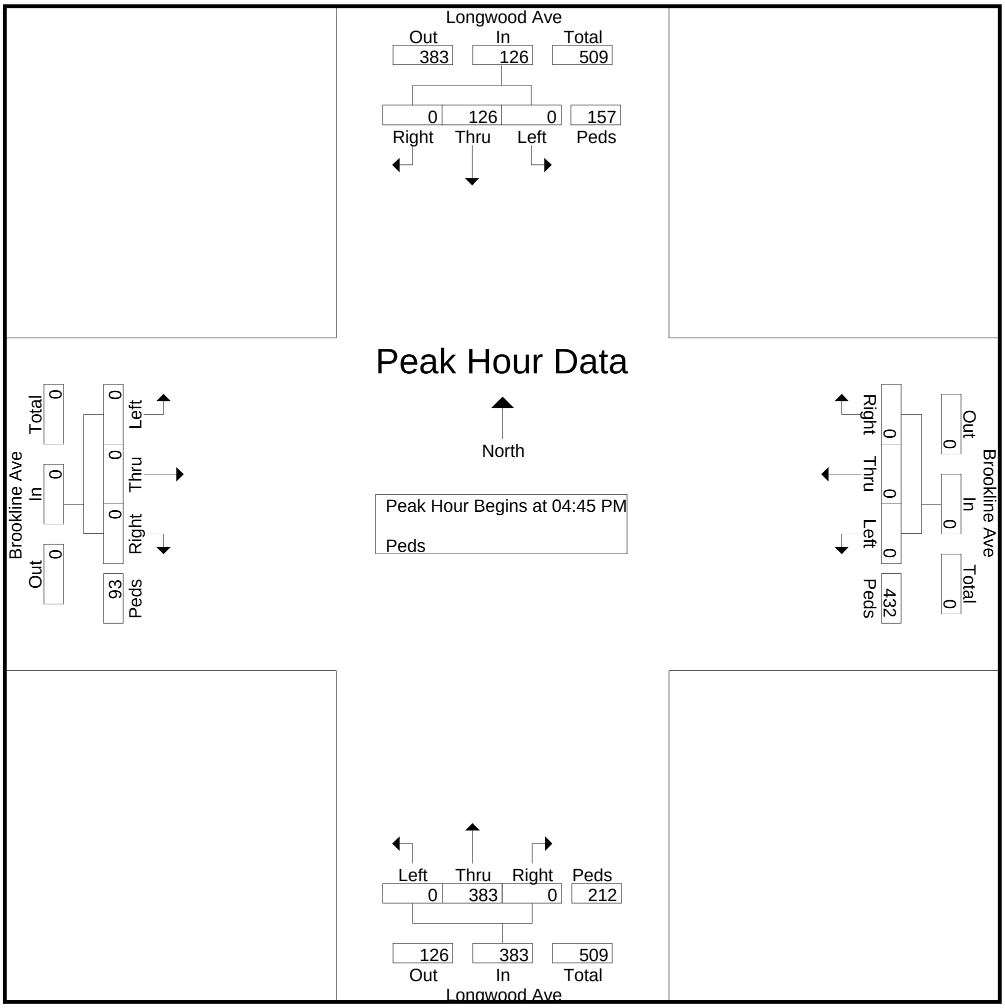
	Longwood Ave From North				**Brookline Ave From East**				**Longwood Ave From South**				**Brookline Ave From West**				
Start Time		NW / SE		Peds				Peds		NE / SW		Peds				Peds	Int. Total
04:00 PM	0	36	0	27	0	0	0	87	0	70	0	67	0	0	0	22	309
04:15 PM	0	31	0	31	0	0	0	74	0	52	0	60	0	0	0	16	264
04:30 PM	0	30	0	44	0	0	0	73	0	61	0	83	0	0	0	32	323
04:45 PM	0	36	0	38	0	0	0	98	0	55	0	45	0	0	0	24	296
Total	0	133	0	140	0	0	0	332	0	238	0	255	0	0	0	94	1192
05:00 PM	0	33	0	47	0	0	0	130	0	127	0	43	0	0	0	34	414
05:15 PM	0	22	0	52	0	0	0	104	0	98	0	57	0	0	0	16	349
05:30 PM	0	35	0	20	0	0	0	100	0	103	0	67	0	0	0	19	344
05:45 PM	0	19	0	30	0	0	0	76	0	64	0	45	0	0	0	19	253
Total	0	109	0	149	0	0	0	410	0	392	0	212	0	0	0	88	1360
Grand Total	0	242	0	289	0	0	0	742	0	630	0	467	0	0	0	182	2552
Apprch %	0	45.6	0	54.4	0	0	0	100	0	57.4	0	42.6	0	0	0	100	
Total %	0	9.5	0	11.3	0	0	0	29.1	0	24.7	0	18.3	0	0	0	7.1	

	Longwood Ave From North					**Brookline Ave From East**					**Longwood Ave From South**					**Brookline Ave From West**					
Start Time		NW / SE		Peds	App. Total				Peds	App. Total		NE / SW		Peds	App. Total				Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	**36**	0	38	74	0	0	0	98	98	0	55	0	45	100	0	0	0	24	24	296
05:00 PM	0	33	0	47	**80**	0	0	0	**130**	**130**	0	**127**	0	43	**170**	0	0	0	**34**	**34**	**414**
05:15 PM	0	22	0	**52**	74	0	0	0	104	104	0	98	0	57	155	0	0	0	16	16	349
05:30 PM	0	35	0	20	55	0	0	0	100	100	0	103	0	**67**	170	0	0	0	19	19	344
Total Volume	0	126	0	157	283	0	0	0	432	432	0	383	0	212	595	0	0	0	93	93	1403
% App. Total	0	44.5	0	55.5		0	0	0	100		0	64.4	0	35.6		0	0	0	100		
PHF	.000	.875	.000	.755	.884	.000	.000	.000	.831	.831	.000	.754	.000	.791	.875	.000	.000	.000	.684	.684	.847

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012



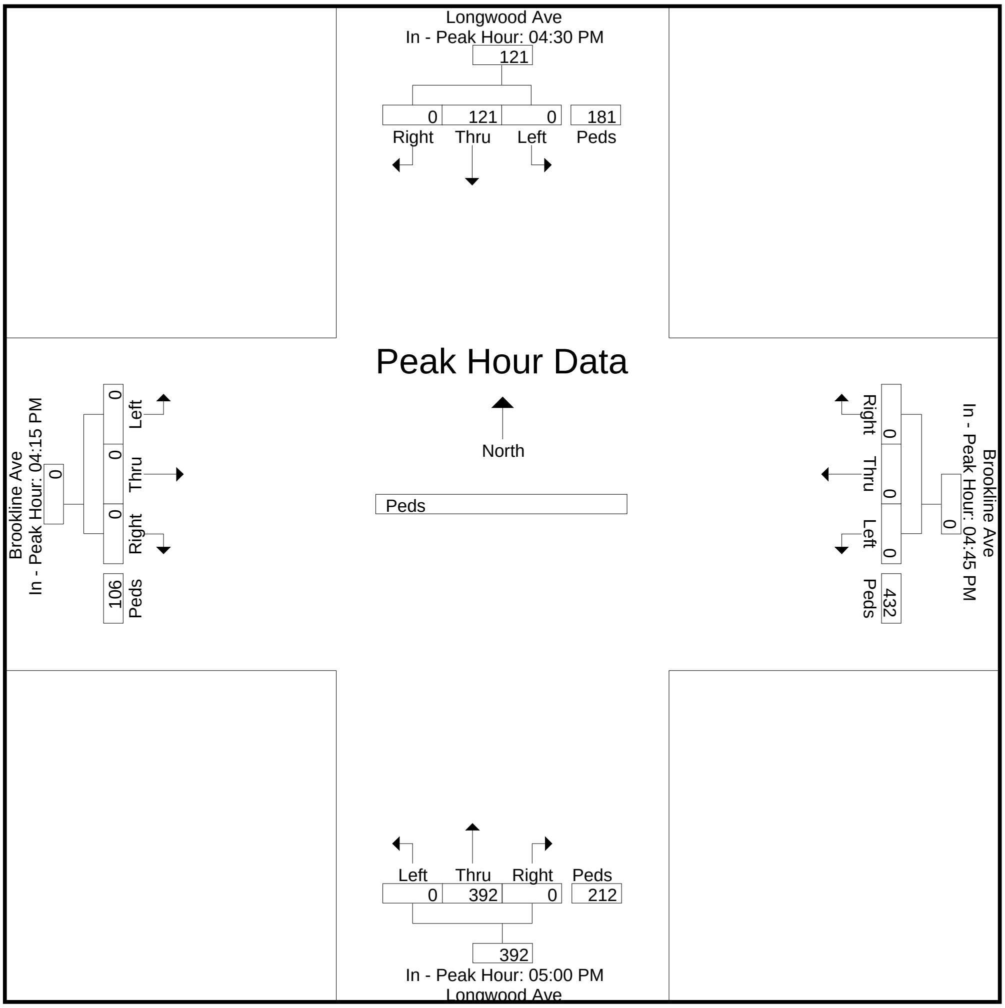
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM					04:45 PM					05:00 PM					04:15 PM				
+0 mins.	0	30	0	44	74	0	0	0	98	98	0	**127**	0	43	**170**	0	0	0	16	16
+15 mins.	0	**36**	0	38	74	0	0	0	**130**	**130**	0	98	0	57	155	0	0	0	32	32
+30 mins.	0	33	0	47	**80**	0	0	0	104	104	0	103	0	**67**	170	0	0	0	24	24
+45 mins.	0	22	0	**52**	74	0	0	0	100	100	0	64	0	45	109	0	0	0	**34**	**34**
Total Volume	0	121	0	181	302	0	0	0	432	432	0	392	0	212	604	0	0	0	106	106
% App. Total	0	40.1	0	59.9		0	0	0	100		0	64.9	0	35.1		0	0	0	100	
PHF	.000	.840	.000	.870	.944	.000	.000	.000	.831	.831	.000	.772	.000	.791	.888	.000	.000	.000	.779	.779

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

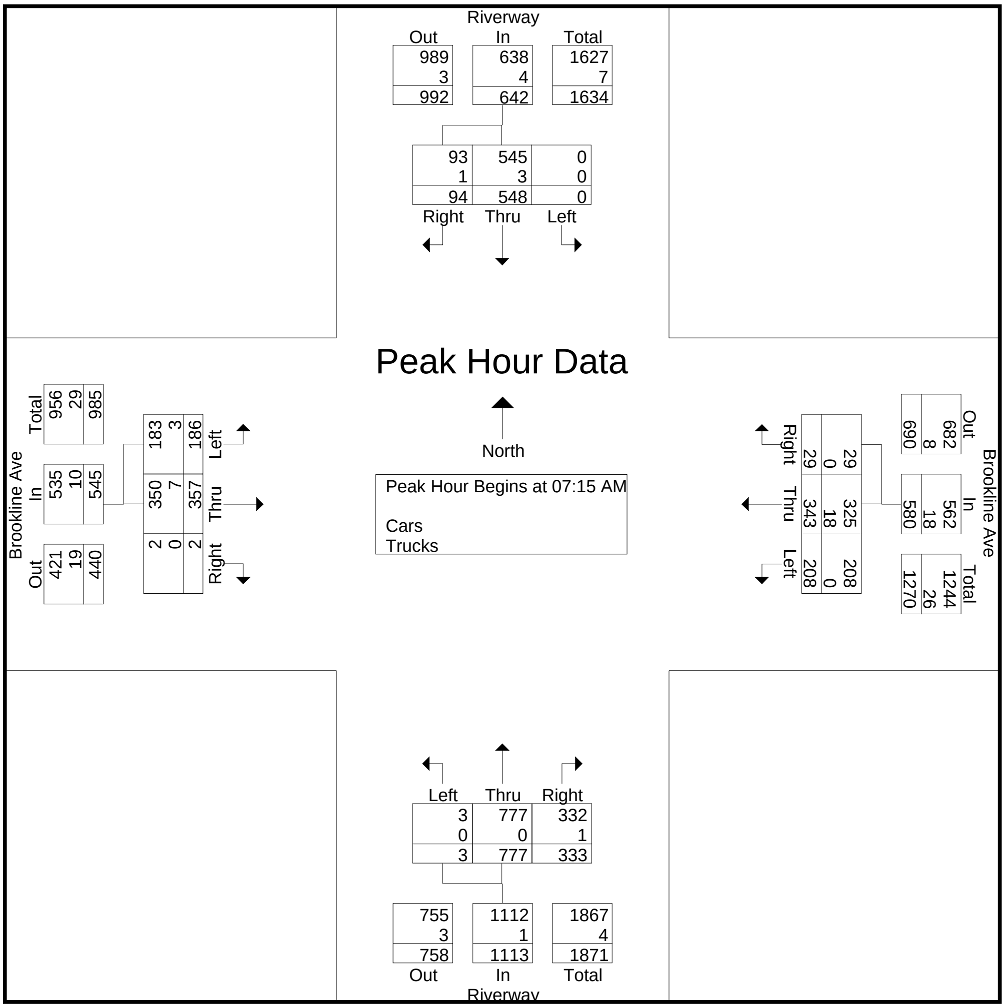
	Riverway From North			Brookline Ave From East			Riverway From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	130	20	56	62	3	1	240	88	53	108	0	761
07:15 AM	0	124	19	52	78	3	2	187	62	46	69	1	643
07:30 AM	0	152	27	60	85	3	0	180	84	46	96	0	733
07:45 AM	0	126	30	50	95	18	0	190	85	48	98	0	740
Total	0	532	96	218	320	27	3	797	319	193	371	1	2877
08:00 AM	0	146	18	46	85	5	1	220	102	46	94	1	764
08:15 AM	0	123	21	30	65	5	2	170	54	51	106	0	627
08:30 AM	0	114	16	31	83	5	2	135	34	41	66	1	528
08:45 AM	0	96	19	40	70	5	3	143	70	33	86	0	565
Total	0	479	74	147	303	20	8	668	260	171	352	2	2484
Grand Total	0	1011	170	365	623	47	11	1465	579	364	723	3	5361
Apprch %	0	85.6	14.4	35.3	60.2	4.5	0.5	71.3	28.2	33.4	66.3	0.3	
Total %	0	18.9	3.2	6.8	11.6	0.9	0.2	27.3	10.8	6.8	13.5	0.1	
Cars	0	1008	169	365	589	47	11	1464	578	360	704	3	5298
% Cars	0	99.7	99.4	100	94.5	100	100	99.9	99.8	98.9	97.4	100	98.8
Trucks	0	3	1	0	34	0	0	1	1	4	19	0	63
% Trucks	0	0.3	0.6	0	5.5	0	0	0.1	0.2	1.1	2.6	0	1.2

	Riverway From North				Brookline Ave From East				Riverway From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	124	19	143	52	78	3	133	**2**	187	62	251	46	69	**1**	116	643
07:30 AM	0	**152**	27	**179**	**60**	85	3	148	0	180	84	264	46	96	0	142	733
07:45 AM	0	126	**30**	156	50	**95**	**18**	**163**	0	190	85	275	**48**	**98**	0	**146**	740
08:00 AM	0	146	18	164	46	85	5	136	1	**220**	**102**	**323**	46	94	1	141	**764**
Total Volume	0	548	94	642	208	343	29	580	3	777	333	1113	186	357	2	545	2880
% App. Total	0	85.4	14.6		35.9	59.1	5		0.3	69.8	29.9		34.1	65.5	0.4		
PHF	.000	.901	.783	.897	.867	.903	.403	.890	.375	.883	.816	.861	.969	.911	.500	.933	.942
Cars	0	545	93	638	208	325	29	562	3	777	332	1112	183	350	2	535	2847
% Cars	0	99.5	98.9	99.4	100	94.8	100	96.9	100	100	99.7	99.9	98.4	98.0	100	98.2	98.9
Trucks	0	3	1	4	0	18	0	18	0	0	1	1	3	7	0	10	33
% Trucks	0	0.5	1.1	0.6	0	5.2	0	3.1	0	0	0.3	0.1	1.6	2.0	0	1.8	1.1

Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 2



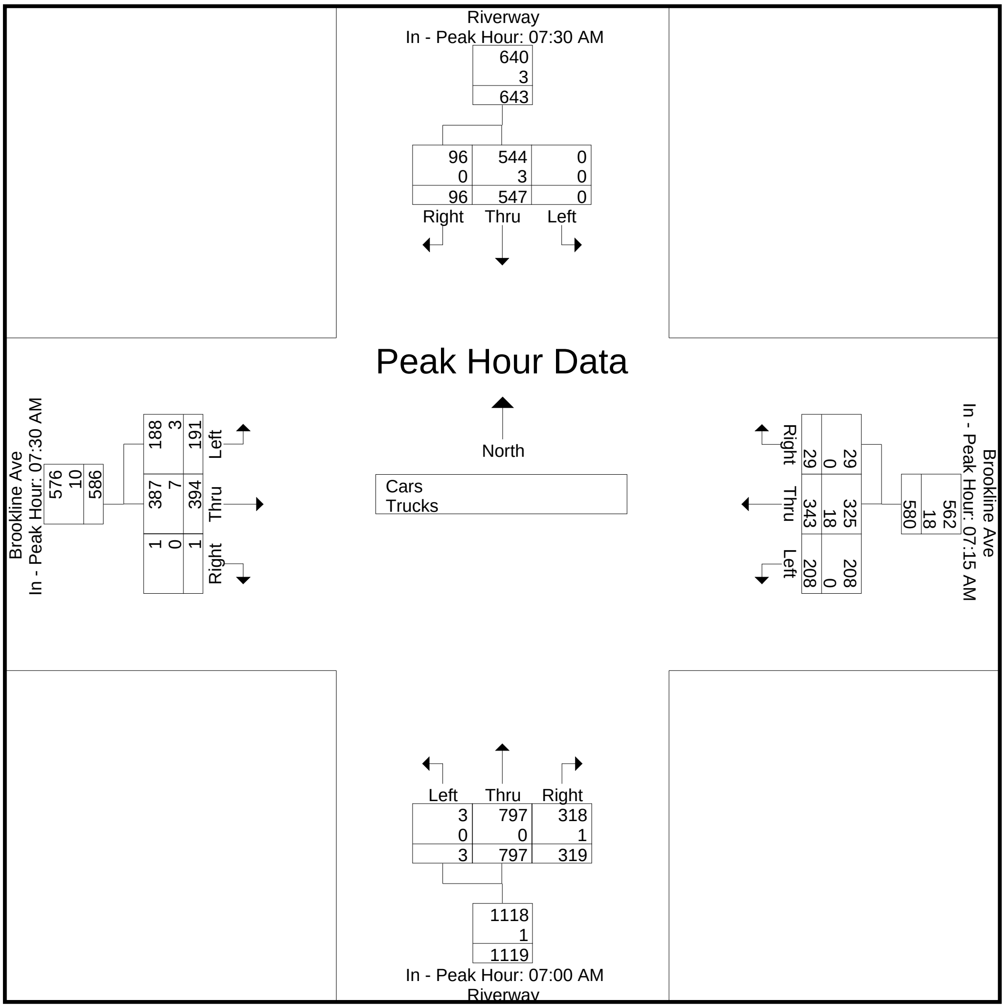
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:15 AM				07:00 AM				07:30 AM			
+0 mins.	0	**152**	27	**179**	52	78	3	133	1	**240**	**88**	**329**	46	96	0	142
+15 mins.	0	126	**30**	156	**60**	85	3	148	**2**	187	62	251	48	98	0	146
+30 mins.	0	146	18	164	50	**95**	**18**	**163**	0	180	84	264	46	94	**1**	141
+45 mins.	0	123	21	144	46	85	5	136	0	190	85	275	**51**	**106**	0	**157**
Total Volume	0	547	96	643	208	343	29	580	3	797	319	1119	191	394	1	586
% App. Total	0	85.1	14.9		35.9	59.1	5		0.3	71.2	28.5		32.6	67.2	0.2	
PHF	.000	.900	.800	.898	.867	.903	.403	.890	.375	.830	.906	.850	.936	.929	.250	.933
Cars	0	544	96	640	208	325	29	562	3	797	318	1118	188	387	1	576
% Cars	0	99.5	100	99.5	100	94.8	100	96.9	100	100	99.7	99.9	98.4	98.2	100	98.3
Trucks	0	3	0	3	0	18	0	18	0	0	1	1	3	7	0	10
% Trucks	0	0.5	0	0.5	0	5.2	0	3.1	0	0	0.3	0.1	1.6	1.8	0	1.7

Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

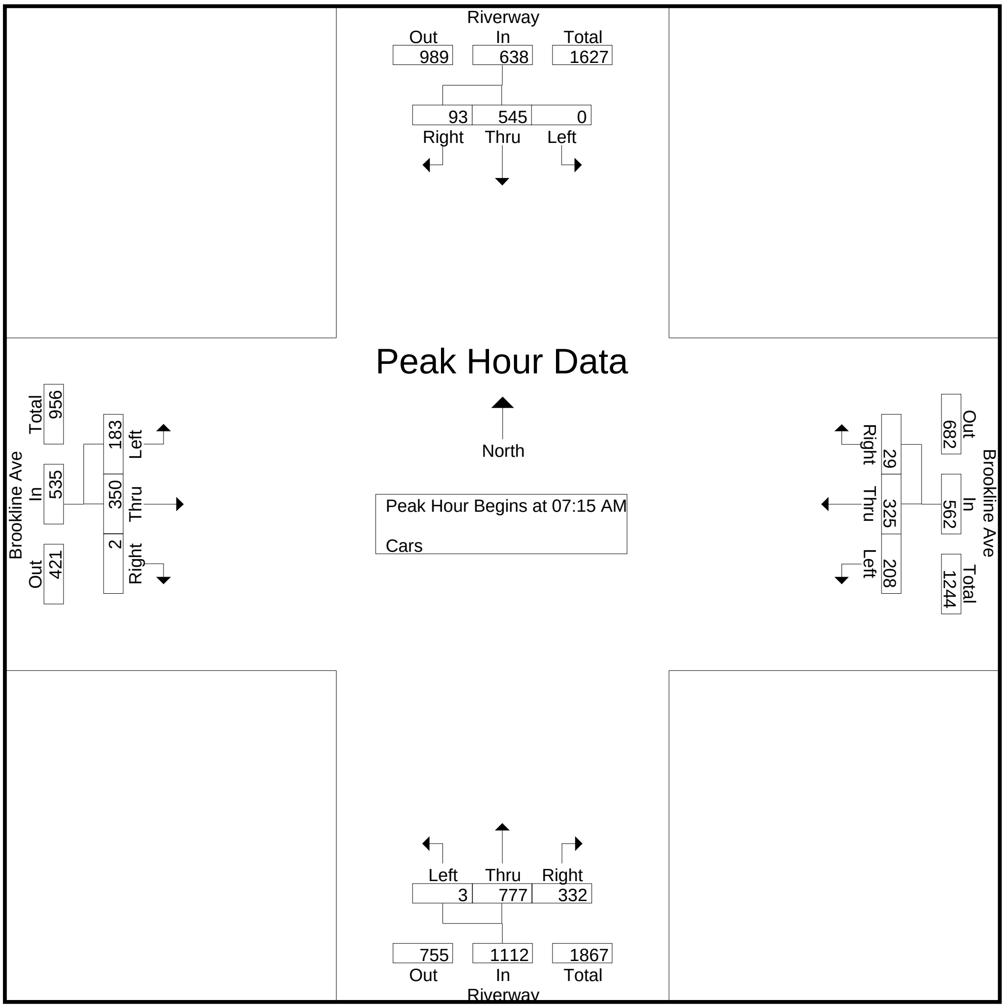
	Riverway From North			**Brookline Ave From East**			**Riverway From South**			**Brookline Ave From West**			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	130	20	56	56	3	1	240	88	53	104	0	751
07:15 AM	0	124	18	52	71	3	2	187	62	45	67	1	632
07:30 AM	0	151	27	60	82	3	0	180	83	44	95	0	725
07:45 AM	0	124	30	50	91	18	0	190	85	48	96	0	732
Total	0	529	95	218	300	27	3	797	318	190	362	1	2840
08:00 AM	0	146	18	46	81	5	1	220	102	46	92	1	758
08:15 AM	0	123	21	30	63	5	2	170	54	50	104	0	622
08:30 AM	0	114	16	31	78	5	2	134	34	41	63	1	519
08:45 AM	0	96	19	40	67	5	3	143	70	33	83	0	559
Total	0	479	74	147	289	20	8	667	260	170	342	2	2458
Grand Total	0	1008	169	365	589	47	11	1464	578	360	704	3	5298
Apprch %	0	85.6	14.4	36.5	58.8	4.7	0.5	71.3	28.2	33.7	66	0.3	
Total %	0	19	3.2	6.9	11.1	0.9	0.2	27.6	10.9	6.8	13.3	0.1	

	Riverway From North				**Brookline Ave From East**				**Riverway From South**				**Brookline Ave From West**				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	124	18	142	52	71	3	126	**2**	187	62	251	45	67	**1**	113	632
07:30 AM	0	**151**	27	**178**	**60**	82	3	145	0	180	83	263	44	95	0	139	725
07:45 AM	0	124	**30**	154	50	**91**	**18**	**159**	0	190	85	275	**48**	**96**	0	**144**	732
08:00 AM	0	146	18	164	46	81	5	132	1	**220**	**102**	**323**	46	92	1	139	**758**
Total Volume	0	545	93	638	208	325	29	562	3	777	332	1112	183	350	2	535	2847
% App. Total	0	85.4	14.6		37	57.8	5.2		0.3	69.9	29.9		34.2	65.4	0.4		
PHF	.000	.902	.775	.896	.867	.893	.403	.884	.375	.883	.814	.861	.953	.911	.500	.929	.939

Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 2



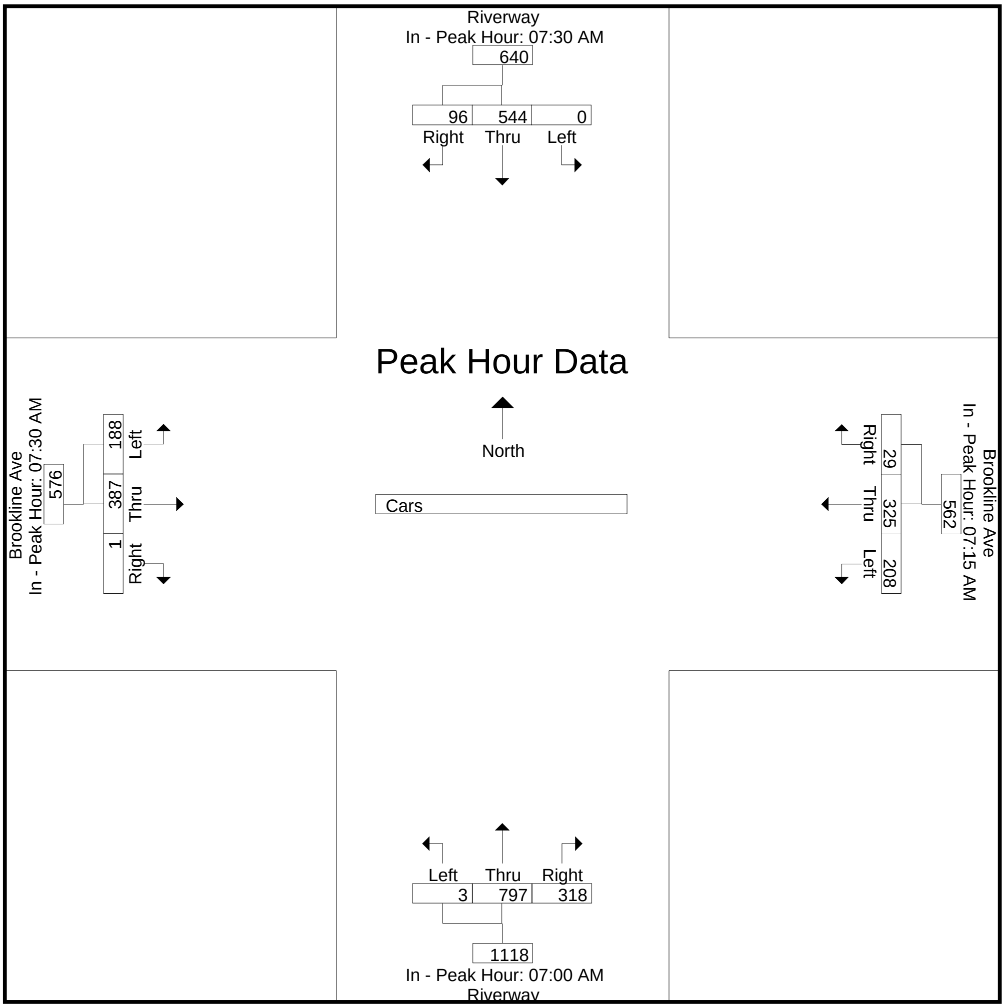
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:15 AM				07:00 AM				07:30 AM			
+0 mins.	0	**151**	27	**178**	52	71	3	126	1	**240**	**88**	**329**	44	95	0	139
+15 mins.	0	124	**30**	154	**60**	82	3	145	**2**	187	62	251	48	96	0	144
+30 mins.	0	146	18	164	50	**91**	**18**	**159**	0	180	83	263	46	92	**1**	139
+45 mins.	0	123	21	144	46	81	5	132	0	190	85	275	**50**	**104**	0	**154**
Total Volume	0	544	96	640	208	325	29	562	3	797	318	1118	188	387	1	576
% App. Total	0	85	15		37	57.8	5.2		0.3	71.3	28.4		32.6	67.2	0.2	
PHF	.000	.901	.800	.899	.867	.893	.403	.884	.375	.830	.903	.850	.940	.930	.250	.935

Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

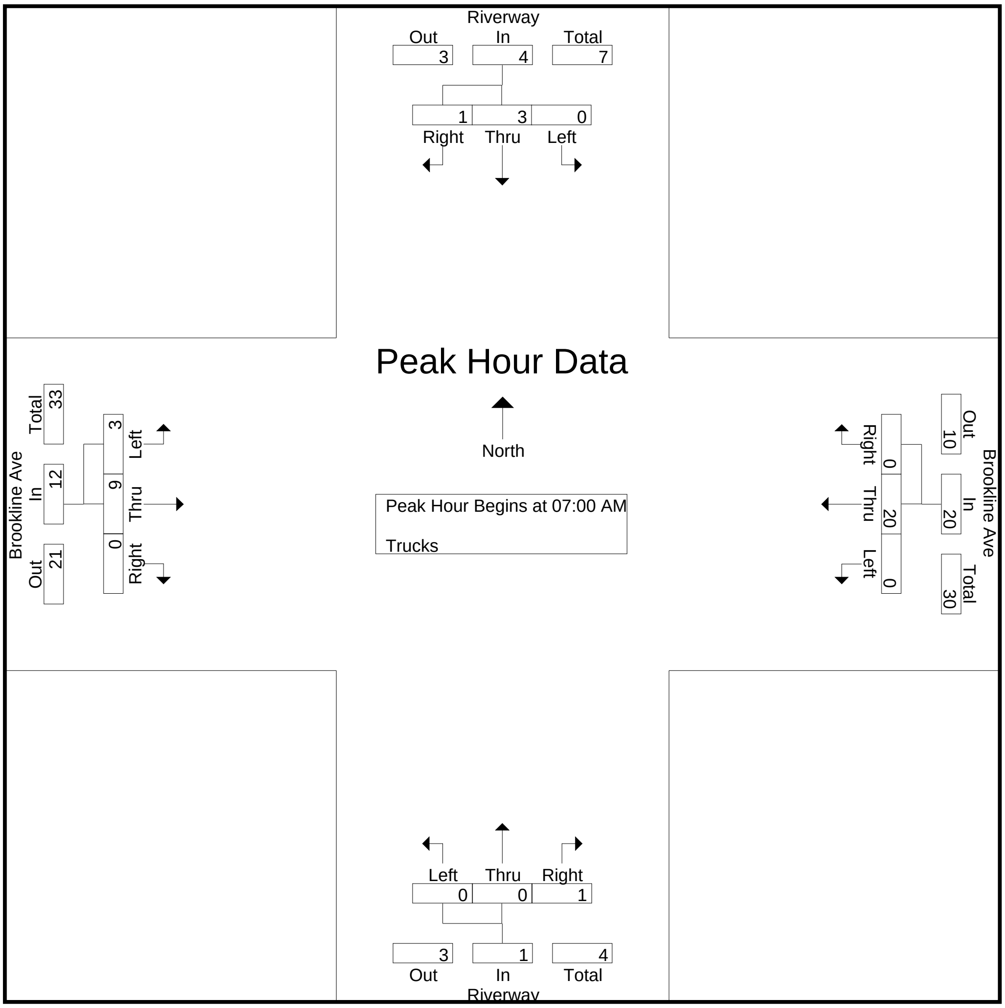
	Riverway From North			Brookline Ave From East			Riverway From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	0	6	0	0	0	0	0	4	0	10
07:15 AM	0	0	1	0	7	0	0	0	0	1	2	0	11
07:30 AM	0	1	0	0	3	0	0	0	1	2	1	0	8
07:45 AM	0	2	0	0	4	0	0	0	0	0	2	0	8
Total	0	3	1	0	20	0	0	0	1	3	9	0	37
08:00 AM	0	0	0	0	4	0	0	0	0	0	2	0	6
08:15 AM	0	0	0	0	2	0	0	0	0	1	2	0	5
08:30 AM	0	0	0	0	5	0	0	1	0	0	3	0	9
08:45 AM	0	0	0	0	3	0	0	0	0	0	3	0	6
Total	0	0	0	0	14	0	0	1	0	1	10	0	26
Grand Total	0	3	1	0	34	0	0	1	1	4	19	0	63
Apprch %	0	75	25	0	100	0	0	50	50	17.4	82.6	0	
Total %	0	4.8	1.6	0	54	0	0	1.6	1.6	6.3	30.2	0	

	Riverway From North				Brookline Ave From East				Riverway From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	6	0	6	0	0	0	0	0	**4**	0	**4**	10
07:15 AM	0	0	**1**	1	0	**7**	0	**7**	0	0	0	0	1	2	0	3	**11**
07:30 AM	0	1	0	1	0	3	0	3	0	0	**1**	**1**	**2**	1	0	3	8
07:45 AM	0	**2**	0	**2**	0	4	0	4	0	0	0	0	0	2	0	2	8
Total Volume	0	3	1	4	0	20	0	20	0	0	1	1	3	9	0	12	37
% App. Total	0	75	25		0	100	0		0	0	100		25	75	0		
PHF	.000	.375	.250	.500	.000	.714	.000	.714	.000	.000	.250	.250	.375	.563	.000	.750	.841

Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 2



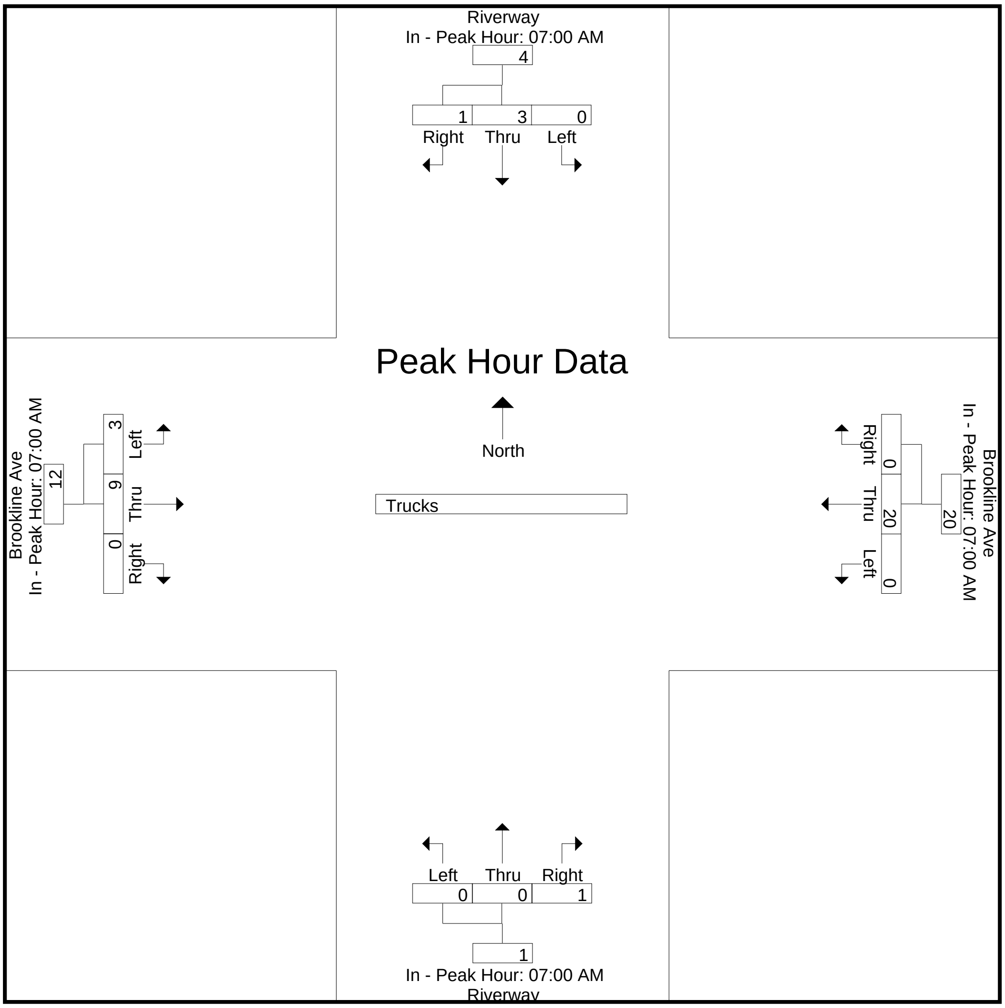
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	6	0	6	0	0	0	0	0	**4**	0	**4**
+15 mins.	0	0	**1**	1	0	**7**	0	**7**	0	0	0	0	1	2	0	3
+30 mins.	0	1	0	1	0	3	0	3	0	0	**1**	**1**	**2**	1	0	3
+45 mins.	0	**2**	0	**2**	0	4	0	4	0	0	0	0	0	2	0	2
Total Volume	0	3	1	4	0	20	0	20	0	0	1	1	3	9	0	12
% App. Total	0	75	25		0	100	0		0	0	100		25	75	0	
PHF	.000	.375	.250	.500	.000	.714	.000	.714	.000	.000	.250	.250	.375	.563	.000	.750

Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

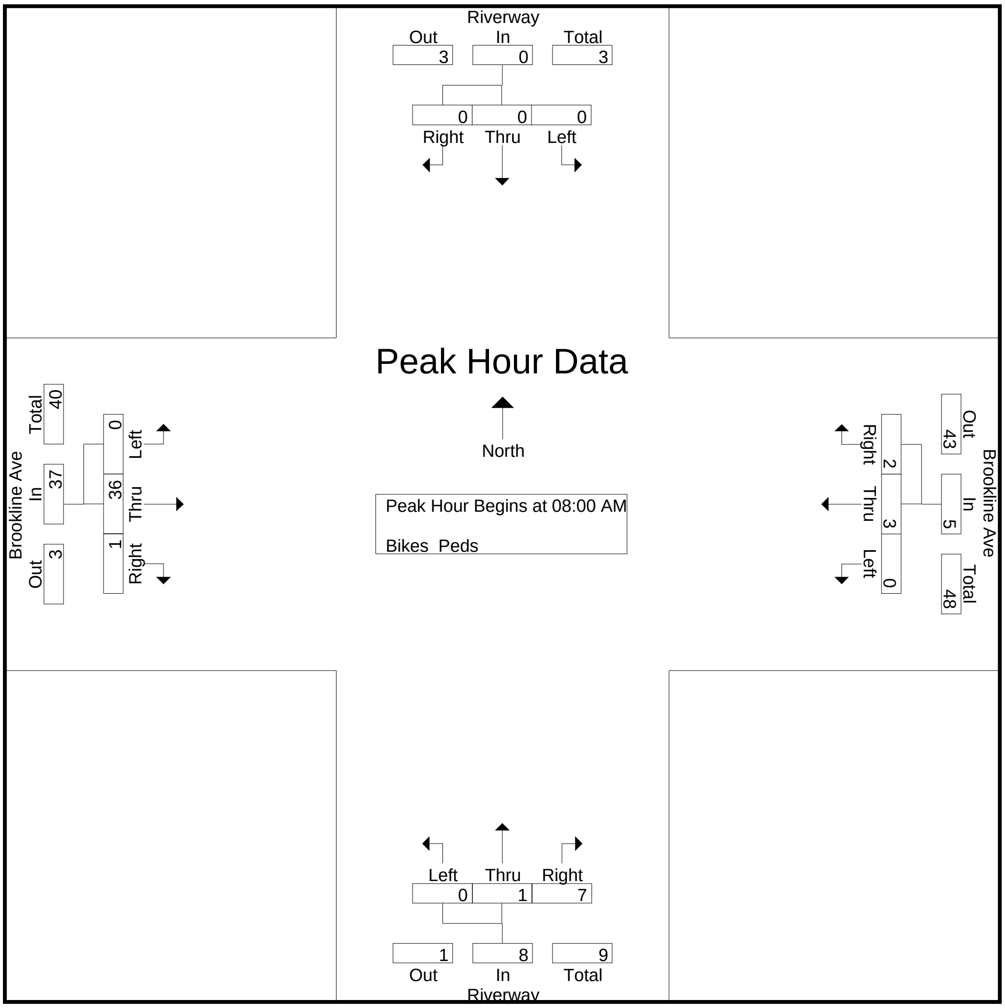
	Riverway From North				**Brookline Ave From East**				**Riverway From South**				**Brookline Ave From West**						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	15	0	1	0	3	0	1	0	10	0	5	0	2	30	7	37
07:15 AM	0	0	0	10	0	0	0	5	0	0	0	17	0	5	0	3	35	5	40
07:30 AM	0	0	1	18	0	0	0	11	0	0	0	13	0	4	0	8	50	5	55
07:45 AM	0	1	0	22	0	0	0	7	0	0	1	32	0	9	0	7	68	11	79
Total	0	1	1	65	0	1	0	26	0	1	1	72	0	23	0	20	183	28	211
08:00 AM	0	0	0	20	0	0	0	11	0	0	2	20	0	8	0	11	62	10	72
08:15 AM	0	0	0	10	0	1	0	5	0	0	2	25	0	9	0	17	57	12	69
08:30 AM	0	0	0	26	0	1	0	5	0	0	1	29	0	9	0	13	73	11	84
08:45 AM	0	0	0	39	0	1	2	24	0	1	2	56	0	10	1	7	126	17	143
Total	0	0	0	95	0	3	2	45	0	1	7	130	0	36	1	48	318	50	368
Grand Total	0	1	1	160	0	4	2	71	0	2	8	202	0	59	1	68	501	78	579
Apprch %	0	50	50		0	66.7	33.3		0	20	80		0	98.3	1.7				
Total %	0	1.3	1.3		0	5.1	2.6		0	2.6	10.3		0	75.6	1.3		86.5	13.5	

	Riverway From North				**Brookline Ave From East**				**Riverway From South**				**Brookline Ave From West**				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	0	0	0	0	0	0	0	0	**2**	2	0	8	0	8	10
08:15 AM	0	0	0	0	0	**1**	0	1	0	0	2	2	0	9	0	9	12
08:30 AM	0	0	0	0	0	1	0	1	0	0	1	1	0	9	0	9	11
08:45 AM	0	0	0	0	0	1	**2**	**3**	0	**1**	2	**3**	0	**10**	**1**	**11**	**17**
Total Volume	0	0	0	0	0	3	2	5	0	1	7	8	0	36	1	37	50
% App. Total	0	0	0		0	60	40		0	12.5	87.5		0	97.3	2.7		
PHF	.000	.000	.000	.000	.000	.750	.250	.417	.000	.250	.875	.667	.000	.900	.250	.841	.735

Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				08:00 AM				08:00 AM				08:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	**2**	2	0	8	0	8
+15 mins.	0	0	0	0	0	**1**	0	1	0	0	2	2	0	9	0	9
+30 mins.	0	0	**1**	**1**	0	1	0	1	0	0	1	1	0	9	0	9
+45 mins.	0	**1**	0	1	0	1	**2**	**3**	0	**1**	2	**3**	0	**10**	**1**	**11**
Total Volume	0	1	1	2	0	3	2	5	0	1	7	8	0	36	1	37
% App. Total	0	50	50		0	60	40		0	12.5	87.5		0	97.3	2.7	
PHF	.000	.250	.250	.500	.000	.750	.250	.417	.000	.250	.875	.667	.000	.900	.250	.841

Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
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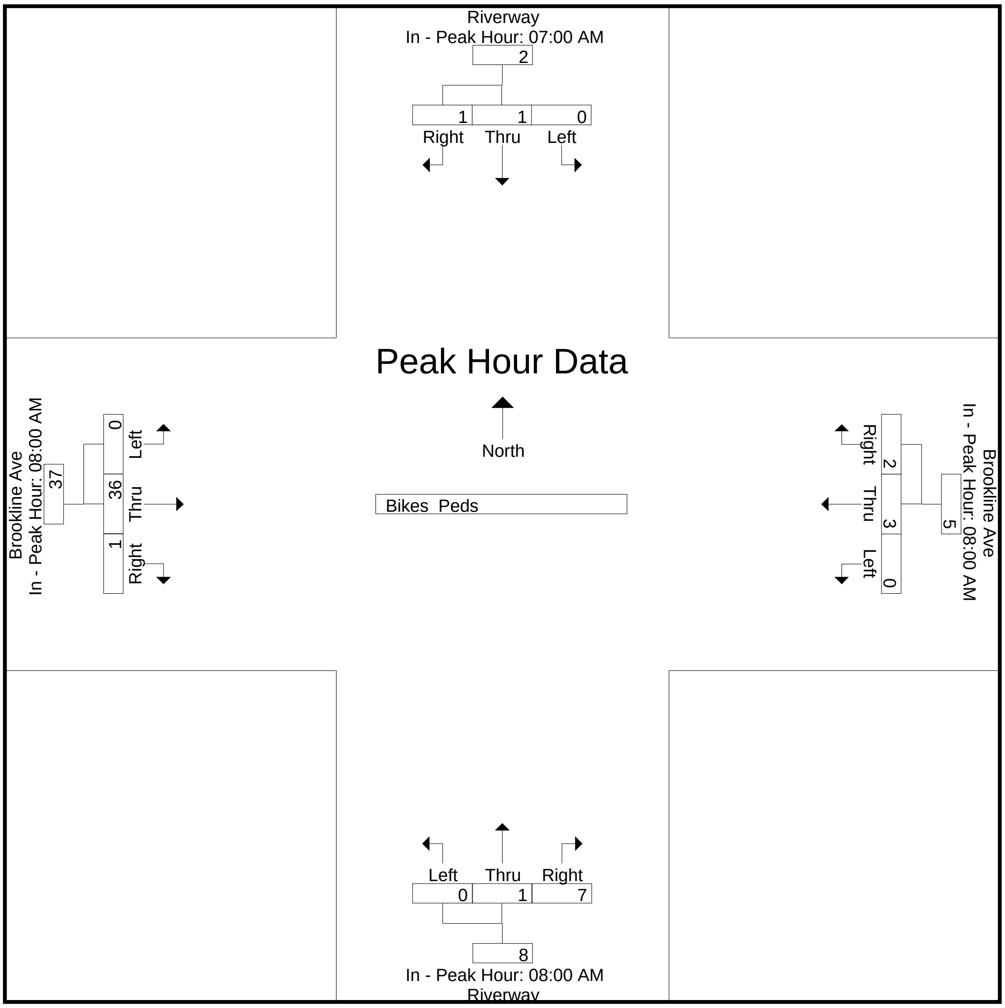


Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

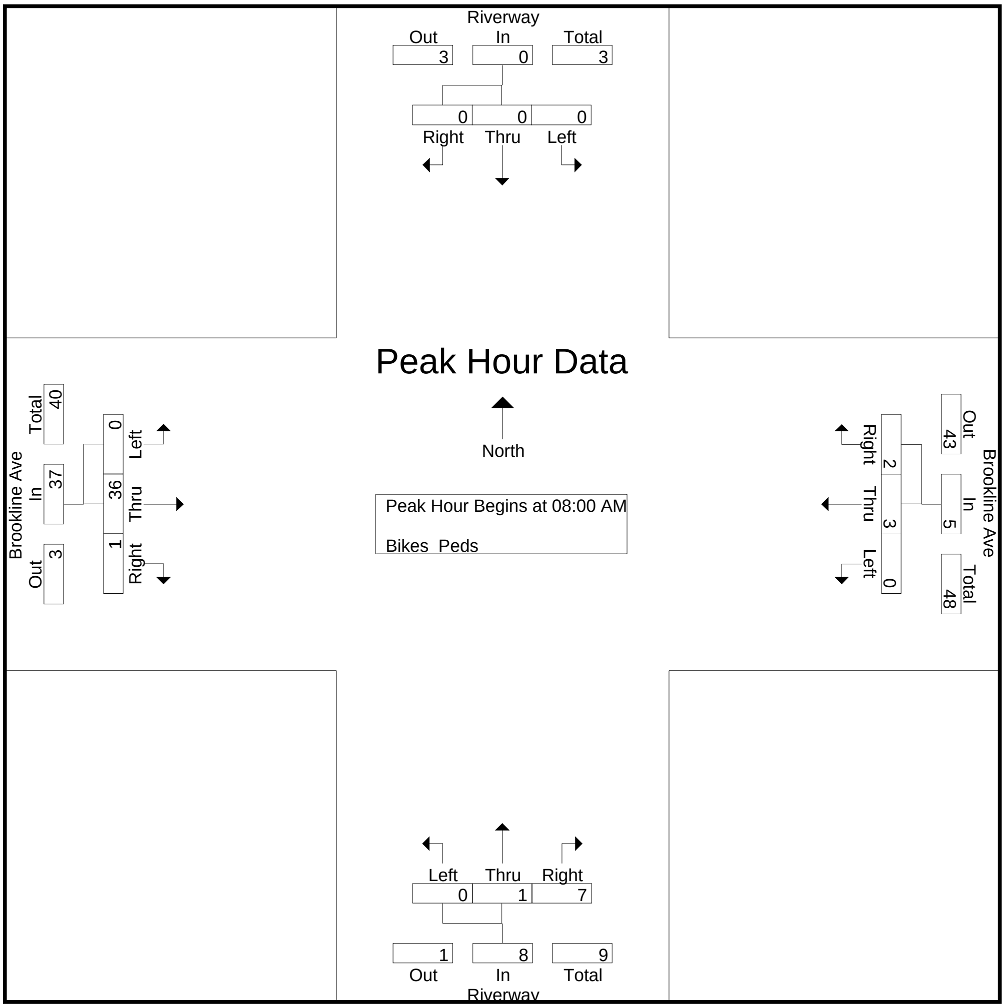
	Riverway From North				Brookline Ave From East				Riverway From South				Brookline Ave From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	15	0	1	0	3	0	1	0	10	0	5	0	2	30	7	37
07:15 AM	0	0	0	10	0	0	0	5	0	0	0	17	0	5	0	3	35	5	40
07:30 AM	0	0	1	18	0	0	0	11	0	0	0	13	0	4	0	8	50	5	55
07:45 AM	0	1	0	22	0	0	0	7	0	0	1	32	0	9	0	7	68	11	79
Total	0	1	1	65	0	1	0	26	0	1	1	72	0	23	0	20	183	28	211
08:00 AM	0	0	0	20	0	0	0	11	0	0	2	20	0	8	0	11	62	10	72
08:15 AM	0	0	0	10	0	1	0	5	0	0	2	25	0	9	0	17	57	12	69
08:30 AM	0	0	0	26	0	1	0	5	0	0	1	29	0	9	0	13	73	11	84
08:45 AM	0	0	0	39	0	1	2	24	0	1	2	56	0	10	1	7	126	17	143
Total	0	0	0	95	0	3	2	45	0	1	7	130	0	36	1	48	318	50	368
Grand Total	0	1	1	160	0	4	2	71	0	2	8	202	0	59	1	68	501	78	579
Apprch %	0	50	50		0	66.7	33.3		0	20	80		0	98.3	1.7				
Total %	0	1.3	1.3		0	5.1	2.6		0	2.6	10.3		0	75.6	1.3		86.5	13.5	

	Riverway From North				Brookline Ave From East				Riverway From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	0	0	0	0	0	0	0	0	**2**	2	0	8	0	8	10
08:15 AM	0	0	0	0	0	**1**	0	1	0	0	2	2	0	9	0	9	12
08:30 AM	0	0	0	0	0	1	0	1	0	0	1	1	0	9	0	9	11
08:45 AM	0	0	0	0	0	1	**2**	**3**	0	**1**	2	**3**	0	**10**	**1**	**11**	**17**
Total Volume	0	0	0	0	0	3	2	5	0	1	7	8	0	36	1	37	50
% App. Total	0	0	0		0	60	40		0	12.5	87.5		0	97.3	2.7		
PHF	.000	.000	.000	.000	.000	.750	.250	.417	.000	.250	.875	.667	.000	.900	.250	.841	.735

Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 2



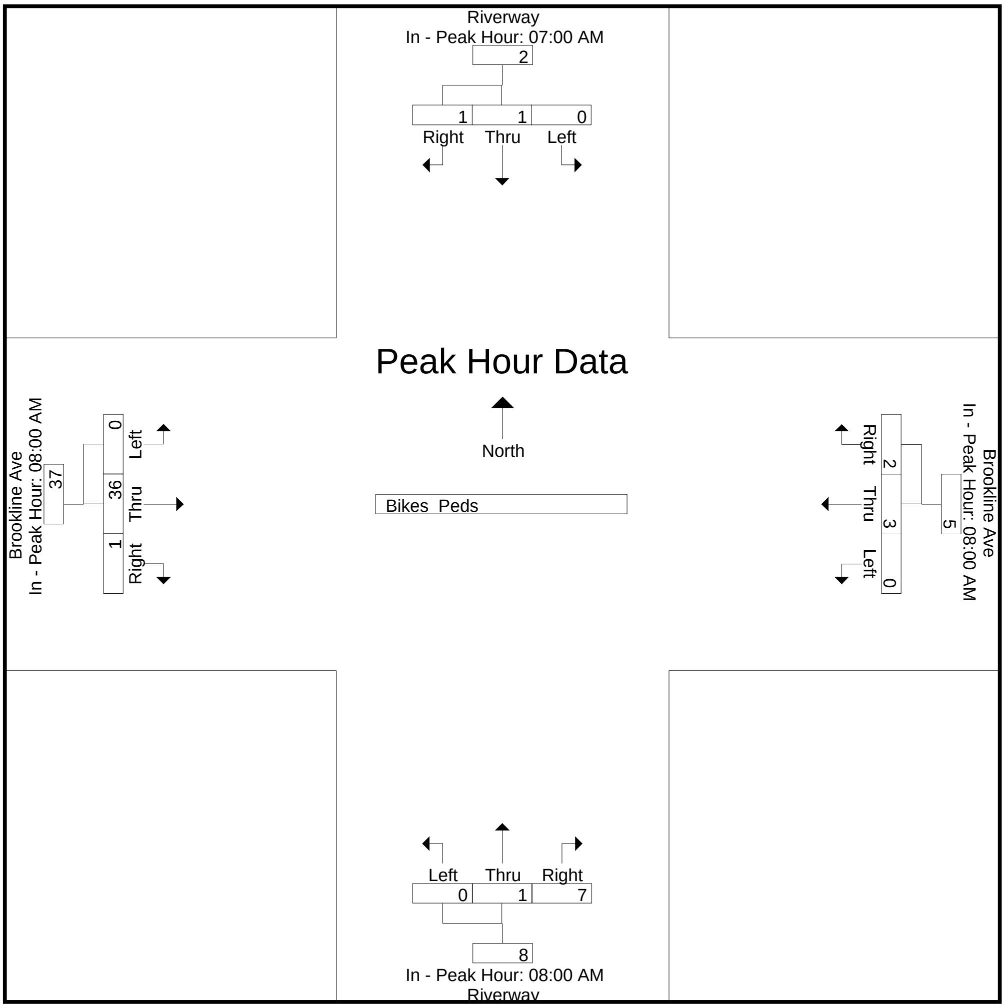
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				08:00 AM				08:00 AM				08:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	**2**	2	0	8	0	8
+15 mins.	0	0	0	0	0	**1**	0	1	0	0	2	2	0	9	0	9
+30 mins.	0	0	**1**	**1**	0	1	0	1	0	0	1	1	0	9	0	9
+45 mins.	0	**1**	0	1	0	1	**2**	**3**	0	**1**	2	**3**	0	**10**	**1**	**11**
Total Volume	0	1	1	2	0	3	2	5	0	1	7	8	0	36	1	37
% App. Total	0	50	50		0	60	40		0	12.5	87.5		0	97.3	2.7	
PHF	.000	.250	.250	.500	.000	.750	.250	.417	.000	.250	.875	.667	.000	.900	.250	.841

Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

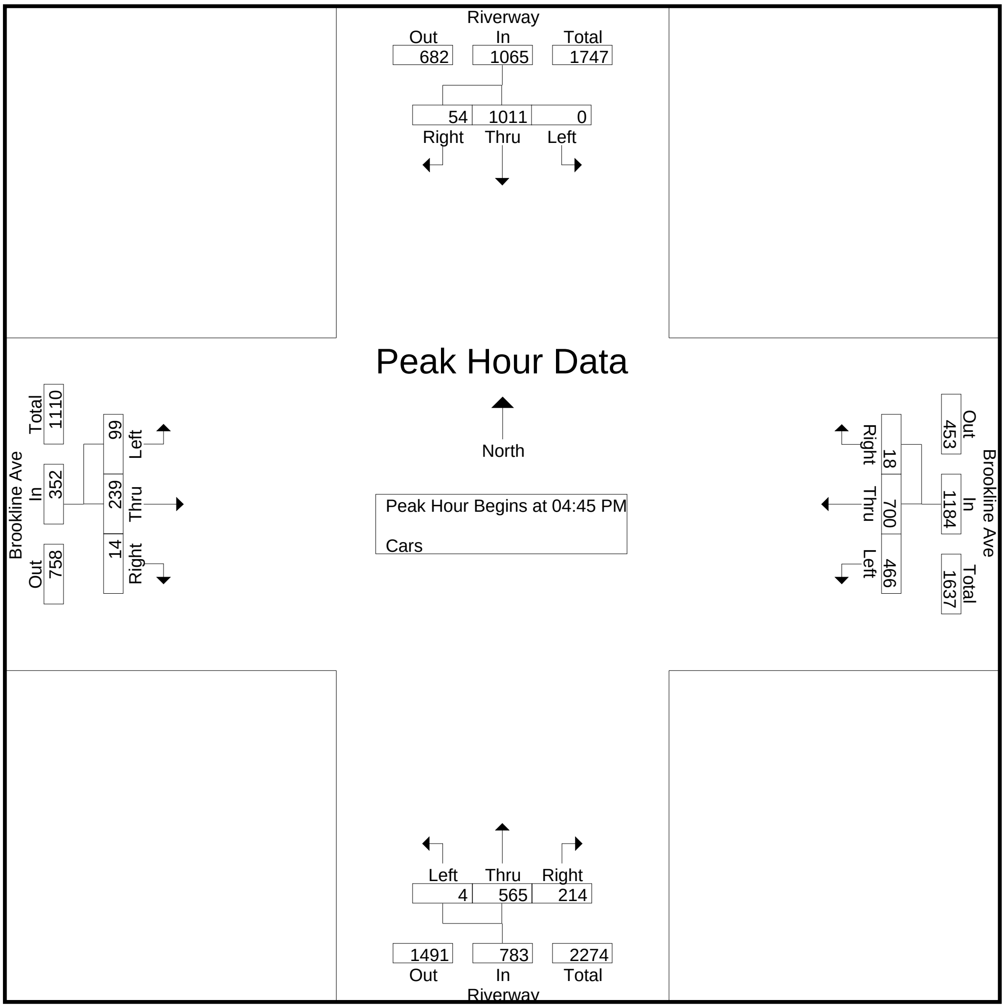
	Riverway From North			Brookline Ave From East			Riverway From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	288	13	107	153	2	1	161	61	21	53	0	860
04:15 PM	0	231	15	103	144	5	1	143	50	23	73	1	789
04:30 PM	0	200	10	104	134	3	1	130	49	26	64	3	724
04:45 PM	0	251	13	102	155	7	2	149	53	24	67	0	823
Total	0	970	51	416	586	17	5	583	213	94	257	4	3196
05:00 PM	0	243	15	127	163	3	2	138	52	24	41	10	818
05:15 PM	0	254	11	114	194	1	0	150	57	29	64	2	876
05:30 PM	0	263	15	123	188	7	0	128	52	22	67	2	867
05:45 PM	1	224	8	90	168	3	2	114	52	30	80	3	775
Total	1	984	49	454	713	14	4	530	213	105	252	17	3336
Grand Total	1	1954	100	870	1299	31	9	1113	426	199	509	21	6532
Apprch %	0	95.1	4.9	39.5	59	1.4	0.6	71.9	27.5	27.3	69.8	2.9	
Total %	0	29.9	1.5	13.3	19.9	0.5	0.1	17	6.5	3	7.8	0.3	

	Riverway From North				Brookline Ave From East				Riverway From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	251	13	264	102	155	**7**	264	**2**	149	53	204	24	**67**	0	91	823
05:00 PM	0	243	**15**	258	**127**	163	3	293	2	138	52	192	24	41	**10**	75	818
05:15 PM	0	254	11	265	114	**194**	1	309	0	**150**	**57**	**207**	**29**	64	2	**95**	**876**
05:30 PM	0	**263**	15	**278**	123	188	7	**318**	0	128	52	180	22	67	2	91	867
Total Volume	0	1011	54	1065	466	700	18	1184	4	565	214	783	99	239	14	352	3384
% App. Total	0	94.9	5.1		39.4	59.1	1.5		0.5	72.2	27.3		28.1	67.9	4		
PHF	.000	.961	.900	.958	.917	.902	.643	.931	.500	.942	.939	.946	.853	.892	.350	.926	.966

Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 2



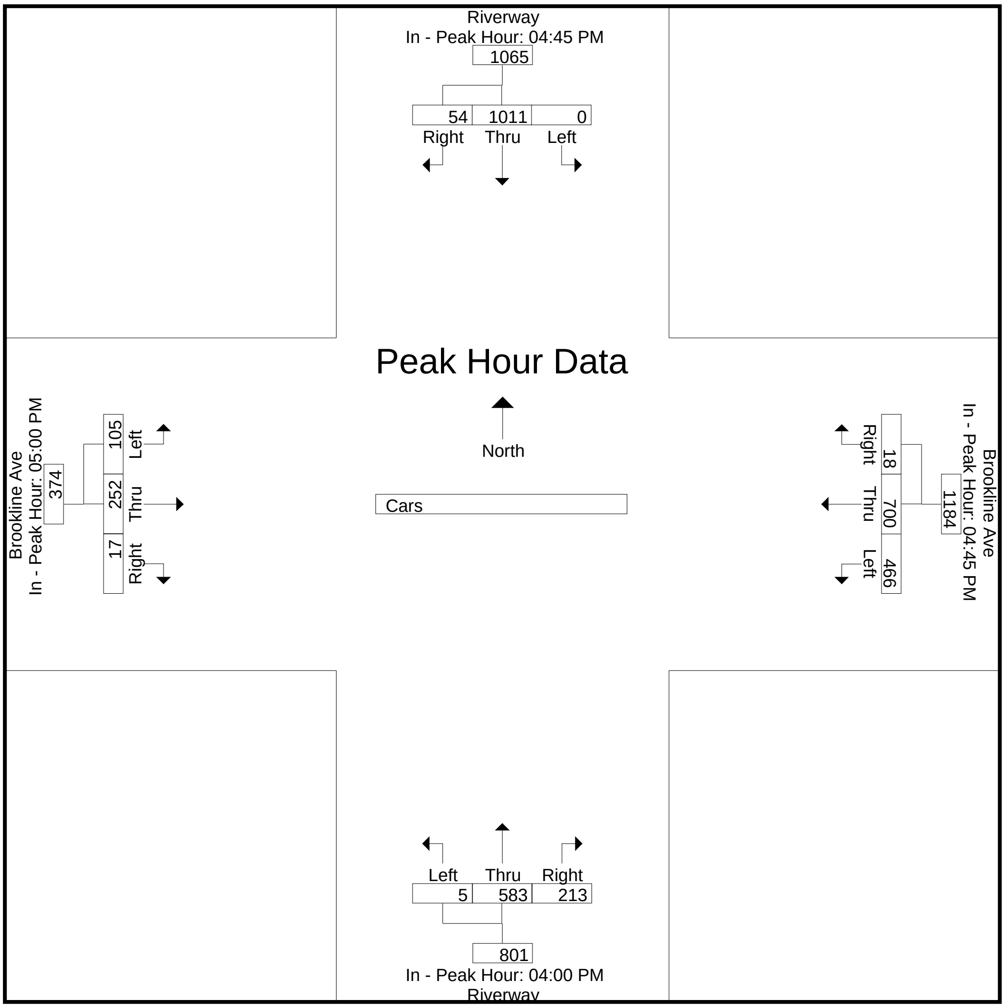
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:00 PM				05:00 PM			
+0 mins.	0	251	13	264	102	155	**7**	264	1	**161**	**61**	**223**	24	41	**10**	75
+15 mins.	0	243	**15**	258	**127**	163	3	293	1	143	50	194	29	64	2	95
+30 mins.	0	254	11	265	114	**194**	1	309	1	130	49	180	22	67	2	91
+45 mins.	0	**263**	15	**278**	123	188	7	**318**	**2**	149	53	204	**30**	**80**	3	**113**
Total Volume	0	1011	54	1065	466	700	18	1184	5	583	213	801	105	252	17	374
% App. Total	0	94.9	5.1		39.4	59.1	1.5		0.6	72.8	26.6		28.1	67.4	4.5	
PHF	.000	.961	.900	.958	.917	.902	.643	.931	.625	.905	.873	.898	.875	.788	.425	.827

Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

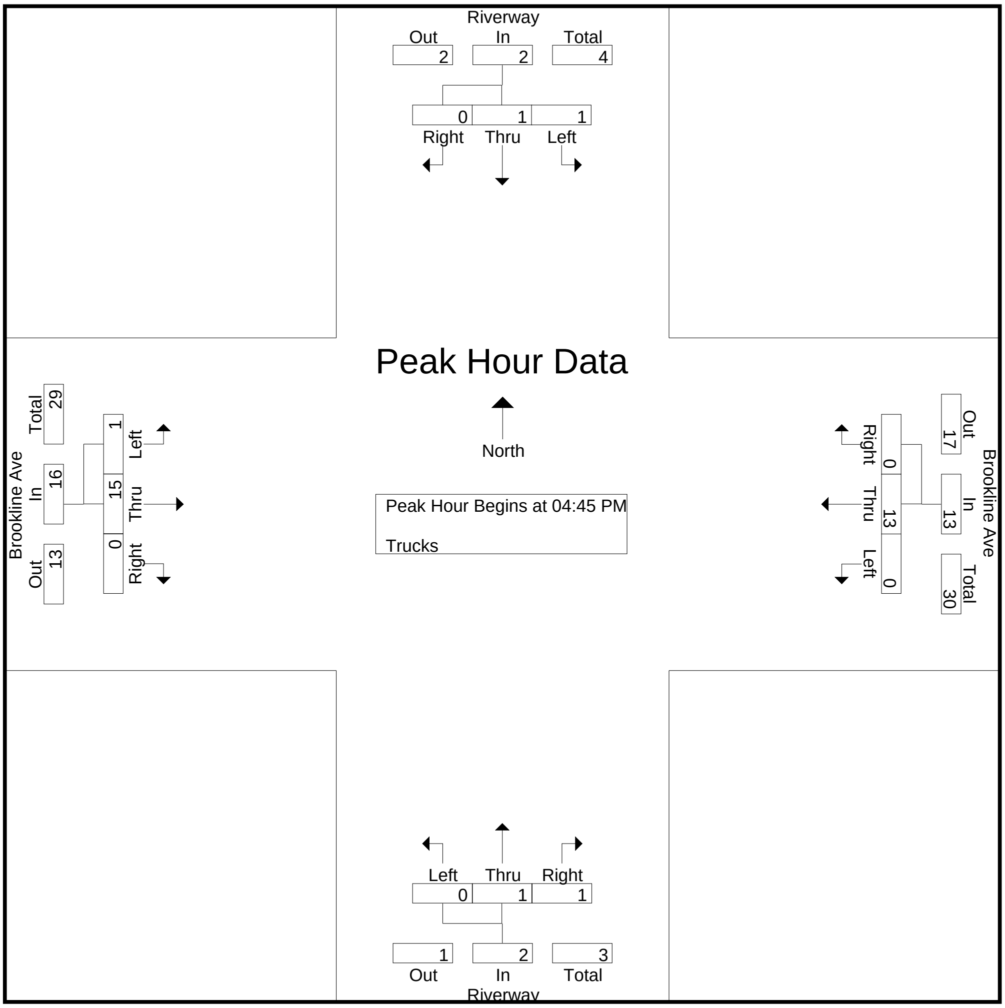
	Riverway From North			Brookline Ave From East			Riverway From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	0	4	0	1	0	0	0	1	0	6
04:15 PM	0	0	0	0	2	0	0	0	0	0	3	0	5
04:30 PM	0	0	0	1	4	0	0	0	1	1	2	0	9
04:45 PM	0	0	0	0	3	0	0	0	0	0	6	0	9
Total	0	0	0	1	13	0	1	0	1	1	12	0	29
05:00 PM	0	0	0	0	3	0	0	1	0	0	4	0	8
05:15 PM	0	0	0	0	2	0	0	0	0	1	2	0	5
05:30 PM	1	1	0	0	5	0	0	0	1	0	3	0	11
05:45 PM	0	0	0	0	3	0	0	0	0	0	2	0	5
Total	1	1	0	0	13	0	0	1	1	1	11	0	29
Grand Total	1	1	0	1	26	0	1	1	2	2	23	0	58
Apprch %	50	50	0	3.7	96.3	0	25	25	50	8	92	0	
Total %	1.7	1.7	0	1.7	44.8	0	1.7	1.7	3.4	3.4	39.7	0	

	Riverway From North				Brookline Ave From East				Riverway From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	**6**	0	**6**	9
05:00 PM	0	0	0	0	0	3	0	3	0	**1**	0	**1**	0	4	0	4	8
05:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	**1**	2	0	3	5
05:30 PM	**1**	**1**	0	**2**	0	**5**	0	**5**	0	0	**1**	1	0	3	0	3	**11**
Total Volume	1	1	0	2	0	13	0	13	0	1	1	2	1	15	0	16	33
% App. Total	50	50	0		0	100	0		0	50	50		6.2	93.8	0		
PHF	.250	.250	.000	.250	.000	.650	.000	.650	.000	.250	.250	.500	.250	.625	.000	.667	.750

Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 2



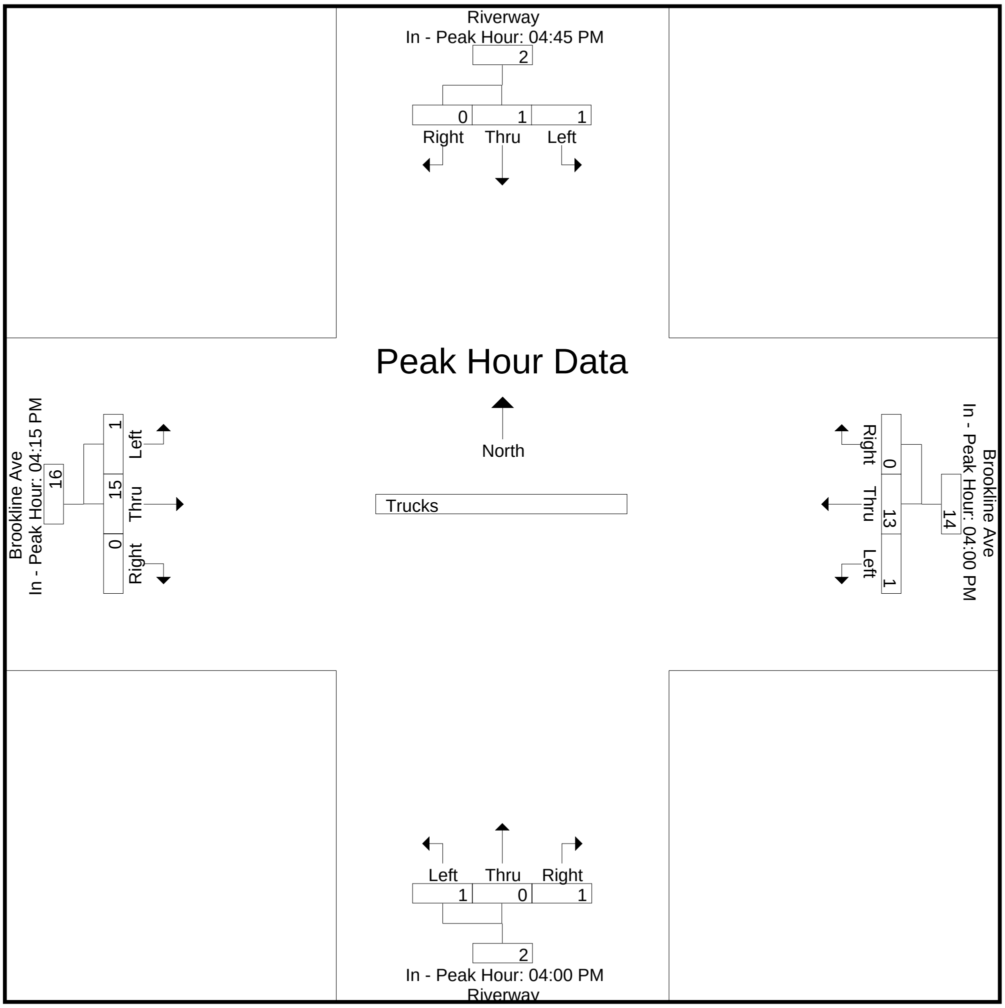
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:00 PM				04:00 PM				04:15 PM			
+0 mins.	0	0	0	0	0	**4**	0	4	**1**	0	0	**1**	0	3	0	3
+15 mins.	0	0	0	0	0	2	0	2	0	0	0	0	**1**	2	0	3
+30 mins.	0	0	0	0	**1**	4	0	**5**	0	0	**1**	1	0	**6**	0	**6**
+45 mins.	**1**	**1**	0	**2**	0	3	0	3	0	0	0	0	0	4	0	4
Total Volume	1	1	0	2	1	13	0	14	1	0	1	2	1	15	0	16
% App. Total	50	50	0		7.1	92.9	0		50	0	50		6.2	93.8	0	
PHF	.250	.250	.000	.250	.250	.813	.000	.700	.250	.000	.250	.500	.250	.625	.000	.667

Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

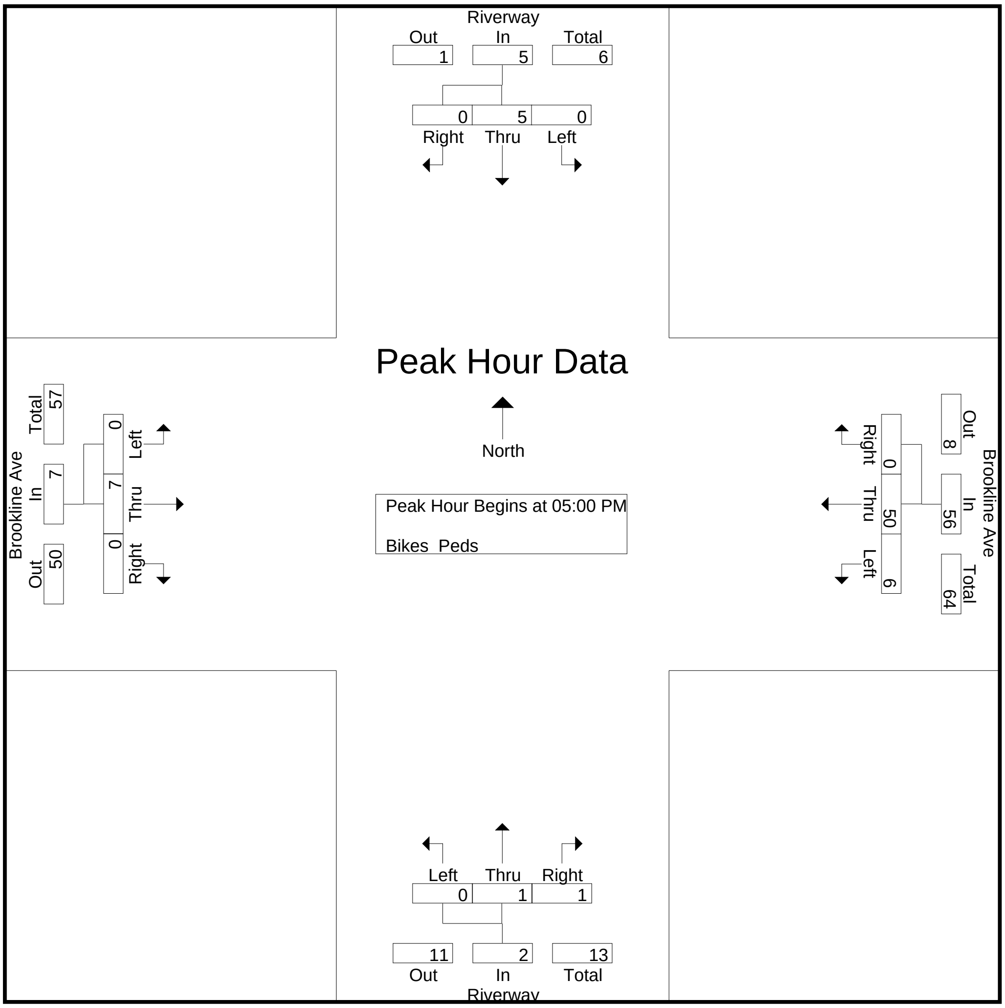
	Riverway From North				Brookline Ave From East				Riverway From South				Brookline Ave From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	23	1	4	0	2	0	0	2	20	0	0	0	4	49	7	56
04:15 PM	1	0	0	17	0	2	0	1	0	0	0	23	0	1	0	7	48	4	52
04:30 PM	0	0	0	15	0	4	0	4	0	0	0	34	1	0	0	13	66	5	71
04:45 PM	0	0	0	16	0	4	0	3	0	1	0	18	0	1	0	9	46	6	52
Total	1	0	0	71	1	14	0	10	0	1	2	95	1	2	0	33	209	22	231
05:00 PM	0	0	0	21	1	15	0	1	0	0	1	24	0	2	0	10	56	19	75
05:15 PM	0	1	0	27	0	7	0	3	0	1	0	34	0	1	0	18	82	10	92
05:30 PM	0	4	0	13	0	17	0	2	0	0	0	33	0	3	0	16	64	24	88
05:45 PM	0	0	0	15	5	11	0	6	0	0	0	32	0	1	0	10	63	17	80
Total	0	5	0	76	6	50	0	12	0	1	1	123	0	7	0	54	265	70	335
Grand Total	1	5	0	147	7	64	0	22	0	2	3	218	1	9	0	87	474	92	566
Apprch %	16.7	83.3	0		9.9	90.1	0		0	40	60		10	90	0				
Total %	1.1	5.4	0		7.6	69.6	0		0	2.2	3.3		1.1	9.8	0		83.7	16.3	

	Riverway From North				Brookline Ave From East				Riverway From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	1	15	0	16	0	0	**1**	**1**	0	2	0	2	19
05:15 PM	0	1	0	1	0	7	0	7	0	**1**	0	1	0	1	0	1	10
05:30 PM	0	**4**	0	**4**	0	**17**	0	**17**	0	0	0	0	0	**3**	0	**3**	**24**
05:45 PM	0	0	0	0	**5**	11	0	16	0	0	0	0	0	1	0	1	17
Total Volume	0	5	0	5	6	50	0	56	0	1	1	2	0	7	0	7	70
% App. Total	0	100	0		10.7	89.3	0		0	50	50		0	100	0		
PHF	.000	.313	.000	.313	.300	.735	.000	.824	.000	.250	.250	.500	.000	.583	.000	.583	.729

Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 2



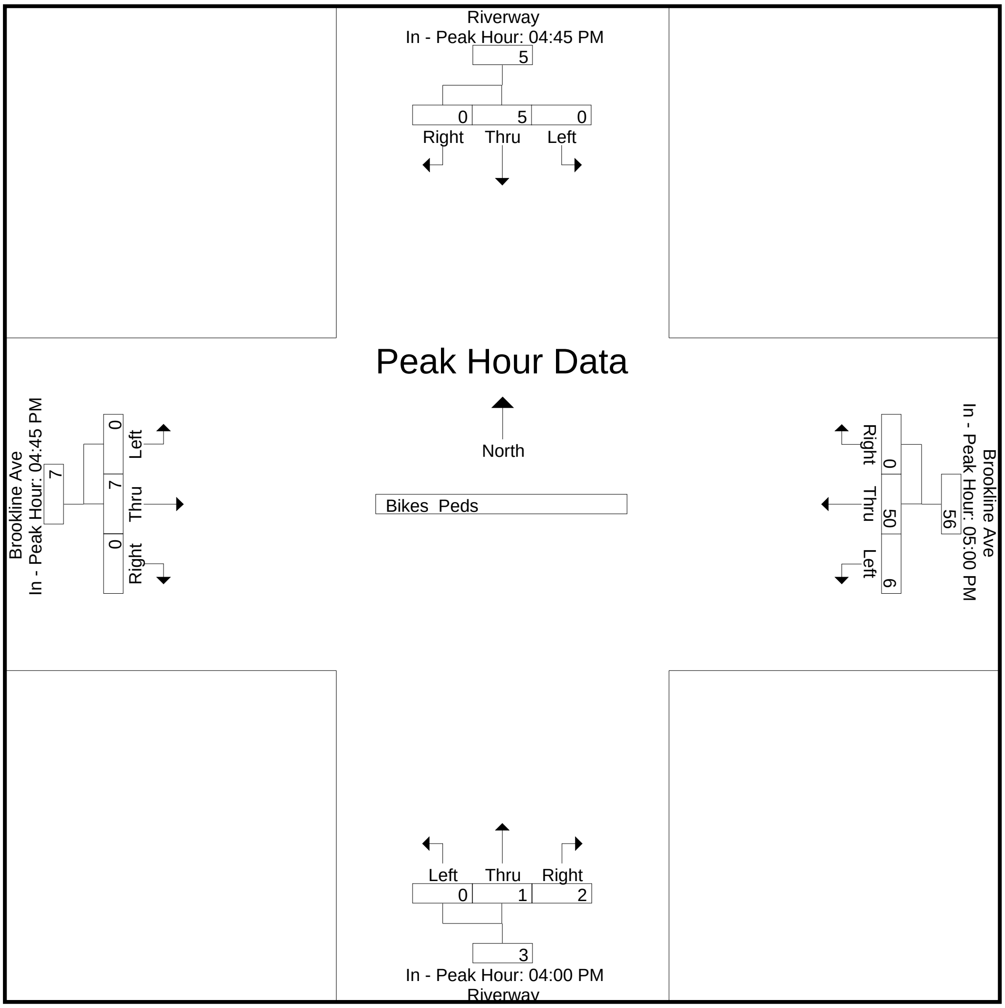
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				05:00 PM				04:00 PM				04:45 PM			
+0 mins.	0	0	0	0	1	15	0	16	0	0	**2**	**2**	0	1	0	1
+15 mins.	0	0	0	0	0	7	0	7	0	0	0	0	0	2	0	2
+30 mins.	0	1	0	1	0	**17**	0	**17**	0	0	0	0	0	1	0	1
+45 mins.	0	**4**	0	**4**	**5**	11	0	16	0	**1**	0	1	0	**3**	0	**3**
Total Volume	0	5	0	5	6	50	0	56	0	1	2	3	0	7	0	7
% App. Total	0	100	0		10.7	89.3	0		0	33.3	66.7		0	100	0	
PHF	.000	.313	.000	.313	.300	.735	.000	.824	.000	.250	.250	.375	.000	.583	.000	.583

Accurate Counts
978-664-2565

N/S Street : Riverway
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970014
Site Code : 94970014
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

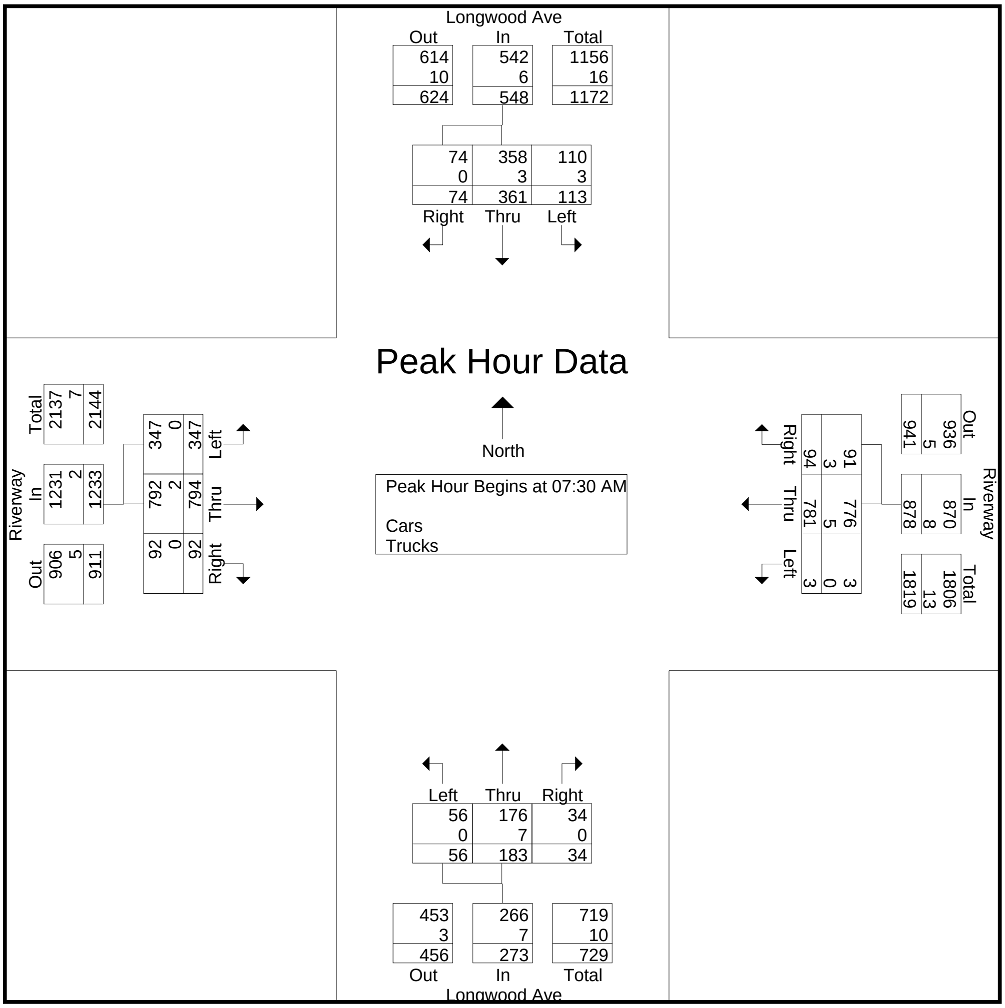
	Longwood Ave From North			Riverway From East			Longwood Ave From South			Riverway From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	13	61	14	0	164	13	8	29	8	58	200	33	601
07:15 AM	15	79	20	0	149	18	20	54	5	51	197	23	631
07:30 AM	33	79	14	0	203	25	34	57	7	80	196	25	753
07:45 AM	28	98	24	2	228	24	6	36	11	83	204	14	758
Total	89	317	72	2	744	80	68	176	31	272	797	95	2743
08:00 AM	22	98	19	1	188	24	7	44	9	104	198	25	739
08:15 AM	30	86	17	0	162	21	9	46	7	80	196	28	682
08:30 AM	21	103	24	1	153	16	6	38	4	78	133	35	612
08:45 AM	18	97	24	0	145	20	5	42	6	73	157	21	608
Total	91	384	84	2	648	81	27	170	26	335	684	109	2641
Grand Total	180	701	156	4	1392	161	95	346	57	607	1481	204	5384
Apprch %	17.4	67.6	15	0.3	89.4	10.3	19.1	69.5	11.4	26.5	64.6	8.9	
Total %	3.3	13	2.9	0.1	25.9	3	1.8	6.4	1.1	11.3	27.5	3.8	
Cars	177	696	156	4	1386	158	94	336	57	605	1479	204	5352
% Cars	98.3	99.3	100	100	99.6	98.1	98.9	97.1	100	99.7	99.9	100	99.4
Trucks	3	5	0	0	6	3	1	10	0	2	2	0	32
% Trucks	1.7	0.7	0	0	0.4	1.9	1.1	2.9	0	0.3	0.1	0	0.6

	Longwood Ave From North				Riverway From East				Longwood Ave From South				Riverway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**33**	79	14	126	0	203	**25**	228	**34**	**57**	7	**98**	80	196	25	301	753
07:45 AM	28	**98**	**24**	**150**	**2**	**228**	24	**254**	6	36	**11**	53	83	**204**	14	301	**758**
08:00 AM	22	98	19	139	1	188	24	213	7	44	9	60	**104**	198	25	**327**	739
08:15 AM	30	86	17	133	0	162	21	183	9	46	7	62	80	196	**28**	304	682
Total Volume	113	361	74	548	3	781	94	878	56	183	34	273	347	794	92	1233	2932
% App. Total	20.6	65.9	13.5		0.3	89	10.7		20.5	67	12.5		28.1	64.4	7.5		
PHF	.856	.921	.771	.913	.375	.856	.940	.864	.412	.803	.773	.696	.834	.973	.821	.943	.967
Cars	110	358	74	542	3	776	91	870	56	176	34	266	347	792	92	1231	2909
% Cars	97.3	99.2	100	98.9	100	99.4	96.8	99.1	100	96.2	100	97.4	100	99.7	100	99.8	99.2
Trucks	3	3	0	6	0	5	3	8	0	7	0	7	0	2	0	2	23
% Trucks	2.7	0.8	0	1.1	0	0.6	3.2	0.9	0	3.8	0	2.6	0	0.3	0	0.2	0.8

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 2



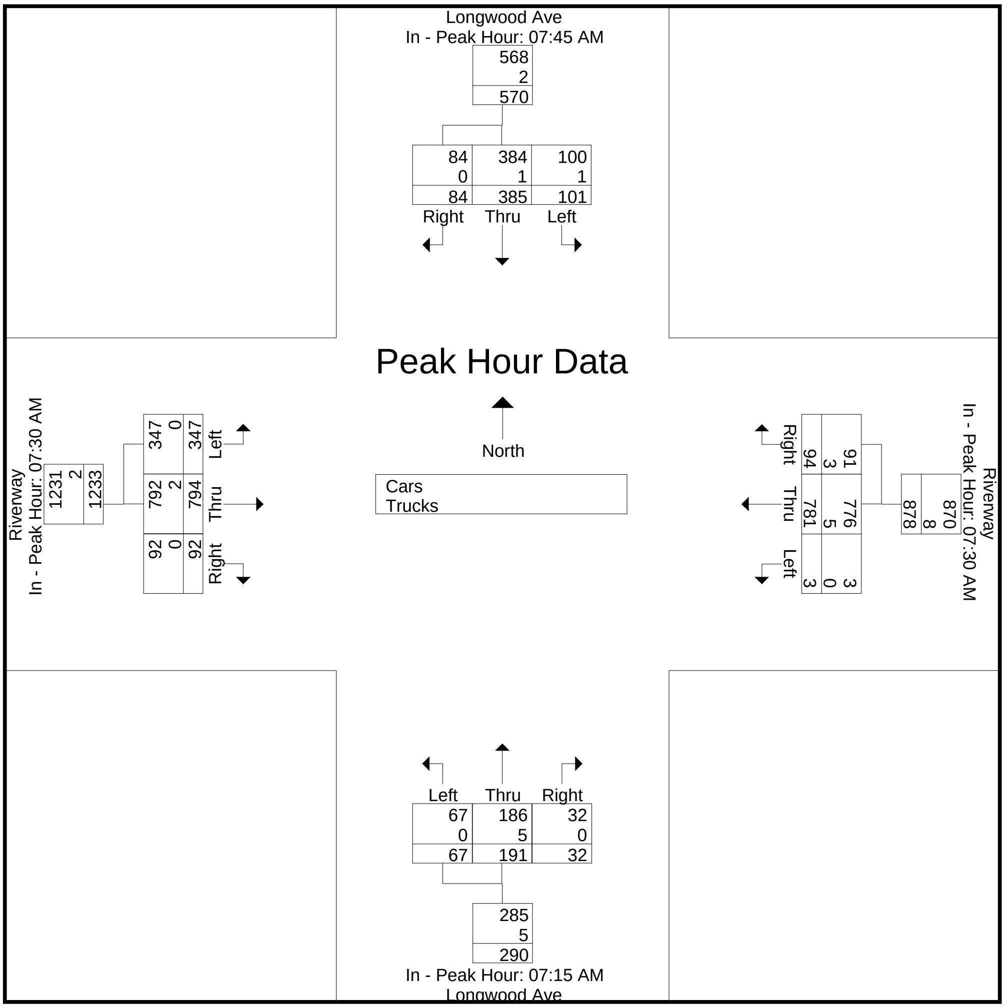
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:30 AM				07:15 AM				07:30 AM			
+0 mins.	28	98	**24**	**150**	0	203	**25**	228	20	54	5	79	80	196	25	301
+15 mins.	22	98	19	139	**2**	**228**	24	**254**	**34**	**57**	7	**98**	83	**204**	14	301
+30 mins.	**30**	86	17	133	1	188	24	213	6	36	**11**	53	**104**	198	25	**327**
+45 mins.	21	**103**	24	148	0	162	21	183	7	44	9	60	80	196	**28**	304
Total Volume	101	385	84	570	3	781	94	878	67	191	32	290	347	794	92	1233
% App. Total	17.7	67.5	14.7		0.3	89	10.7		23.1	65.9	11		28.1	64.4	7.5	
PHF	.842	.934	.875	.950	.375	.856	.940	.864	.493	.838	.727	.740	.834	.973	.821	.943
Cars	100	384	84	568	3	776	91	870	67	186	32	285	347	792	92	1231
% Cars	99	99.7	100	99.6	100	99.4	96.8	99.1	100	97.4	100	98.3	100	99.7	100	99.8
Trucks	1	1	0	2	0	5	3	8	0	5	0	5	0	2	0	2
% Trucks	1	0.3	0	0.4	0	0.6	3.2	0.9	0	2.6	0	1.7	0	0.3	0	0.2

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

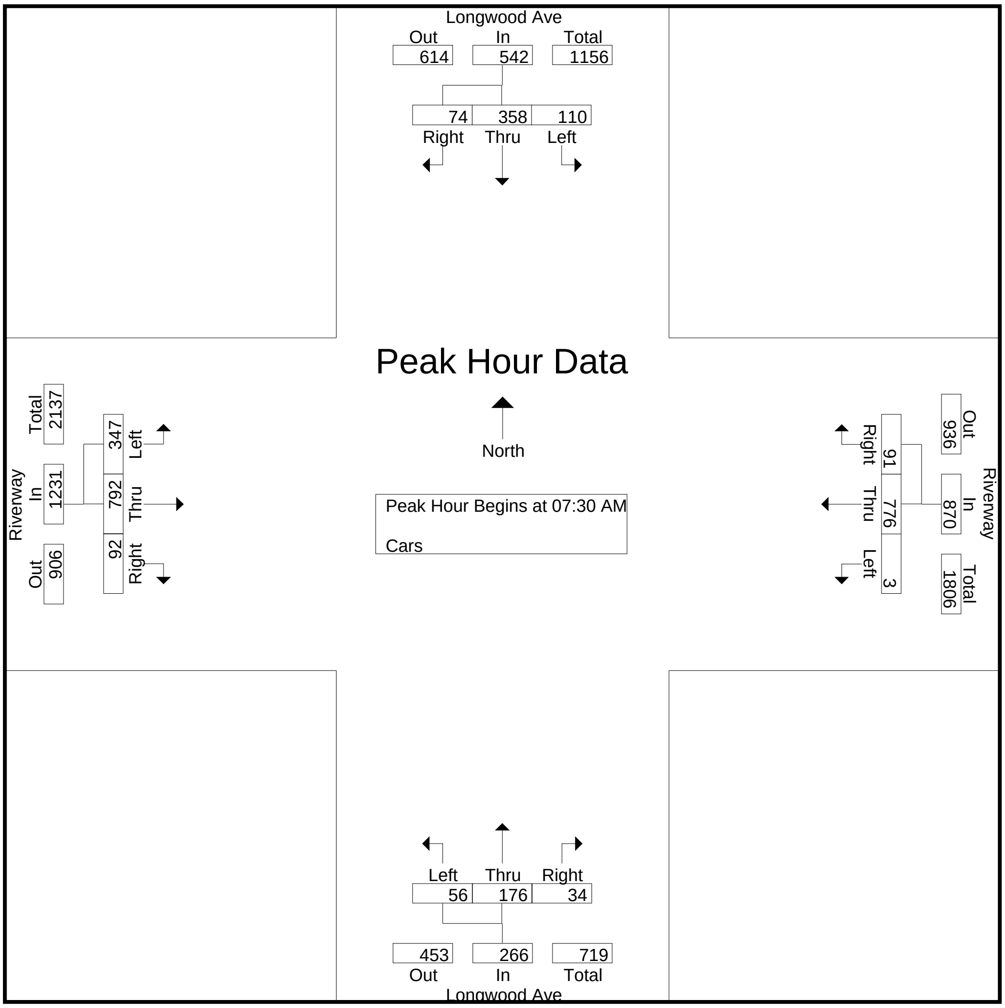
	Longwood Ave From North			**Riverway From East**			**Longwood Ave From South**			**Riverway From West**			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	13	60	14	0	164	13	7	29	8	58	200	33	599
07:15 AM	15	79	20	0	148	18	20	54	5	51	197	23	630
07:30 AM	31	77	14	0	201	23	34	55	7	80	195	25	742
07:45 AM	28	97	24	2	225	24	6	35	11	83	204	14	753
Total	87	313	72	2	738	78	67	173	31	272	796	95	2724
08:00 AM	21	98	19	1	188	23	7	42	9	104	198	25	735
08:15 AM	30	86	17	0	162	21	9	44	7	80	195	28	679
08:30 AM	21	103	24	1	153	16	6	35	4	76	133	35	607
08:45 AM	18	96	24	0	145	20	5	42	6	73	157	21	607
Total	90	383	84	2	648	80	27	163	26	333	683	109	2628
Grand Total	177	696	156	4	1386	158	94	336	57	605	1479	204	5352
Apprch %	17.2	67.6	15.2	0.3	89.5	10.2	19.3	69	11.7	26.4	64.6	8.9	
Total %	3.3	13	2.9	0.1	25.9	3	1.8	6.3	1.1	11.3	27.6	3.8	

	Longwood Ave From North				**Riverway From East**				**Longwood Ave From South**				**Riverway From West**				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**31**	77	14	122	0	201	23	224	**34**	**55**	7	**96**	80	195	25	300	742
07:45 AM	28	97	**24**	**149**	**2**	**225**	**24**	**251**	6	35	**11**	52	83	**204**	14	301	**753**
08:00 AM	21	**98**	19	138	1	188	23	212	7	42	9	58	**104**	198	25	**327**	735
08:15 AM	30	86	17	133	0	162	21	183	9	44	7	60	80	195	**28**	303	679
Total Volume	110	358	74	542	3	776	91	870	56	176	34	266	347	792	92	1231	2909
% App. Total	20.3	66.1	13.7		0.3	89.2	10.5		21.1	66.2	12.8		28.2	64.3	7.5		
PHF	.887	.913	.771	.909	.375	.862	.948	.867	.412	.800	.773	.693	.834	.971	.821	.941	.966

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 2



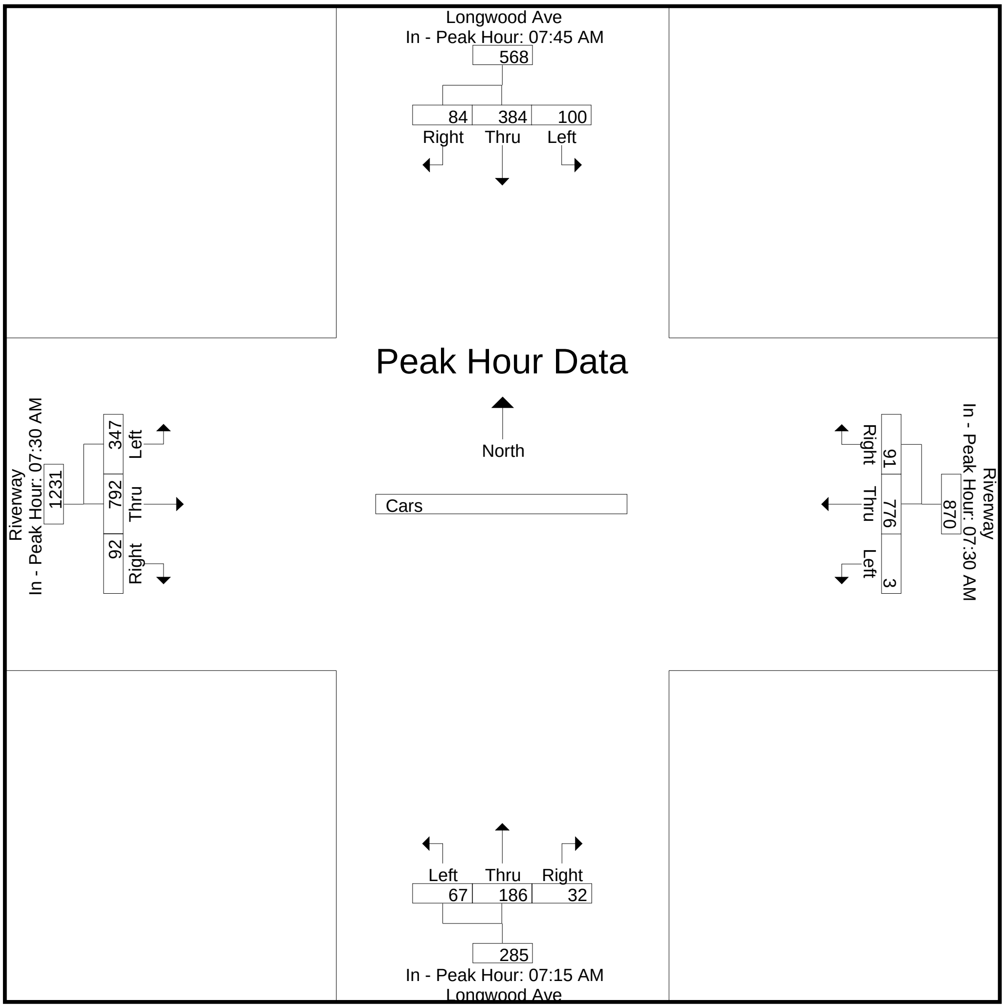
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:30 AM				07:15 AM				07:30 AM			
+0 mins.	28	97	**24**	**149**	0	201	23	224	20	54	5	79	80	195	25	300
+15 mins.	21	98	19	138	**2**	**225**	**24**	**251**	**34**	**55**	7	**96**	83	**204**	14	301
+30 mins.	**30**	86	17	133	1	188	23	212	6	35	**11**	52	**104**	198	25	**327**
+45 mins.	21	**103**	24	148	0	162	21	183	7	42	9	58	80	195	**28**	303
Total Volume	100	384	84	568	3	776	91	870	67	186	32	285	347	792	92	1231
% App. Total	17.6	67.6	14.8		0.3	89.2	10.5		23.5	65.3	11.2		28.2	64.3	7.5	
PHF	.833	.932	.875	.953	.375	.862	.948	.867	.493	.845	.727	.742	.834	.971	.821	.941

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

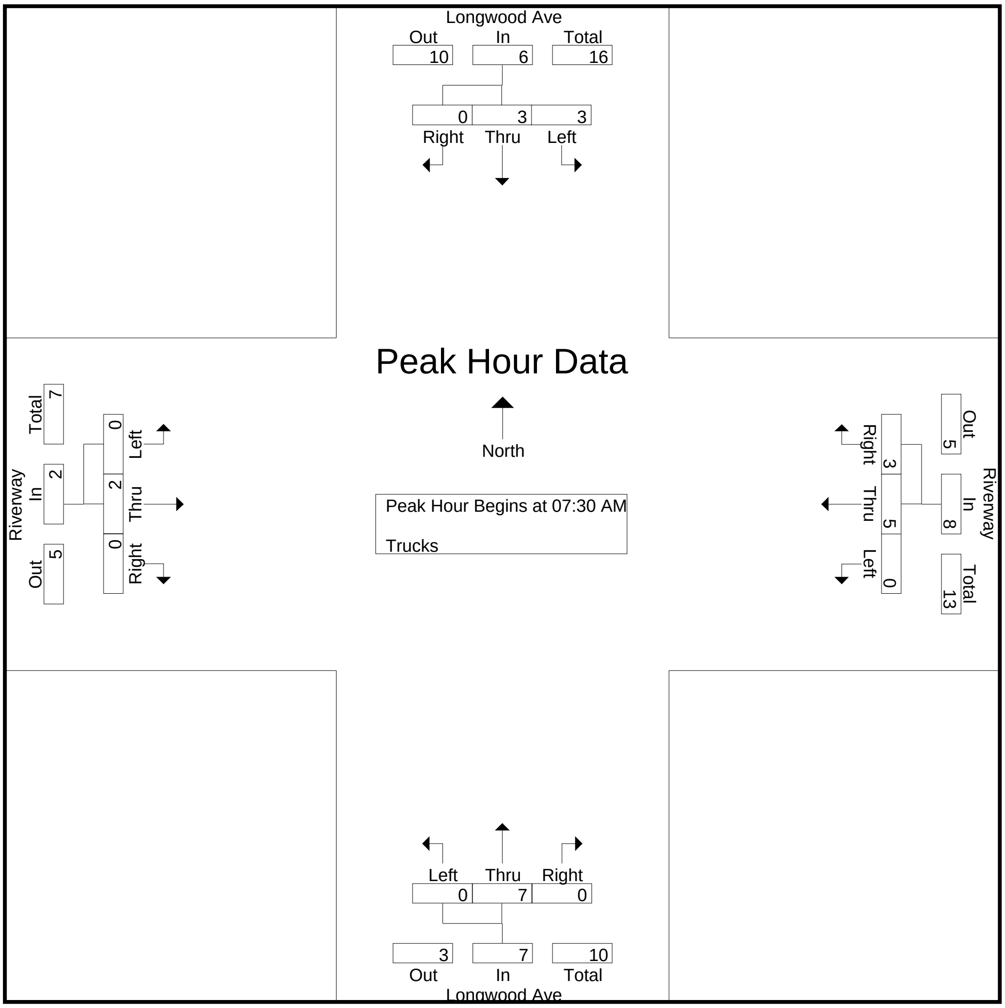
	Longwood Ave From North			Riverway From East			Longwood Ave From South			Riverway From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	1	0	0	0	0	1	0	0	0	0	0	2
07:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
07:30 AM	2	2	0	0	2	2	0	2	0	0	1	0	11
07:45 AM	0	1	0	0	3	0	0	1	0	0	0	0	5
Total	2	4	0	0	6	2	1	3	0	0	1	0	19
08:00 AM	1	0	0	0	0	1	0	2	0	0	0	0	4
08:15 AM	0	0	0	0	0	0	0	2	0	0	1	0	3
08:30 AM	0	0	0	0	0	0	0	3	0	2	0	0	5
08:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	1	1	0	0	0	1	0	7	0	2	1	0	13
Grand Total	3	5	0	0	6	3	1	10	0	2	2	0	32
Apprch %	37.5	62.5	0	0	66.7	33.3	9.1	90.9	0	50	50	0	
Total %	9.4	15.6	0	0	18.8	9.4	3.1	31.2	0	6.2	6.2	0	

	Longwood Ave From North				Riverway From East				Longwood Ave From South				Riverway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**2**	**2**	0	**4**	0	2	**2**	**4**	0	**2**	0	**2**	0	**1**	0	**1**	**11**
07:45 AM	0	1	0	1	0	**3**	0	3	0	1	0	1	0	0	0	0	5
08:00 AM	1	0	0	1	0	0	1	1	0	2	0	2	0	0	0	0	4
08:15 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
Total Volume	3	3	0	6	0	5	3	8	0	7	0	7	0	2	0	2	23
% App. Total	50	50	0		0	62.5	37.5		0	100	0		0	100	0		
PHF	.375	.375	.000	.375	.000	.417	.375	.500	.000	.875	.000	.875	.000	.500	.000	.500	.523

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 2



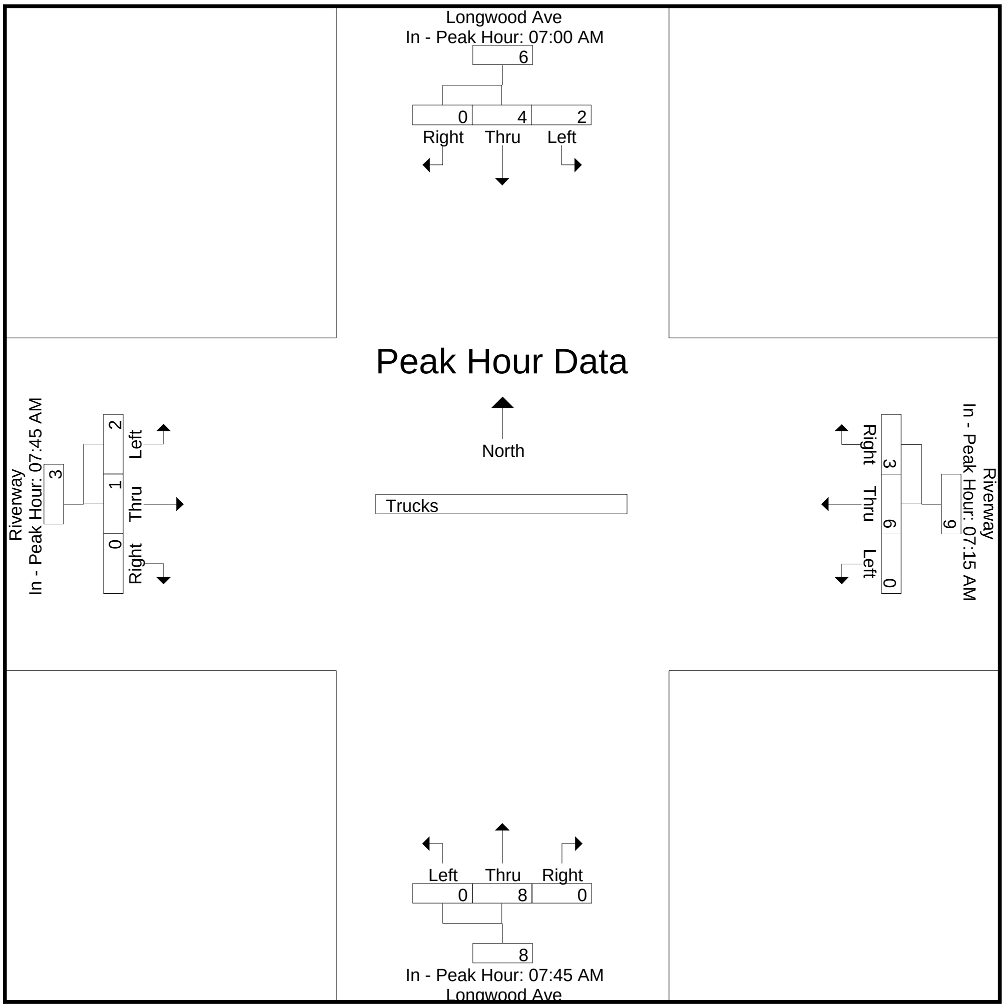
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				07:45 AM				07:45 AM			
+0 mins.	0	1	0	1	0	1	0	1	0	1	0	1	0	0	0	0
+15 mins.	0	0	0	0	0	2	**2**	**4**	0	2	0	2	0	0	0	0
+30 mins.	**2**	**2**	0	**4**	0	**3**	0	3	0	2	0	2	0	**1**	0	1
+45 mins.	0	1	0	1	0	0	1	1	0	**3**	0	**3**	**2**	0	0	**2**
Total Volume	2	4	0	6	0	6	3	9	0	8	0	8	2	1	0	3
% App. Total	33.3	66.7	0		0	66.7	33.3		0	100	0		66.7	33.3	0	
PHF	.250	.500	.000	.375	.000	.500	.375	.563	.000	.667	.000	.667	.250	.250	.000	.375

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes

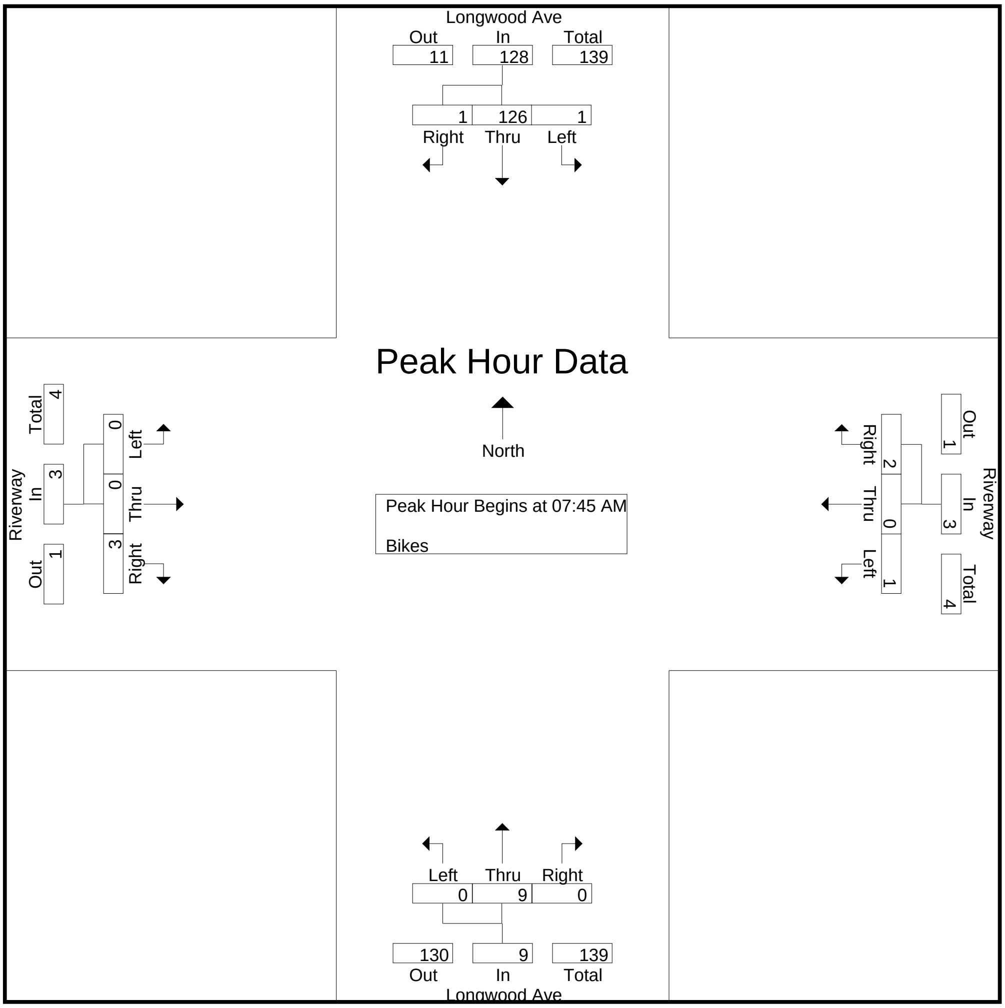
	Longwood Ave From North			Riverway From East			Longwood Ave From South			Riverway From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	1	11	0	0	0	0	0	1	0	0	0	0	13
07:15 AM	0	13	0	0	0	0	0	2	0	1	0	0	16
07:30 AM	0	13	0	0	0	0	0	0	0	0	0	0	13
07:45 AM	0	41	0	0	0	2	0	1	0	0	0	0	44
Total	1	78	0	0	0	2	0	4	0	1	0	0	86
08:00 AM	0	20	0	1	0	0	0	1	0	0	0	0	22
08:15 AM	1	37	0	0	0	0	0	4	0	0	0	0	42
08:30 AM	0	28	1	0	0	0	0	3	0	0	0	3	35
08:45 AM	0	32	0	0	0	0	0	5	0	0	0	0	37
Total	1	117	1	1	0	0	0	13	0	0	0	3	136
Grand Total	2	195	1	1	0	2	0	17	0	1	0	3	222
Apprch %	1	98.5	0.5	33.3	0	66.7	0	100	0	25	0	75	
Total %	0.9	87.8	0.5	0.5	0	0.9	0	7.7	0	0.5	0	1.4	

	Longwood Ave From North				Riverway From East				Longwood Ave From South				Riverway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	**41**	0	**41**	0	0	**2**	**2**	0	1	0	1	0	0	0	0	**44**
08:00 AM	0	20	0	20	**1**	0	0	1	0	1	0	1	0	0	0	0	22
08:15 AM	**1**	37	0	38	0	0	0	0	0	**4**	0	**4**	0	0	0	0	42
08:30 AM	0	28	**1**	29	0	0	0	0	0	3	0	3	0	0	**3**	**3**	35
Total Volume	1	126	1	128	1	0	2	3	0	9	0	9	0	0	3	3	143
% App. Total	0.8	98.4	0.8		33.3	0	66.7		0	100	0		0	0	100		
PHF	.250	.768	.250	.780	.250	.000	.250	.375	.000	.563	.000	.563	.000	.000	.250	.250	.813

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 2



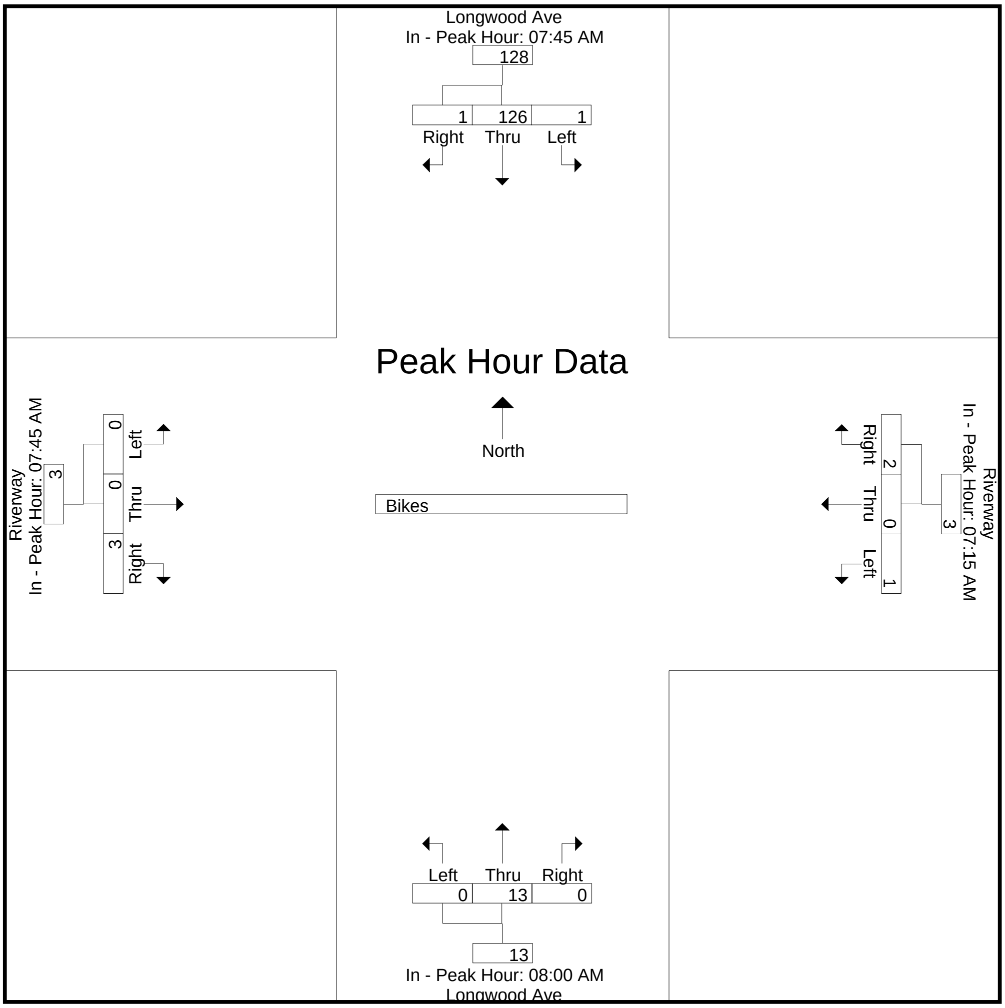
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:15 AM				08:00 AM				07:45 AM			
+0 mins.	0	**41**	0	**41**	0	0	0	0	0	1	0	1	0	0	0	0
+15 mins.	0	20	0	20	0	0	0	0	0	4	0	4	0	0	0	0
+30 mins.	**1**	37	0	38	0	0	**2**	**2**	0	3	0	3	0	0	0	0
+45 mins.	0	28	**1**	29	**1**	0	0	1	0	**5**	0	**5**	0	0	**3**	**3**
Total Volume	1	126	1	128	1	0	2	3	0	13	0	13	0	0	3	3
% App. Total	0.8	98.4	0.8		33.3	0	66.7		0	100	0		0	0	100	
PHF	.250	.768	.250	.780	.250	.000	.250	.375	.000	.650	.000	.650	.000	.000	.250	.250

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 1

Groups Printed- Peds

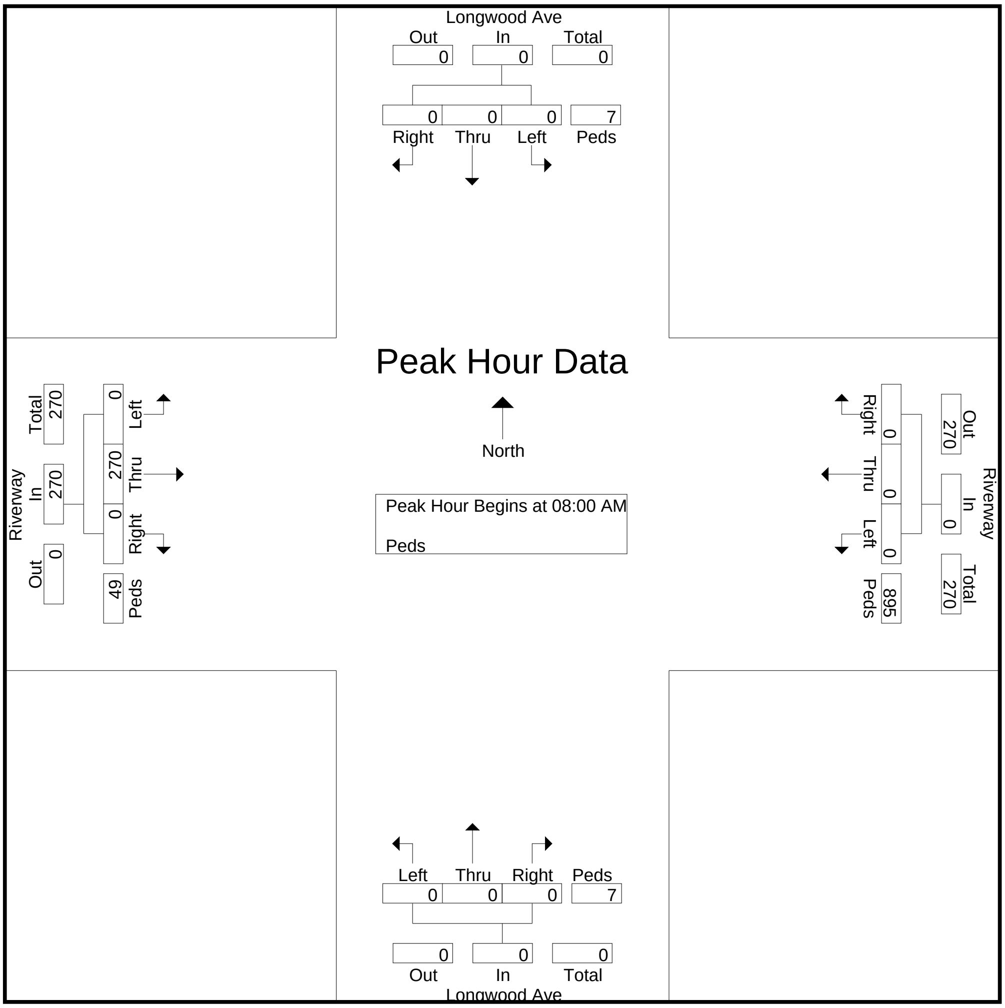
	Longwood Ave From North				**Riverway From East**				**Longwood Ave From South**				**Riverway From West**				
Start Time				Peds				Peds				Peds		NE / SW		Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	82	0	0	0	2	0	25	0	2	111
07:15 AM	0	0	0	0	0	0	0	102	0	0	0	1	0	48	0	9	160
07:30 AM	0	0	0	2	0	0	0	71	0	0	0	3	0	33	0	4	113
07:45 AM	0	0	0	0	0	0	0	191	0	0	0	2	0	79	0	5	277
Total	0	0	0	2	0	0	0	446	0	0	0	8	0	185	0	20	661
08:00 AM	0	0	0	0	0	0	0	177	0	0	0	2	0	52	0	17	248
08:15 AM	0	0	0	1	0	0	0	230	0	0	0	4	0	60	0	14	309
08:30 AM	0	0	0	2	0	0	0	201	0	0	0	1	0	72	0	11	287
08:45 AM	0	0	0	4	0	0	0	287	0	0	0	0	0	86	0	7	384
Total	0	0	0	7	0	0	0	895	0	0	0	7	0	270	0	49	1228
Grand Total	0	0	0	9	0	0	0	1341	0	0	0	15	0	455	0	69	1889
Apprch %	0	0	0	100	0	0	0	100	0	0	0	100	0	86.8	0	13.2	
Total %	0	0	0	0.5	0	0	0	71	0	0	0	0.8	0	24.1	0	3.7	

	Longwood Ave From North					**Riverway From East**					**Longwood Ave From South**					**Riverway From West**					
Start Time				Peds	App. Total				Peds	App. Total				Peds	App. Total		NE / SW		Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	0	0	0	0	0	0	0	177	177	0	0	0	2	2	0	52	0	**17**	69	248
08:15 AM	0	0	0	1	1	0	0	0	230	230	0	0	0	**4**	**4**	0	60	0	14	74	309
08:30 AM	0	0	0	2	2	0	0	0	201	201	0	0	0	1	1	0	72	0	11	83	287
08:45 AM	0	0	0	**4**	**4**	0	0	0	**287**	**287**	0	0	0	0	0	0	**86**	0	7	**93**	**384**
Total Volume	0	0	0	7	7	0	0	0	895	895	0	0	0	7	7	0	270	0	49	319	1228
% App. Total	0	0	0	100		0	0	0	100		0	0	0	100		0	84.6	0	15.4		
PHF	.000	.000	.000	.438	.438	.000	.000	.000	.780	.780	.000	.000	.000	.438	.438	.000	.785	.000	.721	.858	.799

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 2



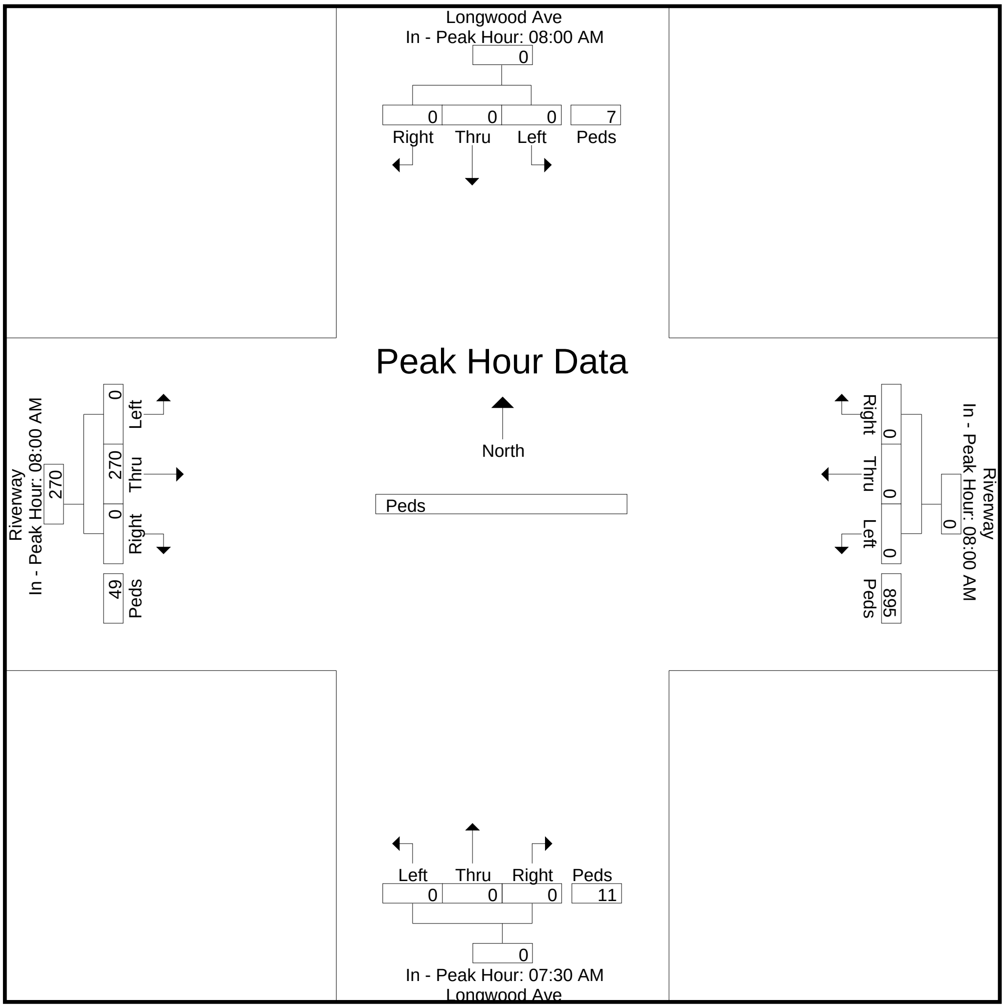
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM					08:00 AM					07:30 AM					08:00 AM				
+0 mins.	0	0	0	0	0	0	0	0	177	177	0	0	0	3	3	0	52	0	**17**	69
+15 mins.	0	0	0	1	1	0	0	0	230	230	0	0	0	2	2	0	60	0	14	74
+30 mins.	0	0	0	2	2	0	0	0	201	201	0	0	0	2	2	0	72	0	11	83
+45 mins.	0	0	0	**4**	**4**	0	0	0	**287**	**287**	0	0	0	**4**	**4**	0	**86**	0	7	**93**
Total Volume	0	0	0	7	7	0	0	0	895	895	0	0	0	11	11	0	270	0	49	319
% App. Total	0	0	0	100		0	0	0	100		0	0	0	100		0	84.6	0	15.4	
PHF	.000	.000	.000	.438	.438	.000	.000	.000	.780	.780	.000	.000	.000	.688	.688	.000	.785	.000	.721	.858

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

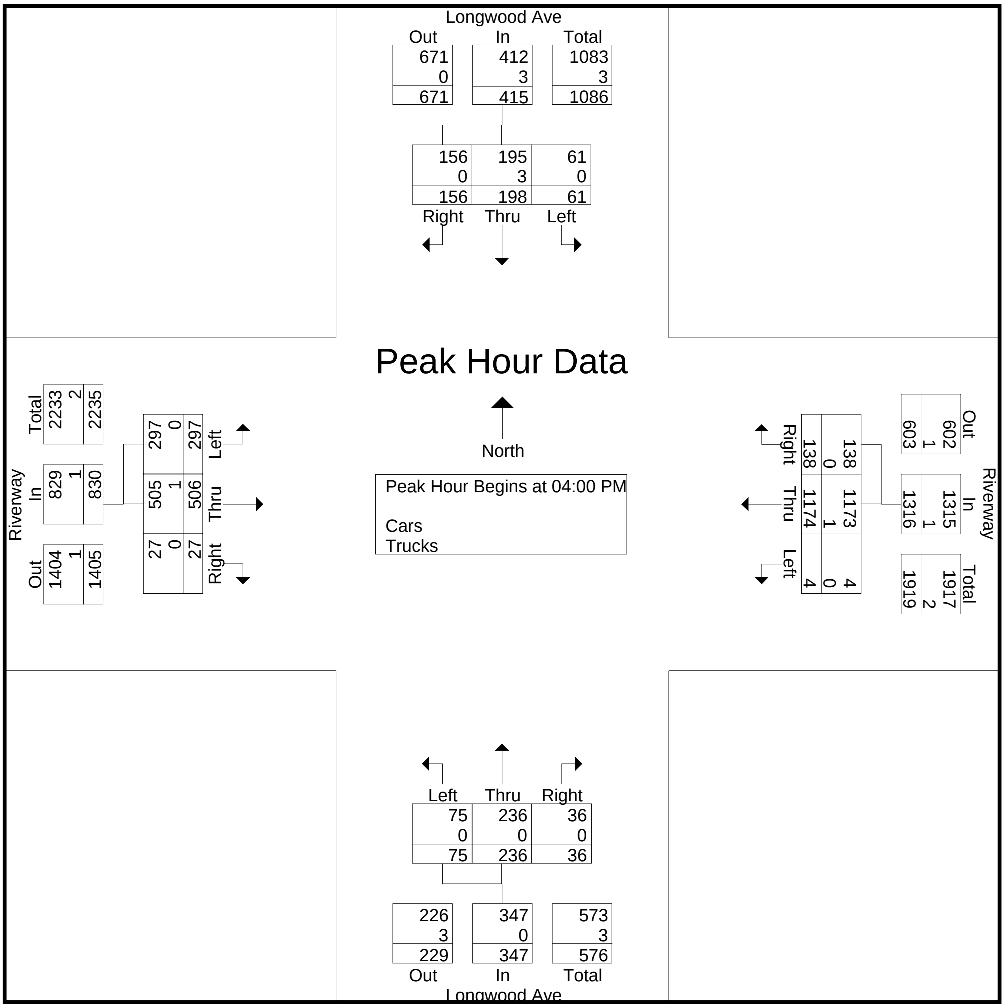
	Longwood Ave From North			Riverway From East			Longwood Ave From South			Riverway From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	14	50	45	3	313	33	11	49	4	82	108	2	714
04:15 PM	18	52	36	1	309	23	18	60	9	69	149	8	752
04:30 PM	14	44	41	0	251	43	28	60	18	77	126	6	708
04:45 PM	15	52	34	0	301	39	18	67	5	69	123	11	734
Total	61	198	156	4	1174	138	75	236	36	297	506	27	2908
05:00 PM	11	47	47	0	286	33	26	61	3	65	129	2	710
05:15 PM	19	40	55	0	250	57	33	67	11	44	132	5	713
05:30 PM	11	47	42	0	259	60	19	82	2	58	137	5	722
05:45 PM	17	53	33	0	273	66	20	45	5	38	121	4	675
Total	58	187	177	0	1068	216	98	255	21	205	519	16	2820
Grand Total	119	385	333	4	2242	354	173	491	57	502	1025	43	5728
Apprch %	14.2	46	39.8	0.2	86.2	13.6	24	68.1	7.9	32	65.3	2.7	
Total %	2.1	6.7	5.8	0.1	39.1	6.2	3	8.6	1	8.8	17.9	0.8	
Cars	119	382	333	4	2240	354	173	491	57	502	1022	43	5720
% Cars	100	99.2	100	100	99.9	100	100	100	100	100	99.7	100	99.9
Trucks	0	3	0	0	2	0	0	0	0	0	3	0	8
% Trucks	0	0.8	0	0	0.1	0	0	0	0	0	0.3	0	0.1

	Longwood Ave From North				Riverway From East				Longwood Ave From South				Riverway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	14	50	**45**	**109**	**3**	**313**	33	**349**	11	49	4	64	**82**	108	2	192	714
04:15 PM	**18**	**52**	36	106	1	309	23	333	18	60	9	87	69	**149**	8	**226**	**752**
04:30 PM	14	44	41	99	0	251	**43**	294	**28**	60	**18**	**106**	77	126	6	209	708
04:45 PM	15	52	34	101	0	301	39	340	18	**67**	5	90	69	123	**11**	203	734
Total Volume	61	198	156	415	4	1174	138	1316	75	236	36	347	297	506	27	830	2908
% App. Total	14.7	47.7	37.6		0.3	89.2	10.5		21.6	68	10.4		35.8	61	3.3		
PHF	.847	.952	.867	.952	.333	.938	.802	.943	.670	.881	.500	.818	.905	.849	.614	.918	.967
Cars	61	195	156	412	4	1173	138	1315	75	236	36	347	297	505	27	829	2903
% Cars	100	98.5	100	99.3	100	99.9	100	99.9	100	100	100	100	100	99.8	100	99.9	99.8
Trucks	0	3	0	3	0	1	0	1	0	0	0	0	0	1	0	1	5
% Trucks	0	1.5	0	0.7	0	0.1	0	0.1	0	0	0	0	0	0.2	0	0.1	0.2

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 2



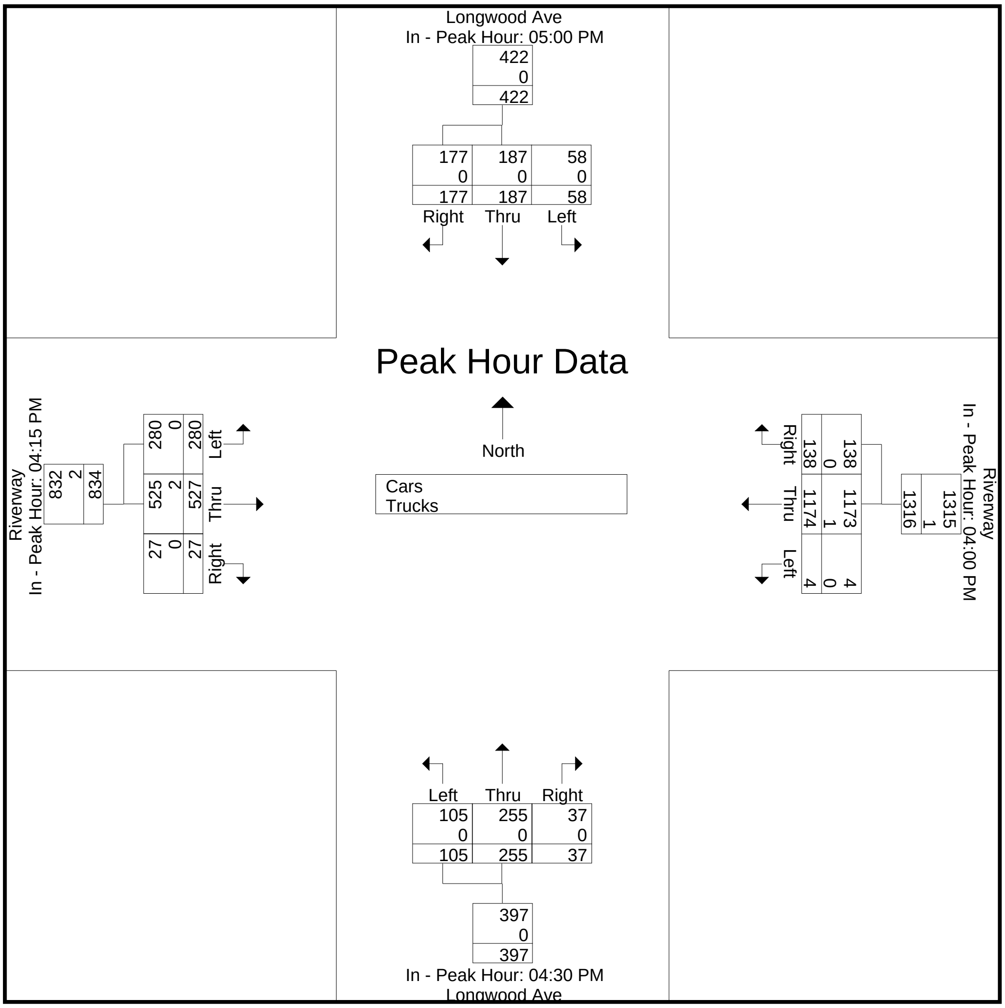
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:00 PM				04:30 PM				04:15 PM			
+0 mins.	11	47	47	105	**3**	**313**	33	**349**	28	60	**18**	106	69	**149**	8	**226**
+15 mins.	**19**	40	**55**	**114**	1	309	23	333	18	**67**	5	90	**77**	126	6	209
+30 mins.	11	47	42	100	0	251	**43**	294	26	61	3	90	69	123	**11**	203
+45 mins.	17	**53**	33	103	0	301	39	340	**33**	67	11	**111**	65	129	2	196
Total Volume	58	187	177	422	4	1174	138	1316	105	255	37	397	280	527	27	834
% App. Total	13.7	44.3	41.9		0.3	89.2	10.5		26.4	64.2	9.3		33.6	63.2	3.2	
PHF	.763	.882	.805	.925	.333	.938	.802	.943	.795	.951	.514	.894	.909	.884	.614	.923
Cars	58	187	177	422	4	1173	138	1315	105	255	37	397	280	525	27	832
% Cars	100	100	100	100	100	99.9	100	99.9	100	100	100	100	100	99.6	100	99.8
Trucks	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2
% Trucks	0	0	0	0	0	0.1	0	0.1	0	0	0	0	0	0.4	0	0.2

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

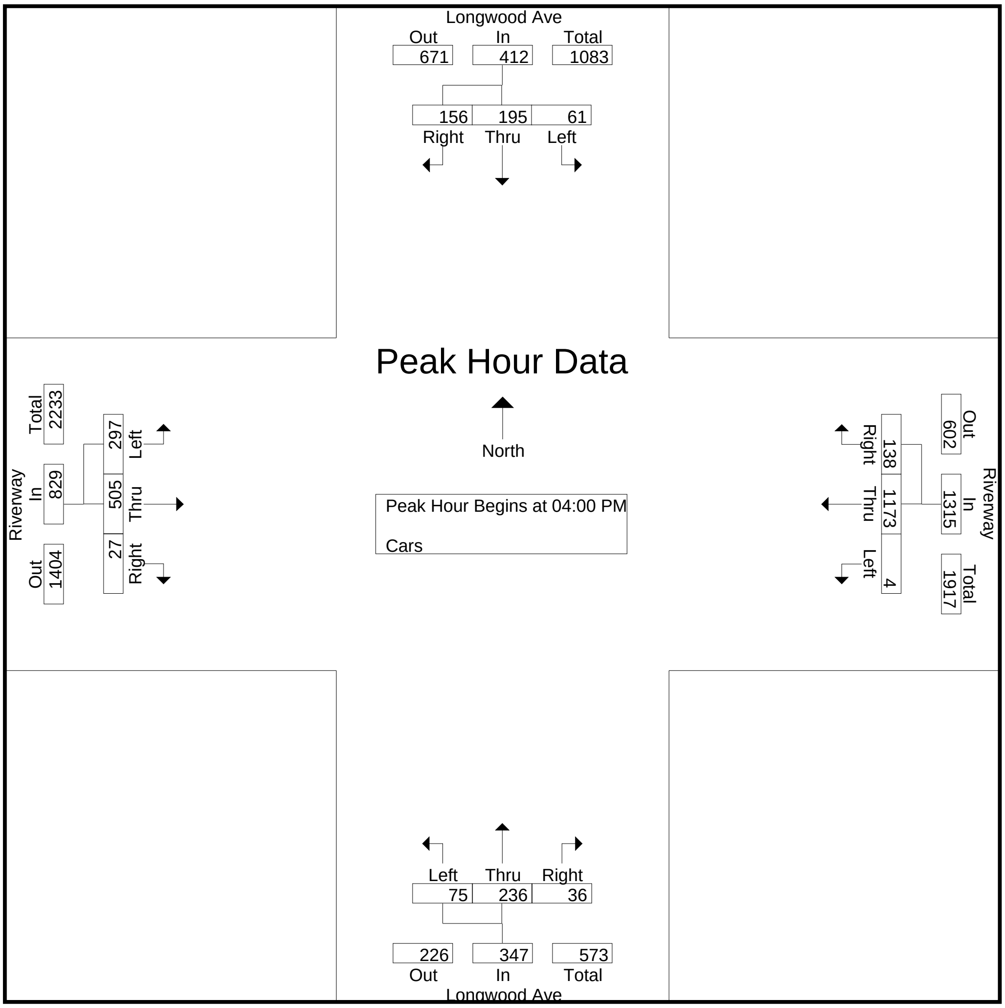
	Longwood Ave From North			Riverway From East			Longwood Ave From South			Riverway From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	14	50	45	3	313	33	11	49	4	82	108	2	714
04:15 PM	18	52	36	1	309	23	18	60	9	69	149	8	752
04:30 PM	14	42	41	0	251	43	28	60	18	77	125	6	705
04:45 PM	15	51	34	0	300	39	18	67	5	69	123	11	732
Total	61	195	156	4	1173	138	75	236	36	297	505	27	2903
05:00 PM	11	47	47	0	286	33	26	61	3	65	128	2	709
05:15 PM	19	40	55	0	249	57	33	67	11	44	131	5	711
05:30 PM	11	47	42	0	259	60	19	82	2	58	137	5	722
05:45 PM	17	53	33	0	273	66	20	45	5	38	121	4	675
Total	58	187	177	0	1067	216	98	255	21	205	517	16	2817
Grand Total	119	382	333	4	2240	354	173	491	57	502	1022	43	5720
Apprch %	14.3	45.8	39.9	0.2	86.2	13.6	24	68.1	7.9	32	65.2	2.7	
Total %	2.1	6.7	5.8	0.1	39.2	6.2	3	8.6	1	8.8	17.9	0.8	

	Longwood Ave From North				Riverway From East				Longwood Ave From South				Riverway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	14	50	**45**	**109**	**3**	**313**	33	**349**	11	49	4	64	**82**	108	2	192	714
04:15 PM	**18**	**52**	36	106	1	309	23	333	18	60	9	87	69	**149**	8	**226**	**752**
04:30 PM	14	42	41	97	0	251	**43**	294	**28**	60	**18**	**106**	77	125	6	208	705
04:45 PM	15	51	34	100	0	300	39	339	18	**67**	5	90	69	123	**11**	203	732
Total Volume	61	195	156	412	4	1173	138	1315	75	236	36	347	297	505	27	829	2903
% App. Total	14.8	47.3	37.9		0.3	89.2	10.5		21.6	68	10.4		35.8	60.9	3.3		
PHF	.847	.938	.867	.945	.333	.937	.802	.942	.670	.881	.500	.818	.905	.847	.614	.917	.965

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 2



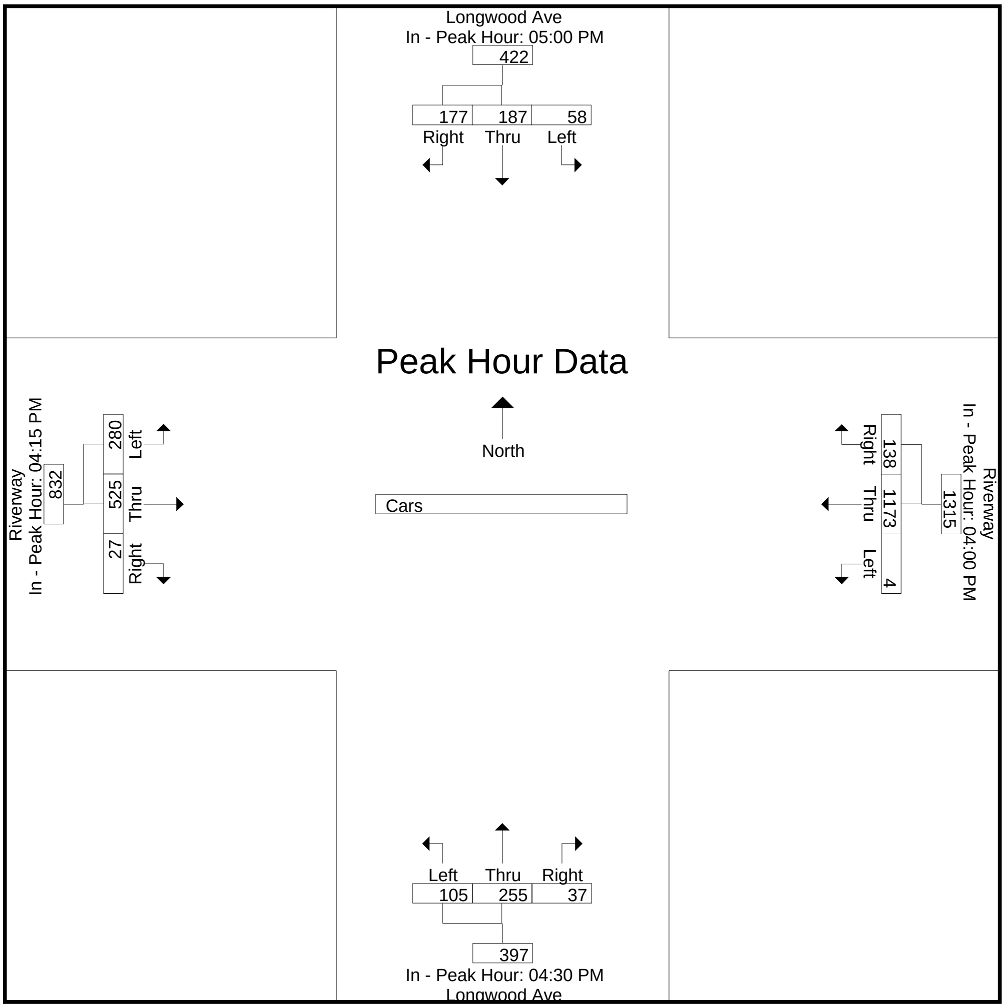
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:00 PM				04:30 PM				04:15 PM			
+0 mins.	11	47	47	105	**3**	**313**	33	**349**	28	60	**18**	106	69	**149**	8	**226**
+15 mins.	**19**	40	**55**	**114**	1	309	23	333	18	**67**	5	90	**77**	125	6	208
+30 mins.	11	47	42	100	0	251	**43**	294	26	61	3	90	69	123	**11**	203
+45 mins.	17	**53**	33	103	0	300	39	339	**33**	67	11	**111**	65	128	2	195
Total Volume	58	187	177	422	4	1173	138	1315	105	255	37	397	280	525	27	832
% App. Total	13.7	44.3	41.9		0.3	89.2	10.5		26.4	64.2	9.3		33.7	63.1	3.2	
PHF	.763	.882	.805	.925	.333	.937	.802	.942	.795	.951	.514	.894	.909	.881	.614	.920

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

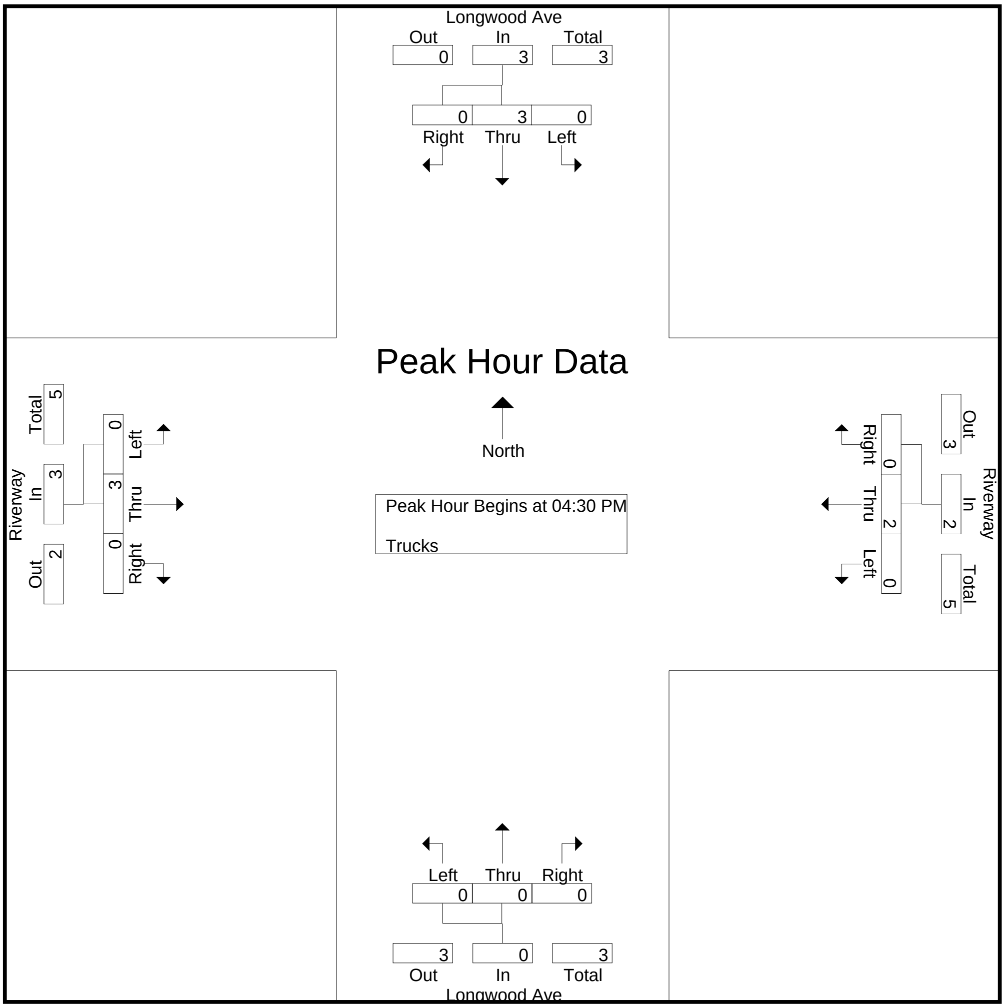
	Longwood Ave From North			Riverway From East			Longwood Ave From South			Riverway From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	2	0	0	0	0	0	0	0	0	1	0	3
04:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	2
Total	0	3	0	0	1	0	0	0	0	0	1	0	5
05:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
05:15 PM	0	0	0	0	1	0	0	0	0	0	1	0	2
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	0	0	0	2	0	3
Grand Total	0	3	0	0	2	0	0	0	0	0	3	0	8
Apprch %	0	100	0	0	100	0	0	0	0	0	100	0	
Total %	0	37.5	0	0	25	0	0	0	0	0	37.5	0	

	Longwood Ave From North				Riverway From East				Longwood Ave From South				Riverway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	**2**	0	**2**	0	0	0	0	0	0	0	0	0	**1**	0	**1**	**3**
04:45 PM	0	1	0	1	0	**1**	0	**1**	0	0	0	0	0	0	0	0	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Total Volume	0	3	0	3	0	2	0	2	0	0	0	0	0	3	0	3	8
% App. Total	0	100	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.375	.000	.375	.000	.500	.000	.500	.000	.000	.000	.000	.000	.750	.000	.750	.667

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 2



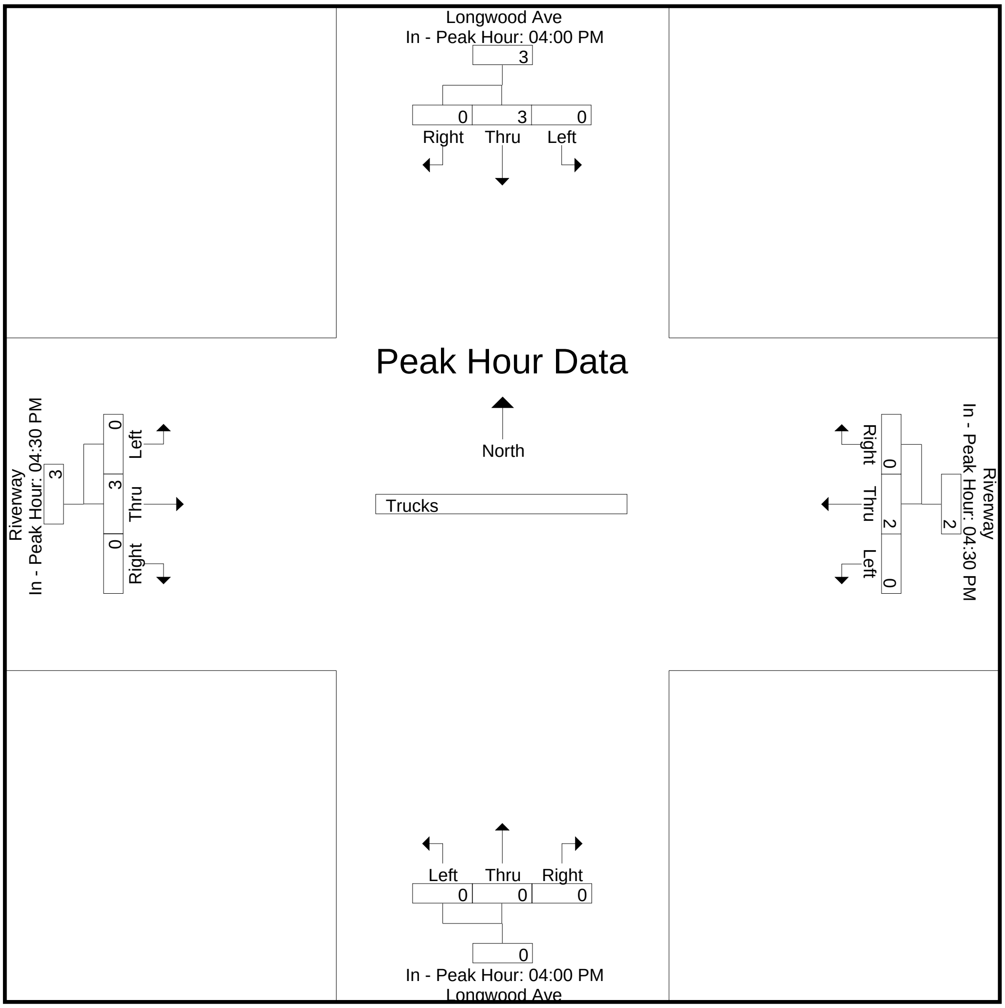
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:00 PM				04:30 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**
+15 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0
+30 mins.	0	**2**	0	**2**	0	0	0	0	0	0	0	0	0	1	0	1
+45 mins.	0	1	0	1	0	1	0	1	0	0	0	0	0	1	0	1
Total Volume	0	3	0	3	0	2	0	2	0	0	0	0	0	3	0	3
% App. Total	0	100	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.375	.000	.375	.000	.500	.000	.500	.000	.000	.000	.000	.000	.750	.000	.750

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes

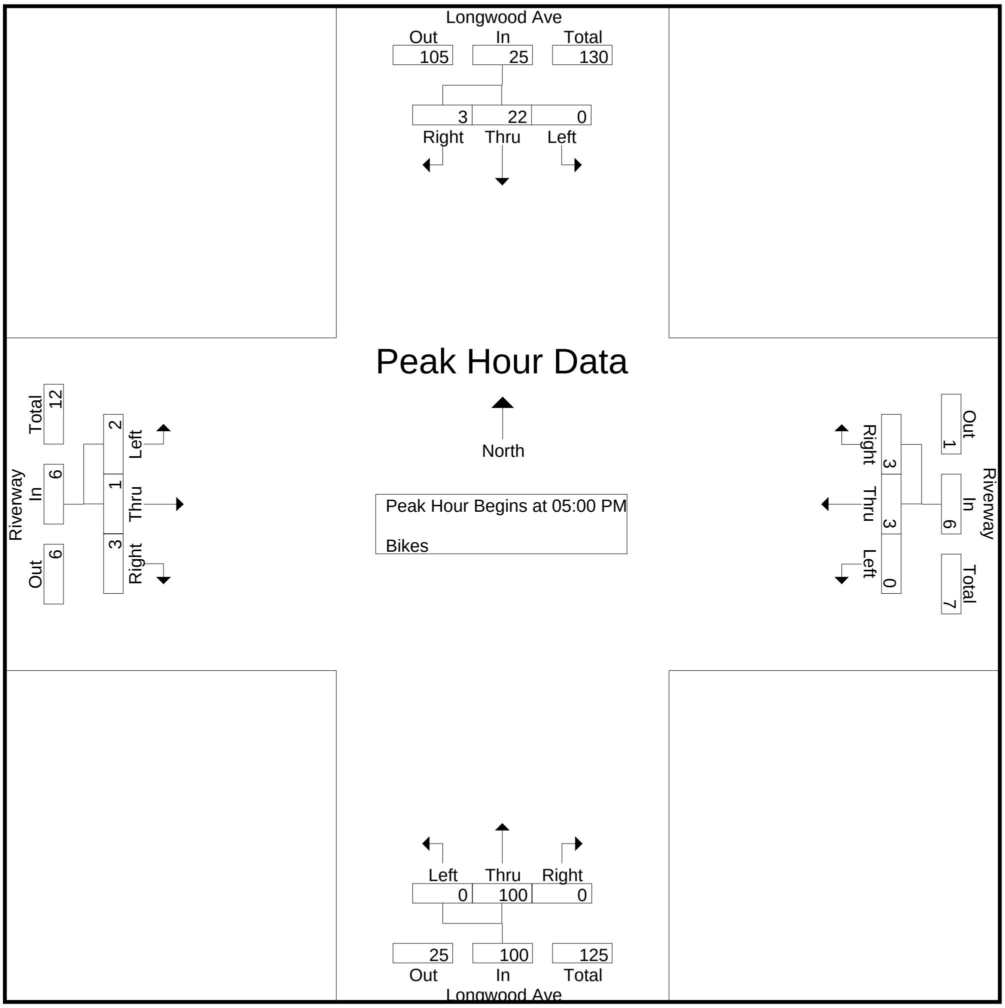
	Longwood Ave From North			Riverway From East			Longwood Ave From South			Riverway From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	2	0	0	0	0	0	7	0	0	0	0	9
04:15 PM	0	4	0	0	0	0	0	9	0	0	1	0	14
04:30 PM	0	2	0	0	1	0	0	19	0	0	1	0	23
04:45 PM	0	4	0	0	0	0	0	20	0	1	3	0	28
Total	0	12	0	0	1	0	0	55	0	1	5	0	74
05:00 PM	0	4	2	0	0	2	0	29	0	1	0	1	39
05:15 PM	0	6	0	0	0	0	0	23	0	0	1	0	30
05:30 PM	0	6	0	0	1	0	0	19	0	1	0	0	27
05:45 PM	0	6	1	0	2	1	0	29	0	0	0	2	41
Total	0	22	3	0	3	3	0	100	0	2	1	3	137
Grand Total	0	34	3	0	4	3	0	155	0	3	6	3	211
Apprch %	0	91.9	8.1	0	57.1	42.9	0	100	0	25	50	25	
Total %	0	16.1	1.4	0	1.9	1.4	0	73.5	0	1.4	2.8	1.4	

	Longwood Ave From North				Riverway From East				Longwood Ave From South				Riverway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	4	**2**	6	0	0	**2**	2	0	**29**	0	**29**	**1**	0	1	**2**	39
05:15 PM	0	**6**	0	6	0	0	0	0	0	23	0	23	0	**1**	0	1	30
05:30 PM	0	6	0	6	0	1	0	1	0	19	0	19	1	0	0	1	27
05:45 PM	0	6	1	**7**	0	**2**	1	**3**	0	29	0	29	0	0	**2**	2	**41**
Total Volume	0	22	3	25	0	3	3	6	0	100	0	100	2	1	3	6	137
% App. Total	0	88	12		0	50	50		0	100	0		33.3	16.7	50		
PHF	.000	.917	.375	.893	.000	.375	.375	.500	.000	.862	.000	.862	.500	.250	.375	.750	.835

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 2



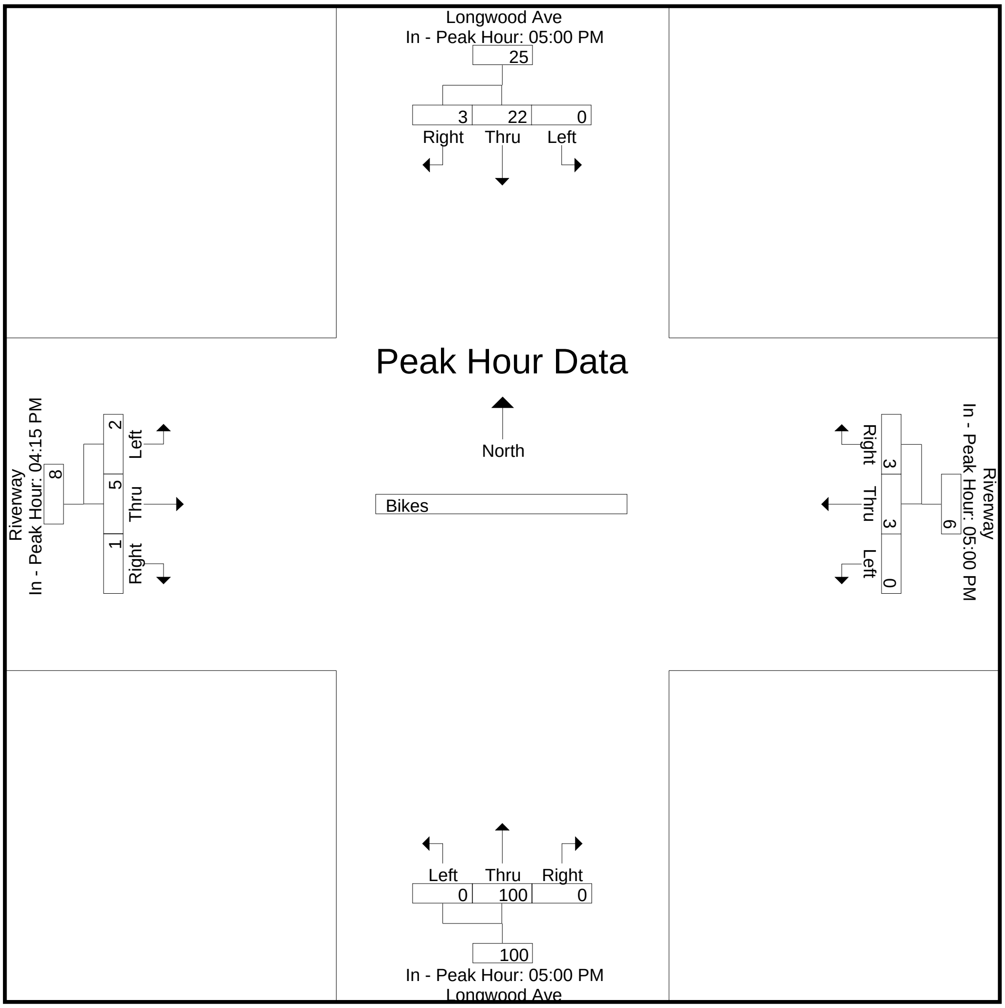
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				04:15 PM			
+0 mins.	0	4	**2**	6	0	0	**2**	2	0	**29**	0	**29**	0	1	0	1
+15 mins.	0	**6**	0	6	0	0	0	0	0	23	0	23	0	1	0	1
+30 mins.	0	6	0	6	0	1	0	1	0	19	0	19	**1**	**3**	0	**4**
+45 mins.	0	6	1	**7**	0	**2**	1	**3**	0	29	0	29	1	0	**1**	2
Total Volume	0	22	3	25	0	3	3	6	0	100	0	100	2	5	1	8
% App. Total	0	88	12		0	50	50		0	100	0		25	62.5	12.5	
PHF	.000	.917	.375	.893	.000	.375	.375	.500	.000	.862	.000	.862	.500	.417	.250	.500

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 1

Groups Printed- Peds

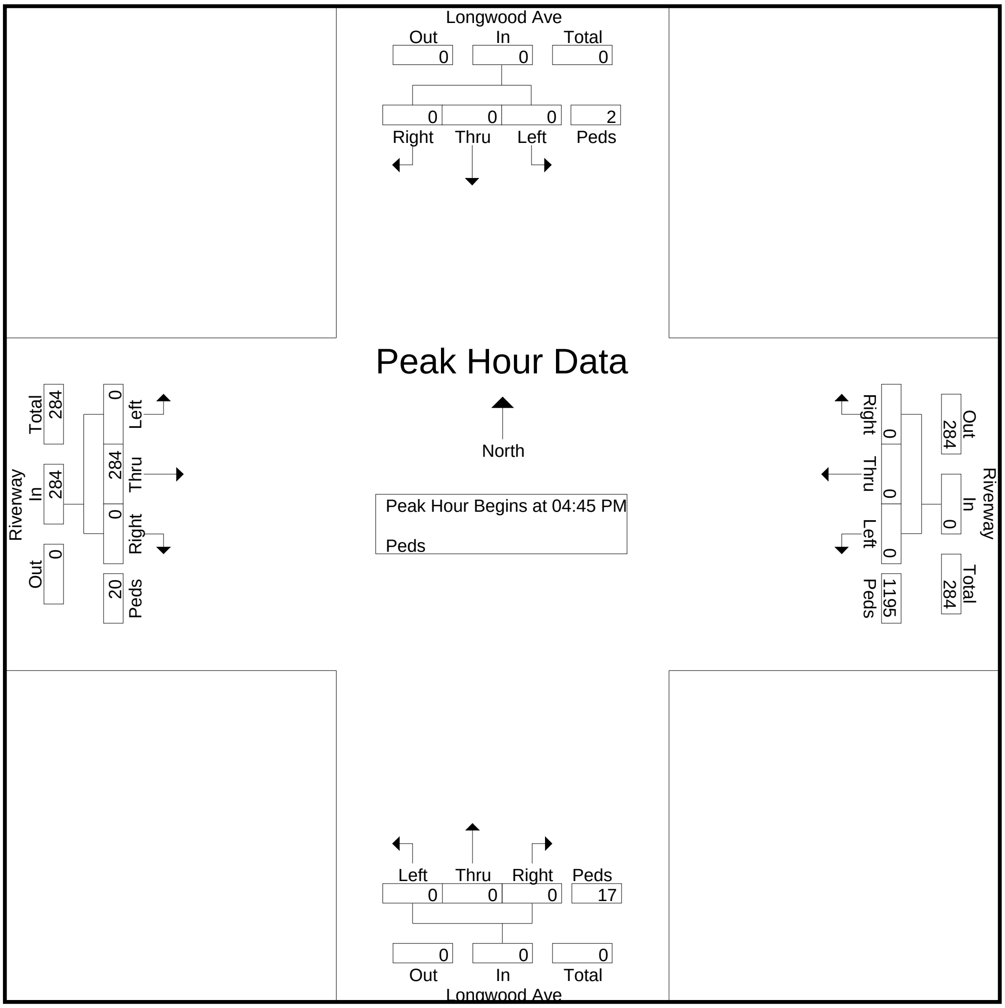
	Longwood Ave From North				Riverway From East				Longwood Ave From South				Riverway From West				
Start Time				Peds				Peds				Peds		NE / SW		Peds	Int. Total
04:00 PM	0	0	0	3	0	0	0	159	0	0	0	1	0	41	0	4	208
04:15 PM	0	0	0	1	0	0	0	150	0	0	0	0	0	36	0	4	191
04:30 PM	0	0	0	1	0	0	0	174	0	0	0	1	0	42	0	7	225
04:45 PM	0	0	0	1	0	0	0	274	0	0	0	6	0	51	0	2	334
Total	0	0	0	6	0	0	0	757	0	0	0	8	0	170	0	17	958
05:00 PM	0	0	0	0	0	0	0	338	0	0	0	5	0	108	0	9	460
05:15 PM	0	0	0	1	0	0	0	304	0	0	0	1	0	66	0	4	376
05:30 PM	0	0	0	0	0	0	0	279	0	0	0	5	0	59	0	5	348
05:45 PM	0	0	0	1	0	0	0	216	0	0	0	5	0	49	0	9	280
Total	0	0	0	2	0	0	0	1137	0	0	0	16	0	282	0	27	1464
Grand Total	0	0	0	8	0	0	0	1894	0	0	0	24	0	452	0	44	2422
Apprch %	0	0	0	100	0	0	0	100	0	0	0	100	0	91.1	0	8.9	
Total %	0	0	0	0.3	0	0	0	78.2	0	0	0	1	0	18.7	0	1.8	

	Longwood Ave From North					Riverway From East					Longwood Ave From South					Riverway From West					
Start Time				Peds	App. Total				Peds	App. Total				Peds	App. Total		NE / SW		Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	0	**1**	**1**	0	0	0	274	274	0	0	0	**6**	**6**	0	51	0	2	53	334
05:00 PM	0	0	0	0	0	0	0	0	**338**	**338**	0	0	0	5	5	0	**108**	0	**9**	**117**	**460**
05:15 PM	0	0	0	1	1	0	0	0	304	304	0	0	0	1	1	0	66	0	4	70	376
05:30 PM	0	0	0	0	0	0	0	0	279	279	0	0	0	5	5	0	59	0	5	64	348
Total Volume	0	0	0	2	2	0	0	0	1195	1195	0	0	0	17	17	0	284	0	20	304	1518
% App. Total	0	0	0	100		0	0	0	100		0	0	0	100		0	93.4	0	6.6		
PHF	.000	.000	.000	.500	.500	.000	.000	.000	.884	.884	.000	.000	.000	.708	.708	.000	.657	.000	.556	.650	.825

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012
Page No : 2



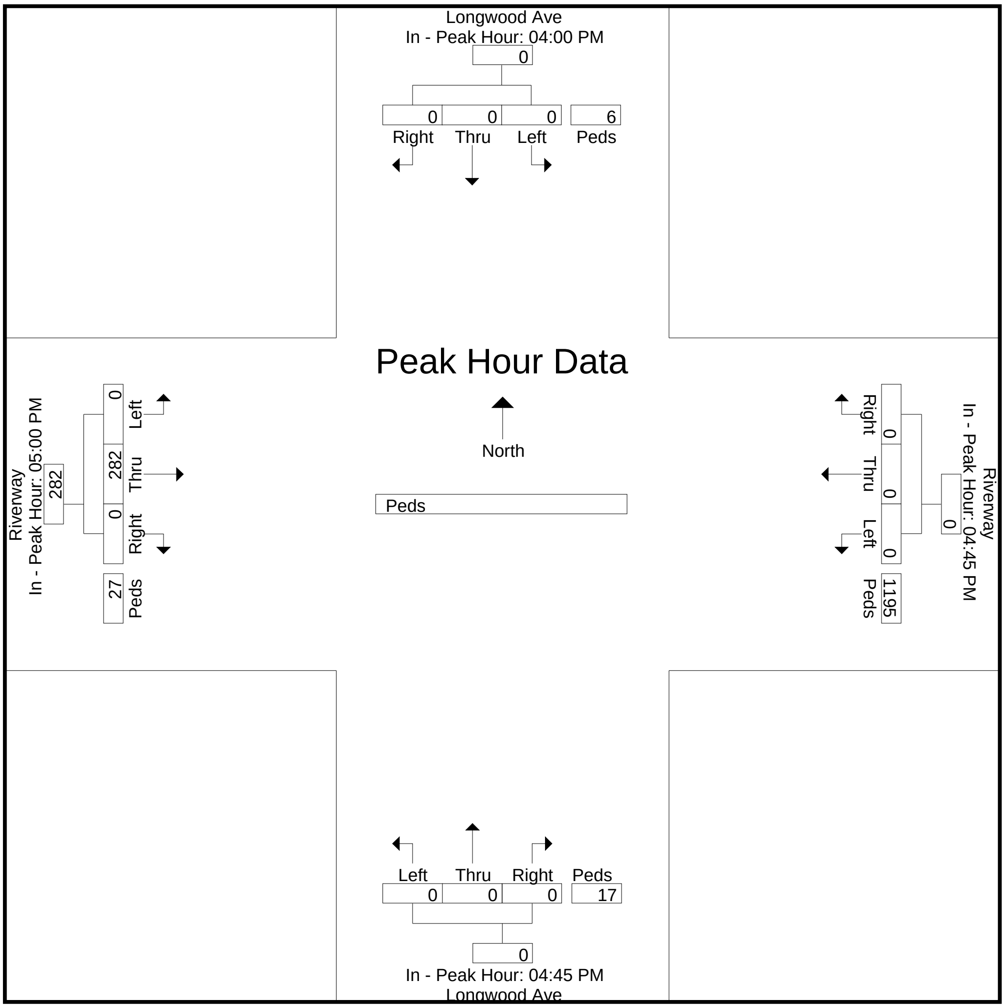
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM					04:45 PM					04:45 PM					05:00 PM				
+0 mins.	0	0	0	**3**	**3**	0	0	0	274	274	0	0	0	**6**	**6**	0	**108**	0	**9**	**117**
+15 mins.	0	0	0	1	1	0	0	0	**338**	**338**	0	0	0	5	5	0	66	0	4	70
+30 mins.	0	0	0	1	1	0	0	0	304	304	0	0	0	1	1	0	59	0	5	64
+45 mins.	0	0	0	1	1	0	0	0	279	279	0	0	0	5	5	0	49	0	9	58
Total Volume	0	0	0	6	6	0	0	0	1195	1195	0	0	0	17	17	0	282	0	27	309
% App. Total	0	0	0	100		0	0	0	100		0	0	0	100		0	91.3	0	8.7	
PHF	.000	.000	.000	.500	.500	.000	.000	.000	.884	.884	.000	.000	.000	.708	.708	.000	.653	.000	.750	.660

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 94970016
Site Code : 94970016
Start Date : 5/16/2012



Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
Page No : 1

Groups Printed- Cars - Trucks

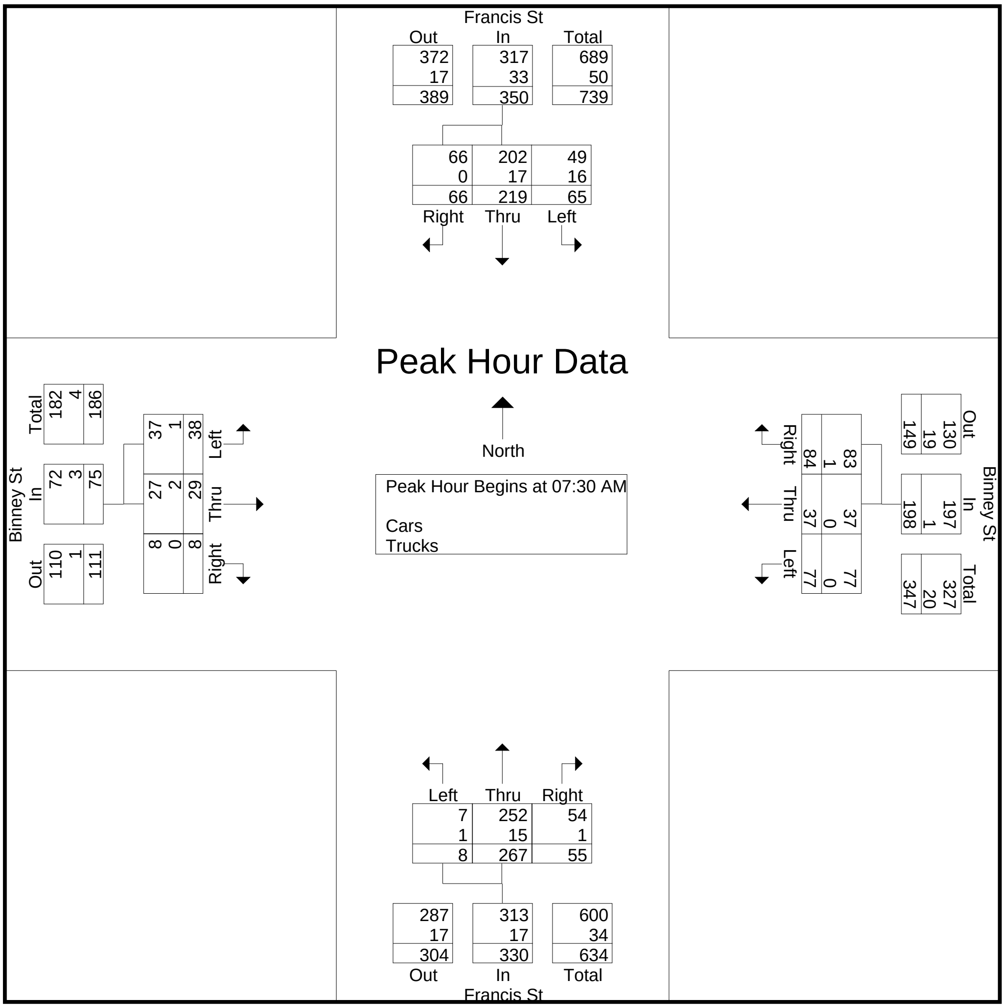
	Francis St From North			Binney St From East			Francis St From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	17	60	12	23	1	17	3	45	5	5	4	7	199
07:15 AM	9	53	15	23	4	19	4	65	20	5	7	2	226
07:30 AM	15	48	14	25	6	26	2	79	12	13	6	1	247
07:45 AM	17	49	14	17	4	15	3	76	16	10	9	2	232
Total	58	210	55	88	15	77	12	265	53	33	26	12	904
08:00 AM	17	57	20	18	15	22	2	55	11	9	6	3	235
08:15 AM	16	65	18	17	12	21	1	57	16	6	8	2	239
08:30 AM	11	61	12	17	13	16	3	47	15	10	4	7	216
08:45 AM	23	47	14	17	8	19	0	57	16	9	7	5	222
Total	67	230	64	69	48	78	6	216	58	34	25	17	912
Grand Total	125	440	119	157	63	155	18	481	111	67	51	29	1816
Apprch %	18.3	64.3	17.4	41.9	16.8	41.3	3	78.9	18.2	45.6	34.7	19.7	
Total %	6.9	24.2	6.6	8.6	3.5	8.5	1	26.5	6.1	3.7	2.8	1.6	
Cars	96	406	119	156	63	152	17	458	110	64	49	26	1716
% Cars	76.8	92.3	100	99.4	100	98.1	94.4	95.2	99.1	95.5	96.1	89.7	94.5
Trucks	29	34	0	1	0	3	1	23	1	3	2	3	100
% Trucks	23.2	7.7	0	0.6	0	1.9	5.6	4.8	0.9	4.5	3.9	10.3	5.5

	Francis St From North				Binney St From East				Francis St From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	15	48	14	77	**25**	6	**26**	**57**	2	**79**	12	93	**13**	6	1	20	**247**
07:45 AM	**17**	49	14	80	17	4	15	36	**3**	76	**16**	**95**	10	**9**	2	**21**	232
08:00 AM	17	57	**20**	94	18	**15**	22	55	2	55	11	68	9	6	**3**	18	235
08:15 AM	16	**65**	18	**99**	17	12	21	50	1	57	16	74	6	8	2	16	239
Total Volume	65	219	66	350	77	37	84	198	8	267	55	330	38	29	8	75	953
% App. Total	18.6	62.6	18.9		38.9	18.7	42.4		2.4	80.9	16.7		50.7	38.7	10.7		
PHF	.956	.842	.825	.884	.770	.617	.808	.868	.667	.845	.859	.868	.731	.806	.667	.893	.965
Cars	49	202	66	317	77	37	83	197	7	252	54	313	37	27	8	72	899
% Cars	75.4	92.2	100	90.6	100	100	98.8	99.5	87.5	94.4	98.2	94.8	97.4	93.1	100	96.0	94.3
Trucks	16	17	0	33	0	0	1	1	1	15	1	17	1	2	0	3	54
% Trucks	24.6	7.8	0	9.4	0	0	1.2	0.5	12.5	5.6	1.8	5.2	2.6	6.9	0	4.0	5.7

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				07:15 AM				07:45 AM			
+0 mins.	17	57	**20**	94	**25**	6	**26**	**57**	**4**	65	**20**	89	**10**	**9**	2	**21**
+15 mins.	16	**65**	18	**99**	17	4	15	36	2	**79**	12	93	9	6	3	18
+30 mins.	11	61	12	84	18	**15**	22	55	3	76	16	**95**	6	8	2	16
+45 mins.	**23**	47	14	84	17	12	21	50	2	55	11	68	10	4	**7**	21
Total Volume	67	230	64	361	77	37	84	198	11	275	59	345	35	27	14	76
% App. Total	18.6	63.7	17.7		38.9	18.7	42.4		3.2	79.7	17.1		46.1	35.5	18.4	
PHF	.728	.885	.800	.912	.770	.617	.808	.868	.688	.870	.738	.908	.875	.750	.500	.905
Cars	54	213	64	331	77	37	83	197	11	264	58	333	34	25	13	72
% Cars	80.6	92.6	100	91.7	100	100	98.8	99.5	100	96	98.3	96.5	97.1	92.6	92.9	94.7
Trucks	13	17	0	30	0	0	1	1	0	11	1	12	1	2	1	4
% Trucks	19.4	7.4	0	8.3	0	0	1.2	0.5	0	4	1.7	3.5	2.9	7.4	7.1	5.3

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
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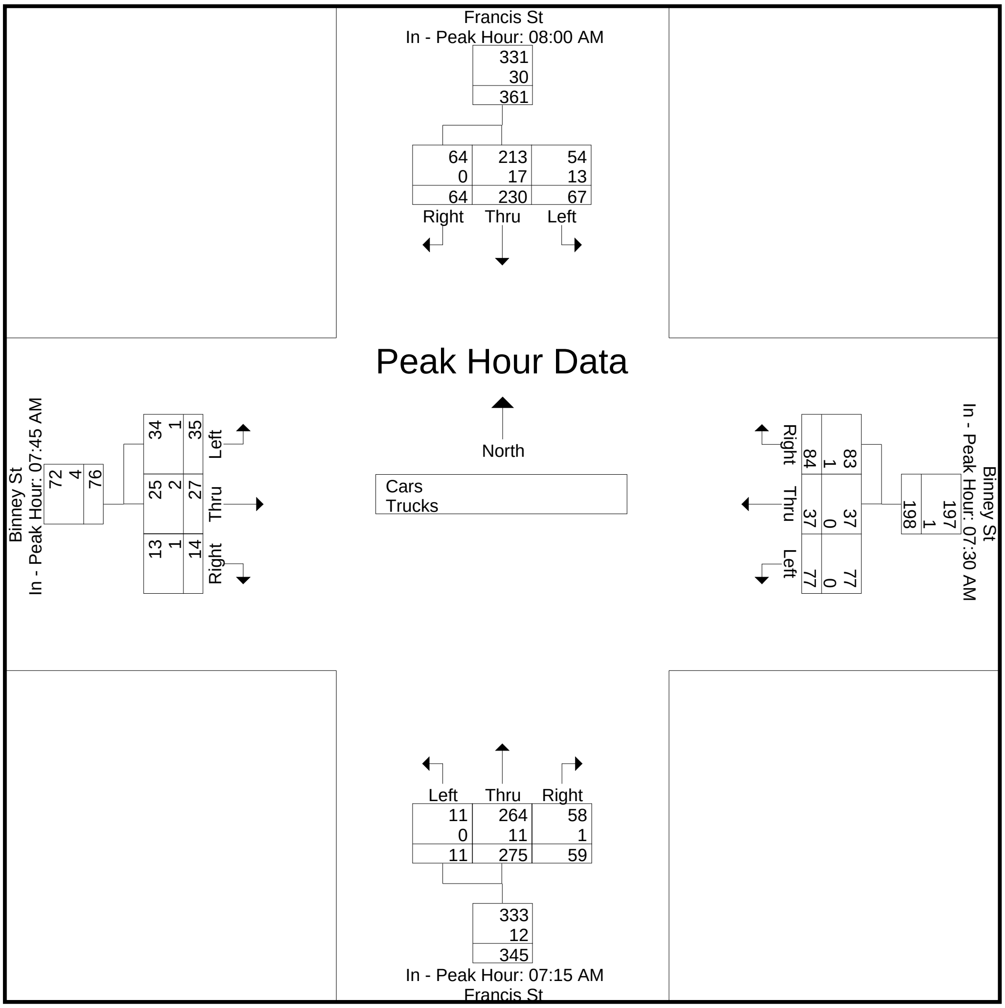


Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
Page No : 1

Groups Printed- Cars

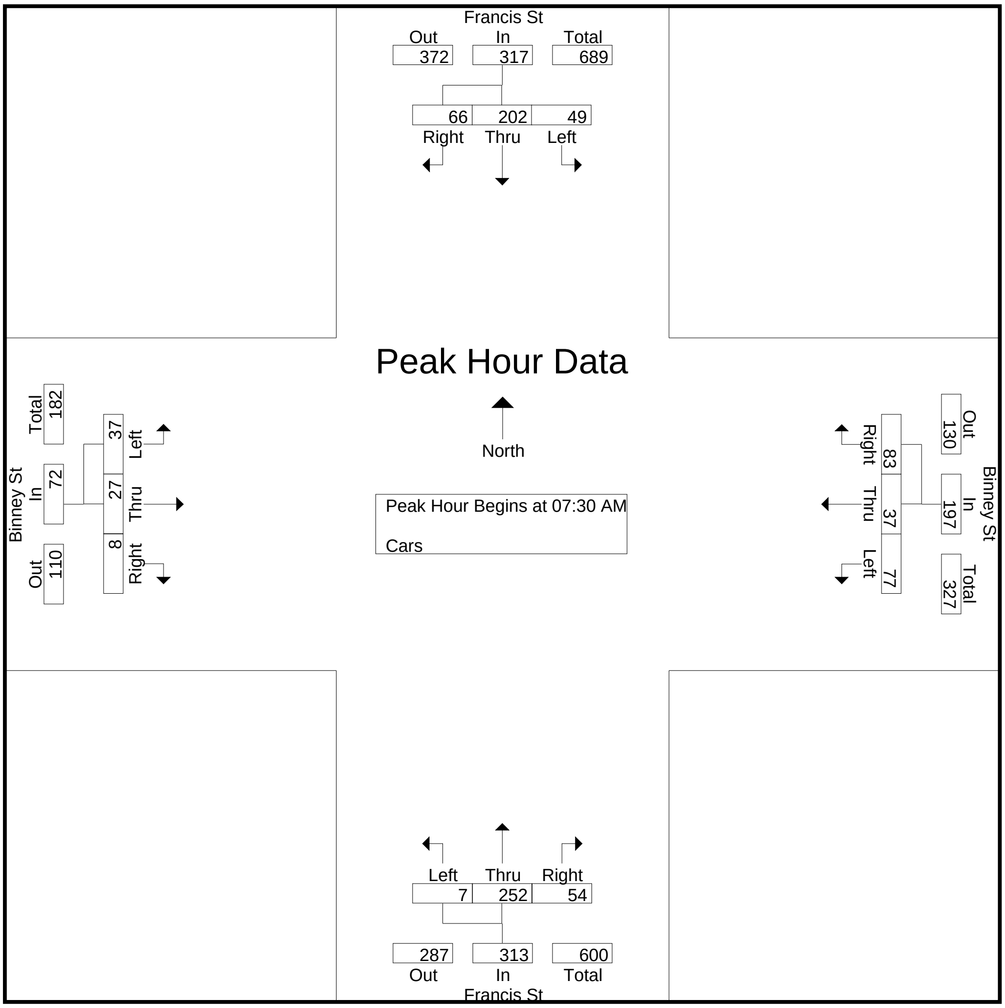
	Francis St From North			**Binney St From East**			**Francis St From South**			**Binney St From West**			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	13	56	12	22	1	17	3	42	5	5	4	5	185
07:15 AM	6	49	15	23	4	18	4	64	20	3	7	2	215
07:30 AM	11	45	14	25	6	26	2	75	11	13	6	1	235
07:45 AM	12	43	14	17	4	15	3	72	16	10	8	2	216
Total	42	193	55	87	15	76	12	253	52	31	25	10	851
08:00 AM	15	54	20	18	15	22	2	53	11	8	5	3	226
08:15 AM	11	60	18	17	12	20	0	52	16	6	8	2	222
08:30 AM	9	57	12	17	13	15	3	45	15	10	4	6	206
08:45 AM	19	42	14	17	8	19	0	55	16	9	7	5	211
Total	54	213	64	69	48	76	5	205	58	33	24	16	865
Grand Total	96	406	119	156	63	152	17	458	110	64	49	26	1716
Apprch %	15.5	65.4	19.2	42	17	41	2.9	78.3	18.8	46	35.3	18.7	
Total %	5.6	23.7	6.9	9.1	3.7	8.9	1	26.7	6.4	3.7	2.9	1.5	

	Francis St From North				**Binney St From East**				**Francis St From South**				**Binney St From West**				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	11	45	14	70	**25**	6	**26**	**57**	2	**75**	11	88	**13**	6	1	**20**	**235**
07:45 AM	12	43	14	69	17	4	15	36	**3**	72	**16**	**91**	10	**8**	2	20	216
08:00 AM	**15**	54	**20**	**89**	18	**15**	22	55	2	53	11	66	8	5	**3**	16	226
08:15 AM	11	**60**	18	89	17	12	20	49	0	52	16	68	6	8	2	16	222
Total Volume	49	202	66	317	77	37	83	197	7	252	54	313	37	27	8	72	899
% App. Total	15.5	63.7	20.8		39.1	18.8	42.1		2.2	80.5	17.3		51.4	37.5	11.1		
PHF	.817	.842	.825	.890	.770	.617	.798	.864	.583	.840	.844	.860	.712	.844	.667	.900	.956

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
Page No : 2

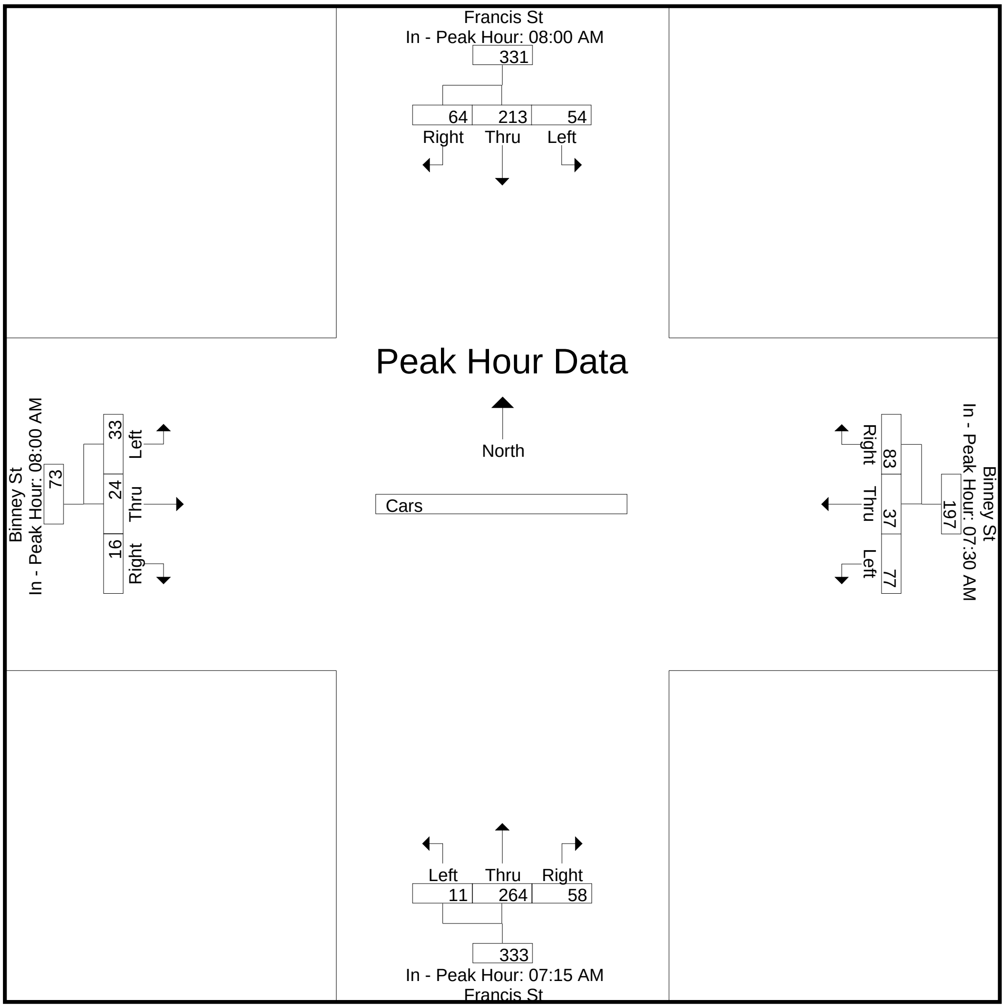


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				07:15 AM				08:00 AM			
+0 mins.	15	54	**20**	**89**	**25**	6	**26**	**57**	**4**	64	**20**	88	8	5	3	16
+15 mins.	11	**60**	18	89	17	4	15	36	2	**75**	11	88	6	**8**	2	16
+30 mins.	9	57	12	78	18	**15**	22	55	3	72	16	**91**	**10**	4	**6**	20
+45 mins.	**19**	42	14	75	17	12	20	49	2	53	11	66	9	7	5	**21**
Total Volume	54	213	64	331	77	37	83	197	11	264	58	333	33	24	16	73
% App. Total	16.3	64.4	19.3		39.1	18.8	42.1		3.3	79.3	17.4		45.2	32.9	21.9	
PHF	.711	.888	.800	.930	.770	.617	.798	.864	.688	.880	.725	.915	.825	.750	.667	.869

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
Page No : 1

Groups Printed- Trucks

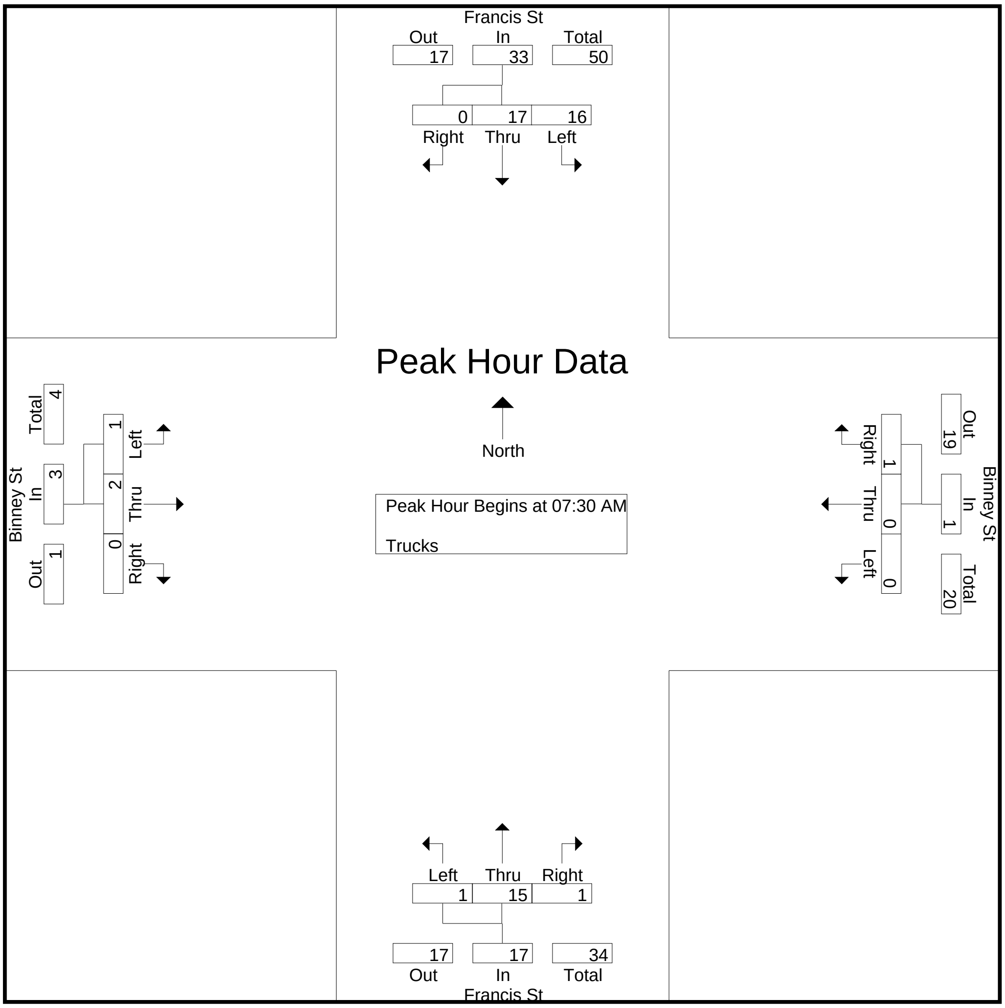
	Francis St From North			Binney St From East			Francis St From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	4	4	0	1	0	0	0	3	0	0	0	2	14
07:15 AM	3	4	0	0	0	1	0	1	0	2	0	0	11
07:30 AM	4	3	0	0	0	0	0	4	1	0	0	0	12
07:45 AM	5	6	0	0	0	0	0	4	0	0	1	0	16
Total	16	17	0	1	0	1	0	12	1	2	1	2	53
08:00 AM	2	3	0	0	0	0	0	2	0	1	1	0	9
08:15 AM	5	5	0	0	0	1	1	5	0	0	0	0	17
08:30 AM	2	4	0	0	0	1	0	2	0	0	0	1	10
08:45 AM	4	5	0	0	0	0	0	2	0	0	0	0	11
Total	13	17	0	0	0	2	1	11	0	1	1	1	47
Grand Total	29	34	0	1	0	3	1	23	1	3	2	3	100
Apprch %	46	54	0	25	0	75	4	92	4	37.5	25	37.5	
Total %	29	34	0	1	0	3	1	23	1	3	2	3	

	Francis St From North				Binney St From East				Francis St From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	4	3	0	7	0	0	0	0	0	4	**1**	5	0	0	0	0	12
07:45 AM	**5**	**6**	0	**11**	0	0	0	0	0	4	0	4	0	**1**	0	1	16
08:00 AM	2	3	0	5	0	0	0	0	0	2	0	2	**1**	1	0	**2**	9
08:15 AM	5	5	0	10	0	0	**1**	**1**	**1**	**5**	0	**6**	0	0	0	0	**17**
Total Volume	16	17	0	33	0	0	1	1	1	15	1	17	1	2	0	3	54
% App. Total	48.5	51.5	0		0	0	100		5.9	88.2	5.9		33.3	66.7	0		
PHF	.800	.708	.000	.750	.000	.000	.250	.250	.250	.750	.250	.708	.250	.500	.000	.375	.794

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
Page No : 2



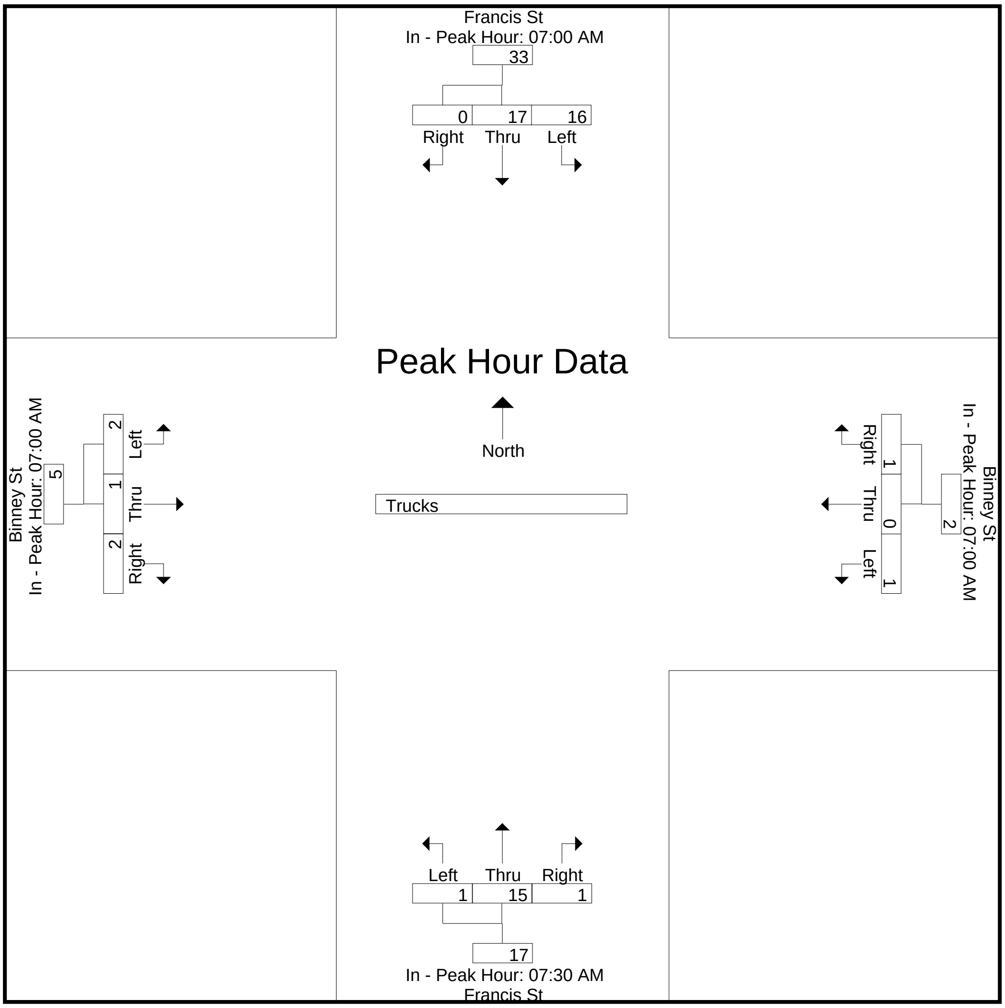
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:30 AM				07:00 AM			
+0 mins.	4	4	0	8	**1**	0	0	**1**	0	4	**1**	5	0	0	**2**	**2**
+15 mins.	3	4	0	7	0	0	**1**	1	0	4	0	4	**2**	0	0	2
+30 mins.	4	3	0	7	0	0	0	0	0	2	0	2	0	0	0	0
+45 mins.	**5**	**6**	0	**11**	0	0	0	0	**1**	**5**	0	**6**	0	**1**	0	1
Total Volume	16	17	0	33	1	0	1	2	1	15	1	17	2	1	2	5
% App. Total	48.5	51.5	0		50	0	50		5.9	88.2	5.9		40	20	40	
PHF	.800	.708	.000	.750	.250	.000	.250	.500	.250	.750	.250	.708	.250	.250	.250	.625

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
Page No : 1

Groups Printed- Bikes Peds

	Francis St From North				Binney St From East				Francis St From South				Binney St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	1	2	1	16	0	0	0	75	0	3	1	20	0	2	0	37	148	10	158
07:15 AM	2	2	0	18	1	0	0	46	0	0	0	29	0	1	0	23	116	6	122
07:30 AM	2	0	0	13	0	0	0	57	0	1	0	13	0	0	0	31	114	3	117
07:45 AM	1	3	0	34	0	0	1	72	0	2	1	21	0	0	0	48	175	8	183
Total	6	7	1	81	1	0	1	250	0	6	2	83	0	3	0	139	553	27	580
08:00 AM	3	0	0	26	0	0	0	62	0	1	0	24	0	1	0	32	144	5	149
08:15 AM	2	2	0	27	0	1	0	65	0	2	0	32	1	1	0	54	178	9	187
08:30 AM	3	1	0	30	0	0	0	65	0	1	1	21	0	1	0	32	148	7	155
08:45 AM	2	2	0	30	0	0	0	71	0	0	1	19	0	2	1	49	169	8	177
Total	10	5	0	113	0	1	0	263	0	4	2	96	1	5	1	167	639	29	668
Grand Total	16	12	1	194	1	1	1	513	0	10	4	179	1	8	1	306	1192	56	1248
Apprch %	55.2	41.4	3.4		33.3	33.3	33.3		0	71.4	28.6		10	80	10				
Total %	28.6	21.4	1.8		1.8	1.8	1.8		0	17.9	7.1		1.8	14.3	1.8		95.5	4.5	

	Francis St From North				Binney St From East				Francis St From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	1	**3**	0	**4**	0	0	**1**	**1**	0	**2**	**1**	**3**	0	0	0	0	8
08:00 AM	**3**	0	0	3	0	0	0	0	0	1	0	1	0	**1**	0	1	5
08:15 AM	2	2	0	4	0	**1**	0	1	0	2	0	2	**1**	1	0	**2**	**9**
08:30 AM	3	1	0	4	0	0	0	0	0	1	1	2	0	1	0	1	7
Total Volume	9	6	0	15	0	1	1	2	0	6	2	8	1	3	0	4	29
% App. Total	60	40	0		0	50	50		0	75	25		25	75	0		
PHF	.750	.500	.000	.938	.000	.250	.250	.500	.000	.750	.500	.667	.250	.750	.000	.500	.806

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
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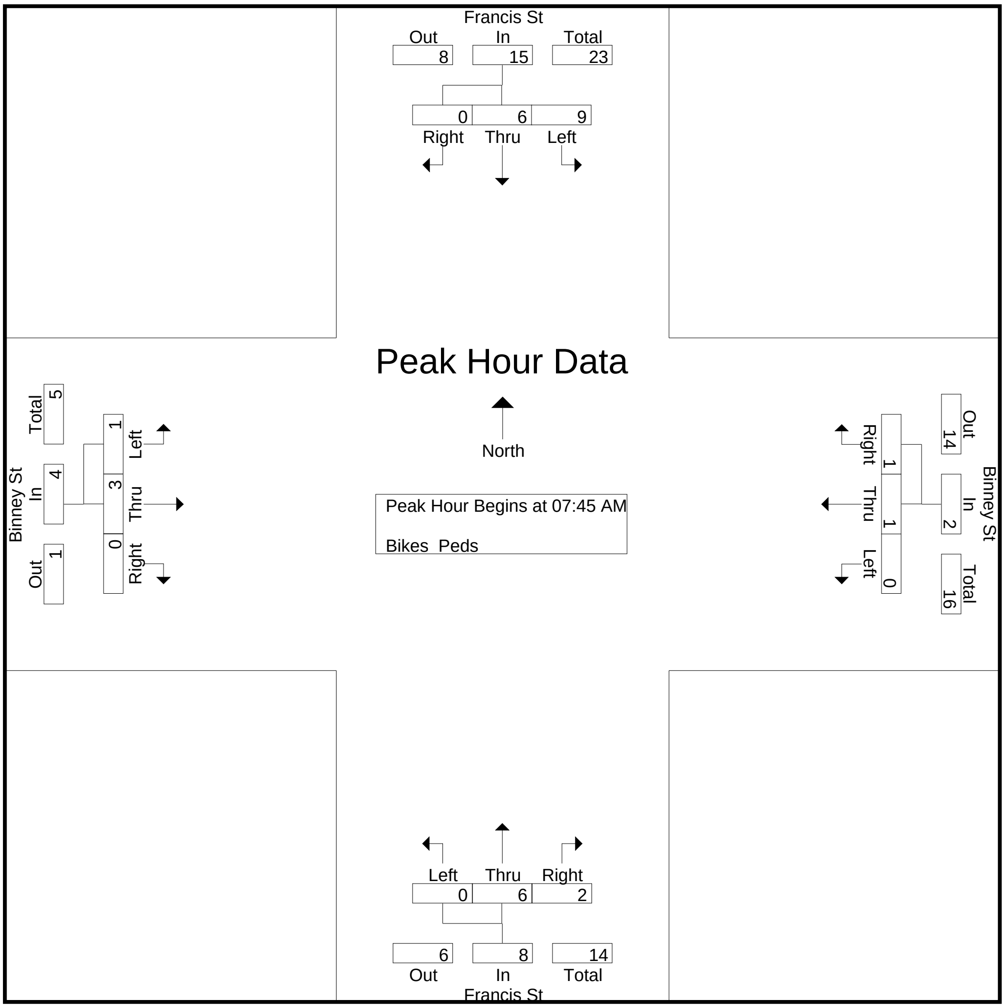


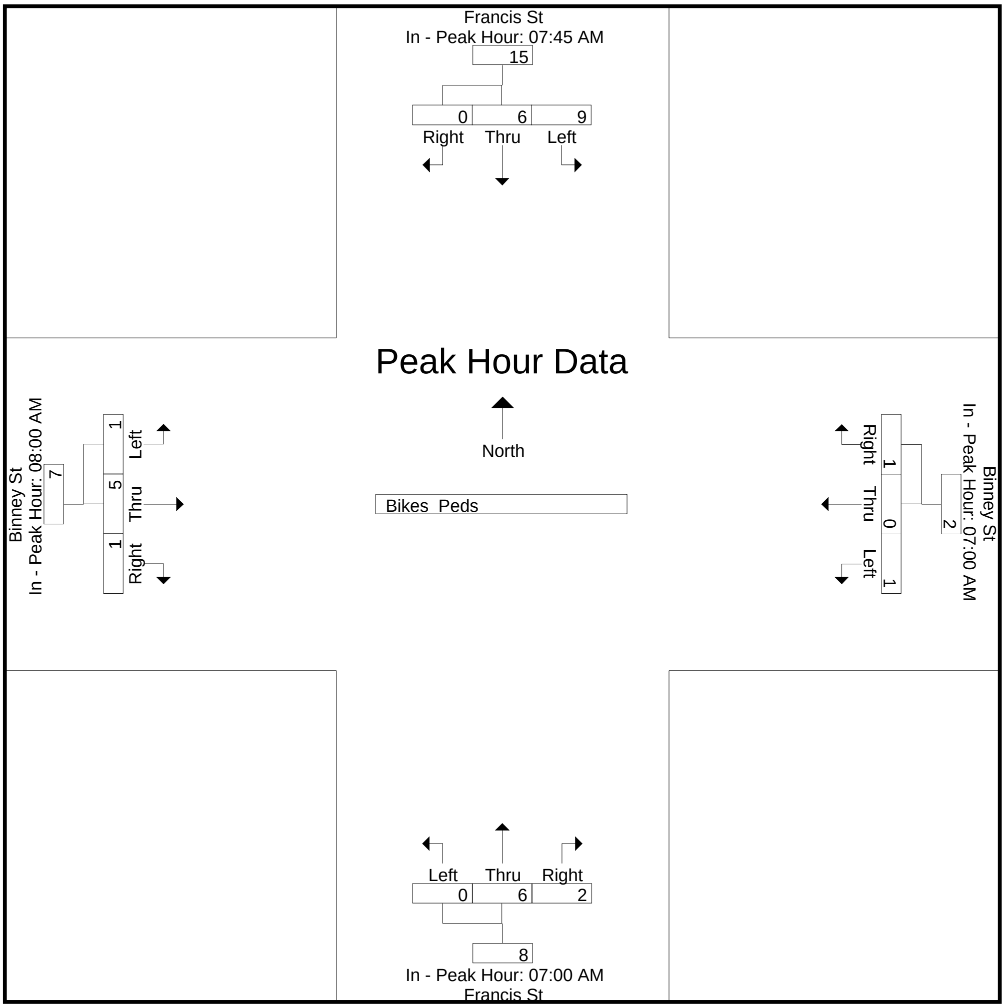
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:00 AM				07:00 AM				08:00 AM			
+0 mins.	1	**3**	0	**4**	0	0	0	0	0	**3**	**1**	**4**	0	1	0	1
+15 mins.	**3**	0	0	3	**1**	0	0	**1**	0	0	0	0	**1**	1	0	2
+30 mins.	2	2	0	4	0	0	0	0	0	1	0	1	0	1	0	1
+45 mins.	3	1	0	4	0	0	**1**	1	0	2	1	3	0	**2**	**1**	**3**
Total Volume	9	6	0	15	1	0	1	2	0	6	2	8	1	5	1	7
% App. Total	60	40	0		50	0	50		0	75	25		14.3	71.4	14.3	
PHF	.750	.500	.000	.938	.250	.000	.250	.500	.000	.500	.500	.500	.250	.625	.250	.583

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
Page No : 1

Groups Printed- Cars - Trucks

	Francis St From North			Binney St From East			Francis St From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	5	53	11	32	7	36	3	59	8	9	11	1	235
04:15 PM	5	78	5	25	1	34	3	55	17	7	5	4	239
04:30 PM	11	61	8	27	6	35	0	69	13	10	6	6	252
04:45 PM	6	57	8	28	4	35	2	52	10	8	11	4	225
Total	27	249	32	112	18	140	8	235	48	34	33	15	951
05:00 PM	6	70	12	30	3	31	1	58	11	13	3	6	244
05:15 PM	7	57	15	23	6	44	1	48	14	11	7	7	240
05:30 PM	6	62	9	29	6	32	1	52	9	11	7	6	230
05:45 PM	4	58	10	32	4	21	2	63	9	6	8	5	222
Total	23	247	46	114	19	128	5	221	43	41	25	24	936
Grand Total	50	496	78	226	37	268	13	456	91	75	58	39	1887
Apprch %	8	79.5	12.5	42.6	7	50.5	2.3	81.4	16.2	43.6	33.7	22.7	
Total %	2.6	26.3	4.1	12	2	14.2	0.7	24.2	4.8	4	3.1	2.1	
Cars	50	450	77	226	37	267	13	456	91	73	40	38	1818
% Cars	100	90.7	98.7	100	100	99.6	100	100	100	97.3	69	97.4	96.3
Trucks	0	46	1	0	0	1	0	0	0	2	18	1	69
% Trucks	0	9.3	1.3	0	0	0.4	0	0	0	2.7	31	2.6	3.7

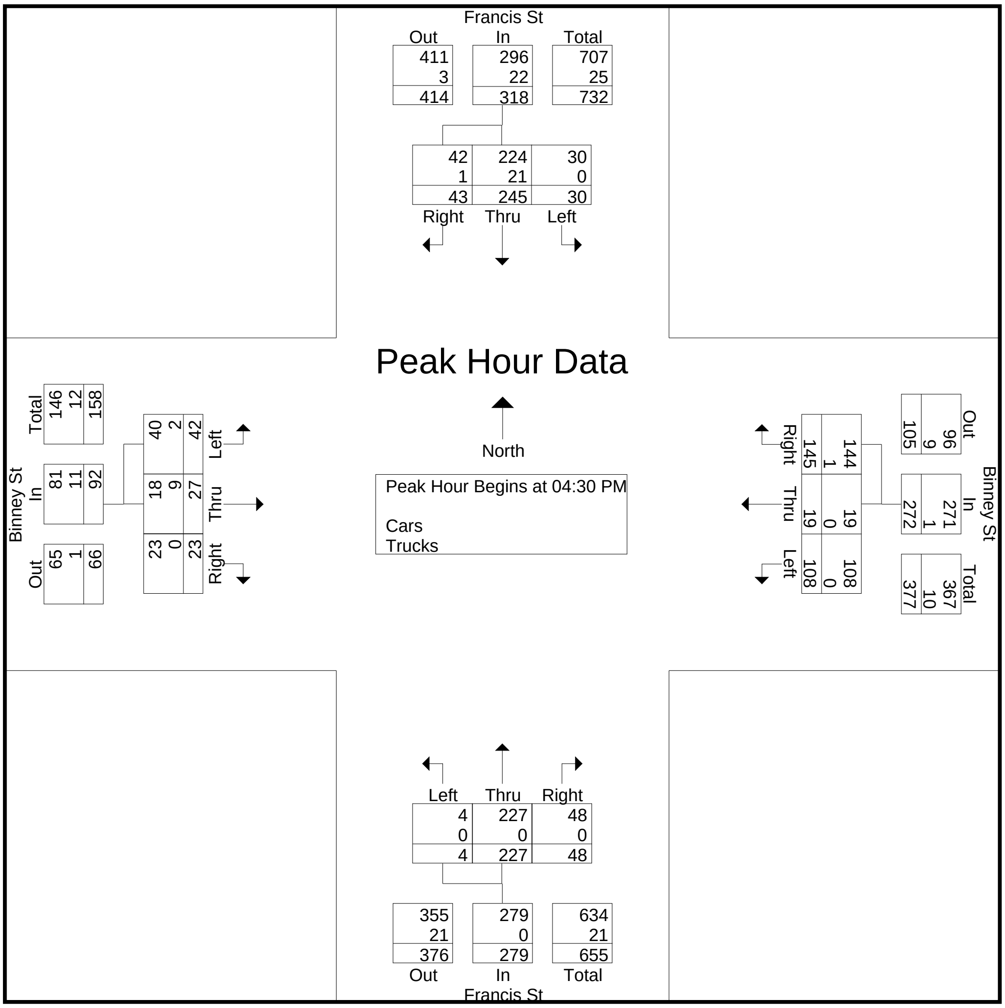
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 04:30 PM

	Francis St From North				Binney St From East				Francis St From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:30 PM	**11**	61	8	80	27	**6**	35	68	0	**69**	13	**82**	10	6	6	22	**252**
04:45 PM	6	57	8	71	28	4	35	67	**2**	52	10	64	8	**11**	4	23	225
05:00 PM	6	**70**	12	**88**	**30**	3	31	64	1	58	11	70	**13**	3	6	22	244
05:15 PM	7	57	**15**	79	23	6	**44**	**73**	1	48	**14**	63	11	7	**7**	**25**	240
Total Volume	30	245	43	318	108	19	145	272	4	227	48	279	42	27	23	92	961
% App. Total	9.4	77	13.5		39.7	7	53.3		1.4	81.4	17.2		45.7	29.3	25		
PHF	.682	.875	.717	.903	.900	.792	.824	.932	.500	.822	.857	.851	.808	.614	.821	.920	.953
Cars	30	224	42	296	108	19	144	271	4	227	48	279	40	18	23	81	927
% Cars	100	91.4	97.7	93.1	100	100	99.3	99.6	100	100	100	100	95.2	66.7	100	88.0	96.5
Trucks	0	21	1	22	0	0	1	1	0	0	0	0	2	9	0	11	34
% Trucks	0	8.6	2.3	6.9	0	0	0.7	0.4	0	0	0	0	4.8	33.3	0	12.0	3.5

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
Page No : 2



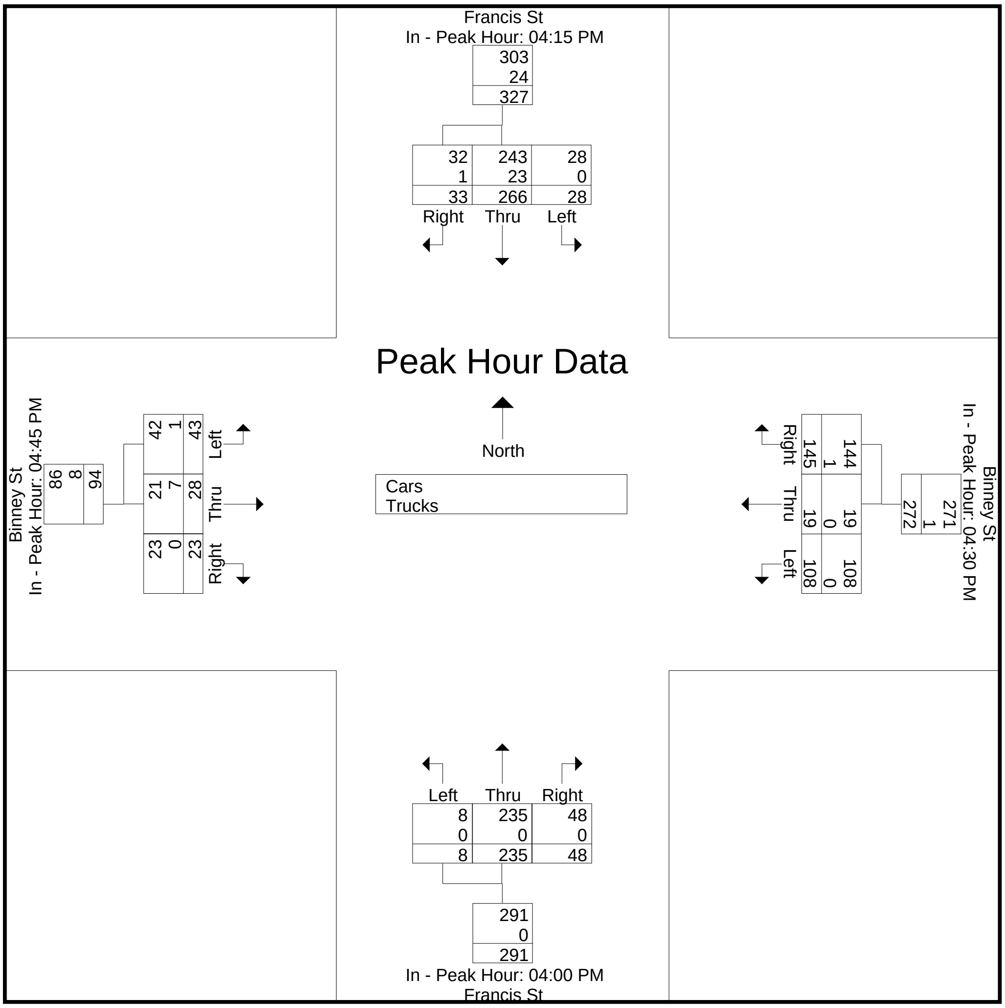
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:30 PM				04:00 PM				04:45 PM			
+0 mins.	5	**78**	5	**88**	27	**6**	35	68	**3**	59	8	70	8	**11**	4	23
+15 mins.	**11**	61	8	80	28	4	35	67	3	55	**17**	75	**13**	3	6	22
+30 mins.	6	57	8	71	**30**	3	31	64	0	**69**	13	**82**	11	7	**7**	**25**
+45 mins.	6	70	**12**	88	23	6	**44**	**73**	2	52	10	64	11	7	6	24
Total Volume	28	266	33	327	108	19	145	272	8	235	48	291	43	28	23	94
% App. Total	8.6	81.3	10.1		39.7	7	53.3		2.7	80.8	16.5		45.7	29.8	24.5	
PHF	.636	.853	.688	.929	.900	.792	.824	.932	.667	.851	.706	.887	.827	.636	.821	.940
Cars	28	243	32	303	108	19	144	271	8	235	48	291	42	21	23	86
% Cars	100	91.4	97	92.7	100	100	99.3	99.6	100	100	100	100	97.7	75	100	91.5
Trucks	0	23	1	24	0	0	1	1	0	0	0	0	1	7	0	8
% Trucks	0	8.6	3	7.3	0	0	0.7	0.4	0	0	0	0	2.3	25	0	8.5

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
Page No : 1

Groups Printed- Cars

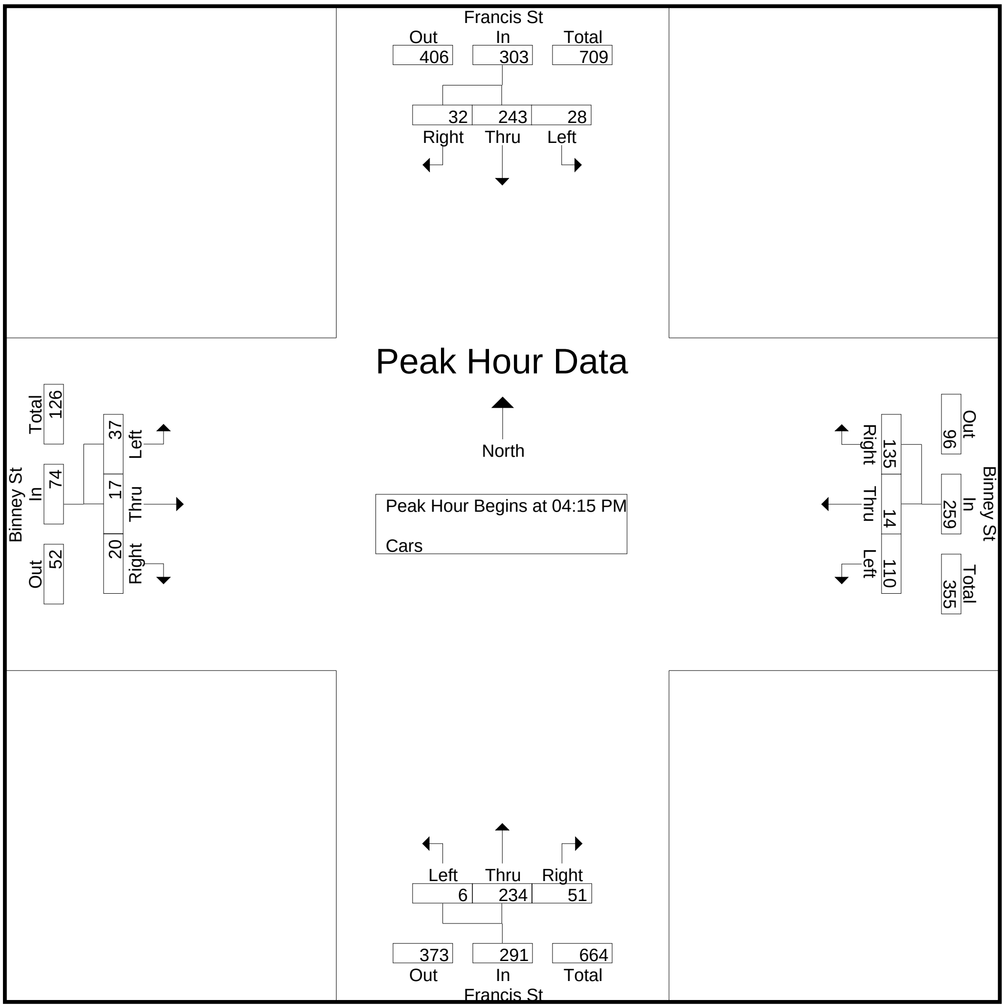
	Francis St From North			**Binney St From East**			**Francis St From South**			**Binney St From West**			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	5	47	11	32	7	36	3	59	8	9	8	0	225
04:15 PM	5	72	5	25	1	34	3	55	17	7	3	4	231
04:30 PM	11	57	8	27	6	35	0	69	13	9	3	6	244
04:45 PM	6	52	7	28	4	35	2	52	10	8	9	4	217
Total	27	228	31	112	18	140	8	235	48	33	23	14	917
05:00 PM	6	62	12	30	3	31	1	58	11	13	2	6	235
05:15 PM	7	53	15	23	6	43	1	48	14	10	4	7	231
05:30 PM	6	55	9	29	6	32	1	52	9	11	6	6	222
05:45 PM	4	52	10	32	4	21	2	63	9	6	5	5	213
Total	23	222	46	114	19	127	5	221	43	40	17	24	901
Grand Total	50	450	77	226	37	267	13	456	91	73	40	38	1818
Apprch %	8.7	78	13.3	42.6	7	50.4	2.3	81.4	16.2	48.3	26.5	25.2	
Total %	2.8	24.8	4.2	12.4	2	14.7	0.7	25.1	5	4	2.2	2.1	

	Francis St From North				**Binney St From East**				**Francis St From South**				**Binney St From West**				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	5	**72**	5	**82**	25	1	34	60	**3**	55	**17**	75	7	3	4	14	231
04:30 PM	**11**	57	8	76	27	**6**	**35**	**68**	0	**69**	13	**82**	9	3	**6**	18	**244**
04:45 PM	6	52	7	65	28	4	35	67	2	52	10	64	8	**9**	4	**21**	217
05:00 PM	6	62	**12**	80	**30**	3	31	64	1	58	11	70	**13**	2	6	21	235
Total Volume	28	243	32	303	110	14	135	259	6	234	51	291	37	17	20	74	927
% App. Total	9.2	80.2	10.6		42.5	5.4	52.1		2.1	80.4	17.5		50	23	27		
PHF	.636	.844	.667	.924	.917	.583	.964	.952	.500	.848	.750	.887	.712	.472	.833	.881	.950

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:30 PM				04:00 PM				04:45 PM			
+0 mins.	5	**72**	5	**82**	27	**6**	35	68	**3**	59	8	70	8	**9**	4	21
+15 mins.	**11**	57	8	76	28	4	35	67	3	55	**17**	75	**13**	2	6	21
+30 mins.	6	52	7	65	**30**	3	31	64	0	**69**	13	**82**	10	4	**7**	21
+45 mins.	6	62	**12**	80	23	6	**43**	**72**	2	52	10	64	11	6	6	**23**
Total Volume	28	243	32	303	108	19	144	271	8	235	48	291	42	21	23	86
% App. Total	9.2	80.2	10.6		39.9	7	53.1		2.7	80.8	16.5		48.8	24.4	26.7	
PHF	.636	.844	.667	.924	.900	.792	.837	.941	.667	.851	.706	.887	.808	.583	.821	.935

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
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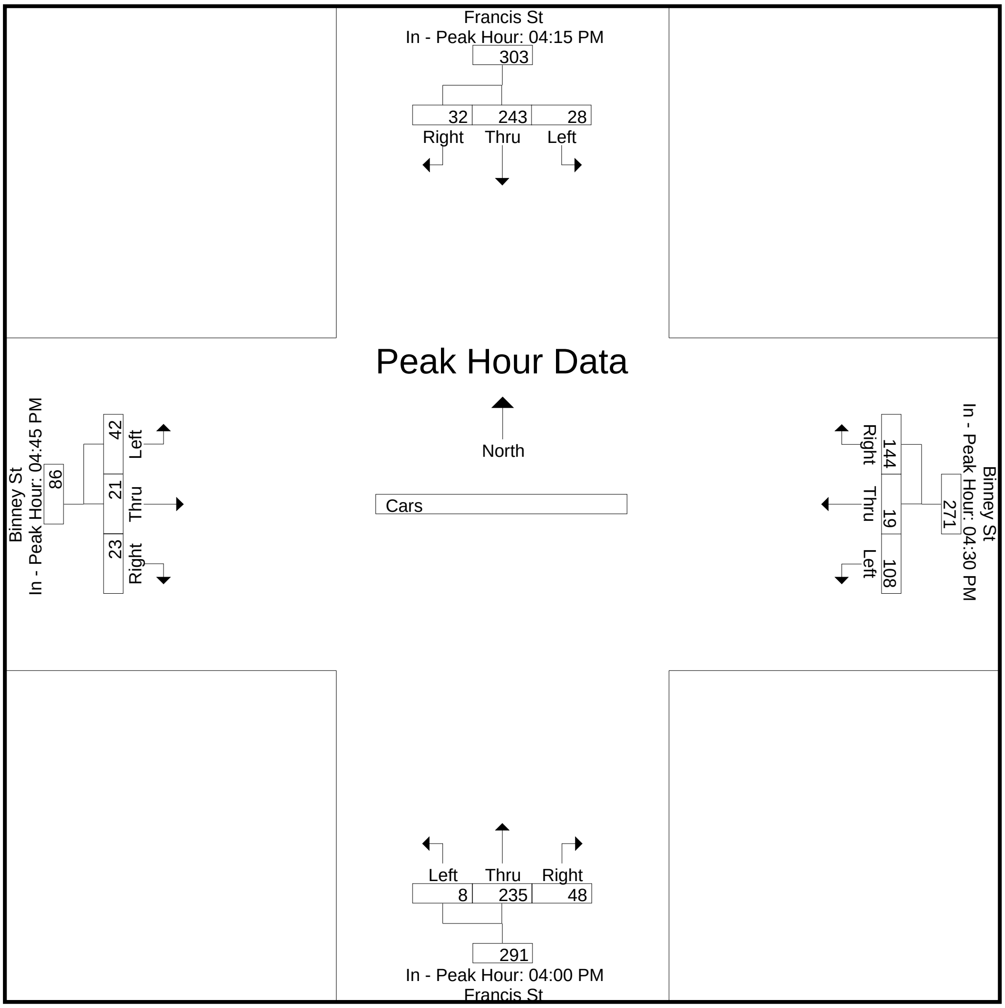


Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
Page No : 1

Groups Printed- Trucks

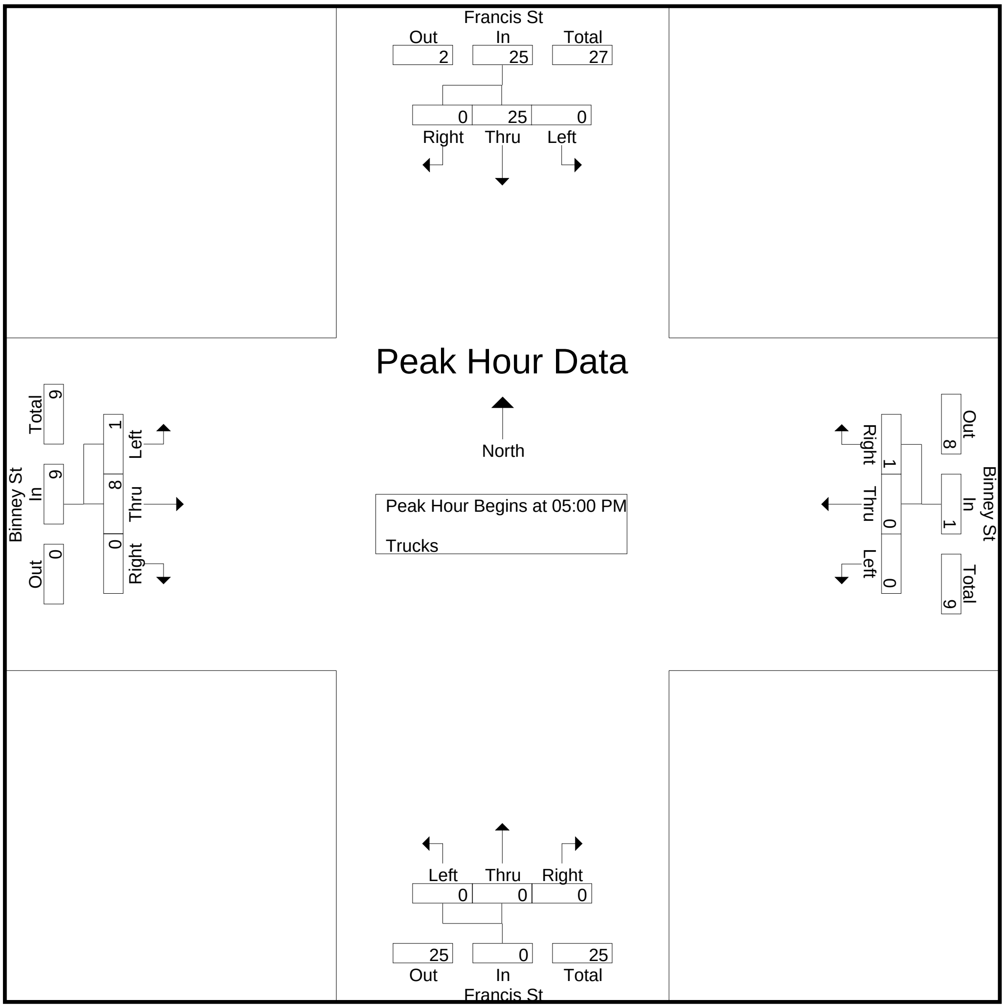
	Francis St From North			Binney St From East			Francis St From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	6	0	0	0	0	0	0	0	0	3	1	10
04:15 PM	0	6	0	0	0	0	0	0	0	0	2	0	8
04:30 PM	0	4	0	0	0	0	0	0	0	1	3	0	8
04:45 PM	0	5	1	0	0	0	0	0	0	0	2	0	8
Total	0	21	1	0	0	0	0	0	0	1	10	1	34
05:00 PM	0	8	0	0	0	0	0	0	0	0	1	0	9
05:15 PM	0	4	0	0	0	1	0	0	0	1	3	0	9
05:30 PM	0	7	0	0	0	0	0	0	0	0	1	0	8
05:45 PM	0	6	0	0	0	0	0	0	0	0	3	0	9
Total	0	25	0	0	0	1	0	0	0	1	8	0	35
Grand Total	0	46	1	0	0	1	0	0	0	2	18	1	69
Apprch %	0	97.9	2.1	0	0	100	0	0	0	9.5	85.7	4.8	
Total %	0	66.7	1.4	0	0	1.4	0	0	0	2.9	26.1	1.4	

	Francis St From North				Binney St From East				Francis St From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	**8**	0	**8**	0	0	0	0	0	0	0	0	0	1	0	1	**9**
05:15 PM	0	4	0	4	0	0	**1**	**1**	0	0	0	0	**1**	**3**	0	**4**	9
05:30 PM	0	7	0	7	0	0	0	0	0	0	0	0	0	1	0	1	8
05:45 PM	0	6	0	6	0	0	0	0	0	0	0	0	0	3	0	3	9
Total Volume	0	25	0	25	0	0	1	1	0	0	0	0	1	8	0	9	35
% App. Total	0	100	0		0	0	100		0	0	0		11.1	88.9	0		
PHF	.000	.781	.000	.781	.000	.000	.250	.250	.000	.000	.000	.000	.250	.667	.000	.563	.972

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:30 PM				04:00 PM				04:00 PM			
+0 mins.	0	5	**1**	6	0	0	0	0	0	0	0	0	0	**3**	**1**	**4**
+15 mins.	0	**8**	0	**8**	0	0	0	0	0	0	0	0	0	2	0	2
+30 mins.	0	4	0	4	0	0	0	0	0	0	0	0	**1**	3	0	4
+45 mins.	0	7	0	7	0	0	**1**	**1**	0	0	0	0	0	2	0	2
Total Volume	0	24	1	25	0	0	1	1	0	0	0	0	1	10	1	12
% App. Total	0	96	4		0	0	100		0	0	0		8.3	83.3	8.3	
PHF	.000	.750	.250	.781	.000	.000	.250	.250	.000	.000	.000	.000	.250	.833	.250	.750

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
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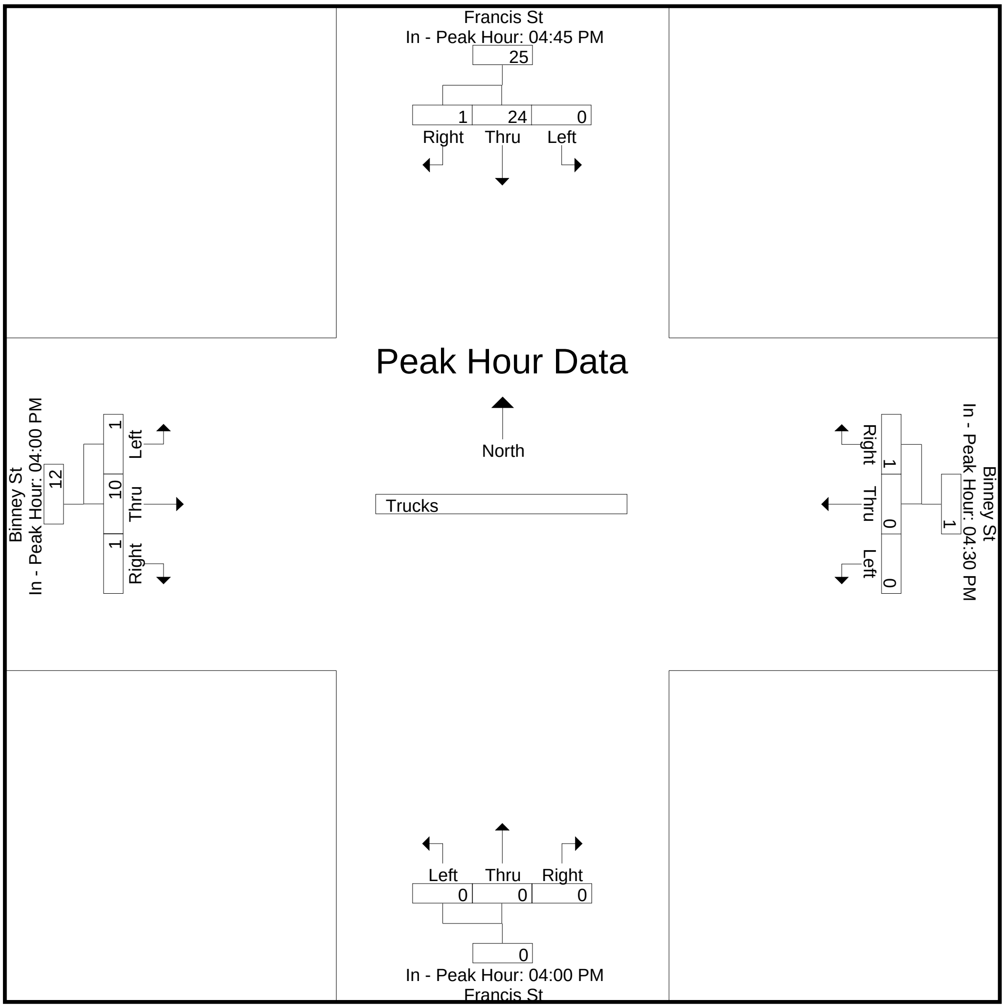

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
Page No : 1

Groups Printed- Bikes Peds

	Francis St From North				Binney St From East				Francis St From South				Binney St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	1	1	49	0	2	0	51	0	0	0	20	0	0	0	54	174	4	178
04:15 PM	0	0	0	25	0	2	1	43	0	0	0	26	0	0	0	48	142	3	145
04:30 PM	0	2	0	26	1	1	0	51	0	0	1	37	0	0	0	69	183	5	188
04:45 PM	0	0	0	29	0	0	0	69	0	0	0	19	0	0	0	38	155	0	155
Total	0	3	1	129	1	5	1	214	0	0	1	102	0	0	0	209	654	12	666
05:00 PM	0	1	0	44	0	1	0	72	0	0	0	30	0	0	1	61	207	3	210
05:15 PM	0	2	0	32	1	2	0	45	0	4	0	26	0	0	0	26	129	9	138
05:30 PM	0	1	0	28	0	0	1	60	0	1	2	28	0	0	0	57	173	5	178
05:45 PM	1	1	0	18	0	2	2	46	0	0	0	16	0	0	0	40	120	6	126
Total	1	5	0	122	1	5	3	223	0	5	2	100	0	0	1	184	629	23	652
Grand Total	1	8	1	251	2	10	4	437	0	5	3	202	0	0	1	393	1283	35	1318
Apprch %	10	80	10		12.5	62.5	25		0	62.5	37.5		0	0	100				
Total %	2.9	22.9	2.9		5.7	28.6	11.4		0	14.3	8.6		0	0	2.9		97.3	2.7	

	Francis St From North				Binney St From East				Francis St From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	**1**	**1**	3
05:15 PM	0	**2**	0	**2**	**1**	**2**	0	3	0	**4**	0	**4**	0	0	0	0	**9**
05:30 PM	0	1	0	1	0	0	1	1	0	1	**2**	3	0	0	0	0	5
05:45 PM	**1**	1	0	2	0	2	**2**	**4**	0	0	0	0	0	0	0	0	6
Total Volume	1	5	0	6	1	5	3	9	0	5	2	7	0	0	1	1	23
% App. Total	16.7	83.3	0		11.1	55.6	33.3		0	71.4	28.6		0	0	100		
PHF	.250	.625	.000	.750	.250	.625	.375	.563	.000	.313	.250	.438	.000	.000	.250	.250	.639

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
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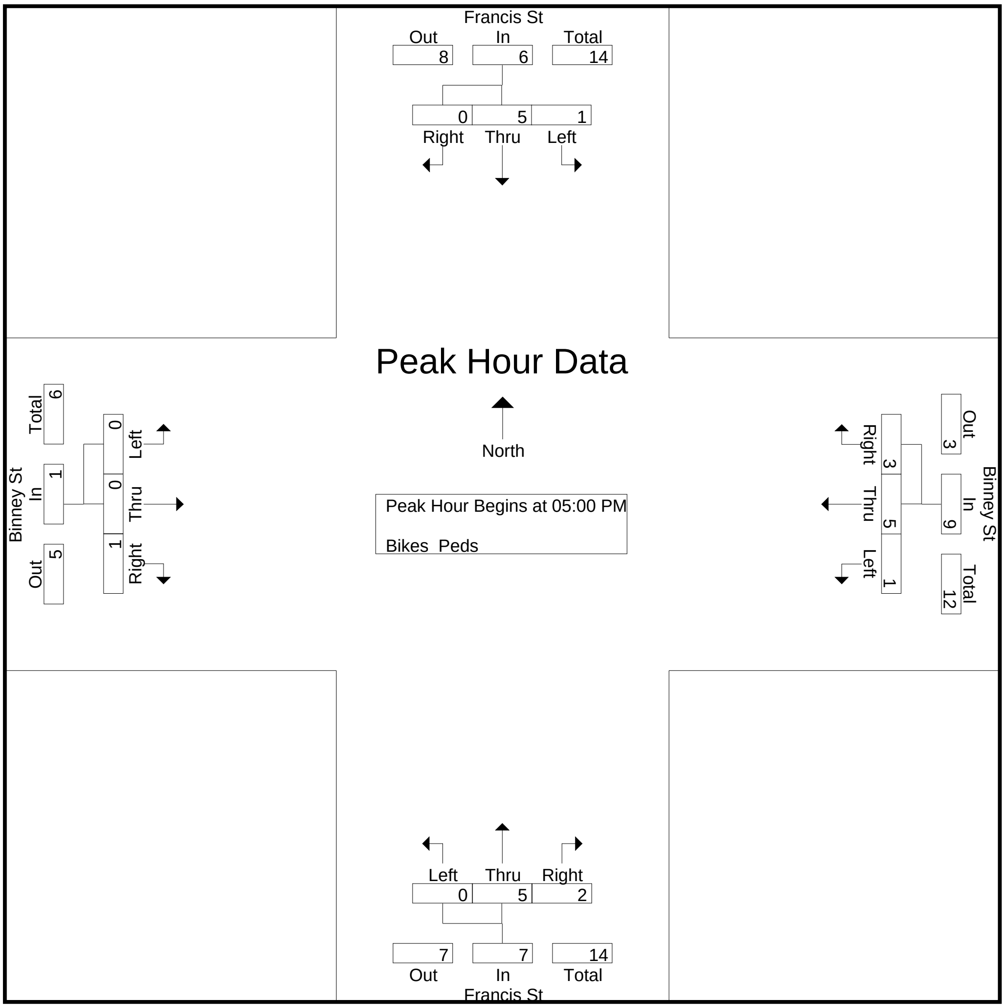


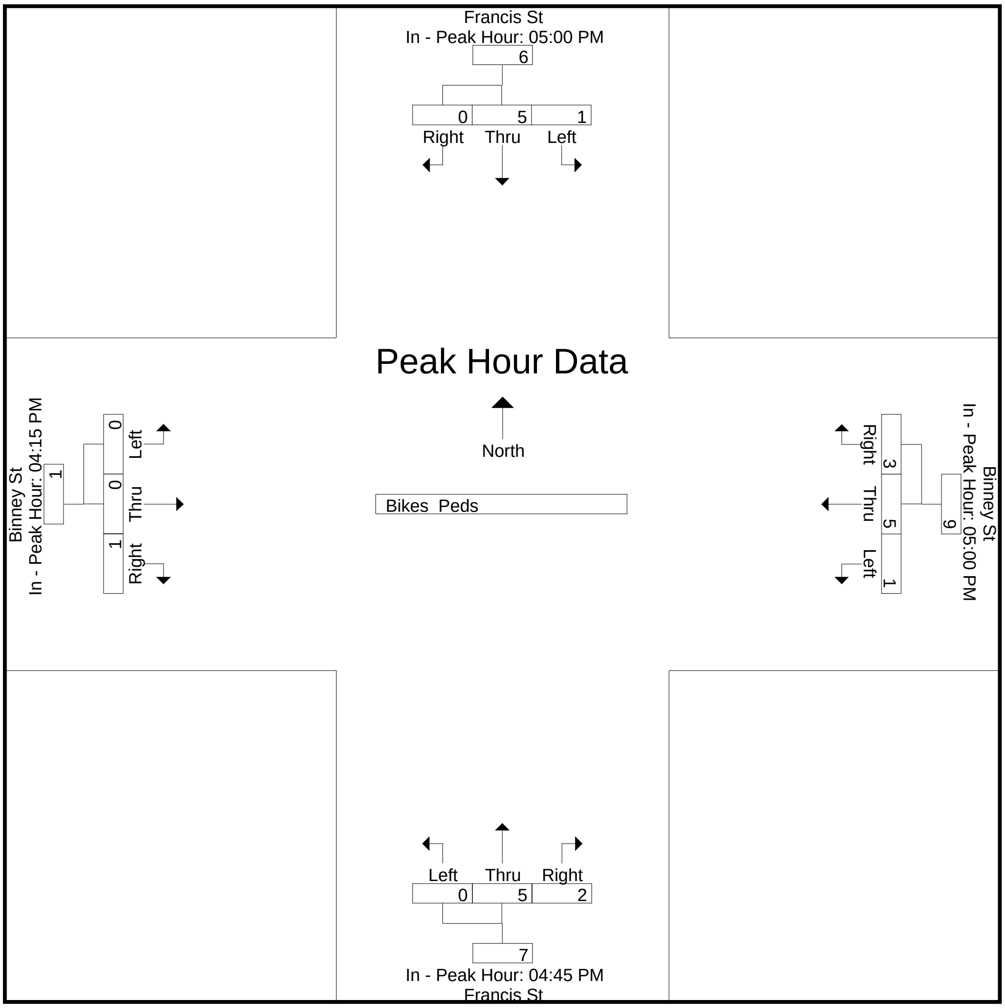
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				04:45 PM				04:15 PM			
+0 mins.	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0
+15 mins.	0	**2**	0	**2**	**1**	**2**	0	3	0	0	0	0	0	0	0	0
+30 mins.	0	1	0	1	0	0	1	1	0	**4**	0	**4**	0	0	0	0
+45 mins.	**1**	1	0	2	0	2	**2**	**4**	0	1	**2**	3	0	0	**1**	**1**
Total Volume	1	5	0	6	1	5	3	9	0	5	2	7	0	0	1	1
% App. Total	16.7	83.3	0		11.1	55.6	33.3		0	71.4	28.6		0	0	100	
PHF	.250	.625	.000	.750	.250	.625	.375	.563	.000	.313	.250	.438	.000	.000	.250	.250

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street: Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970017
Site Code : 94970017
Start Date : 5/22/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

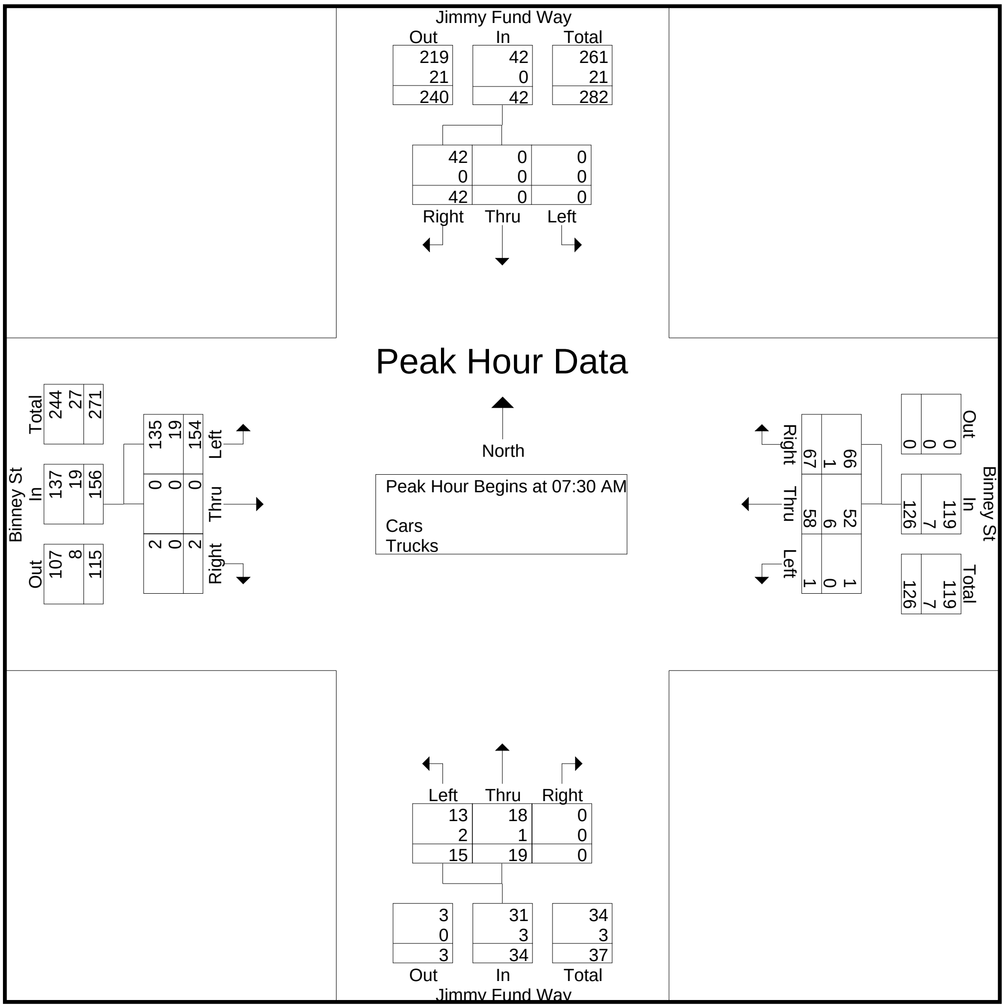
	Jimmy Fund Way From North			Binney St From East			Jimmy Fund Way From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	9	0	8	8	2	7	0	38	0	1	73
07:15 AM	0	0	11	1	13	14	2	4	0	38	1	2	86
07:30 AM	0	0	11	0	14	25	3	1	0	39	0	0	93
07:45 AM	0	0	9	0	13	11	5	4	0	46	0	1	89
Total	0	0	40	1	48	58	12	16	0	161	1	4	341
08:00 AM	0	0	5	0	14	17	4	3	0	41	0	1	85
08:15 AM	0	0	17	1	17	14	3	11	0	28	0	0	91
08:30 AM	0	0	8	0	17	10	4	5	0	42	0	0	86
08:45 AM	0	0	6	0	20	6	3	3	0	38	0	1	77
Total	0	0	36	1	68	47	14	22	0	149	0	2	339
Grand Total	0	0	76	2	116	105	26	38	0	310	1	6	680
Apprch %	0	0	100	0.9	52	47.1	40.6	59.4	0	97.8	0.3	1.9	
Total %	0	0	11.2	0.3	17.1	15.4	3.8	5.6	0	45.6	0.1	0.9	
Cars	0	0	76	2	101	103	24	35	0	276	1	6	624
% Cars	0	0	100	100	87.1	98.1	92.3	92.1	0	89	100	100	91.8
Trucks	0	0	0	0	15	2	2	3	0	34	0	0	56
% Trucks	0	0	0	0	12.9	1.9	7.7	7.9	0	11	0	0	8.2

	Jimmy Fund Way From North				Binney St From East				Jimmy Fund Way From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	11	11	0	14	**25**	**39**	3	1	0	4	39	0	0	39	**93**
07:45 AM	0	0	9	9	0	13	11	24	**5**	4	0	9	**46**	0	**1**	**47**	89
08:00 AM	0	0	5	5	0	14	17	31	4	3	0	7	41	0	1	42	85
08:15 AM	0	0	**17**	**17**	**1**	**17**	14	32	3	**11**	0	**14**	28	0	0	28	91
Total Volume	0	0	42	42	1	58	67	126	15	19	0	34	154	0	2	156	358
% App. Total	0	0	100		0.8	46	53.2		44.1	55.9	0		98.7	0	1.3		
PHF	.000	.000	.618	.618	.250	.853	.670	.808	.750	.432	.000	.607	.837	.000	.500	.830	.962
Cars	0	0	42	42	1	52	66	119	13	18	0	31	135	0	2	137	329
% Cars	0	0	100	100	100	89.7	98.5	94.4	86.7	94.7	0	91.2	87.7	0	100	87.8	91.9
Trucks	0	0	0	0	0	6	1	7	2	1	0	3	19	0	0	19	29
% Trucks	0	0	0	0	0	10.3	1.5	5.6	13.3	5.3	0	8.8	12.3	0	0	12.2	8.1

Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012



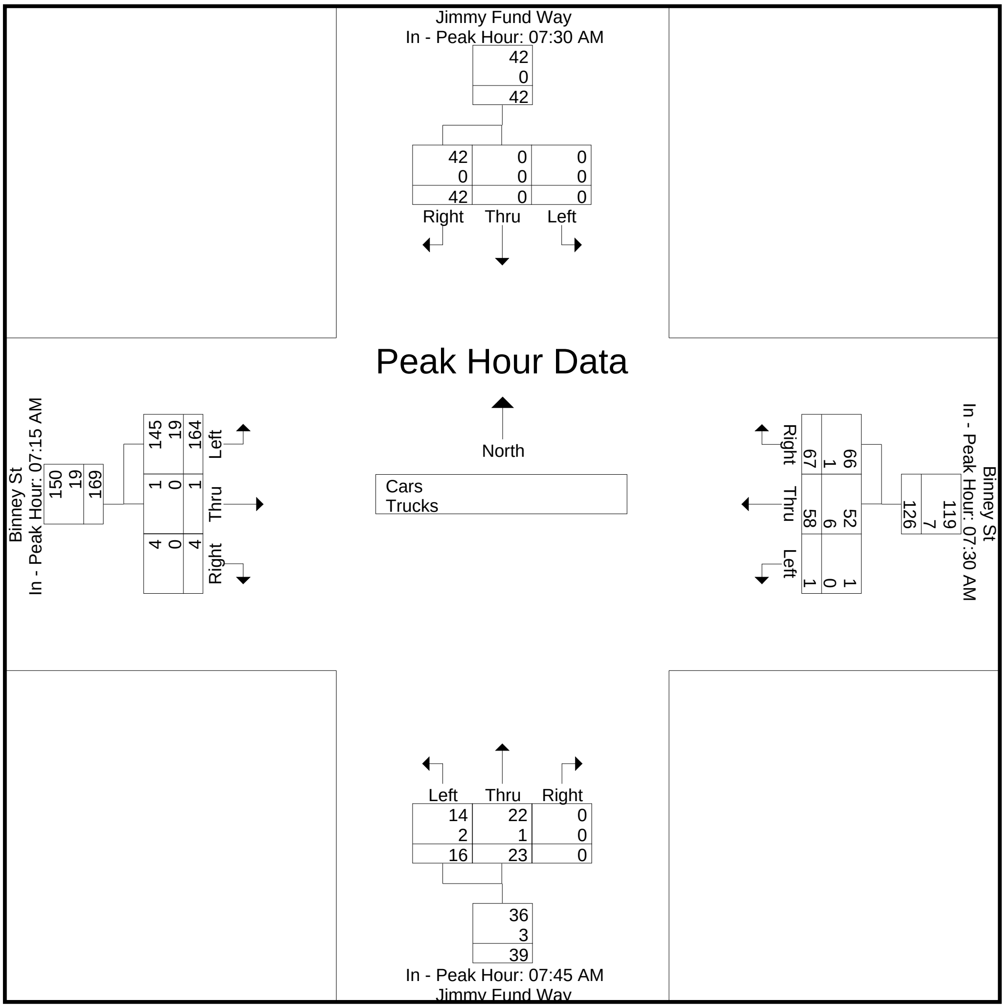
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:45 AM				07:15 AM			
+0 mins.	0	0	11	11	0	14	**25**	**39**	**5**	4	0	9	38	**1**	**2**	41
+15 mins.	0	0	9	9	0	13	11	24	4	3	0	7	39	0	0	39
+30 mins.	0	0	5	5	0	14	17	31	3	**11**	0	**14**	**46**	0	1	**47**
+45 mins.	0	0	**17**	**17**	**1**	**17**	14	32	4	5	0	9	41	0	1	42
Total Volume	0	0	42	42	1	58	67	126	16	23	0	39	164	1	4	169
% App. Total	0	0	100		0.8	46	53.2		41	59	0		97	0.6	2.4	
PHF	.000	.000	.618	.618	.250	.853	.670	.808	.800	.523	.000	.696	.891	.250	.500	.899
Cars	0	0	42	42	1	52	66	119	14	22	0	36	145	1	4	150
% Cars	0	0	100	100	100	89.7	98.5	94.4	87.5	95.7	0	92.3	88.4	100	100	88.8
Trucks	0	0	0	0	0	6	1	7	2	1	0	3	19	0	0	19
% Trucks	0	0	0	0	0	10.3	1.5	5.6	12.5	4.3	0	7.7	11.6	0	0	11.2

Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012
Page No : 1

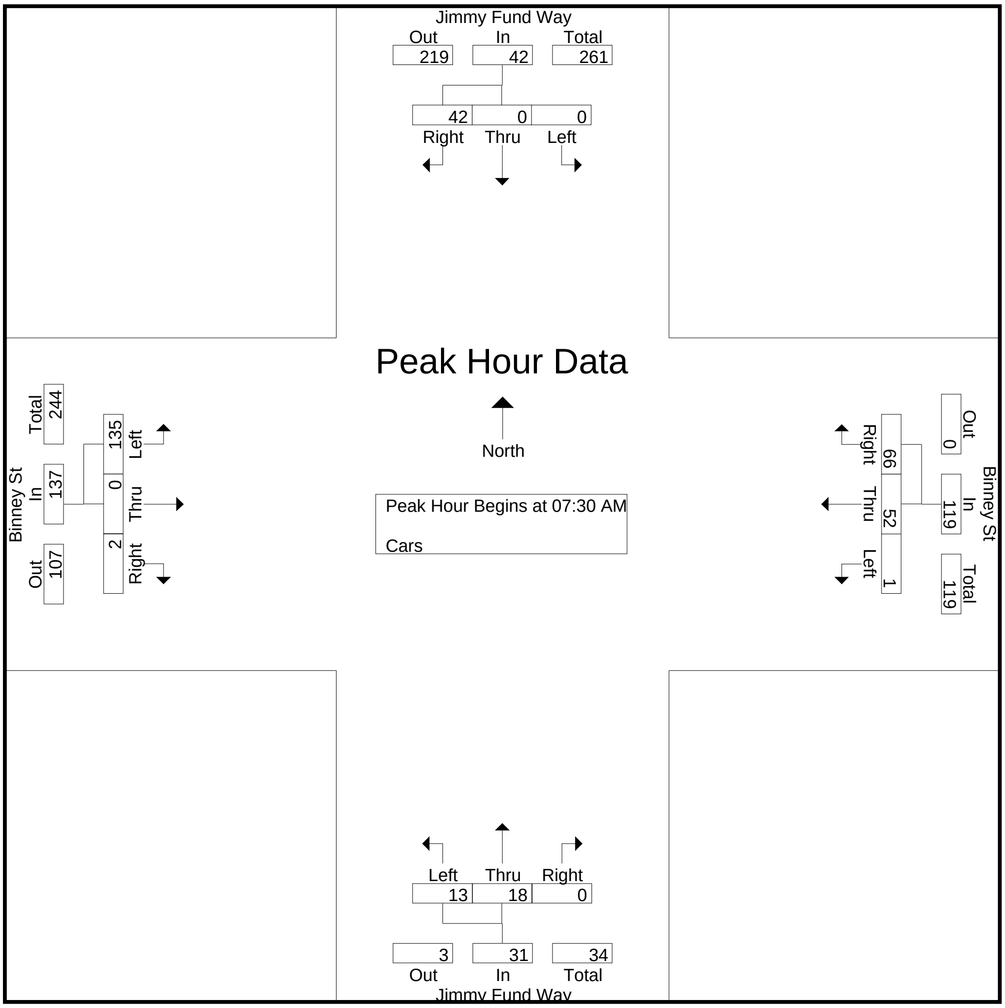
Groups Printed- Cars

	Jimmy Fund Way From North			Binney St From East			Jimmy Fund Way From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	9	0	7	7	2	6	0	34	0	1	66
07:15 AM	0	0	11	1	8	14	2	4	0	35	1	2	78
07:30 AM	0	0	11	0	14	24	3	1	0	33	0	0	86
07:45 AM	0	0	9	0	10	11	3	4	0	39	0	1	77
Total	0	0	40	1	39	56	10	15	0	141	1	4	307
08:00 AM	0	0	5	0	14	17	4	3	0	38	0	1	82
08:15 AM	0	0	17	1	14	14	3	10	0	25	0	0	84
08:30 AM	0	0	8	0	16	10	4	5	0	37	0	0	80
08:45 AM	0	0	6	0	18	6	3	2	0	35	0	1	71
Total	0	0	36	1	62	47	14	20	0	135	0	2	317
Grand Total	0	0	76	2	101	103	24	35	0	276	1	6	624
Apprch %	0	0	100	1	49	50	40.7	59.3	0	97.5	0.4	2.1	
Total %	0	0	12.2	0.3	16.2	16.5	3.8	5.6	0	44.2	0.2	1	

	Jimmy Fund Way From North				Binney St From East				Jimmy Fund Way From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	11	11	0	**14**	**24**	**38**	3	1	0	4	33	0	0	33	**86**
07:45 AM	0	0	9	9	0	10	11	21	3	4	0	7	**39**	0	**1**	**40**	77
08:00 AM	0	0	5	5	0	14	17	31	**4**	3	0	7	38	0	1	39	82
08:15 AM	0	0	**17**	**17**	**1**	14	14	29	3	**10**	0	**13**	25	0	0	25	84
Total Volume	0	0	42	42	1	52	66	119	13	18	0	31	135	0	2	137	329
% App. Total	0	0	100		0.8	43.7	55.5		41.9	58.1	0		98.5	0	1.5		
PHF	.000	.000	.618	.618	.250	.929	.688	.783	.813	.450	.000	.596	.865	.000	.500	.856	.956

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

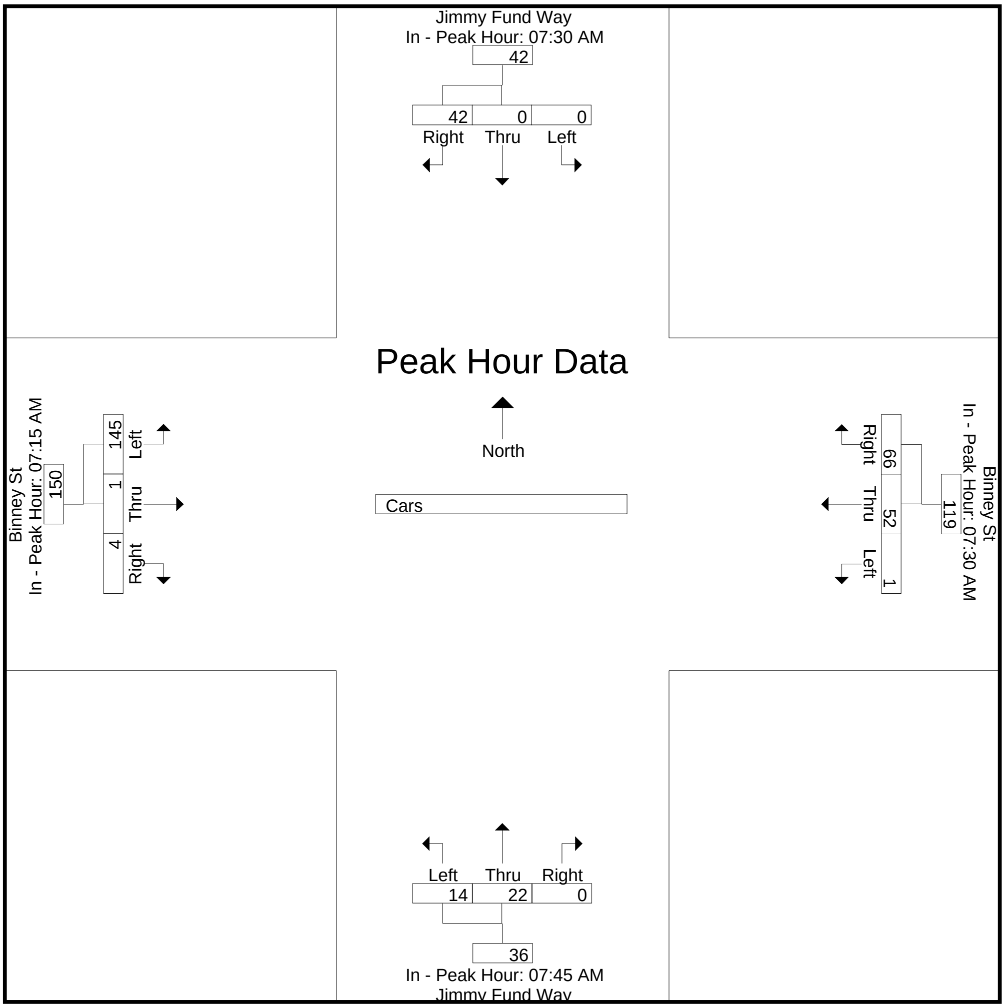
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:45 AM				07:15 AM			
+0 mins.	0	0	11	11	0	**14**	**24**	**38**	3	4	0	7	35	**1**	**2**	38
+15 mins.	0	0	9	9	0	10	11	21	**4**	3	0	7	33	0	0	33
+30 mins.	0	0	5	5	0	14	17	31	3	**10**	0	**13**	**39**	0	1	**40**
+45 mins.	0	0	**17**	**17**	**1**	14	14	29	4	5	0	9	38	0	1	39
Total Volume	0	0	42	42	1	52	66	119	14	22	0	36	145	1	4	150
% App. Total	0	0	100		0.8	43.7	55.5		38.9	61.1	0		96.7	0.7	2.7	
PHF	.000	.000	.618	.618	.250	.929	.688	.783	.875	.550	.000	.692	.929	.250	.500	.938

Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

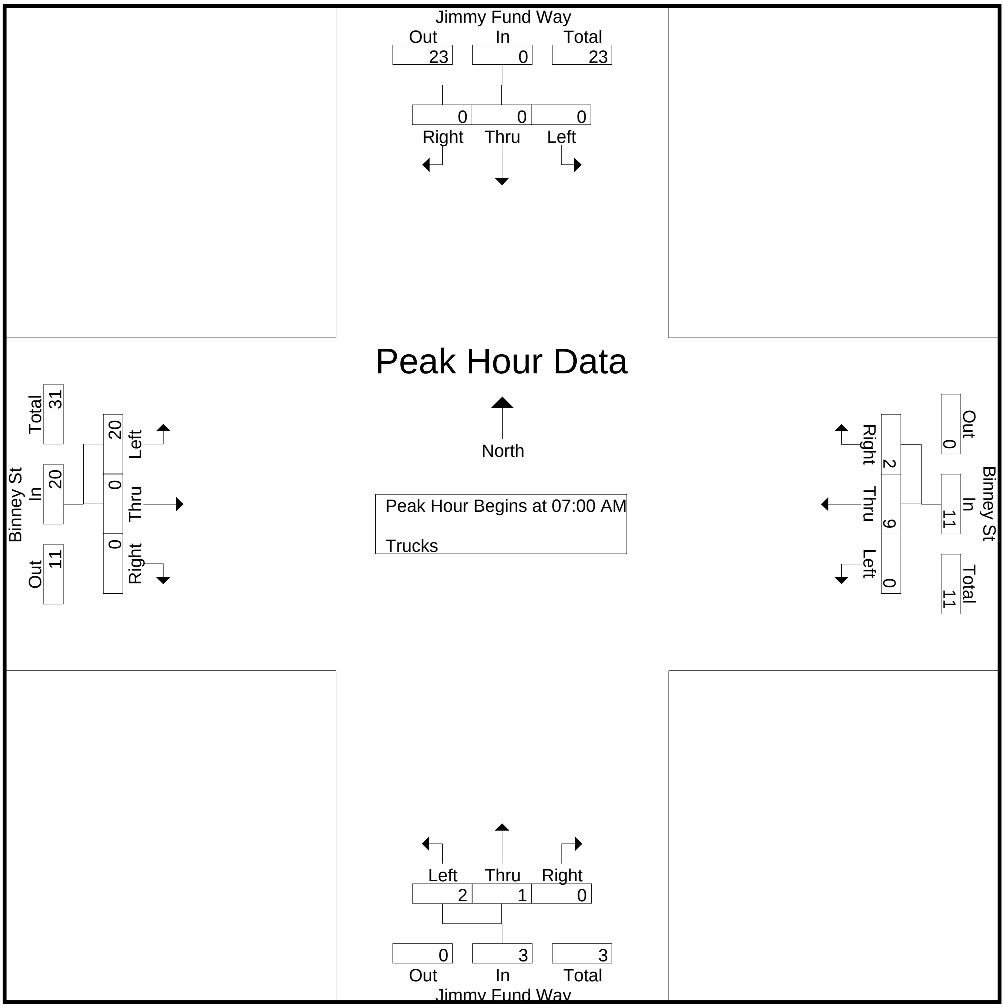
	Jimmy Fund Way From North			Binney St From East			Jimmy Fund Way From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	0	1	1	0	1	0	4	0	0	7
07:15 AM	0	0	0	0	5	0	0	0	0	3	0	0	8
07:30 AM	0	0	0	0	0	1	0	0	0	6	0	0	7
07:45 AM	0	0	0	0	3	0	2	0	0	7	0	0	12
Total	0	0	0	0	9	2	2	1	0	20	0	0	34
08:00 AM	0	0	0	0	0	0	0	0	0	3	0	0	3
08:15 AM	0	0	0	0	3	0	0	1	0	3	0	0	7
08:30 AM	0	0	0	0	1	0	0	0	0	5	0	0	6
08:45 AM	0	0	0	0	2	0	0	1	0	3	0	0	6
Total	0	0	0	0	6	0	0	2	0	14	0	0	22
Grand Total	0	0	0	0	15	2	2	3	0	34	0	0	56
Apprch %	0	0	0	0	88.2	11.8	40	60	0	100	0	0	
Total %	0	0	0	0	26.8	3.6	3.6	5.4	0	60.7	0	0	

	Jimmy Fund Way From North				Binney St From East				Jimmy Fund Way From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	1	**1**	2	0	**1**	0	1	4	0	0	4	7
07:15 AM	0	0	0	0	0	**5**	0	**5**	0	0	0	0	3	0	0	3	8
07:30 AM	0	0	0	0	0	0	1	1	0	0	0	0	6	0	0	6	7
07:45 AM	0	0	0	0	0	3	0	3	**2**	0	0	**2**	**7**	0	0	**7**	**12**
Total Volume	0	0	0	0	0	9	2	11	2	1	0	3	20	0	0	20	34
% App. Total	0	0	0		0	81.8	18.2		66.7	33.3	0		100	0	0		
PHF	.000	.000	.000	.000	.000	.450	.500	.550	.250	.250	.000	.375	.714	.000	.000	.714	.708

Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012



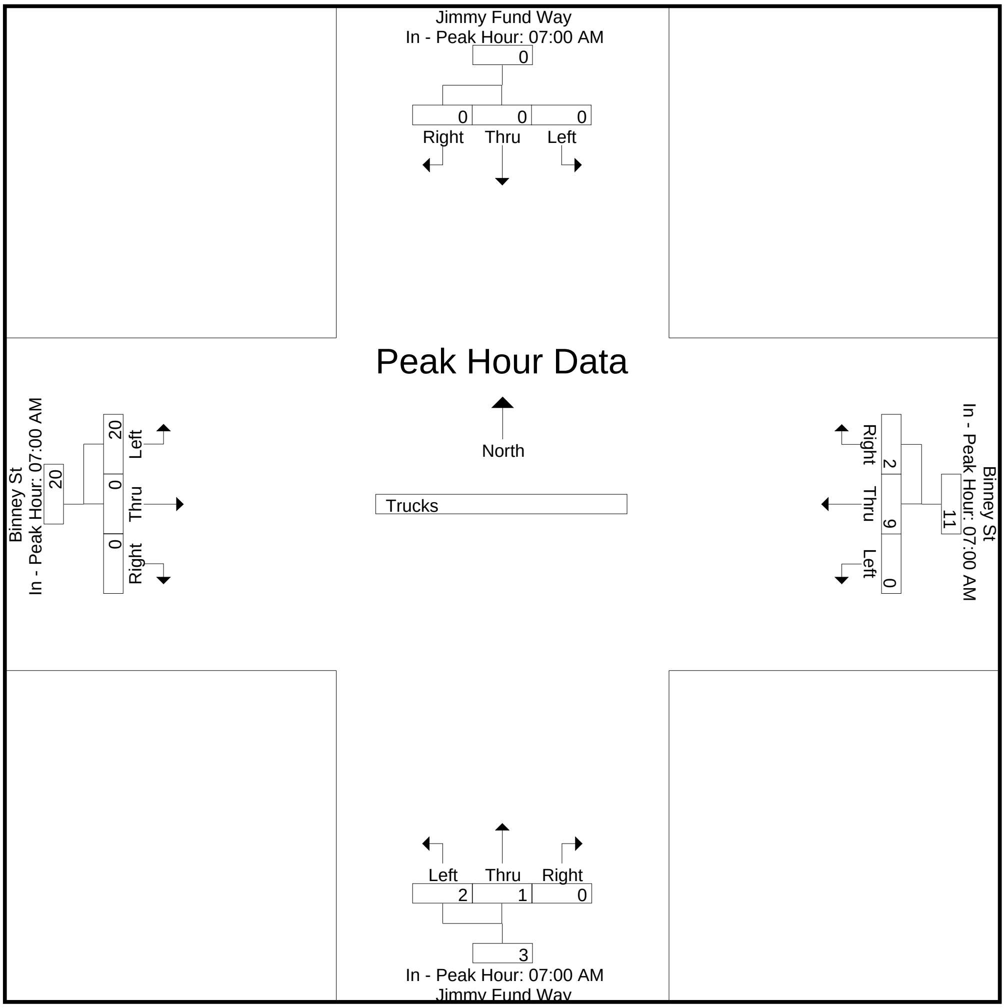
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	1	**1**	2	0	**1**	0	1	4	0	0	4
+15 mins.	0	0	0	0	0	**5**	0	**5**	0	0	0	0	3	0	0	3
+30 mins.	0	0	0	0	0	0	1	1	0	0	0	0	6	0	0	6
+45 mins.	0	0	0	0	0	3	0	3	**2**	0	0	**2**	**7**	0	0	**7**
Total Volume	0	0	0	0	0	9	2	11	2	1	0	3	20	0	0	20
% App. Total	0	0	0		0	81.8	18.2		66.7	33.3	0		100	0	0	
PHF	.000	.000	.000	.000	.000	.450	.500	.550	.250	.250	.000	.375	.714	.000	.000	.714

Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012



Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

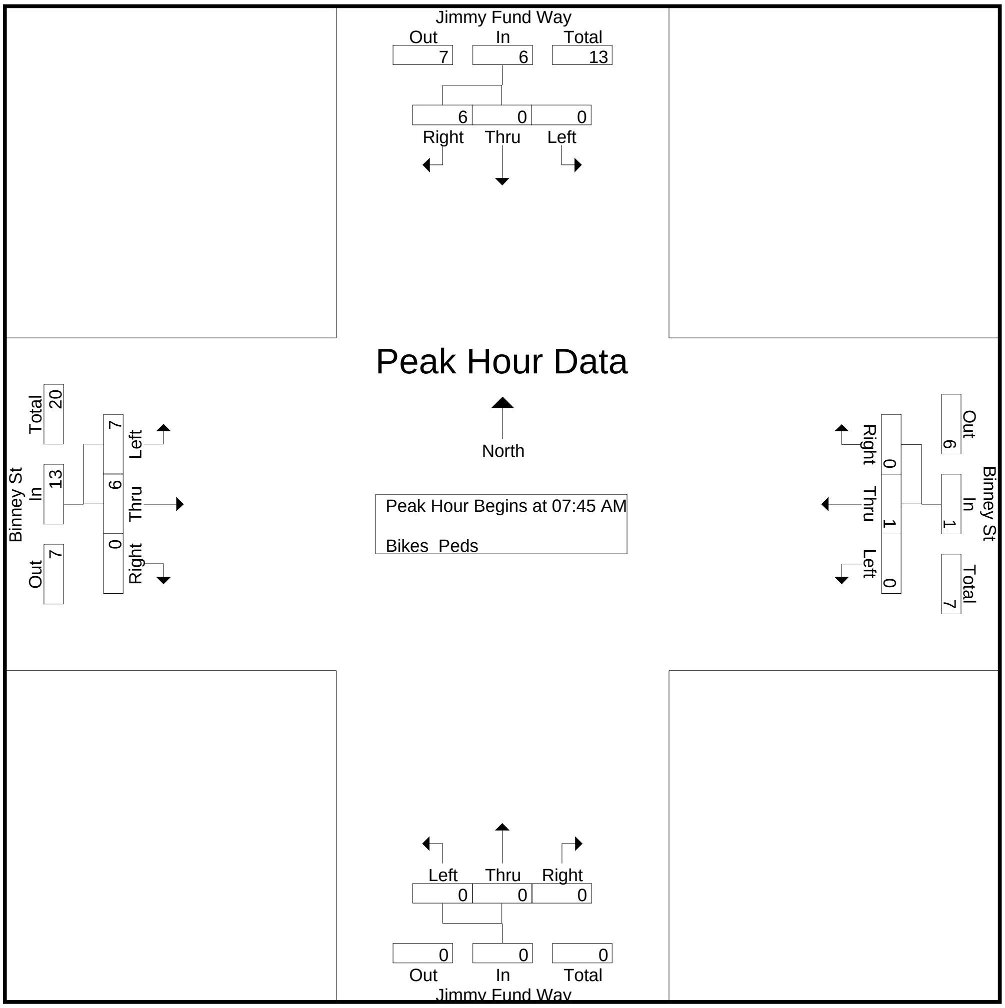
	Jimmy Fund Way From North				**Binney St From East**				**Jimmy Fund Way From South**				**Binney St From West**						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	1	12	0	1	0	57	0	0	0	29	2	2	0	15	113	6	119
07:15 AM	0	0	1	10	0	0	0	45	0	0	0	21	0	0	0	22	98	1	99
07:30 AM	0	0	1	11	0	0	0	57	0	0	0	28	1	0	0	20	116	2	118
07:45 AM	0	0	3	19	0	0	0	69	0	0	0	39	2	0	0	31	158	5	163
Total	0	0	6	52	0	1	0	228	0	0	0	117	5	2	0	88	485	14	499
08:00 AM	0	0	1	12	0	0	0	67	0	0	0	18	2	0	0	22	119	3	122
08:15 AM	0	0	1	16	0	1	0	62	0	0	0	21	1	3	0	27	126	6	132
08:30 AM	0	0	1	19	0	0	0	65	0	0	0	20	2	3	0	26	130	6	136
08:45 AM	1	0	0	17	0	0	0	91	0	0	0	42	1	1	0	36	186	3	189
Total	1	0	3	64	0	1	0	285	0	0	0	101	6	7	0	111	561	18	579
Grand Total	1	0	9	116	0	2	0	513	0	0	0	218	11	9	0	199	1046	32	1078
Apprch %	10	0	90		0	100	0		0	0	0		55	45	0				
Total %	3.1	0	28.1		0	6.2	0		0	0	0		34.4	28.1	0		97	3	

	Jimmy Fund Way From North				**Binney St From East**				**Jimmy Fund Way From South**				**Binney St From West**				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	**3**	**3**	0	0	0	0	0	0	0	0	**2**	0	0	2	5
08:00 AM	0	0	1	1	0	0	0	0	0	0	0	0	2	0	0	2	3
08:15 AM	0	0	1	1	0	**1**	0	**1**	0	0	0	0	1	**3**	0	4	**6**
08:30 AM	0	0	1	1	0	0	0	0	0	0	0	0	2	3	0	**5**	6
Total Volume	0	0	6	6	0	1	0	1	0	0	0	0	7	6	0	13	20
% App. Total	0	0	100		0	100	0		0	0	0		53.8	46.2	0		
PHF	.000	.000	.500	.500	.000	.250	.000	.250	.000	.000	.000	.000	.875	.500	.000	.650	.833

Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012



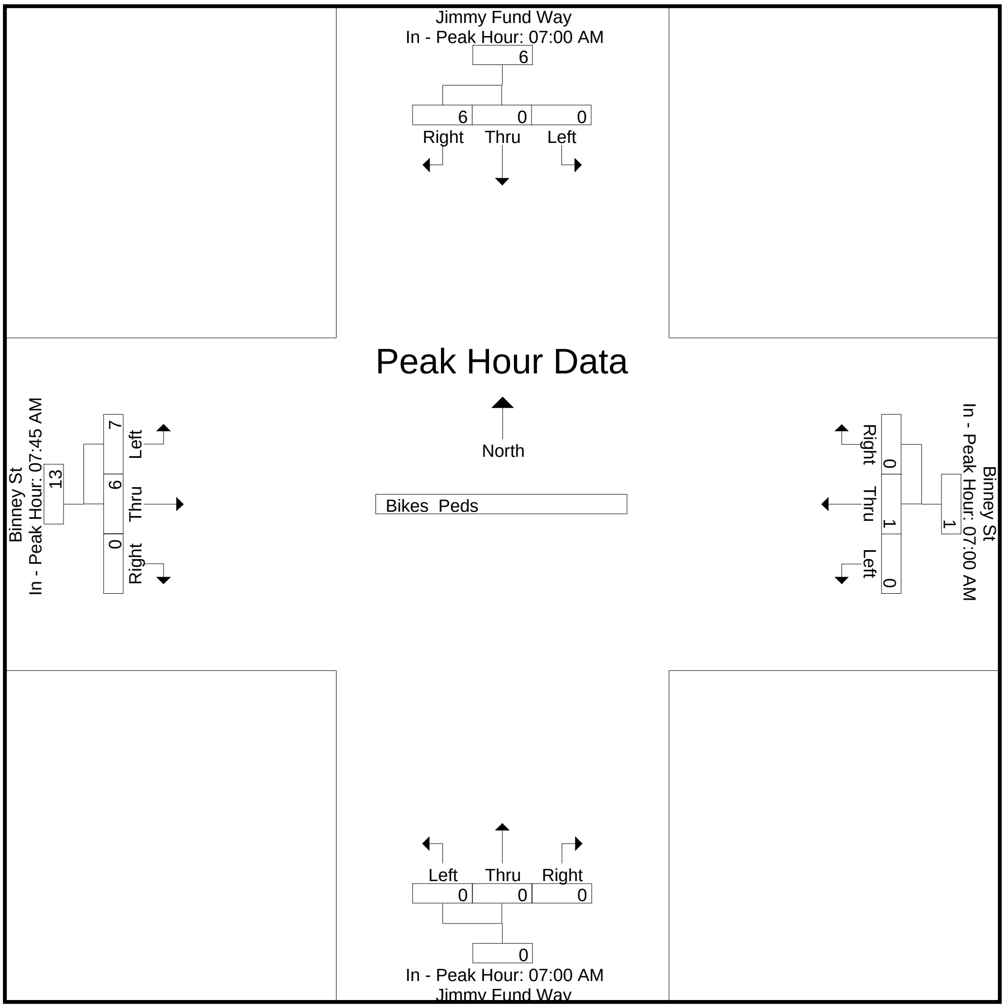
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:45 AM			
+0 mins.	0	0	1	1	0	**1**	0	**1**	0	0	0	0	**2**	0	0	2
+15 mins.	0	0	1	1	0	0	0	0	0	0	0	0	2	0	0	2
+30 mins.	0	0	1	1	0	0	0	0	0	0	0	0	1	**3**	0	4
+45 mins.	0	0	**3**	**3**	0	0	0	0	0	0	0	0	2	3	0	**5**
Total Volume	0	0	6	6	0	1	0	1	0	0	0	0	7	6	0	13
% App. Total	0	0	100		0	100	0		0	0	0		53.8	46.2	0	
PHF	.000	.000	.500	.500	.000	.250	.000	.250	.000	.000	.000	.000	.875	.500	.000	.650

Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

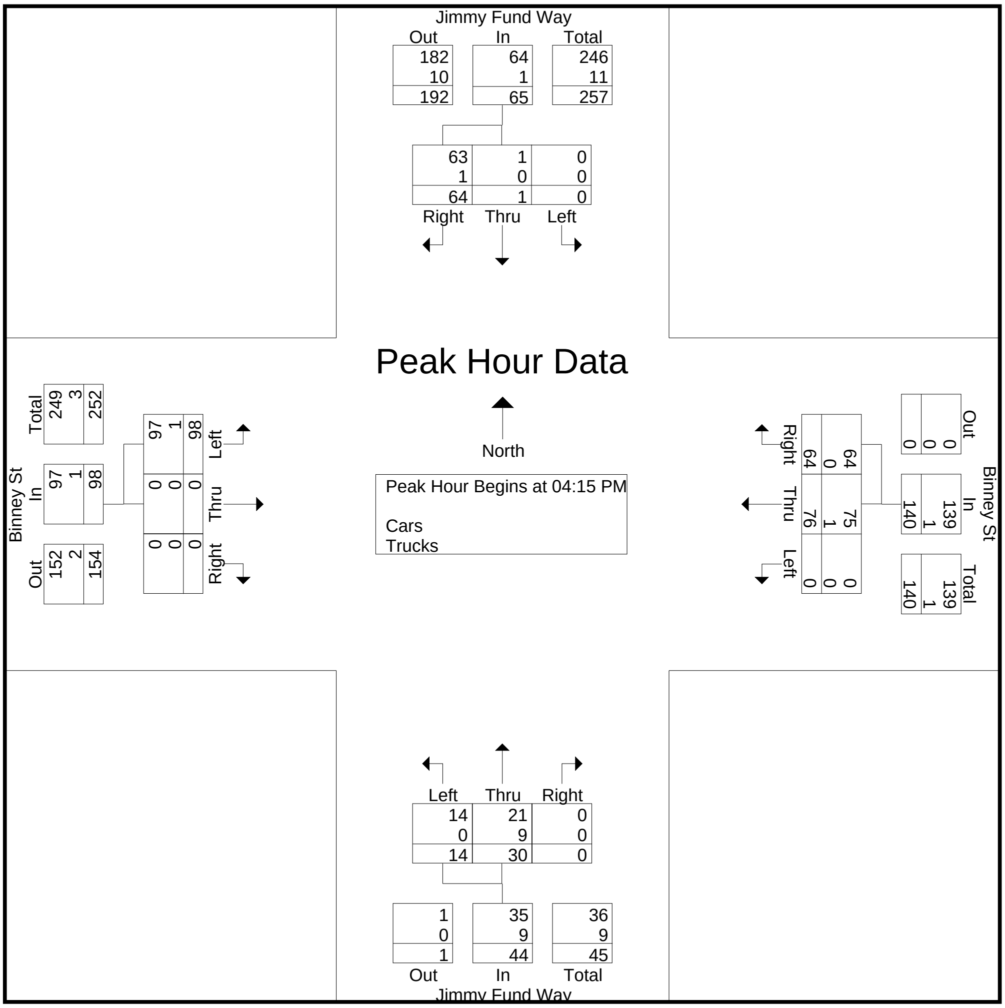
	Jimmy Fund Way From North			Binney St From East			Jimmy Fund Way From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	13	0	21	7	4	9	0	24	0	0	78
04:15 PM	0	0	21	0	20	13	3	6	0	23	0	0	86
04:30 PM	0	1	14	0	23	18	3	9	0	21	0	0	89
04:45 PM	0	0	18	0	15	14	3	8	0	27	0	0	85
Total	0	1	66	0	79	52	13	32	0	95	0	0	338
05:00 PM	0	0	11	0	18	19	5	7	0	27	0	0	87
05:15 PM	0	1	10	0	15	21	2	7	0	22	0	0	78
05:30 PM	0	0	9	0	20	21	2	8	1	20	0	2	83
05:45 PM	0	0	7	0	13	15	2	6	0	14	0	0	57
Total	0	1	37	0	66	76	11	28	1	83	0	2	305
Grand Total	0	2	103	0	145	128	24	60	1	178	0	2	643
Apprch %	0	1.9	98.1	0	53.1	46.9	28.2	70.6	1.2	98.9	0	1.1	
Total %	0	0.3	16	0	22.6	19.9	3.7	9.3	0.2	27.7	0	0.3	
Cars	0	2	102	0	144	128	24	42	1	175	0	2	620
% Cars	0	100	99	0	99.3	100	100	70	100	98.3	0	100	96.4
Trucks	0	0	1	0	1	0	0	18	0	3	0	0	23
% Trucks	0	0	1	0	0.7	0	0	30	0	1.7	0	0	3.6

	Jimmy Fund Way From North				Binney St From East				Jimmy Fund Way From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	**21**	**21**	0	20	13	33	3	6	0	9	23	0	0	23	86
04:30 PM	0	**1**	14	15	0	**23**	18	**41**	3	**9**	0	**12**	21	0	0	21	**89**
04:45 PM	0	0	18	18	0	15	14	29	3	8	0	11	**27**	0	0	**27**	85
05:00 PM	0	0	11	11	0	18	**19**	37	**5**	7	0	12	27	0	0	27	87
Total Volume	0	1	64	65	0	76	64	140	14	30	0	44	98	0	0	98	347
% App. Total	0	1.5	98.5		0	54.3	45.7		31.8	68.2	0		100	0	0		
PHF	.000	.250	.762	.774	.000	.826	.842	.854	.700	.833	.000	.917	.907	.000	.000	.907	.975
Cars	0	1	63	64	0	75	64	139	14	21	0	35	97	0	0	97	335
% Cars	0	100	98.4	98.5	0	98.7	100	99.3	100	70.0	0	79.5	99.0	0	0	99.0	96.5
Trucks	0	0	1	1	0	1	0	1	0	9	0	9	1	0	0	1	12
% Trucks	0	0	1.6	1.5	0	1.3	0	0.7	0	30.0	0	20.5	1.0	0	0	1.0	3.5

Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012



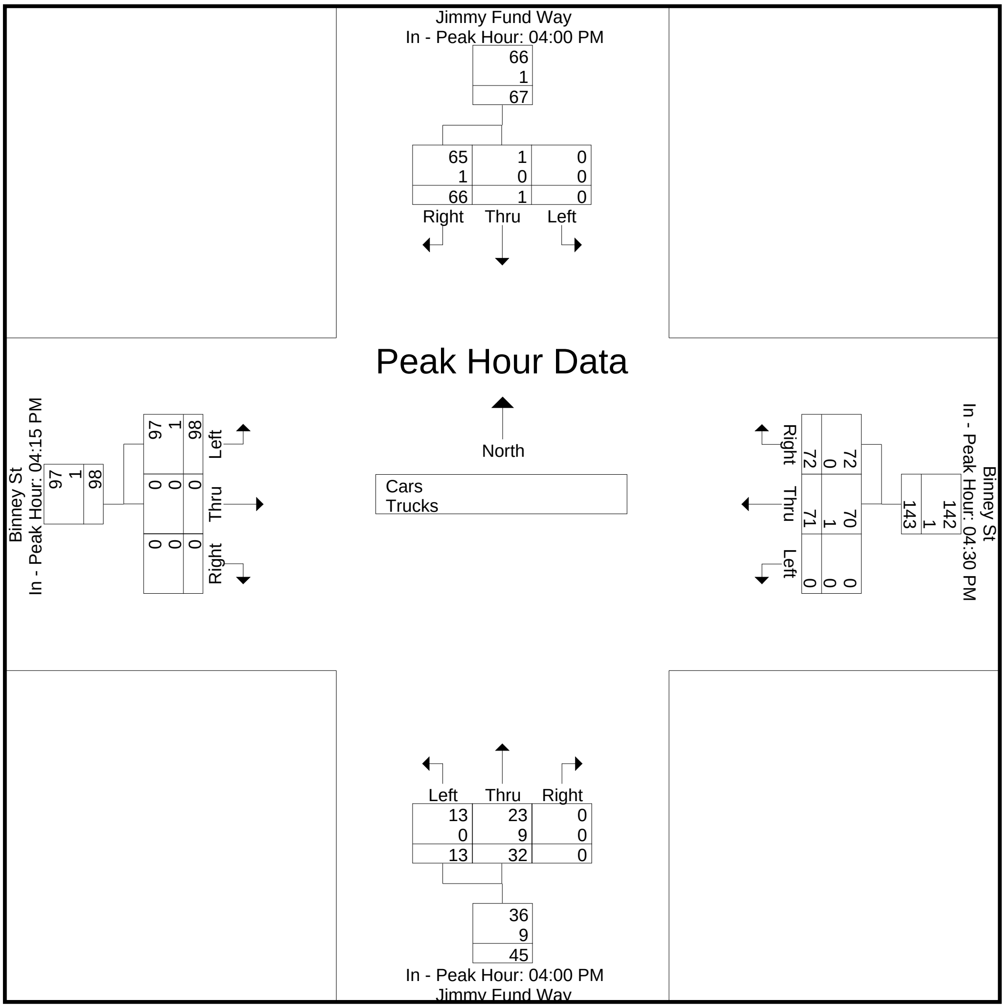
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:00 PM				04:15 PM			
+0 mins.	0	0	13	13	0	**23**	18	**41**	**4**	**9**	0	**13**	23	0	0	23
+15 mins.	0	0	**21**	**21**	0	15	14	29	3	6	0	9	21	0	0	21
+30 mins.	0	**1**	14	15	0	18	19	37	3	9	0	12	**27**	0	0	**27**
+45 mins.	0	0	18	18	0	15	**21**	36	3	8	0	11	27	0	0	27
Total Volume	0	1	66	67	0	71	72	143	13	32	0	45	98	0	0	98
% App. Total	0	1.5	98.5		0	49.7	50.3		28.9	71.1	0		100	0	0	
PHF	.000	.250	.786	.798	.000	.772	.857	.872	.813	.889	.000	.865	.907	.000	.000	.907
Cars	0	1	65	66	0	70	72	142	13	23	0	36	97	0	0	97
% Cars	0	100	98.5	98.5	0	98.6	100	99.3	100	71.9	0	80	99	0	0	99
Trucks	0	0	1	1	0	1	0	1	0	9	0	9	1	0	0	1
% Trucks	0	0	1.5	1.5	0	1.4	0	0.7	0	28.1	0	20	1	0	0	1

Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012

Groups Printed- Cars

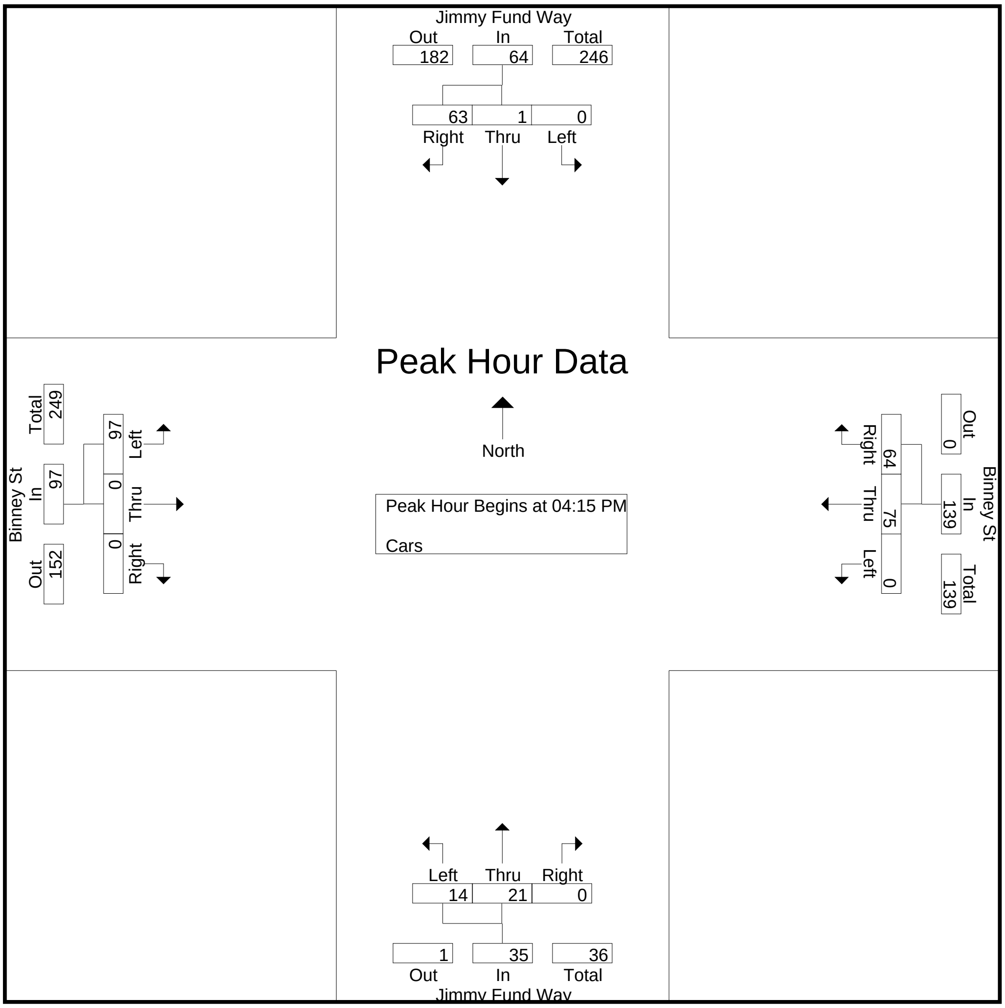
	Jimmy Fund Way From North			Binney St From East			Jimmy Fund Way From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	13	0	21	7	4	7	0	24	0	0	76
04:15 PM	0	0	20	0	20	13	3	4	0	23	0	0	83
04:30 PM	0	1	14	0	22	18	3	6	0	21	0	0	85
04:45 PM	0	0	18	0	15	14	3	6	0	26	0	0	82
Total	0	1	65	0	78	52	13	23	0	94	0	0	326
05:00 PM	0	0	11	0	18	19	5	5	0	27	0	0	85
05:15 PM	0	1	10	0	15	21	2	4	0	21	0	0	74
05:30 PM	0	0	9	0	20	21	2	6	1	20	0	2	81
05:45 PM	0	0	7	0	13	15	2	4	0	13	0	0	54
Total	0	1	37	0	66	76	11	19	1	81	0	2	294
Grand Total	0	2	102	0	144	128	24	42	1	175	0	2	620
Apprch %	0	1.9	98.1	0	52.9	47.1	35.8	62.7	1.5	98.9	0	1.1	
Total %	0	0.3	16.5	0	23.2	20.6	3.9	6.8	0.2	28.2	0	0.3	

	Jimmy Fund Way From North				Binney St From East				Jimmy Fund Way From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	**20**	**20**	0	20	13	33	3	4	0	7	23	0	0	23	83
04:30 PM	0	**1**	14	15	0	**22**	18	**40**	3	**6**	0	9	21	0	0	21	**85**
04:45 PM	0	0	18	18	0	15	14	29	3	6	0	9	26	0	0	26	82
05:00 PM	0	0	11	11	0	18	**19**	37	**5**	5	0	**10**	**27**	0	0	**27**	85
Total Volume	0	1	63	64	0	75	64	139	14	21	0	35	97	0	0	97	335
% App. Total	0	1.6	98.4		0	54	46		40	60	0		100	0	0		
PHF	.000	.250	.788	.800	.000	.852	.842	.869	.700	.875	.000	.875	.898	.000	.000	.898	.985

Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012
Page No : 2



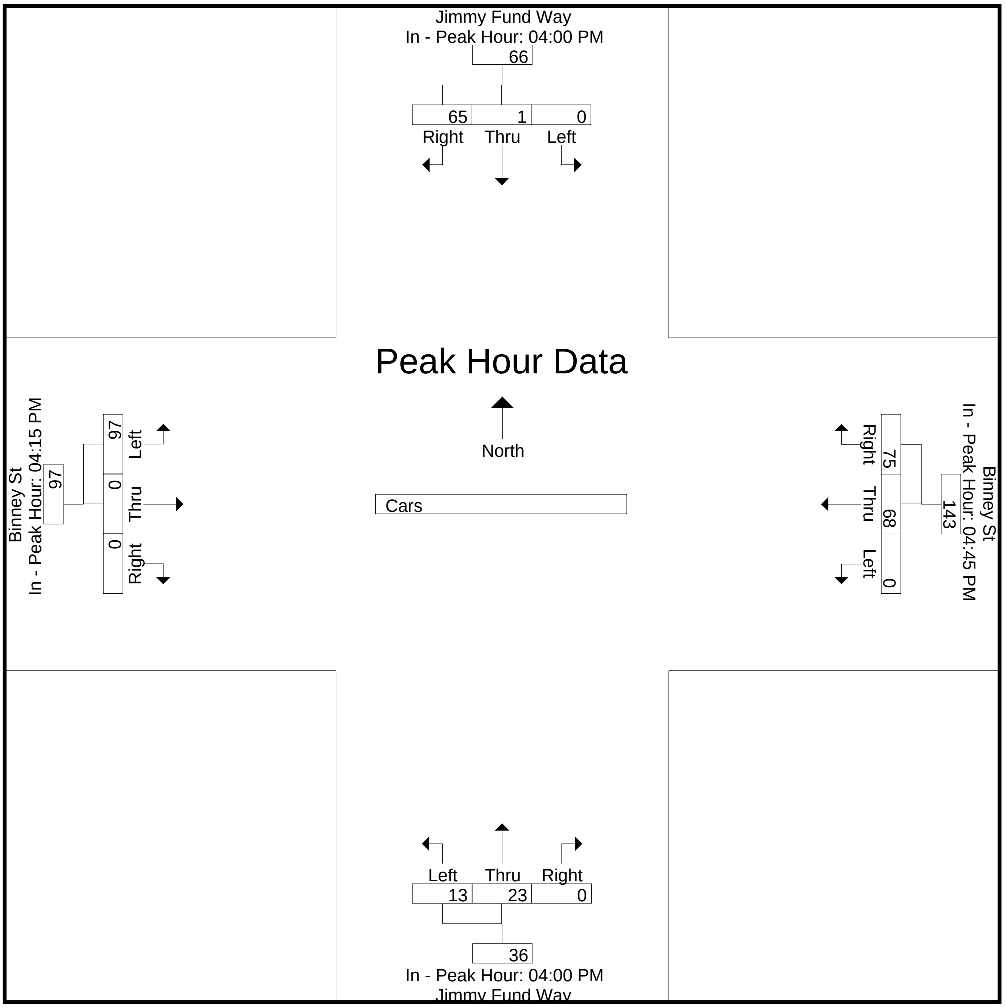
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:45 PM				04:00 PM				04:15 PM			
+0 mins.	0	0	13	13	0	15	14	29	**4**	**7**	0	**11**	23	0	0	23
+15 mins.	0	0	**20**	**20**	0	18	19	37	3	4	0	7	21	0	0	21
+30 mins.	0	**1**	14	15	0	15	**21**	36	3	6	0	9	26	0	0	26
+45 mins.	0	0	18	18	0	**20**	21	**41**	3	6	0	9	**27**	0	0	**27**
Total Volume	0	1	65	66	0	68	75	143	13	23	0	36	97	0	0	97
% App. Total	0	1.5	98.5		0	47.6	52.4		36.1	63.9	0		100	0	0	
PHF	.000	.250	.813	.825	.000	.850	.893	.872	.813	.821	.000	.818	.898	.000	.000	.898

Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

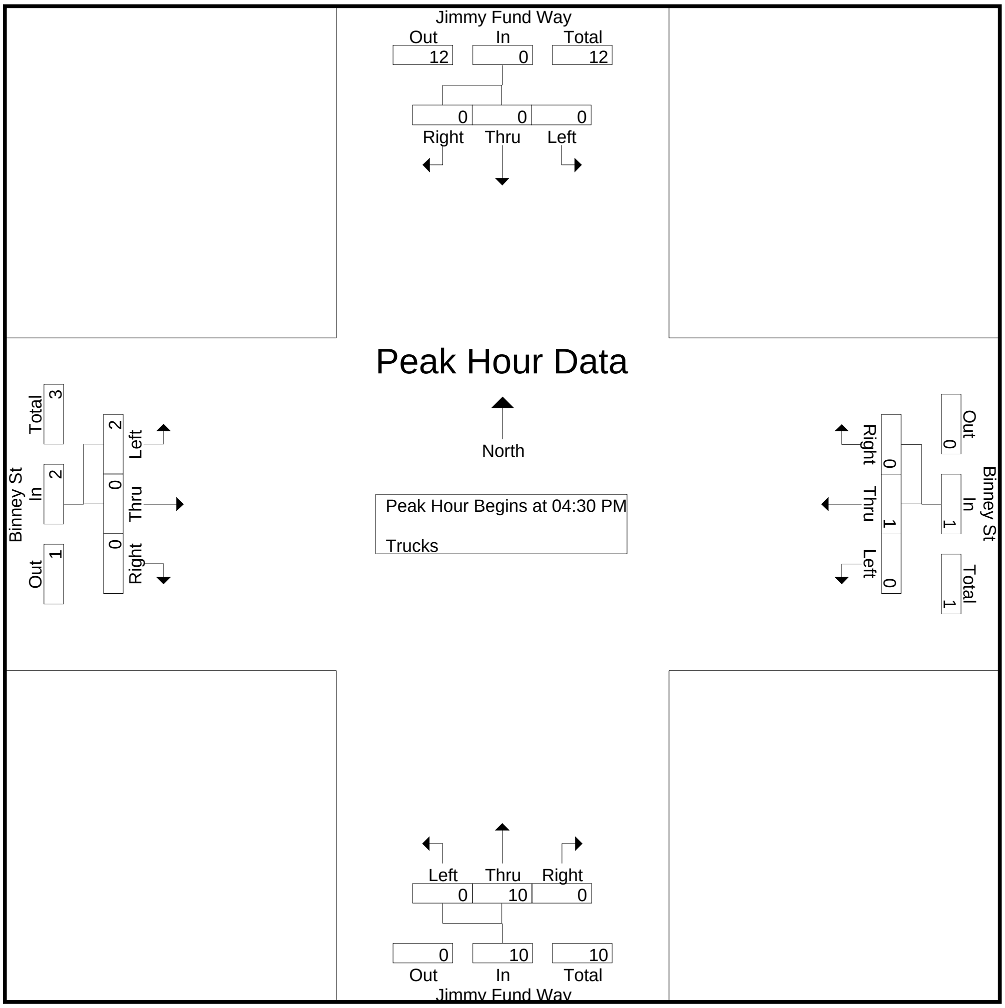
	Jimmy Fund Way From North			Binney St From East			Jimmy Fund Way From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	0	0	0	0	2	0	0	0	0	2
04:15 PM	0	0	1	0	0	0	0	2	0	0	0	0	3
04:30 PM	0	0	0	0	1	0	0	3	0	0	0	0	4
04:45 PM	0	0	0	0	0	0	0	2	0	1	0	0	3
Total	0	0	1	0	1	0	0	9	0	1	0	0	12
05:00 PM	0	0	0	0	0	0	0	2	0	0	0	0	2
05:15 PM	0	0	0	0	0	0	0	3	0	1	0	0	4
05:30 PM	0	0	0	0	0	0	0	2	0	0	0	0	2
05:45 PM	0	0	0	0	0	0	0	2	0	1	0	0	3
Total	0	0	0	0	0	0	0	9	0	2	0	0	11
Grand Total	0	0	1	0	1	0	0	18	0	3	0	0	23
Apprch %	0	0	100	0	100	0	0	100	0	100	0	0	
Total %	0	0	4.3	0	4.3	0	0	78.3	0	13	0	0	

	Jimmy Fund Way From North				Binney St From East				Jimmy Fund Way From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	**1**	0	**1**	0	**3**	0	**3**	0	0	0	0	**4**
04:45 PM	0	0	0	0	0	0	0	0	0	2	0	2	**1**	0	0	**1**	3
05:00 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
05:15 PM	0	0	0	0	0	0	0	0	0	3	0	3	1	0	0	1	4
Total Volume	0	0	0	0	0	1	0	1	0	10	0	10	2	0	0	2	13
% App. Total	0	0	0		0	100	0		0	100	0		100	0	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.833	.000	.833	.500	.000	.000	.500	.813

Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012
Page No : 2



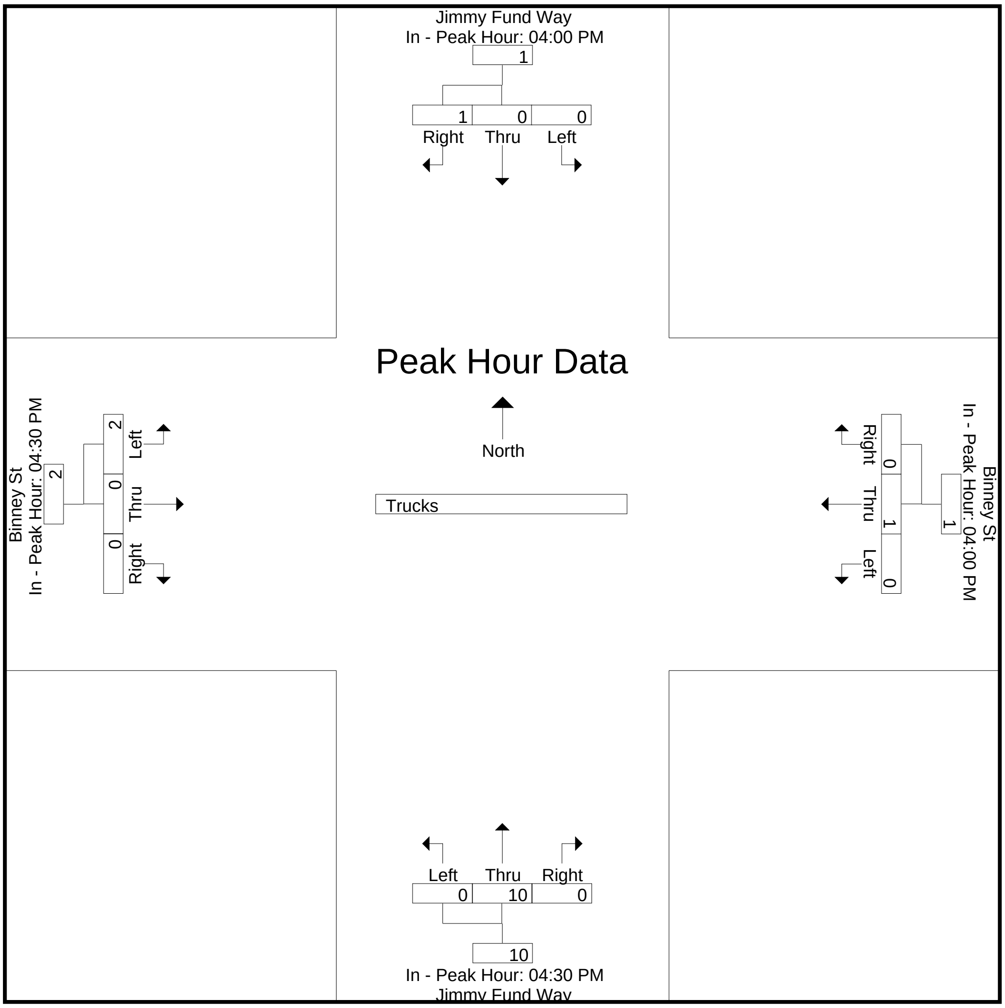
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	**3**	0	**3**	0	0	0	0
+15 mins.	0	0	**1**	**1**	0	0	0	0	0	2	0	2	**1**	0	0	**1**
+30 mins.	0	0	0	0	0	**1**	0	**1**	0	2	0	2	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	3	0	3	1	0	0	1
Total Volume	0	0	1	1	0	1	0	1	0	10	0	10	2	0	0	2
% App. Total	0	0	100		0	100	0		0	100	0		100	0	0	
PHF	.000	.000	.250	.250	.000	.250	.000	.250	.000	.833	.000	.833	.500	.000	.000	.500

Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

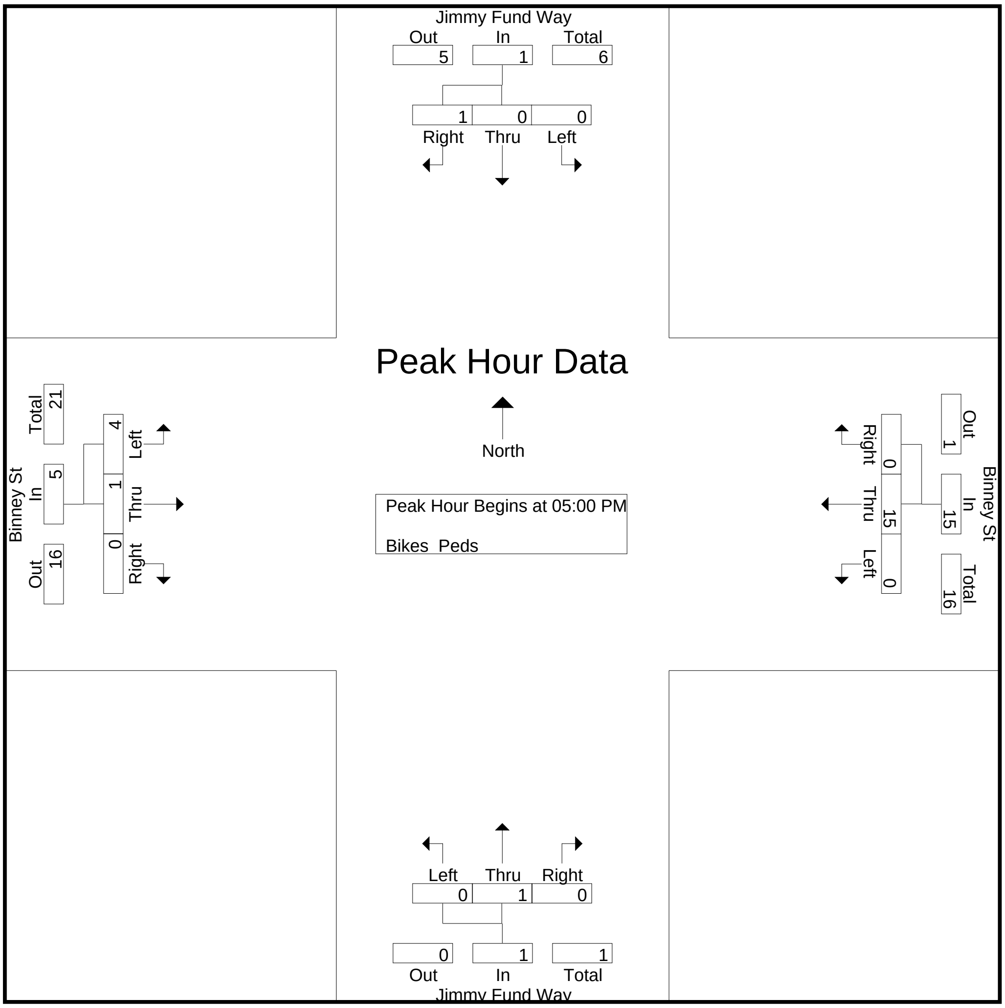
	Jimmy Fund Way From North				Binney St From East				Jimmy Fund Way From South				Binney St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	1	0	0	26	0	1	0	67	0	0	0	23	0	0	0	33	149	2	151
04:15 PM	0	0	1	17	0	0	0	67	0	0	0	24	1	0	0	29	137	2	139
04:30 PM	0	0	1	23	0	2	0	76	0	0	0	19	3	0	0	34	152	6	158
04:45 PM	1	0	1	23	0	0	0	87	0	0	0	31	1	0	0	24	165	3	168
Total	2	0	3	89	0	3	0	297	0	0	0	97	5	0	0	120	603	13	616
05:00 PM	0	0	0	30	0	7	0	92	0	0	0	33	1	0	0	45	200	8	208
05:15 PM	0	0	0	29	0	2	0	62	0	0	0	32	0	0	0	35	158	2	160
05:30 PM	0	0	1	32	0	1	0	61	0	1	0	23	0	1	0	17	133	4	137
05:45 PM	0	0	0	19	0	5	0	53	0	0	0	19	3	0	0	13	104	8	112
Total	0	0	1	110	0	15	0	268	0	1	0	107	4	1	0	110	595	22	617
Grand Total	2	0	4	199	0	18	0	565	0	1	0	204	9	1	0	230	1198	35	1233
Apprch %	33.3	0	66.7		0	100	0		0	100	0		90	10	0				
Total %	5.7	0	11.4		0	51.4	0		0	2.9	0		25.7	2.9	0		97.2	2.8	

	Jimmy Fund Way From North				Binney St From East				Jimmy Fund Way From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	**7**	0	**7**	0	0	0	0	1	0	0	1	**8**
05:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
05:30 PM	0	0	**1**	**1**	0	1	0	1	0	**1**	0	**1**	0	**1**	0	1	4
05:45 PM	0	0	0	0	0	5	0	5	0	0	0	0	**3**	0	0	**3**	8
Total Volume	0	0	1	1	0	15	0	15	0	1	0	1	4	1	0	5	22
% App. Total	0	0	100		0	100	0		0	100	0		80	20	0		
PHF	.000	.000	.250	.250	.000	.536	.000	.536	.000	.250	.000	.250	.333	.250	.000	.417	.688

Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012
Page No : 2



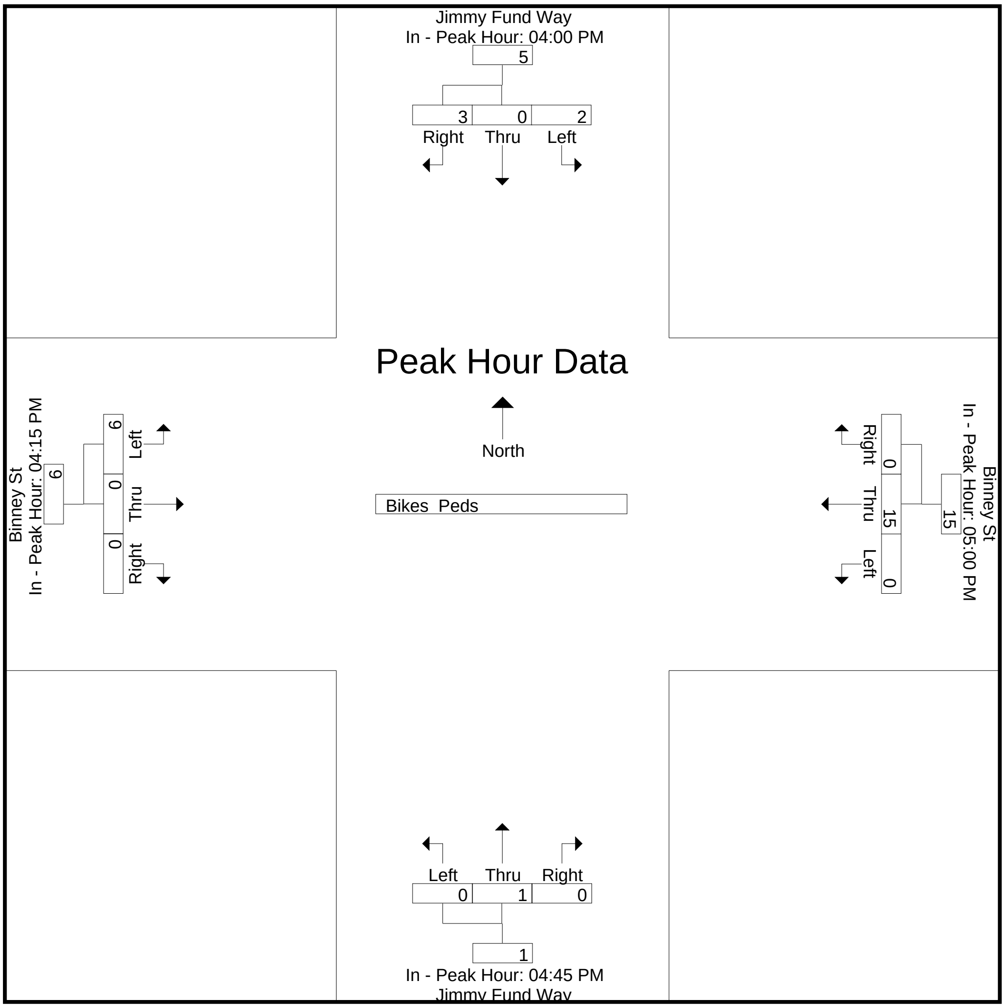
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:45 PM				04:15 PM			
+0 mins.	**1**	0	0	1	0	**7**	0	**7**	0	0	0	0	1	0	0	1
+15 mins.	0	0	**1**	1	0	2	0	2	0	0	0	0	**3**	0	0	**3**
+30 mins.	0	0	1	1	0	1	0	1	0	0	0	0	1	0	0	1
+45 mins.	1	0	1	**2**	0	5	0	5	0	**1**	0	**1**	1	0	0	1
Total Volume	2	0	3	5	0	15	0	15	0	1	0	1	6	0	0	6
% App. Total	40	0	60		0	100	0		0	100	0		100	0	0	
PHF	.500	.000	.750	.625	.000	.536	.000	.536	.000	.250	.000	.250	.500	.000	.000	.500

Accurate Counts
978-664-2565

N/S Street : Jimmy Fund Way
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970018
Site Code : 94970018
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

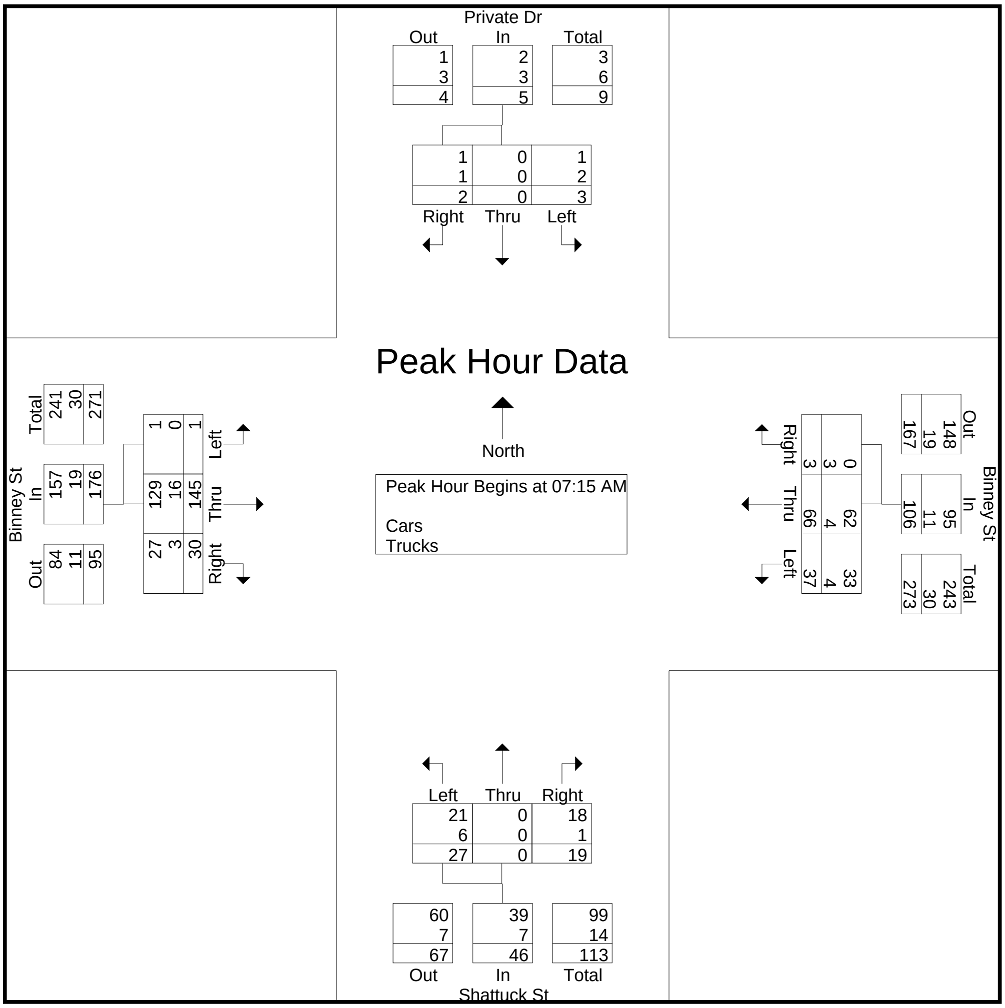
	Private Dr From North			Binney St From East			Shattuck St From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	1	0	1	12	9	0	5	0	9	2	27	6	72
07:15 AM	0	0	1	12	13	1	10	0	2	0	34	6	79
07:30 AM	3	0	0	10	19	0	8	0	4	0	37	7	88
07:45 AM	0	0	0	6	19	2	4	0	7	1	39	9	87
Total	4	0	2	40	60	3	27	0	22	3	137	28	326
08:00 AM	0	0	1	9	15	0	5	0	6	0	35	8	79
08:15 AM	0	0	0	11	23	3	5	0	4	0	24	6	76
08:30 AM	1	0	1	7	22	1	9	0	5	0	36	6	88
08:45 AM	2	0	2	9	19	1	7	0	4	0	30	8	82
Total	3	0	4	36	79	5	26	0	19	0	125	28	325
Grand Total	7	0	6	76	139	8	53	0	41	3	262	56	651
Apprch %	53.8	0	46.2	34.1	62.3	3.6	56.4	0	43.6	0.9	81.6	17.4	
Total %	1.1	0	0.9	11.7	21.4	1.2	8.1	0	6.3	0.5	40.2	8.6	
Cars	5	0	2	71	132	2	46	0	39	2	232	50	581
% Cars	71.4	0	33.3	93.4	95	25	86.8	0	95.1	66.7	88.5	89.3	89.2
Trucks	2	0	4	5	7	6	7	0	2	1	30	6	70
% Trucks	28.6	0	66.7	6.6	5	75	13.2	0	4.9	33.3	11.5	10.7	10.8

	Private Dr From North				Binney St From East				Shattuck St From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	**1**	1	**12**	13	1	26	**10**	0	2	**12**	0	34	6	40	79
07:30 AM	**3**	0	0	**3**	10	**19**	0	**29**	8	0	4	12	0	37	7	44	**88**
07:45 AM	0	0	0	0	6	19	**2**	27	4	0	**7**	11	**1**	**39**	**9**	**49**	87
08:00 AM	0	0	1	1	9	15	0	24	5	0	6	11	0	35	8	43	79
Total Volume	3	0	2	5	37	66	3	106	27	0	19	46	1	145	30	176	333
% App. Total	60	0	40		34.9	62.3	2.8		58.7	0	41.3		0.6	82.4	17		
PHF	.250	.000	.500	.417	.771	.868	.375	.914	.675	.000	.679	.958	.250	.929	.833	.898	.946
Cars	1	0	1	2	33	62	0	95	21	0	18	39	1	129	27	157	293
% Cars	33.3	0	50.0	40.0	89.2	93.9	0	89.6	77.8	0	94.7	84.8	100	89.0	90.0	89.2	88.0
Trucks	2	0	1	3	4	4	3	11	6	0	1	7	0	16	3	19	40
% Trucks	66.7	0	50.0	60.0	10.8	6.1	100	10.4	22.2	0	5.3	15.2	0	11.0	10.0	10.8	12.0

Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 2



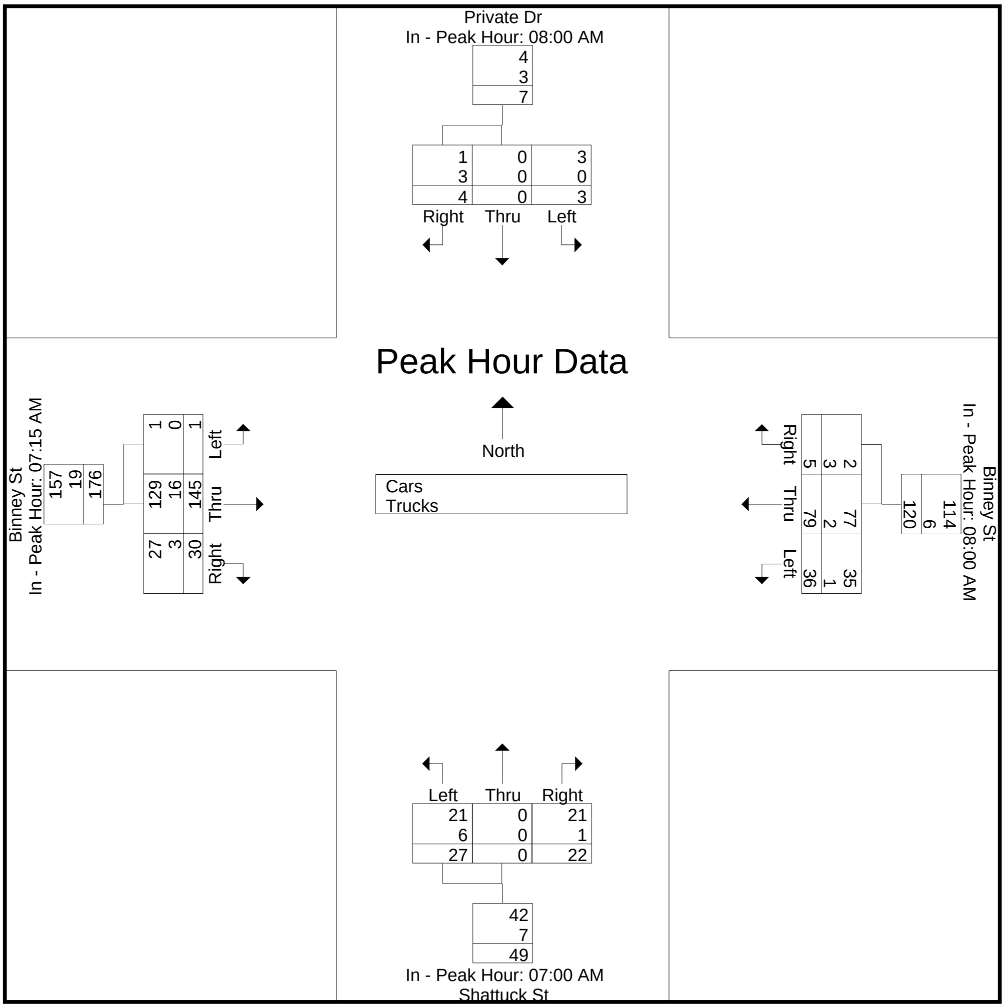
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				07:00 AM				07:15 AM			
+0 mins.	0	0	1	1	9	15	0	24	5	0	**9**	**14**	0	34	6	40
+15 mins.	0	0	0	0	**11**	**23**	**3**	**37**	**10**	0	2	12	0	37	7	44
+30 mins.	1	0	1	2	7	22	1	30	8	0	4	12	**1**	**39**	**9**	**49**
+45 mins.	**2**	0	**2**	**4**	9	19	1	29	4	0	7	11	0	35	8	43
Total Volume	3	0	4	7	36	79	5	120	27	0	22	49	1	145	30	176
% App. Total	42.9	0	57.1		30	65.8	4.2		55.1	0	44.9		0.6	82.4	17	
PHF	.375	.000	.500	.438	.818	.859	.417	.811	.675	.000	.611	.875	.250	.929	.833	.898
Cars	3	0	1	4	35	77	2	114	21	0	21	42	1	129	27	157
% Cars	100	0	25	57.1	97.2	97.5	40	95	77.8	0	95.5	85.7	100	89	90	89.2
Trucks	0	0	3	3	1	2	3	6	6	0	1	7	0	16	3	19
% Trucks	0	0	75	42.9	2.8	2.5	60	5	22.2	0	4.5	14.3	0	11	10	10.8

Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

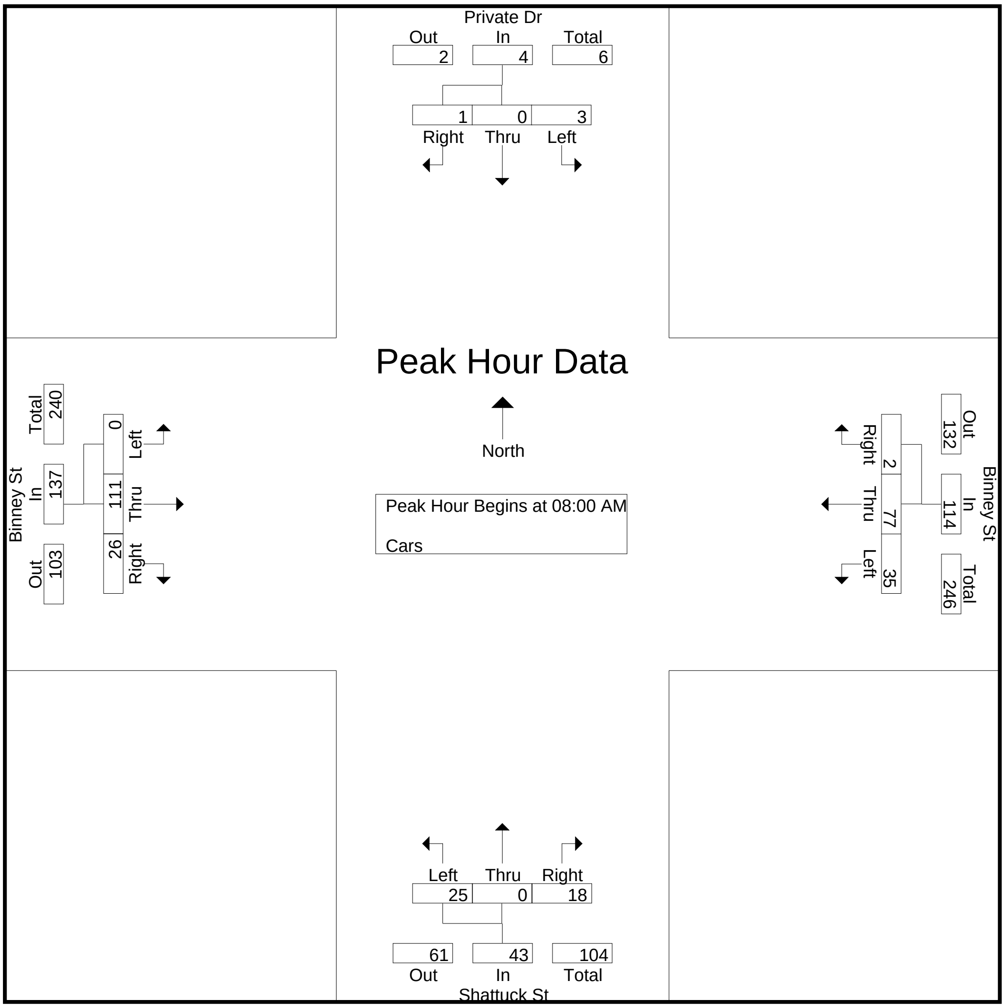
	Private Dr From North			Binney St From East			Shattuck St From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	1	0	1	12	8	0	5	0	9	1	24	5	66
07:15 AM	0	0	0	9	12	0	9	0	2	0	31	4	67
07:30 AM	1	0	0	10	18	0	5	0	4	0	33	7	78
07:45 AM	0	0	0	5	17	0	2	0	6	1	33	8	72
Total	2	0	1	36	55	0	21	0	21	2	121	24	283
08:00 AM	0	0	1	9	15	0	5	0	6	0	32	8	76
08:15 AM	0	0	0	11	21	2	5	0	4	0	21	5	69
08:30 AM	1	0	0	7	22	0	8	0	4	0	32	6	80
08:45 AM	2	0	0	8	19	0	7	0	4	0	26	7	73
Total	3	0	1	35	77	2	25	0	18	0	111	26	298
Grand Total	5	0	2	71	132	2	46	0	39	2	232	50	581
Apprch %	71.4	0	28.6	34.6	64.4	1	54.1	0	45.9	0.7	81.7	17.6	
Total %	0.9	0	0.3	12.2	22.7	0.3	7.9	0	6.7	0.3	39.9	8.6	

	Private Dr From North				Binney St From East				Shattuck St From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	**1**	1	9	15	0	24	5	0	**6**	11	0	**32**	**8**	**40**	76
08:15 AM	0	0	0	0	**11**	21	**2**	**34**	5	0	4	9	0	21	5	26	69
08:30 AM	1	0	0	1	7	**22**	0	29	**8**	0	4	**12**	0	32	6	38	**80**
08:45 AM	**2**	0	0	**2**	8	19	0	27	7	0	4	11	0	26	7	33	73
Total Volume	3	0	1	4	35	77	2	114	25	0	18	43	0	111	26	137	298
% App. Total	75	0	25		30.7	67.5	1.8		58.1	0	41.9		0	81	19		
PHF	.375	.000	.250	.500	.795	.875	.250	.838	.781	.000	.750	.896	.000	.867	.813	.856	.931

Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 2



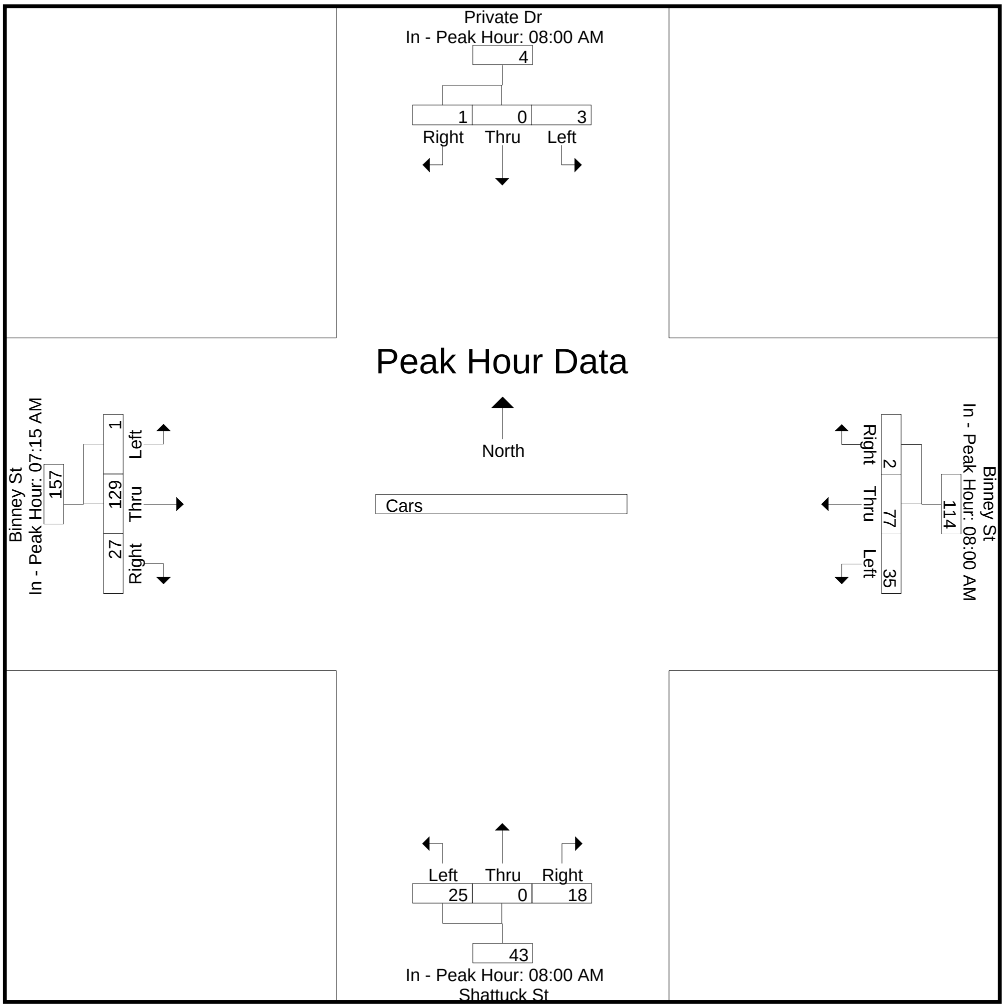
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				08:00 AM				07:15 AM			
+0 mins.	0	0	**1**	1	9	15	0	24	5	0	**6**	11	0	31	4	35
+15 mins.	0	0	0	0	**11**	21	**2**	**34**	5	0	4	9	0	**33**	7	40
+30 mins.	1	0	0	1	7	**22**	0	29	**8**	0	4	**12**	**1**	33	**8**	**42**
+45 mins.	**2**	0	0	**2**	8	19	0	27	7	0	4	11	0	32	8	40
Total Volume	3	0	1	4	35	77	2	114	25	0	18	43	1	129	27	157
% App. Total	75	0	25		30.7	67.5	1.8		58.1	0	41.9		0.6	82.2	17.2	
PHF	.375	.000	.250	.500	.795	.875	.250	.838	.781	.000	.750	.896	.250	.977	.844	.935

Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

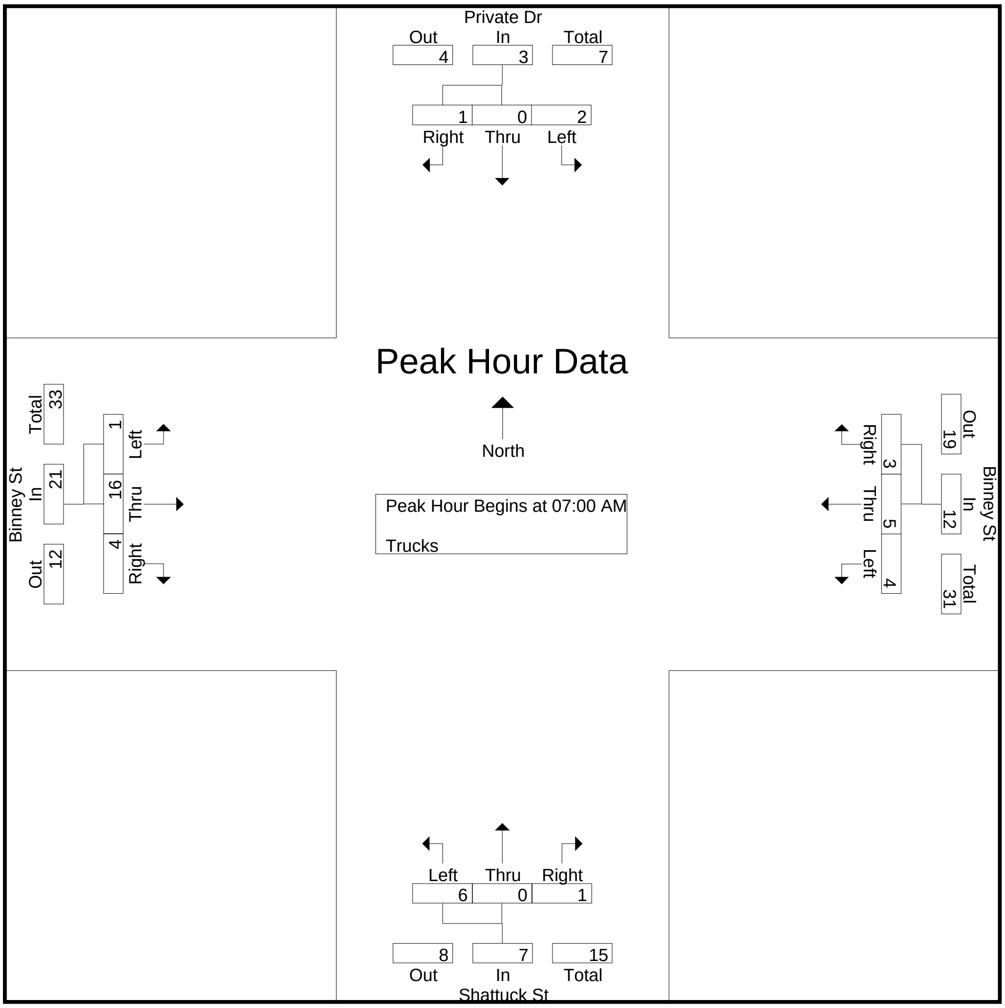
	Private Dr From North			Binney St From East			Shattuck St From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	0	1	0	0	0	0	1	3	1	6
07:15 AM	0	0	1	3	1	1	1	0	0	0	3	2	12
07:30 AM	2	0	0	0	1	0	3	0	0	0	4	0	10
07:45 AM	0	0	0	1	2	2	2	0	1	0	6	1	15
Total	2	0	1	4	5	3	6	0	1	1	16	4	43
08:00 AM	0	0	0	0	0	0	0	0	0	0	3	0	3
08:15 AM	0	0	0	0	2	1	0	0	0	0	3	1	7
08:30 AM	0	0	1	0	0	1	1	0	1	0	4	0	8
08:45 AM	0	0	2	1	0	1	0	0	0	0	4	1	9
Total	0	0	3	1	2	3	1	0	1	0	14	2	27
Grand Total	2	0	4	5	7	6	7	0	2	1	30	6	70
Apprch %	33.3	0	66.7	27.8	38.9	33.3	77.8	0	22.2	2.7	81.1	16.2	
Total %	2.9	0	5.7	7.1	10	8.6	10	0	2.9	1.4	42.9	8.6	

	Private Dr From North				Binney St From East				Shattuck St From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	**1**	3	1	5	6
07:15 AM	0	0	**1**	1	**3**	1	1	**5**	1	0	0	1	0	3	**2**	5	12
07:30 AM	**2**	0	0	**2**	0	1	0	1	**3**	0	0	**3**	0	4	0	4	10
07:45 AM	0	0	0	0	1	**2**	**2**	5	2	0	**1**	3	0	**6**	1	**7**	**15**
Total Volume	2	0	1	3	4	5	3	12	6	0	1	7	1	16	4	21	43
% App. Total	66.7	0	33.3		33.3	41.7	25		85.7	0	14.3		4.8	76.2	19		
PHF	.250	.000	.250	.375	.333	.625	.375	.600	.500	.000	.250	.583	.250	.667	.500	.750	.717

Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 2



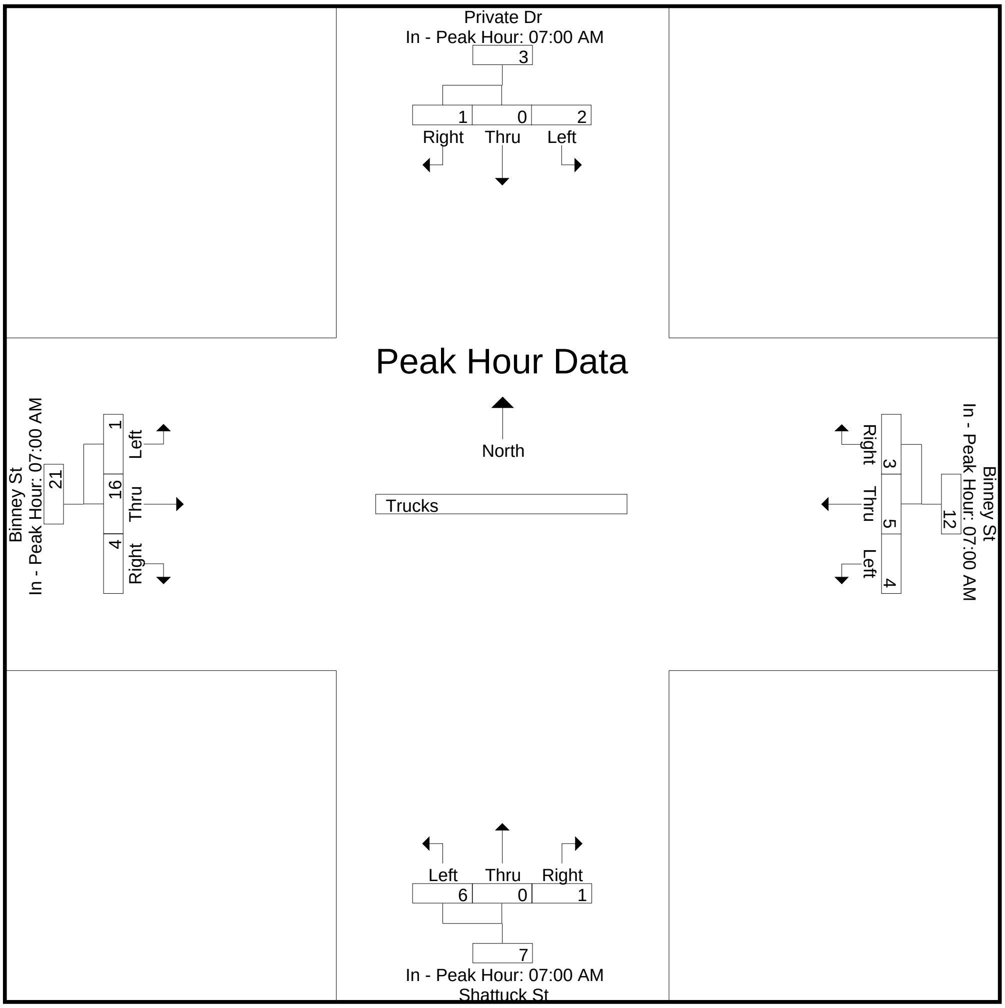
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	1	0	1	0	0	0	0	**1**	3	1	5
+15 mins.	0	0	**1**	1	**3**	1	1	**5**	1	0	0	1	0	3	**2**	5
+30 mins.	**2**	0	0	**2**	0	1	0	1	**3**	0	0	**3**	0	4	0	4
+45 mins.	0	0	0	0	1	**2**	**2**	5	2	0	**1**	3	0	**6**	1	**7**
Total Volume	2	0	1	3	4	5	3	12	6	0	1	7	1	16	4	21
% App. Total	66.7	0	33.3		33.3	41.7	25		85.7	0	14.3		4.8	76.2	19	
PHF	.250	.000	.250	.375	.333	.625	.375	.600	.500	.000	.250	.583	.250	.667	.500	.750

Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

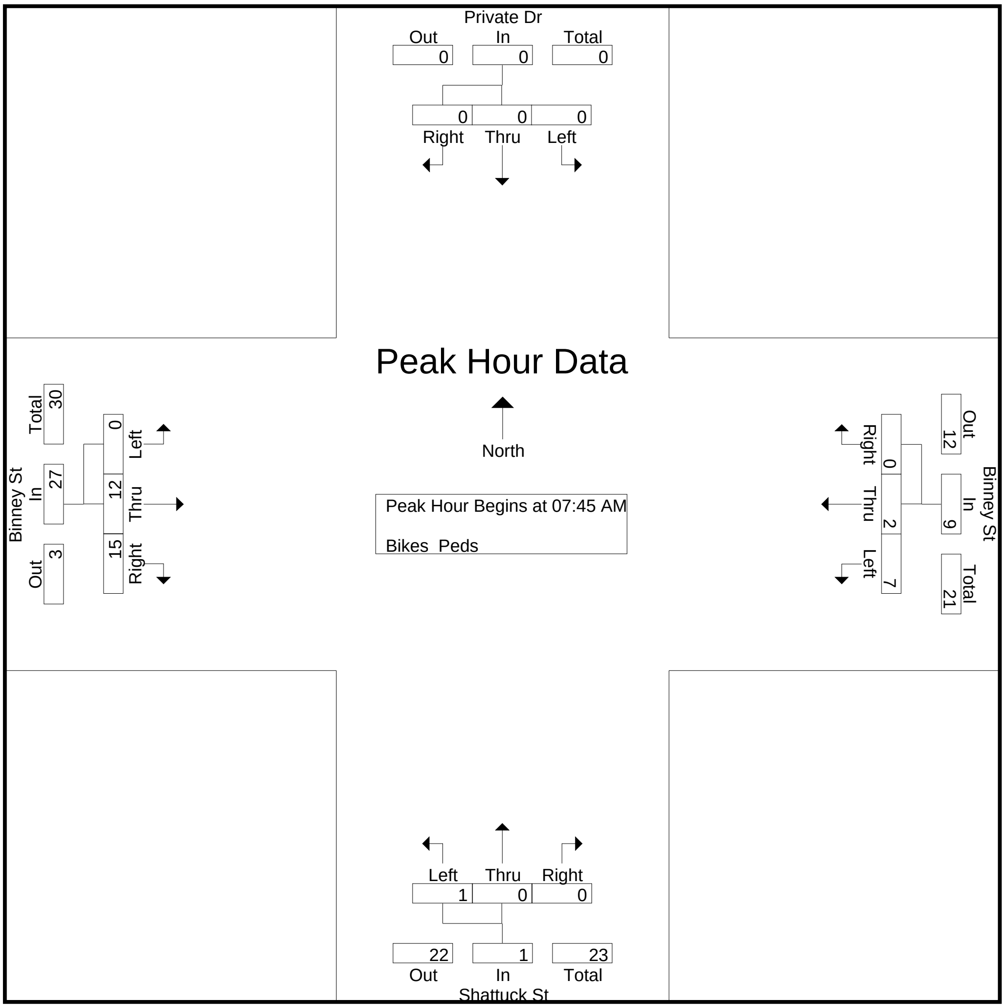
	Private Dr From North				Binney St From East				Shattuck St From South				Binney St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	25	1	1	0	16	1	0	0	35	0	4	0	7	83	7	90
07:15 AM	0	0	0	19	1	0	0	11	0	0	0	53	0	2	0	5	88	3	91
07:30 AM	0	0	0	15	1	0	0	8	0	0	0	18	0	1	1	3	44	3	47
07:45 AM	0	0	0	24	2	2	0	24	1	0	0	48	0	1	3	15	111	9	120
Total	0	0	0	83	5	3	0	59	2	0	0	154	0	8	4	30	326	22	348
08:00 AM	0	0	0	22	1	0	0	11	0	0	0	24	0	3	5	4	61	9	70
08:15 AM	0	0	0	19	3	0	0	9	0	0	0	45	0	4	3	3	76	10	86
08:30 AM	0	0	0	31	1	0	0	13	0	0	0	47	0	4	4	4	95	9	104
08:45 AM	0	0	0	17	0	0	0	14	0	0	0	49	0	2	2	3	83	4	87
Total	0	0	0	89	5	0	0	47	0	0	0	165	0	13	14	14	315	32	347
Grand Total	0	0	0	172	10	3	0	106	2	0	0	319	0	21	18	44	641	54	695
Apprch %	0	0	0		76.9	23.1	0		100	0	0		0	53.8	46.2				
Total %	0	0	0		18.5	5.6	0		3.7	0	0		0	38.9	33.3		92.2	7.8	

	Private Dr From North				Binney St From East				Shattuck St From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	2	**2**	0	**4**	**1**	0	0	**1**	0	1	3	4	9
08:00 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	3	**5**	**8**	9
08:15 AM	0	0	0	0	**3**	0	0	3	0	0	0	0	0	**4**	3	7	**10**
08:30 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	4	4	8	9
Total Volume	0	0	0	0	7	2	0	9	1	0	0	1	0	12	15	27	37
% App. Total	0	0	0		77.8	22.2	0		100	0	0		0	44.4	55.6		
PHF	.000	.000	.000	.000	.583	.250	.000	.563	.250	.000	.000	.250	.000	.750	.750	.844	.925

Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 2



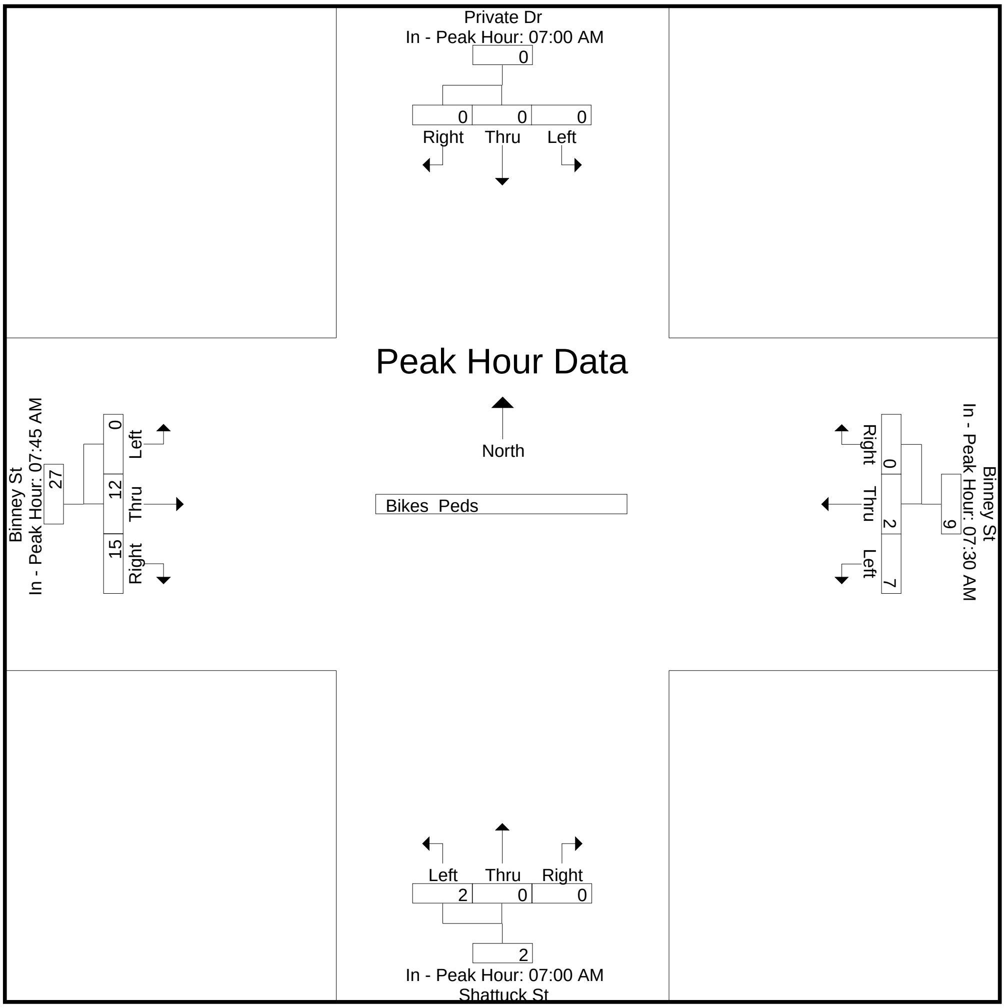
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:30 AM				07:00 AM				07:45 AM			
+0 mins.	0	0	0	0	1	0	0	1	**1**	0	0	**1**	0	1	3	4
+15 mins.	0	0	0	0	2	**2**	0	**4**	0	0	0	0	0	3	**5**	**8**
+30 mins.	0	0	0	0	1	0	0	1	0	0	0	0	0	**4**	3	7
+45 mins.	0	0	0	0	**3**	0	0	3	1	0	0	1	0	4	4	8
Total Volume	0	0	0	0	7	2	0	9	2	0	0	2	0	12	15	27
% App. Total	0	0	0		77.8	22.2	0		100	0	0		0	44.4	55.6	
PHF	.000	.000	.000	.000	.583	.250	.000	.563	.500	.000	.000	.500	.000	.750	.750	.844

Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

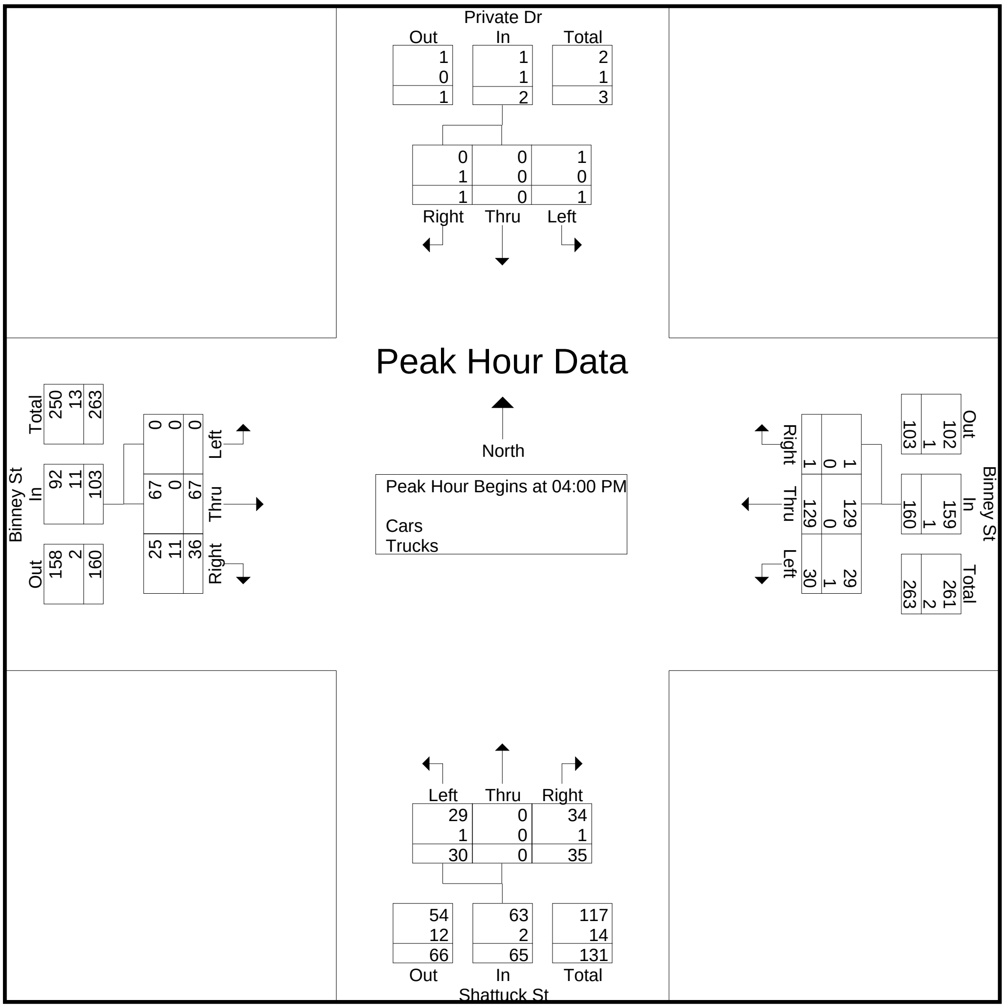
	Private Dr From North			Binney St From East			Shattuck St From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	1	9	32	0	12	0	12	0	20	10	96
04:15 PM	0	0	0	11	33	0	5	0	6	0	14	5	74
04:30 PM	0	0	0	5	33	1	5	0	7	0	14	13	78
04:45 PM	1	0	0	5	31	0	8	0	10	0	19	8	82
Total	1	0	1	30	129	1	30	0	35	0	67	36	330
05:00 PM	0	0	0	9	24	2	7	0	9	0	17	9	77
05:15 PM	0	0	0	4	23	0	11	0	6	0	12	10	66
05:30 PM	0	0	0	7	23	2	11	0	7	0	18	5	73
05:45 PM	1	0	1	6	15	0	10	0	4	0	8	9	54
Total	1	0	1	26	85	4	39	0	26	0	55	33	270
Grand Total	2	0	2	56	214	5	69	0	61	0	122	69	600
Apprch %	50	0	50	20.4	77.8	1.8	53.1	0	46.9	0	63.9	36.1	
Total %	0.3	0	0.3	9.3	35.7	0.8	11.5	0	10.2	0	20.3	11.5	
Cars	1	0	1	55	214	4	68	0	60	0	121	49	573
% Cars	50	0	50	98.2	100	80	98.6	0	98.4	0	99.2	71	95.5
Trucks	1	0	1	1	0	1	1	0	1	0	1	20	27
% Trucks	50	0	50	1.8	0	20	1.4	0	1.6	0	0.8	29	4.5

	Private Dr From North				Binney St From East				Shattuck St From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	**1**	**1**	9	32	0	41	**12**	0	**12**	**24**	0	**20**	10	**30**	**96**
04:15 PM	0	0	0	0	**11**	**33**	0	**44**	5	0	6	11	0	14	5	19	74
04:30 PM	0	0	0	0	5	33	**1**	39	5	0	7	12	0	14	**13**	27	78
04:45 PM	**1**	0	0	1	5	31	0	36	8	0	10	18	0	19	8	27	82
Total Volume	1	0	1	2	30	129	1	160	30	0	35	65	0	67	36	103	330
% App. Total	50	0	50		18.8	80.6	0.6		46.2	0	53.8		0	65	35		
PHF	.250	.000	.250	.500	.682	.977	.250	.909	.625	.000	.729	.677	.000	.838	.692	.858	.859
Cars	1	0	0	1	29	129	1	159	29	0	34	63	0	67	25	92	315
% Cars	100	0	0	50.0	96.7	100	100	99.4	96.7	0	97.1	96.9	0	100	69.4	89.3	95.5
Trucks	0	0	1	1	1	0	0	1	1	0	1	2	0	0	11	11	15
% Trucks	0	0	100	50.0	3.3	0	0	0.6	3.3	0	2.9	3.1	0	0	30.6	10.7	4.5

Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 2



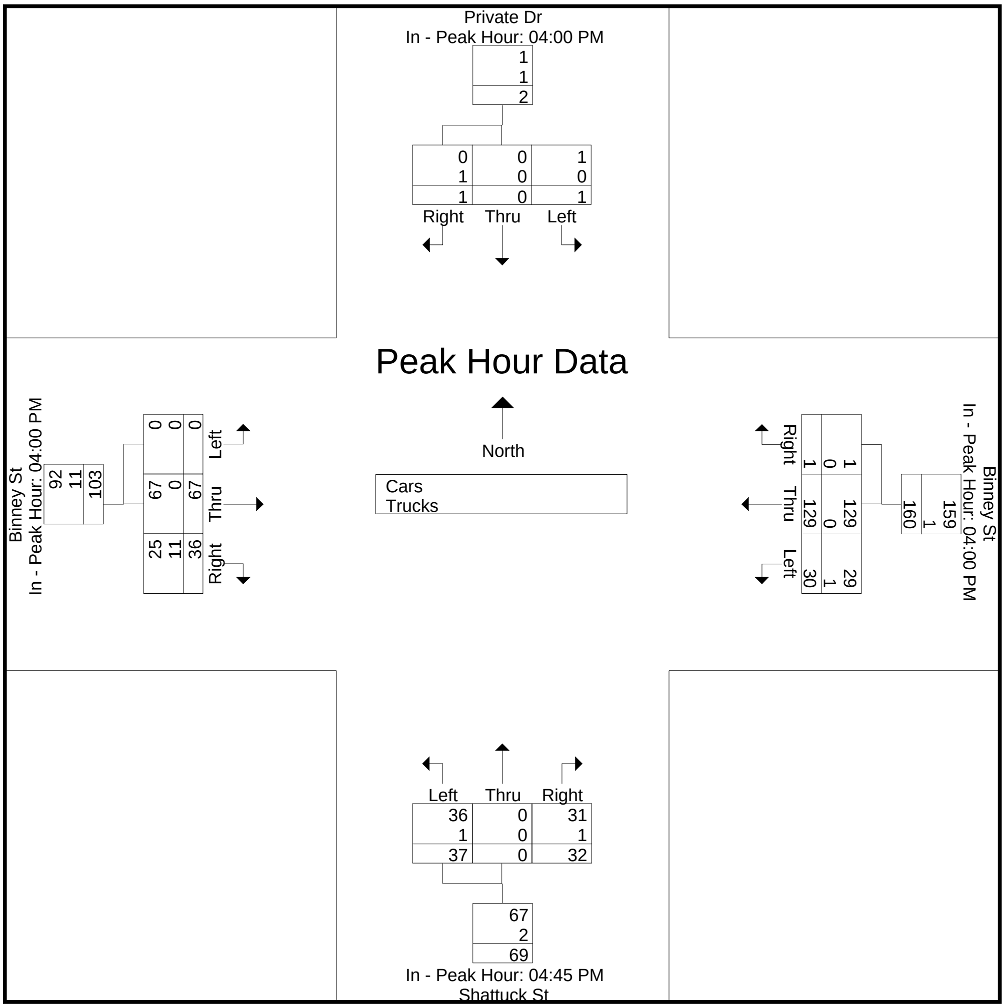
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:45 PM				04:00 PM			
+0 mins.	0	0	**1**	**1**	9	32	0	41	8	0	**10**	**18**	0	**20**	10	**30**
+15 mins.	0	0	0	0	**11**	**33**	0	**44**	7	0	9	16	0	14	5	19
+30 mins.	0	0	0	0	5	33	**1**	39	**11**	0	6	17	0	14	**13**	27
+45 mins.	**1**	0	0	1	5	31	0	36	11	0	7	18	0	19	8	27
Total Volume	1	0	1	2	30	129	1	160	37	0	32	69	0	67	36	103
% App. Total	50	0	50		18.8	80.6	0.6		53.6	0	46.4		0	65	35	
PHF	.250	.000	.250	.500	.682	.977	.250	.909	.841	.000	.800	.958	.000	.838	.692	.858
Cars	1	0	0	1	29	129	1	159	36	0	31	67	0	67	25	92
% Cars	100	0	0	50	96.7	100	100	99.4	97.3	0	96.9	97.1	0	100	69.4	89.3
Trucks	0	0	1	1	1	0	0	1	1	0	1	2	0	0	11	11
% Trucks	0	0	100	50	3.3	0	0	0.6	2.7	0	3.1	2.9	0	0	30.6	10.7

Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

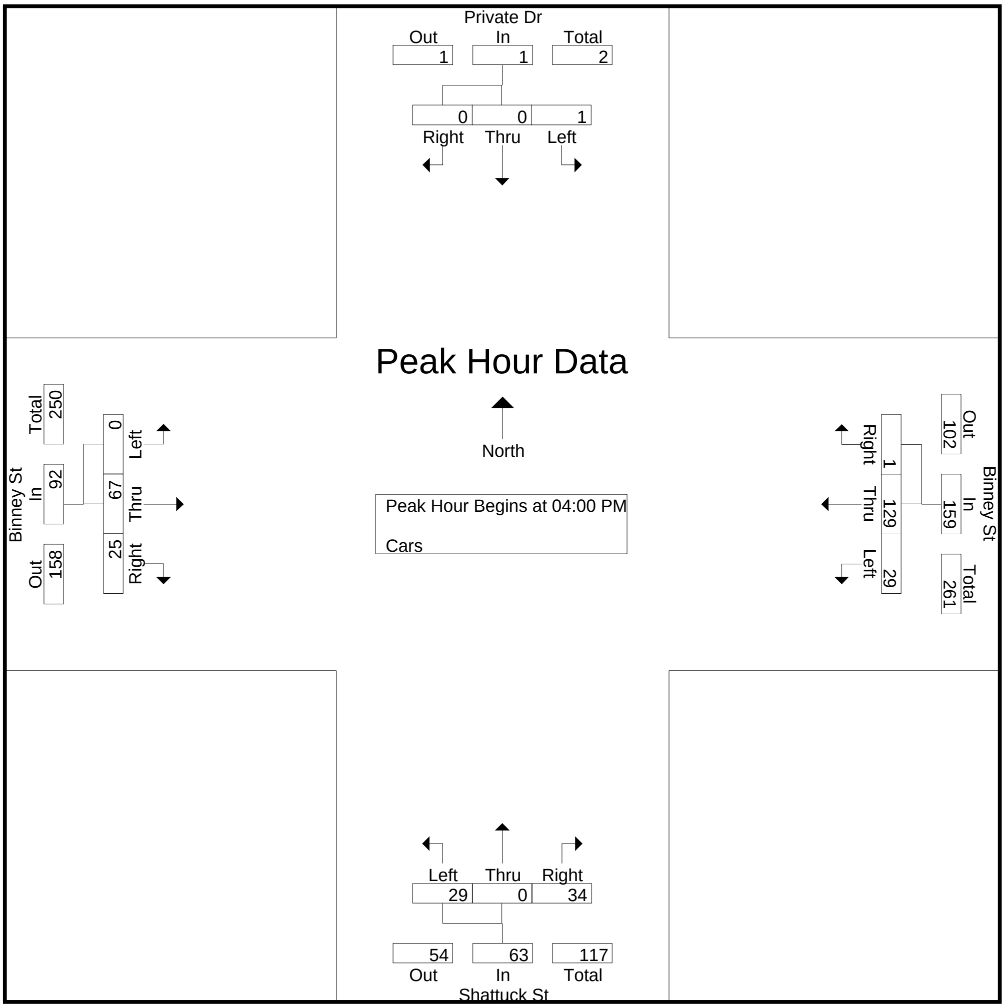
	Private Dr From North			Binney St From East			Shattuck St From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	9	32	0	12	0	12	0	20	7	92
04:15 PM	0	0	0	10	33	0	5	0	6	0	14	4	72
04:30 PM	0	0	0	5	33	1	5	0	7	0	14	9	74
04:45 PM	1	0	0	5	31	0	7	0	9	0	19	5	77
Total	1	0	0	29	129	1	29	0	34	0	67	25	315
05:00 PM	0	0	0	9	24	2	7	0	9	0	17	7	75
05:15 PM	0	0	0	4	23	0	11	0	6	0	11	7	62
05:30 PM	0	0	0	7	23	1	11	0	7	0	18	3	70
05:45 PM	0	0	1	6	15	0	10	0	4	0	8	7	51
Total	0	0	1	26	85	3	39	0	26	0	54	24	258
Grand Total	1	0	1	55	214	4	68	0	60	0	121	49	573
Apprch %	50	0	50	20.1	78.4	1.5	53.1	0	46.9	0	71.2	28.8	
Total %	0.2	0	0.2	9.6	37.3	0.7	11.9	0	10.5	0	21.1	8.6	

	Private Dr From North				Binney St From East				Shattuck St From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	9	32	0	41	**12**	0	**12**	**24**	0	**20**	7	**27**	**92**
04:15 PM	0	0	0	0	**10**	**33**	0	**43**	5	0	6	11	0	14	4	18	72
04:30 PM	0	0	0	0	5	33	**1**	39	5	0	7	12	0	14	**9**	23	74
04:45 PM	**1**	0	0	**1**	5	31	0	36	7	0	9	16	0	19	5	24	77
Total Volume	1	0	0	1	29	129	1	159	29	0	34	63	0	67	25	92	315
% App. Total	100	0	0		18.2	81.1	0.6		46	0	54		0	72.8	27.2		
PHF	.250	.000	.000	.250	.725	.977	.250	.924	.604	.000	.708	.656	.000	.838	.694	.852	.856

Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 2



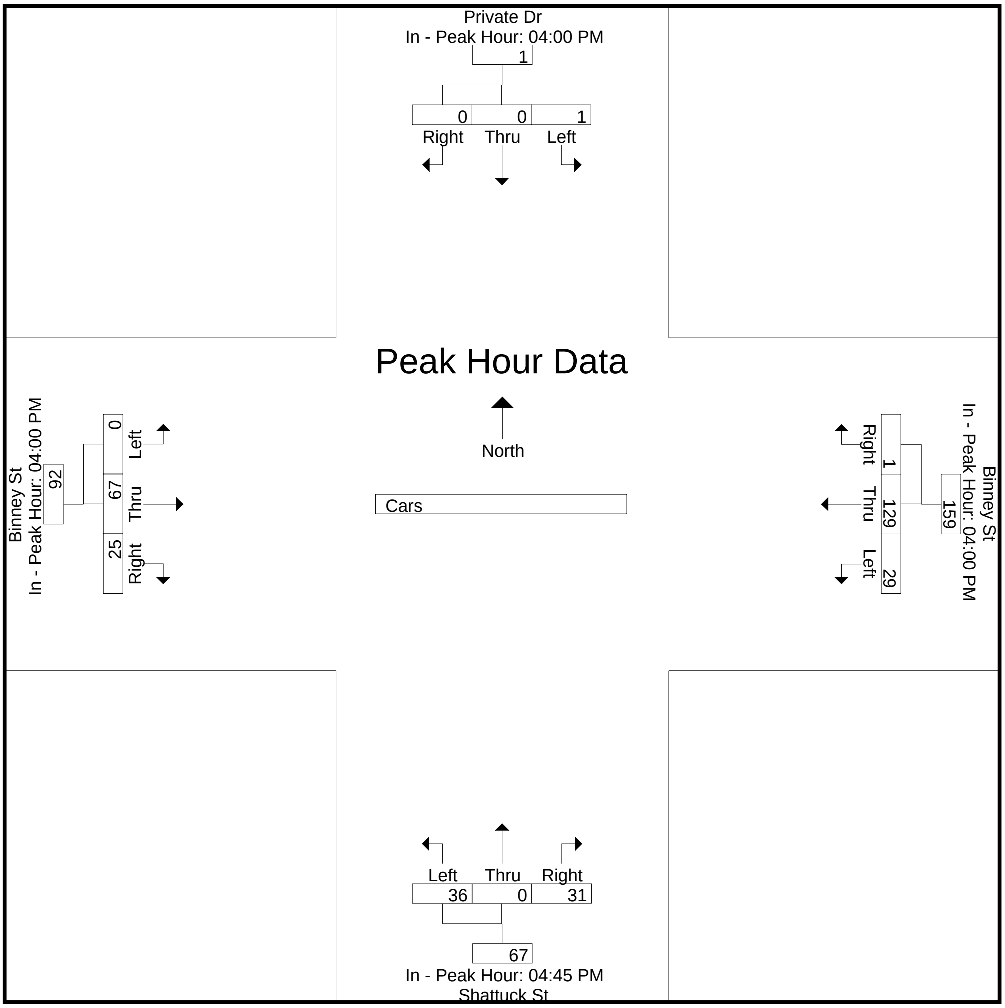
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:45 PM				04:00 PM			
+0 mins.	0	0	0	0	9	32	0	41	7	0	**9**	16	0	**20**	7	**27**
+15 mins.	0	0	0	0	**10**	**33**	0	**43**	7	0	9	16	0	14	4	18
+30 mins.	0	0	0	0	5	33	**1**	39	**11**	0	6	17	0	14	**9**	23
+45 mins.	**1**	0	0	**1**	5	31	0	36	11	0	7	**18**	0	19	5	24
Total Volume	1	0	0	1	29	129	1	159	36	0	31	67	0	67	25	92
% App. Total	100	0	0		18.2	81.1	0.6		53.7	0	46.3		0	72.8	27.2	
PHF	.250	.000	.000	.250	.725	.977	.250	.924	.818	.000	.861	.931	.000	.838	.694	.852

Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

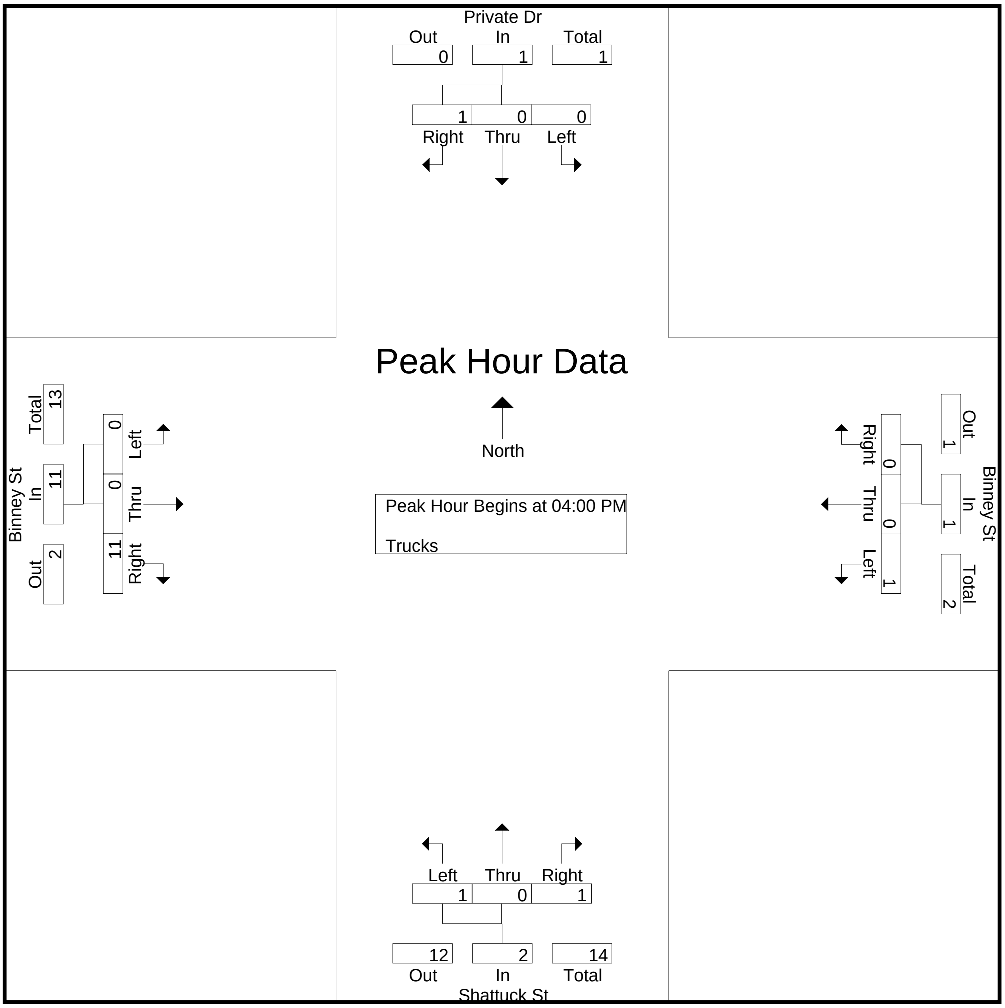
	Private Dr From North			Binney St From East			Shattuck St From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	1	0	0	0	0	0	0	0	0	3	4
04:15 PM	0	0	0	1	0	0	0	0	0	0	0	1	2
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	4	4
04:45 PM	0	0	0	0	0	0	1	0	1	0	0	3	5
Total	0	0	1	1	0	0	1	0	1	0	0	11	15
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	2	2
05:15 PM	0	0	0	0	0	0	0	0	0	0	1	3	4
05:30 PM	0	0	0	0	0	1	0	0	0	0	0	2	3
05:45 PM	1	0	0	0	0	0	0	0	0	0	0	2	3
Total	1	0	0	0	0	1	0	0	0	0	1	9	12
Grand Total	1	0	1	1	0	1	1	0	1	0	1	20	27
Apprch %	50	0	50	50	0	50	50	0	50	0	4.8	95.2	
Total %	3.7	0	3.7	3.7	0	3.7	3.7	0	3.7	0	3.7	74.1	

	Private Dr From North				Binney St From East				Shattuck St From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	0	3	3	4
04:15 PM	0	0	0	0	**1**	0	0	**1**	0	0	0	0	0	0	1	1	2
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**	**4**	4
04:45 PM	0	0	0	0	0	0	0	0	**1**	0	**1**	**2**	0	0	3	3	**5**
Total Volume	0	0	1	1	1	0	0	1	1	0	1	2	0	0	11	11	15
% App. Total	0	0	100		100	0	0		50	0	50		0	0	100		
PHF	.000	.000	.250	.250	.250	.000	.000	.250	.250	.000	.250	.250	.000	.000	.688	.688	.750

Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 2



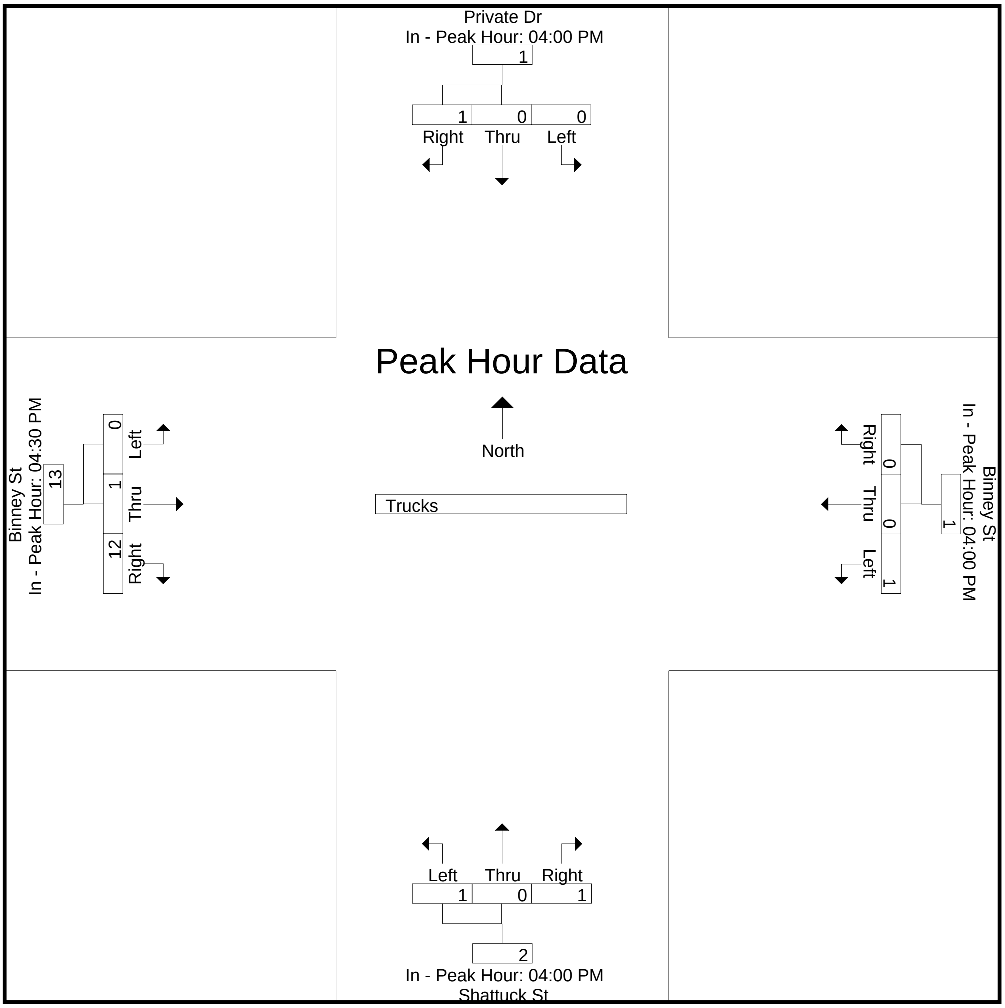
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:30 PM			
+0 mins.	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	0	**4**	**4**
+15 mins.	0	0	0	0	**1**	0	0	**1**	0	0	0	0	0	0	3	3
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
+45 mins.	0	0	0	0	0	0	0	0	**1**	0	**1**	**2**	0	**1**	3	4
Total Volume	0	0	1	1	1	0	0	1	1	0	1	2	0	1	12	13
% App. Total	0	0	100		100	0	0		50	0	50		0	7.7	92.3	
PHF	.000	.000	.250	.250	.250	.000	.000	.250	.250	.000	.250	.250	.000	.250	.750	.813

Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

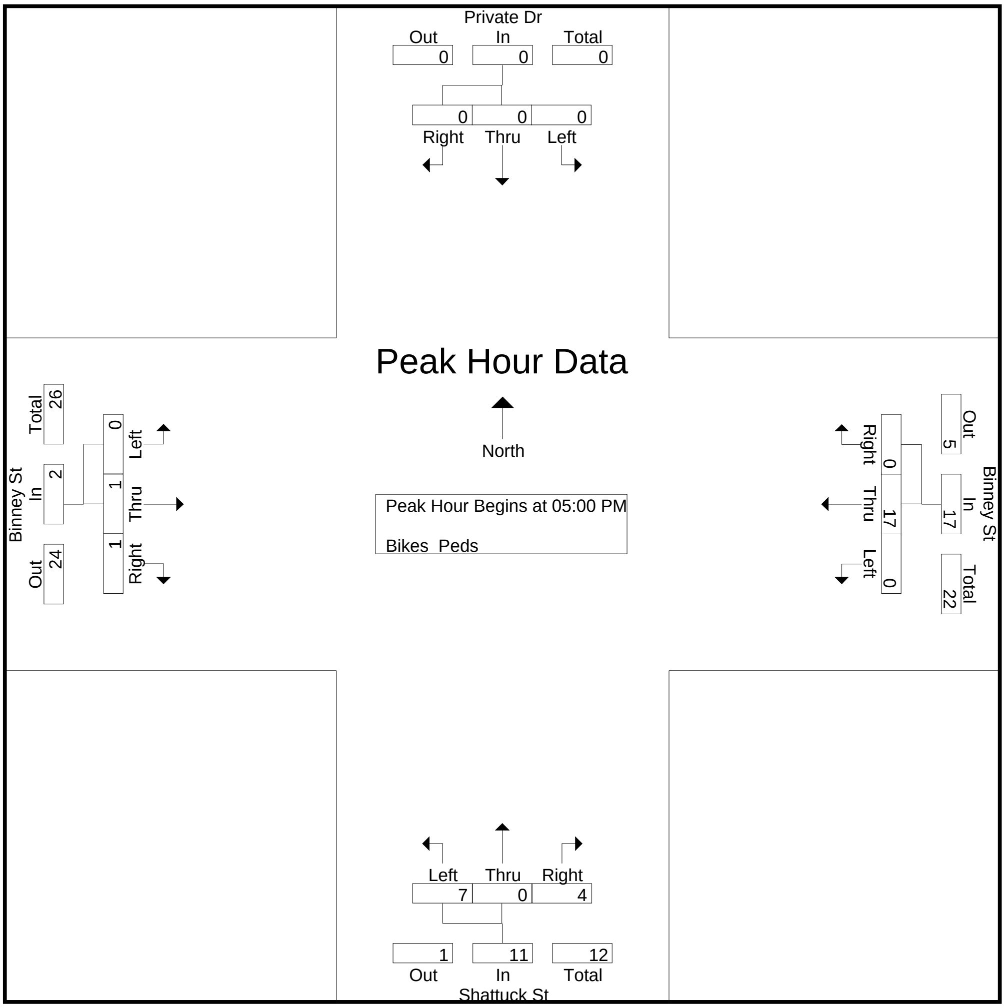
	Private Dr From North				Binney St From East				Shattuck St From South				Binney St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	13	0	1	0	15	1	0	1	33	0	0	0	11	72	3	75
04:15 PM	0	0	0	18	0	1	0	32	1	0	1	37	0	0	0	7	94	3	97
04:30 PM	0	0	0	32	0	3	0	22	0	0	3	41	0	1	0	13	108	7	115
04:45 PM	0	0	0	29	0	1	0	17	3	0	1	36	0	0	0	15	97	5	102
Total	0	0	0	92	0	6	0	86	5	0	6	147	0	1	0	46	371	18	389
05:00 PM	0	0	0	46	0	7	0	25	1	0	1	59	0	0	0	12	142	9	151
05:15 PM	0	0	0	31	0	2	0	23	2	0	0	45	0	0	0	13	112	4	116
05:30 PM	0	0	0	29	0	3	0	23	4	0	0	50	0	1	1	8	110	9	119
05:45 PM	0	0	0	31	0	5	0	10	0	0	3	37	0	0	0	16	94	8	102
Total	0	0	0	137	0	17	0	81	7	0	4	191	0	1	1	49	458	30	488
Grand Total	0	0	0	229	0	23	0	167	12	0	10	338	0	2	1	95	829	48	877
Apprch %	0	0	0		0	100	0		54.5	0	45.5		0	66.7	33.3				
Total %	0	0	0		0	47.9	0		25	0	20.8		0	4.2	2.1		94.5	5.5	

	Private Dr From North				Binney St From East				Shattuck St From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	**7**	0	**7**	1	0	1	2	0	0	0	0	**9**
05:15 PM	0	0	0	0	0	2	0	2	2	0	0	2	0	0	0	0	4
05:30 PM	0	0	0	0	0	3	0	3	**4**	0	0	**4**	0	**1**	**1**	**2**	9
05:45 PM	0	0	0	0	0	5	0	5	0	0	**3**	3	0	0	0	0	8
Total Volume	0	0	0	0	0	17	0	17	7	0	4	11	0	1	1	2	30
% App. Total	0	0	0		0	100	0		63.6	0	36.4		0	50	50		
PHF	.000	.000	.000	.000	.000	.607	.000	.607	.438	.000	.333	.688	.000	.250	.250	.250	.833

Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012
Page No : 2



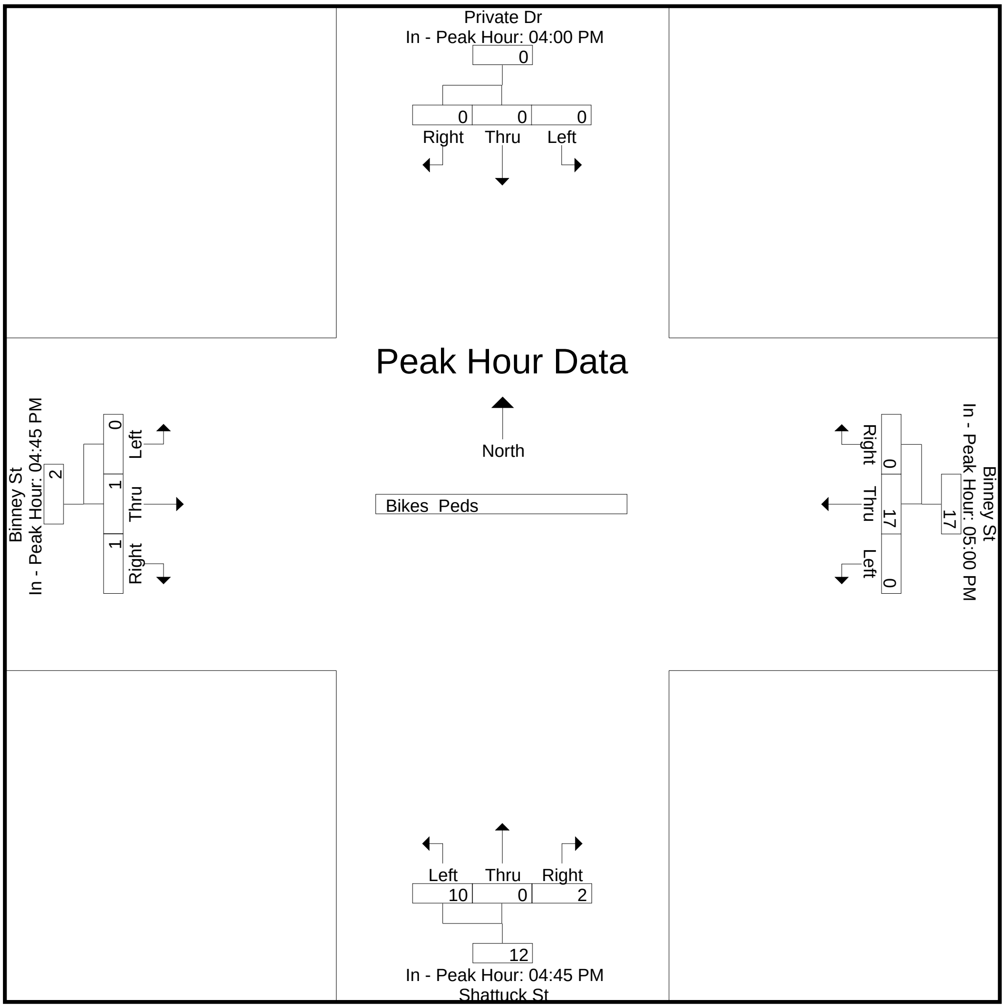
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	**7**	0	**7**	3	0	**1**	**4**	0	0	0	0
+15 mins.	0	0	0	0	0	2	0	2	1	0	1	2	0	0	0	0
+30 mins.	0	0	0	0	0	3	0	3	2	0	0	2	0	0	0	0
+45 mins.	0	0	0	0	0	5	0	5	**4**	0	0	4	0	**1**	**1**	**2**
Total Volume	0	0	0	0	0	17	0	17	10	0	2	12	0	1	1	2
% App. Total	0	0	0		0	100	0		83.3	0	16.7		0	50	50	
PHF	.000	.000	.000	.000	.000	.607	.000	.607	.625	.000	.500	.750	.000	.250	.250	.250

Accurate Counts
978-664-2565

N/S Street : Shattuck Street
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970019
Site Code : 94970019
Start Date : 5/16/2012



Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

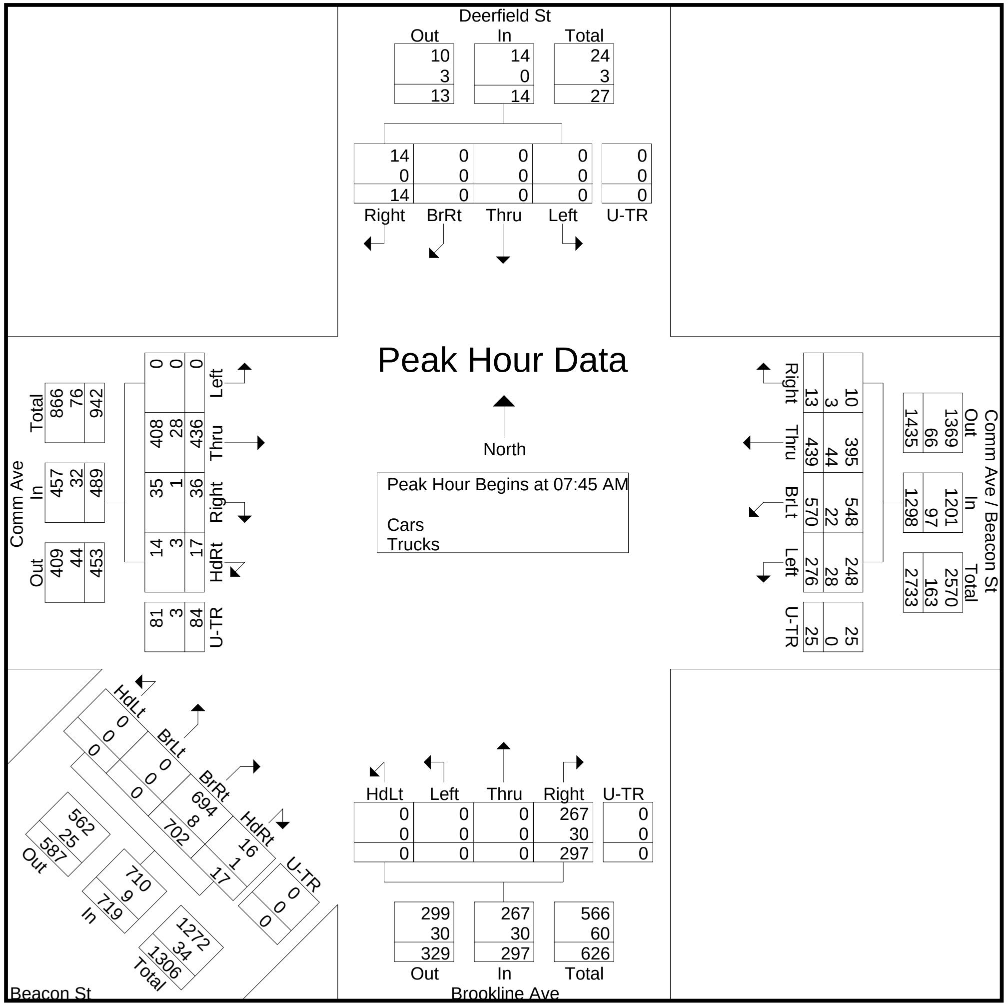
	Deerfield St From North					Comm Ave / Beacon St From East					Brookline Ave From South					Beacon St From Southwest					Comm Ave From West					
Start Time	Left	Thru	BrRt	Right	U-TR	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	U-TR	Left	Thru	Right	HdRt	U-TR	Int. Total
07:00 AM	0	0	0	2	0	64	114	78	5	0	0	0	0	50	0	0	0	84	2	0	0	60	12	7	12	490
07:15 AM	0	0	0	1	0	80	133	90	3	5	0	0	0	52	0	0	0	99	9	0	0	71	6	2	18	569
07:30 AM	0	0	0	3	0	74	148	107	8	10	0	0	0	57	0	0	0	131	5	0	0	79	9	2	20	653
07:45 AM	0	0	0	5	0	76	159	123	5	5	0	0	0	78	0	0	0	144	4	0	0	99	12	4	17	731
Total	0	0	0	11	0	294	554	398	21	20	0	0	0	237	0	0	0	458	20	0	0	309	39	15	67	2443
08:00 AM	0	0	0	1	0	66	129	105	0	7	0	0	0	63	0	0	0	176	0	0	0	117	9	2	16	691
08:15 AM	0	0	0	4	0	62	152	107	4	6	0	0	0	77	0	0	0	187	5	0	0	101	5	4	23	737
08:30 AM	0	0	0	4	0	72	130	104	4	7	0	0	0	79	0	0	0	195	8	0	0	119	10	7	28	767
08:45 AM	0	0	0	3	0	52	91	112	4	1	0	0	0	66	0	0	0	158	12	0	0	106	3	8	31	647
Total	0	0	0	12	0	252	502	428	12	21	0	0	0	285	0	0	0	716	25	0	0	443	27	21	98	2842
Grand Total	0	0	0	23	0	546	1056	826	33	41	0	0	0	522	0	0	0	1174	45	0	0	752	66	36	165	5285
Apprch %	0	0	0	100	0	21.8	42.2	33	1.3	1.6	0	0	0	100	0	0	0	96.3	3.7	0	0	73.8	6.5	3.5	16.2	
Total %	0	0	0	0.4	0	10.3	20	15.6	0.6	0.8	0	0	0	9.9	0	0	0	22.2	0.9	0	0	14.2	1.2	0.7	3.1	
Cars	0	0	0	22	0	489	1014	754	26	41	0	0	0	467	0	0	0	1162	41	0	0	690	60	28	158	4952
% Cars	0	0	0	95.7	0	89.6	96	91.3	78.8	100	0	0	0	89.5	0	0	0	99	91.1	0	0	91.8	90.9	77.8	95.8	93.7
Trucks	0	0	0	1	0	57	42	72	7	0	0	0	0	55	0	0	0	12	4	0	0	62	6	8	7	333
% Trucks	0	0	0	4.3	0	10.4	4	8.7	21.2	0	0	0	0	10.5	0	0	0	1	8.9	0	0	8.2	9.1	22.2	4.2	6.3

	Deerfield St From North						Comm Ave / Beacon St From East						Brookline Ave From South						Beacon St From Southwest						Comm Ave From West						
Start Time	Left	Thru	BrRt	Right	U-TR	App. Total	Left	BrLt	Thru	Right	U-TR	App. Total	HdLt	Left	Thru	Right	U-TR	App. Total	HdLt	BrLt	BrRt	HdRt	U-TR	App. Total	Left	Thru	Right	HdRt	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 07:45 AM																															
07:45 AM	0	0	0	**5**	0	**5**	**76**	**159**	**123**	**5**	5	**368**	0	0	0	78	0	78	0	0	144	4	0	148	0	99	**12**	4	17	132	731
08:00 AM	0	0	0	1	0	1	66	129	105	0	**7**	307	0	0	0	63	0	63	0	0	176	0	0	176	0	117	9	2	16	144	691
08:15 AM	0	0	0	4	0	4	62	152	107	4	6	331	0	0	0	77	0	77	0	0	187	5	0	192	0	101	5	4	23	133	737
08:30 AM	0	0	0	4	0	4	72	130	104	4	7	317	0	0	0	**79**	0	**79**	0	0	**195**	**8**	0	**203**	0	**119**	10	**7**	**28**	**164**	**767**
Total Volume	0	0	0	14	0	14	276	570	439	13	25	1323	0	0	0	297	0	297	0	0	702	17	0	719	0	436	36	17	84	573	2926
% App. Total	0	0	0	100	0		20.9	43.1	33.2	1	1.9		0	0	0	100	0		0	0	97.6	2.4	0		0	76.1	6.3	3	14.7		
PHF	.000	.000	.000	.700	.000	.700	.908	.896	.892	.650	.893	.899	.000	.000	.000	.940	.000	.940	.000	.000	.900	.531	.000	.885	.000	.916	.750	.607	.750	.873	.954
Cars	0	0	0	14	0	14	248	548	395	10	25	1226	0	0	0	267	0	267	0	0	694	16	0	710	0	408	35	14	81	538	2755
% Cars	0	0	0	100	0	100	89.9	96.1	90.0	76.9	100	92.7	0	0	0	89.9	0	89.9	0	0	98.9	94.1	0	98.7	0	93.6	97.2	82.4	96.4	93.9	94.2
Trucks	0	0	0	0	0	0	28	22	44	3	0	97	0	0	0	30	0	30	0	0	8	1	0	9	0	28	1	3	3	35	171
% Trucks	0	0	0	0	0	0	10.1	3.9	10.0	23.1	0	7.3	0	0	0	10.1	0	10.1	0	0	1.1	5.9	0	1.3	0	6.4	2.8	17.6	3.6	6.1	5.8

Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

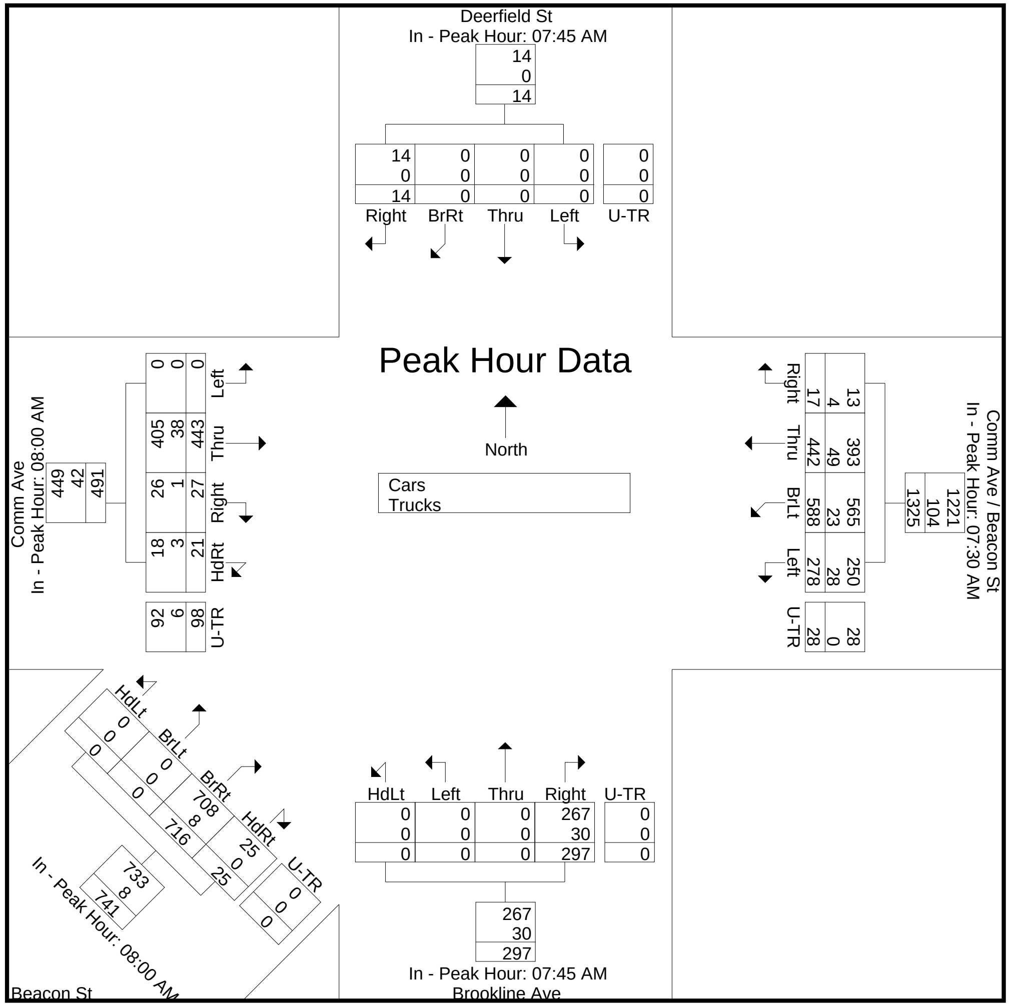
File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM						07:30 AM						07:45 AM						08:00 AM						08:00 AM					
+0 mins.	0	0	0	**5**	0	**5**	74	148	107	**8**	**10**	347	0	0	0	78	0	78	0	0	176	0	0	176	0	117	9	2	16	144
+15 mins.	0	0	0	1	0	1	**76**	**159**	**123**	5	5	**368**	0	0	0	63	0	63	0	0	187	5	0	192	0	101	5	4	23	133
+30 mins.	0	0	0	4	0	4	66	129	105	0	7	307	0	0	0	77	0	77	0	0	**195**	8	0	**203**	0	**119**	**10**	7	28	**164**
+45 mins.	0	0	0	4	0	4	62	152	107	4	6	331	0	0	0	**79**	0	**79**	0	0	158	**12**	0	170	0	106	3	**8**	**31**	148
Total Volume	0	0	0	14	0	14	278	588	442	17	28	1353	0	0	0	297	0	297	0	0	716	25	0	741	0	443	27	21	98	589
% App. Total	0	0	0	100	0		20.5	43.5	32.7	1.3	2.1		0	0	0	100	0		0	0	96.6	3.4	0		0	75.2	4.6	3.6	16.6	
PHF	.000	.000	.000	.700	.000	.700	.914	.925	.898	.531	.700	.919	.000	.000	.000	.940	.000	.940	.000	.000	.918	.521	.000	.913	.000	.931	.675	.656	.790	.898
Cars	0	0	0	14	0	14	250	565	393	13	28	1249	0	0	0	267	0	267	0	0	708	25	0	733	0	405	26	18	92	541
% Cars	0	0	0	100	0	100	89.9	96.1	88.9	76.5	100	92.3	0	0	0	89.9	0	89.9	0	0	98.9	100	0	98.9	0	91.4	96.3	85.7	93.9	91.9
Trucks	0	0	0	0	0	0	28	23	49	4	0	104	0	0	0	30	0	30	0	0	8	0	0	8	0	38	1	3	6	48

Accurate Counts
978-664-2565



Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars

	Deerfield St From North					Comm Ave / Beacon St From East					Brookline Ave From South					Beacon St From Southwest					Comm Ave From West					
Start Time	Left	Thru	BrRt	Right	U-TR	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	U-TR	Left	Thru	Right	HdRt	U-TR	Int. Total
07:00 AM	0	0	0	1	0	55	109	72	3	0	0	0	0	47	0	0	0	84	1	0	0	54	9	4	12	451
07:15 AM	0	0	0	1	0	74	127	82	2	5	0	0	0	43	0	0	0	99	7	0	0	63	5	1	18	527
07:30 AM	0	0	0	3	0	67	142	97	7	10	0	0	0	50	0	0	0	129	5	0	0	72	8	2	19	611
07:45 AM	0	0	0	5	0	72	157	107	2	5	0	0	0	66	0	0	0	142	3	0	0	96	12	3	17	687
Total	0	0	0	10	0	268	535	358	14	20	0	0	0	206	0	0	0	454	16	0	0	285	34	10	66	2276
08:00 AM	0	0	0	1	0	59	122	92	0	7	0	0	0	56	0	0	0	176	0	0	0	104	8	2	14	641
08:15 AM	0	0	0	4	0	52	144	97	4	6	0	0	0	70	0	0	0	184	5	0	0	97	5	4	22	694
08:30 AM	0	0	0	4	0	65	125	99	4	7	0	0	0	75	0	0	0	192	8	0	0	111	10	5	28	733
08:45 AM	0	0	0	3	0	45	88	108	4	1	0	0	0	60	0	0	0	156	12	0	0	93	3	7	28	608
Total	0	0	0	12	0	221	479	396	12	21	0	0	0	261	0	0	0	708	25	0	0	405	26	18	92	2676
Grand Total	0	0	0	22	0	489	1014	754	26	41	0	0	0	467	0	0	0	1162	41	0	0	690	60	28	158	4952
Apprch %	0	0	0	100	0	21	43.6	32.4	1.1	1.8	0	0	0	100	0	0	0	96.6	3.4	0	0	73.7	6.4	3	16.9	
Total %	0	0	0	0.4	0	9.9	20.5	15.2	0.5	0.8	0	0	0	9.4	0	0	0	23.5	0.8	0	0	13.9	1.2	0.6	3.2	

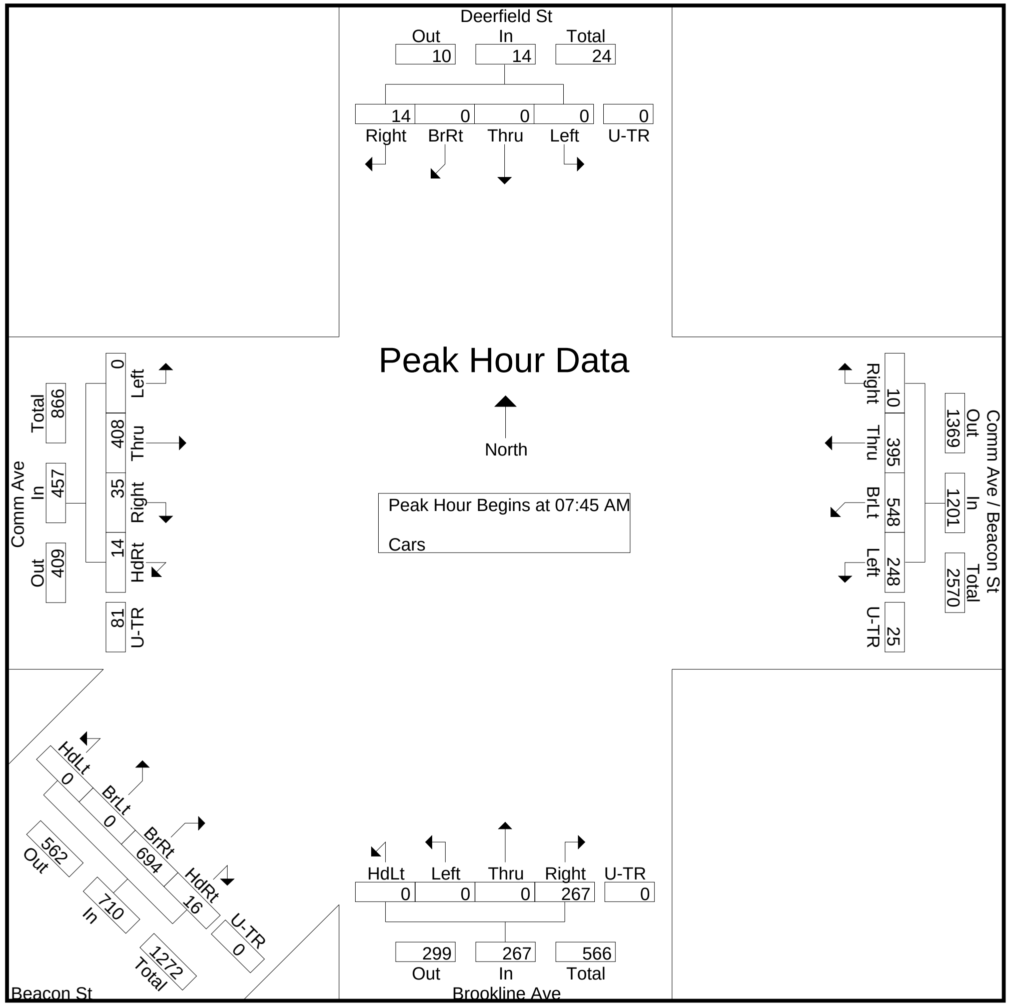
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 07:45 AM

	Deerfield St From North						Comm Ave / Beacon St From East						Brookline Ave From South						Beacon St From Southwest						Comm Ave From West						
Start Time	Left	Thru	BrRt	Right	U-TR	App. Total	Left	BrLt	Thru	Right	U-TR	App. Total	HdLt	Left	Thru	Right	U-TR	App. Total	HdLt	BrLt	BrRt	HdRt	U-TR	App. Total	Left	Thru	Right	HdRt	U-TR	App. Total	Int. Total
07:45 AM	0	0	0	**5**	0	**5**	**72**	**157**	**107**	2	5	**343**	0	0	0	66	0	66	0	0	142	3	0	145	0	96	**12**	3	17	128	687
08:00 AM	0	0	0	1	0	1	59	122	92	0	**7**	280	0	0	0	56	0	56	0	0	176	0	0	176	0	104	8	2	14	128	641
08:15 AM	0	0	0	4	0	4	52	144	97	**4**	6	303	0	0	0	70	0	70	0	0	184	5	0	189	0	97	5	4	22	128	694
08:30 AM	0	0	0	4	0	4	65	125	99	4	7	300	0	0	0	**75**	0	**75**	0	0	**192**	**8**	0	**200**	0	**111**	10	**5**	**28**	**154**	**733**
Total Volume	0	0	0	14	0	14	248	548	395	10	25	1226	0	0	0	267	0	267	0	0	694	16	0	710	0	408	35	14	81	538	2755
% App. Total	0	0	0	100	0		20.2	44.7	32.2	0.8	2		0	0	0	100	0		0	0	97.7	2.3	0		0	75.8	6.5	2.6	15.1		
PHF	.000	.000	.000	.700	.000	.700	.861	.873	.923	.625	.893	.894	.000	.000	.000	.890	.000	.890	.000	.000	.904	.500	.000	.888	.000	.919	.729	.700	.723	.873	.940

Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 2



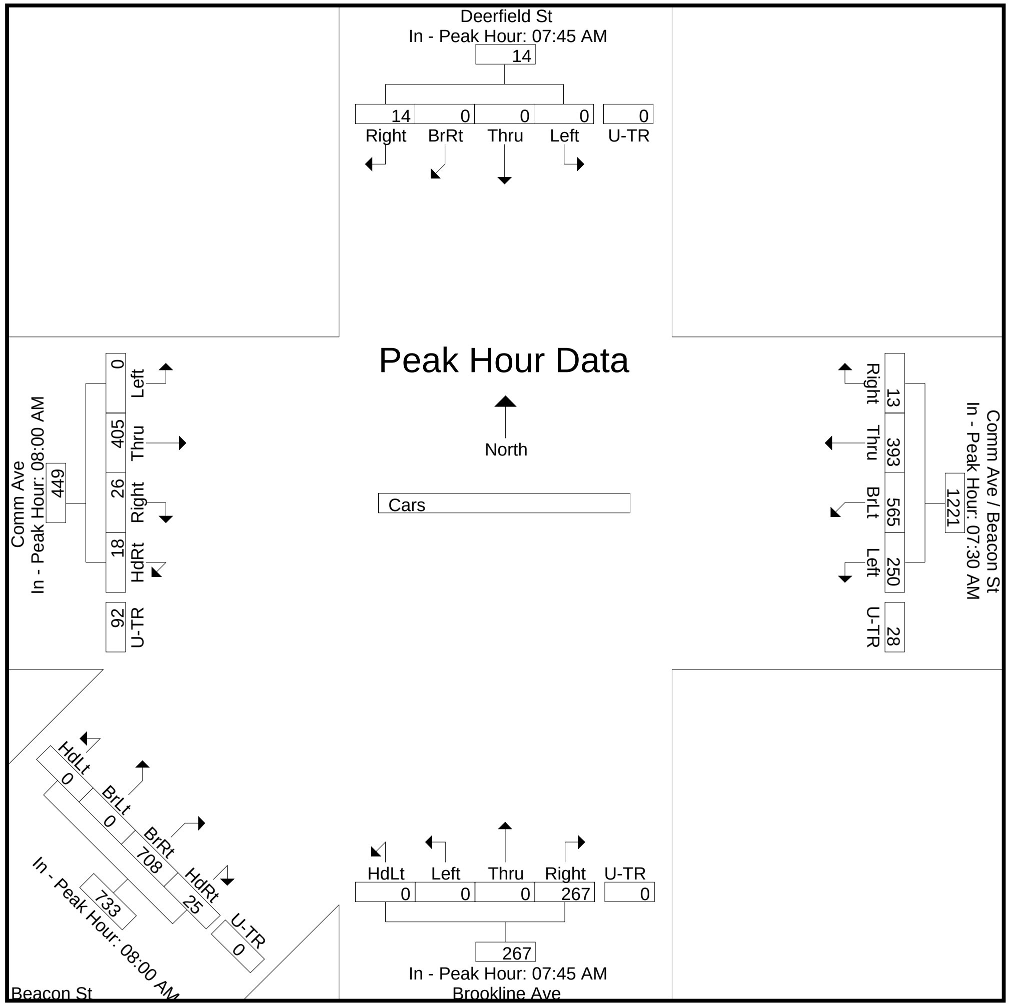
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM						07:30 AM						07:45 AM						08:00 AM						08:00 AM					
+0 mins.	0	0	0	**5**	0	**5**	67	142	97	**7**	**10**	323	0	0	0	66	0	66	0	0	176	0	0	176	0	104	8	2	14	128
+15 mins.	0	0	0	1	0	1	**72**	**157**	**107**	2	5	**343**	0	0	0	56	0	56	0	0	184	5	0	189	0	97	5	4	22	128
+30 mins.	0	0	0	4	0	4	59	122	92	0	7	280	0	0	0	70	0	70	0	0	**192**	8	0	**200**	0	**111**	**10**	5	**28**	**154**
+45 mins.	0	0	0	4	0	4	52	144	97	4	6	303	0	0	0	**75**	0	**75**	0	0	156	**12**	0	168	0	93	3	**7**	28	131
Total Volume	0	0	0	14	0	14	250	565	393	13	28	1249	0	0	0	267	0	267	0	0	708	25	0	733	0	405	26	18	92	541
% App. Total	0	0	0	100	0		20	45.2	31.5	1	2.2		0	0	0	100	0		0	0	96.6	3.4	0		0	74.9	4.8	3.3	17	
PHF	.000	.000	.000	.700	.000	.700	.868	.900	.918	.464	.700	.910	.000	.000	.000	.890	.000	.890	.000	.000	.922	.521	.000	.916	.000	.912	.650	.643	.821	.878

Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012



Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 1

Groups Printed- Trucks

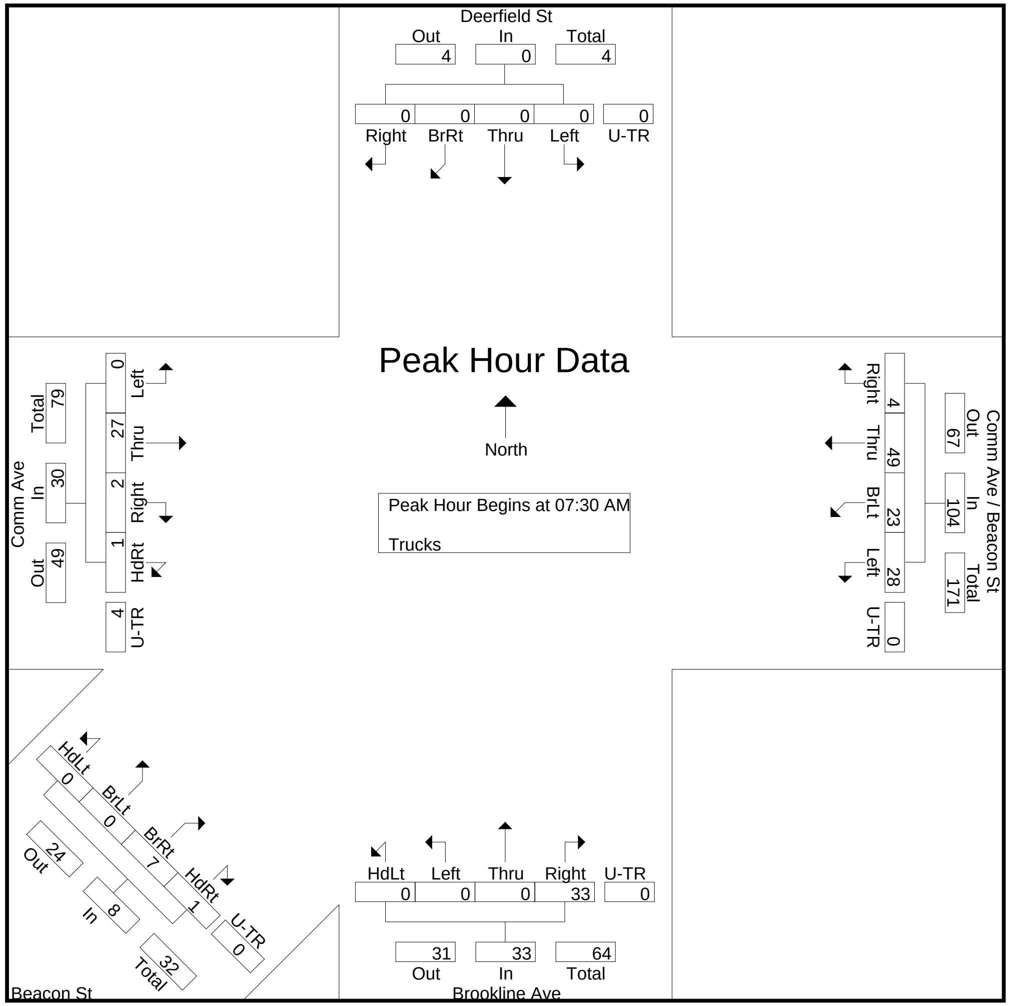
	Deerfield St From North					Comm Ave / Beacon St From East					Brookline Ave From South					Beacon St From Southwest					Comm Ave From West					
Start Time	Left	Thru	BrRt	Right	U-TR	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	U-TR	Left	Thru	Right	HdRt	U-TR	Int. Total
07:00 AM	0	0	0	1	0	9	5	6	2	0	0	0	0	3	0	0	0	0	1	0	0	6	3	3	0	39
07:15 AM	0	0	0	0	0	6	6	8	1	0	0	0	0	9	0	0	0	0	2	0	0	8	1	1	0	42
07:30 AM	0	0	0	0	0	7	6	10	1	0	0	0	0	7	0	0	0	2	0	0	0	7	1	0	1	42
07:45 AM	0	0	0	0	0	4	2	16	3	0	0	0	0	12	0	0	0	2	1	0	0	3	0	1	0	44
Total	0	0	0	1	0	26	19	40	7	0	0	0	0	31	0	0	0	4	4	0	0	24	5	5	1	167
08:00 AM	0	0	0	0	0	7	7	13	0	0	0	0	0	7	0	0	0	0	0	0	0	13	1	0	2	50
08:15 AM	0	0	0	0	0	10	8	10	0	0	0	0	0	7	0	0	0	3	0	0	0	4	0	0	1	43
08:30 AM	0	0	0	0	0	7	5	5	0	0	0	0	0	4	0	0	0	3	0	0	0	8	0	2	0	34
08:45 AM	0	0	0	0	0	7	3	4	0	0	0	0	0	6	0	0	0	2	0	0	0	13	0	1	3	39
Total	0	0	0	0	0	31	23	32	0	0	0	0	0	24	0	0	0	8	0	0	0	38	1	3	6	166
Grand Total	0	0	0	1	0	57	42	72	7	0	0	0	0	55	0	0	0	12	4	0	0	62	6	8	7	333
Apprch %	0	0	0	100	0	32	23.6	40.4	3.9	0	0	0	0	100	0	0	0	75	25	0	0	74.7	7.2	9.6	8.4	
Total %	0	0	0	0.3	0	17.1	12.6	21.6	2.1	0	0	0	0	16.5	0	0	0	3.6	1.2	0	0	18.6	1.8	2.4	2.1	

	Deerfield St From North						Comm Ave / Beacon St From East						Brookline Ave From South						Beacon St From Southwest						Comm Ave From West						
Start Time	Left	Thru	BrRt	Right	U-TR	App. Total	Left	BrLt	Thru	Right	U-TR	App. Total	HdLt	Left	Thru	Right	U-TR	App. Total	HdLt	BrLt	BrRt	HdRt	U-TR	App. Total	Left	Thru	Right	HdRt	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 07:30 AM																															
07:30 AM	0	0	0	0	0	0	7	6	10	1	0	24	0	0	0	7	0	7	0	0	2	0	0	2	0	7	**1**	0	1	9	42
07:45 AM	0	0	0	0	0	0	4	2	**16**	**3**	0	25	0	0	0	**12**	0	**12**	0	0	2	**1**	0	**3**	0	3	0	**1**	0	4	44
08:00 AM	0	0	0	0	0	0	7	7	13	0	0	27	0	0	0	7	0	7	0	0	0	0	0	0	0	**13**	1	0	**2**	**16**	**50**
08:15 AM	0	0	0	0	0	0	**10**	**8**	10	0	0	**28**	0	0	0	7	0	7	0	0	**3**	0	0	3	0	4	0	0	1	5	43
Total Volume	0	0	0	0	0	0	28	23	49	4	0	104	0	0	0	33	0	33	0	0	7	1	0	8	0	27	2	1	4	34	179
% App. Total	0	0	0	0	0		26.9	22.1	47.1	3.8	0		0	0	0	100	0		0	0	87.5	12.5	0		0	79.4	5.9	2.9	11.8		
PHF	.000	.000	.000	.000	.000	.000	.700	.719	.766	.333	.000	.929	.000	.000	.000	.688	.000	.688	.000	.000	.583	.250	.000	.667	.000	.519	.500	.250	.500	.531	.895

Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM					
+0 mins.	0	0	0	**1**	0	**1**
+15 mins.	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0
Total Volume	0	0	0	1	0	1
% App. Total	0	0	0	100	0	
PHF	.000	.000	.000	.250	.000	.250

	07:30 AM					
+0 mins.	7	6	10	1	0	24
+15 mins.	4	2	**16**	**3**	0	25
+30 mins.	7	7	13	0	0	27
+45 mins.	**10**	**8**	10	0	0	**28**
Total Volume	28	23	49	4	0	104
% App. Total	26.9	22.1	47.1	3.8	0	
PHF	.700	.719	.766	.333	.000	.929

	07:15 AM					
+0 mins.	0	0	0	9	0	9
+15 mins.	0	0	0	7	0	7
+30 mins.	0	0	0	**12**	0	**12**
+45 mins.	0	0	0	7	0	7
Total Volume	0	0	0	35	0	35
% App. Total	0	0	0	100	0	
PHF	.000	.000	.000	.729	.000	.729

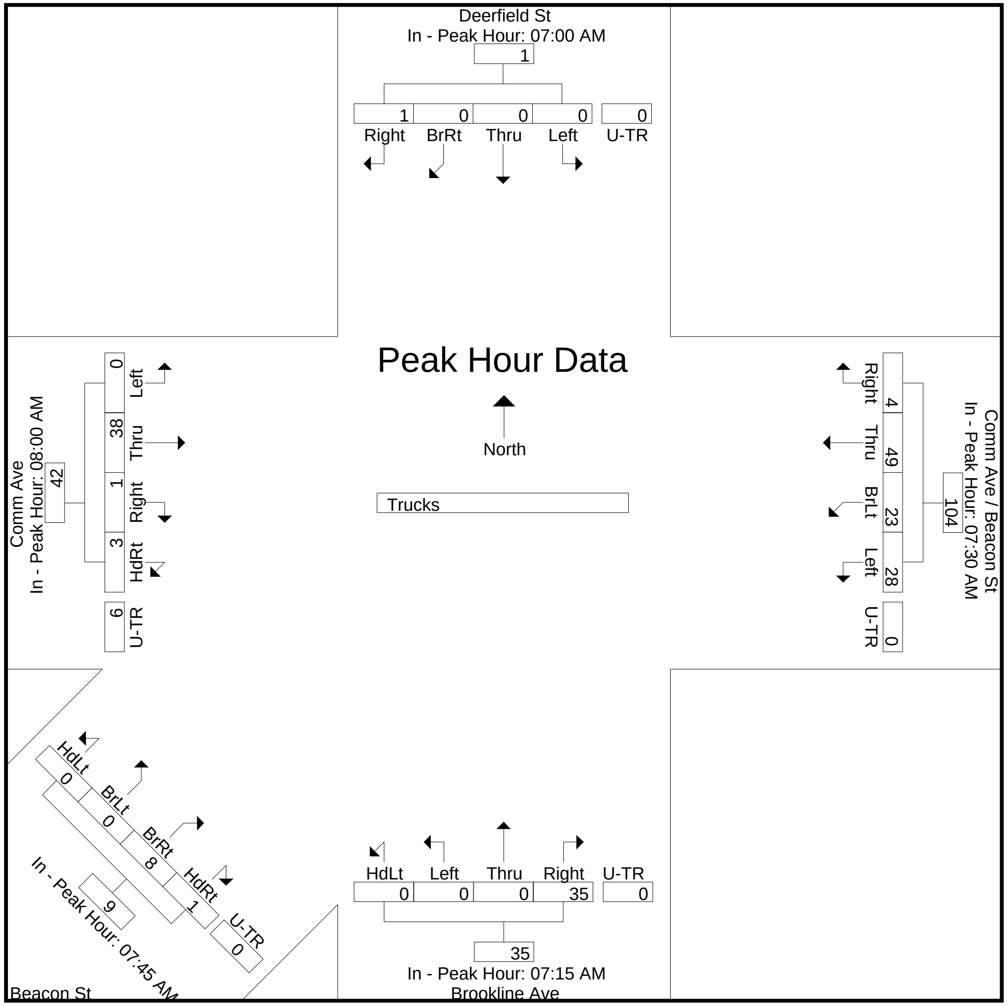
	07:45 AM					
+0 mins.	0	0	2	**1**	0	**3**
+15 mins.	0	0	0	0	0	0
+30 mins.	0	0	**3**	0	0	3
+45 mins.	0	0	3	0	0	3
Total Volume	0	0	8	1	0	9
% App. Total	0	0	88.9	11.1	0	
PHF	.000	.000	.667	.250	.000	.750

	08:00 AM					
+0 mins.	0	**13**	**1**	0	2	16
+15 mins.	0	4	0	0	1	5
+30 mins.	0	8	0	**2**	0	10
+45 mins.	0	13	0	1	**3**	**17**
Total Volume	0	38	1	3	6	48
% App. Total	0	79.2	2.1	6.2	12.5	
PHF	.000	.731	.250	.375	.500	.706

Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 1

Groups Printed- Bikes Peds

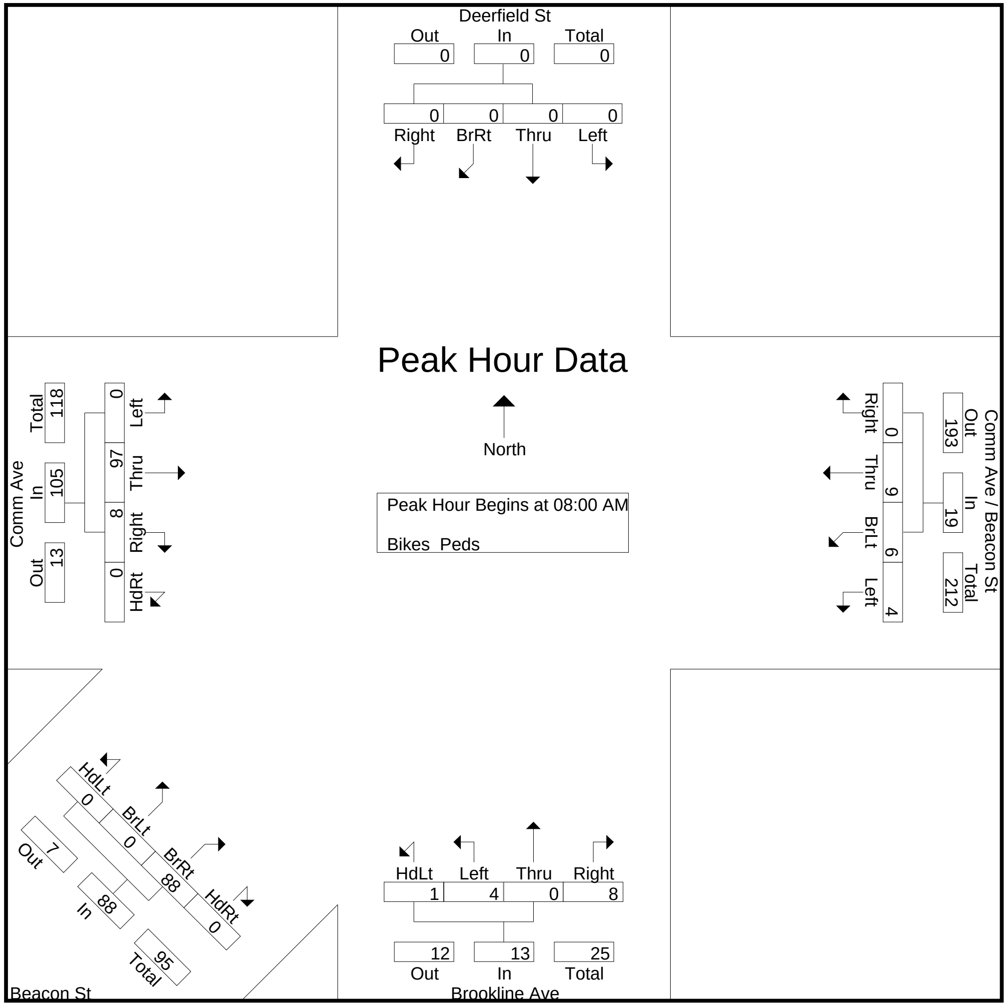
	Deerfield St From North					Comm Ave / Beacon St From East					Brookline Ave From South					Beacon St From Southwest					Comm Ave From West							
Start Time	Left	Thru	BrRt	Right	Peds	Left	BrLt	Thru	Right	Peds	HdLt	Left	Thru	Right	Peds	HdLt	BrLt	BrRt	HdRt	Peds	Left	Thru	Right	HdRt	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	7	1	2	2	0	9	0	0	0	1	16	0	0	14	0	6	0	4	2	0	6	44	26	70
07:15 AM	0	0	0	0	11	0	2	1	0	21	0	0	0	0	35	0	0	10	0	12	0	10	3	0	6	85	26	111
07:30 AM	0	0	0	0	7	1	2	1	0	41	1	0	0	2	31	0	0	32	0	25	0	14	2	0	4	108	55	163
07:45 AM	0	0	0	0	22	0	1	0	0	54	0	0	0	0	58	0	0	26	0	22	0	11	0	0	6	162	38	200
Total	0	0	0	0	47	2	7	4	0	125	1	0	0	3	140	0	0	82	0	65	0	39	7	0	22	399	145	544
08:00 AM	0	0	0	0	30	1	1	2	0	36	0	1	0	3	51	0	0	16	0	14	0	19	4	0	7	138	47	185
08:15 AM	0	0	0	0	20	2	3	5	0	54	1	0	0	1	50	0	0	25	0	28	0	20	1	0	10	162	58	220
08:30 AM	0	0	0	0	43	0	1	2	0	38	0	1	0	0	69	0	0	25	0	26	0	24	1	0	25	201	54	255
08:45 AM	0	0	0	0	44	1	1	0	0	66	0	2	0	4	70	0	0	22	0	54	0	34	2	0	14	248	66	314
Total	0	0	0	0	137	4	6	9	0	194	1	4	0	8	240	0	0	88	0	122	0	97	8	0	56	749	225	974
Grand Total	0	0	0	0	184	6	13	13	0	319	2	4	0	11	380	0	0	170	0	187	0	136	15	0	78	1148	370	1518
Apprch %	0	0	0	0		18.8	40.6	40.6	0		11.8	23.5	0	64.7		0	0	100	0		0	90.1	9.9	0				
Total %	0	0	0	0		1.6	3.5	3.5	0		0.5	1.1	0	3		0	0	45.9	0		0	36.8	4.1	0		75.6	24.4	

	Deerfield St From North					Comm Ave / Beacon St From East					Brookline Ave From South					Beacon St From Southwest					Comm Ave From West					
Start Time	Left	Thru	BrRt	Right	App. Total	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 08:00 AM																										
08:00 AM	0	0	0	0	0	1	1	2	0	4	0	1	0	3	4	0	0	16	0	16	0	19	**4**	0	23	47
08:15 AM	0	0	0	0	0	**2**	**3**	**5**	0	**10**	**1**	0	0	1	2	0	0	**25**	0	**25**	0	20	1	0	21	58
08:30 AM	0	0	0	0	0	0	1	2	0	3	0	1	0	0	1	0	0	25	0	25	0	24	1	0	25	54
08:45 AM	0	0	0	0	0	1	1	0	0	2	0	**2**	0	**4**	**6**	0	0	22	0	22	0	**34**	2	0	**36**	**66**
Total Volume	0	0	0	0	0	4	6	9	0	19	1	4	0	8	13	0	0	88	0	88	0	97	8	0	105	225
% App. Total	0	0	0	0		21.1	31.6	47.4	0		7.7	30.8	0	61.5		0	0	100	0		0	92.4	7.6	0		
PHF	.000	.000	.000	.000	.000	.500	.500	.450	.000	.475	.250	.500	.000	.500	.542	.000	.000	.880	.000	.880	.000	.713	.500	.000	.729	.852

Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 2



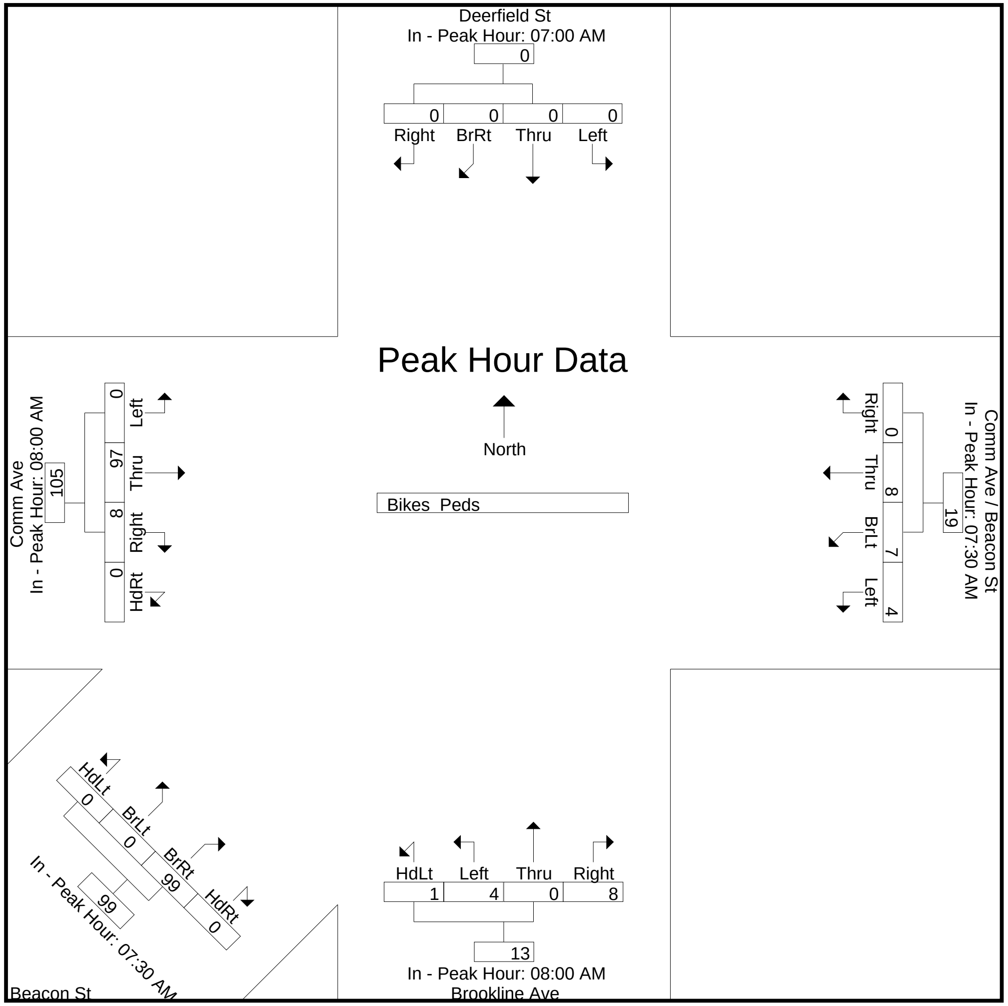
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM					07:30 AM					08:00 AM					07:30 AM					08:00 AM				
+0 mins.	0	0	0	0	0	1	2	1	0	4	0	1	0	3	4	0	0	**32**	0	**32**	0	19	**4**	0	23
+15 mins.	0	0	0	0	0	0	1	0	0	1	**1**	0	0	1	2	0	0	26	0	26	0	20	1	0	21
+30 mins.	0	0	0	0	0	1	1	2	0	4	0	1	0	0	1	0	0	16	0	16	0	24	1	0	25
+45 mins.	0	0	0	0	0	**2**	**3**	**5**	0	**10**	0	**2**	0	**4**	**6**	0	0	25	0	25	0	**34**	2	0	**36**
Total Volume	0	0	0	0	0	4	7	8	0	19	1	4	0	8	13	0	0	99	0	99	0	97	8	0	105
% App. Total	0	0	0	0		21.1	36.8	42.1	0		7.7	30.8	0	61.5		0	0	100	0		0	92.4	7.6	0	
PHF	.000	.000	.000	.000	.000	.500	.583	.400	.000	.475	.250	.500	.000	.500	.542	.000	.000	.773	.000	.773	.000	.713	.500	.000	.729

Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

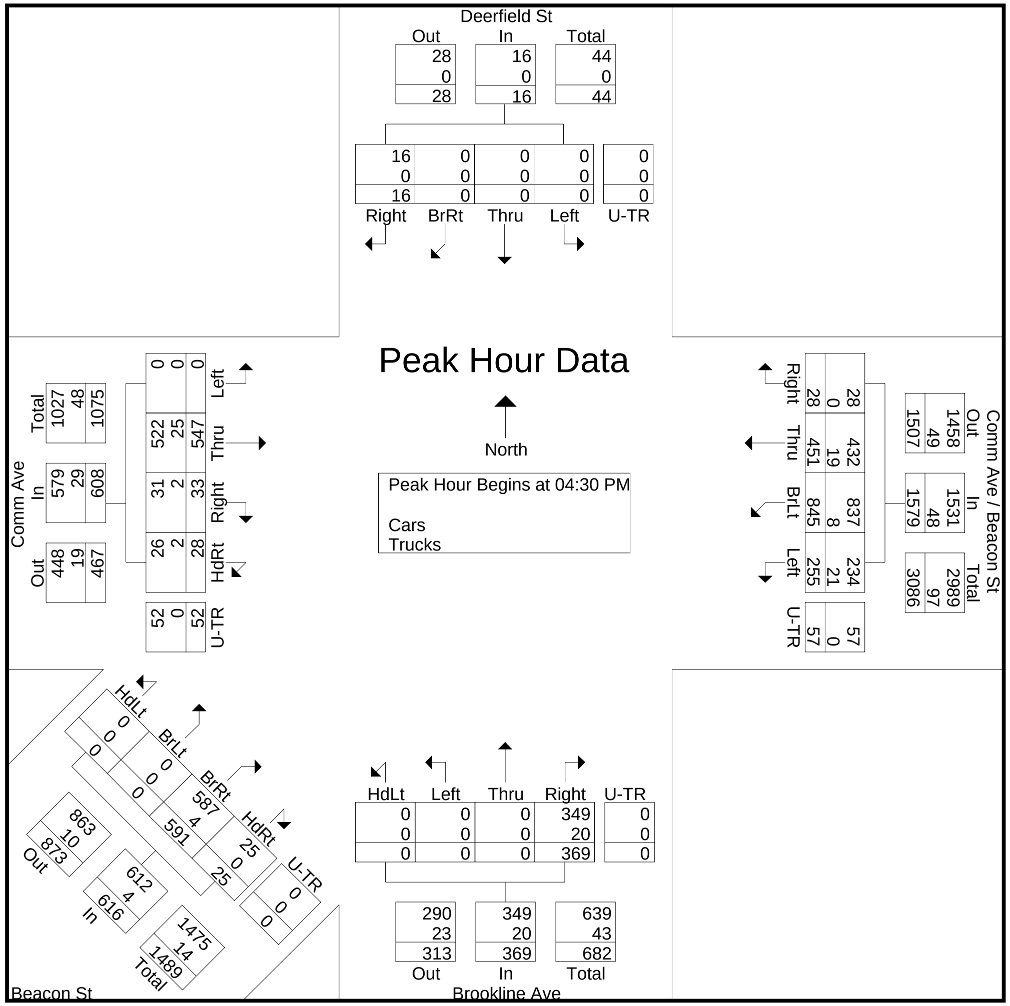
	Deerfield St From North					Comm Ave / Beacon St From East					Brookline Ave From South					Beacon St From Southwest					Comm Ave From West					
Start Time	Left	Thru	BrRt	Right	U-TR	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	U-TR	Left	Thru	Right	HdRt	U-TR	Int. Total
04:00 PM	0	0	0	4	0	78	177	113	7	13	0	0	0	76	0	0	0	122	10	0	0	139	10	5	18	772
04:15 PM	0	0	0	1	0	67	169	88	7	11	0	0	0	101	0	0	0	138	5	0	0	129	11	10	23	760
04:30 PM	0	0	0	2	0	62	200	101	9	24	0	0	0	103	0	0	0	146	7	0	0	146	8	3	8	819
04:45 PM	0	0	0	11	0	74	231	122	8	10	0	0	0	107	0	0	0	139	7	0	0	127	6	6	13	861
Total	0	0	0	18	0	281	777	424	31	58	0	0	0	387	0	0	0	545	29	0	0	541	35	24	62	3212
05:00 PM	0	0	0	2	0	42	208	106	4	10	0	0	0	74	0	0	0	144	9	0	0	154	9	11	16	789
05:15 PM	0	0	0	1	0	77	206	122	7	13	0	0	0	85	0	0	0	162	2	0	0	120	10	8	15	828
05:30 PM	0	0	0	1	0	64	198	100	4	17	0	0	0	90	0	0	0	154	3	0	0	143	7	4	13	798
05:45 PM	0	0	0	6	0	49	176	102	2	9	0	0	0	89	0	0	0	109	7	0	0	131	6	8	7	701
Total	0	0	0	10	0	232	788	430	17	49	0	0	0	338	0	0	0	569	21	0	0	548	32	31	51	3116
Grand Total	0	0	0	28	0	513	1565	854	48	107	0	0	0	725	0	0	0	1114	50	0	0	1089	67	55	113	6328
Apprch %	0	0	0	100	0	16.6	50.7	27.7	1.6	3.5	0	0	0	100	0	0	0	95.7	4.3	0	0	82.3	5.1	4.2	8.5	
Total %	0	0	0	0.4	0	8.1	24.7	13.5	0.8	1.7	0	0	0	11.5	0	0	0	17.6	0.8	0	0	17.2	1.1	0.9	1.8	
Cars	0	0	0	28	0	477	1544	808	48	107	0	0	0	690	0	0	0	1104	50	0	0	1041	64	52	113	6126
% Cars	0	0	0	100	0	93	98.7	94.6	100	100	0	0	0	95.2	0	0	0	99.1	100	0	0	95.6	95.5	94.5	100	96.8
Trucks	0	0	0	0	0	36	21	46	0	0	0	0	0	35	0	0	0	10	0	0	0	48	3	3	0	202
% Trucks	0	0	0	0	0	7	1.3	5.4	0	0	0	0	0	4.8	0	0	0	0.9	0	0	0	4.4	4.5	5.5	0	3.2

	Deerfield St From North						Comm Ave / Beacon St From East						Brookline Ave From South						Beacon St From Southwest						Comm Ave From West						
Start Time	Left	Thru	BrRt	Right	U-TR	App. Total	Left	BrLt	Thru	Right	U-TR	App. Total	HdLt	Left	Thru	Right	U-TR	App. Total	HdLt	BrLt	BrRt	HdRt	U-TR	App. Total	Left	Thru	Right	HdRt	U-TR	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 04:30 PM																															
04:30 PM	0	0	0	2	0	2	62	200	101	**9**	**24**	396	0	0	0	103	0	103	0	0	146	7	0	153	0	146	8	3	8	165	819
04:45 PM	0	0	0	**11**	0	**11**	74	**231**	**122**	8	10	**445**	0	0	0	**107**	0	**107**	0	0	139	7	0	146	0	127	6	6	13	152	**861**
05:00 PM	0	0	0	2	0	2	42	208	106	4	10	370	0	0	0	74	0	74	0	0	144	**9**	0	153	0	**154**	9	**11**	**16**	**190**	789
05:15 PM	0	0	0	1	0	1	**77**	206	122	7	13	425	0	0	0	85	0	85	0	0	**162**	2	0	**164**	0	120	**10**	8	15	153	828
Total Volume	0	0	0	16	0	16	255	845	451	28	57	1636	0	0	0	369	0	369	0	0	591	25	0	616	0	547	33	28	52	660	3297
% App. Total	0	0	0	100	0		15.6	51.7	27.6	1.7	3.5		0	0	0	100	0		0	0	95.9	4.1	0		0	82.9	5	4.2	7.9		
PHF	.000	.000	.000	.364	.000	.364	.828	.915	.924	.778	.594	.919	.000	.000	.000	.862	.000	.862	.000	.000	.912	.694	.000	.939	.000	.888	.825	.636	.813	.868	.957
Cars	0	0	0	16	0	16	234	837	432	28	57	1588	0	0	0	349	0	349	0	0	587	25	0	612	0	522	31	26	52	631	3196
% Cars	0	0	0	100	0	100	91.8	99.1	95.8	100	100	97.1	0	0	0	94.6	0	94.6	0	0	99.3	100	0	99.4	0	95.4	93.9	92.9	100	95.6	96.9
Trucks	0	0	0	0	0	0	21	8	19	0	0	48	0	0	0	20	0	20	0	0	4	0	0	4	0	25	2	2	0	29	101
% Trucks	0	0	0	0	0	0	8.2	0.9	4.2	0	0	2.9	0	0	0	5.4	0	5.4	0	0	0.7	0	0	0.6	0	4.6	6.1	7.1	0	4.4	3.1

Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

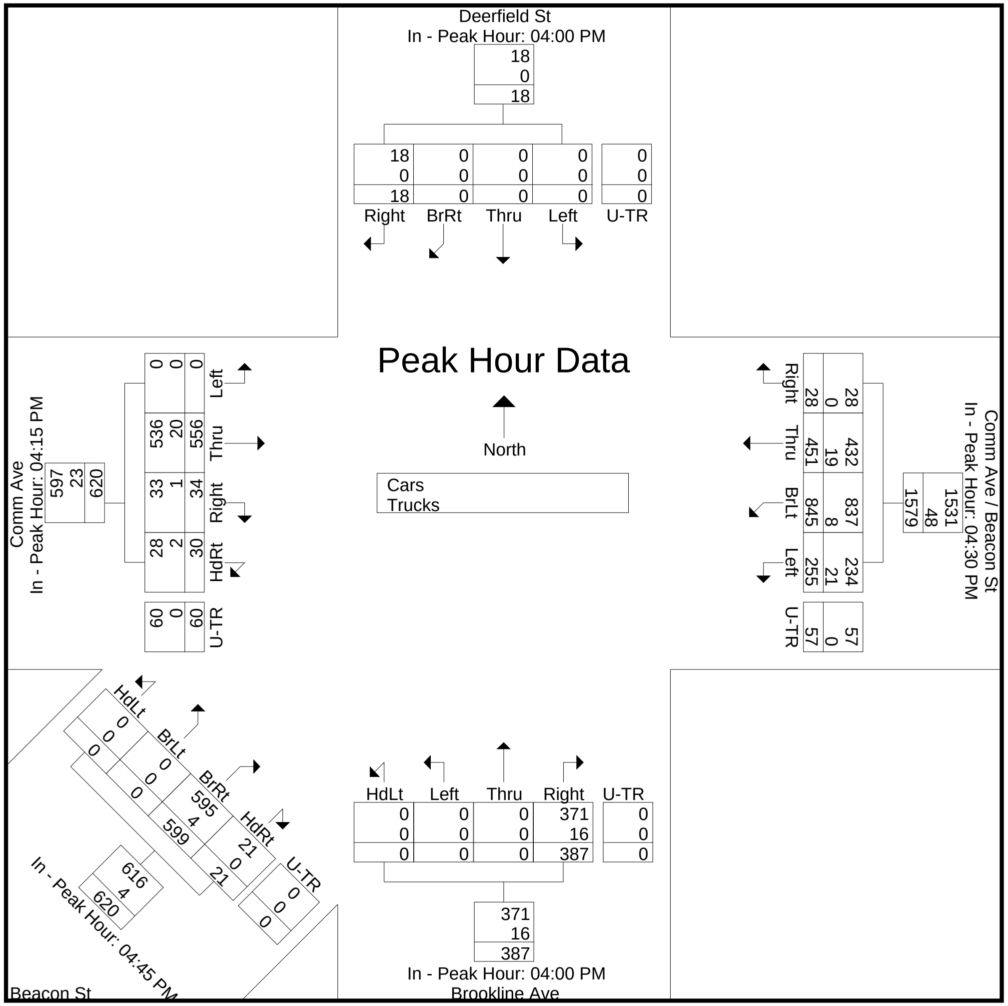
File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM						04:30 PM						04:00 PM						04:45 PM						04:15 PM					
+0 mins.	0	0	0	4	0	4	62	200	101	**9**	**24**	396	0	0	0	76	0	76	0	0	139	7	0	146	0	129	**11**	10	**23**	173
+15 mins.	0	0	0	1	0	1	74	**231**	**122**	8	10	**445**	0	0	0	101	0	101	0	0	144	**9**	0	153	0	146	8	3	8	165
+30 mins.	0	0	0	2	0	2	42	208	106	4	10	370	0	0	0	103	0	103	0	0	**162**	2	0	**164**	0	127	6	6	13	152
+45 mins.	0	0	0	**11**	0	**11**	**77**	206	122	7	13	425	0	0	0	**107**	0	**107**	0	0	154	3	0	157	0	**154**	9	**11**	16	**190**
Total Volume	0	0	0	18	0	18	255	845	451	28	57	1636	0	0	0	387	0	387	0	0	599	21	0	620	0	556	34	30	60	680
% App. Total	0	0	0	100	0		15.6	51.7	27.6	1.7	3.5		0	0	0	100	0		0	0	96.6	3.4	0		0	81.8	5	4.4	8.8	
PHF	.000	.000	.000	.409	.000	.409	.828	.915	.924	.778	.594	.919	.000	.000	.000	.904	.000	.904	.000	.000	.924	.583	.000	.945	.000	.903	.773	.682	.652	.895
Cars	0	0	0	18	0	18	234	837	432	28	57	1588	0	0	0	371	0	371	0	0	595	21	0	616	0	536	33	28	60	657
% Cars	0	0	0	100	0	100	91.8	99.1	95.8	100	100	97.1	0	0	0	95.9	0	95.9	0	0	99.3	100	0	99.4	0	96.4	97.1	93.3	100	96.6
Trucks	0	0	0	0	0	0	21	8	19	0	0	48	0	0	0	16	0	16	0	0	4	0	0	4	0	20	1	2	0	23

Accurate Counts
978-664-2565



Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars

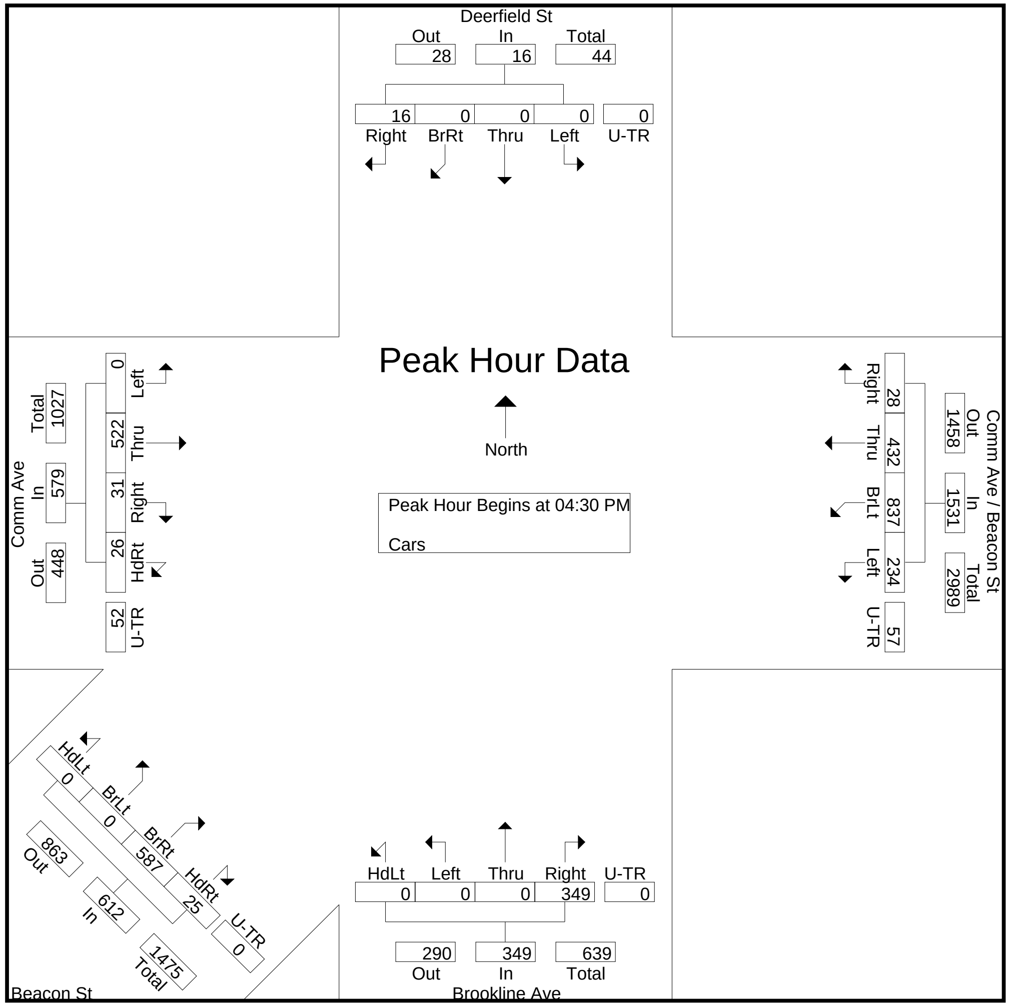
	Deerfield St From North					Comm Ave / Beacon St From East					Brookline Ave From South					Beacon St From Southwest					Comm Ave From West					
Start Time	Left	Thru	BrRt	Right	U-TR	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	U-TR	Left	Thru	Right	HdRt	U-TR	Int. Total
04:00 PM	0	0	0	4	0	71	174	107	7	13	0	0	0	72	0	0	0	120	10	0	0	130	10	5	18	741
04:15 PM	0	0	0	1	0	62	165	83	7	11	0	0	0	97	0	0	0	136	5	0	0	128	11	9	23	738
04:30 PM	0	0	0	2	0	55	197	98	9	24	0	0	0	99	0	0	0	145	7	0	0	140	8	3	8	795
04:45 PM	0	0	0	11	0	70	230	116	8	10	0	0	0	103	0	0	0	139	7	0	0	123	6	6	13	842
Total	0	0	0	18	0	258	766	404	31	58	0	0	0	371	0	0	0	540	29	0	0	521	35	23	62	3116
05:00 PM	0	0	0	2	0	38	206	102	4	10	0	0	0	69	0	0	0	143	9	0	0	145	8	10	16	762
05:15 PM	0	0	0	1	0	71	204	116	7	13	0	0	0	78	0	0	0	160	2	0	0	114	9	7	15	797
05:30 PM	0	0	0	1	0	62	195	94	4	17	0	0	0	85	0	0	0	153	3	0	0	134	6	4	13	771
05:45 PM	0	0	0	6	0	48	173	92	2	9	0	0	0	87	0	0	0	108	7	0	0	127	6	8	7	680
Total	0	0	0	10	0	219	778	404	17	49	0	0	0	319	0	0	0	564	21	0	0	520	29	29	51	3010
Grand Total	0	0	0	28	0	477	1544	808	48	107	0	0	0	690	0	0	0	1104	50	0	0	1041	64	52	113	6126
Apprch %	0	0	0	100	0	16	51.7	27.1	1.6	3.6	0	0	0	100	0	0	0	95.7	4.3	0	0	82	5	4.1	8.9	
Total %	0	0	0	0.5	0	7.8	25.2	13.2	0.8	1.7	0	0	0	11.3	0	0	0	18	0.8	0	0	17	1	0.8	1.8	

	Deerfield St From North						Comm Ave / Beacon St From East						Brookline Ave From South						Beacon St From Southwest						Comm Ave From West						
Start Time	Left	Thru	BrRt	Right	U-TR	App. Total	Left	BrLt	Thru	Right	U-TR	App. Total	HdLt	Left	Thru	Right	U-TR	App. Total	HdLt	BrLt	BrRt	HdRt	U-TR	App. Total	Left	Thru	Right	HdRt	U-TR	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 04:30 PM																															
04:30 PM	0	0	0	2	0	2	55	197	98	**9**	**24**	383	0	0	0	99	0	99	0	0	145	7	0	152	0	140	8	3	8	159	795
04:45 PM	0	0	0	**11**	0	**11**	70	**230**	**116**	8	10	**434**	0	0	0	**103**	0	**103**	0	0	139	7	0	146	0	123	6	6	13	148	**842**
05:00 PM	0	0	0	2	0	2	38	206	102	4	10	360	0	0	0	69	0	69	0	0	143	**9**	0	152	0	**145**	8	**10**	**16**	**179**	762
05:15 PM	0	0	0	1	0	1	**71**	204	116	7	13	411	0	0	0	78	0	78	0	0	**160**	2	0	**162**	0	114	**9**	7	15	145	797
Total Volume	0	0	0	16	0	16	234	837	432	28	57	1588	0	0	0	349	0	349	0	0	587	25	0	612	0	522	31	26	52	631	3196
% App. Total	0	0	0	100	0		14.7	52.7	27.2	1.8	3.6		0	0	0	100	0		0	0	95.9	4.1	0		0	82.7	4.9	4.1	8.2		
PHF	.000	.000	.000	.364	.000	.364	.824	.910	.931	.778	.594	.915	.000	.000	.000	.847	.000	.847	.000	.000	.917	.694	.000	.944	.000	.900	.861	.650	.813	.881	.949

Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 2



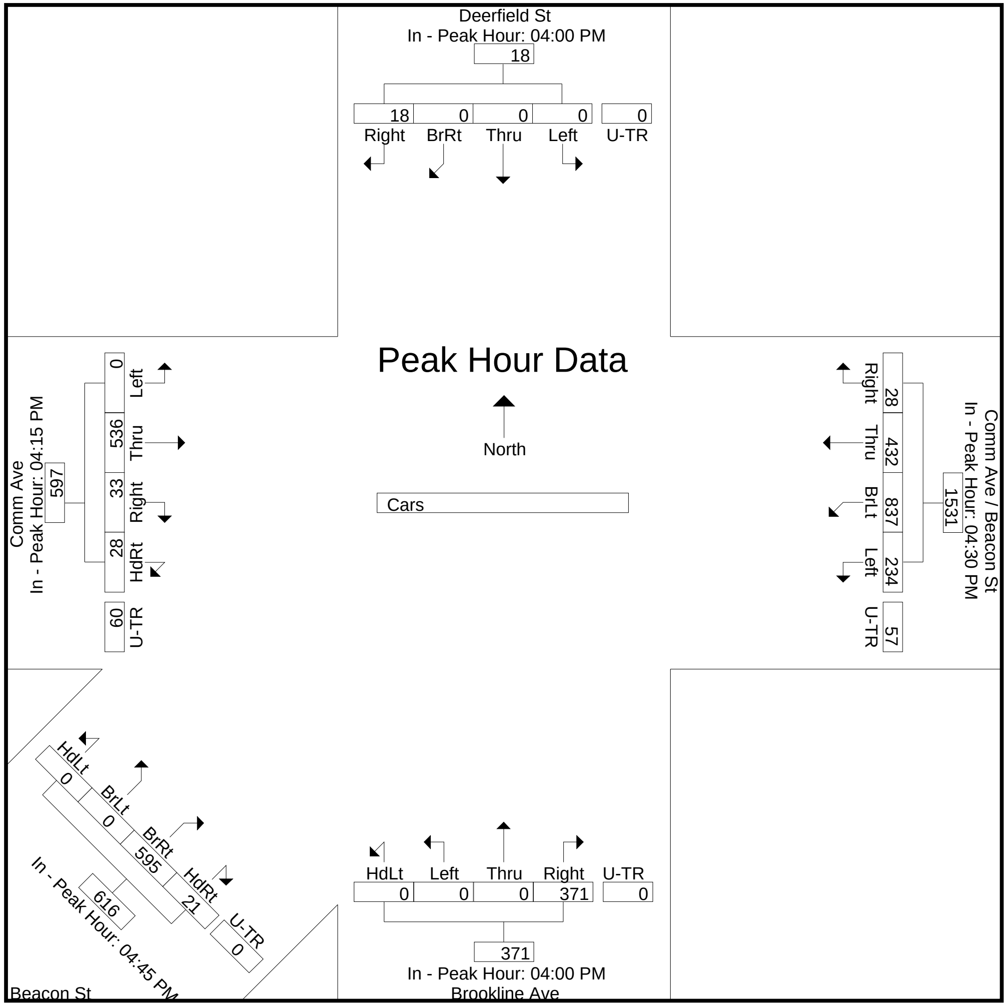
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM						04:30 PM						04:00 PM						04:45 PM						04:15 PM					
+0 mins.	0	0	0	4	0	4	55	197	98	**9**	**24**	383	0	0	0	72	0	72	0	0	139	7	0	146	0	128	**11**	9	**23**	171
+15 mins.	0	0	0	1	0	1	70	**230**	**116**	8	10	**434**	0	0	0	97	0	97	0	0	143	**9**	0	152	0	140	8	3	8	159
+30 mins.	0	0	0	2	0	2	38	206	102	4	10	360	0	0	0	99	0	99	0	0	**160**	2	0	**162**	0	123	6	6	13	148
+45 mins.	0	0	0	**11**	0	**11**	**71**	204	116	7	13	411	0	0	0	**103**	0	**103**	0	0	153	3	0	156	0	**145**	8	**10**	16	**179**
Total Volume	0	0	0	18	0	18	234	837	432	28	57	1588	0	0	0	371	0	371	0	0	595	21	0	616	0	536	33	28	60	657
% App. Total	0	0	0	100	0		14.7	52.7	27.2	1.8	3.6		0	0	0	100	0		0	0	96.6	3.4	0		0	81.6	5	4.3	9.1	
PHF	.000	.000	.000	.409	.000	.409	.824	.910	.931	.778	.594	.915	.000	.000	.000	.900	.000	.900	.000	.000	.930	.583	.000	.951	.000	.924	.750	.700	.652	.918

Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 1

Groups Printed- Trucks

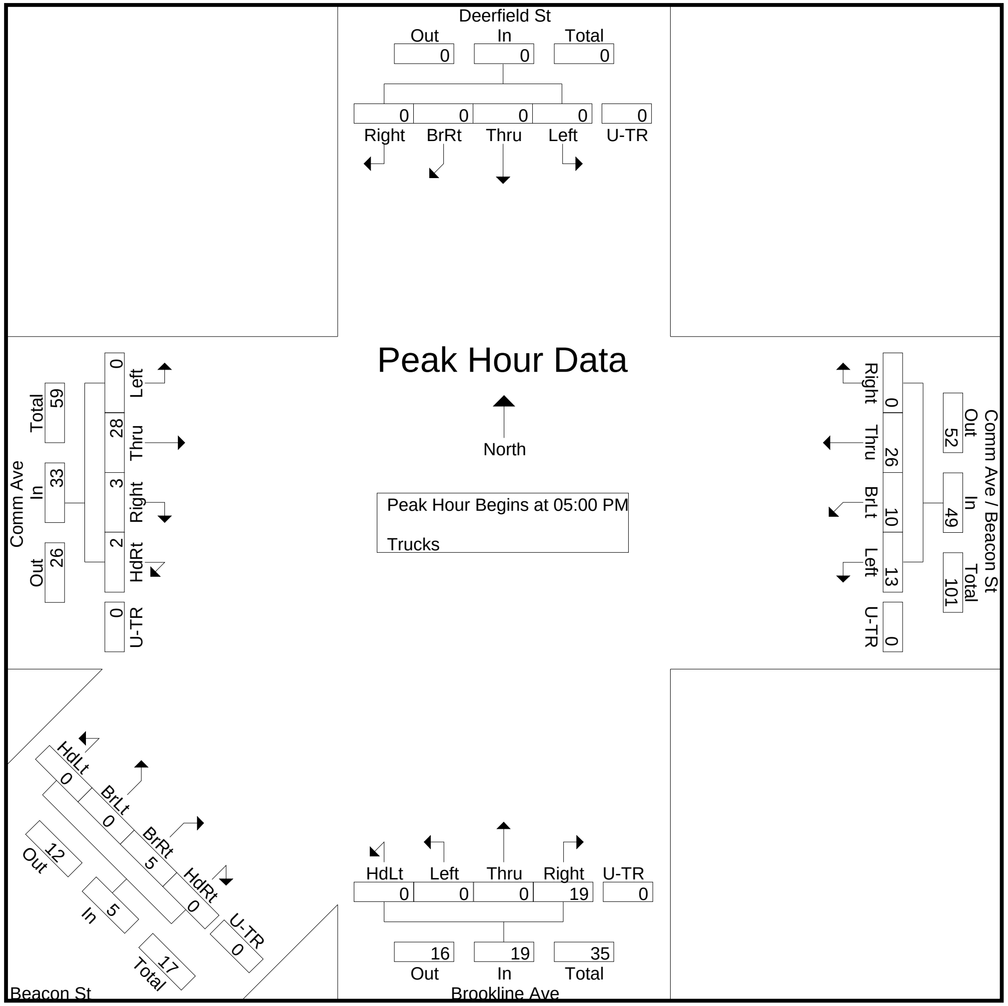
	Deerfield St From North					Comm Ave / Beacon St From East					Brookline Ave From South					Beacon St From Southwest					Comm Ave From West					
Start Time	Left	Thru	BrRt	Right	U-TR	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	U-TR	Left	Thru	Right	HdRt	U-TR	Int. Total
04:00 PM	0	0	0	0	0	7	3	6	0	0	0	0	0	4	0	0	0	2	0	0	0	9	0	0	0	31
04:15 PM	0	0	0	0	0	5	4	5	0	0	0	0	0	4	0	0	0	2	0	0	0	1	0	1	0	22
04:30 PM	0	0	0	0	0	7	3	3	0	0	0	0	0	4	0	0	0	1	0	0	0	6	0	0	0	24
04:45 PM	0	0	0	0	0	4	1	6	0	0	0	0	0	4	0	0	0	0	0	0	0	4	0	0	0	19
Total	0	0	0	0	0	23	11	20	0	0	0	0	0	16	0	0	0	5	0	0	0	20	0	1	0	96
05:00 PM	0	0	0	0	0	4	2	4	0	0	0	0	0	5	0	0	0	1	0	0	0	9	1	1	0	27
05:15 PM	0	0	0	0	0	6	2	6	0	0	0	0	0	7	0	0	0	2	0	0	0	6	1	1	0	31
05:30 PM	0	0	0	0	0	2	3	6	0	0	0	0	0	5	0	0	0	1	0	0	0	9	1	0	0	27
05:45 PM	0	0	0	0	0	1	3	10	0	0	0	0	0	2	0	0	0	1	0	0	0	4	0	0	0	21
Total	0	0	0	0	0	13	10	26	0	0	0	0	0	19	0	0	0	5	0	0	0	28	3	2	0	106
Grand Total	0	0	0	0	0	36	21	46	0	0	0	0	0	35	0	0	0	10	0	0	0	48	3	3	0	202
Apprch %	0	0	0	0	0	35	20.4	44.7	0	0	0	0	0	100	0	0	0	100	0	0	0	88.9	5.6	5.6	0	
Total %	0	0	0	0	0	17.8	10.4	22.8	0	0	0	0	0	17.3	0	0	0	5	0	0	0	23.8	1.5	1.5	0	

	Deerfield St From North						Comm Ave / Beacon St From East						Brookline Ave From South						Beacon St From Southwest						Comm Ave From West						
Start Time	Left	Thru	BrRt	Right	U-TR	App. Total	Left	BrLt	Thru	Right	U-TR	App. Total	HdLt	Left	Thru	Right	U-TR	App. Total	HdLt	BrLt	BrRt	HdRt	U-TR	App. Total	Left	Thru	Right	HdRt	U-TR	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 05:00 PM																															
05:00 PM	0	0	0	0	0	0	4	2	4	0	0	10	0	0	0	5	0	5	0	0	1	0	0	1	0	**9**	**1**	**1**	0	**11**	27
05:15 PM	0	0	0	0	0	0	**6**	2	6	0	0	**14**	0	0	0	**7**	0	**7**	0	0	**2**	0	0	**2**	0	6	1	1	0	8	**31**
05:30 PM	0	0	0	0	0	0	2	**3**	6	0	0	11	0	0	0	5	0	5	0	0	1	0	0	1	0	9	1	0	0	10	27
05:45 PM	0	0	0	0	0	0	1	3	**10**	0	0	14	0	0	0	2	0	2	0	0	1	0	0	1	0	4	0	0	0	4	21
Total Volume	0	0	0	0	0	0	13	10	26	0	0	49	0	0	0	19	0	19	0	0	5	0	0	5	0	28	3	2	0	33	106
% App. Total	0	0	0	0	0		26.5	20.4	53.1	0	0		0	0	0	100	0		0	0	100	0	0		0	84.8	9.1	6.1	0		
PHF	.000	.000	.000	.000	.000	.000	.542	.833	.650	.000	.000	.875	.000	.000	.000	.679	.000	.679	.000	.000	.625	.000	.000	.625	.000	.778	.750	.500	.000	.750	.855

Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 2



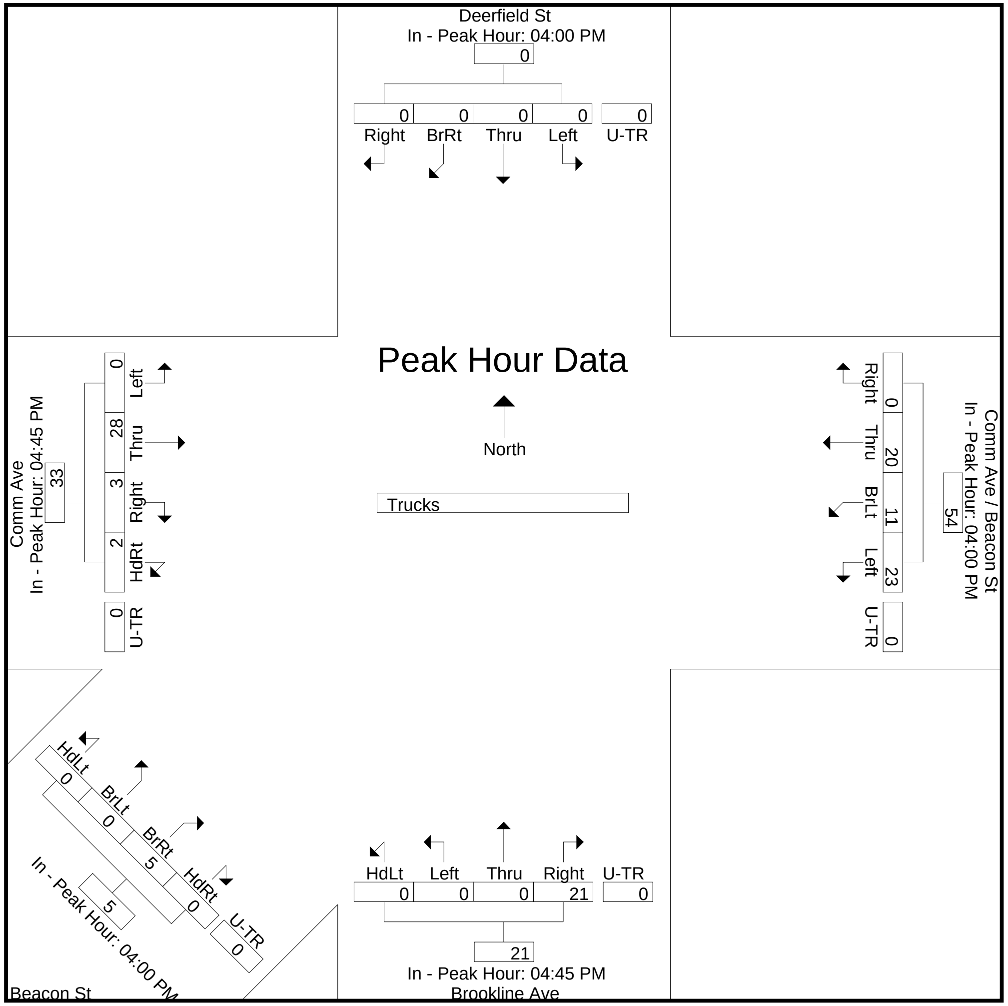
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM						04:00 PM						04:45 PM						04:00 PM						04:45 PM					
+0 mins.	0	0	0	0	0	0	**7**	3	**6**	0	0	**16**	0	0	0	4	0	4	0	0	**2**	0	0	**2**	0	4	0	0	0	4
+15 mins.	0	0	0	0	0	0	5	**4**	5	0	0	14	0	0	0	5	0	5	0	0	2	0	0	2	0	**9**	**1**	**1**	0	**11**
+30 mins.	0	0	0	0	0	0	7	3	3	0	0	13	0	0	0	**7**	0	**7**	0	0	1	0	0	1	0	6	1	1	0	8
+45 mins.	0	0	0	0	0	0	4	1	6	0	0	11	0	0	0	5	0	5	0	0	0	0	0	0	0	9	1	0	0	10
Total Volume	0	0	0	0	0	0	23	11	20	0	0	54	0	0	0	21	0	21	0	0	5	0	0	5	0	28	3	2	0	33
% App. Total	0	0	0	0	0		42.6	20.4	37	0	0		0	0	0	100	0		0	0	100	0	0		0	84.8	9.1	6.1	0	
PHF	.000	.000	.000	.000	.000	.000	.821	.688	.833	.000	.000	.844	.000	.000	.000	.750	.000	.750	.000	.000	.625	.000	.000	.625	.000	.778	.750	.500	.000	.750

Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 1

Groups Printed- Bikes Peds

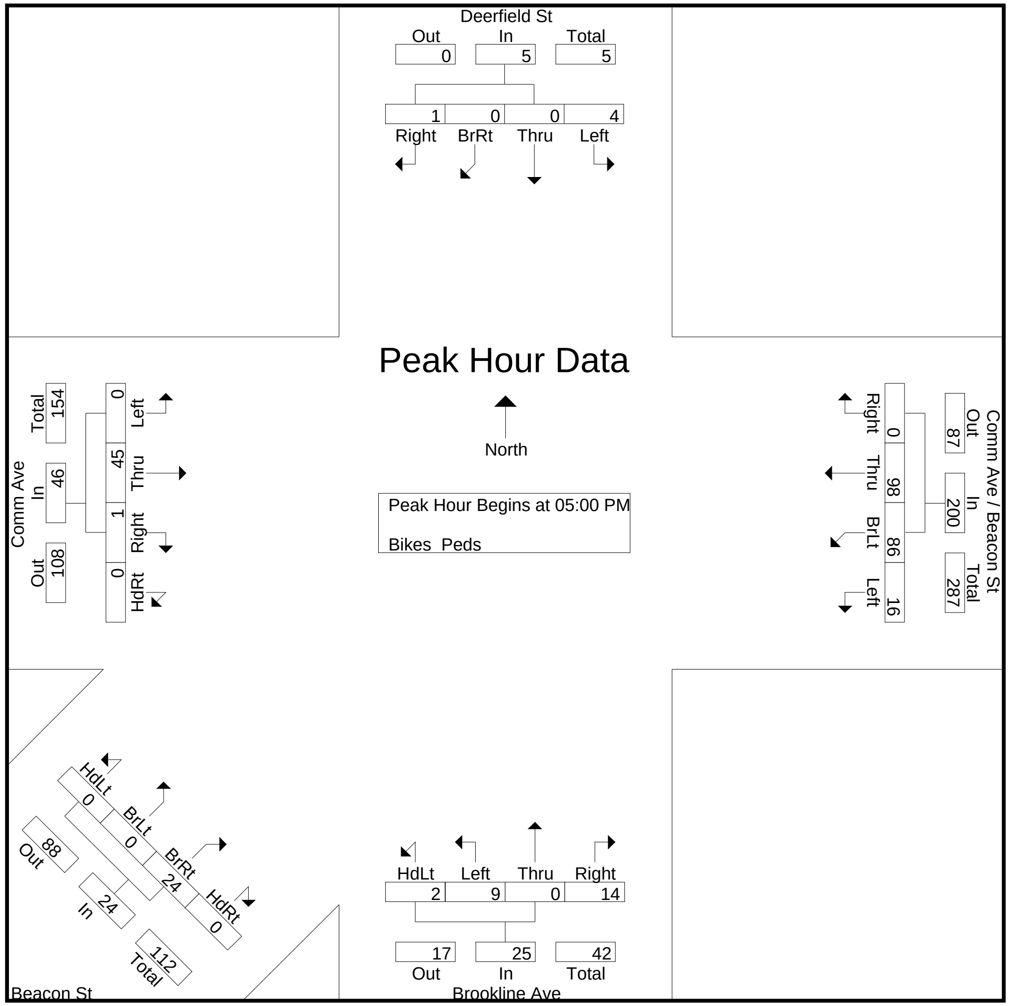
	Deerfield St From North					Comm Ave / Beacon St From East					Brookline Ave From South					Beacon St From Southwest					Comm Ave From West							
Start Time	Left	Thru	BrRt	Right	Peds	Left	BrLt	Thru	Right	Peds	HdLt	Left	Thru	Right	Peds	HdLt	BrLt	BrRt	HdRt	Peds	Left	Thru	Right	HdRt	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	1	90	0	9	9	0	87	1	0	0	3	79	0	0	3	0	68	0	11	2	0	33	357	39	396
04:15 PM	0	0	0	0	75	1	4	13	0	82	0	0	1	2	43	0	0	0	1	61	0	16	2	0	21	282	40	322
04:30 PM	1	0	0	0	86	2	13	11	0	89	0	0	0	3	65	0	0	1	0	59	0	10	0	0	39	338	41	379
04:45 PM	0	0	0	0	80	1	14	18	0	59	0	1	0	2	121	0	0	4	0	81	0	15	1	2	36	377	58	435
Total	1	0	0	1	331	4	40	51	0	317	1	1	1	10	308	0	0	8	1	269	0	52	5	2	129	1354	178	1532
05:00 PM	3	0	0	1	111	0	15	30	0	86	0	4	0	6	76	0	0	8	0	56	0	13	1	0	43	372	81	453
05:15 PM	0	0	0	0	94	5	27	21	0	87	1	2	0	5	95	0	0	6	0	77	0	12	0	0	34	387	79	466
05:30 PM	1	0	0	0	69	4	21	26	0	86	1	1	0	0	85	0	0	7	0	77	0	7	0	0	43	360	68	428
05:45 PM	0	0	0	0	140	7	23	21	0	78	0	2	0	3	107	0	0	3	0	65	0	13	0	0	32	422	72	494
Total	4	0	0	1	414	16	86	98	0	337	2	9	0	14	363	0	0	24	0	275	0	45	1	0	152	1541	300	1841
Grand Total	5	0	0	2	745	20	126	149	0	654	3	10	1	24	671	0	0	32	1	544	0	97	6	2	281	2895	478	3373
Apprch %	71.4	0	0	28.6		6.8	42.7	50.5	0		7.9	26.3	2.6	63.2		0	0	97	3		0	92.4	5.7	1.9				
Total %	1	0	0	0.4		4.2	26.4	31.2	0		0.6	2.1	0.2	5		0	0	6.7	0.2		0	20.3	1.3	0.4		85.8	14.2	

	Deerfield St From North					Comm Ave / Beacon St From East					Brookline Ave From South					Beacon St From Southwest					Comm Ave From West					
Start Time	Left	Thru	BrRt	Right	App. Total	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 05:00 PM																										
05:00 PM	**3**	0	0	**1**	**4**	0	15	**30**	0	45	0	**4**	0	**6**	**10**	0	0	**8**	0	**8**	0	**13**	**1**	0	**14**	**81**
05:15 PM	0	0	0	0	0	5	**27**	21	0	**53**	**1**	2	0	5	8	0	0	6	0	6	0	12	0	0	12	79
05:30 PM	1	0	0	0	1	4	21	26	0	51	1	1	0	0	2	0	0	7	0	7	0	7	0	0	7	68
05:45 PM	0	0	0	0	0	**7**	23	21	0	51	0	2	0	3	5	0	0	3	0	3	0	13	0	0	13	72
Total Volume	4	0	0	1	5	16	86	98	0	200	2	9	0	14	25	0	0	24	0	24	0	45	1	0	46	300
% App. Total	80	0	0	20		8	43	49	0		8	36	0	56		0	0	100	0		0	97.8	2.2	0		
PHF	.333	.000	.000	.250	.313	.571	.796	.817	.000	.943	.500	.563	.000	.583	.625	.000	.000	.750	.000	.750	.000	.865	.250	.000	.821	.926

Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 2



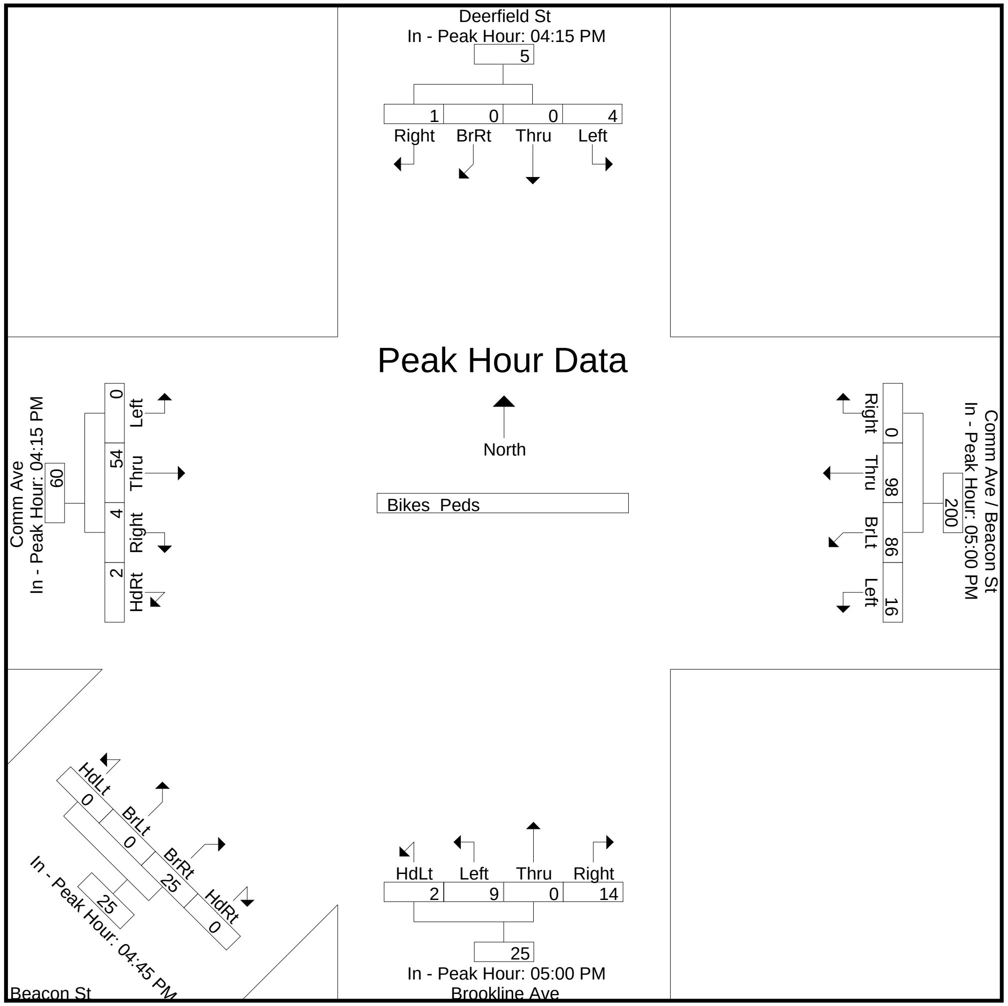
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM					05:00 PM					05:00 PM					04:45 PM					04:15 PM				
+0 mins.	0	0	0	0	0	0	15	**30**	0	45	0	**4**	0	**6**	**10**	0	0	4	0	4	0	**16**	**2**	0	**18**
+15 mins.	1	0	0	0	1	5	**27**	21	0	**53**	**1**	2	0	5	8	0	0	**8**	0	**8**	0	10	0	0	10
+30 mins.	0	0	0	0	0	4	21	26	0	51	1	1	0	0	2	0	0	6	0	6	0	15	1	**2**	18
+45 mins.	**3**	0	0	**1**	**4**	**7**	23	21	0	51	0	2	0	3	5	0	0	7	0	7	0	13	1	0	14
Total Volume	4	0	0	1	5	16	86	98	0	200	2	9	0	14	25	0	0	25	0	25	0	54	4	2	60
% App. Total	80	0	0	20		8	43	49	0		8	36	0	56		0	0	100	0		0	90	6.7	3.3	
PHF	.333	.000	.000	.250	.313	.571	.796	.817	.000	.943	.500	.563	.000	.583	.625	.000	.000	.781	.000	.781	.000	.844	.500	.250	.833

Accurate Counts
978-664-2565

N/S Street : Deerfield St / Brookline Av
E/W Street: Comm Ave Beacon St
City/State : Boston, MA
Weather : Drizzle

File Name : 94970001
Site Code : 94970001
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012

Groups Printed- Cars - Trucks

	Blackfan St From North		Ave Louis Pasteur From East		Ave Louis Pasteur From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	7	8	113	31	17	51	227
07:15 AM	22	6	141	61	18	74	322
07:30 AM	18	5	121	28	22	51	245
07:45 AM	12	4	80	19	9	15	139
Total	59	23	455	139	66	191	933
08:00 AM	9	5	93	31	4	16	158
08:15 AM	8	10	113	35	3	16	185
08:30 AM	6	6	97	44	6	14	173
08:45 AM	9	9	91	22	7	25	163
Total	32	30	394	132	20	71	679
Grand Total	91	53	849	271	86	262	1612
Apprch %	63.2	36.8	75.8	24.2	24.7	75.3	
Total %	5.6	3.3	52.7	16.8	5.3	16.3	
Cars	91	52	778	270	81	207	1479
% Cars	100	98.1	91.6	99.6	94.2	79	91.7
Trucks	0	1	71	1	5	55	133
% Trucks	0	1.9	8.4	0.4	5.8	21	8.3

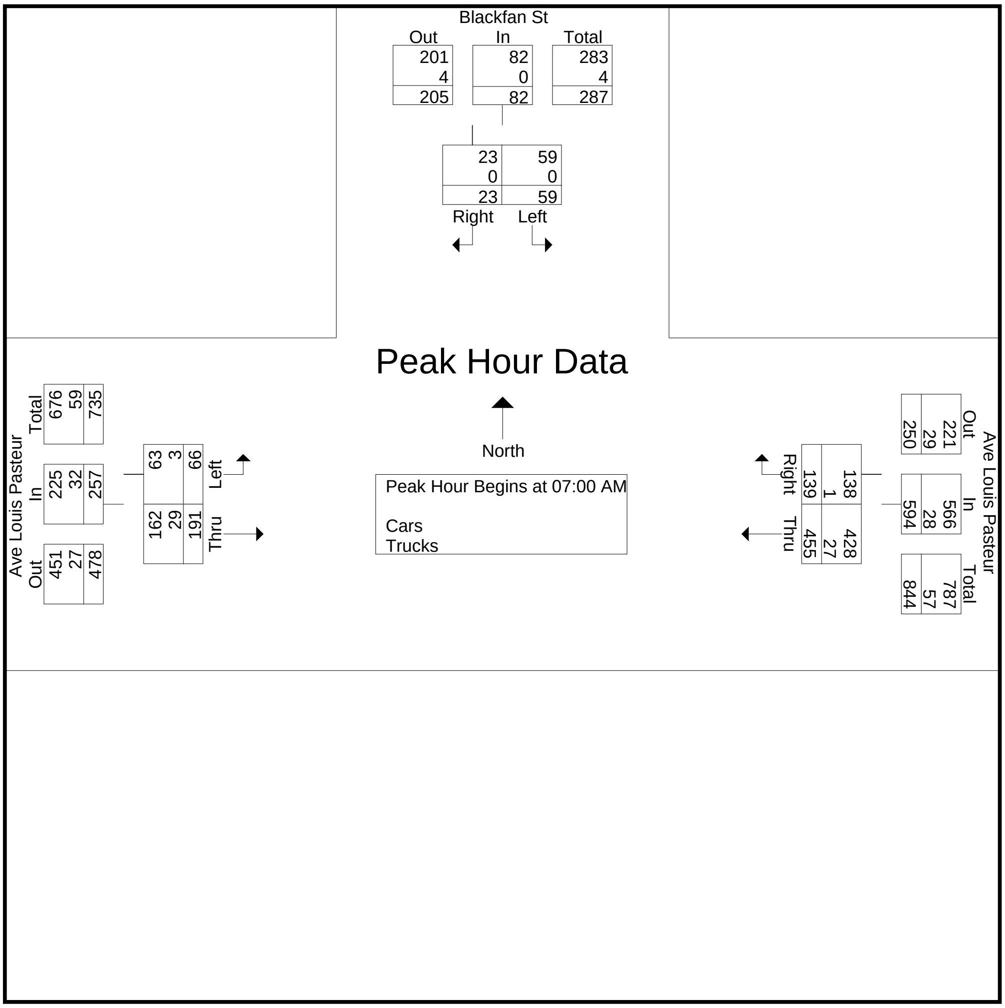
	Blackfan St From North			Ave Louis Pasteur From East			Ave Louis Pasteur From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	7	**8**	15	113	31	144	17	51	68	227
07:15 AM	**22**	6	**28**	**141**	**61**	**202**	18	**74**	**92**	**322**
07:30 AM	18	5	23	121	28	149	**22**	51	73	245
07:45 AM	12	4	16	80	19	99	9	15	24	139
Total Volume	59	23	82	455	139	594	66	191	257	933
% App. Total	72	28		76.6	23.4		25.7	74.3		
PHF	.670	.719	.732	.807	.570	.735	.750	.645	.698	.724
Cars	59	23	82	428	138	566	63	162	225	873
% Cars	100	100	100	94.1	99.3	95.3	95.5	84.8	87.5	93.6
Trucks	0	0	0	27	1	28	3	29	32	60
% Trucks	0	0	0	5.9	0.7	4.7	4.5	15.2	12.5	6.4

Accurate Counts

978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

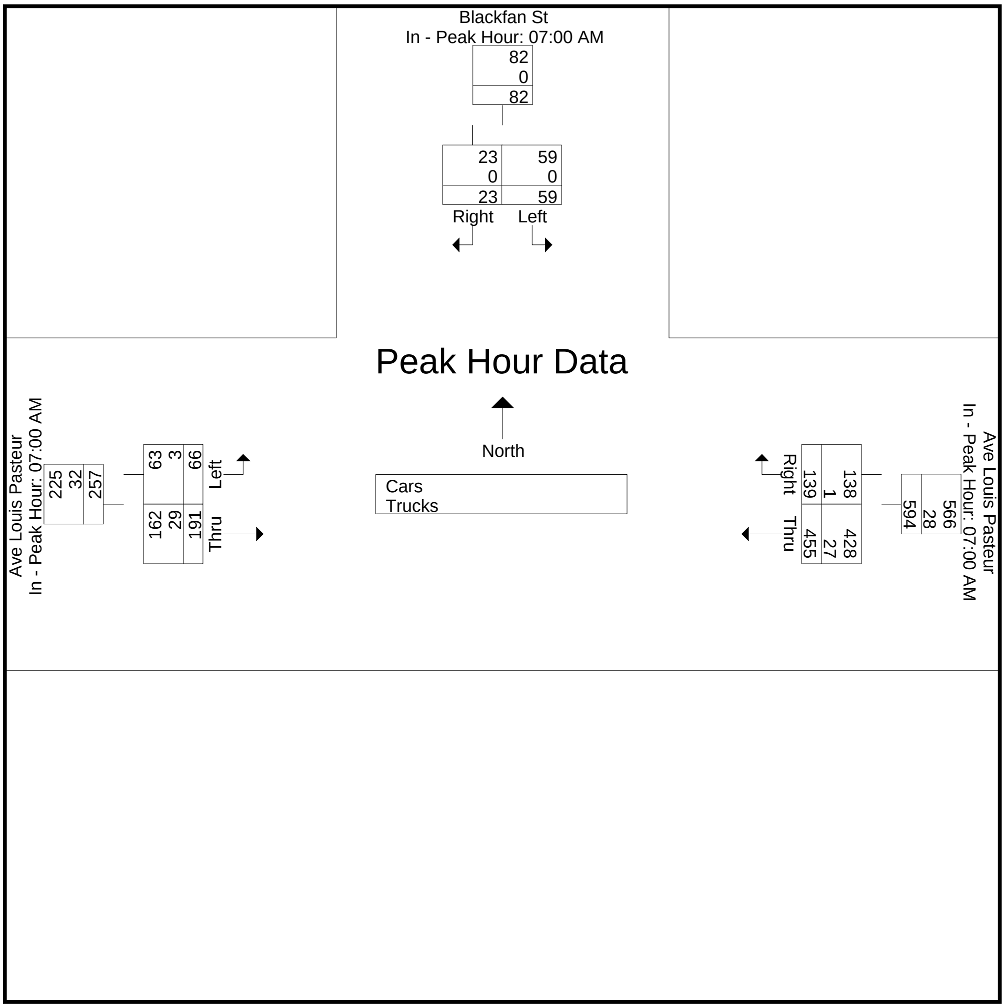
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	7	**8**	15	113	31	144	17	51	68
+15 mins.	**22**	6	**28**	**141**	**61**	**202**	18	**74**	**92**
+30 mins.	18	5	23	121	28	149	**22**	51	73
+45 mins.	12	4	16	80	19	99	9	15	24
Total Volume	59	23	82	455	139	594	66	191	257
% App. Total	72	28		76.6	23.4		25.7	74.3	
PHF	.670	.719	.732	.807	.570	.735	.750	.645	.698
Cars	59	23	82	428	138	566	63	162	225
% Cars	100	100	100	94.1	99.3	95.3	95.5	84.8	87.5
Trucks	0	0	0	27	1	28	3	29	32
% Trucks	0	0	0	5.9	0.7	4.7	4.5	15.2	12.5

Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

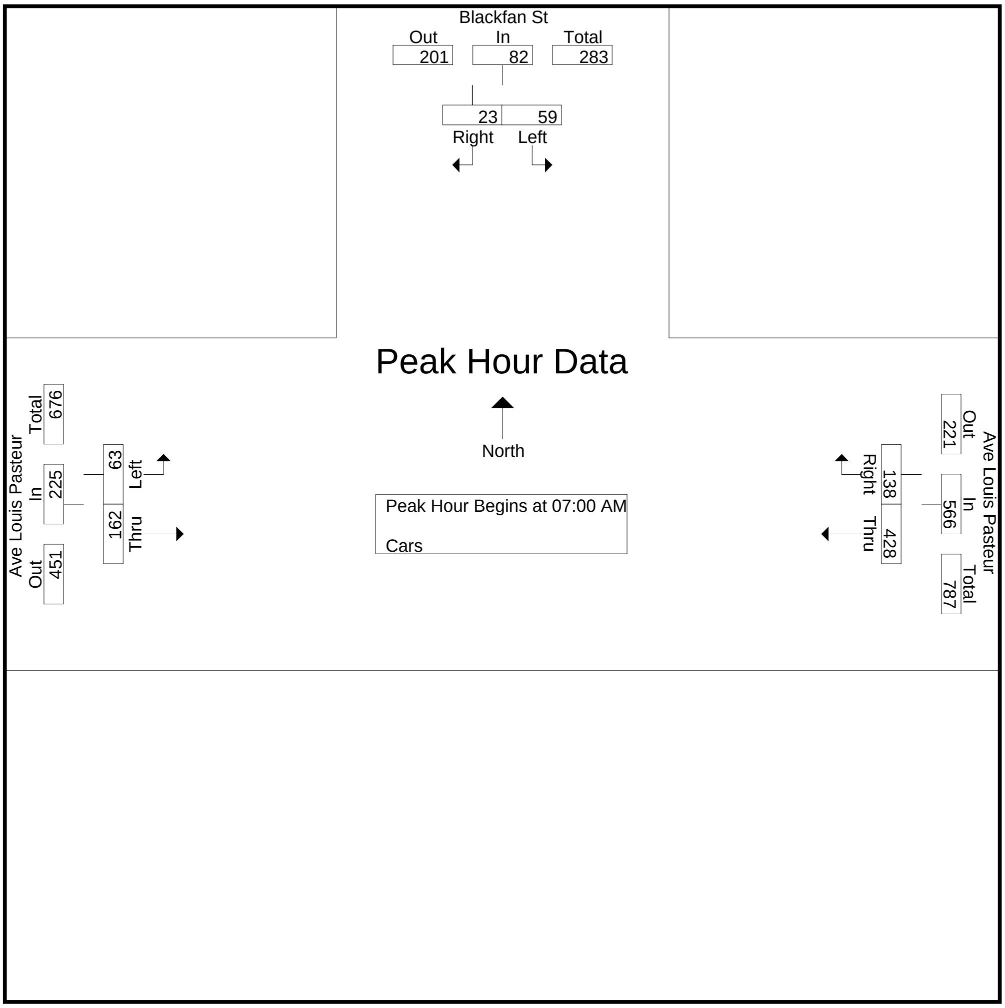
	Blackfan St From North		Ave Louis Pasteur From East		Ave Louis Pasteur From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	7	8	104	30	16	40	205
07:15 AM	22	6	136	61	17	64	306
07:30 AM	18	5	114	28	21	47	233
07:45 AM	12	4	74	19	9	11	129
Total	59	23	428	138	63	162	873
08:00 AM	9	5	86	31	4	11	146
08:15 AM	8	9	98	35	3	11	164
08:30 AM	6	6	84	44	6	8	154
08:45 AM	9	9	82	22	5	15	142
Total	32	29	350	132	18	45	606
Grand Total	91	52	778	270	81	207	1479
Apprch %	63.6	36.4	74.2	25.8	28.1	71.9	
Total %	6.2	3.5	52.6	18.3	5.5	14	

	Blackfan St From North			Ave Louis Pasteur From East			Ave Louis Pasteur From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	7	**8**	15	104	30	134	16	40	56	205
07:15 AM	**22**	6	**28**	**136**	**61**	**197**	17	**64**	**81**	**306**
07:30 AM	18	5	23	114	28	142	**21**	47	68	233
07:45 AM	12	4	16	74	19	93	9	11	20	129
Total Volume	59	23	82	428	138	566	63	162	225	873
% App. Total	72	28		75.6	24.4		28	72		
PHF	.670	.719	.732	.787	.566	.718	.750	.633	.694	.713

Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012
Page No : 2



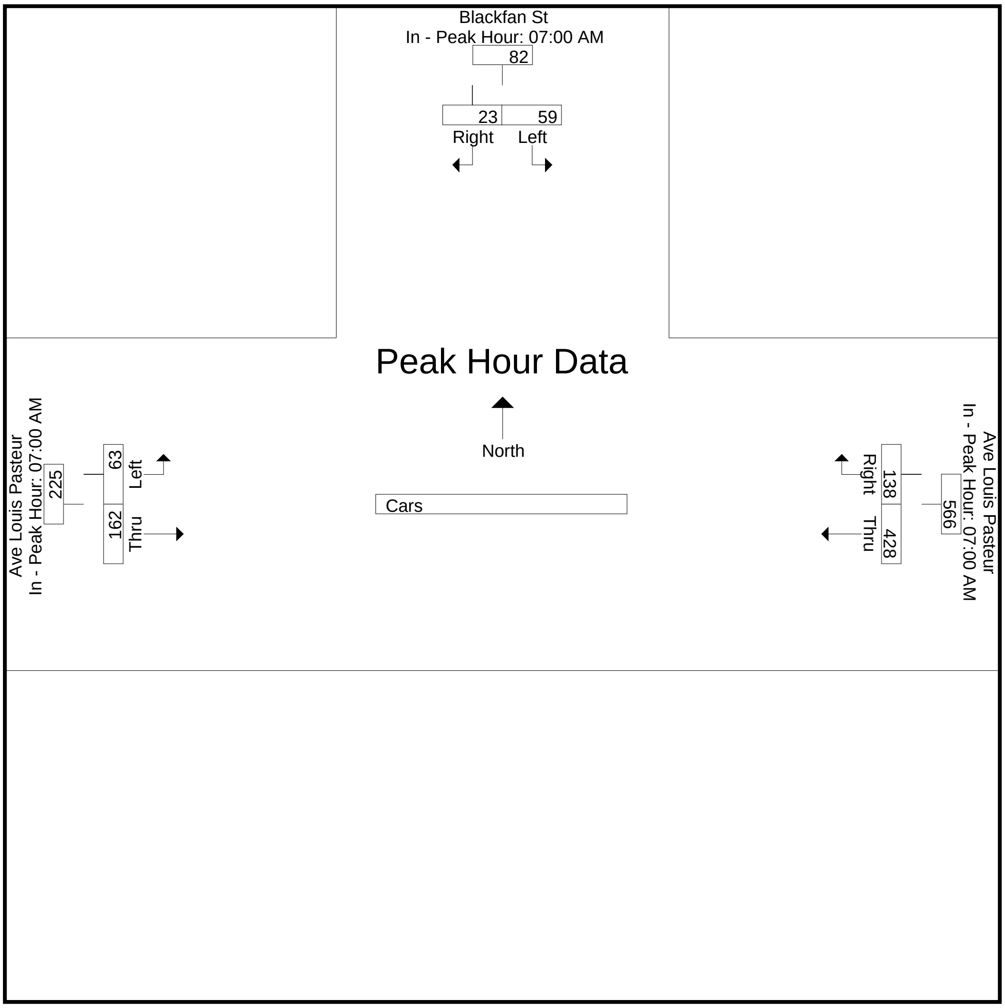
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	7	**8**	15	104	30	134	16	40	56
+15 mins.	**22**	6	**28**	**136**	**61**	**197**	17	**64**	**81**
+30 mins.	18	5	23	114	28	142	**21**	47	68
+45 mins.	12	4	16	74	19	93	9	11	20
Total Volume	59	23	82	428	138	566	63	162	225
% App. Total	72	28		75.6	24.4		28	72	
PHF	.670	.719	.732	.787	.566	.718	.750	.633	.694

Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012

Groups Printed- Trucks

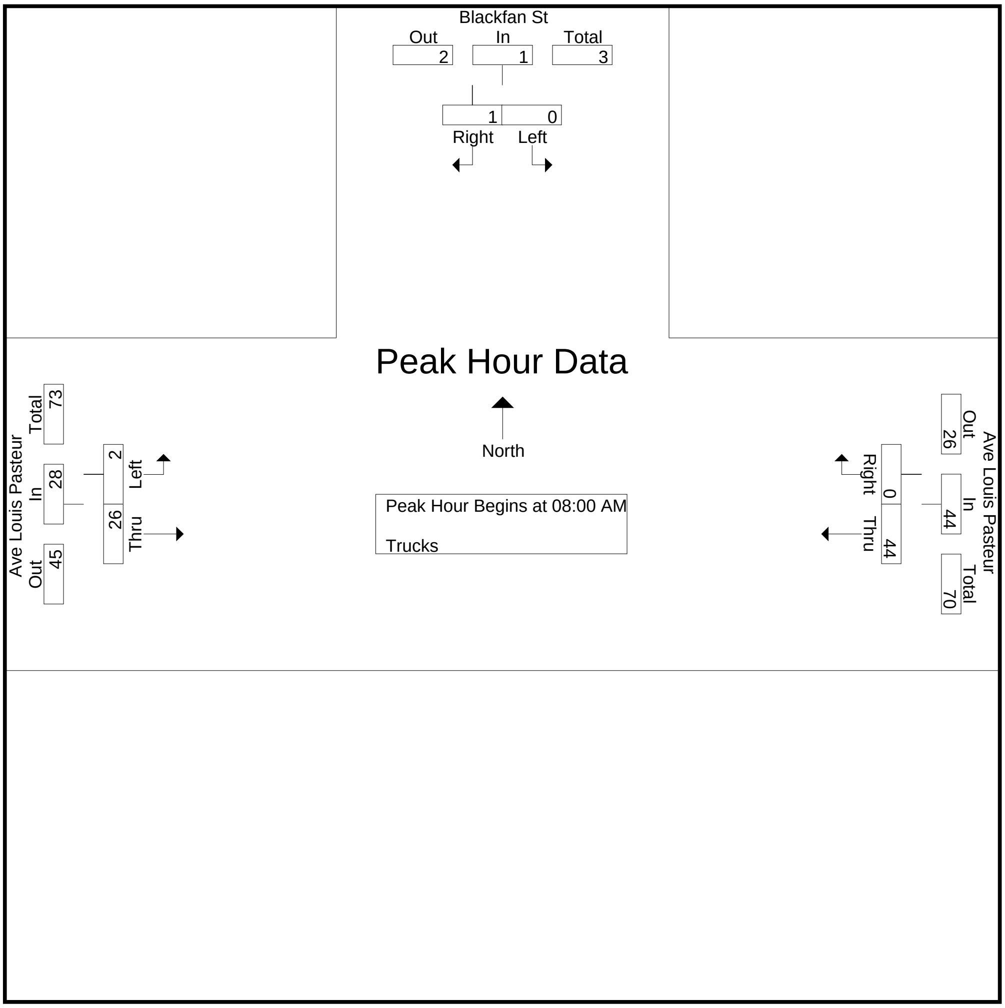
	Blackfan St From North		Ave Louis Pasteur From East		Ave Louis Pasteur From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	0	0	9	1	1	11	22
07:15 AM	0	0	5	0	1	10	16
07:30 AM	0	0	7	0	1	4	12
07:45 AM	0	0	6	0	0	4	10
Total	0	0	27	1	3	29	60
08:00 AM	0	0	7	0	0	5	12
08:15 AM	0	1	15	0	0	5	21
08:30 AM	0	0	13	0	0	6	19
08:45 AM	0	0	9	0	2	10	21
Total	0	1	44	0	2	26	73
Grand Total	0	1	71	1	5	55	133
Apprch %	0	100	98.6	1.4	8.3	91.7	
Total %	0	0.8	53.4	0.8	3.8	41.4	

	Blackfan St From North			Ave Louis Pasteur From East			Ave Louis Pasteur From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	0	0	0	7	0	7	0	5	5	12
08:15 AM	0	**1**	**1**	**15**	0	**15**	0	5	5	**21**
08:30 AM	0	0	0	13	0	13	0	6	6	19
08:45 AM	0	0	0	9	0	9	**2**	**10**	**12**	21
Total Volume	0	1	1	44	0	44	2	26	28	73
% App. Total	0	100		100	0		7.1	92.9		
PHF	.000	.250	.250	.733	.000	.733	.250	.650	.583	.869

Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012



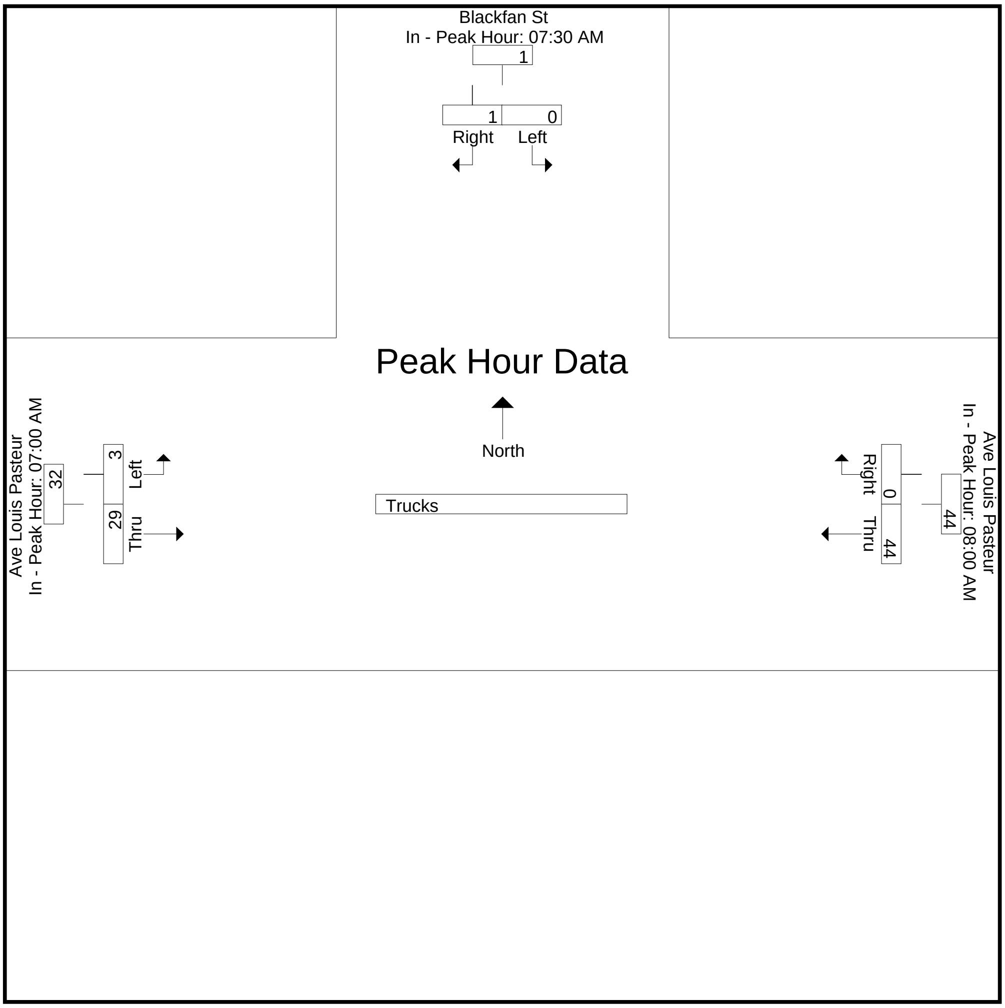
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			08:00 AM			07:00 AM		
+0 mins.	0	0	0	7	0	7	**1**	**11**	**12**
+15 mins.	0	0	0	**15**	0	**15**	1	10	11
+30 mins.	0	0	0	13	0	13	1	4	5
+45 mins.	0	**1**	**1**	9	0	9	0	4	4
Total Volume	0	1	1	44	0	44	3	29	32
% App. Total	0	100		100	0		9.4	90.6	
PHF	.000	.250	.250	.733	.000	.733	.750	.659	.667

Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012
Page No : 1

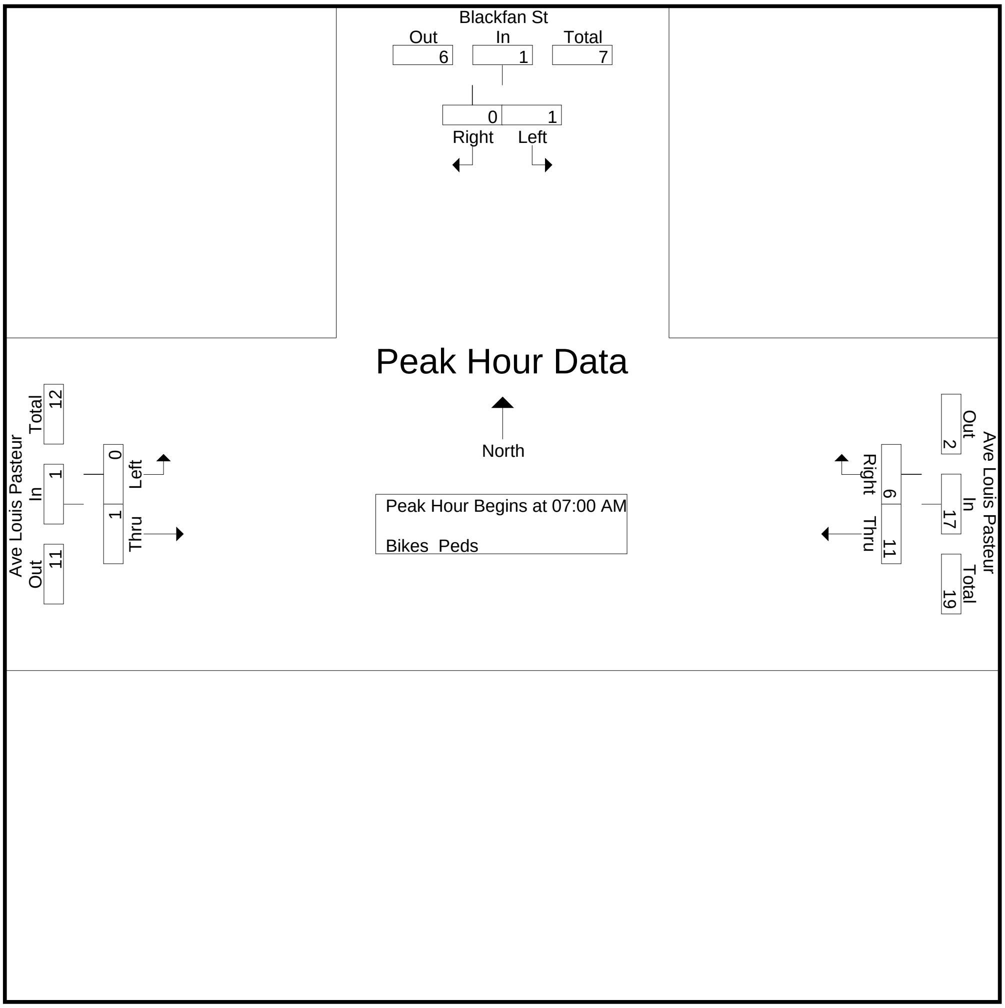
Groups Printed- Bikes Peds

	Blackfan St From North			Ave Louis Pasteur From East			Ave Louis Pasteur From West					
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	12	1	2	2	0	1	0	14	4	18
07:15 AM	0	0	33	4	2	3	0	0	2	38	6	44
07:30 AM	1	0	10	2	0	1	0	0	1	12	3	15
07:45 AM	0	0	16	4	2	1	0	0	2	19	6	25
Total	1	0	71	11	6	7	0	1	5	83	19	102
08:00 AM	0	0	15	3	1	5	0	0	2	22	4	26
08:15 AM	0	0	26	1	0	2	0	0	1	29	1	30
08:30 AM	0	1	22	3	2	5	0	1	1	28	7	35
08:45 AM	0	0	23	5	1	5	0	0	1	29	6	35
Total	0	1	86	12	4	17	0	1	5	108	18	126
Grand Total	1	1	157	23	10	24	0	2	10	191	37	228
Apprch %	50	50		69.7	30.3		0	100				
Total %	2.7	2.7		62.2	27		0	5.4		83.8	16.2	

	Blackfan St From North			Ave Louis Pasteur From East			Ave Louis Pasteur From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	1	**2**	3	0	**1**	**1**	4
07:15 AM	0	0	0	**4**	2	**6**	0	0	0	**6**
07:30 AM	**1**	0	**1**	2	0	2	0	0	0	3
07:45 AM	0	0	0	4	2	6	0	0	0	6
Total Volume	1	0	1	11	6	17	0	1	1	19
% App. Total	100	0		64.7	35.3		0	100		
PHF	.250	.000	.250	.688	.750	.708	.000	.250	.250	.792

Accurate Counts
978-664-2565

N/S Street : Blackfan Street	File Name : 94970023
E/W Street : Avenue Louis Pasteur	Site Code : 94970023
City/State : Boston, MA	Start Date : 5/16/2012
Weather : Drizzle	Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

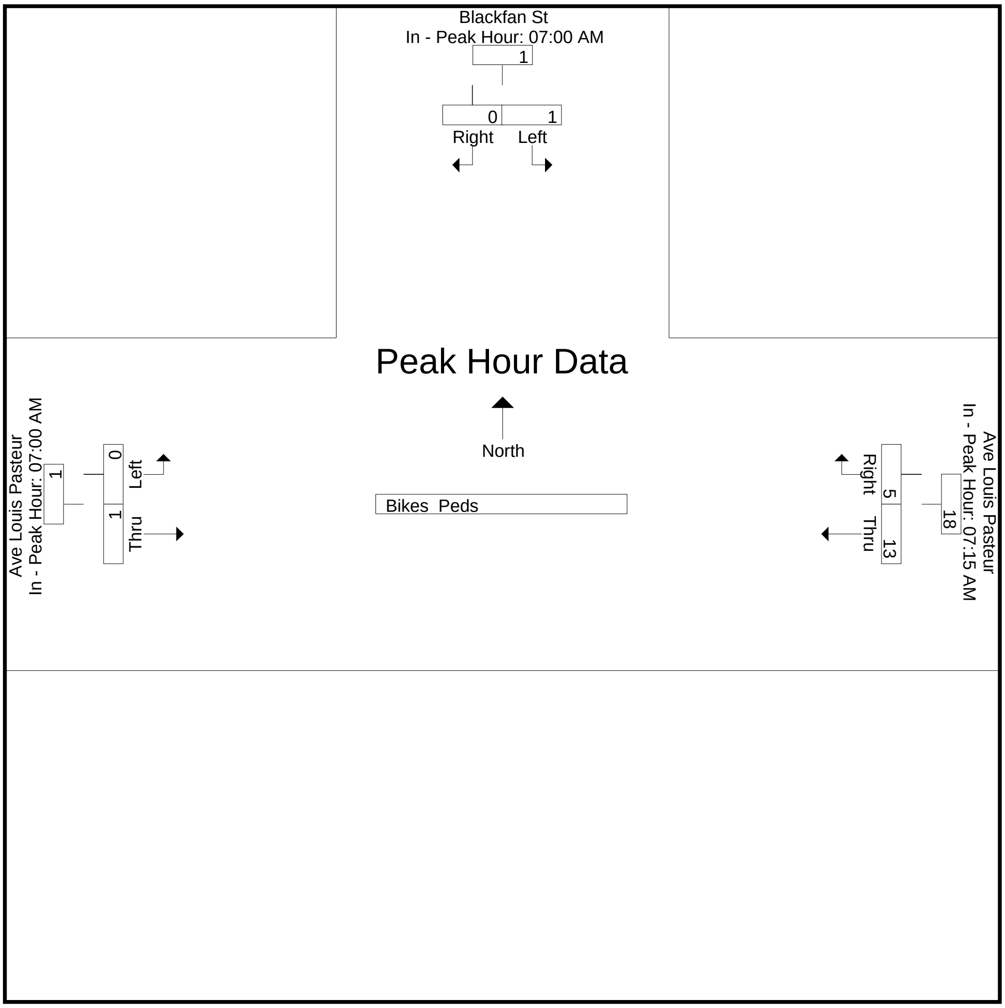
Peak Hour for Each Approach Begins at:

	07:00 AM			07:15 AM			07:00 AM		
+0 mins.	0	0	0	**4**	**2**	**6**	0	**1**	**1**
+15 mins.	0	0	0	2	0	2	0	0	0
+30 mins.	**1**	0	**1**	4	2	6	0	0	0
+45 mins.	0	0	0	3	1	4	0	0	0
Total Volume	1	0	1	13	5	18	0	1	1
% App. Total	100	0		72.2	27.8		0	100	
PHF	.250	.000	.250	.813	.625	.750	.000	.250	.250

Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012



Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012
Page No : 1

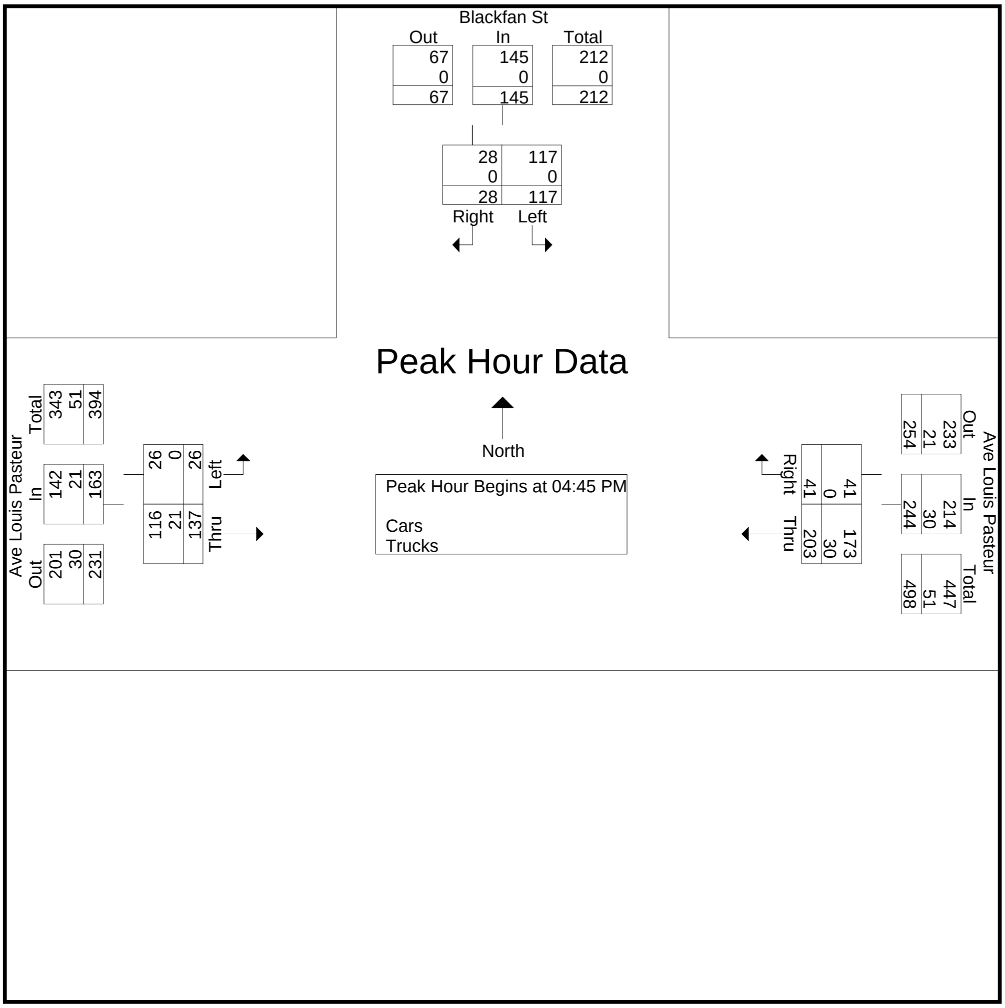
Groups Printed- Cars - Trucks

	Blackfan St From North		Ave Louis Pasteur From East		Ave Louis Pasteur From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	27	10	42	5	8	32	124
04:15 PM	24	4	41	4	5	38	116
04:30 PM	30	5	48	8	9	37	137
04:45 PM	33	9	43	6	8	32	131
Total	114	28	174	23	30	139	508
05:00 PM	35	6	48	5	9	19	122
05:15 PM	23	6	54	16	4	49	152
05:30 PM	26	7	58	14	5	37	147
05:45 PM	29	1	51	12	2	28	123
Total	113	20	211	47	20	133	544
Grand Total	227	48	385	70	50	272	1052
Apprch %	82.5	17.5	84.6	15.4	15.5	84.5	
Total %	21.6	4.6	36.6	6.7	4.8	25.9	
Cars	227	48	319	70	49	232	945
% Cars	100	100	82.9	100	98	85.3	89.8
Trucks	0	0	66	0	1	40	107
% Trucks	0	0	17.1	0	2	14.7	10.2

	Blackfan St From North			Ave Louis Pasteur From East			Ave Louis Pasteur From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	33	**9**	**42**	43	6	49	8	32	40	131
05:00 PM	**35**	6	41	48	5	53	**9**	19	28	122
05:15 PM	23	6	29	54	**16**	70	4	**49**	**53**	**152**
05:30 PM	26	7	33	**58**	14	**72**	5	37	42	147
Total Volume	117	28	145	203	41	244	26	137	163	552
% App. Total	80.7	19.3		83.2	16.8		16	84		
PHF	.836	.778	.863	.875	.641	.847	.722	.699	.769	.908
Cars	117	28	145	173	41	214	26	116	142	501
% Cars	100	100	100	85.2	100	87.7	100	84.7	87.1	90.8
Trucks	0	0	0	30	0	30	0	21	21	51
% Trucks	0	0	0	14.8	0	12.3	0	15.3	12.9	9.2

Accurate Counts
978-664-2565

N/S Street : Blackfan Street		File Name	: 94970023
E/W Street : Avenue Louis Pasteur		Site Code	: 94970023
City/State : Boston, MA		Start Date	: 5/16/2012
Weather : Drizzle		Page No	: 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

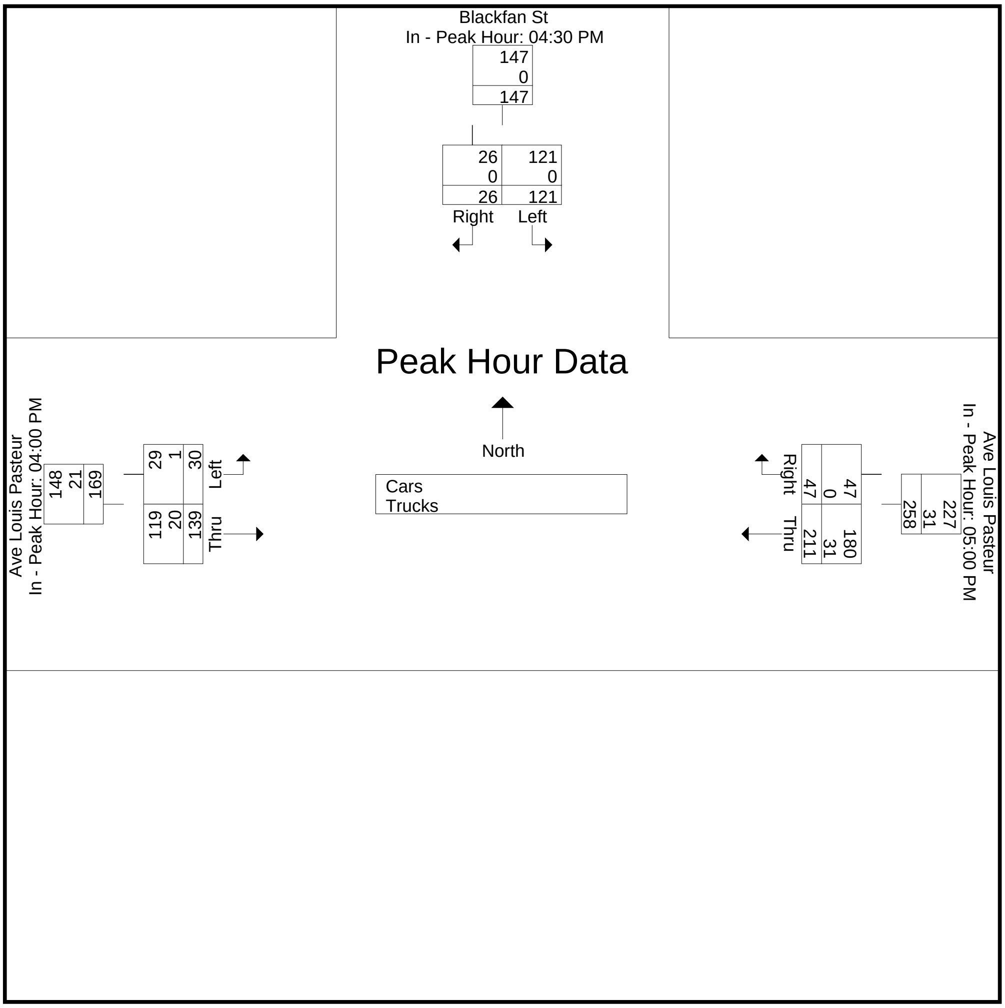
Peak Hour for Each Approach Begins at:

	04:30 PM			05:00 PM			04:00 PM		
+0 mins.	30	5	35	48	5	53	8	32	40
+15 mins.	33	**9**	**42**	54	**16**	70	5	**38**	43
+30 mins.	**35**	6	41	**58**	14	**72**	**9**	37	**46**
+45 mins.	23	6	29	51	12	63	8	32	40
Total Volume	121	26	147	211	47	258	30	139	169
% App. Total	82.3	17.7		81.8	18.2		17.8	82.2	
PHF	.864	.722	.875	.909	.734	.896	.833	.914	.918
Cars	121	26	147	180	47	227	29	119	148
% Cars	100	100	100	85.3	100	88	96.7	85.6	87.6
Trucks	0	0	0	31	0	31	1	20	21
% Trucks	0	0	0	14.7	0	12	3.3	14.4	12.4

Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012

Groups Printed- Cars

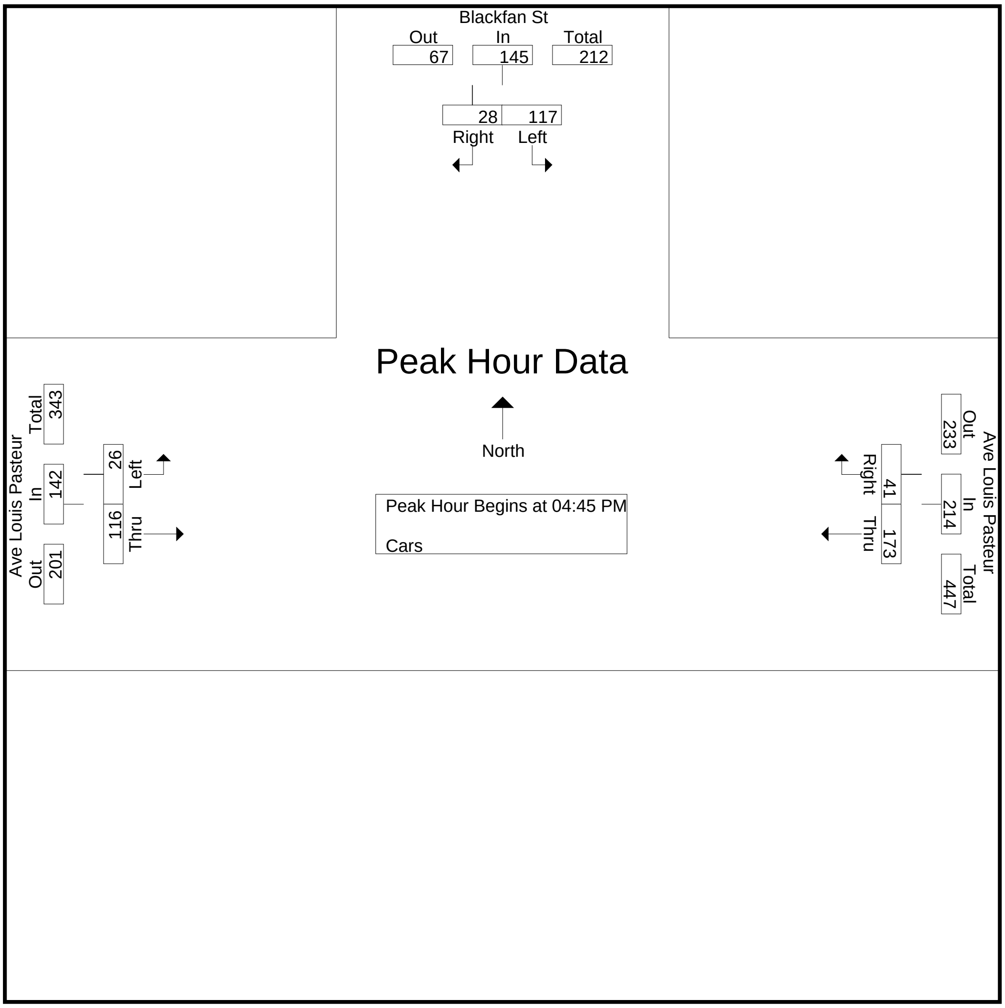
	Blackfan St From North		Ave Louis Pasteur From East		Ave Louis Pasteur From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	27	10	32	5	8	29	111
04:15 PM	24	4	36	4	5	32	105
04:30 PM	30	5	38	8	8	31	120
04:45 PM	33	9	33	6	8	27	116
Total	114	28	139	23	29	119	452
05:00 PM	35	6	45	5	9	15	115
05:15 PM	23	6	43	16	4	44	136
05:30 PM	26	7	52	14	5	30	134
05:45 PM	29	1	40	12	2	24	108
Total	113	20	180	47	20	113	493
Grand Total	227	48	319	70	49	232	945
Apprch %	82.5	17.5	82	18	17.4	82.6	
Total %	24	5.1	33.8	7.4	5.2	24.6	

	Blackfan St From North			Ave Louis Pasteur From East			Ave Louis Pasteur From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	33	**9**	**42**	33	6	39	8	27	35	116
05:00 PM	**35**	6	41	45	5	50	**9**	15	24	115
05:15 PM	23	6	29	43	**16**	59	4	**44**	**48**	**136**
05:30 PM	26	7	33	**52**	14	**66**	5	30	35	134
Total Volume	117	28	145	173	41	214	26	116	142	501
% App. Total	80.7	19.3		80.8	19.2		18.3	81.7		
PHF	.836	.778	.863	.832	.641	.811	.722	.659	.740	.921

Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012
Page No : 2



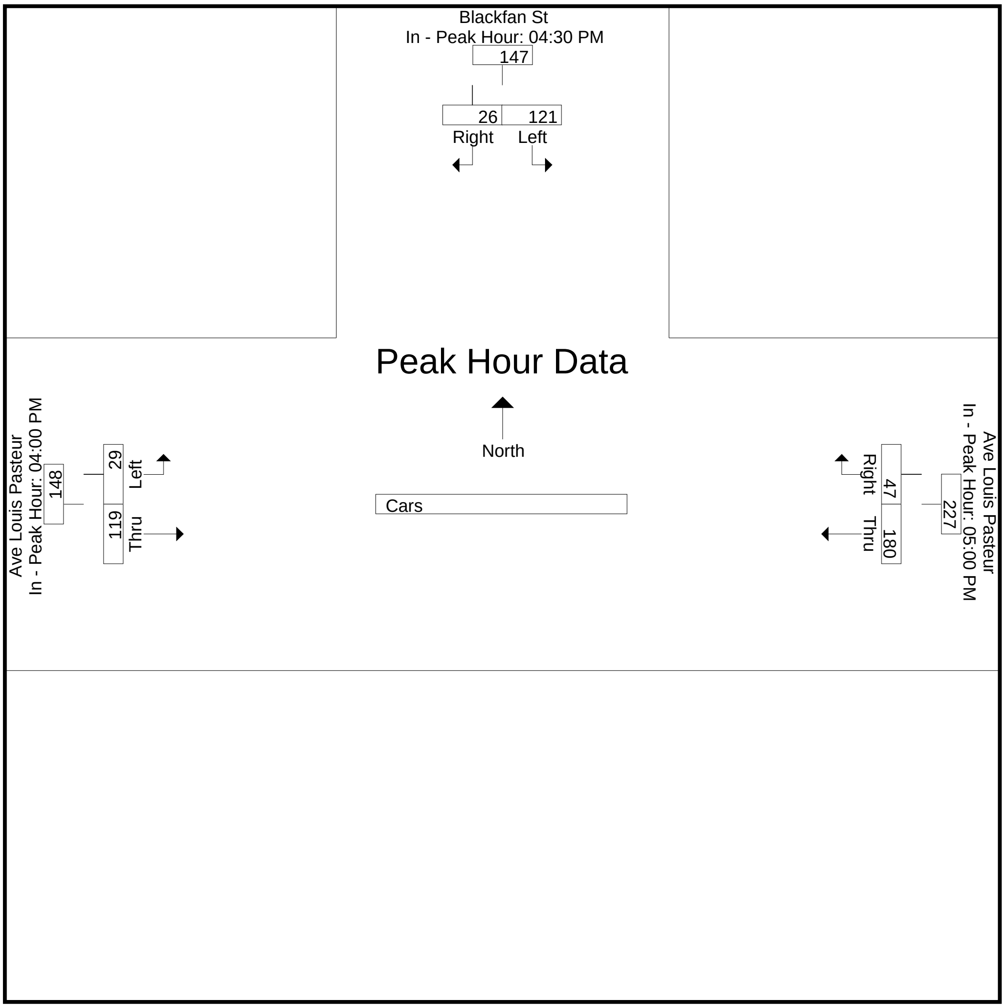
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			05:00 PM			04:00 PM		
+0 mins.	30	5	35	45	5	50	**8**	29	37
+15 mins.	33	**9**	**42**	43	**16**	59	5	**32**	37
+30 mins.	**35**	6	41	**52**	14	**66**	8	31	**39**
+45 mins.	23	6	29	40	12	52	8	27	35
Total Volume	121	26	147	180	47	227	29	119	148
% App. Total	82.3	17.7		79.3	20.7		19.6	80.4	
PHF	.864	.722	.875	.865	.734	.860	.906	.930	.949

Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

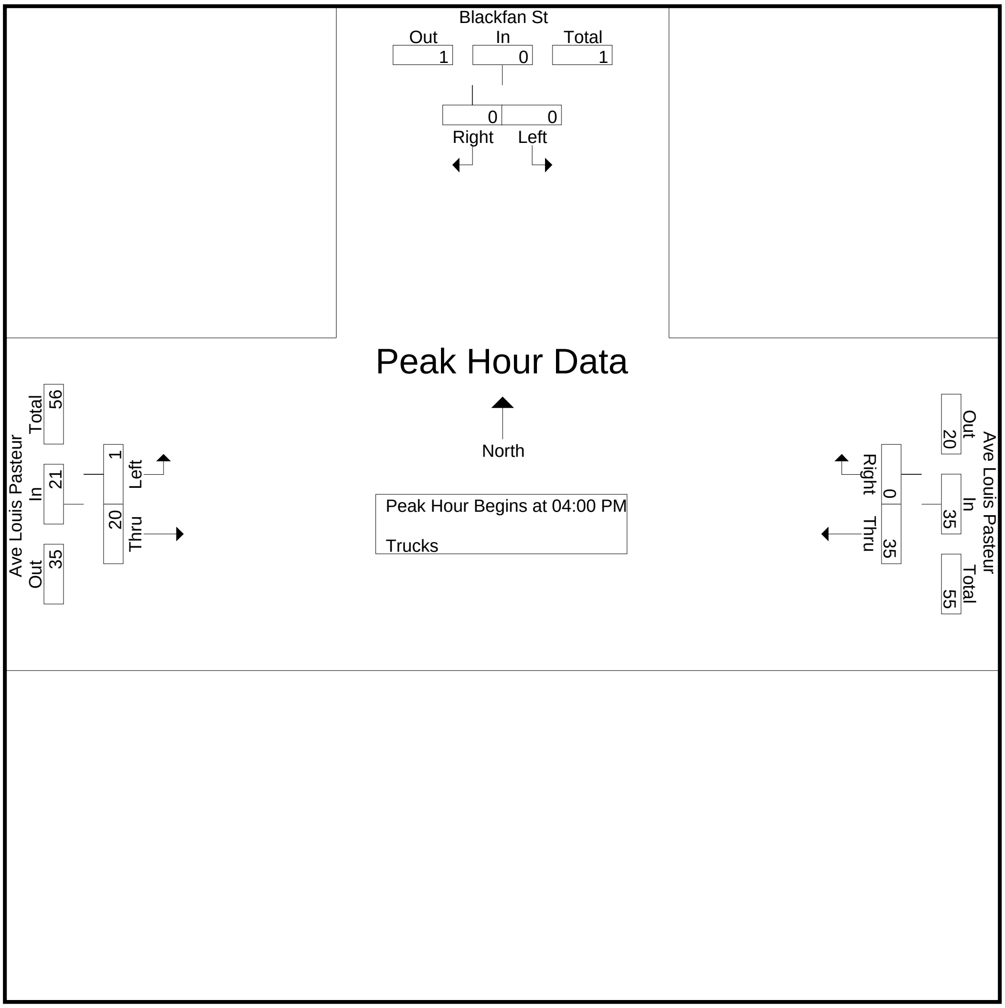
	Blackfan St From North		Ave Louis Pasteur From East		Ave Louis Pasteur From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	0	0	10	0	0	3	13
04:15 PM	0	0	5	0	0	6	11
04:30 PM	0	0	10	0	1	6	17
04:45 PM	0	0	10	0	0	5	15
Total	0	0	35	0	1	20	56
05:00 PM	0	0	3	0	0	4	7
05:15 PM	0	0	11	0	0	5	16
05:30 PM	0	0	6	0	0	7	13
05:45 PM	0	0	11	0	0	4	15
Total	0	0	31	0	0	20	51
Grand Total	0	0	66	0	1	40	107
Apprch %	0	0	100	0	2.4	97.6	
Total %	0	0	61.7	0	0.9	37.4	

	Blackfan St From North			Ave Louis Pasteur From East			Ave Louis Pasteur From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	**10**	0	**10**	0	3	3	13
04:15 PM	0	0	0	5	0	5	0	**6**	6	11
04:30 PM	0	0	0	10	0	10	**1**	6	**7**	**17**
04:45 PM	0	0	0	10	0	10	0	5	5	15
Total Volume	0	0	0	35	0	35	1	20	21	56
% App. Total	0	0		100	0		4.8	95.2		
PHF	.000	.000	.000	.875	.000	.875	.250	.833	.750	.824

Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012



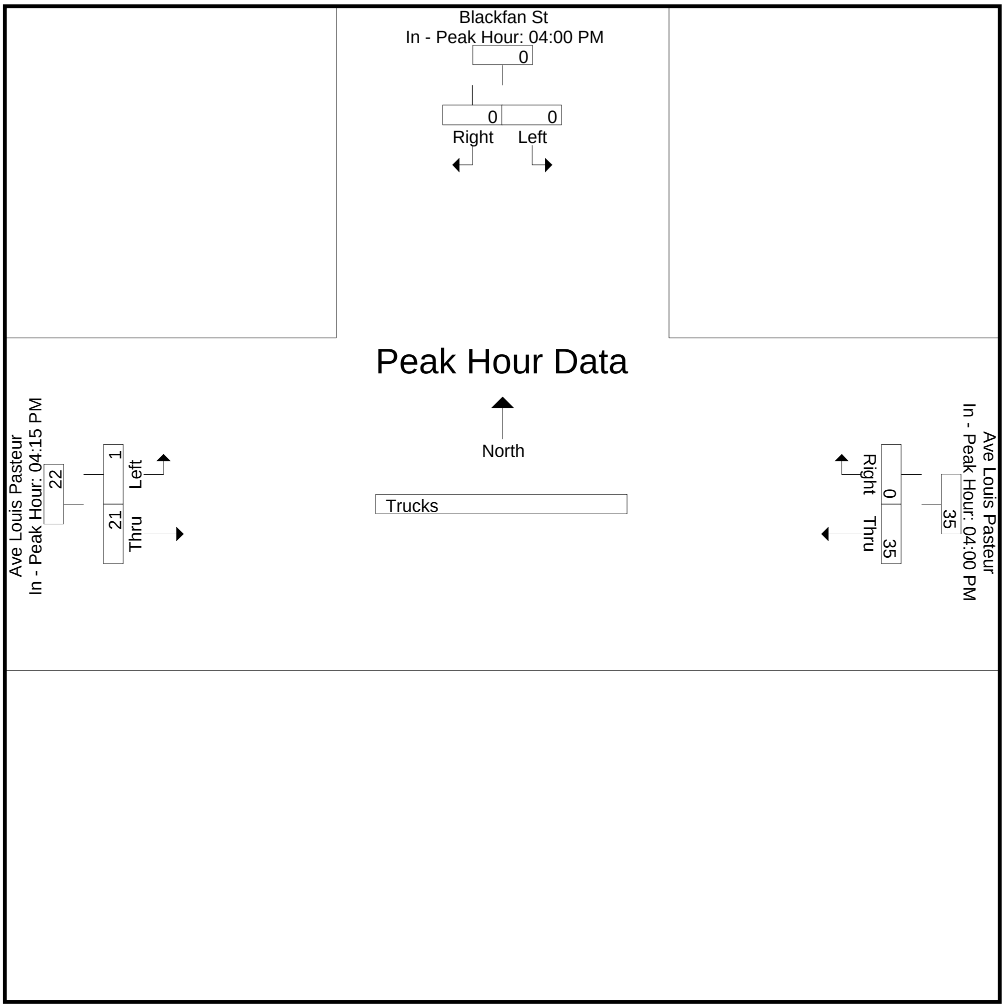
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:15 PM		
+0 mins.	0	0	0	**10**	0	**10**	0	**6**	6
+15 mins.	0	0	0	5	0	5	**1**	6	**7**
+30 mins.	0	0	0	10	0	10	0	5	5
+45 mins.	0	0	0	10	0	10	0	4	4
Total Volume	0	0	0	35	0	35	1	21	22
% App. Total	0	0		100	0		4.5	95.5	
PHF	.000	.000	.000	.875	.000	.875	.250	.875	.786

Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

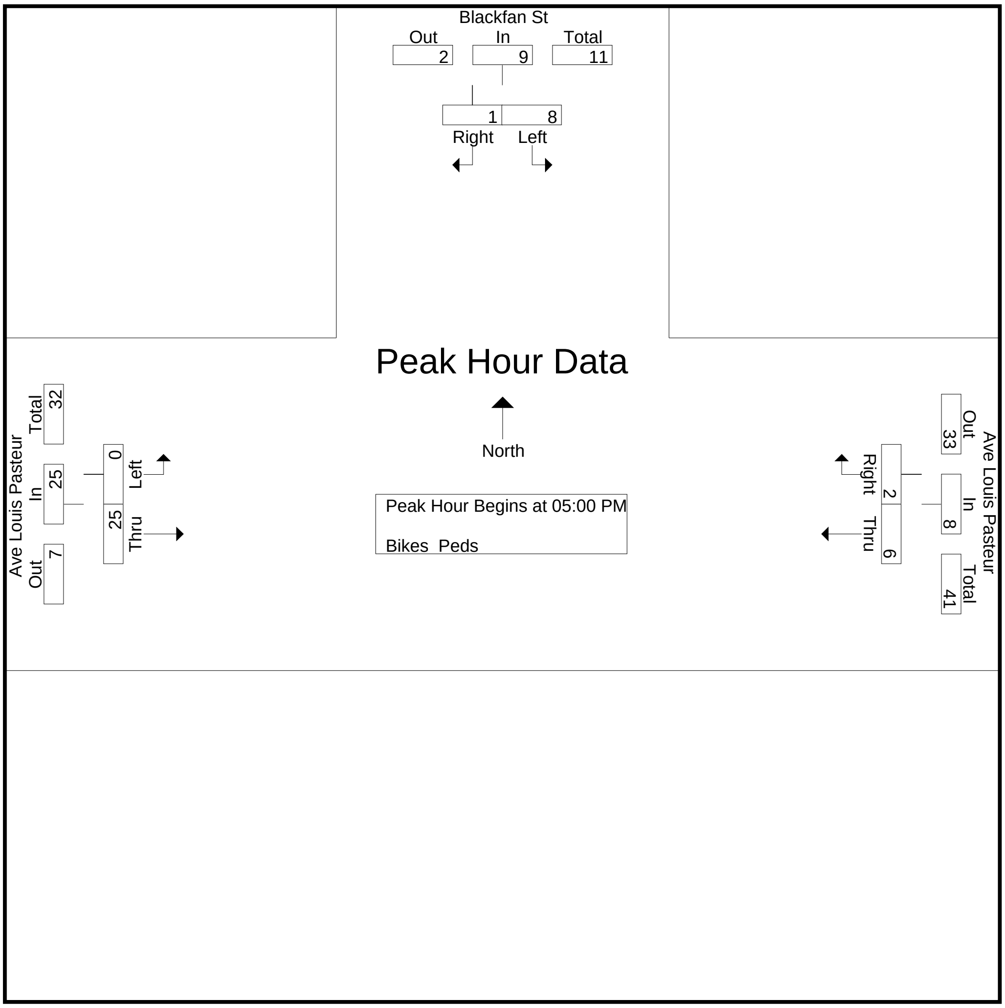
	Blackfan St From North			Ave Louis Pasteur From East			Ave Louis Pasteur From West					
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	1	0	35	0	1	10	0	2	2	47	4	51
04:15 PM	1	0	27	1	1	3	1	3	3	33	7	40
04:30 PM	3	0	33	1	0	17	0	4	1	51	8	59
04:45 PM	1	0	31	0	0	17	0	2	0	48	3	51
Total	6	0	126	2	2	47	1	11	6	179	22	201
05:00 PM	1	0	45	1	1	10	0	7	2	57	10	67
05:15 PM	1	1	38	1	0	3	0	6	1	42	9	51
05:30 PM	3	0	26	2	1	7	0	6	2	35	12	47
05:45 PM	3	0	18	2	0	5	0	6	3	26	11	37
Total	8	1	127	6	2	25	0	25	8	160	42	202
Grand Total	14	1	253	8	4	72	1	36	14	339	64	403
Apprch %	93.3	6.7		66.7	33.3		2.7	97.3				
Total %	21.9	1.6		12.5	6.2		1.6	56.2		84.1	15.9	

	Blackfan St From North			Ave Louis Pasteur From East			Ave Louis Pasteur From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	1	0	1	1	**1**	2	0	**7**	**7**	10
05:15 PM	1	**1**	2	1	0	1	0	6	6	9
05:30 PM	**3**	0	**3**	**2**	1	**3**	0	6	6	**12**
05:45 PM	3	0	3	2	0	2	0	6	6	11
Total Volume	8	1	9	6	2	8	0	25	25	42
% App. Total	88.9	11.1		75	25		0	100		
PHF	.667	.250	.750	.750	.500	.667	.000	.893	.893	.875

Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012



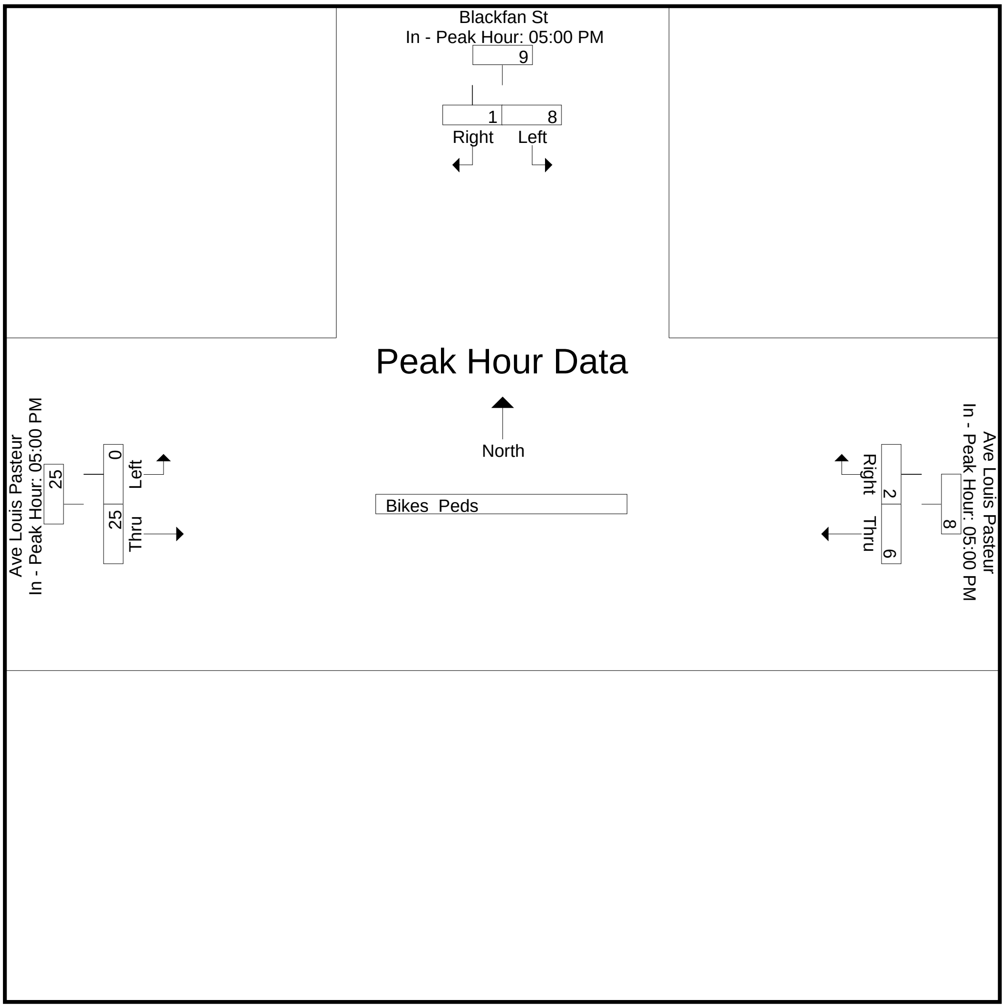
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	1	0	1	1	**1**	2	0	**7**	**7**
+15 mins.	1	**1**	2	1	0	1	0	6	6
+30 mins.	**3**	0	**3**	**2**	1	**3**	0	6	6
+45 mins.	3	0	3	2	0	2	0	6	6
Total Volume	8	1	9	6	2	8	0	25	25
% App. Total	88.9	11.1		75	25		0	100	
PHF	.667	.250	.750	.750	.500	.667	.000	.893	.893

Accurate Counts
978-664-2565

N/S Street : Blackfan Street
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970023
Site Code : 94970023
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 1

Groups Printed- Cars - Trucks

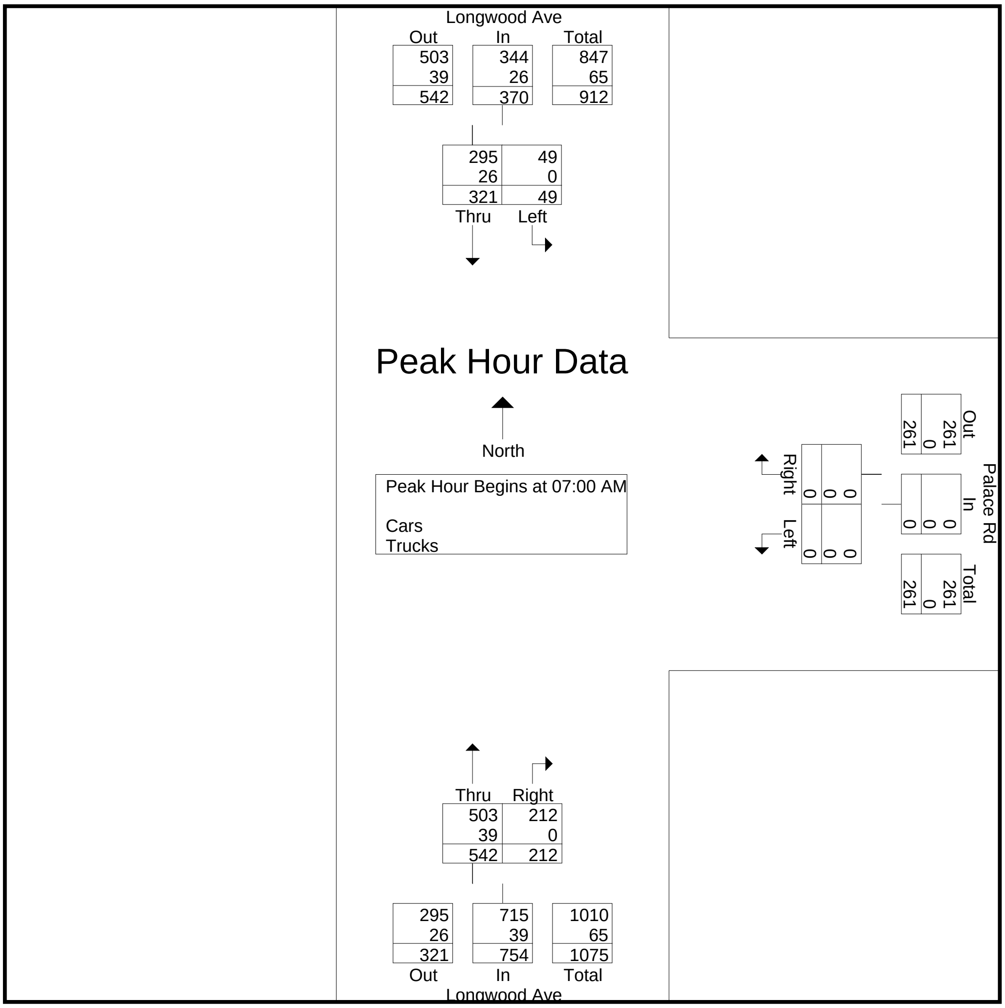
	Longwood Ave From North		Palace Rd From East		Longwood Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	6	70	0	0	143	34	253
07:15 AM	18	93	0	0	144	87	342
07:30 AM	18	96	0	0	133	64	311
07:45 AM	7	62	0	0	122	27	218
Total	49	321	0	0	542	212	1124
08:00 AM	8	58	0	0	108	17	191
08:15 AM	11	70	0	0	104	26	211
08:30 AM	10	62	0	0	120	23	215
08:45 AM	6	58	0	0	126	17	207
Total	35	248	0	0	458	83	824
Grand Total	84	569	0	0	1000	295	1948
Apprch %	12.9	87.1	0	0	77.2	22.8	
Total %	4.3	29.2	0	0	51.3	15.1	
Cars	83	527	0	0	945	293	1848
% Cars	98.8	92.6	0	0	94.5	99.3	94.9
Trucks	1	42	0	0	55	2	100
% Trucks	1.2	7.4	0	0	5.5	0.7	5.1

	Longwood Ave From North			Palace Rd From East			Longwood Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	6	70	76	0	0	0	143	34	177	253
07:15 AM	**18**	93	111	0	0	0	**144**	**87**	**231**	**342**
07:30 AM	18	**96**	**114**	0	0	0	133	64	197	311
07:45 AM	7	62	69	0	0	0	122	27	149	218
Total Volume	49	321	370	0	0	0	542	212	754	1124
% App. Total	13.2	86.8		0	0		71.9	28.1		
PHF	.681	.836	.811	.000	.000	.000	.941	.609	.816	.822
Cars	49	295	344	0	0	0	503	212	715	1059
% Cars	100	91.9	93.0	0	0	0	92.8	100	94.8	94.2
Trucks	0	26	26	0	0	0	39	0	39	65
% Trucks	0	8.1	7.0	0	0	0	7.2	0	5.2	5.8

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 2



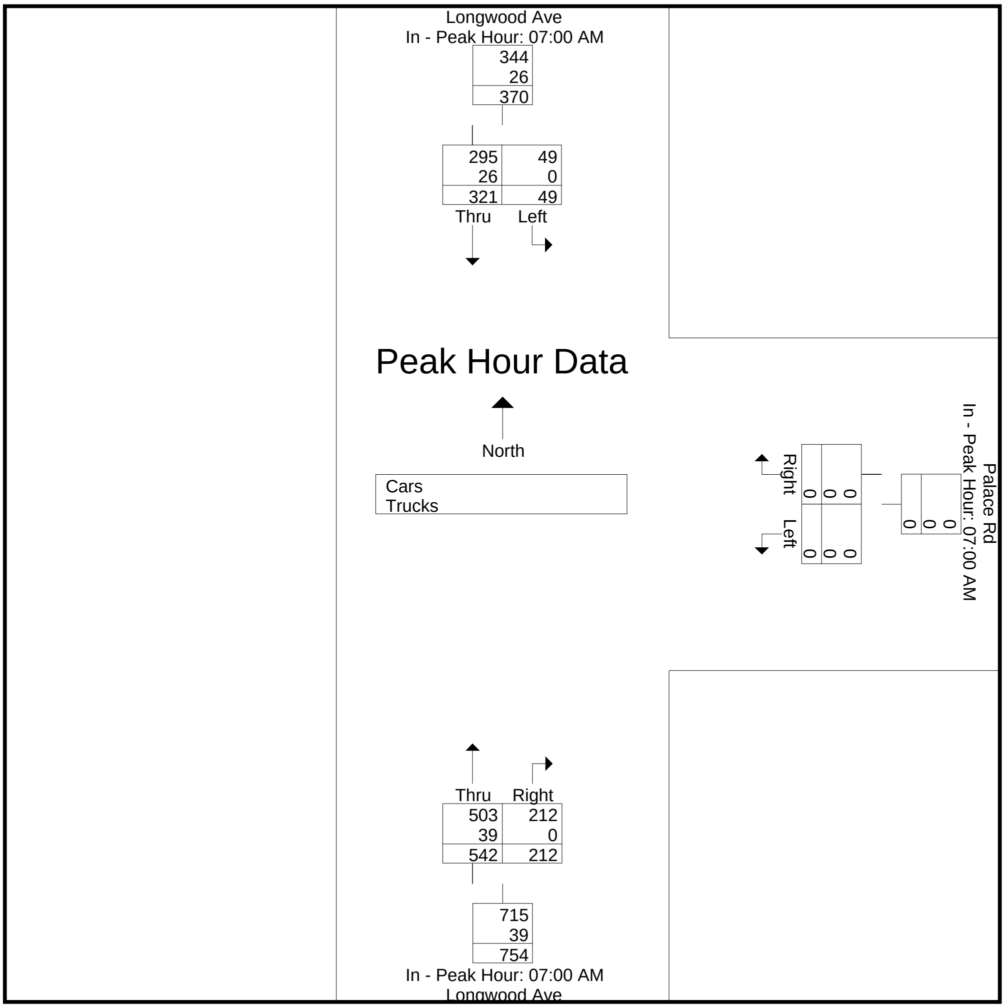
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	6	70	76	0	0	0	143	34	177
+15 mins.	**18**	93	111	0	0	0	**144**	**87**	**231**
+30 mins.	18	**96**	**114**	0	0	0	133	64	197
+45 mins.	7	62	69	0	0	0	122	27	149
Total Volume	49	321	370	0	0	0	542	212	754
% App. Total	13.2	86.8		0	0		71.9	28.1	
PHF	.681	.836	.811	.000	.000	.000	.941	.609	.816
Cars	49	295	344	0	0	0	503	212	715
% Cars	100	91.9	93	0	0	0	92.8	100	94.8
Trucks	0	26	26	0	0	0	39	0	39
% Trucks	0	8.1	7	0	0	0	7.2	0	5.2

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 1

Groups Printed- Cars

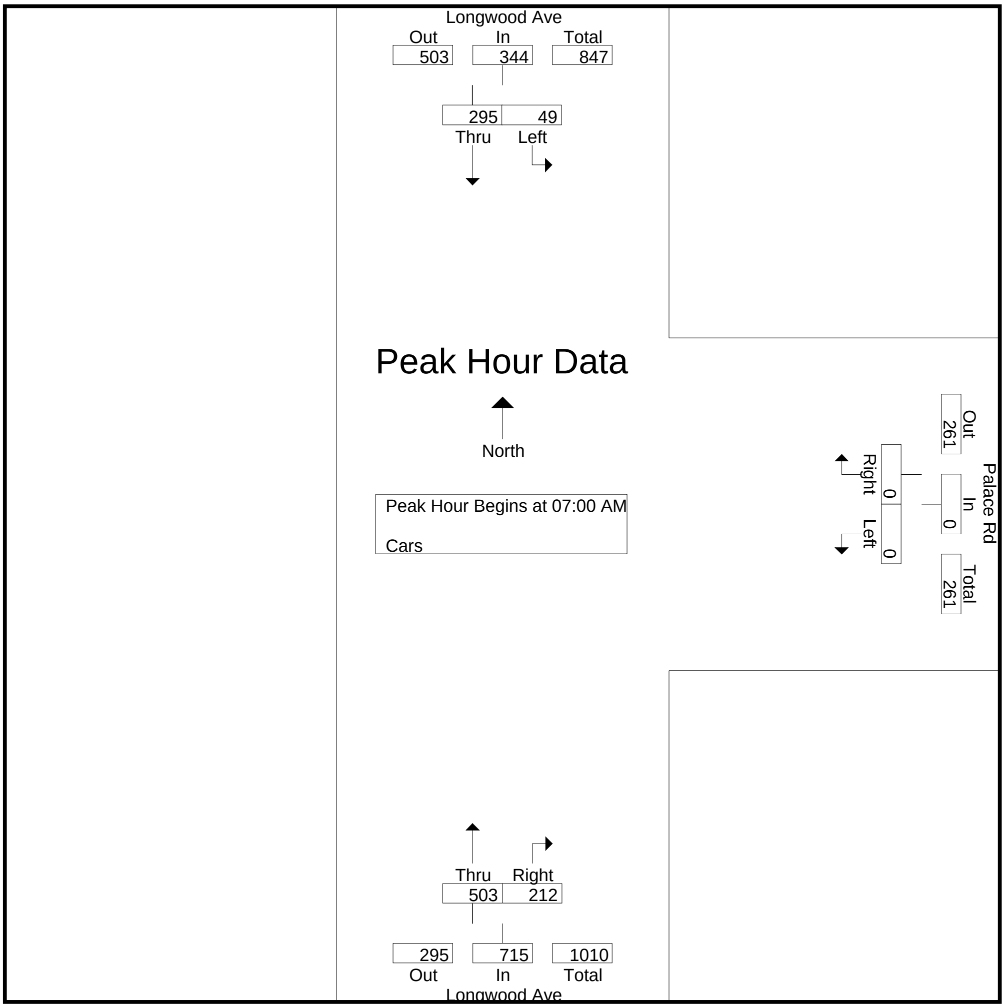
	Longwood Ave From North		Palace Rd From East		Longwood Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	6	63	0	0	129	34	232
07:15 AM	18	84	0	0	132	87	321
07:30 AM	18	92	0	0	125	64	299
07:45 AM	7	56	0	0	117	27	207
Total	49	295	0	0	503	212	1059
08:00 AM	8	52	0	0	102	15	177
08:15 AM	10	67	0	0	102	26	205
08:30 AM	10	59	0	0	117	23	209
08:45 AM	6	54	0	0	121	17	198
Total	34	232	0	0	442	81	789
Grand Total	83	527	0	0	945	293	1848
Apprch %	13.6	86.4	0	0	76.3	23.7	
Total %	4.5	28.5	0	0	51.1	15.9	

	Longwood Ave From North			Palace Rd From East			Longwood Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	6	63	69	0	0	0	129	34	163	232
07:15 AM	**18**	84	102	0	0	0	**132**	**87**	**219**	**321**
07:30 AM	18	**92**	**110**	0	0	0	125	64	189	299
07:45 AM	7	56	63	0	0	0	117	27	144	207
Total Volume	49	295	344	0	0	0	503	212	715	1059
% App. Total	14.2	85.8		0	0		70.3	29.7		
PHF	.681	.802	.782	.000	.000	.000	.953	.609	.816	.825

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 2



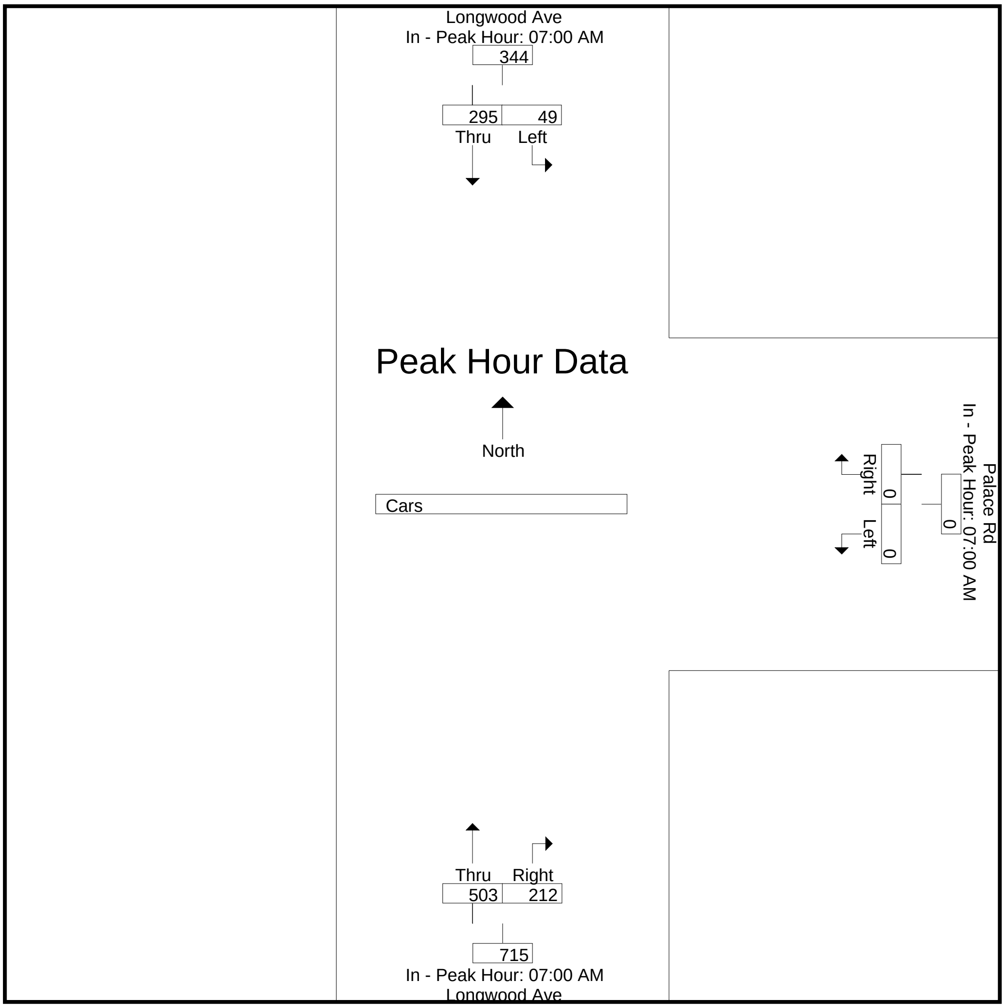
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	6	63	69	0	0	0	129	34	163
+15 mins.	**18**	84	102	0	0	0	**132**	**87**	**219**
+30 mins.	18	**92**	**110**	0	0	0	125	64	189
+45 mins.	7	56	63	0	0	0	117	27	144
Total Volume	49	295	344	0	0	0	503	212	715
% App. Total	14.2	85.8		0	0		70.3	29.7	
PHF	.681	.802	.782	.000	.000	.000	.953	.609	.816

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 1

Groups Printed- Trucks

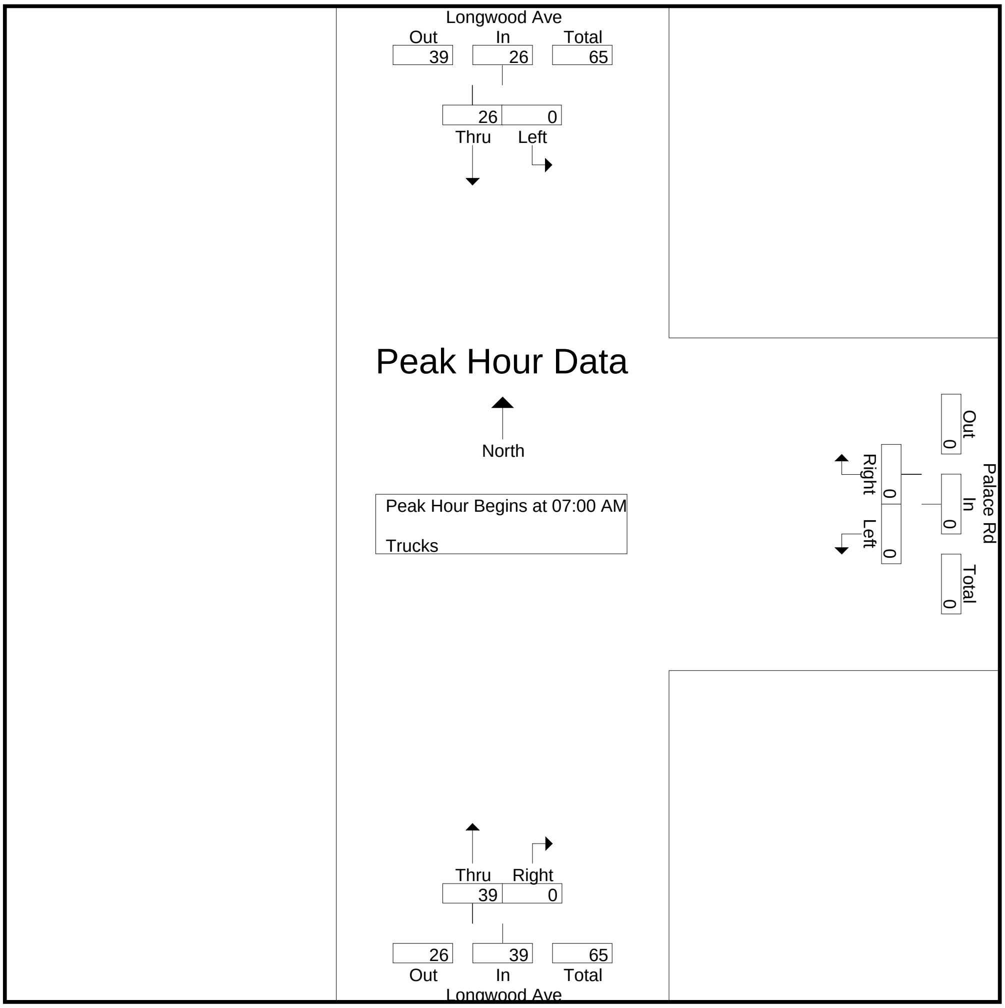
	Longwood Ave From North		Palace Rd From East		Longwood Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	0	7	0	0	14	0	21
07:15 AM	0	9	0	0	12	0	21
07:30 AM	0	4	0	0	8	0	12
07:45 AM	0	6	0	0	5	0	11
Total	0	26	0	0	39	0	65
08:00 AM	0	6	0	0	6	2	14
08:15 AM	1	3	0	0	2	0	6
08:30 AM	0	3	0	0	3	0	6
08:45 AM	0	4	0	0	5	0	9
Total	1	16	0	0	16	2	35
Grand Total	1	42	0	0	55	2	100
Apprch %	2.3	97.7	0	0	96.5	3.5	
Total %	1	42	0	0	55	2	

	Longwood Ave From North			Palace Rd From East			Longwood Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	7	7	0	0	0	**14**	0	**14**	**21**
07:15 AM	0	**9**	**9**	0	0	0	12	0	12	21
07:30 AM	0	4	4	0	0	0	8	0	8	12
07:45 AM	0	6	6	0	0	0	5	0	5	11
Total Volume	0	26	26	0	0	0	39	0	39	65
% App. Total	0	100		0	0		100	0		
PHF	.000	.722	.722	.000	.000	.000	.696	.000	.696	.774

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 2



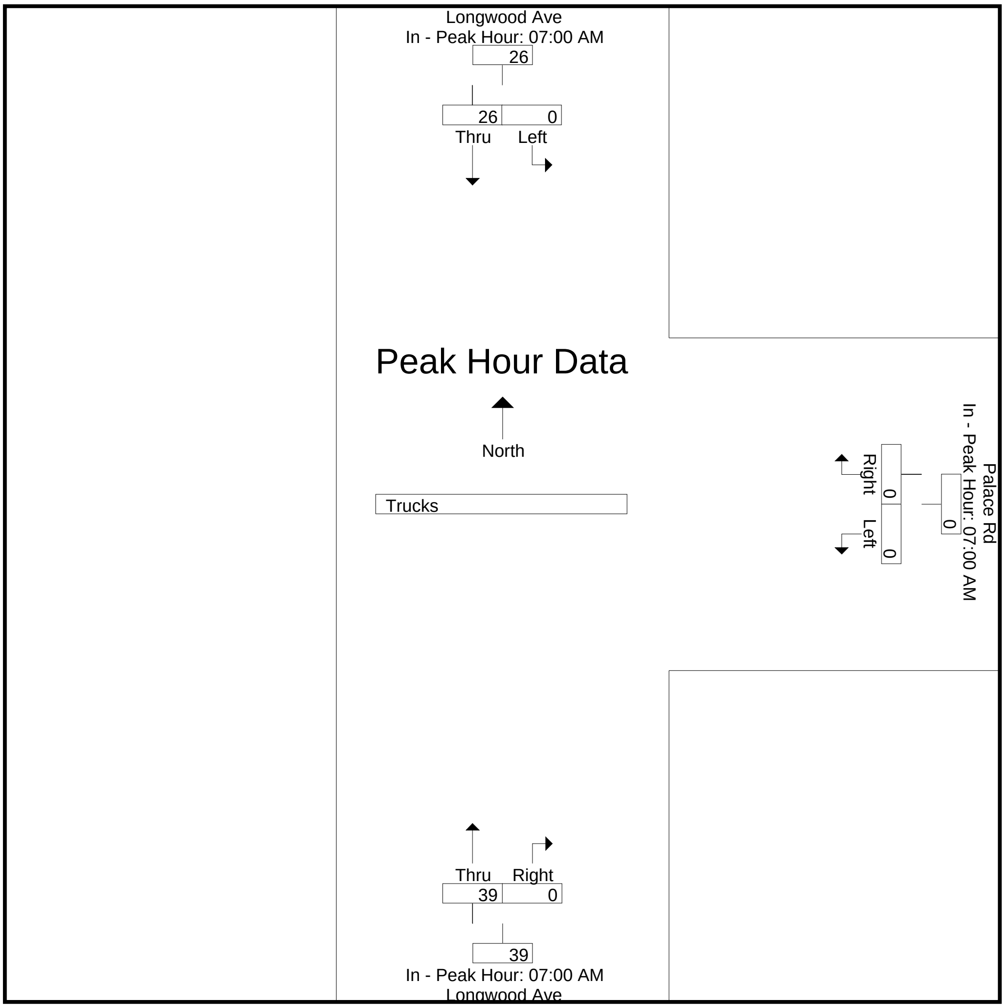
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	7	7	0	0	0	**14**	0	**14**
+15 mins.	0	**9**	**9**	0	0	0	12	0	12
+30 mins.	0	4	4	0	0	0	8	0	8
+45 mins.	0	6	6	0	0	0	5	0	5
Total Volume	0	26	26	0	0	0	39	0	39
% App. Total	0	100		0	0		100	0	
PHF	.000	.722	.722	.000	.000	.000	.696	.000	.696

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 1

Groups Printed- Bikes Peds

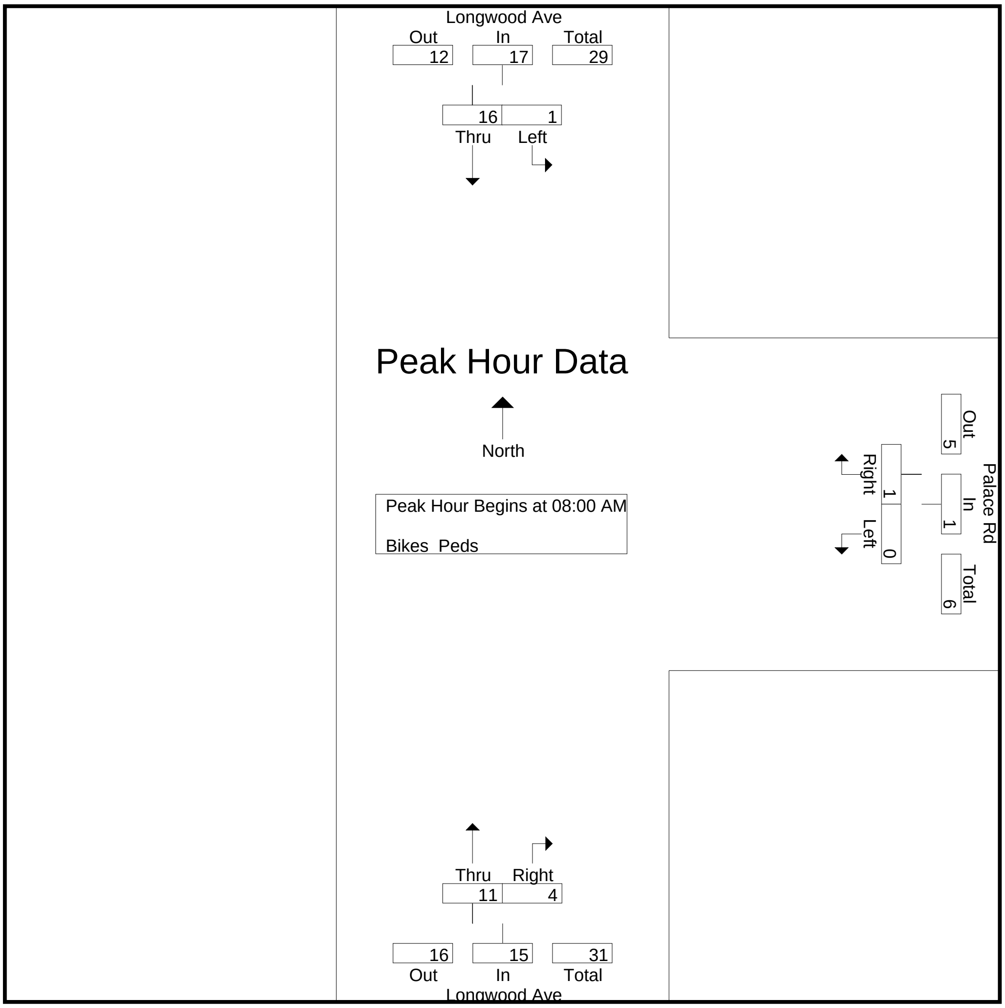
	Longwood Ave From North			Palace Rd From East			Longwood Ave From South					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	1	10	0	0	75	5	0	3	88	6	94
07:15 AM	0	1	17	0	1	85	3	0	0	102	5	107
07:30 AM	1	3	17	0	1	114	6	0	0	131	11	142
07:45 AM	0	4	12	0	1	77	1	0	1	90	6	96
Total	1	9	56	0	3	351	15	0	4	411	28	439
08:00 AM	0	5	29	0	0	144	1	2	0	173	8	181
08:15 AM	0	3	21	0	0	92	3	1	1	114	7	121
08:30 AM	1	3	28	0	1	149	5	1	1	178	11	189
08:45 AM	0	5	20	0	0	79	2	0	1	100	7	107
Total	1	16	98	0	1	464	11	4	3	565	33	598
Grand Total	2	25	154	0	4	815	26	4	7	976	61	1037
Apprch %	7.4	92.6		0	100		86.7	13.3				
Total %	3.3	41		0	6.6		42.6	6.6		94.1	5.9	

	Longwood Ave From North			Palace Rd From East			Longwood Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	0	**5**	**5**	0	0	0	1	**2**	3	8
08:15 AM	0	3	3	0	0	0	3	1	4	7
08:30 AM	**1**	3	4	0	**1**	**1**	**5**	1	**6**	**11**
08:45 AM	0	5	5	0	0	0	2	0	2	7
Total Volume	1	16	17	0	1	1	11	4	15	33
% App. Total	5.9	94.1		0	100		73.3	26.7		
PHF	.250	.800	.850	.000	.250	.250	.550	.500	.625	.750

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	**5**	**5**	0	0	0	5	0	5
+15 mins.	0	3	3	0	**1**	**1**	3	0	3
+30 mins.	**1**	3	4	0	1	1	**6**	0	**6**
+45 mins.	0	5	5	0	1	1	1	0	1
Total Volume	1	16	17	0	3	3	15	0	15
% App. Total	5.9	94.1		0	100		100	0	
PHF	.250	.800	.850	.000	.750	.750	.625	.000	.625

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
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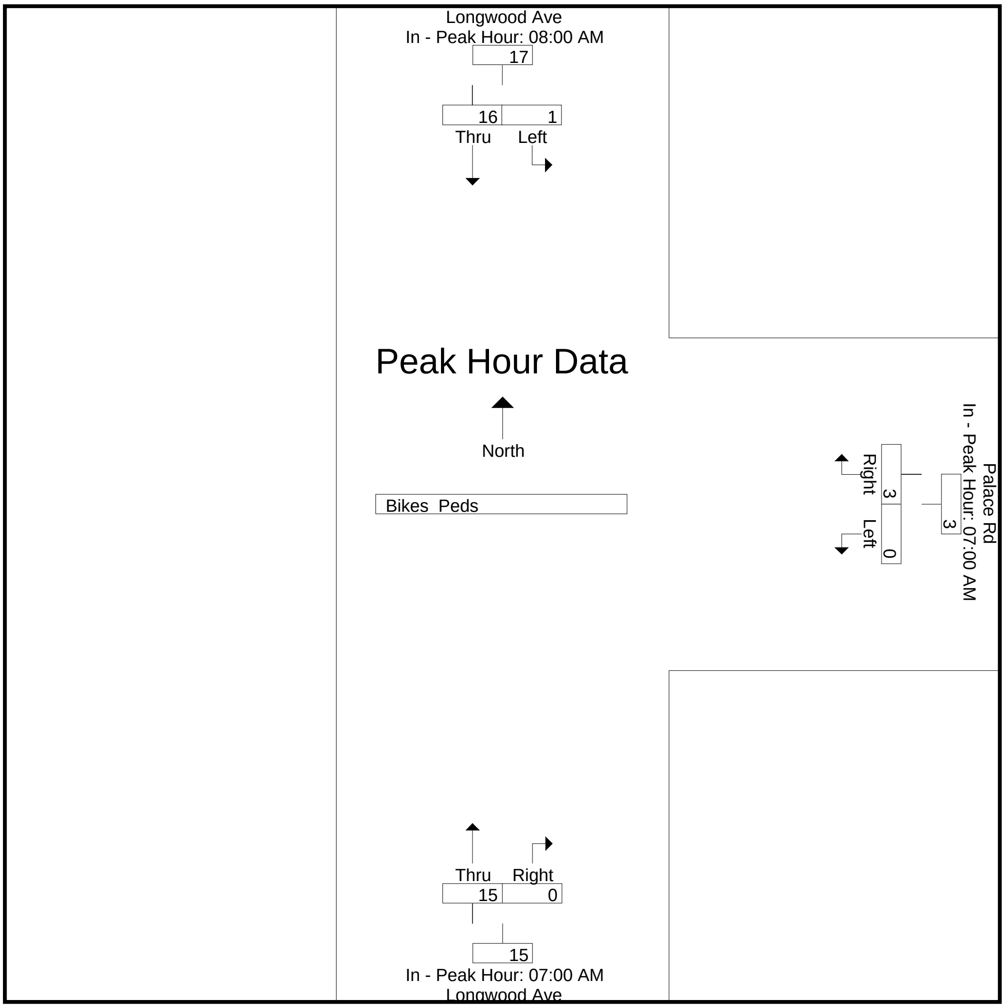


Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 1

Groups Printed- Cars - Trucks

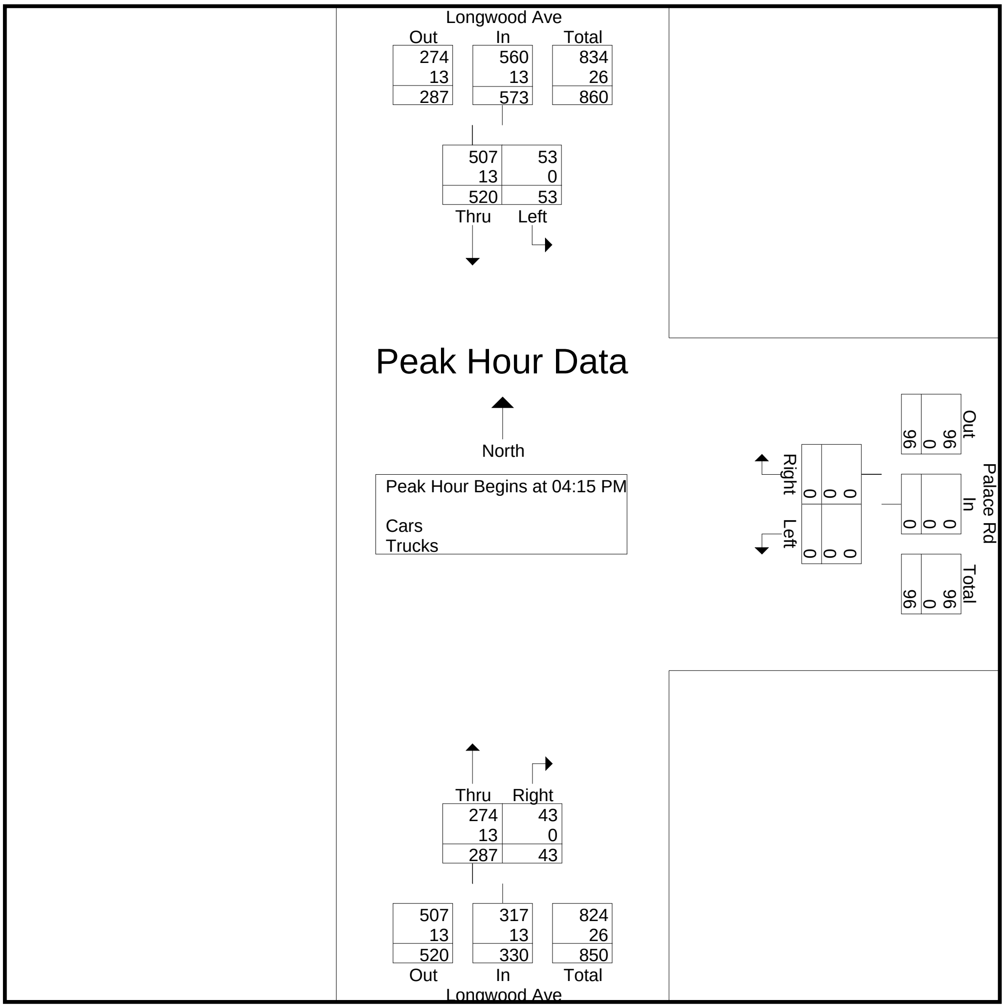
	Longwood Ave From North		Palace Rd From East		Longwood Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	10	114	1	0	77	7	209
04:15 PM	10	140	0	0	79	15	244
04:30 PM	9	118	0	0	65	6	198
04:45 PM	19	140	0	0	79	7	245
Total	48	512	1	0	300	35	896
05:00 PM	15	122	0	0	64	15	216
05:15 PM	11	140	0	1	59	3	214
05:30 PM	7	130	0	0	61	11	209
05:45 PM	17	106	0	0	64	10	197
Total	50	498	0	1	248	39	836
Grand Total	98	1010	1	1	548	74	1732
Apprch %	8.8	91.2	50	50	88.1	11.9	
Total %	5.7	58.3	0.1	0.1	31.6	4.3	
Cars	98	986	1	1	524	74	1684
% Cars	100	97.6	100	100	95.6	100	97.2
Trucks	0	24	0	0	24	0	48
% Trucks	0	2.4	0	0	4.4	0	2.8

	Longwood Ave From North			Palace Rd From East			Longwood Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	10	**140**	150	0	0	0	**79**	**15**	**94**	244
04:30 PM	9	118	127	0	0	0	65	6	71	198
04:45 PM	**19**	140	**159**	0	0	0	79	7	86	**245**
05:00 PM	15	122	137	0	0	0	64	15	79	216
Total Volume	53	520	573	0	0	0	287	43	330	903
% App. Total	9.2	90.8		0	0		87	13		
PHF	.697	.929	.901	.000	.000	.000	.908	.717	.878	.921
Cars	53	507	560	0	0	0	274	43	317	877
% Cars	100	97.5	97.7	0	0	0	95.5	100	96.1	97.1
Trucks	0	13	13	0	0	0	13	0	13	26
% Trucks	0	2.5	2.3	0	0	0	4.5	0	3.9	2.9

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 2

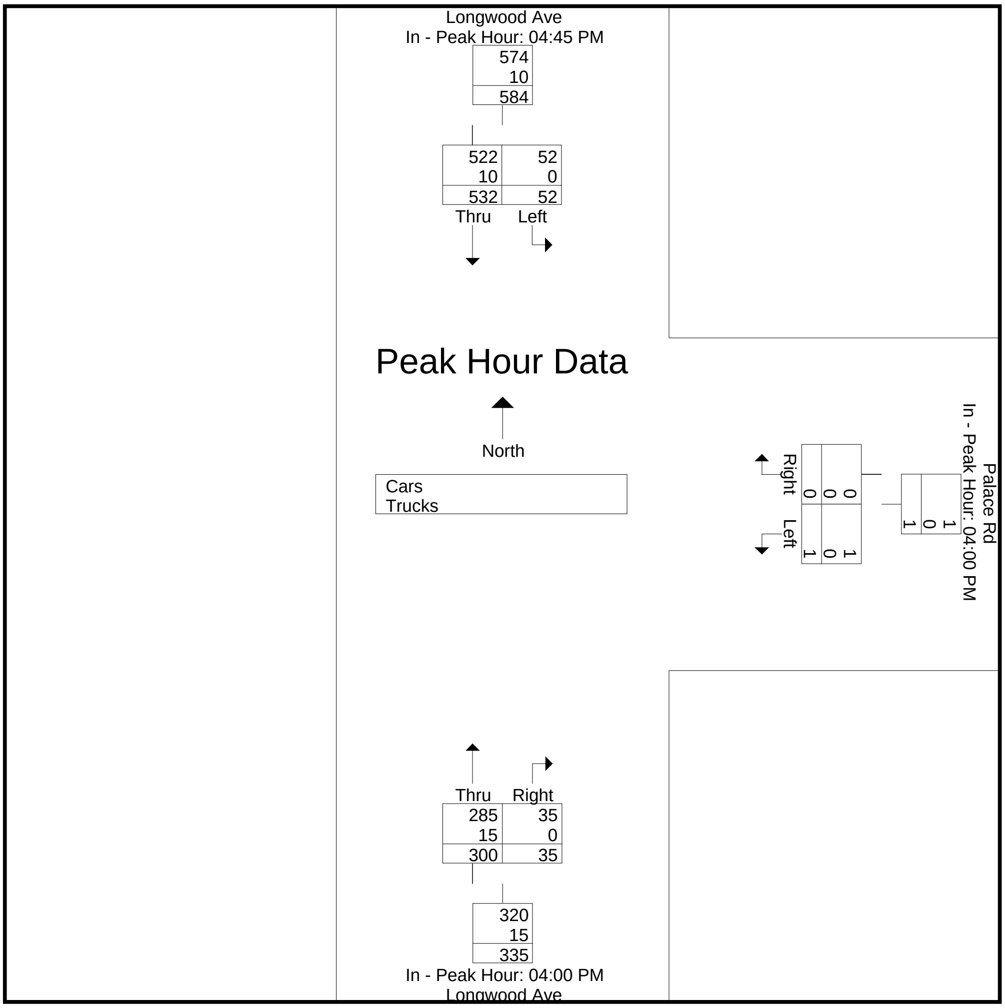


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:00 PM			04:00 PM		
+0 mins.	**19**	**140**	**159**	**1**	0	**1**	77	7	84
+15 mins.	15	122	137	0	0	0	**79**	**15**	**94**
+30 mins.	11	140	151	0	0	0	65	6	71
+45 mins.	7	130	137	0	0	0	79	7	86
Total Volume	52	532	584	1	0	1	300	35	335
% App. Total	8.9	91.1		100	0		89.6	10.4	
PHF	.684	.950	.918	.250	.000	.250	.949	.583	.891
Cars	52	522	574	1	0	1	285	35	320
% Cars	100	98.1	98.3	100	0	100	95	100	95.5
Trucks	0	10	10	0	0	0	15	0	15
% Trucks	0	1.9	1.7	0	0	0	5	0	4.5

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue	File Name : 94970024
E/W Street : Palace Road	Site Code : 94970024
City/State : Boston, MA	Start Date : 5/22/2012
Weather : Drizzle	Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 1

Groups Printed- Cars

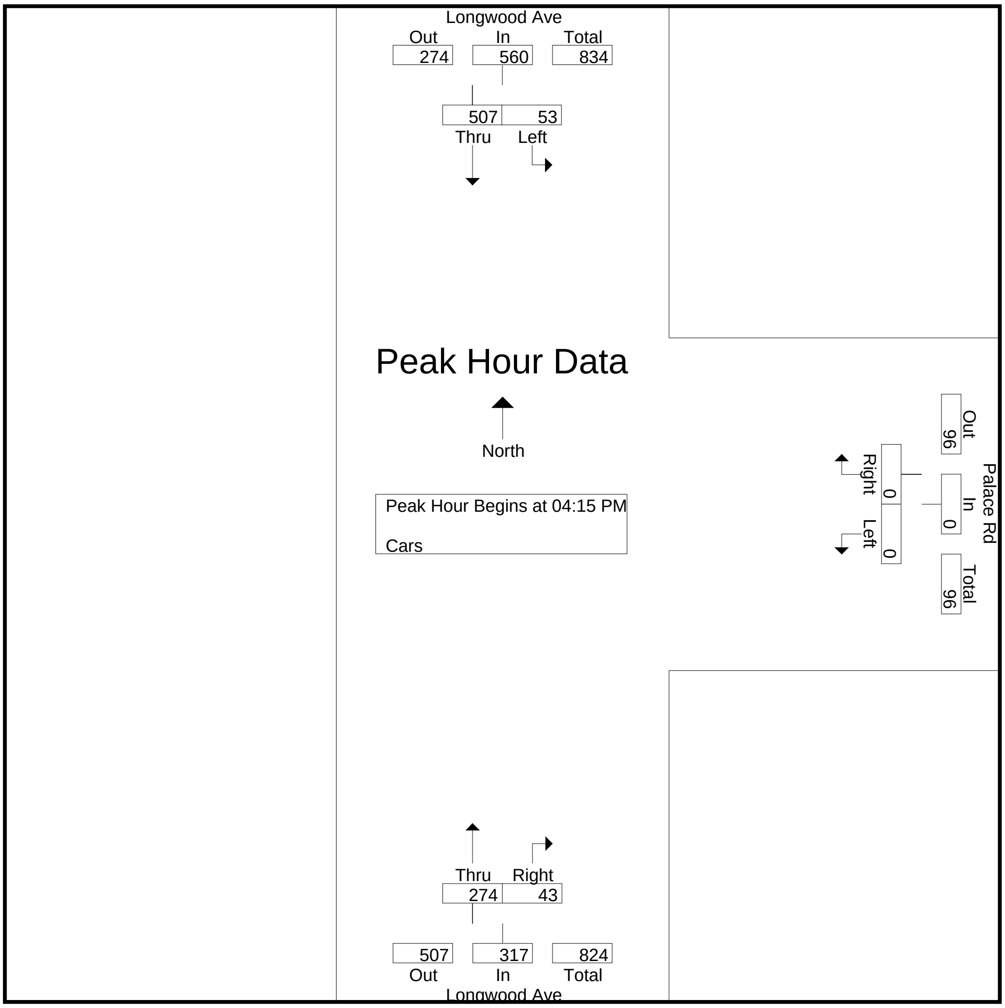
	Longwood Ave From North		Palace Rd From East		Longwood Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	10	109	1	0	72	7	199
04:15 PM	10	137	0	0	76	15	238
04:30 PM	9	114	0	0	62	6	191
04:45 PM	19	136	0	0	75	7	237
Total	48	496	1	0	285	35	865
05:00 PM	15	120	0	0	61	15	211
05:15 PM	11	139	0	1	57	3	211
05:30 PM	7	127	0	0	59	11	204
05:45 PM	17	104	0	0	62	10	193
Total	50	490	0	1	239	39	819
Grand Total	98	986	1	1	524	74	1684
Apprch %	9	91	50	50	87.6	12.4	
Total %	5.8	58.6	0.1	0.1	31.1	4.4	

	Longwood Ave From North			Palace Rd From East			Longwood Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	10	**137**	147	0	0	0	**76**	**15**	**91**	**238**
04:30 PM	9	114	123	0	0	0	62	6	68	191
04:45 PM	**19**	136	**155**	0	0	0	75	7	82	237
05:00 PM	15	120	135	0	0	0	61	15	76	211
Total Volume	53	507	560	0	0	0	274	43	317	877
% App. Total	9.5	90.5		0	0		86.4	13.6		
PHF	.697	.925	.903	.000	.000	.000	.901	.717	.871	.921

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 2



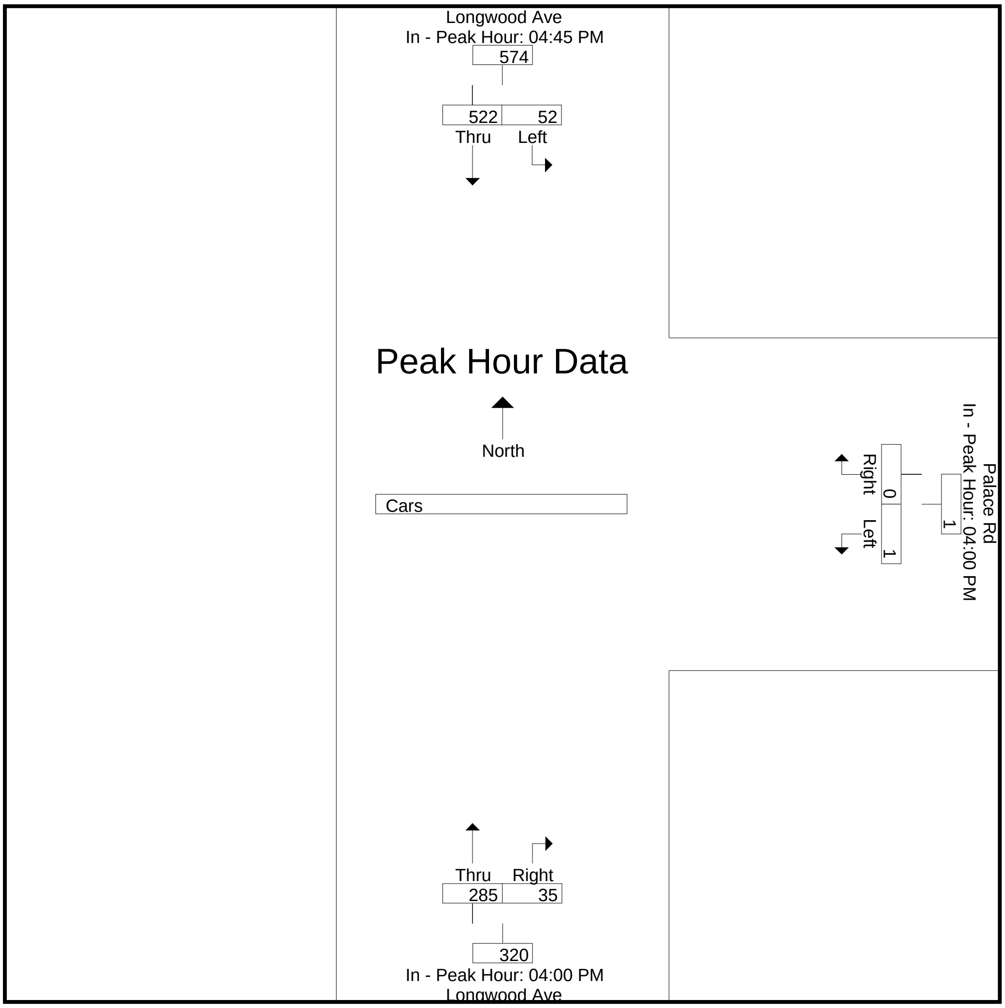
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:00 PM			04:00 PM		
+0 mins.	**19**	136	**155**	**1**	0	**1**	72	7	79
+15 mins.	15	120	135	0	0	0	**76**	**15**	**91**
+30 mins.	11	**139**	150	0	0	0	62	6	68
+45 mins.	7	127	134	0	0	0	75	7	82
Total Volume	52	522	574	1	0	1	285	35	320
% App. Total	9.1	90.9		100	0		89.1	10.9	
PHF	.684	.939	.926	.250	.000	.250	.938	.583	.879

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 3



N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012

Groups Printed- Trucks

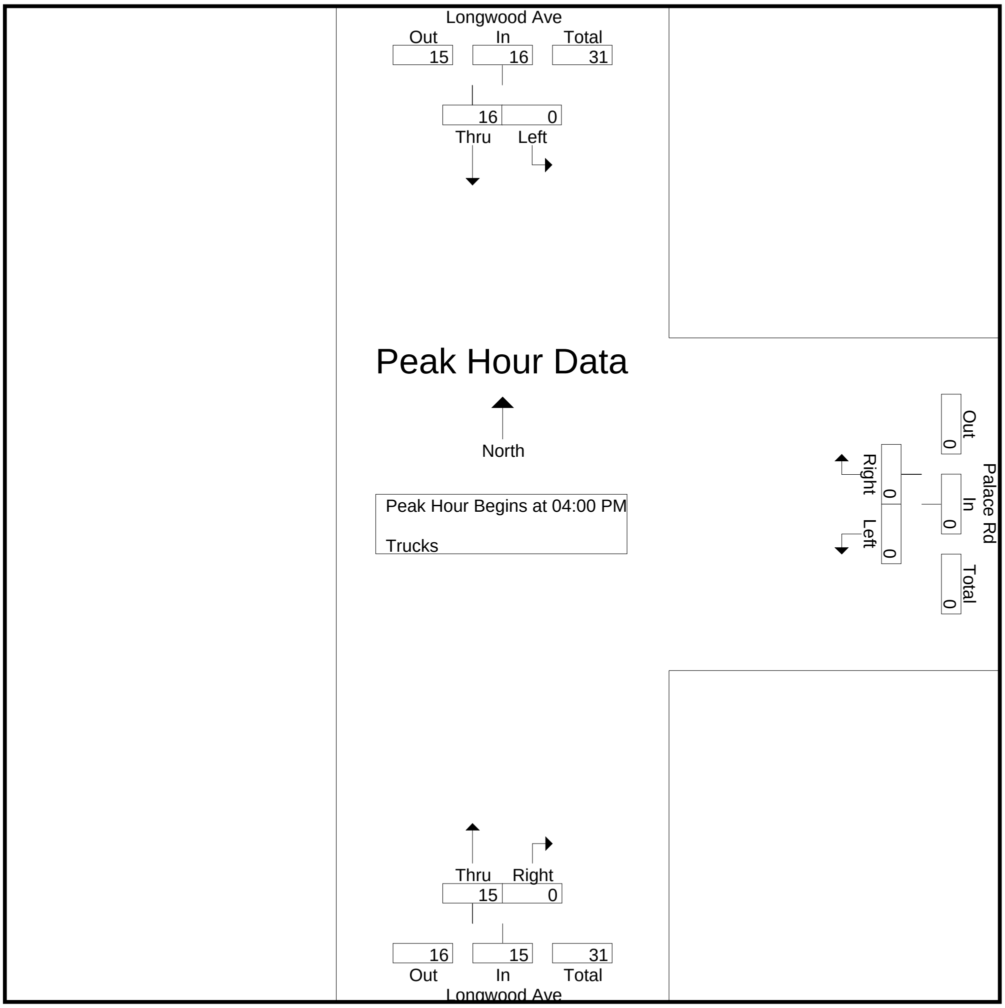
	Longwood Ave From North		Palace Rd From East		Longwood Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	0	5	0	0	5	0	10
04:15 PM	0	3	0	0	3	0	6
04:30 PM	0	4	0	0	3	0	7
04:45 PM	0	4	0	0	4	0	8
Total	0	16	0	0	15	0	31
05:00 PM	0	2	0	0	3	0	5
05:15 PM	0	1	0	0	2	0	3
05:30 PM	0	3	0	0	2	0	5
05:45 PM	0	2	0	0	2	0	4
Total	0	8	0	0	9	0	17
Grand Total	0	24	0	0	24	0	48
Apprch %	0	100	0	0	100	0	
Total %	0	50	0	0	50	0	

	Longwood Ave From North			Palace Rd From East			Longwood Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	**5**	**5**	0	0	0	**5**	0	**5**	**10**
04:15 PM	0	3	3	0	0	0	3	0	3	6
04:30 PM	0	4	4	0	0	0	3	0	3	7
04:45 PM	0	4	4	0	0	0	4	0	4	8
Total Volume	0	16	16	0	0	0	15	0	15	31
% App. Total	0	100		0	0		100	0		
PHF	.000	.800	.800	.000	.000	.000	.750	.000	.750	.775

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 2



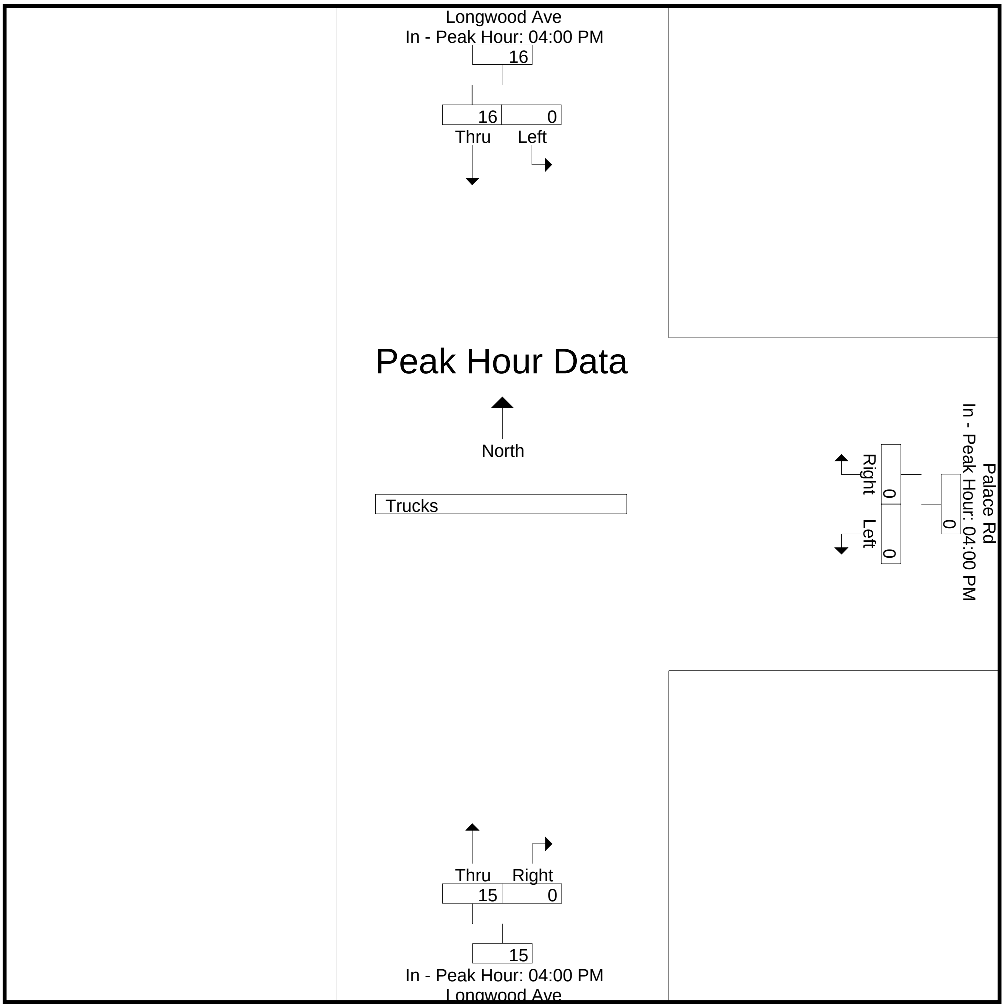
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	0	**5**	**5**	0	0	0	**5**	0	**5**
+15 mins.	0	3	3	0	0	0	3	0	3
+30 mins.	0	4	4	0	0	0	3	0	3
+45 mins.	0	4	4	0	0	0	4	0	4
Total Volume	0	16	16	0	0	0	15	0	15
% App. Total	0	100		0	0		100	0	
PHF	.000	.800	.800	.000	.000	.000	.750	.000	.750

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 1

Groups Printed- Bikes Peds

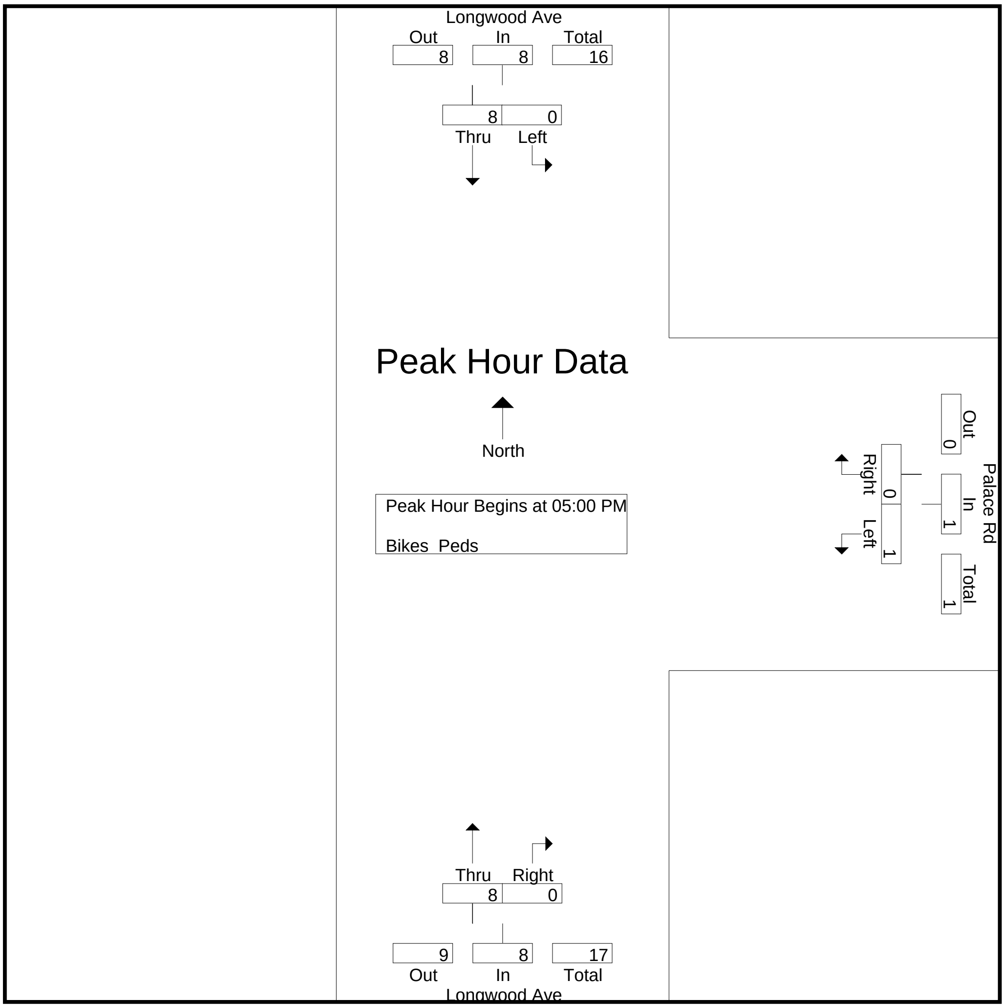
	Longwood Ave From North			Palace Rd From East			Longwood Ave From South					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	24	0	0	109	1	0	0	133	1	134
04:15 PM	0	1	22	0	0	90	1	0	0	112	2	114
04:30 PM	0	4	26	0	0	92	0	0	0	118	4	122
04:45 PM	0	3	34	0	0	96	3	0	2	132	6	138
Total	0	8	106	0	0	387	5	0	2	495	13	508
05:00 PM	0	1	21	0	0	137	2	0	0	158	3	161
05:15 PM	0	0	10	0	0	114	3	0	2	126	3	129
05:30 PM	0	1	13	0	0	103	1	0	0	116	2	118
05:45 PM	0	6	12	1	0	88	2	0	1	101	9	110
Total	0	8	56	1	0	442	8	0	3	501	17	518
Grand Total	0	16	162	1	0	829	13	0	5	996	30	1026
Apprch %	0	100		100	0		100	0				
Total %	0	53.3		3.3	0		43.3	0		97.1	2.9	

	Longwood Ave From North			Palace Rd From East			Longwood Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	1	1	0	0	0	2	0	2	3
05:15 PM	0	0	0	0	0	0	**3**	0	**3**	3
05:30 PM	0	1	1	0	0	0	1	0	1	2
05:45 PM	0	**6**	**6**	**1**	0	**1**	2	0	2	**9**
Total Volume	0	8	8	1	0	1	8	0	8	17
% App. Total	0	100		100	0		100	0		
PHF	.000	.333	.333	.250	.000	.250	.667	.000	.667	.472

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 2



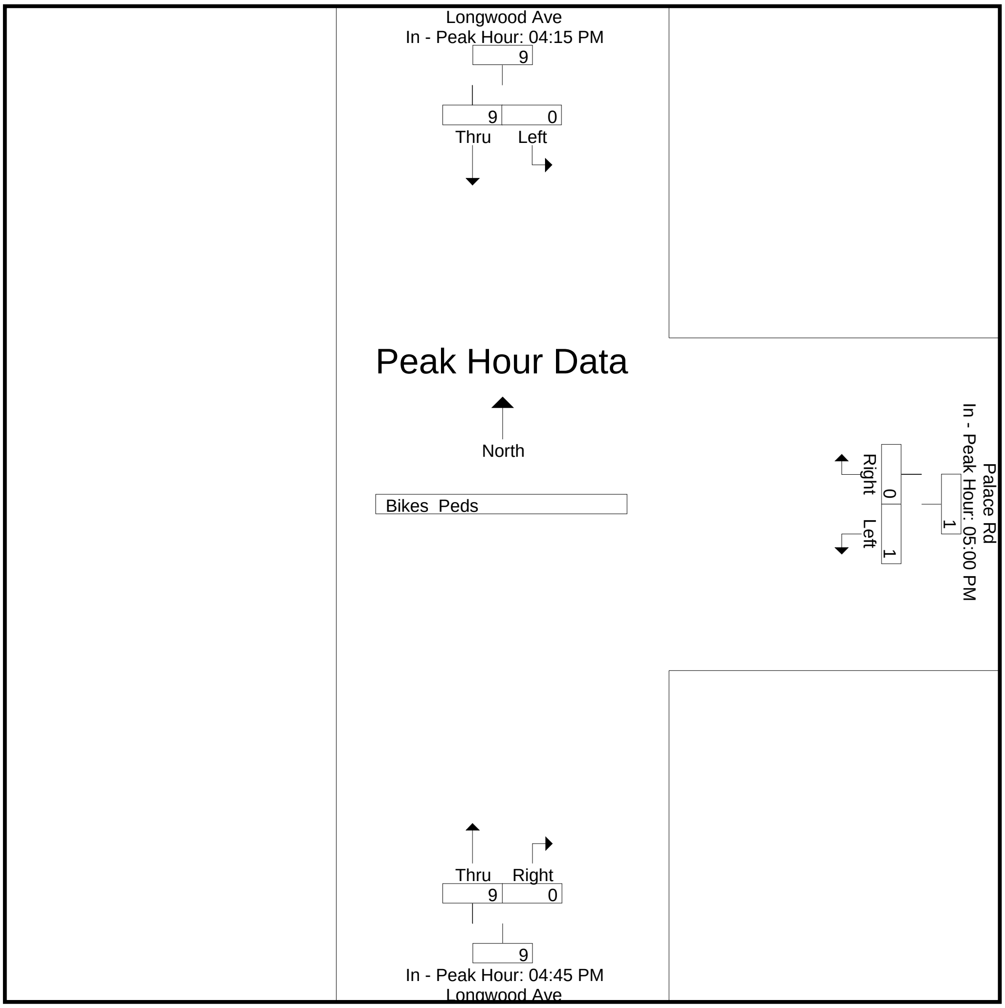
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			05:00 PM			04:45 PM		
+0 mins.	0	1	1	0	0	0	**3**	0	**3**
+15 mins.	0	**4**	**4**	0	0	0	2	0	2
+30 mins.	0	3	3	0	0	0	3	0	3
+45 mins.	0	1	1	**1**	0	**1**	1	0	1
Total Volume	0	9	9	1	0	1	9	0	9
% App. Total	0	100		100	0		100	0	
PHF	.000	.563	.563	.250	.000	.250	.750	.000	.750

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Palace Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970024
Site Code : 94970024
Start Date : 5/22/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

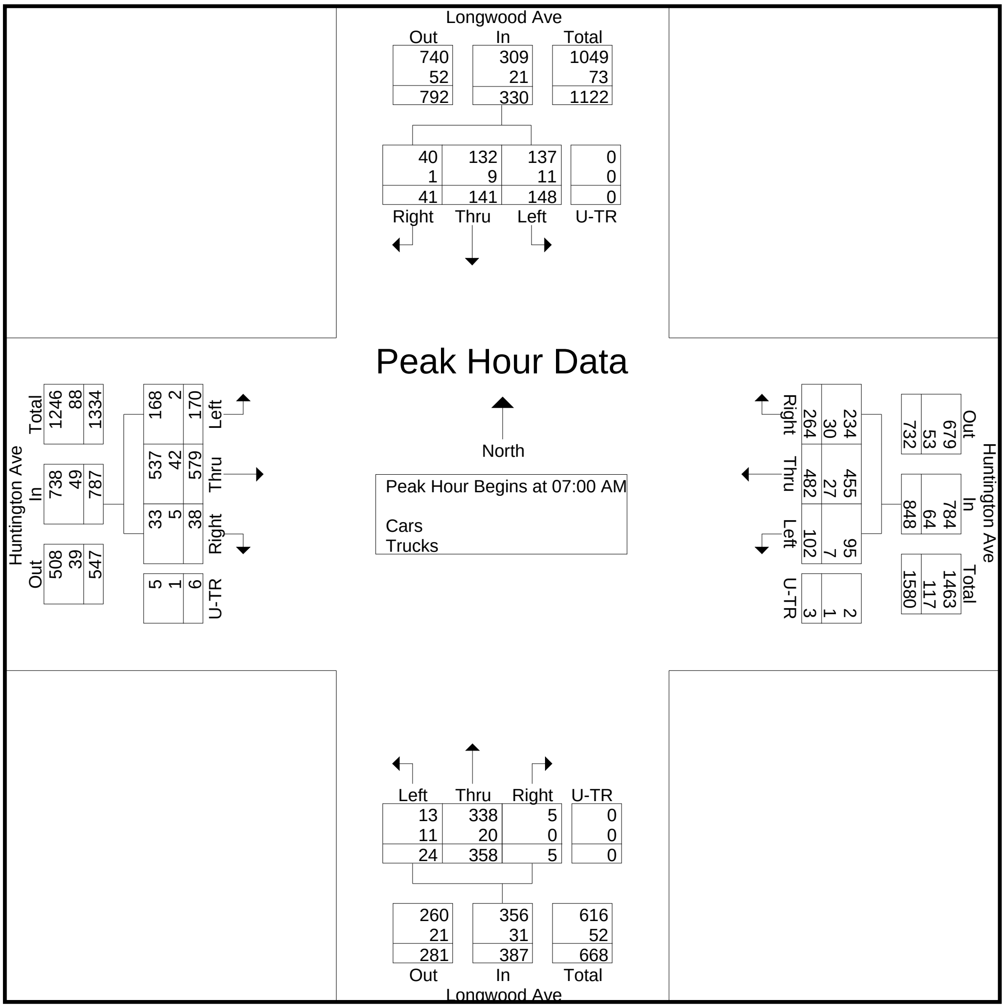
	Longwood Ave From North				Huntington Ave From East				Longwood Ave From South				Huntington Ave From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
07:00 AM	33	40	9	0	25	110	68	0	4	93	1	0	38	120	9	1	551
07:15 AM	31	46	9	0	24	128	69	1	8	117	0	0	45	120	5	0	603
07:30 AM	50	33	16	0	32	134	61	2	2	95	2	0	56	164	19	2	668
07:45 AM	34	22	7	0	21	110	66	0	10	53	2	0	31	175	5	3	539
Total	148	141	41	0	102	482	264	3	24	358	5	0	170	579	38	6	2361
08:00 AM	22	25	16	0	22	91	54	0	8	42	7	0	31	145	6	6	475
08:15 AM	25	33	11	0	21	94	52	1	5	63	0	0	27	114	6	9	461
08:30 AM	23	28	8	0	19	94	62	0	4	46	7	0	26	115	8	4	444
08:45 AM	36	30	7	0	21	108	52	0	5	60	0	0	32	134	7	2	494
Total	106	116	42	0	83	387	220	1	22	211	14	0	116	508	27	21	1874
Grand Total	254	257	83	0	185	869	484	4	46	569	19	0	286	1087	65	27	4235
Apprch %	42.8	43.3	14	0	12	56.4	31.4	0.3	7.3	89.7	3	0	19.5	74.2	4.4	1.8	
Total %	6	6.1	2	0	4.4	20.5	11.4	0.1	1.1	13.4	0.4	0	6.8	25.7	1.5	0.6	
Cars	232	239	80	0	177	814	438	3	25	538	19	0	280	1009	56	26	3936
% Cars	91.3	93	96.4	0	95.7	93.7	90.5	75	54.3	94.6	100	0	97.9	92.8	86.2	96.3	92.9
Trucks	22	18	3	0	8	55	46	1	21	31	0	0	6	78	9	1	299
% Trucks	8.7	7	3.6	0	4.3	6.3	9.5	25	45.7	5.4	0	0	2.1	7.2	13.8	3.7	7.1

	Longwood Ave From North					Huntington Ave From East					Longwood Ave From South					Huntington Ave From West					
Start Time	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	33	40	9	0	82	25	110	68	0	203	4	93	1	0	98	38	120	9	1	168	551
07:15 AM	31	**46**	9	0	86	24	128	**69**	1	222	8	**117**	0	0	**125**	45	120	5	0	170	603
07:30 AM	**50**	33	**16**	0	**99**	**32**	**134**	61	**2**	**229**	2	95	**2**	0	99	**56**	164	**19**	2	**241**	**668**
07:45 AM	34	22	7	0	63	21	110	66	0	197	**10**	53	2	0	65	31	**175**	5	**3**	214	539
Total Volume	148	141	41	0	330	102	482	264	3	851	24	358	5	0	387	170	579	38	6	793	2361
% App. Total	44.8	42.7	12.4	0		12	56.6	31	0.4		6.2	92.5	1.3	0		21.4	73	4.8	0.8		
PHF	.740	.766	.641	.000	.833	.797	.899	.957	.375	.929	.600	.765	.625	.000	.774	.759	.827	.500	.500	.823	.884
Cars	137	132	40	0	309	95	455	234	2	786	13	338	5	0	356	168	537	33	5	743	2194
% Cars	92.6	93.6	97.6	0	93.6	93.1	94.4	88.6	66.7	92.4	54.2	94.4	100	0	92.0	98.8	92.7	86.8	83.3	93.7	92.9
Trucks	11	9	1	0	21	7	27	30	1	65	11	20	0	0	31	2	42	5	1	50	167
% Trucks	7.4	6.4	2.4	0	6.4	6.9	5.6	11.4	33.3	7.6	45.8	5.6	0	0	8.0	1.2	7.3	13.2	16.7	6.3	7.1

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 2



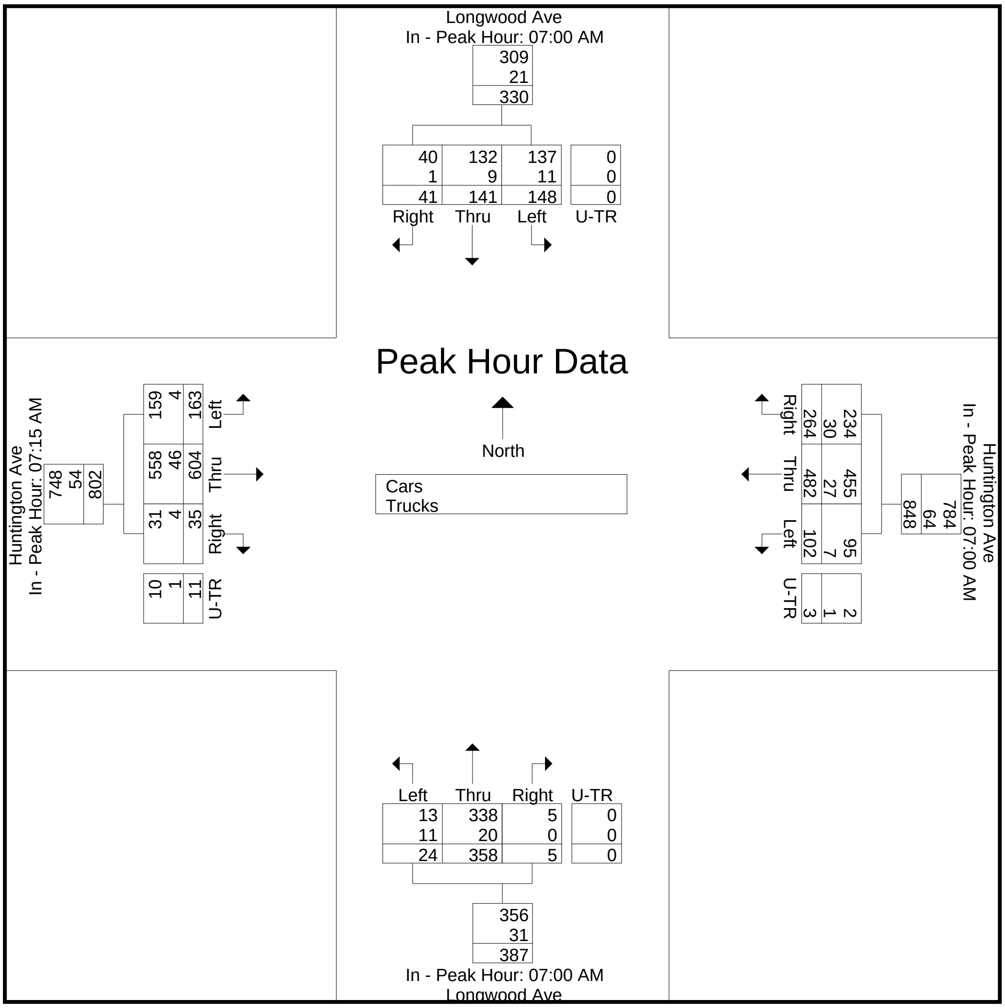
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM					07:00 AM					07:00 AM					07:15 AM				
+0 mins.	33	40	9	0	82	25	110	68	0	203	4	93	1	0	98	45	120	5	0	170
+15 mins.	31	**46**	9	0	86	24	128	**69**	1	222	8	**117**	0	0	**125**	**56**	164	**19**	2	**241**
+30 mins.	**50**	33	**16**	0	**99**	**32**	**134**	61	**2**	**229**	2	95	**2**	0	99	31	**175**	5	3	214
+45 mins.	34	22	7	0	63	21	110	66	0	197	**10**	53	2	0	65	31	145	6	**6**	188
Total Volume	148	141	41	0	330	102	482	264	3	851	24	358	5	0	387	163	604	35	11	813
% App. Total	44.8	42.7	12.4	0		12	56.6	31	0.4		6.2	92.5	1.3	0		20	74.3	4.3	1.4	
PHF	.740	.766	.641	.000	.833	.797	.899	.957	.375	.929	.600	.765	.625	.000	.774	.728	.863	.461	.458	.843
Cars	137	132	40	0	309	95	455	234	2	786	13	338	5	0	356	159	558	31	10	758
% Cars	92.6	93.6	97.6	0	93.6	93.1	94.4	88.6	66.7	92.4	54.2	94.4	100	0	92	97.5	92.4	88.6	90.9	93.2
Trucks	11	9	1	0	21	7	27	30	1	65	11	20	0	0	31	4	46	4	1	55
% Trucks	7.4	6.4	2.4	0	6.4	6.9	5.6	11.4	33.3	7.6	45.8	5.6	0	0	8	2.5	7.6	11.4	9.1	6.8

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

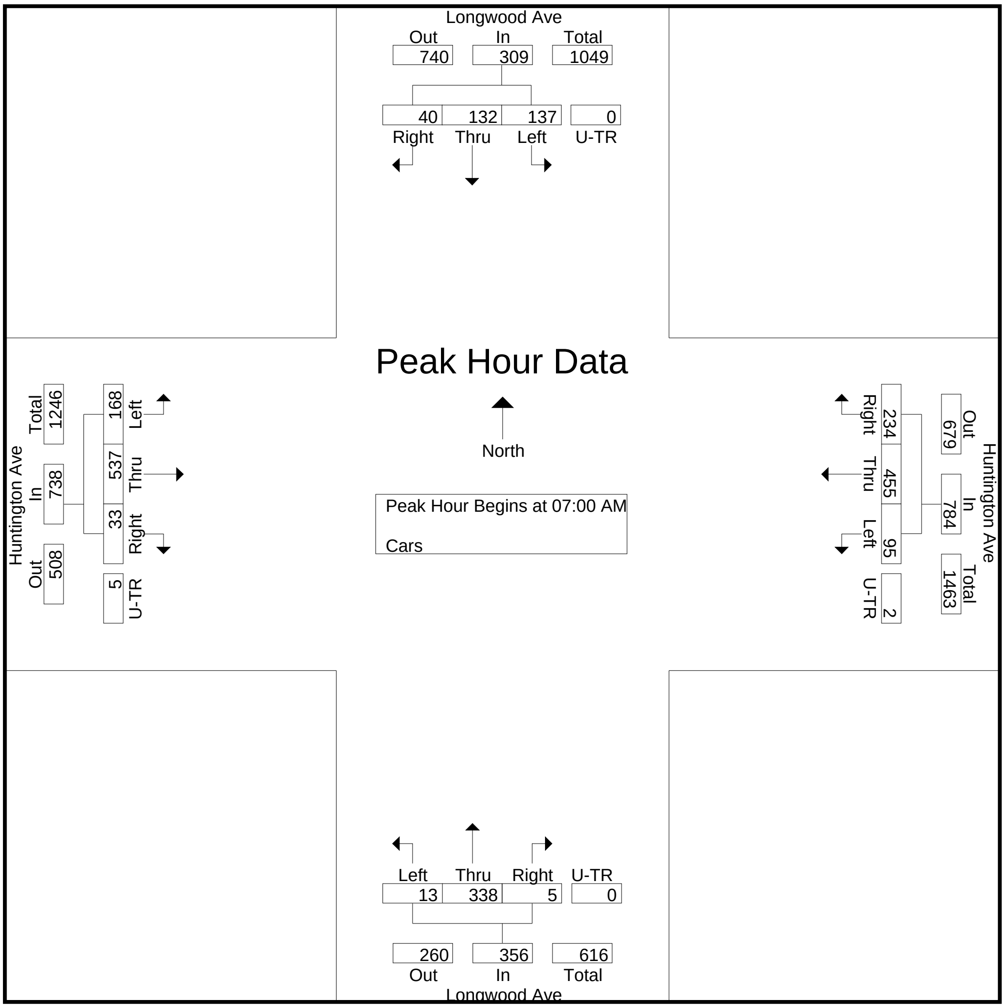
	Longwood Ave From North				**Huntington Ave From East**				**Longwood Ave From South**				**Huntington Ave From West**				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
07:00 AM	32	38	9	0	24	104	62	0	2	86	1	0	38	111	8	1	516
07:15 AM	29	41	9	0	21	119	59	1	6	108	0	0	44	108	5	0	550
07:30 AM	45	32	16	0	30	127	55	1	1	93	2	0	56	154	15	2	629
07:45 AM	31	21	6	0	20	105	58	0	4	51	2	0	30	164	5	2	499
Total	137	132	40	0	95	455	234	2	13	338	5	0	168	537	33	5	2194
08:00 AM	18	22	14	0	22	85	47	0	4	39	7	0	29	132	6	6	431
08:15 AM	24	31	11	0	21	85	50	1	4	61	0	0	26	108	5	9	436
08:30 AM	20	27	8	0	19	85	59	0	2	44	7	0	25	106	6	4	412
08:45 AM	33	27	7	0	20	104	48	0	2	56	0	0	32	126	6	2	463
Total	95	107	40	0	82	359	204	1	12	200	14	0	112	472	23	21	1742
Grand Total	232	239	80	0	177	814	438	3	25	538	19	0	280	1009	56	26	3936
Apprch %	42.1	43.4	14.5	0	12.4	56.8	30.6	0.2	4.3	92.4	3.3	0	20.4	73.6	4.1	1.9	
Total %	5.9	6.1	2	0	4.5	20.7	11.1	0.1	0.6	13.7	0.5	0	7.1	25.6	1.4	0.7	

	Longwood Ave From North					**Huntington Ave From East**					**Longwood Ave From South**					**Huntington Ave From West**					
Start Time	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	32	38	9	0	79	24	104	**62**	0	190	2	86	1	0	89	38	111	8	1	158	516
07:15 AM	29	**41**	9	0	79	21	119	59	**1**	200	**6**	**108**	0	0	**114**	44	108	5	0	157	550
07:30 AM	**45**	32	**16**	0	**93**	**30**	**127**	55	1	**213**	1	93	**2**	0	96	**56**	154	**15**	**2**	**227**	**629**
07:45 AM	31	21	6	0	58	20	105	58	0	183	4	51	2	0	57	30	**164**	5	2	201	499
Total Volume	137	132	40	0	309	95	455	234	2	786	13	338	5	0	356	168	537	33	5	743	2194
% App. Total	44.3	42.7	12.9	0		12.1	57.9	29.8	0.3		3.7	94.9	1.4	0		22.6	72.3	4.4	0.7		
PHF	.761	.805	.625	.000	.831	.792	.896	.944	.500	.923	.542	.782	.625	.000	.781	.750	.819	.550	.625	.818	.872

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 2



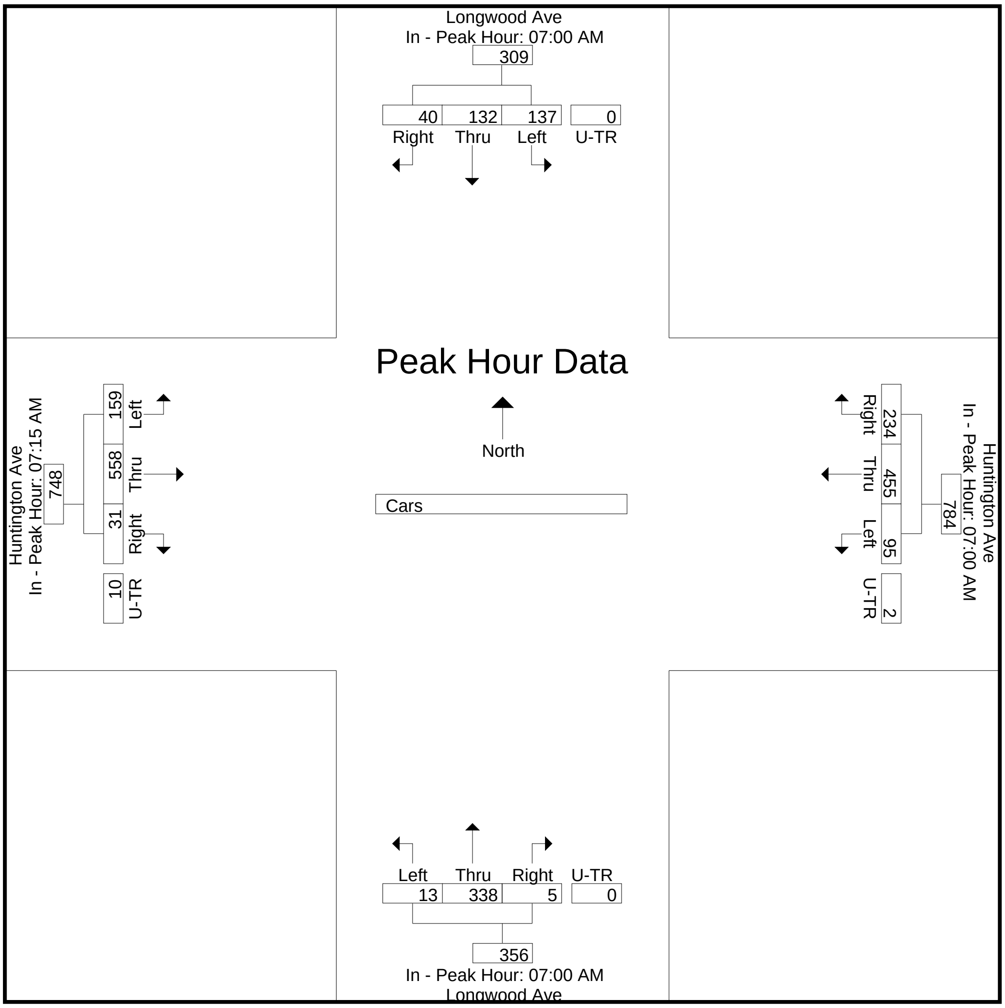
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM					07:00 AM					07:00 AM					07:15 AM				
+0 mins.	32	38	9	0	79	24	104	**62**	0	190	2	86	1	0	89	44	108	5	0	157
+15 mins.	29	**41**	9	0	79	21	119	59	**1**	200	**6**	**108**	0	0	**114**	**56**	154	**15**	2	**227**
+30 mins.	**45**	32	**16**	0	**93**	**30**	**127**	55	1	**213**	1	93	**2**	0	96	30	**164**	5	2	201
+45 mins.	31	21	6	0	58	20	105	58	0	183	4	51	2	0	57	29	132	6	**6**	173
Total Volume	137	132	40	0	309	95	455	234	2	786	13	338	5	0	356	159	558	31	10	758
% App. Total	44.3	42.7	12.9	0		12.1	57.9	29.8	0.3		3.7	94.9	1.4	0		21	73.6	4.1	1.3	
PHF	.761	.805	.625	.000	.831	.792	.896	.944	.500	.923	.542	.782	.625	.000	.781	.710	.851	.517	.417	.835

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 1

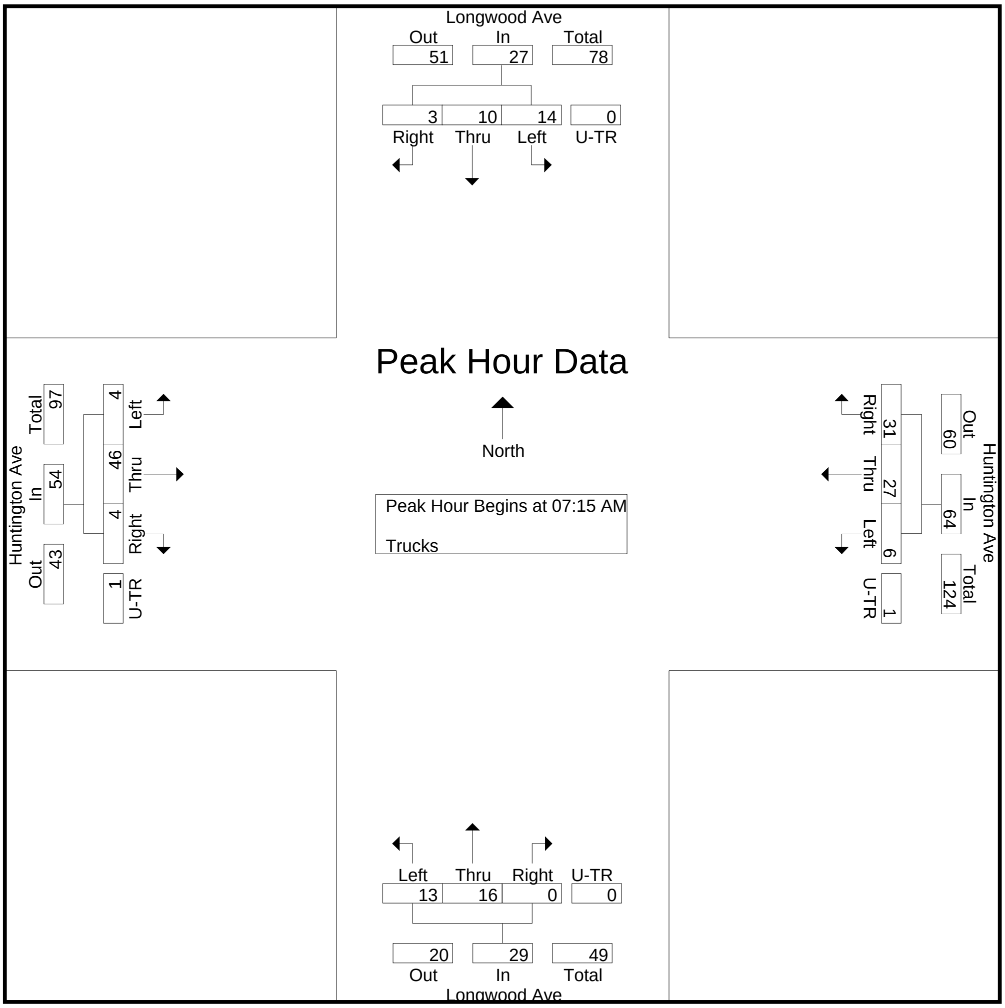
Groups Printed- Trucks

	Longwood Ave From North				Huntington Ave From East				Longwood Ave From South				Huntington Ave From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
07:00 AM	1	2	0	0	1	6	6	0	2	7	0	0	0	9	1	0	35
07:15 AM	2	5	0	0	3	9	10	0	2	9	0	0	1	12	0	0	53
07:30 AM	5	1	0	0	2	7	6	1	1	2	0	0	0	10	4	0	39
07:45 AM	3	1	1	0	1	5	8	0	6	2	0	0	1	11	0	1	40
Total	11	9	1	0	7	27	30	1	11	20	0	0	2	42	5	1	167
08:00 AM	4	3	2	0	0	6	7	0	4	3	0	0	2	13	0	0	44
08:15 AM	1	2	0	0	0	9	2	0	1	2	0	0	1	6	1	0	25
08:30 AM	3	1	0	0	0	9	3	0	2	2	0	0	1	9	2	0	32
08:45 AM	3	3	0	0	1	4	4	0	3	4	0	0	0	8	1	0	31
Total	11	9	2	0	1	28	16	0	10	11	0	0	4	36	4	0	132
Grand Total	22	18	3	0	8	55	46	1	21	31	0	0	6	78	9	1	299
Apprch %	51.2	41.9	7	0	7.3	50	41.8	0.9	40.4	59.6	0	0	6.4	83	9.6	1.1	
Total %	7.4	6	1	0	2.7	18.4	15.4	0.3	7	10.4	0	0	2	26.1	3	0.3	

	Longwood Ave From North					Huntington Ave From East					Longwood Ave From South					Huntington Ave From West					
Start Time	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	2	**5**	0	0	7	**3**	**9**	**10**	0	**22**	2	**9**	0	0	**11**	1	12	0	0	13	**53**
07:30 AM	**5**	1	0	0	6	2	7	6	**1**	16	1	2	0	0	3	0	10	**4**	0	14	39
07:45 AM	3	1	1	0	5	1	5	8	0	14	**6**	2	0	0	8	1	11	0	**1**	13	40
08:00 AM	4	3	**2**	0	**9**	0	6	7	0	13	4	3	0	0	7	**2**	**13**	0	0	**15**	44
Total Volume	14	10	3	0	27	6	27	31	1	65	13	16	0	0	29	4	46	4	1	55	176
% App. Total	51.9	37	11.1	0		9.2	41.5	47.7	1.5		44.8	55.2	0	0		7.3	83.6	7.3	1.8		
PHF	.700	.500	.375	.000	.750	.500	.750	.775	.250	.739	.542	.444	.000	.000	.659	.500	.885	.250	.250	.917	.830

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue	File Name : 94970025
E/W Street: Huntington Avenue	Site Code : 94970025
City/State : Boston, MA	Start Date : 5/16/2012
Weather : Drizzle	Page No : 2



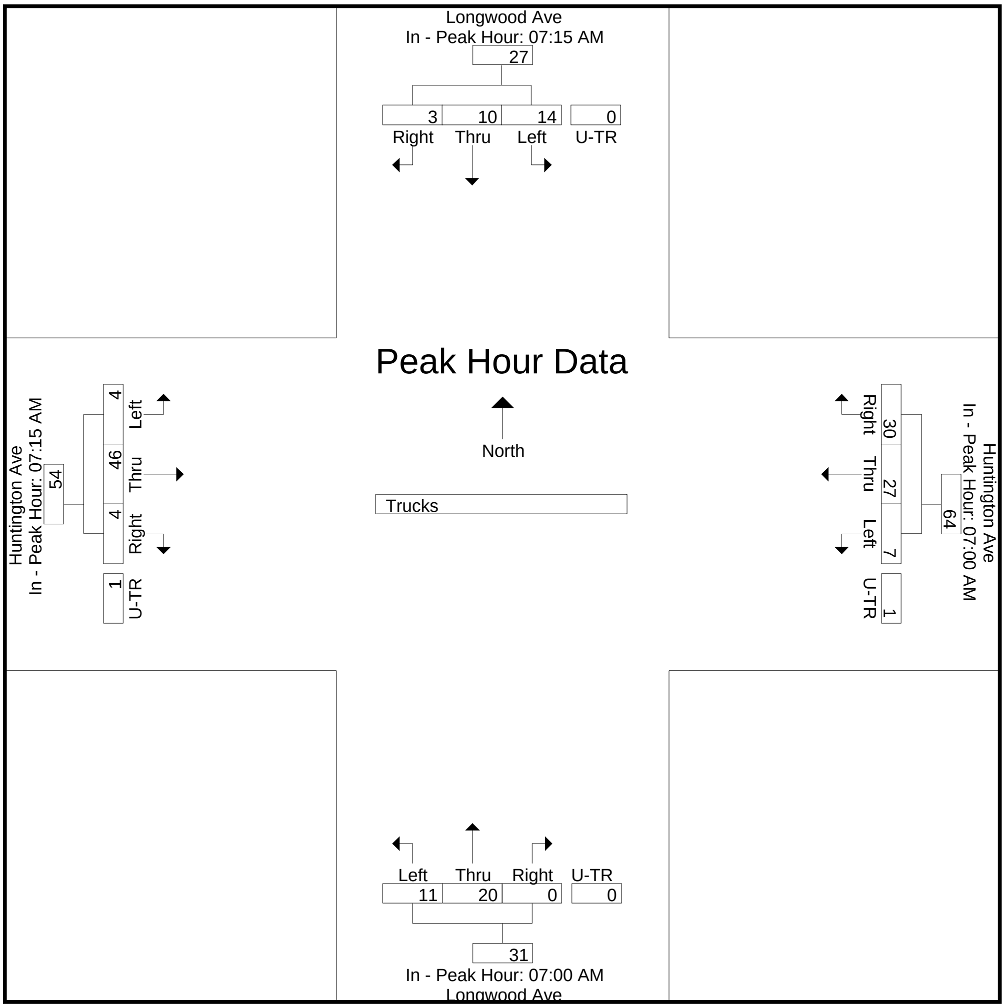
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM					07:00 AM					07:00 AM					07:15 AM				
+0 mins.	2	**5**	0	0	7	1	6	6	0	13	2	7	0	0	9	1	12	0	0	13
+15 mins.	**5**	1	0	0	6	**3**	**9**	**10**	0	**22**	2	**9**	0	0	**11**	0	10	**4**	0	14
+30 mins.	3	1	1	0	5	2	7	6	**1**	16	1	2	0	0	3	1	11	0	**1**	13
+45 mins.	4	3	**2**	0	**9**	1	5	8	0	14	**6**	2	0	0	8	**2**	**13**	0	0	**15**
Total Volume	14	10	3	0	27	7	27	30	1	65	11	20	0	0	31	4	46	4	1	55
% App. Total	51.9	37	11.1	0		10.8	41.5	46.2	1.5		35.5	64.5	0	0		7.3	83.6	7.3	1.8	
PHF	.700	.500	.375	.000	.750	.583	.750	.750	.250	.739	.458	.556	.000	.000	.705	.500	.885	.250	.250	.917

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes

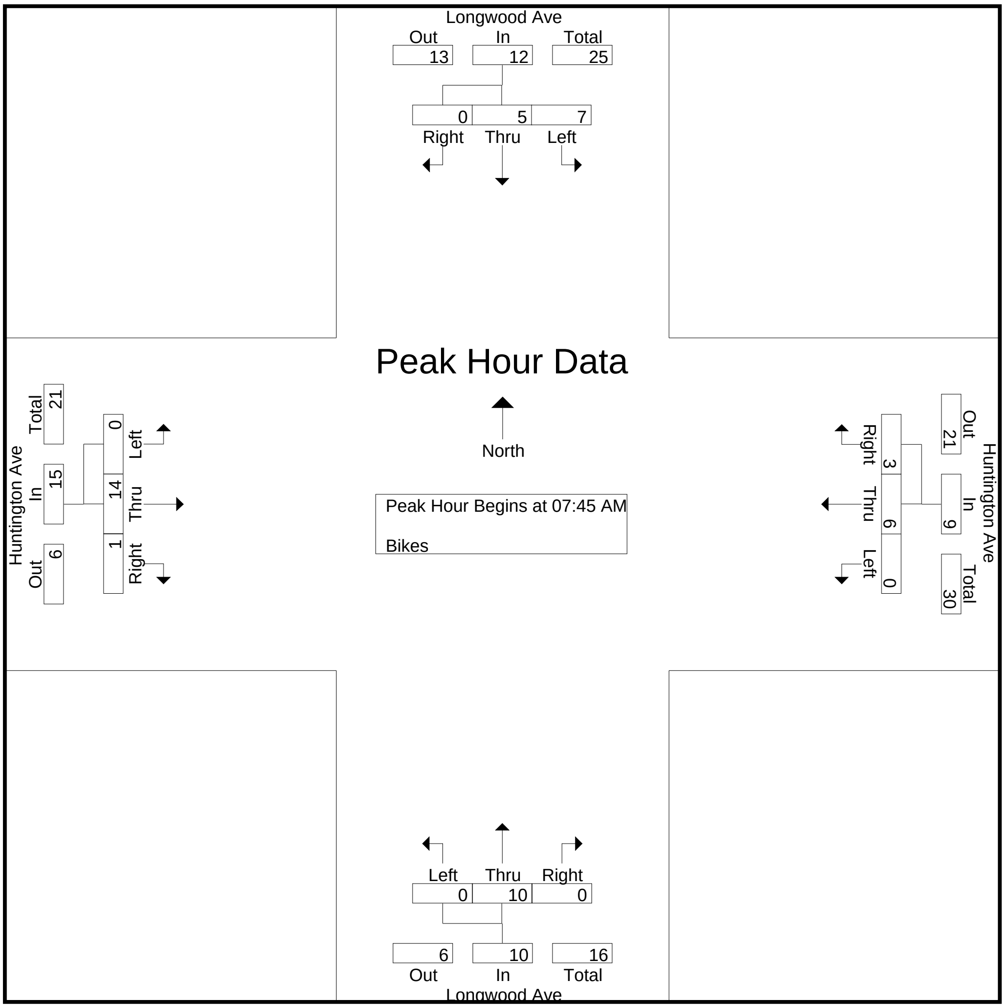
	Longwood Ave From North			Huntington Ave From East			Longwood Ave From South			Huntington Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	0	0	0	0	2	0	0	1	0	3
07:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
07:30 AM	0	2	0	0	0	2	0	2	0	0	2	0	8
07:45 AM	2	1	0	0	5	1	0	2	0	0	3	0	14
Total	2	3	0	0	5	3	0	7	0	0	6	0	26
08:00 AM	3	1	0	0	0	0	0	2	0	0	5	0	11
08:15 AM	0	0	0	0	1	0	0	4	0	0	3	0	8
08:30 AM	2	3	0	0	0	2	0	2	0	0	3	1	13
08:45 AM	0	3	0	0	0	0	0	0	0	1	2	0	6
Total	5	7	0	0	1	2	0	8	0	1	13	1	38
Grand Total	7	10	0	0	6	5	0	15	0	1	19	1	64
Apprch %	41.2	58.8	0	0	54.5	45.5	0	100	0	4.8	90.5	4.8	
Total %	10.9	15.6	0	0	9.4	7.8	0	23.4	0	1.6	29.7	1.6	

	Longwood Ave From North				Huntington Ave From East				Longwood Ave From South				Huntington Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	2	1	0	3	0	**5**	1	**6**	0	2	0	2	0	3	0	3	**14**
08:00 AM	**3**	1	0	4	0	0	0	0	0	2	0	2	0	**5**	0	**5**	11
08:15 AM	0	0	0	0	0	1	0	1	0	**4**	0	**4**	0	3	0	3	8
08:30 AM	2	**3**	0	**5**	0	0	**2**	2	0	2	0	2	0	3	**1**	4	13
Total Volume	7	5	0	12	0	6	3	9	0	10	0	10	0	14	1	15	46
% App. Total	58.3	41.7	0		0	66.7	33.3		0	100	0		0	93.3	6.7		
PHF	.583	.417	.000	.600	.000	.300	.375	.375	.000	.625	.000	.625	.000	.700	.250	.750	.821

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 2



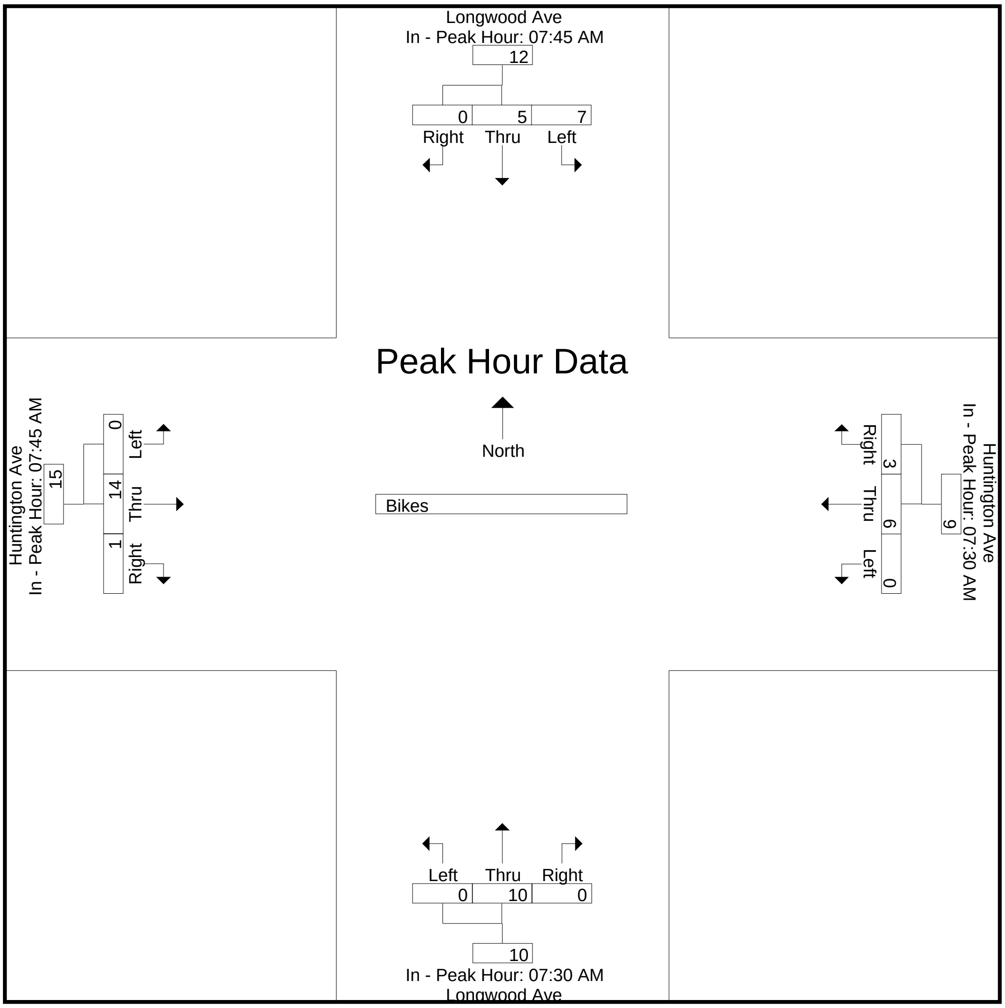
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:30 AM				07:30 AM				07:45 AM			
+0 mins.	2	1	0	3	0	0	**2**	2	0	2	0	2	0	3	0	3
+15 mins.	**3**	1	0	4	0	**5**	1	**6**	0	2	0	2	0	**5**	0	**5**
+30 mins.	0	0	0	0	0	0	0	0	0	2	0	2	0	3	0	3
+45 mins.	2	**3**	0	**5**	0	1	0	1	0	**4**	0	**4**	0	3	**1**	4
Total Volume	7	5	0	12	0	6	3	9	0	10	0	10	0	14	1	15
% App. Total	58.3	41.7	0		0	66.7	33.3		0	100	0		0	93.3	6.7	
PHF	.583	.417	.000	.600	.000	.300	.375	.375	.000	.625	.000	.625	.000	.700	.250	.750

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 1

Groups Printed- Peds

	Longwood Ave From North				Huntington Ave From East				Longwood Ave From South				Huntington Ave From West				
Start Time				Peds				Peds				Peds		NW / SE		Peds	Int. Total
07:00 AM	0	0	0	8	0	0	0	56	0	0	0	21	0	0	0	11	96
07:15 AM	0	0	0	12	0	0	0	87	0	0	0	13	0	0	0	13	125
07:30 AM	0	0	0	15	0	0	0	102	0	0	0	26	0	0	0	15	158
07:45 AM	0	0	0	18	0	0	0	69	0	0	0	23	0	0	0	19	129
Total	0	0	0	53	0	0	0	314	0	0	0	83	0	0	0	58	508
08:00 AM	0	0	0	25	0	0	0	116	0	0	0	27	0	0	0	10	178
08:15 AM	0	0	0	18	0	0	0	74	0	0	0	13	0	0	0	10	115
08:30 AM	0	0	0	22	0	0	0	86	0	0	0	19	0	0	0	5	132
08:45 AM	0	0	0	32	0	0	0	74	0	0	0	18	0	0	0	27	151
Total	0	0	0	97	0	0	0	350	0	0	0	77	0	0	0	52	576
Grand Total	0	0	0	150	0	0	0	664	0	0	0	160	0	0	0	110	1084
Apprch %	0	0	0	100	0	0	0	100	0	0	0	100	0	0	0	100	
Total %	0	0	0	13.8	0	0	0	61.3	0	0	0	14.8	0	0	0	10.1	

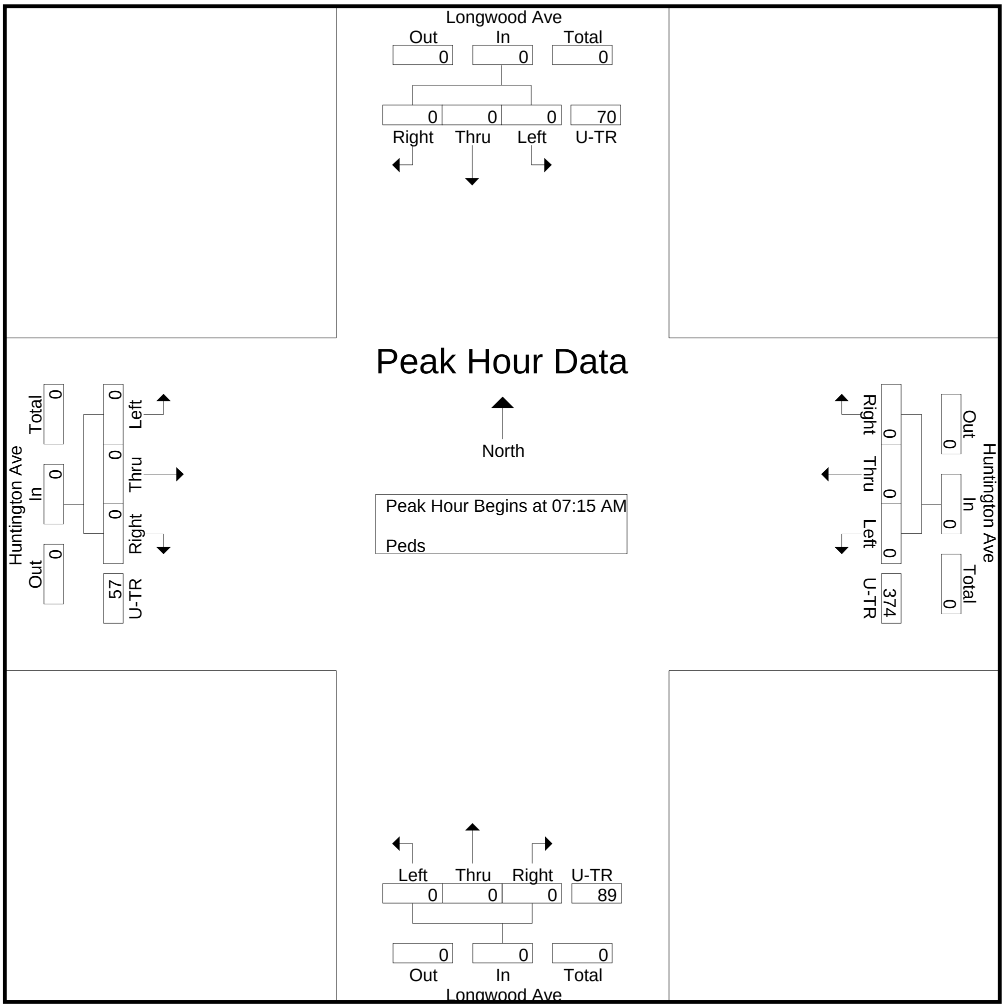
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 07:15 AM

	Longwood Ave From North					Huntington Ave From East					Longwood Ave From South					Huntington Ave From West					
Start Time				Peds	App. Total				Peds	App. Total				Peds	App. Total		NW / SE		Peds	App. Total	Int. Total
07:15 AM	0	0	0	12	12	0	0	0	87	87	0	0	0	13	13	0	0	0	13	13	125
07:30 AM	0	0	0	15	15	0	0	0	102	102	0	0	0	26	26	0	0	0	15	15	158
07:45 AM	0	0	0	18	18	0	0	0	69	69	0	0	0	23	23	0	0	0	**19**	**19**	129
08:00 AM	0	0	0	**25**	**25**	0	0	0	**116**	**116**	0	0	0	**27**	**27**	0	0	0	10	10	**178**
Total Volume	0	0	0	70	70	0	0	0	374	374	0	0	0	89	89	0	0	0	57	57	590
% App. Total	0	0	0	100		0	0	0	100		0	0	0	100		0	0	0	100		
PHF	.000	.000	.000	.700	.700	.000	.000	.000	.806	.806	.000	.000	.000	.824	.824	.000	.000	.000	.750	.750	.829

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 2



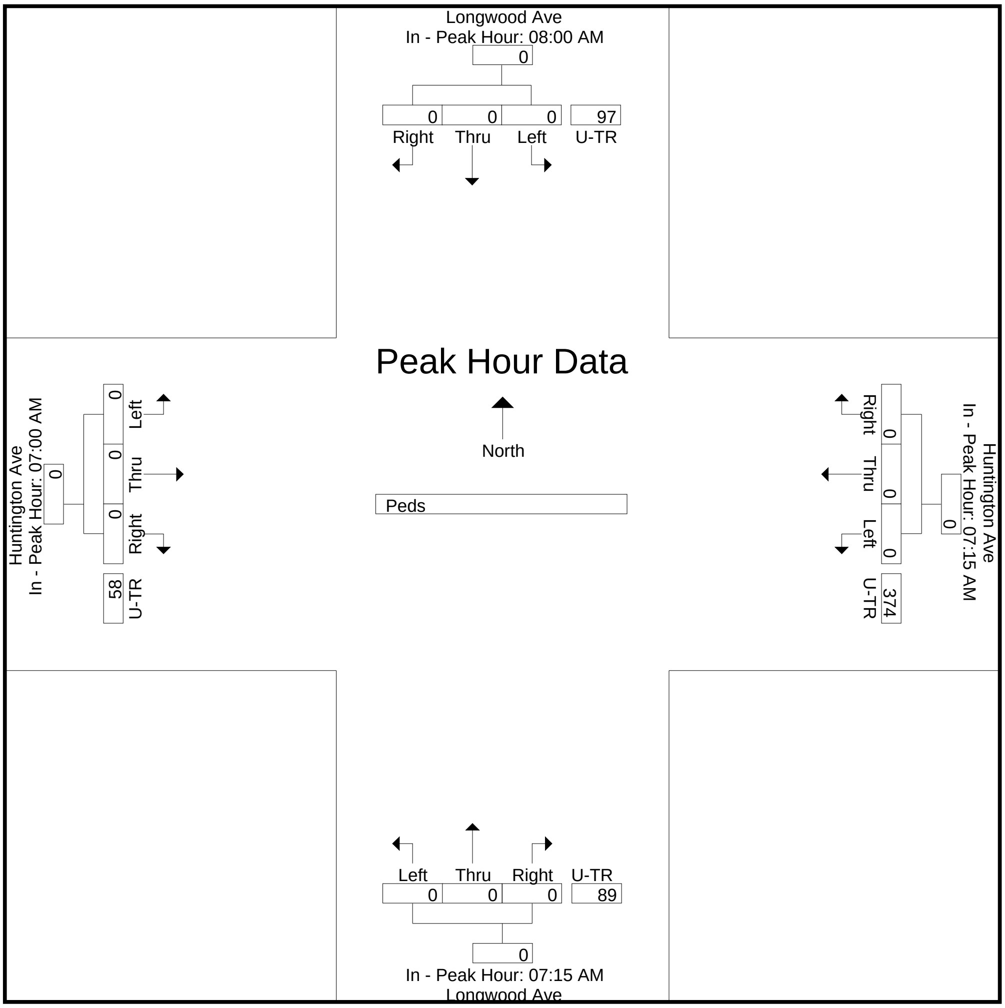
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM					07:15 AM					07:15 AM					07:00 AM				
+0 mins.	0	0	0	25	25	0	0	0	87	87	0	0	0	13	13	0	0	0	11	11
+15 mins.	0	0	0	18	18	0	0	0	102	102	0	0	0	26	26	0	0	0	13	13
+30 mins.	0	0	0	22	22	0	0	0	69	69	0	0	0	23	23	0	0	0	15	15
+45 mins.	0	0	0	**32**	**32**	0	0	0	**116**	**116**	0	0	0	**27**	**27**	0	0	0	**19**	**19**
Total Volume	0	0	0	97	97	0	0	0	374	374	0	0	0	89	89	0	0	0	58	58
% App. Total	0	0	0	100		0	0	0	100		0	0	0	100		0	0	0	100	
PHF	.000	.000	.000	.758	.758	.000	.000	.000	.806	.806	.000	.000	.000	.824	.824	.000	.000	.000	.763	.763

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

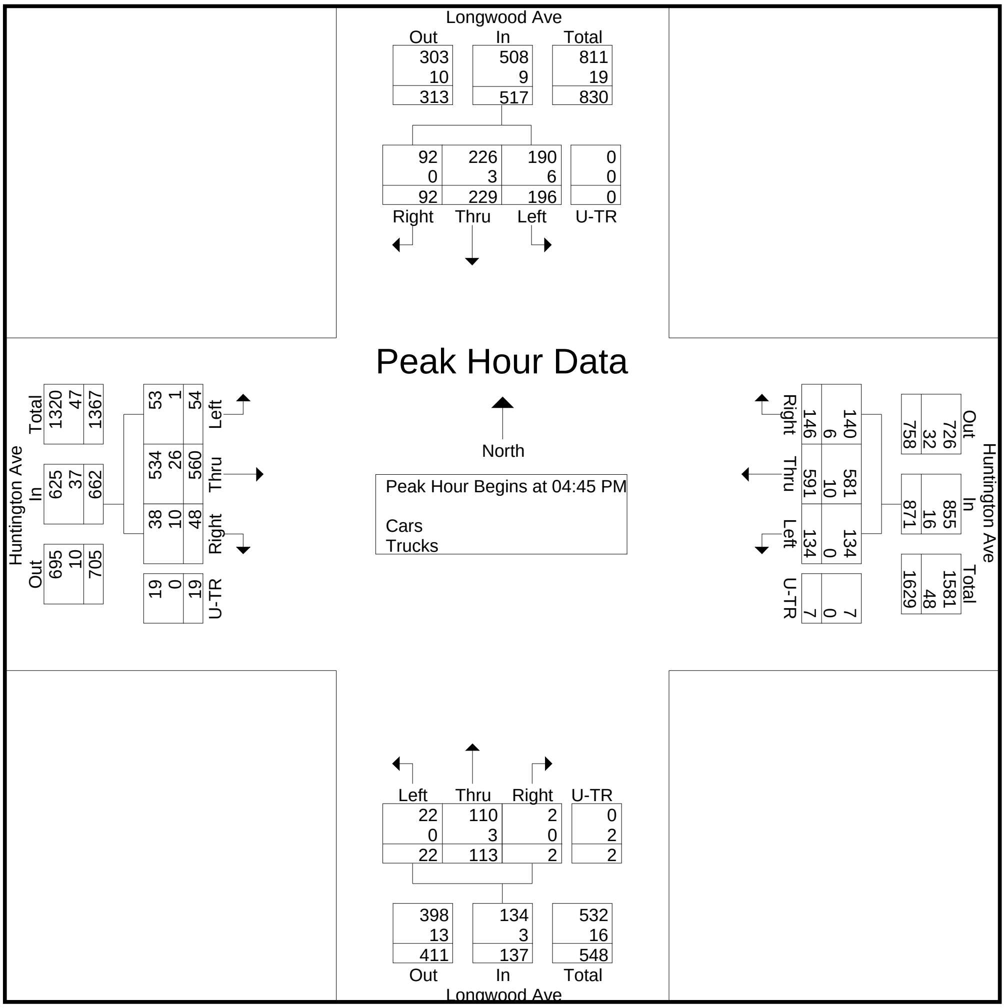
	Longwood Ave From North				Huntington Ave From East				Longwood Ave From South				Huntington Ave From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
04:00 PM	45	66	25	0	35	127	40	2	7	45	0	0	12	130	16	1	551
04:15 PM	50	49	22	0	34	150	37	1	10	35	0	6	13	108	18	6	539
04:30 PM	38	59	21	0	33	129	34	1	6	39	1	4	14	117	12	3	511
04:45 PM	49	61	18	0	33	142	32	0	6	31	0	0	16	148	8	10	554
Total	182	235	86	0	135	548	143	4	29	150	1	10	55	503	54	20	2155
05:00 PM	58	65	26	0	34	138	37	4	6	22	0	2	14	133	17	5	561
05:15 PM	45	50	26	0	43	138	47	2	6	33	2	0	12	122	7	2	535
05:30 PM	44	53	22	0	24	173	30	1	4	27	0	0	12	157	16	2	565
05:45 PM	70	54	14	0	32	111	26	2	0	20	0	2	10	123	13	4	481
Total	217	222	88	0	133	560	140	9	16	102	2	4	48	535	53	13	2142
Grand Total	399	457	174	0	268	1108	283	13	45	252	3	14	103	1038	107	33	4297
Apprch %	38.7	44.4	16.9	0	16	66.3	16.9	0.8	14.3	80.3	1	4.5	8	81	8.4	2.6	
Total %	9.3	10.6	4	0	6.2	25.8	6.6	0.3	1	5.9	0.1	0.3	2.4	24.2	2.5	0.8	
Cars	385	451	172	0	264	1085	265	13	45	244	3	0	102	988	86	32	4135
% Cars	96.5	98.7	98.9	0	98.5	97.9	93.6	100	100	96.8	100	0	99	95.2	80.4	97	96.2
Trucks	14	6	2	0	4	23	18	0	0	8	0	14	1	50	21	1	162
% Trucks	3.5	1.3	1.1	0	1.5	2.1	6.4	0	0	3.2	0	100	1	4.8	19.6	3	3.8

	Longwood Ave From North					Huntington Ave From East					Longwood Ave From South					Huntington Ave From West					
Start Time	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	49	61	18	0	128	33	142	32	0	207	**6**	31	0	0	37	**16**	148	8	**10**	182	554
05:00 PM	**58**	**65**	**26**	0	**149**	34	138	37	**4**	213	6	22	0	**2**	30	14	133	**17**	5	169	561
05:15 PM	45	50	26	0	121	**43**	138	**47**	2	**230**	6	**33**	**2**	0	**41**	12	122	7	2	143	535
05:30 PM	44	53	22	0	119	24	**173**	30	1	228	4	27	0	0	31	12	**157**	16	2	**187**	**565**
Total Volume	196	229	92	0	517	134	591	146	7	878	22	113	2	2	139	54	560	48	19	681	2215
% App. Total	37.9	44.3	17.8	0		15.3	67.3	16.6	0.8		15.8	81.3	1.4	1.4		7.9	82.2	7	2.8		
PHF	.845	.881	.885	.000	.867	.779	.854	.777	.438	.954	.917	.856	.250	.250	.848	.844	.892	.706	.475	.910	.980
Cars	190	226	92	0	508	134	581	140	7	862	22	110	2	0	134	53	534	38	19	644	2148
% Cars	96.9	98.7	100	0	98.3	100	98.3	95.9	100	98.2	100	97.3	100	0	96.4	98.1	95.4	79.2	100	94.6	97.0
Trucks	6	3	0	0	9	0	10	6	0	16	0	3	0	2	5	1	26	10	0	37	67
% Trucks	3.1	1.3	0	0	1.7	0	1.7	4.1	0	1.8	0	2.7	0	100	3.6	1.9	4.6	20.8	0	5.4	3.0

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 2



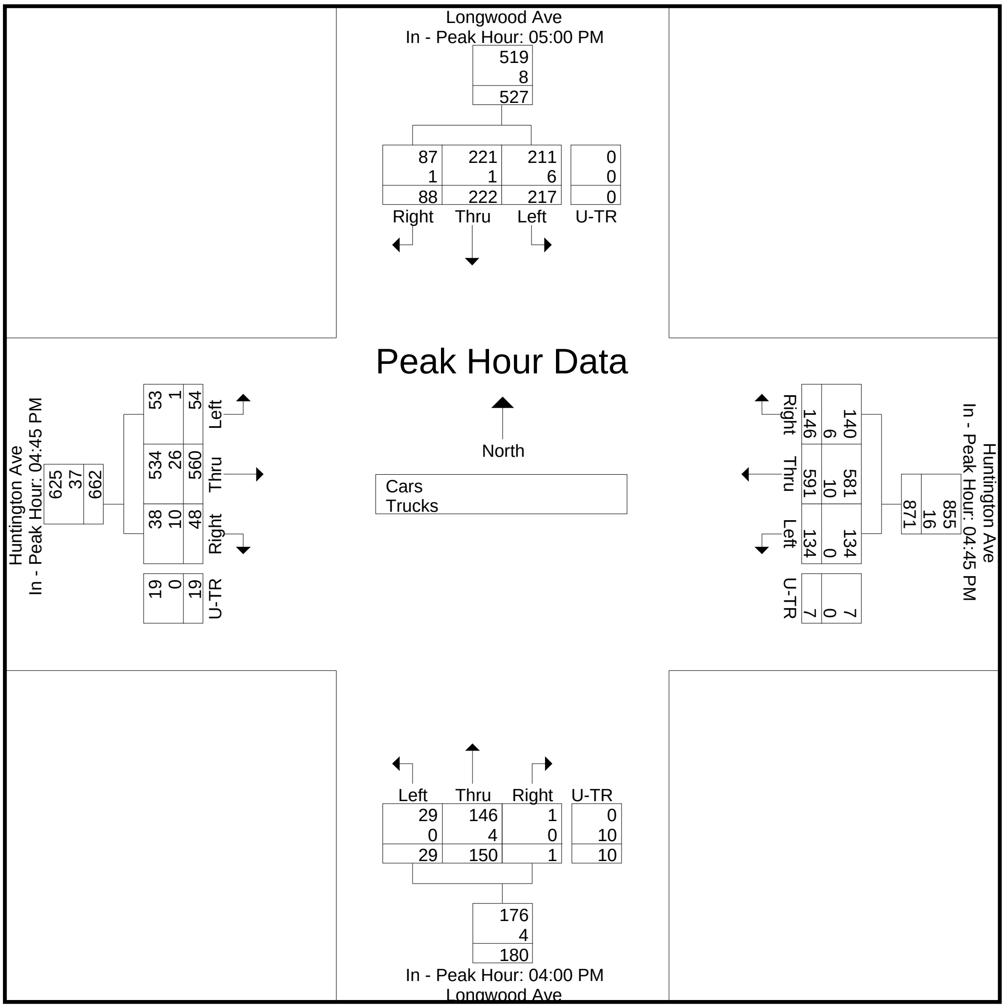
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM					04:45 PM					04:00 PM					04:45 PM				
+0 mins.	58	**65**	**26**	0	**149**	33	142	32	0	207	7	**45**	0	0	**52**	**16**	148	8	**10**	182
+15 mins.	45	50	26	0	121	34	138	37	**4**	213	**10**	35	0	**6**	51	14	133	**17**	5	169
+30 mins.	44	53	22	0	119	**43**	138	**47**	2	**230**	6	39	**1**	4	50	12	122	7	2	143
+45 mins.	**70**	54	14	0	138	24	**173**	30	1	228	6	31	0	0	37	12	**157**	16	2	**187**
Total Volume	217	222	88	0	527	134	591	146	7	878	29	150	1	10	190	54	560	48	19	681
% App. Total	41.2	42.1	16.7	0		15.3	67.3	16.6	0.8		15.3	78.9	0.5	5.3		7.9	82.2	7	2.8	
PHF	.775	.854	.846	.000	.884	.779	.854	.777	.438	.954	.725	.833	.250	.417	.913	.844	.892	.706	.475	.910
Cars	211	221	87	0	519	134	581	140	7	862	29	146	1	0	176	53	534	38	19	644
% Cars	97.2	99.5	98.9	0	98.5	100	98.3	95.9	100	98.2	100	97.3	100	0	92.6	98.1	95.4	79.2	100	94.6
Trucks	6	1	1	0	8	0	10	6	0	16	0	4	0	10	14	1	26	10	0	37
% Trucks	2.8	0.5	1.1	0	1.5	0	1.7	4.1	0	1.8	0	2.7	0	100	7.4	1.9	4.6	20.8	0	5.4

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

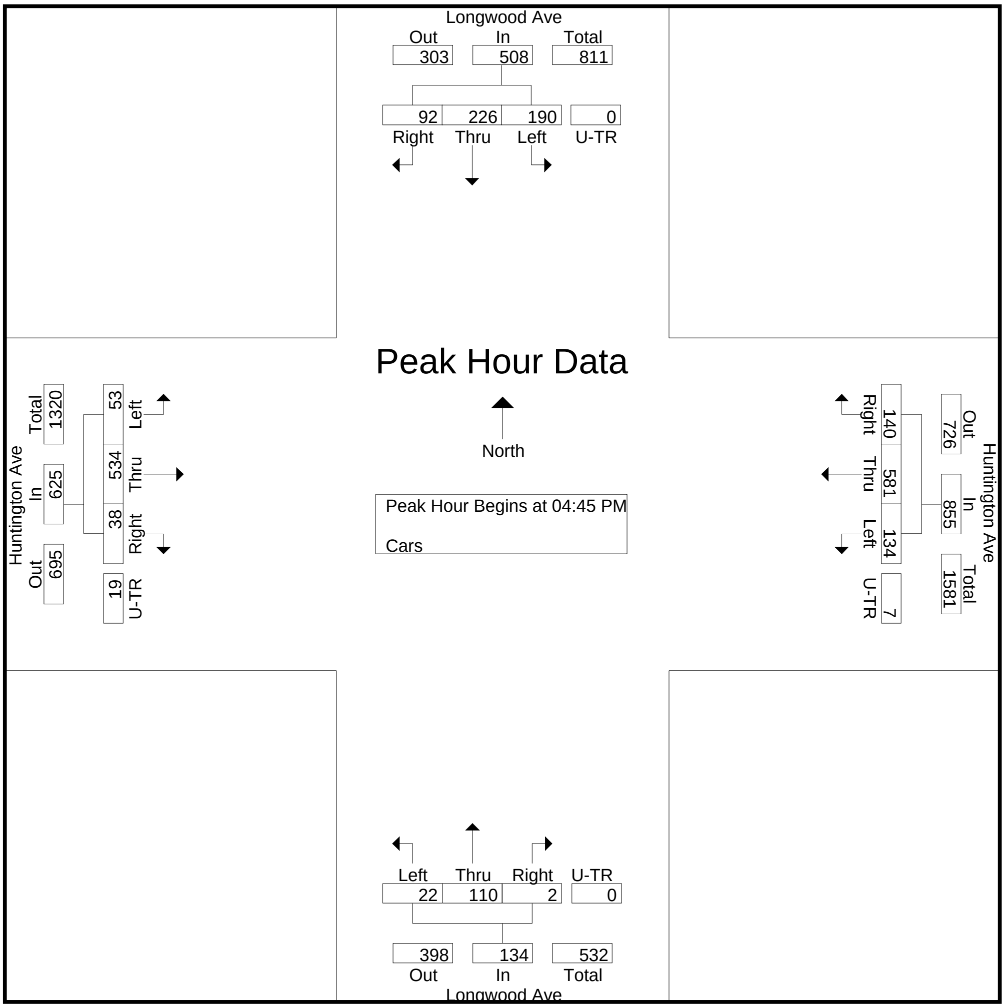
	Longwood Ave From North				Huntington Ave From East				Longwood Ave From South				Huntington Ave From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
04:00 PM	44	64	25	0	33	125	38	2	7	44	0	0	12	118	15	1	528
04:15 PM	46	49	21	0	33	145	34	1	10	33	0	0	13	104	13	6	508
04:30 PM	36	58	21	0	32	125	31	1	6	38	1	0	14	112	10	2	487
04:45 PM	48	59	18	0	33	140	30	0	6	31	0	0	15	141	5	10	536
Total	174	230	85	0	131	535	133	4	29	146	1	0	54	475	43	19	2059
05:00 PM	56	65	26	0	34	134	35	4	6	20	0	0	14	125	15	5	539
05:15 PM	44	50	26	0	43	136	45	2	6	32	2	0	12	117	4	2	521
05:30 PM	42	52	22	0	24	171	30	1	4	27	0	0	12	151	14	2	552
05:45 PM	69	54	13	0	32	109	22	2	0	19	0	0	10	120	10	4	464
Total	211	221	87	0	133	550	132	9	16	98	2	0	48	513	43	13	2076
Grand Total	385	451	172	0	264	1085	265	13	45	244	3	0	102	988	86	32	4135
Apprch %	38.2	44.7	17.1	0	16.2	66.7	16.3	0.8	15.4	83.6	1	0	8.4	81.8	7.1	2.6	
Total %	9.3	10.9	4.2	0	6.4	26.2	6.4	0.3	1.1	5.9	0.1	0	2.5	23.9	2.1	0.8	

	Longwood Ave From North					Huntington Ave From East					Longwood Ave From South					Huntington Ave From West					
Start Time	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	48	59	18	0	125	33	140	30	0	203	**6**	31	0	0	37	**15**	141	5	**10**	171	536
05:00 PM	**56**	**65**	**26**	0	**147**	34	134	35	**4**	207	6	20	0	0	26	14	125	**15**	5	159	539
05:15 PM	44	50	26	0	120	**43**	136	**45**	2	**226**	6	**32**	**2**	0	**40**	12	117	4	2	135	521
05:30 PM	42	52	22	0	116	24	**171**	30	1	226	4	27	0	0	31	12	**151**	14	2	**179**	**552**
Total Volume	190	226	92	0	508	134	581	140	7	862	22	110	2	0	134	53	534	38	19	644	2148
% App. Total	37.4	44.5	18.1	0		15.5	67.4	16.2	0.8		16.4	82.1	1.5	0		8.2	82.9	5.9	3		
PHF	.848	.869	.885	.000	.864	.779	.849	.778	.438	.954	.917	.859	.250	.000	.838	.883	.884	.633	.475	.899	.973

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 2



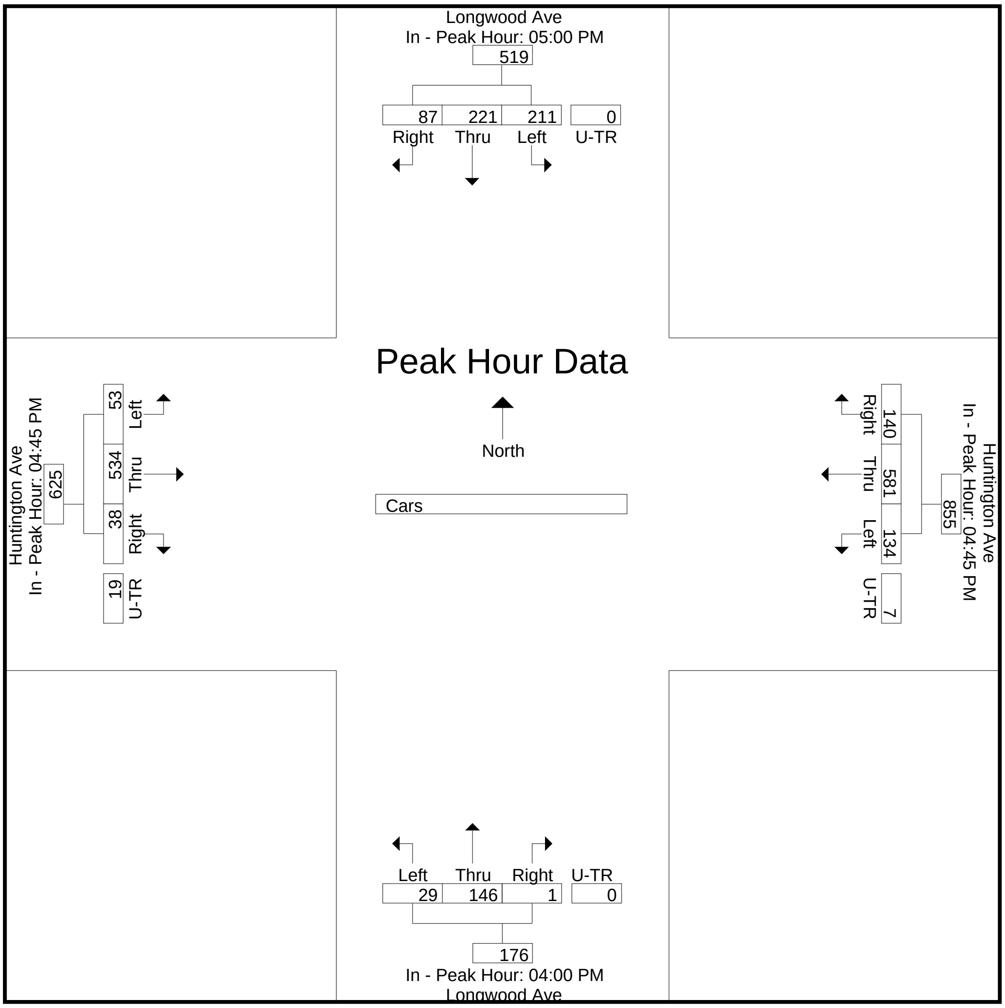
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM					04:45 PM					04:00 PM					04:45 PM				
+0 mins.	56	**65**	**26**	0	**147**	33	140	30	0	203	7	**44**	0	0	**51**	**15**	141	5	**10**	171
+15 mins.	44	50	26	0	120	34	134	35	**4**	207	**10**	33	0	0	43	14	125	**15**	5	159
+30 mins.	42	52	22	0	116	**43**	136	**45**	2	**226**	6	38	**1**	0	45	12	117	4	2	135
+45 mins.	**69**	54	13	0	136	24	**171**	30	1	226	6	31	0	0	37	12	**151**	14	2	**179**
Total Volume	211	221	87	0	519	134	581	140	7	862	29	146	1	0	176	53	534	38	19	644
% App. Total	40.7	42.6	16.8	0		15.5	67.4	16.2	0.8		16.5	83	0.6	0		8.2	82.9	5.9	3	
PHF	.764	.850	.837	.000	.883	.779	.849	.778	.438	.954	.725	.830	.250	.000	.863	.883	.884	.633	.475	.899

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

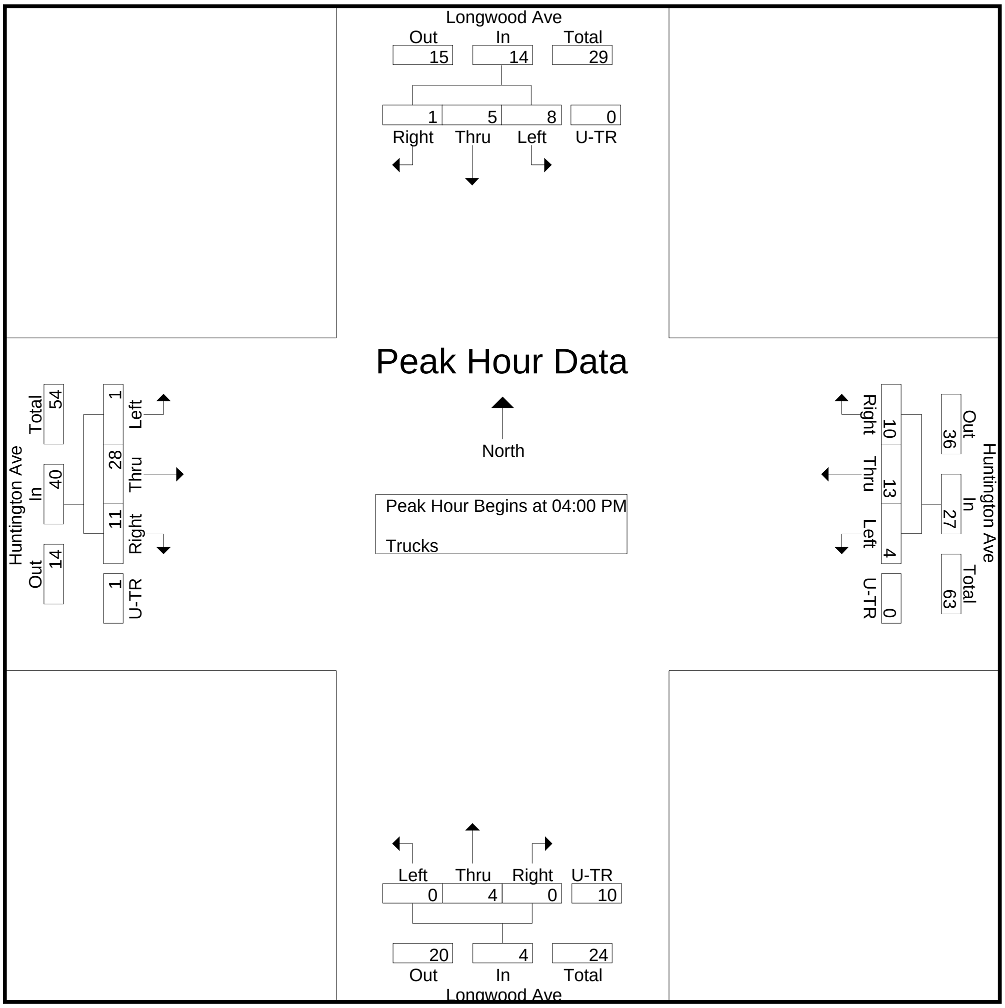
	Longwood Ave From North				Huntington Ave From East				Longwood Ave From South				Huntington Ave From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
04:00 PM	1	2	0	0	2	2	2	0	0	1	0	0	0	12	1	0	23
04:15 PM	4	0	1	0	1	5	3	0	0	2	0	6	0	4	5	0	31
04:30 PM	2	1	0	0	1	4	3	0	0	1	0	4	0	5	2	1	24
04:45 PM	1	2	0	0	0	2	2	0	0	0	0	0	1	7	3	0	18
Total	8	5	1	0	4	13	10	0	0	4	0	10	1	28	11	1	96
05:00 PM	2	0	0	0	0	4	2	0	0	2	0	2	0	8	2	0	22
05:15 PM	1	0	0	0	0	2	2	0	0	1	0	0	0	5	3	0	14
05:30 PM	2	1	0	0	0	2	0	0	0	0	0	0	0	6	2	0	13
05:45 PM	1	0	1	0	0	2	4	0	0	1	0	2	0	3	3	0	17
Total	6	1	1	0	0	10	8	0	0	4	0	4	0	22	10	0	66
Grand Total	14	6	2	0	4	23	18	0	0	8	0	14	1	50	21	1	162
Apprch %	63.6	27.3	9.1	0	8.9	51.1	40	0	0	36.4	0	63.6	1.4	68.5	28.8	1.4	
Total %	8.6	3.7	1.2	0	2.5	14.2	11.1	0	0	4.9	0	8.6	0.6	30.9	13	0.6	

	Longwood Ave From North					Huntington Ave From East					Longwood Ave From South					Huntington Ave From West					
Start Time	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	1	**2**	0	0	3	**2**	2	2	0	6	0	1	0	0	1	0	**12**	1	0	**13**	23
04:15 PM	**4**	0	**1**	0	**5**	1	**5**	**3**	0	**9**	0	**2**	0	**6**	**8**	0	4	**5**	0	9	**31**
04:30 PM	2	1	0	0	3	1	4	3	0	8	0	1	0	4	5	0	5	2	**1**	8	24
04:45 PM	1	2	0	0	3	0	2	2	0	4	0	0	0	0	0	**1**	7	3	0	11	18
Total Volume	8	5	1	0	14	4	13	10	0	27	0	4	0	10	14	1	28	11	1	41	96
% App. Total	57.1	35.7	7.1	0		14.8	48.1	37	0		0	28.6	0	71.4		2.4	68.3	26.8	2.4		
PHF	.500	.625	.250	.000	.700	.500	.650	.833	.000	.750	.000	.500	.000	.417	.438	.250	.583	.550	.250	.788	.774

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 2



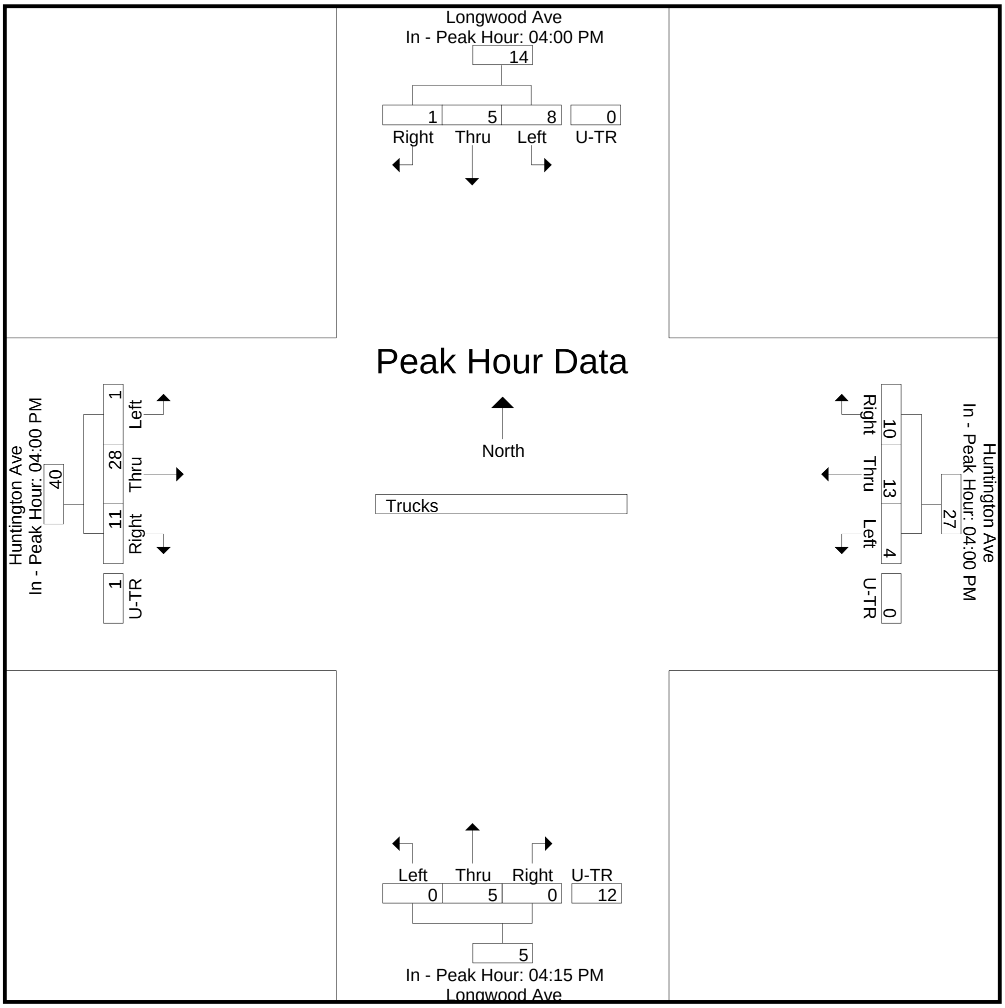
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM					04:00 PM					04:15 PM					04:00 PM				
+0 mins.	1	**2**	0	0	3	**2**	2	2	0	6	0	**2**	0	**6**	**8**	0	**12**	1	0	**13**
+15 mins.	**4**	0	**1**	0	**5**	1	**5**	**3**	0	**9**	0	1	0	4	5	0	4	**5**	0	9
+30 mins.	2	1	0	0	3	1	4	3	0	8	0	0	0	0	0	0	5	2	**1**	8
+45 mins.	1	2	0	0	3	0	2	2	0	4	0	2	0	2	4	**1**	7	3	0	11
Total Volume	8	5	1	0	14	4	13	10	0	27	0	5	0	12	17	1	28	11	1	41
% App. Total	57.1	35.7	7.1	0		14.8	48.1	37	0		0	29.4	0	70.6		2.4	68.3	26.8	2.4	
PHF	.500	.625	.250	.000	.700	.500	.650	.833	.000	.750	.000	.625	.000	.500	.531	.250	.583	.550	.250	.788

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes

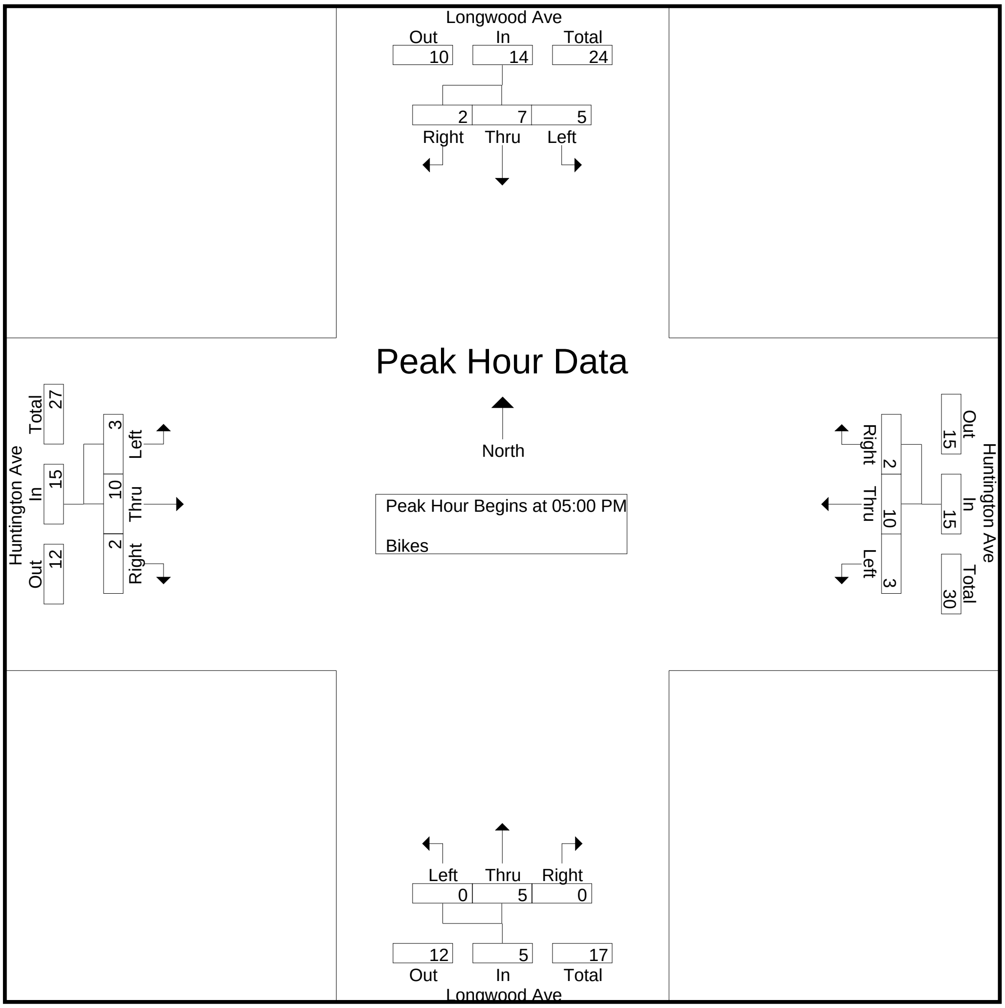
	Longwood Ave From North			**Huntington Ave From East**			**Longwood Ave From South**			**Huntington Ave From West**			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	1	1	0	0	1	0	0	0	0	0	0	3
04:15 PM	0	2	0	0	1	0	0	2	0	1	1	1	8
04:30 PM	0	1	0	0	4	0	1	0	0	0	2	0	8
04:45 PM	1	1	1	0	4	0	0	1	0	1	5	0	14
Total	1	5	2	0	9	1	1	3	0	2	8	1	33
05:00 PM	1	0	0	0	6	1	0	0	0	1	0	0	9
05:15 PM	2	2	0	0	1	0	0	1	0	2	2	0	10
05:30 PM	1	2	1	3	2	1	0	0	0	0	5	0	15
05:45 PM	1	3	1	0	1	0	0	4	0	0	3	2	15
Total	5	7	2	3	10	2	0	5	0	3	10	2	49
Grand Total	6	12	4	3	19	3	1	8	0	5	18	3	82
Apprch %	27.3	54.5	18.2	12	76	12	11.1	88.9	0	19.2	69.2	11.5	
Total %	7.3	14.6	4.9	3.7	23.2	3.7	1.2	9.8	0	6.1	22	3.7	

	Longwood Ave From North				**Huntington Ave From East**				**Longwood Ave From South**				**Huntington Ave From West**				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	1	0	0	1	0	**6**	**1**	**7**	0	0	0	0	1	0	0	1	9
05:15 PM	**2**	2	0	4	0	1	0	1	0	1	0	1	**2**	2	0	4	10
05:30 PM	1	2	**1**	4	**3**	2	1	6	0	0	0	0	0	**5**	0	**5**	**15**
05:45 PM	1	**3**	1	**5**	0	1	0	1	0	**4**	0	**4**	0	3	**2**	5	15
Total Volume	5	7	2	14	3	10	2	15	0	5	0	5	3	10	2	15	49
% App. Total	35.7	50	14.3		20	66.7	13.3		0	100	0		20	66.7	13.3		
PHF	.625	.583	.500	.700	.250	.417	.500	.536	.000	.313	.000	.313	.375	.500	.250	.750	.817

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 2



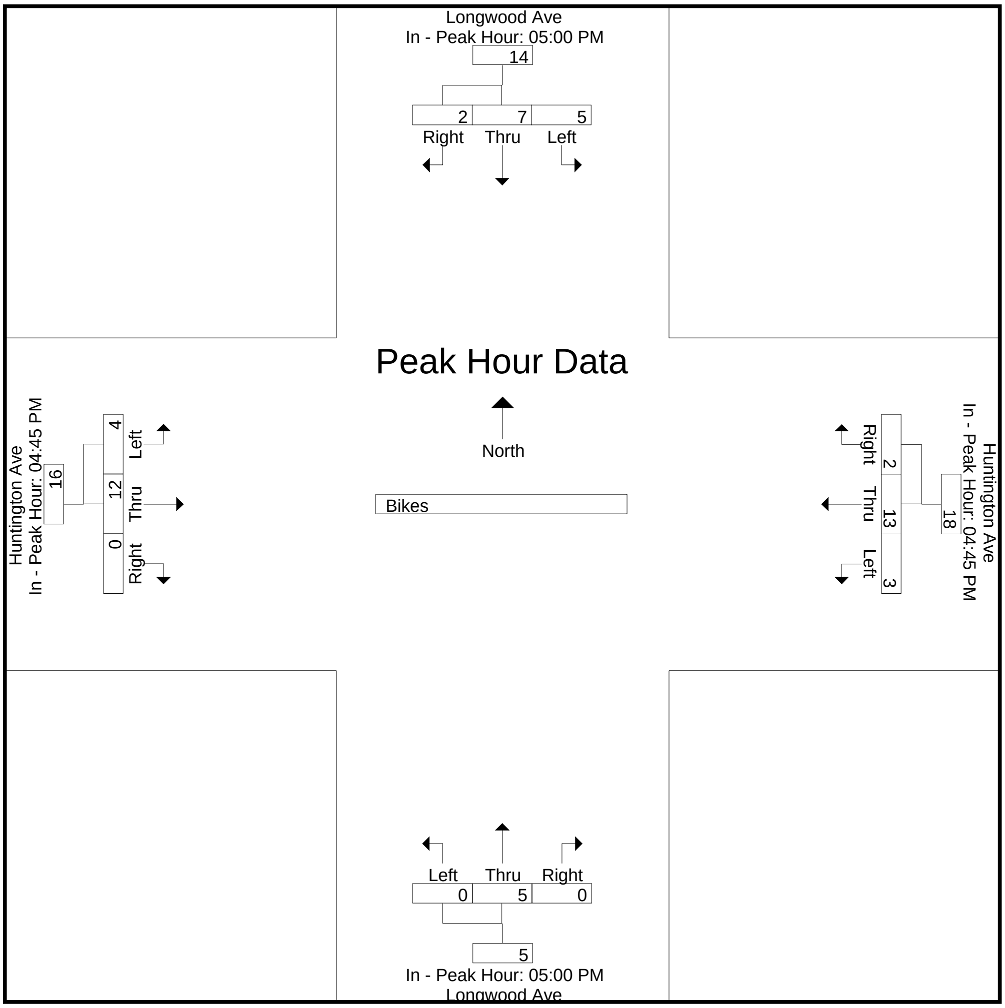
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:45 PM				05:00 PM				04:45 PM			
+0 mins.	1	0	0	1	0	4	0	4	0	0	0	0	1	**5**	0	**6**
+15 mins.	**2**	2	0	4	0	**6**	**1**	**7**	0	1	0	1	1	0	0	1
+30 mins.	1	2	**1**	4	0	1	0	1	0	0	0	0	**2**	2	0	4
+45 mins.	1	**3**	1	**5**	**3**	2	1	6	0	**4**	0	**4**	0	5	0	5
Total Volume	5	7	2	14	3	13	2	18	0	5	0	5	4	12	0	16
% App. Total	35.7	50	14.3		16.7	72.2	11.1		0	100	0		25	75	0	
PHF	.625	.583	.500	.700	.250	.542	.500	.643	.000	.313	.000	.313	.500	.600	.000	.667

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 1

Groups Printed- Peds

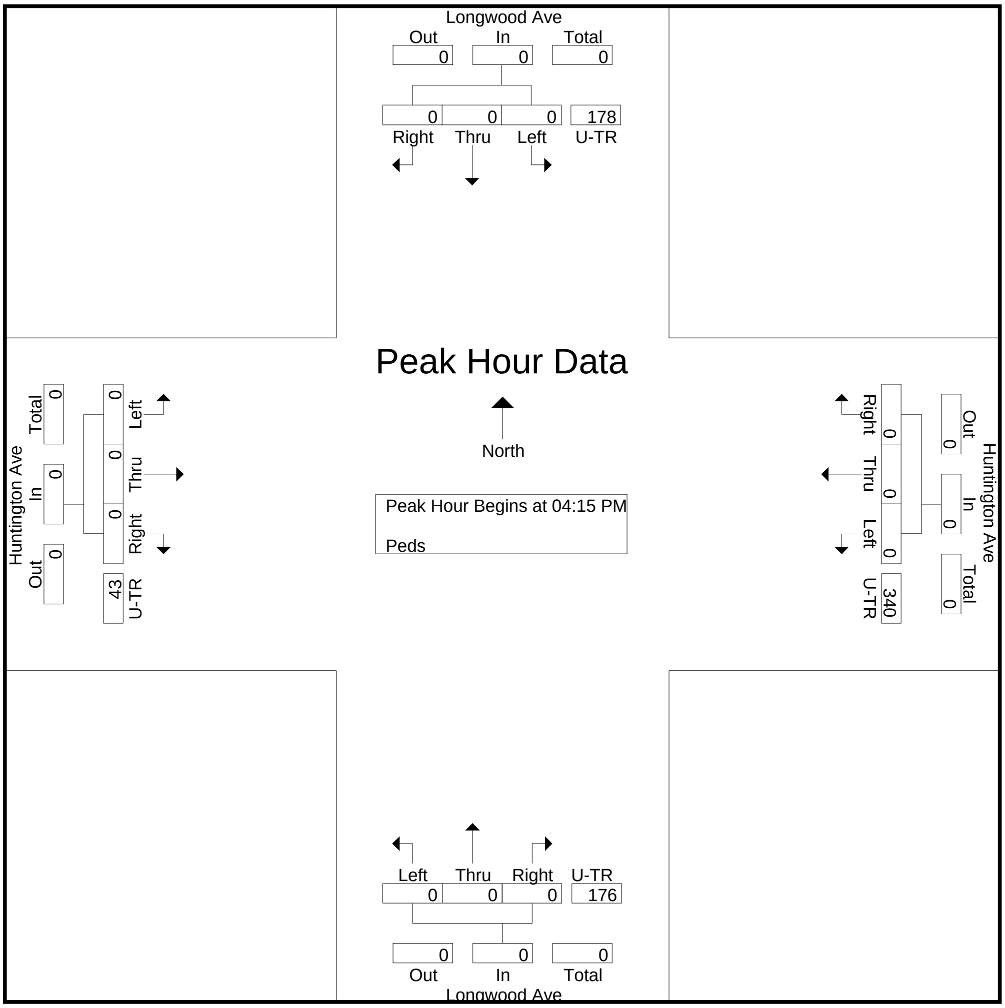
	Longwood Ave From North				**Huntington Ave From East**				**Longwood Ave From South**				**Huntington Ave From West**				
Start Time				Peds				Peds				Peds		NW / SE		Peds	Int. Total
04:00 PM	0	0	0	51	0	0	0	66	0	0	0	50	0	0	0	11	178
04:15 PM	0	0	0	47	0	0	0	82	0	0	0	48	0	0	0	11	188
04:30 PM	0	0	0	46	0	0	0	93	0	0	0	40	0	0	0	14	193
04:45 PM	0	0	0	32	0	0	0	77	0	0	0	45	0	0	0	5	159
Total	0	0	0	176	0	0	0	318	0	0	0	183	0	0	0	41	718
05:00 PM	0	0	0	53	0	0	0	88	0	0	0	43	0	0	0	13	197
05:15 PM	0	0	0	31	0	0	0	67	0	0	0	33	0	0	0	9	140
05:30 PM	0	0	0	15	0	0	0	52	0	0	0	33	0	0	0	3	103
05:45 PM	0	0	0	29	0	0	0	70	0	0	0	40	0	0	0	2	141
Total	0	0	0	128	0	0	0	277	0	0	0	149	0	0	0	27	581
Grand Total	0	0	0	304	0	0	0	595	0	0	0	332	0	0	0	68	1299
Apprch %	0	0	0	100	0	0	0	100	0	0	0	100	0	0	0	100	
Total %	0	0	0	23.4	0	0	0	45.8	0	0	0	25.6	0	0	0	5.2	

	Longwood Ave From North					**Huntington Ave From East**					**Longwood Ave From South**					**Huntington Ave From West**					
Start Time				Peds	App. Total				Peds	App. Total				Peds	App. Total		NW / SE		Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	0	0	47	47	0	0	0	82	82	0	0	0	**48**	**48**	0	0	0	11	11	188
04:30 PM	0	0	0	46	46	0	0	0	**93**	**93**	0	0	0	40	40	0	0	0	**14**	**14**	193
04:45 PM	0	0	0	32	32	0	0	0	77	77	0	0	0	45	45	0	0	0	5	5	159
05:00 PM	0	0	0	**53**	**53**	0	0	0	88	88	0	0	0	43	43	0	0	0	13	13	**197**
Total Volume	0	0	0	178	178	0	0	0	340	340	0	0	0	176	176	0	0	0	43	43	737
% App. Total	0	0	0	100		0	0	0	100		0	0	0	100		0	0	0	100		
PHF	.000	.000	.000	.840	.840	.000	.000	.000	.914	.914	.000	.000	.000	.917	.917	.000	.000	.000	.768	.768	.935

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 2



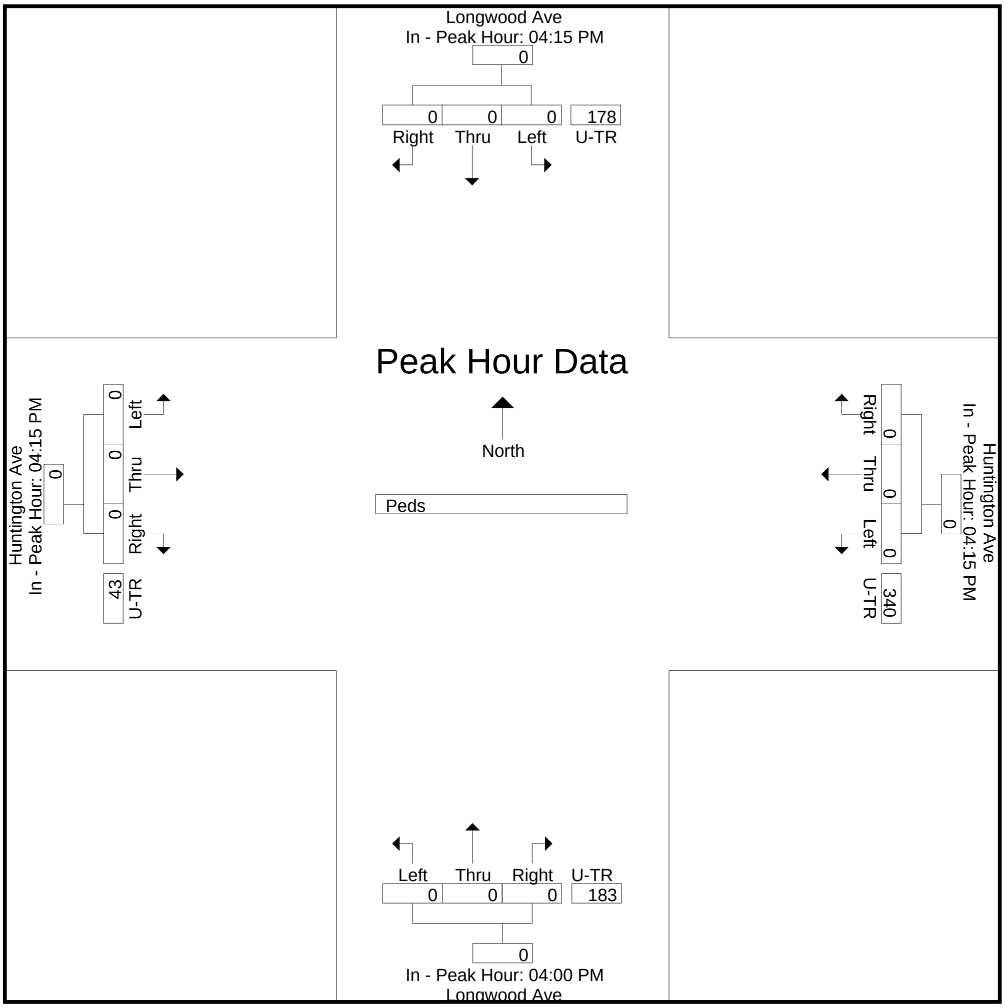
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM					04:15 PM					04:00 PM					04:15 PM				
+0 mins.	0	0	0	47	47	0	0	0	82	82	0	0	0	**50**	**50**	0	0	0	11	11
+15 mins.	0	0	0	46	46	0	0	0	**93**	**93**	0	0	0	48	48	0	0	0	**14**	**14**
+30 mins.	0	0	0	32	32	0	0	0	77	77	0	0	0	40	40	0	0	0	5	5
+45 mins.	0	0	0	**53**	**53**	0	0	0	88	88	0	0	0	45	45	0	0	0	13	13
Total Volume	0	0	0	178	178	0	0	0	340	340	0	0	0	183	183	0	0	0	43	43
% App. Total	0	0	0	100		0	0	0	100		0	0	0	100		0	0	0	100	
PHF	.000	.000	.000	.840	.840	.000	.000	.000	.914	.914	.000	.000	.000	.915	.915	.000	.000	.000	.768	.768

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Huntington Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970025
Site Code : 94970025
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

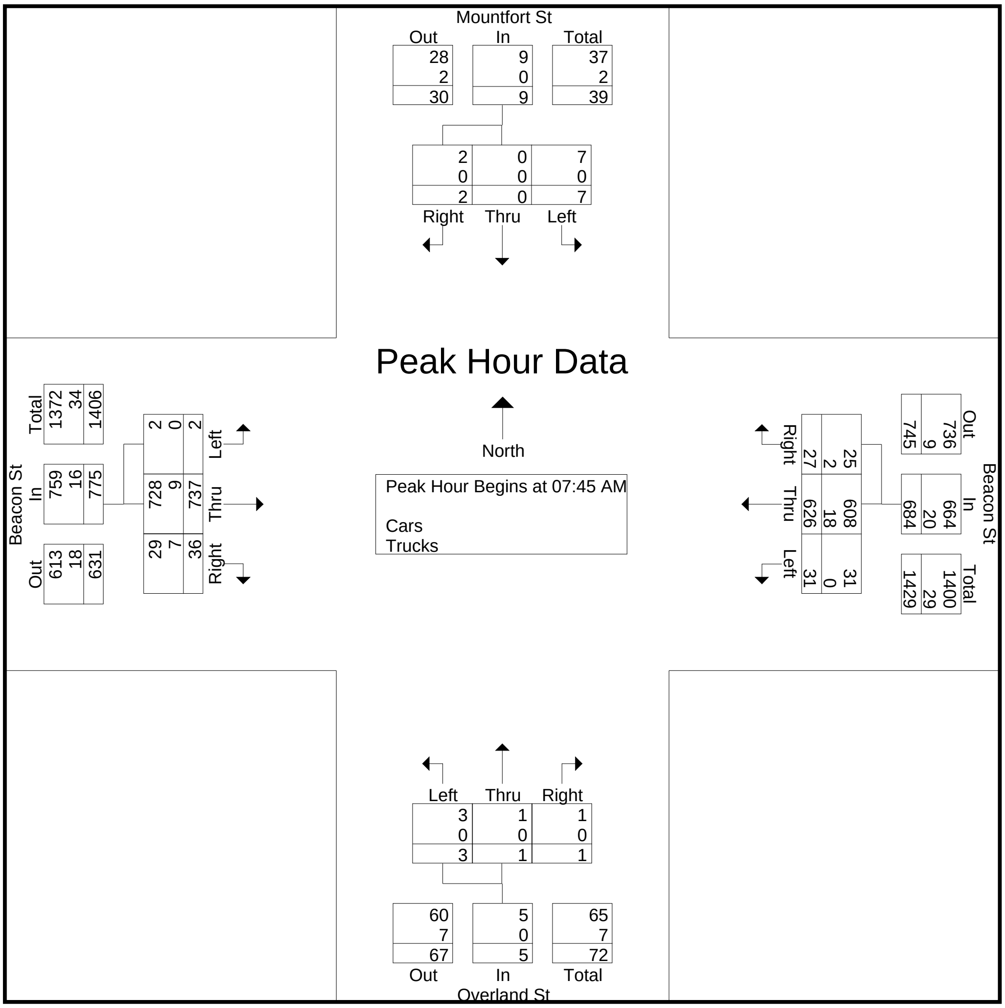
	Mountfort St From North			Beacon St From East			Overland St From South			Beacon St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	2	0	0	16	110	1	1	0	0	0	96	7	233
07:15 AM	4	0	0	7	154	2	0	1	0	0	97	10	275
07:30 AM	5	0	0	8	156	6	1	0	1	0	131	9	317
07:45 AM	0	0	1	10	160	3	0	0	0	0	152	13	339
Total	11	0	1	41	580	12	2	1	1	0	476	39	1164
08:00 AM	0	0	1	7	147	11	0	0	1	2	187	8	364
08:15 AM	3	0	0	8	167	8	1	1	0	0	195	8	391
08:30 AM	4	0	0	6	152	5	2	0	0	0	203	7	379
08:45 AM	4	0	5	5	142	6	0	0	0	0	161	11	334
Total	11	0	6	26	608	30	3	1	1	2	746	34	1468
Grand Total	22	0	7	67	1188	42	5	2	2	2	1222	73	2632
Apprch %	75.9	0	24.1	5.2	91.6	3.2	55.6	22.2	22.2	0.2	94.2	5.6	
Total %	0.8	0	0.3	2.5	45.1	1.6	0.2	0.1	0.1	0.1	46.4	2.8	
Cars	21	0	7	66	1152	39	5	2	2	2	1209	59	2564
% Cars	95.5	0	100	98.5	97	92.9	100	100	100	100	98.9	80.8	97.4
Trucks	1	0	0	1	36	3	0	0	0	0	13	14	68
% Trucks	4.5	0	0	1.5	3	7.1	0	0	0	0	1.1	19.2	2.6

	Mountfort St From North				Beacon St From East				Overland St From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	**1**	1	**10**	160	3	173	0	0	0	0	0	152	**13**	165	339
08:00 AM	0	0	1	1	7	147	**11**	165	0	0	**1**	1	**2**	187	8	197	364
08:15 AM	3	0	0	3	8	**167**	8	**183**	1	**1**	0	**2**	0	195	8	203	**391**
08:30 AM	**4**	0	0	**4**	6	152	5	163	**2**	0	0	2	0	**203**	7	**210**	379
Total Volume	7	0	2	9	31	626	27	684	3	1	1	5	2	737	36	775	1473
% App. Total	77.8	0	22.2		4.5	91.5	3.9		60	20	20		0.3	95.1	4.6		
PHF	.438	.000	.500	.563	.775	.937	.614	.934	.375	.250	.250	.625	.250	.908	.692	.923	.942
Cars	7	0	2	9	31	608	25	664	3	1	1	5	2	728	29	759	1437
% Cars	100	0	100	100	100	97.1	92.6	97.1	100	100	100	100	100	98.8	80.6	97.9	97.6
Trucks	0	0	0	0	0	18	2	20	0	0	0	0	0	9	7	16	36
% Trucks	0	0	0	0	0	2.9	7.4	2.9	0	0	0	0	0	1.2	19.4	2.1	2.4

Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 2



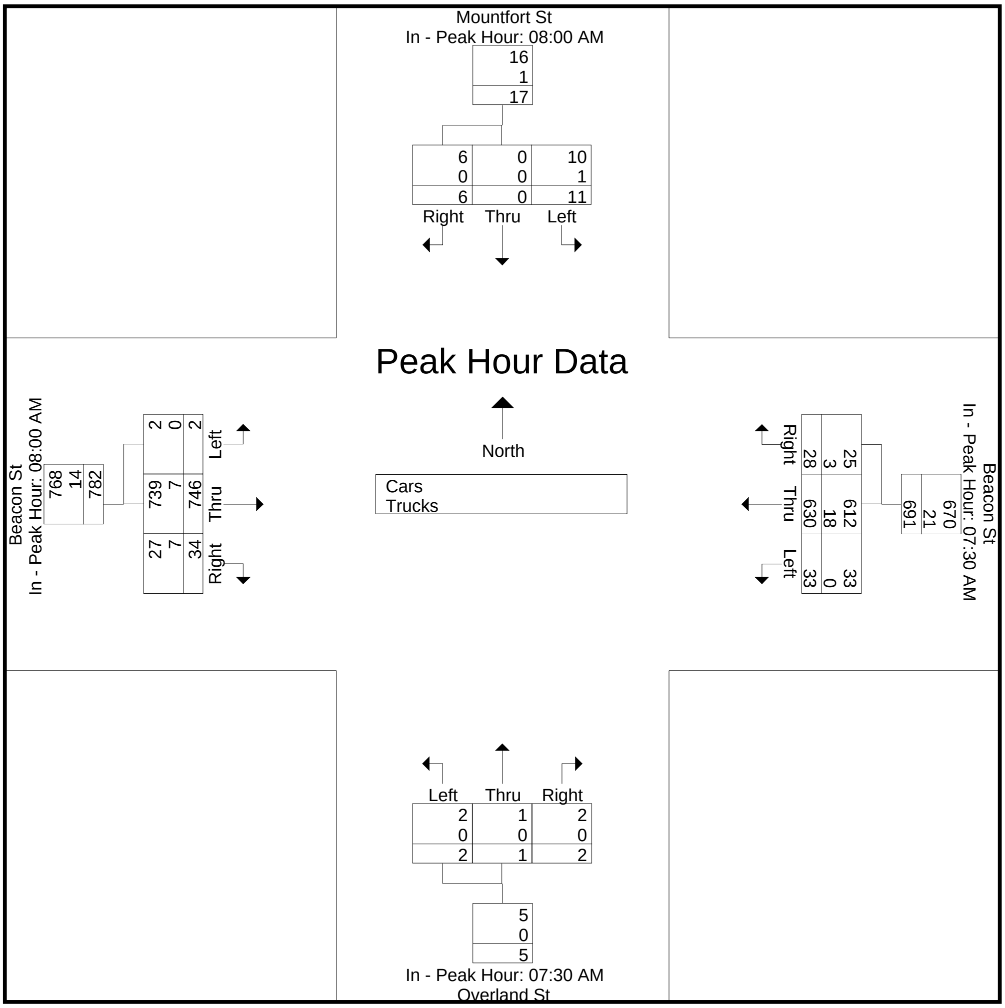
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				07:30 AM				08:00 AM			
+0 mins.	0	0	1	1	8	156	6	170	**1**	0	**1**	**2**	**2**	187	8	197
+15 mins.	3	0	0	3	**10**	160	3	173	0	0	0	0	0	195	8	203
+30 mins.	**4**	0	0	4	7	147	**11**	165	0	0	1	1	0	**203**	7	**210**
+45 mins.	4	0	**5**	**9**	8	**167**	8	**183**	1	**1**	0	2	0	161	**11**	172
Total Volume	11	0	6	17	33	630	28	691	2	1	2	5	2	746	34	782
% App. Total	64.7	0	35.3		4.8	91.2	4.1		40	20	40		0.3	95.4	4.3	
PHF	.688	.000	.300	.472	.825	.943	.636	.944	.500	.250	.500	.625	.250	.919	.773	.931
Cars	10	0	6	16	33	612	25	670	2	1	2	5	2	739	27	768
% Cars	90.9	0	100	94.1	100	97.1	89.3	97	100	100	100	100	100	99.1	79.4	98.2
Trucks	1	0	0	1	0	18	3	21	0	0	0	0	0	7	7	14
% Trucks	9.1	0	0	5.9	0	2.9	10.7	3	0	0	0	0	0	0.9	20.6	1.8

Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars

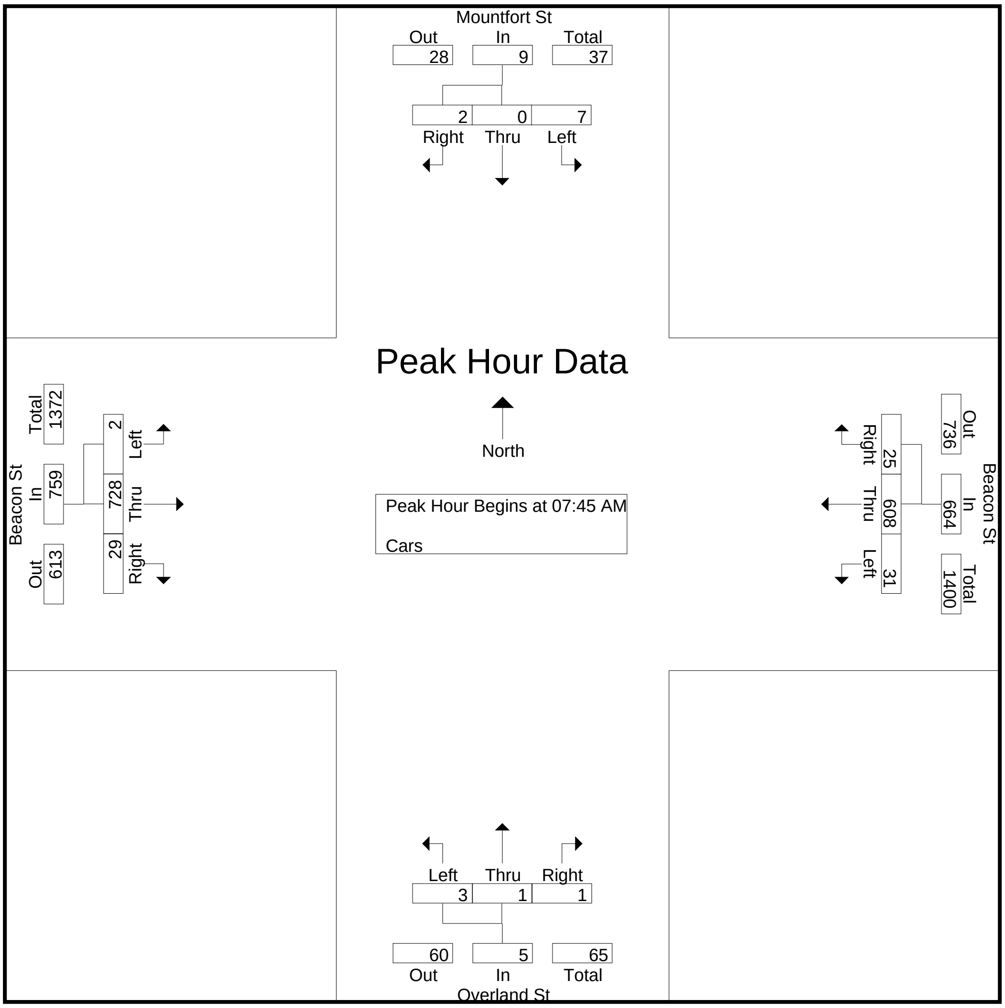
	Mountfort St From North			Beacon St From East			Overland St From South			Beacon St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	2	0	0	15	104	1	1	0	0	0	96	5	224
07:15 AM	4	0	0	7	150	2	0	1	0	0	95	9	268
07:30 AM	5	0	0	8	152	5	1	0	1	0	130	7	309
07:45 AM	0	0	1	10	157	3	0	0	0	0	149	11	331
Total	11	0	1	40	563	11	2	1	1	0	470	32	1132
08:00 AM	0	0	1	7	142	9	0	0	1	2	187	6	355
08:15 AM	3	0	0	8	161	8	1	1	0	0	191	7	380
08:30 AM	4	0	0	6	148	5	2	0	0	0	201	5	371
08:45 AM	3	0	5	5	138	6	0	0	0	0	160	9	326
Total	10	0	6	26	589	28	3	1	1	2	739	27	1432
Grand Total	21	0	7	66	1152	39	5	2	2	2	1209	59	2564
Apprch %	75	0	25	5.3	91.6	3.1	55.6	22.2	22.2	0.2	95.2	4.6	
Total %	0.8	0	0.3	2.6	44.9	1.5	0.2	0.1	0.1	0.1	47.2	2.3	

	Mountfort St From North				Beacon St From East				Overland St From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	**1**	1	**10**	157	3	170	0	0	0	0	0	149	**11**	160	331
08:00 AM	0	0	1	1	7	142	**9**	158	0	0	**1**	1	**2**	187	6	195	355
08:15 AM	3	0	0	3	8	**161**	8	**177**	1	**1**	0	**2**	0	191	7	198	**380**
08:30 AM	**4**	0	0	**4**	6	148	5	159	**2**	0	0	2	0	**201**	5	**206**	371
Total Volume	7	0	2	9	31	608	25	664	3	1	1	5	2	728	29	759	1437
% App. Total	77.8	0	22.2		4.7	91.6	3.8		60	20	20		0.3	95.9	3.8		
PHF	.438	.000	.500	.563	.775	.944	.694	.938	.375	.250	.250	.625	.250	.905	.659	.921	.945

Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 2



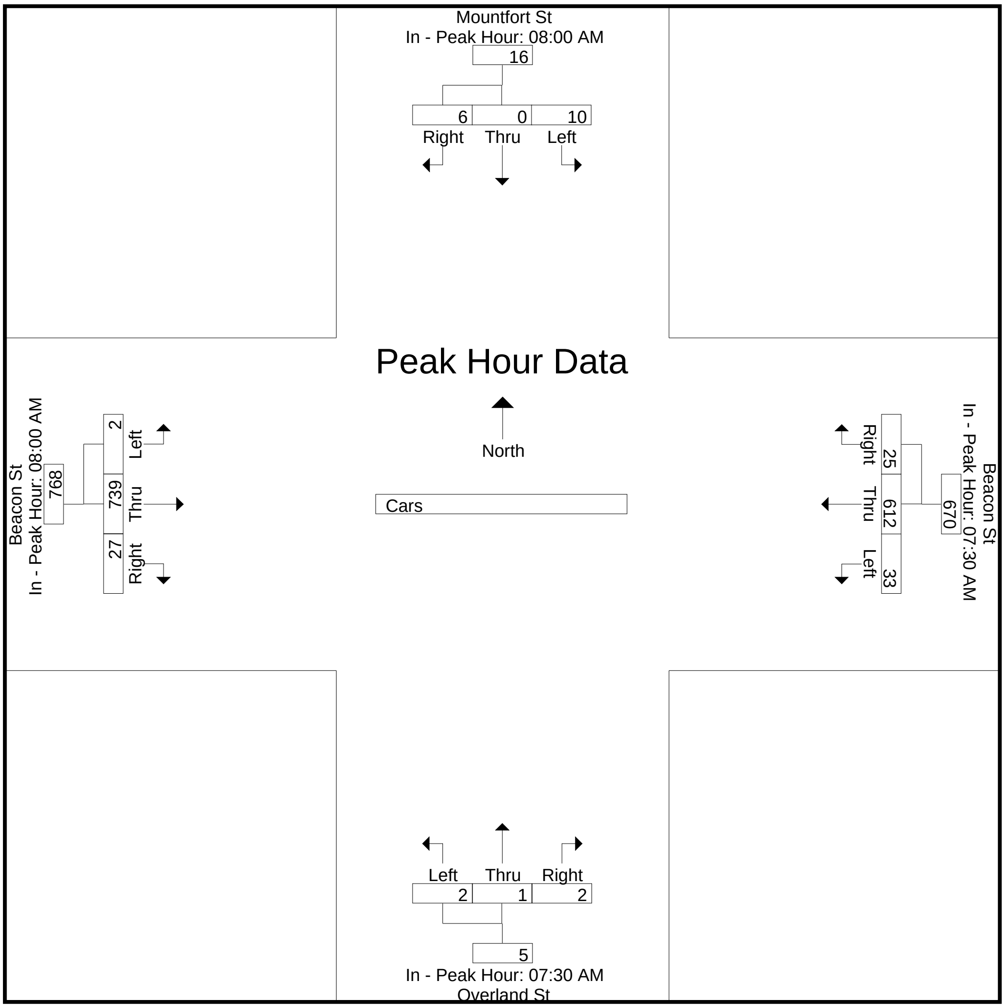
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				07:30 AM				08:00 AM			
+0 mins.	0	0	1	1	8	152	5	165	**1**	0	**1**	**2**	**2**	187	6	195
+15 mins.	3	0	0	3	**10**	157	3	170	0	0	0	0	0	191	7	198
+30 mins.	**4**	0	0	4	7	142	**9**	158	0	0	1	1	0	**201**	5	**206**
+45 mins.	3	0	**5**	**8**	8	**161**	8	**177**	1	**1**	0	2	0	160	**9**	169
Total Volume	10	0	6	16	33	612	25	670	2	1	2	5	2	739	27	768
% App. Total	62.5	0	37.5		4.9	91.3	3.7		40	20	40		0.3	96.2	3.5	
PHF	.625	.000	.300	.500	.825	.950	.694	.946	.500	.250	.500	.625	.250	.919	.750	.932

Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 1

Groups Printed- Trucks

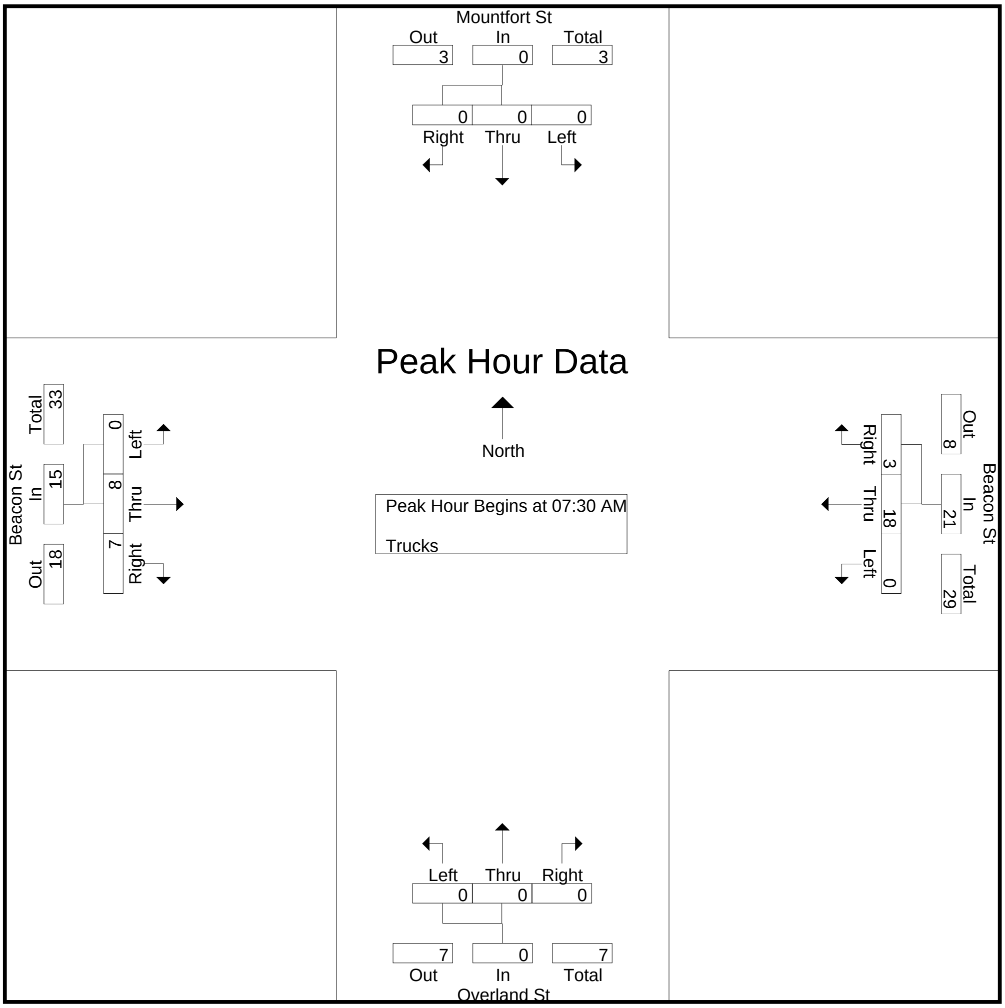
	Mountfort St From North			Beacon St From East			Overland St From South			Beacon St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	1	6	0	0	0	0	0	0	2	9
07:15 AM	0	0	0	0	4	0	0	0	0	0	2	1	7
07:30 AM	0	0	0	0	4	1	0	0	0	0	1	2	8
07:45 AM	0	0	0	0	3	0	0	0	0	0	3	2	8
Total	0	0	0	1	17	1	0	0	0	0	6	7	32
08:00 AM	0	0	0	0	5	2	0	0	0	0	0	2	9
08:15 AM	0	0	0	0	6	0	0	0	0	0	4	1	11
08:30 AM	0	0	0	0	4	0	0	0	0	0	2	2	8
08:45 AM	1	0	0	0	4	0	0	0	0	0	1	2	8
Total	1	0	0	0	19	2	0	0	0	0	7	7	36
Grand Total	1	0	0	1	36	3	0	0	0	0	13	14	68
Apprch %	100	0	0	2.5	90	7.5	0	0	0	0	48.1	51.9	
Total %	1.5	0	0	1.5	52.9	4.4	0	0	0	0	19.1	20.6	

	Mountfort St From North				Beacon St From East				Overland St From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	4	1	5	0	0	0	0	0	1	**2**	3	8
07:45 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	3	2	**5**	8
08:00 AM	0	0	0	0	0	5	**2**	**7**	0	0	0	0	0	0	2	2	9
08:15 AM	0	0	0	0	0	**6**	0	6	0	0	0	0	0	**4**	1	5	**11**
Total Volume	0	0	0	0	0	18	3	21	0	0	0	0	0	8	7	15	36
% App. Total	0	0	0		0	85.7	14.3		0	0	0		0	53.3	46.7		
PHF	.000	.000	.000	.000	.000	.750	.375	.750	.000	.000	.000	.000	.000	.500	.875	.750	.818

Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 2



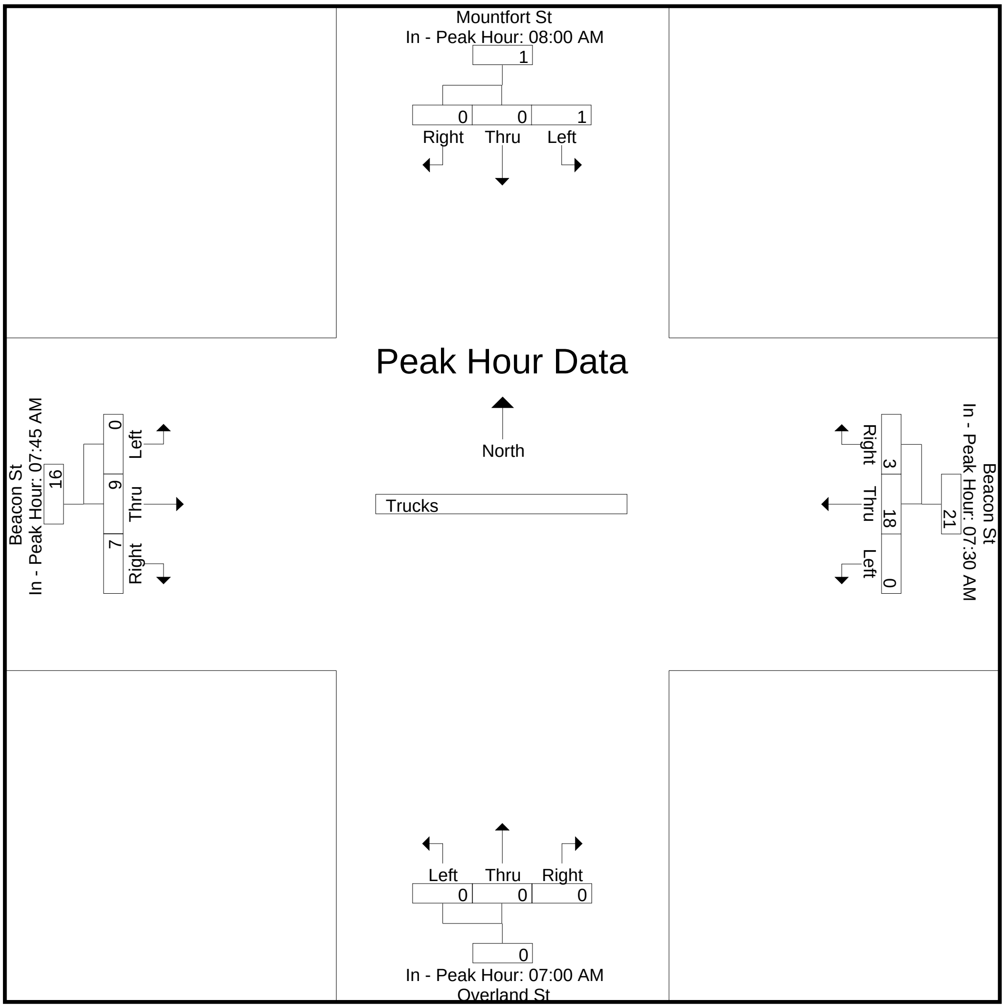
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				07:00 AM				07:45 AM			
+0 mins.	0	0	0	0	0	4	1	5	0	0	0	0	0	3	**2**	**5**
+15 mins.	0	0	0	0	0	3	0	3	0	0	0	0	0	0	2	2
+30 mins.	0	0	0	0	0	5	**2**	**7**	0	0	0	0	0	**4**	1	5
+45 mins.	**1**	0	0	**1**	0	**6**	0	6	0	0	0	0	0	2	2	4
Total Volume	1	0	0	1	0	18	3	21	0	0	0	0	0	9	7	16
% App. Total	100	0	0		0	85.7	14.3		0	0	0		0	56.2	43.8	
PHF	.250	.000	.000	.250	.000	.750	.375	.750	.000	.000	.000	.000	.000	.563	.875	.800

Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 1

Groups Printed- Bikes Peds

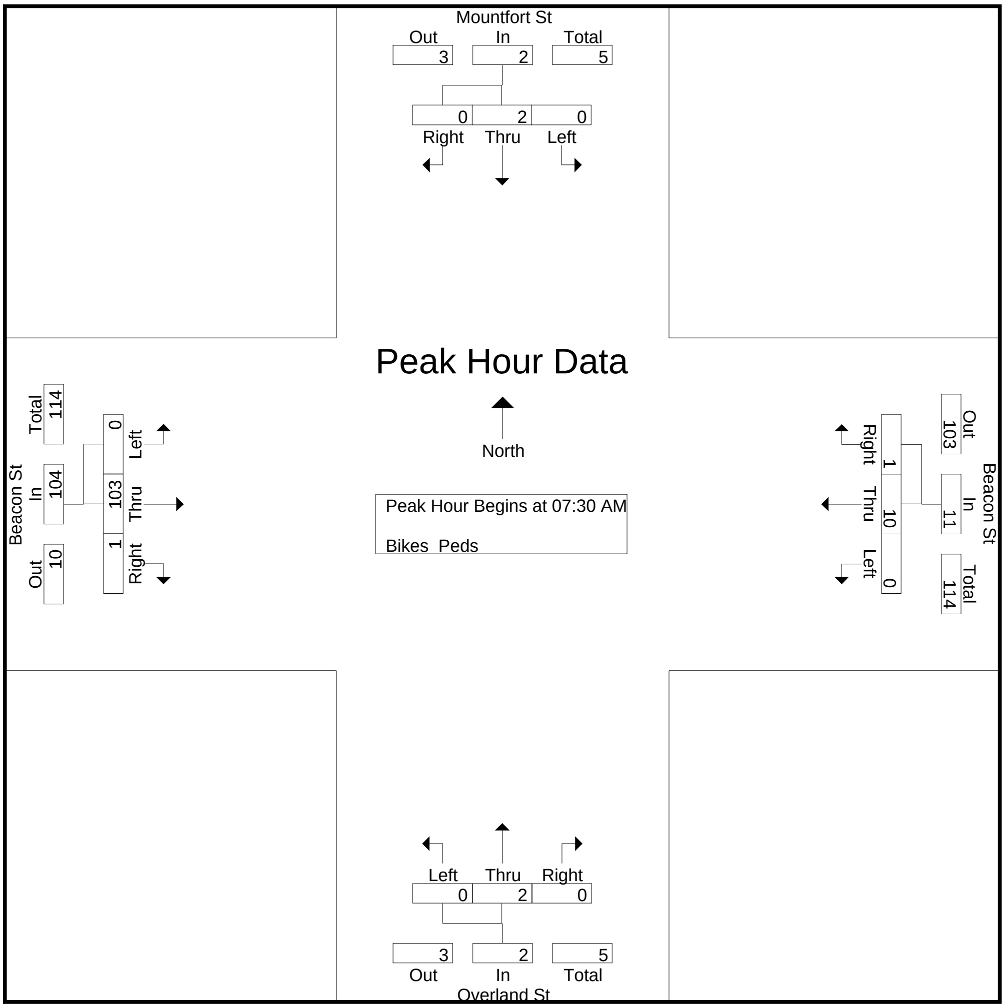
	Mountfort St From North				Beacon St From East				Overland St From South				Beacon St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	9	0	1	0	1	0	0	0	5	0	14	1	0	15	16	31
07:15 AM	0	2	0	6	0	0	0	8	0	0	0	5	0	17	1	1	20	20	40
07:30 AM	0	0	0	11	0	2	0	1	0	2	0	15	0	31	0	0	27	35	62
07:45 AM	0	2	0	4	0	1	1	0	0	0	0	10	0	24	0	1	15	28	43
Total	0	4	0	30	0	4	1	10	0	2	0	35	0	86	2	2	77	99	176
08:00 AM	0	0	0	12	0	0	0	9	0	0	0	11	0	14	1	1	33	15	48
08:15 AM	0	0	0	11	0	7	0	3	0	0	0	15	0	34	0	0	29	41	70
08:30 AM	0	0	0	27	0	3	0	4	0	0	0	20	0	29	1	0	51	33	84
08:45 AM	0	0	0	17	1	1	0	13	0	0	0	19	0	25	0	2	51	27	78
Total	0	0	0	67	1	11	0	29	0	0	0	65	0	102	2	3	164	116	280
Grand Total	0	4	0	97	1	15	1	39	0	2	0	100	0	188	4	5	241	215	456
Apprch %	0	100	0		5.9	88.2	5.9		0	100	0		0	97.9	2.1				
Total %	0	1.9	0		0.5	7	0.5		0	0.9	0		0	87.4	1.9		52.9	47.1	

	Mountfort St From North				Beacon St From East				Overland St From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	2	0	2	0	**2**	0	**2**	0	31	0	31	35
07:45 AM	0	**2**	0	**2**	0	1	**1**	2	0	0	0	0	0	24	0	24	28
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	14	**1**	15	15
08:15 AM	0	0	0	0	0	**7**	0	**7**	0	0	0	0	0	**34**	0	**34**	**41**
Total Volume	0	2	0	2	0	10	1	11	0	2	0	2	0	103	1	104	119
% App. Total	0	100	0		0	90.9	9.1		0	100	0		0	99	1		
PHF	.000	.250	.000	.250	.000	.357	.250	.393	.000	.250	.000	.250	.000	.757	.250	.765	.726

Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 2



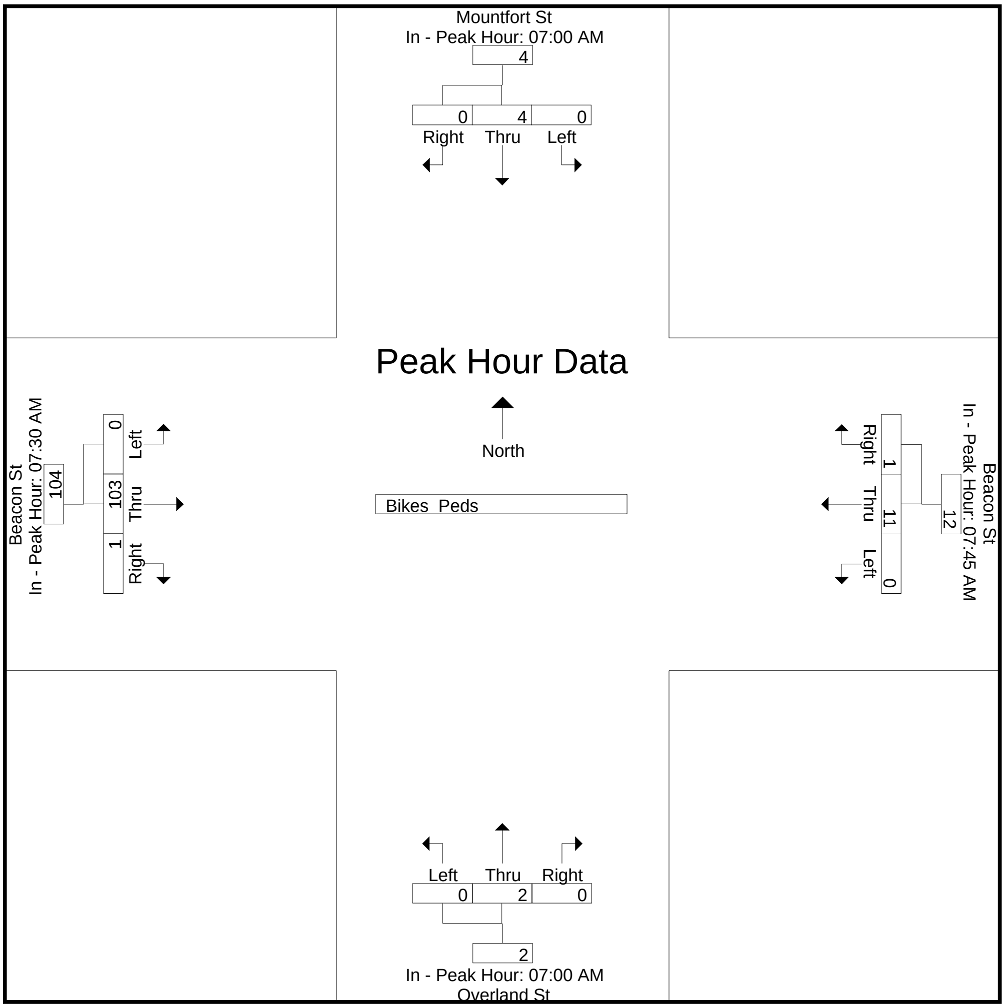
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:45 AM				07:00 AM				07:30 AM			
+0 mins.	0	0	0	0	0	1	**1**	2	0	0	0	0	0	31	0	31
+15 mins.	0	**2**	0	**2**	0	0	0	0	0	0	0	0	0	24	0	24
+30 mins.	0	0	0	0	0	**7**	0	**7**	0	**2**	0	**2**	0	14	**1**	15
+45 mins.	0	2	0	2	0	3	0	3	0	0	0	0	0	**34**	0	**34**
Total Volume	0	4	0	4	0	11	1	12	0	2	0	2	0	103	1	104
% App. Total	0	100	0		0	91.7	8.3		0	100	0		0	99	1	
PHF	.000	.500	.000	.500	.000	.393	.250	.429	.000	.250	.000	.250	.000	.757	.250	.765

Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

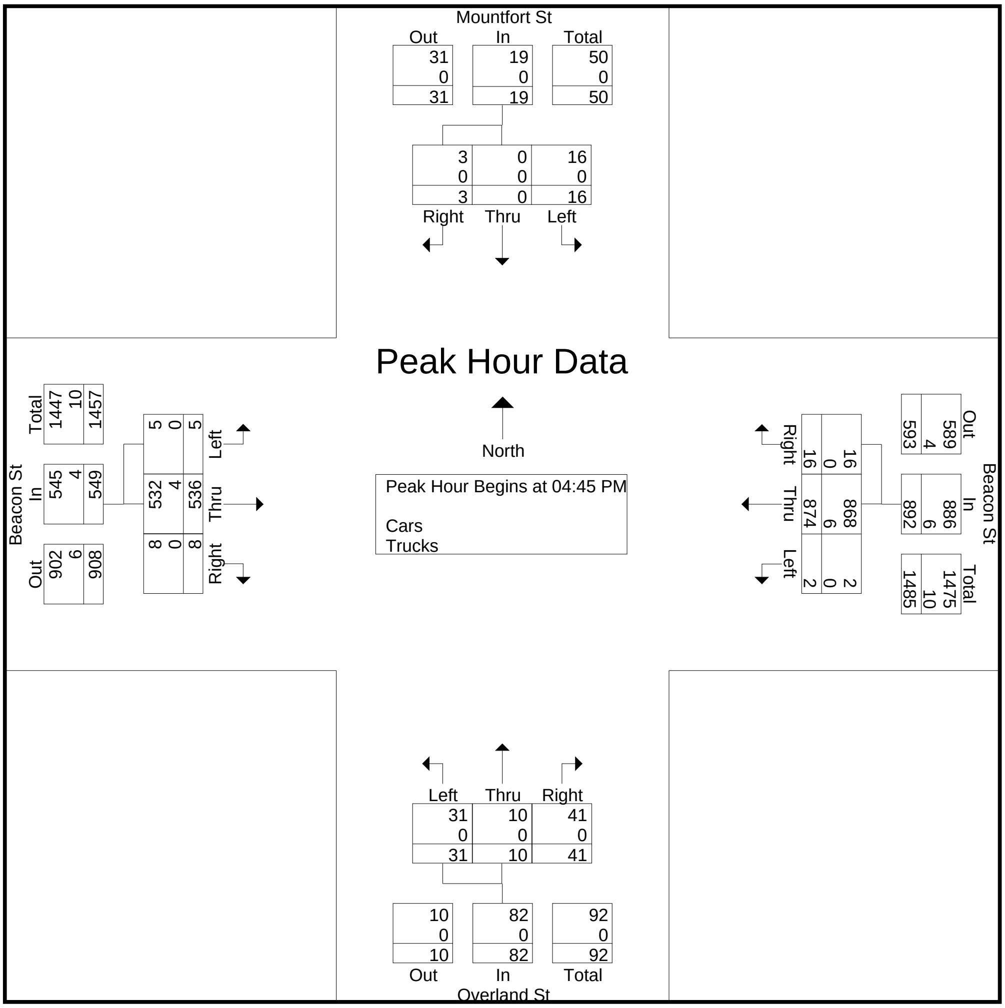
	Mountfort St From North			Beacon St From East			Overland St From South			Beacon St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	2	1	1	1	180	3	16	3	12	0	124	2	345
04:15 PM	1	0	0	0	198	3	11	2	14	1	125	1	356
04:30 PM	4	0	1	0	206	3	11	5	8	2	131	2	373
04:45 PM	4	0	1	1	235	5	7	2	12	1	128	3	399
Total	11	1	3	2	819	14	45	12	46	4	508	8	1473
05:00 PM	5	0	0	0	228	3	8	4	13	2	135	1	399
05:15 PM	2	0	0	0	198	2	12	1	9	1	140	2	367
05:30 PM	5	0	2	1	213	6	4	3	7	1	133	2	377
05:45 PM	4	0	4	0	207	4	7	1	12	1	128	2	370
Total	16	0	6	1	846	15	31	9	41	5	536	7	1513
Grand Total	27	1	9	3	1665	29	76	21	87	9	1044	15	2986
Apprch %	73	2.7	24.3	0.2	98.1	1.7	41.3	11.4	47.3	0.8	97.8	1.4	
Total %	0.9	0	0.3	0.1	55.8	1	2.5	0.7	2.9	0.3	35	0.5	
Cars	26	1	9	3	1651	29	76	21	87	9	1036	15	2963
% Cars	96.3	100	100	100	99.2	100	100	100	100	100	99.2	100	99.2
Trucks	1	0	0	0	14	0	0	0	0	0	8	0	23
% Trucks	3.7	0	0	0	0.8	0	0	0	0	0	0.8	0	0.8

	Mountfort St From North				Beacon St From East				Overland St From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	4	0	1	5	**1**	**235**	5	**241**	7	2	12	21	1	128	**3**	132	**399**
05:00 PM	**5**	0	0	5	0	228	3	231	8	**4**	**13**	**25**	**2**	135	1	138	399
05:15 PM	2	0	0	2	0	198	2	200	**12**	1	9	22	1	**140**	2	**143**	367
05:30 PM	5	0	**2**	**7**	1	213	**6**	220	4	3	7	14	1	133	2	136	377
Total Volume	16	0	3	19	2	874	16	892	31	10	41	82	5	536	8	549	1542
% App. Total	84.2	0	15.8		0.2	98	1.8		37.8	12.2	50		0.9	97.6	1.5		
PHF	.800	.000	.375	.679	.500	.930	.667	.925	.646	.625	.788	.820	.625	.957	.667	.960	.966
Cars	16	0	3	19	2	868	16	886	31	10	41	82	5	532	8	545	1532
% Cars	100	0	100	100	100	99.3	100	99.3	100	100	100	100	100	99.3	100	99.3	99.4
Trucks	0	0	0	0	0	6	0	6	0	0	0	0	0	4	0	4	10
% Trucks	0	0	0	0	0	0.7	0	0.7	0	0	0	0	0	0.7	0	0.7	0.6

Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012

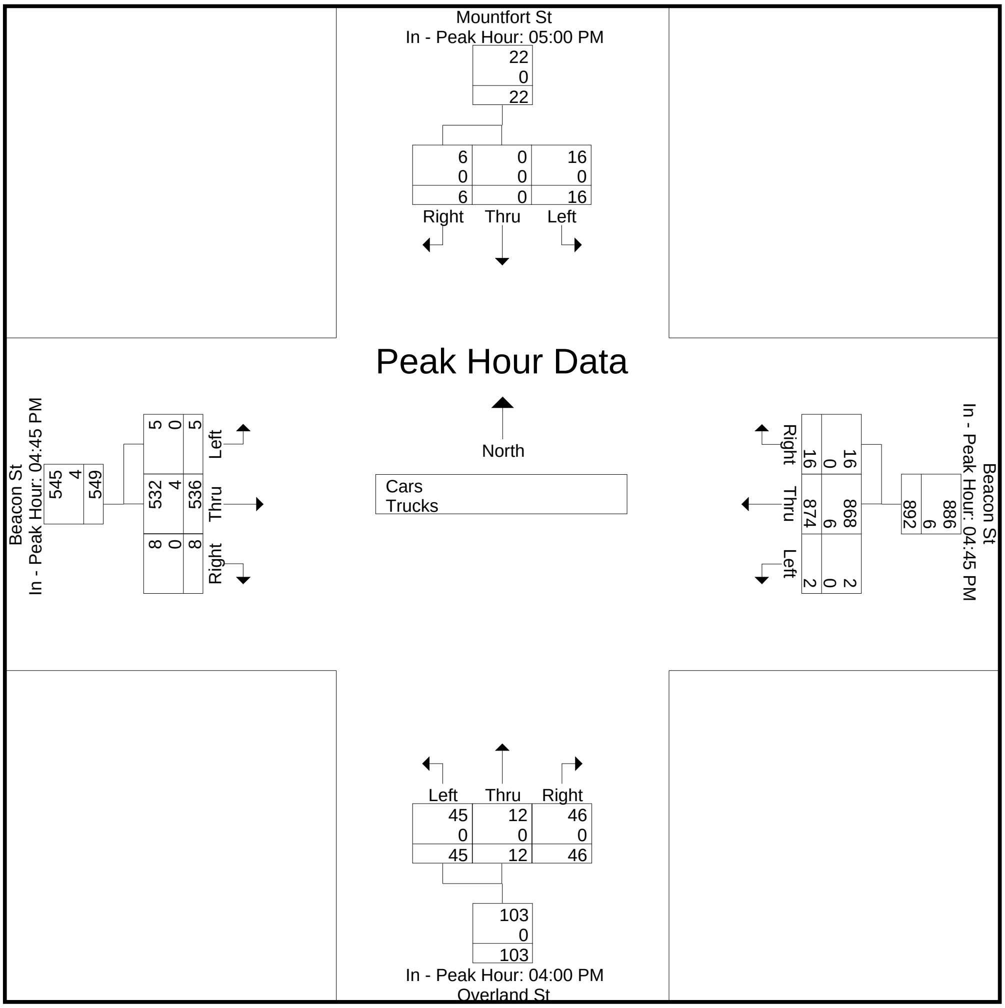


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:45 PM				04:00 PM				04:45 PM			
+0 mins.	**5**	0	0	5	**1**	**235**	5	**241**	**16**	3	12	**31**	1	128	**3**	132
+15 mins.	2	0	0	2	0	228	3	231	11	2	**14**	27	**2**	135	1	138
+30 mins.	5	0	2	7	0	198	2	200	11	**5**	8	24	1	**140**	2	**143**
+45 mins.	4	0	**4**	**8**	1	213	**6**	220	7	2	12	21	1	133	2	136
Total Volume	16	0	6	22	2	874	16	892	45	12	46	103	5	536	8	549
% App. Total	72.7	0	27.3		0.2	98	1.8		43.7	11.7	44.7		0.9	97.6	1.5	
PHF	.800	.000	.375	.688	.500	.930	.667	.925	.703	.600	.821	.831	.625	.957	.667	.960
Cars	16	0	6	22	2	868	16	886	45	12	46	103	5	532	8	545
% Cars	100	0	100	100	100	99.3	100	99.3	100	100	100	100	100	99.3	100	99.3
Trucks	0	0	0	0	0	6	0	6	0	0	0	0	0	4	0	4
% Trucks	0	0	0	0	0	0.7	0	0.7	0	0	0	0	0	0.7	0	0.7

Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St	File Name : 94970002
E/W Street : Beacon Street	Site Code : 94970002
City/State : Boston, MA	Start Date : 5/17/2012
Weather : Drizzle	Page No : 3



Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars

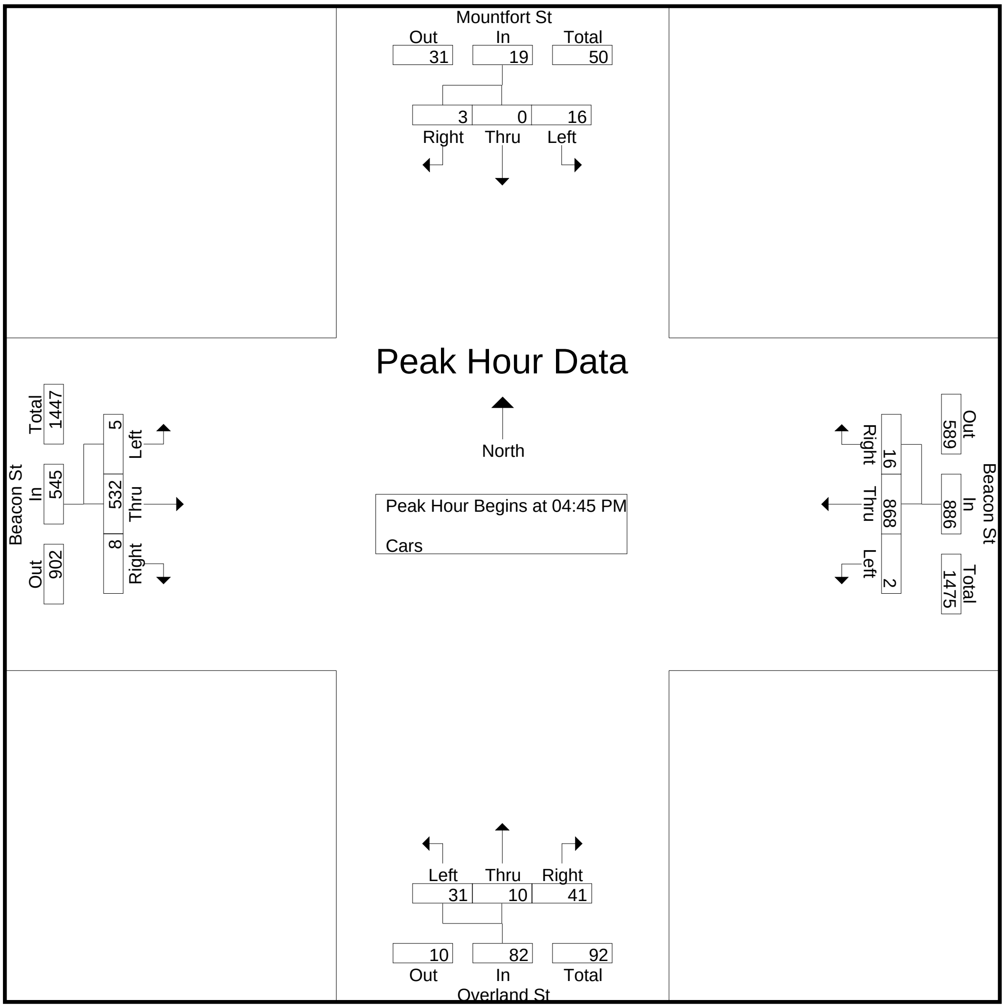
	Mountfort St From North			Beacon St From East			Overland St From South			Beacon St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	1	1	1	1	179	3	16	3	12	0	121	2	340
04:15 PM	1	0	0	0	196	3	11	2	14	1	125	1	354
04:30 PM	4	0	1	0	202	3	11	5	8	2	131	2	369
04:45 PM	4	0	1	1	234	5	7	2	12	1	128	3	398
Total	10	1	3	2	811	14	45	12	46	4	505	8	1461
05:00 PM	5	0	0	0	226	3	8	4	13	2	134	1	396
05:15 PM	2	0	0	0	197	2	12	1	9	1	139	2	365
05:30 PM	5	0	2	1	211	6	4	3	7	1	131	2	373
05:45 PM	4	0	4	0	206	4	7	1	12	1	127	2	368
Total	16	0	6	1	840	15	31	9	41	5	531	7	1502
Grand Total	26	1	9	3	1651	29	76	21	87	9	1036	15	2963
Apprch %	72.2	2.8	25	0.2	98.1	1.7	41.3	11.4	47.3	0.8	97.7	1.4	
Total %	0.9	0	0.3	0.1	55.7	1	2.6	0.7	2.9	0.3	35	0.5	

	Mountfort St From North				Beacon St From East				Overland St From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	4	0	1	5	**1**	**234**	5	**240**	7	2	12	21	1	128	**3**	132	**398**
05:00 PM	**5**	0	0	5	0	226	3	229	8	**4**	**13**	**25**	**2**	134	1	137	396
05:15 PM	2	0	0	2	0	197	2	199	**12**	1	9	22	1	**139**	2	**142**	365
05:30 PM	5	0	**2**	**7**	1	211	**6**	218	4	3	7	14	1	131	2	134	373
Total Volume	16	0	3	19	2	868	16	886	31	10	41	82	5	532	8	545	1532
% App. Total	84.2	0	15.8		0.2	98	1.8		37.8	12.2	50		0.9	97.6	1.5		
PHF	.800	.000	.375	.679	.500	.927	.667	.923	.646	.625	.788	.820	.625	.957	.667	.960	.962

Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 2



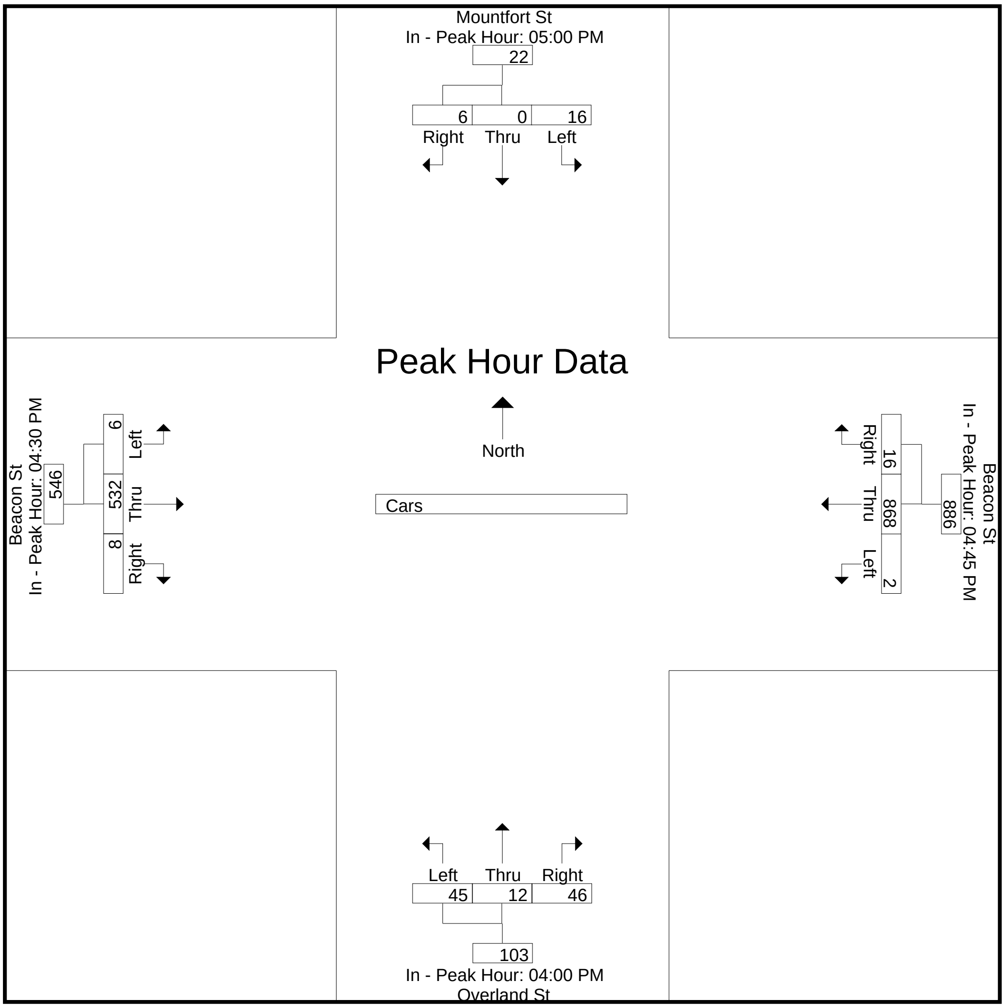
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:45 PM				04:00 PM				04:30 PM			
+0 mins.	**5**	0	0	5	**1**	**234**	5	**240**	**16**	3	12	**31**	**2**	131	2	135
+15 mins.	2	0	0	2	0	226	3	229	11	2	**14**	27	1	128	**3**	132
+30 mins.	5	0	2	7	0	197	2	199	11	**5**	8	24	2	134	1	137
+45 mins.	4	0	**4**	**8**	1	211	**6**	218	7	2	12	21	1	**139**	2	**142**
Total Volume	16	0	6	22	2	868	16	886	45	12	46	103	6	532	8	546
% App. Total	72.7	0	27.3		0.2	98	1.8		43.7	11.7	44.7		1.1	97.4	1.5	
PHF	.800	.000	.375	.688	.500	.927	.667	.923	.703	.600	.821	.831	.750	.957	.667	.961

Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 1

Groups Printed- Trucks

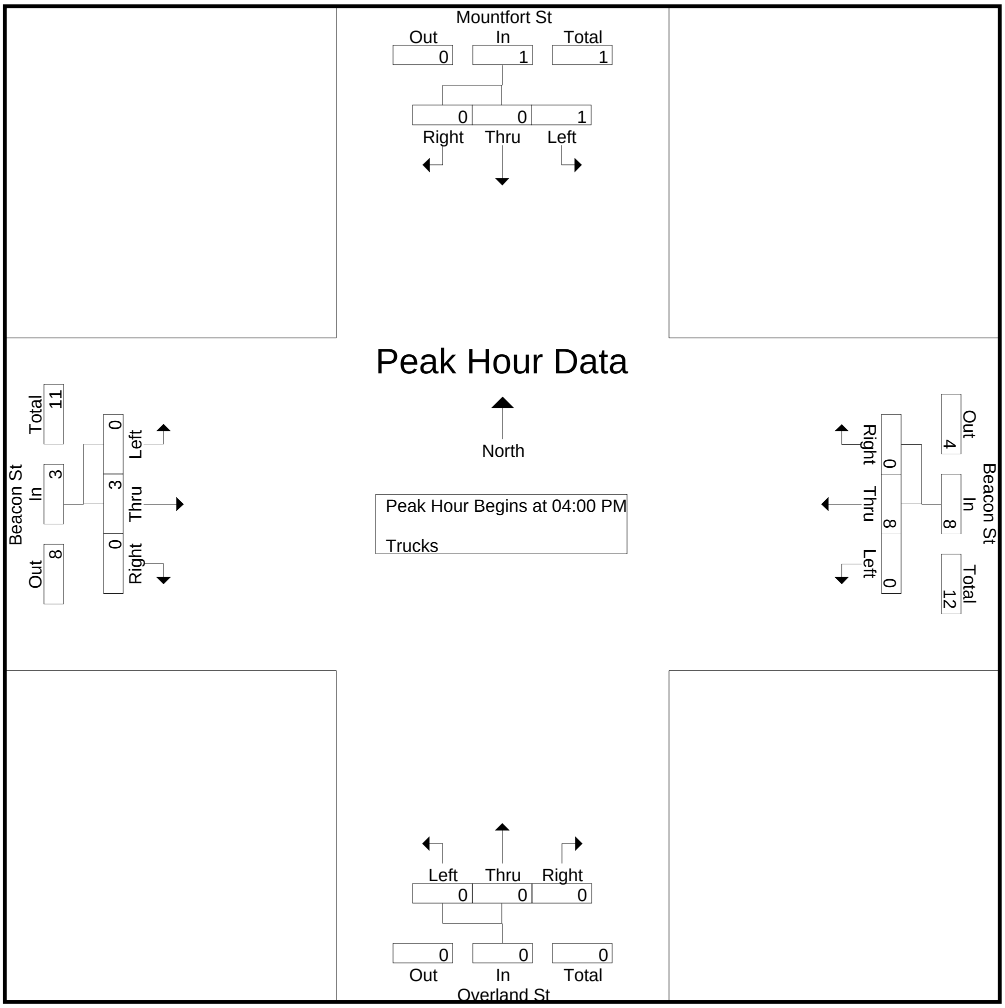
	Mountfort St From North			Beacon St From East			Overland St From South			Beacon St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	1	0	0	0	1	0	0	0	0	0	3	0	5
04:15 PM	0	0	0	0	2	0	0	0	0	0	0	0	2
04:30 PM	0	0	0	0	4	0	0	0	0	0	0	0	4
04:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	1	0	0	0	8	0	0	0	0	0	3	0	12
05:00 PM	0	0	0	0	2	0	0	0	0	0	1	0	3
05:15 PM	0	0	0	0	1	0	0	0	0	0	1	0	2
05:30 PM	0	0	0	0	2	0	0	0	0	0	2	0	4
05:45 PM	0	0	0	0	1	0	0	0	0	0	1	0	2
Total	0	0	0	0	6	0	0	0	0	0	5	0	11
Grand Total	1	0	0	0	14	0	0	0	0	0	8	0	23
Apprch %	100	0	0	0	100	0	0	0	0	0	100	0	
Total %	4.3	0	0	0	60.9	0	0	0	0	0	34.8	0	

	Mountfort St From North				Beacon St From East				Overland St From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**1**	0	0	**1**	0	1	0	1	0	0	0	0	0	**3**	0	**3**	**5**
04:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
04:30 PM	0	0	0	0	0	**4**	0	**4**	0	0	0	0	0	0	0	0	4
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Volume	1	0	0	1	0	8	0	8	0	0	0	0	0	3	0	3	12
% App. Total	100	0	0		0	100	0		0	0	0		0	100	0		
PHF	.250	.000	.000	.250	.000	.500	.000	.500	.000	.000	.000	.000	.000	.250	.000	.250	.600

Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012



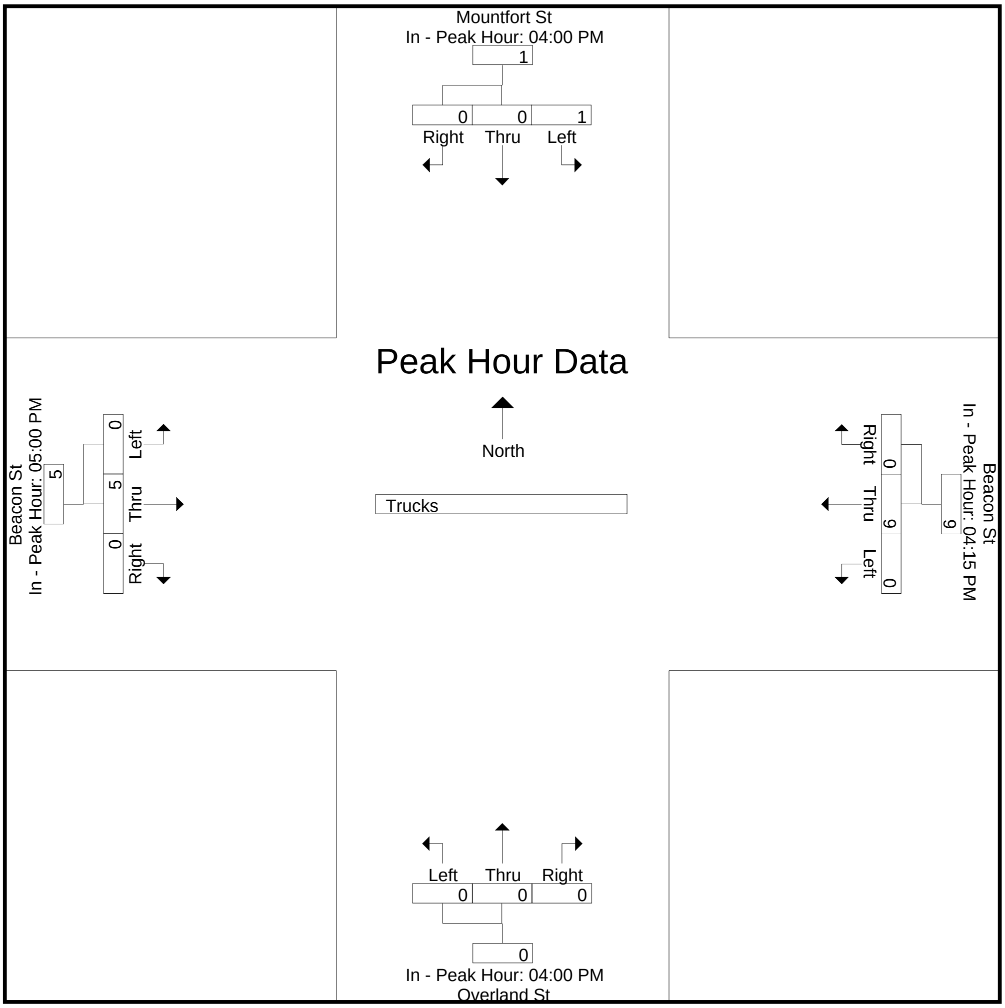
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:15 PM				04:00 PM				05:00 PM			
+0 mins.	**1**	0	0	**1**	0	2	0	2	0	0	0	0	0	1	0	1
+15 mins.	0	0	0	0	0	**4**	0	**4**	0	0	0	0	0	1	0	1
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	**2**	0	**2**
+45 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1
Total Volume	1	0	0	1	0	9	0	9	0	0	0	0	0	5	0	5
% App. Total	100	0	0		0	100	0		0	0	0		0	100	0	
PHF	.250	.000	.000	.250	.000	.563	.000	.563	.000	.000	.000	.000	.000	.625	.000	.625

Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 1

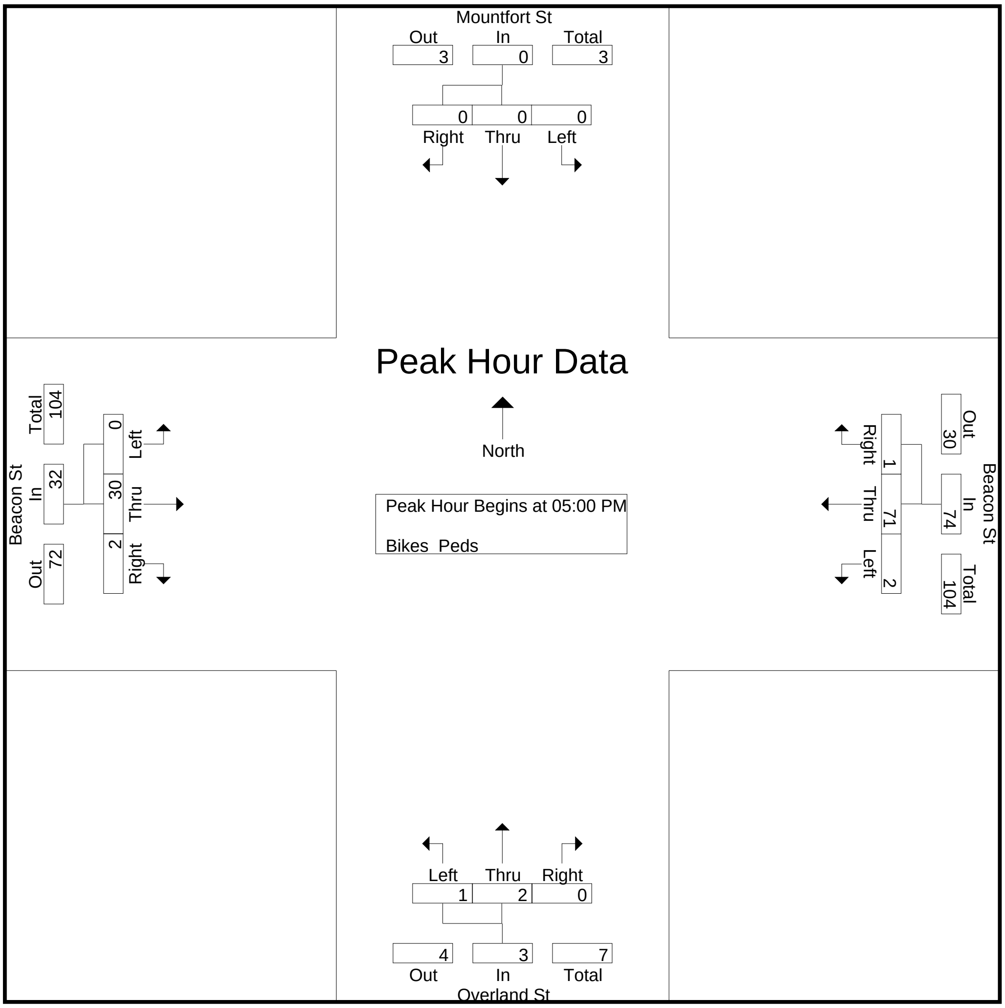
Groups Printed- Bikes Peds

	Mountfort St From North				Beacon St From East				Overland St From South				Beacon St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	24	1	10	0	2	1	0	0	28	0	1	0	1	55	13	68
04:15 PM	0	1	0	36	0	4	1	1	0	0	0	19	0	0	0	3	59	6	65
04:30 PM	0	0	0	30	0	14	0	8	0	0	0	22	0	4	0	5	65	18	83
04:45 PM	0	1	0	42	0	18	0	1	0	3	0	17	0	2	2	1	61	26	87
Total	0	2	0	132	1	46	1	12	1	3	0	86	0	7	2	10	240	63	303
05:00 PM	0	0	0	37	0	12	0	10	0	0	0	20	0	8	2	2	69	22	91
05:15 PM	0	0	0	43	2	22	0	6	0	1	0	25	0	7	0	0	74	32	106
05:30 PM	0	0	0	29	0	19	1	12	0	0	0	29	0	7	0	0	70	27	97
05:45 PM	0	0	0	46	0	18	0	1	1	1	0	35	0	8	0	1	83	28	111
Total	0	0	0	155	2	71	1	29	1	2	0	109	0	30	2	3	296	109	405
Grand Total	0	2	0	287	3	117	2	41	2	5	0	195	0	37	4	13	536	172	708
Apprch %	0	100	0		2.5	95.9	1.6		28.6	71.4	0		0	90.2	9.8				
Total %	0	1.2	0		1.7	68	1.2		1.2	2.9	0		0	21.5	2.3		75.7	24.3	

	Mountfort St From North				Beacon St From East				Overland St From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	12	0	12	0	0	0	0	0	**8**	**2**	**10**	22
05:15 PM	0	0	0	0	**2**	**22**	0	**24**	0	**1**	0	1	0	7	0	7	**32**
05:30 PM	0	0	0	0	0	19	**1**	20	0	0	0	0	0	7	0	7	27
05:45 PM	0	0	0	0	0	18	0	18	**1**	1	0	**2**	0	8	0	8	28
Total Volume	0	0	0	0	2	71	1	74	1	2	0	3	0	30	2	32	109
% App. Total	0	0	0		2.7	95.9	1.4		33.3	66.7	0		0	93.8	6.2		
PHF	.000	.000	.000	.000	.250	.807	.250	.771	.250	.500	.000	.375	.000	.938	.250	.800	.852

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 2



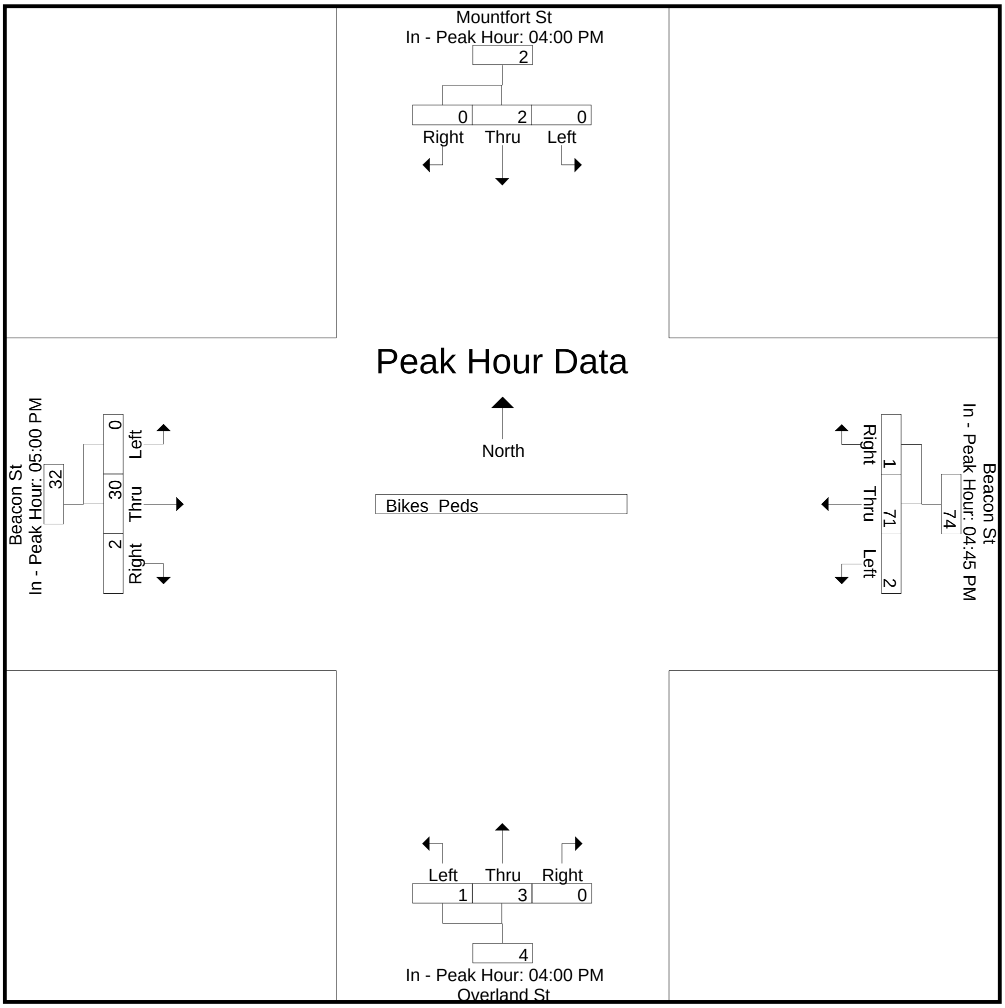
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:45 PM				04:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	18	0	18	**1**	0	0	1	0	**8**	**2**	**10**
+15 mins.	0	**1**	0	**1**	0	12	0	12	0	0	0	0	0	7	0	7
+30 mins.	0	0	0	0	**2**	**22**	0	**24**	0	0	0	0	0	7	0	7
+45 mins.	0	1	0	1	0	19	**1**	20	0	**3**	0	**3**	0	8	0	8
Total Volume	0	2	0	2	2	71	1	74	1	3	0	4	0	30	2	32
% App. Total	0	100	0		2.7	95.9	1.4		25	75	0		0	93.8	6.2	
PHF	.000	.500	.000	.500	.250	.807	.250	.771	.250	.250	.000	.333	.000	.938	.250	.800

Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

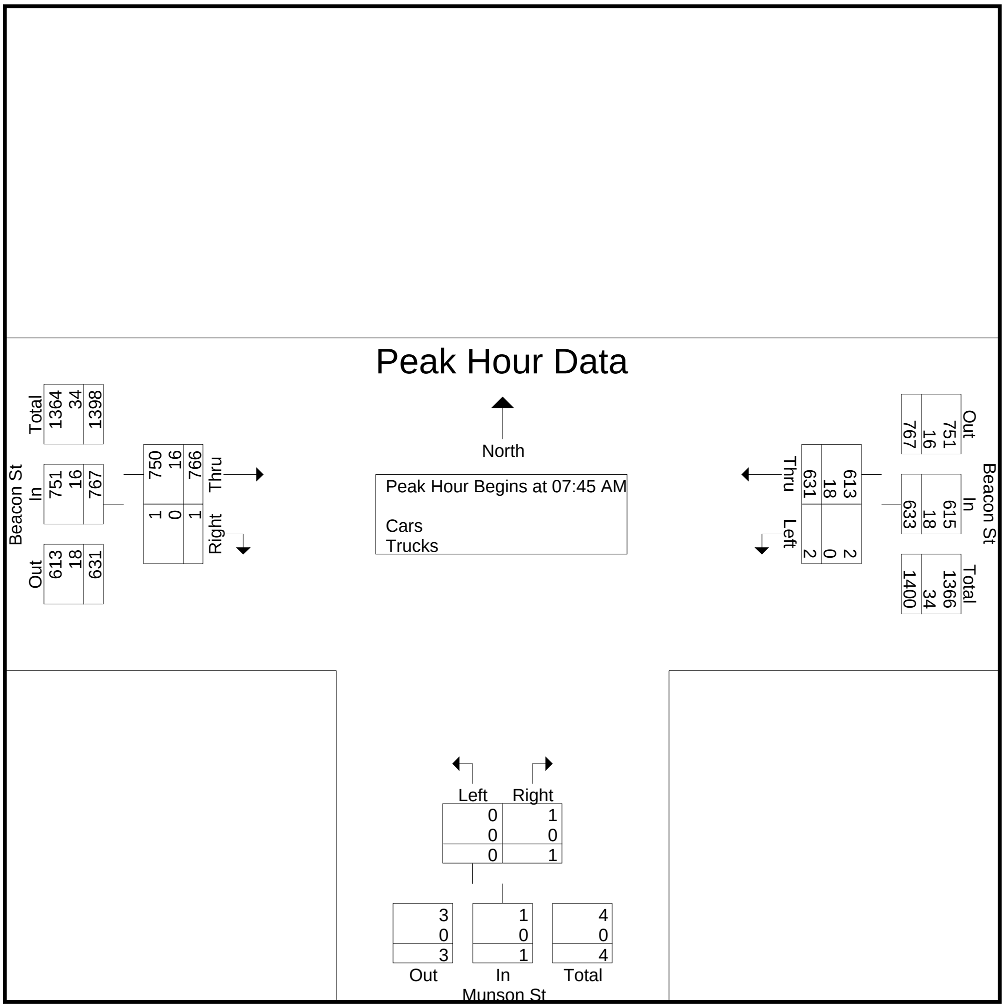
	Beacon St From East		Munson St From South		Beacon St From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	0	115	0	1	100	0	216
07:15 AM	0	146	1	0	108	0	255
07:30 AM	0	160	0	1	144	1	306
07:45 AM	0	164	0	0	158	0	322
Total	0	585	1	2	510	1	1099
08:00 AM	1	147	0	0	195	0	343
08:15 AM	1	163	0	1	206	0	371
08:30 AM	0	157	0	0	207	1	365
08:45 AM	1	145	1	0	174	0	321
Total	3	612	1	1	782	1	1400
Grand Total	3	1197	2	3	1292	2	2499
Apprch %	0.2	99.8	40	60	99.8	0.2	
Total %	0.1	47.9	0.1	0.1	51.7	0.1	
Cars	3	1160	2	3	1265	2	2435
% Cars	100	96.9	100	100	97.9	100	97.4
Trucks	0	37	0	0	27	0	64
% Trucks	0	3.1	0	0	2.1	0	2.6

	Beacon St From East			Munson St From South			Beacon St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	**164**	**164**	0	0	0	158	0	158	322
08:00 AM	**1**	147	148	0	0	0	195	0	195	343
08:15 AM	1	163	164	0	**1**	**1**	206	0	206	**371**
08:30 AM	0	157	157	0	0	0	**207**	**1**	**208**	365
Total Volume	2	631	633	0	1	1	766	1	767	1401
% App. Total	0.3	99.7		0	100		99.9	0.1		
PHF	.500	.962	.965	.000	.250	.250	.925	.250	.922	.944
Cars	2	613	615	0	1	1	750	1	751	1367
% Cars	100	97.1	97.2	0	100	100	97.9	100	97.9	97.6
Trucks	0	18	18	0	0	0	16	0	16	34
% Trucks	0	2.9	2.8	0	0	0	2.1	0	2.1	2.4

Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 2



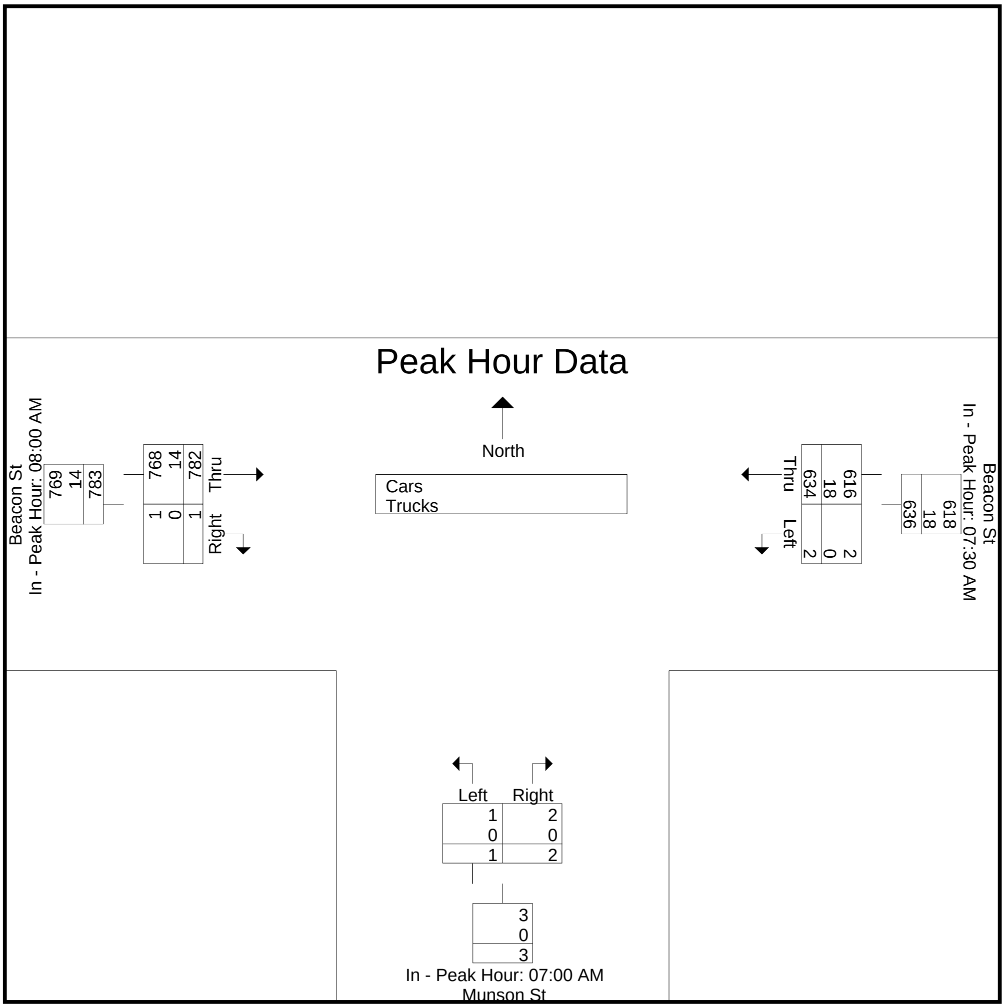
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:00 AM			08:00 AM		
+0 mins.	0	160	160	0	**1**	**1**	195	0	195
+15 mins.	0	**164**	**164**	**1**	0	1	206	0	206
+30 mins.	**1**	147	148	0	1	1	**207**	**1**	**208**
+45 mins.	1	163	164	0	0	0	174	0	174
Total Volume	2	634	636	1	2	3	782	1	783
% App. Total	0.3	99.7		33.3	66.7		99.9	0.1	
PHF	.500	.966	.970	.250	.500	.750	.944	.250	.941
Cars	2	616	618	1	2	3	768	1	769
% Cars	100	97.2	97.2	100	100	100	98.2	100	98.2
Trucks	0	18	18	0	0	0	14	0	14
% Trucks	0	2.8	2.8	0	0	0	1.8	0	1.8

Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars

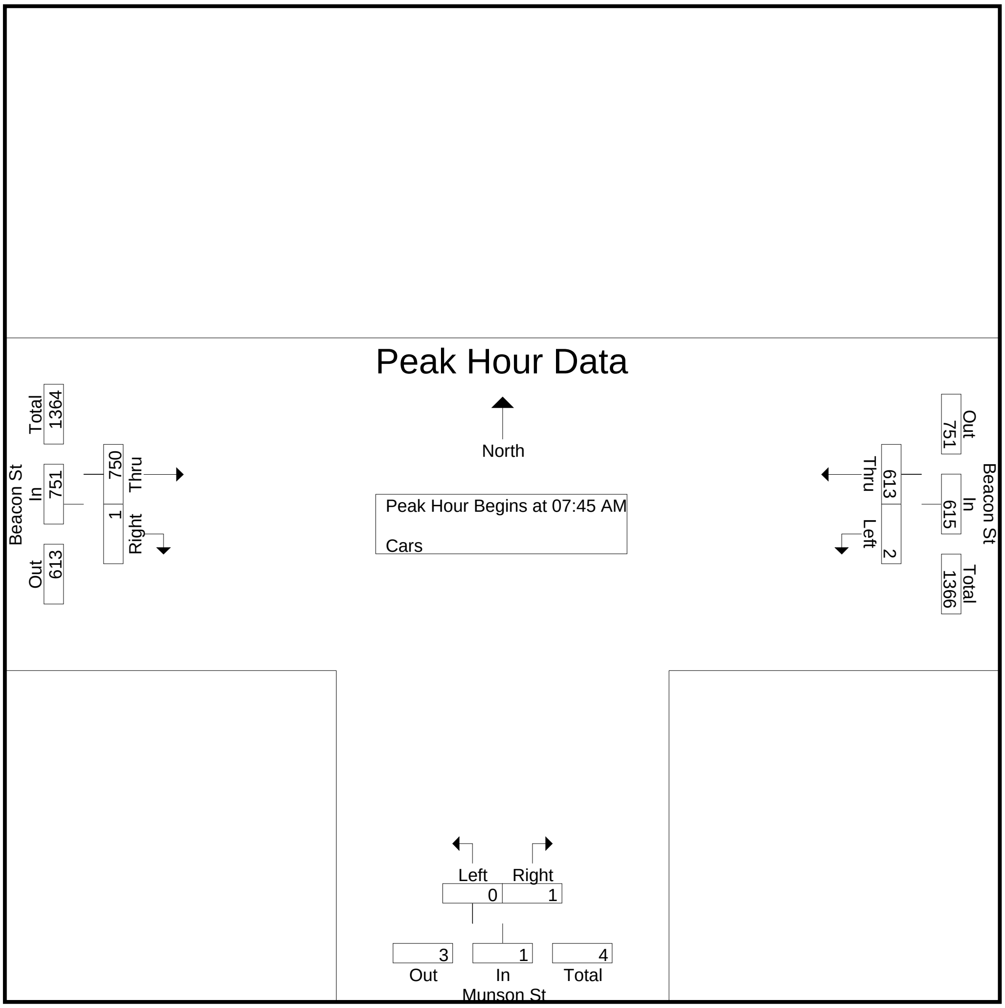
	Beacon St From East		Munson St From South		Beacon St From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	0	108	0	1	98	0	207
07:15 AM	0	142	1	0	104	0	247
07:30 AM	0	156	0	1	142	1	300
07:45 AM	0	161	0	0	153	0	314
Total	0	567	1	2	497	1	1068
08:00 AM	1	142	0	0	193	0	336
08:15 AM	1	157	0	1	201	0	360
08:30 AM	0	153	0	0	203	1	357
08:45 AM	1	141	1	0	171	0	314
Total	3	593	1	1	768	1	1367
Grand Total	3	1160	2	3	1265	2	2435
Apprch %	0.3	99.7	40	60	99.8	0.2	
Total %	0.1	47.6	0.1	0.1	52	0.1	

	Beacon St From East			Munson St From South			Beacon St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	**161**	**161**	0	0	0	153	0	153	314
08:00 AM	**1**	142	143	0	0	0	193	0	193	336
08:15 AM	1	157	158	0	**1**	**1**	201	0	201	**360**
08:30 AM	0	153	153	0	0	0	**203**	**1**	**204**	357
Total Volume	2	613	615	0	1	1	750	1	751	1367
% App. Total	0.3	99.7		0	100		99.9	0.1		
PHF	.500	.952	.955	.000	.250	.250	.924	.250	.920	.949

Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 2



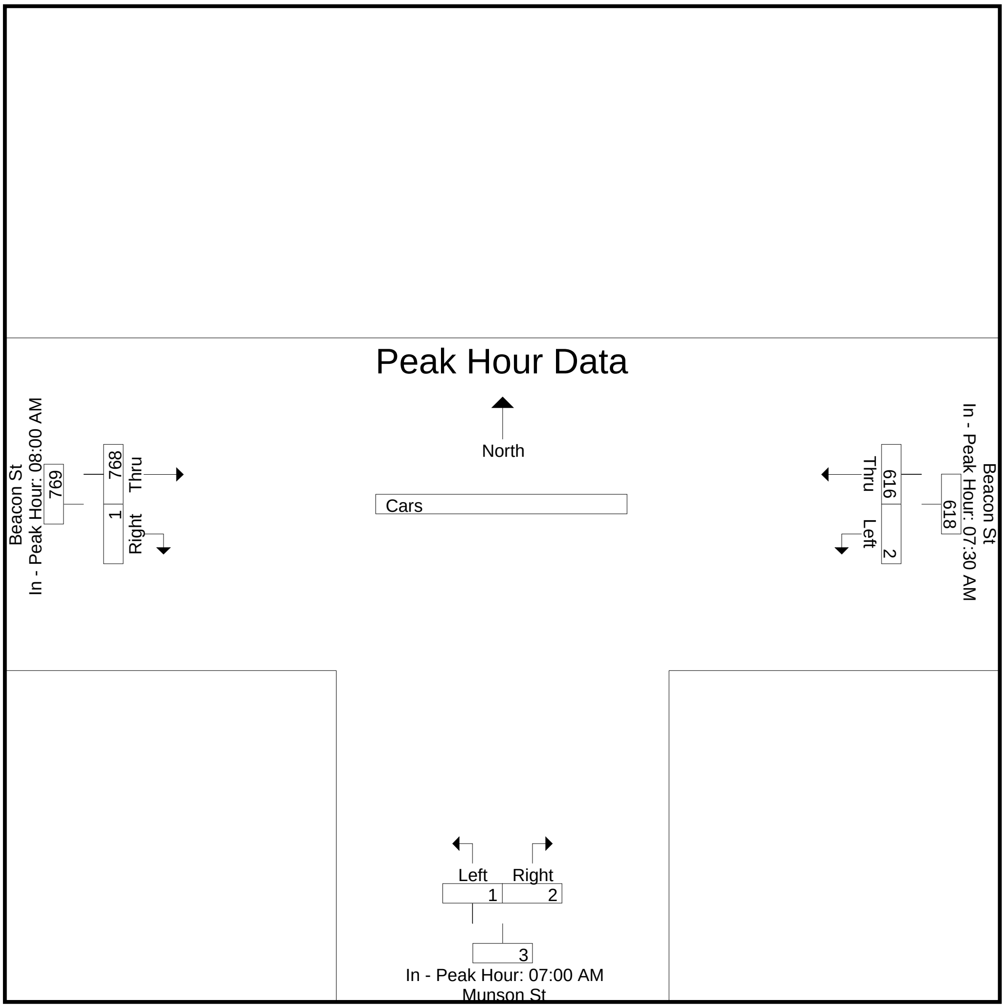
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:00 AM			08:00 AM		
+0 mins.	0	156	156	0	**1**	**1**	193	0	193
+15 mins.	0	**161**	**161**	**1**	0	1	201	0	201
+30 mins.	**1**	142	143	0	1	1	**203**	**1**	**204**
+45 mins.	1	157	158	0	0	0	171	0	171
Total Volume	2	616	618	1	2	3	768	1	769
% App. Total	0.3	99.7		33.3	66.7		99.9	0.1	
PHF	.500	.957	.960	.250	.500	.750	.946	.250	.942

Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 1

Groups Printed- Trucks

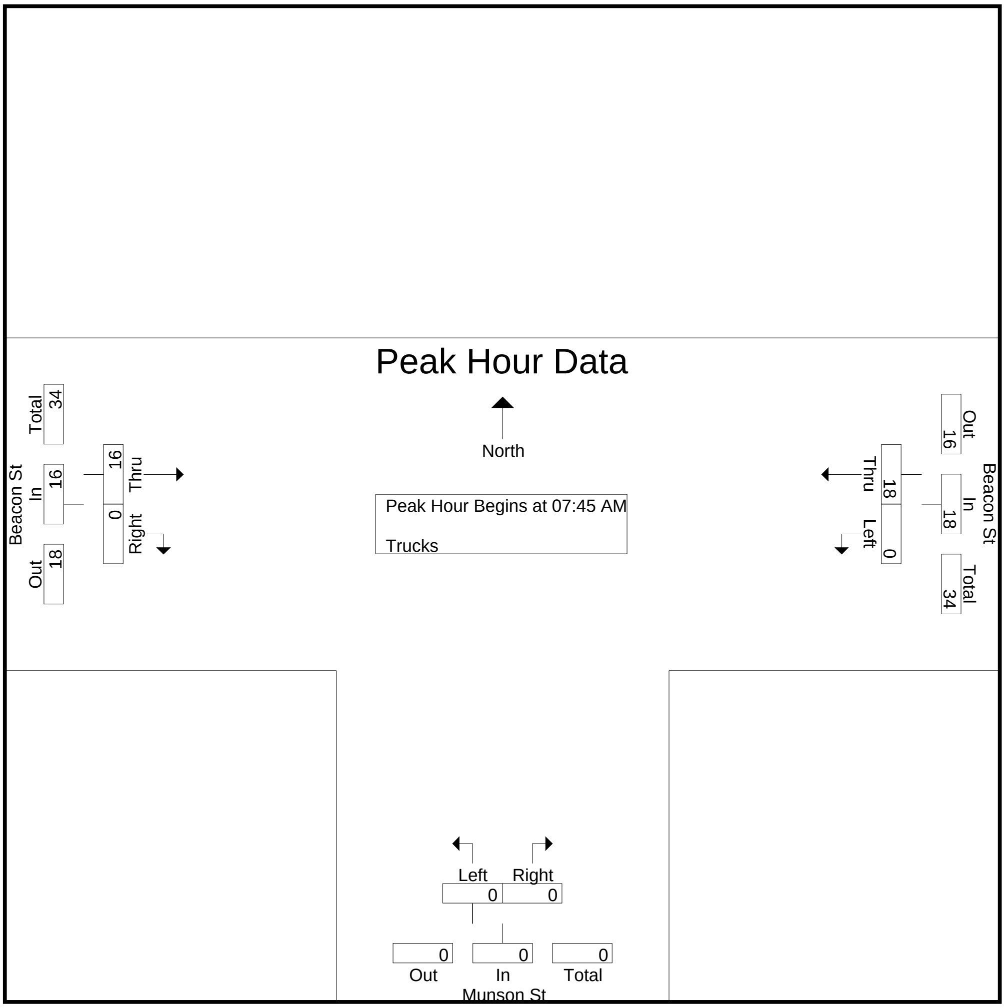
	Beacon St From East		Munson St From South		Beacon St From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	0	7	0	0	2	0	9
07:15 AM	0	4	0	0	4	0	8
07:30 AM	0	4	0	0	2	0	6
07:45 AM	0	3	0	0	5	0	8
Total	0	18	0	0	13	0	31
08:00 AM	0	5	0	0	2	0	7
08:15 AM	0	6	0	0	5	0	11
08:30 AM	0	4	0	0	4	0	8
08:45 AM	0	4	0	0	3	0	7
Total	0	19	0	0	14	0	33
Grand Total	0	37	0	0	27	0	64
Apprch %	0	100	0	0	100	0	
Total %	0	57.8	0	0	42.2	0	

	Beacon St From East			Munson St From South			Beacon St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	3	3	0	0	0	**5**	0	**5**	8
08:00 AM	0	5	5	0	0	0	2	0	2	7
08:15 AM	0	**6**	**6**	0	0	0	5	0	5	**11**
08:30 AM	0	4	4	0	0	0	4	0	4	8
Total Volume	0	18	18	0	0	0	16	0	16	34
% App. Total	0	100		0	0		100	0		
PHF	.000	.750	.750	.000	.000	.000	.800	.000	.800	.773

Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 2



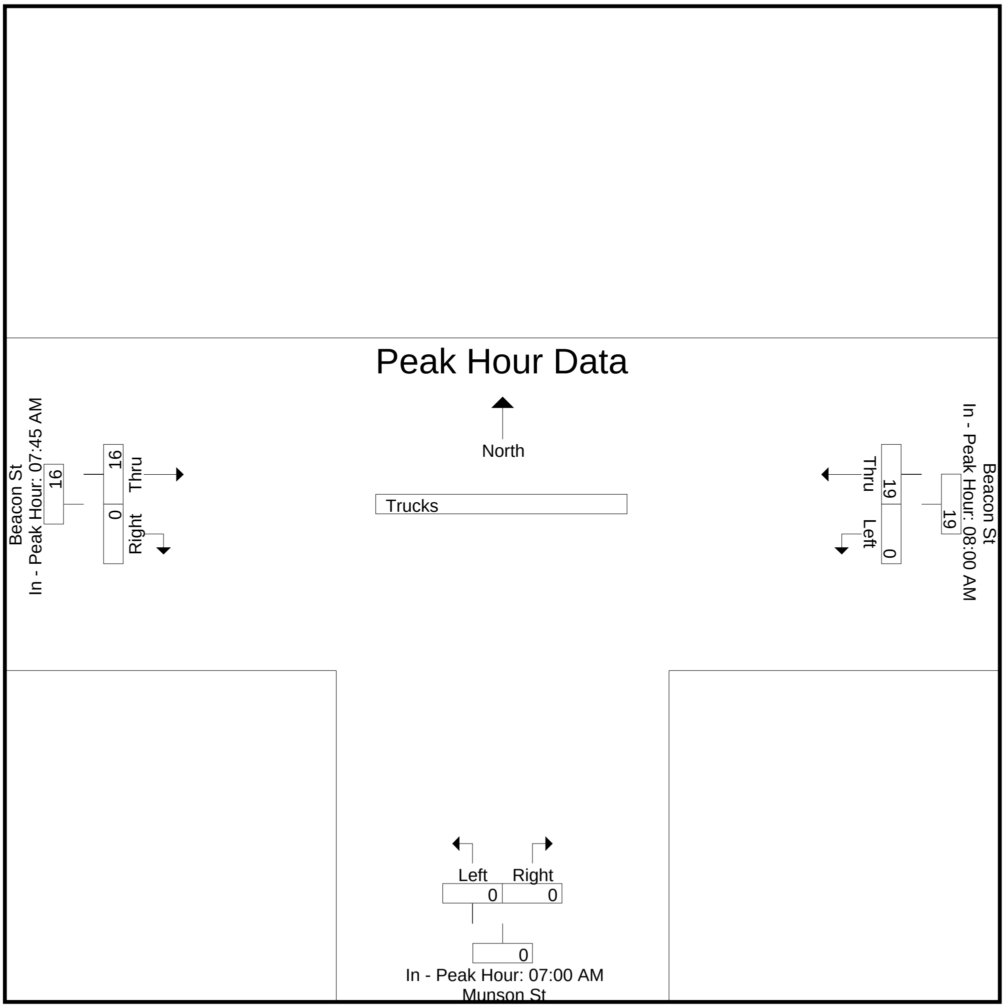
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			07:00 AM			07:45 AM		
+0 mins.	0	5	5	0	0	0	**5**	0	**5**
+15 mins.	0	**6**	**6**	0	0	0	2	0	2
+30 mins.	0	4	4	0	0	0	5	0	5
+45 mins.	0	4	4	0	0	0	4	0	4
Total Volume	0	19	19	0	0	0	16	0	16
% App. Total	0	100		0	0		100	0	
PHF	.000	.792	.792	.000	.000	.000	.800	.000	.800

Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 1

Groups Printed- Bikes Peds

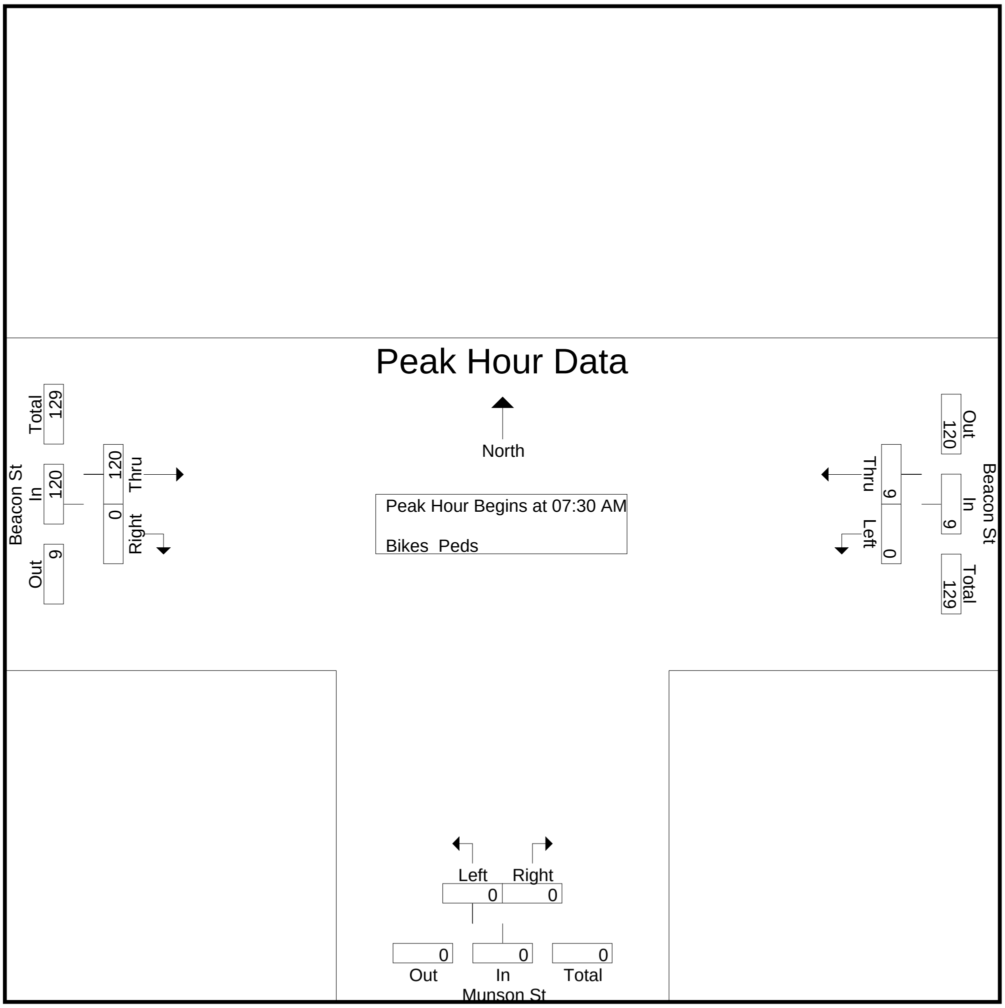
	Beacon St From East			Munson St From South			Beacon St From West					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	2	1	0	0	8	16	0	1	10	18	28
07:15 AM	0	1	3	0	0	9	13	0	1	13	14	27
07:30 AM	0	2	0	0	0	14	40	0	1	15	42	57
07:45 AM	0	0	2	0	0	10	27	0	0	12	27	39
Total	0	5	6	0	0	41	96	0	3	50	101	151
08:00 AM	0	1	2	0	0	19	18	0	2	23	19	42
08:15 AM	0	6	0	0	0	22	35	0	2	24	41	65
08:30 AM	0	3	0	0	0	18	36	0	2	20	39	59
08:45 AM	0	2	0	0	0	25	25	0	2	27	27	54
Total	0	12	2	0	0	84	114	0	8	94	126	220
Grand Total	0	17	8	0	0	125	210	0	11	144	227	371
Apprch %	0	100		0	0		100	0				
Total %	0	7.5		0	0		92.5	0		38.8	61.2	

	Beacon St From East			Munson St From South			Beacon St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	2	2	0	0	0	**40**	0	**40**	**42**
07:45 AM	0	0	0	0	0	0	27	0	27	27
08:00 AM	0	1	1	0	0	0	18	0	18	19
08:15 AM	0	**6**	**6**	0	0	0	35	0	35	41
Total Volume	0	9	9	0	0	0	120	0	120	129
% App. Total	0	100		0	0		100	0		
PHF	.000	.375	.375	.000	.000	.000	.750	.000	.750	.768

Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			07:00 AM			07:30 AM		
+0 mins.	0	1	1	0	0	0	**40**	0	**40**
+15 mins.	0	**6**	**6**	0	0	0	27	0	27
+30 mins.	0	3	3	0	0	0	18	0	18
+45 mins.	0	2	2	0	0	0	35	0	35
Total Volume	0	12	12	0	0	0	120	0	120
% App. Total	0	100		0	0		100	0	
PHF	.000	.500	.500	.000	.000	.000	.750	.000	.750

Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
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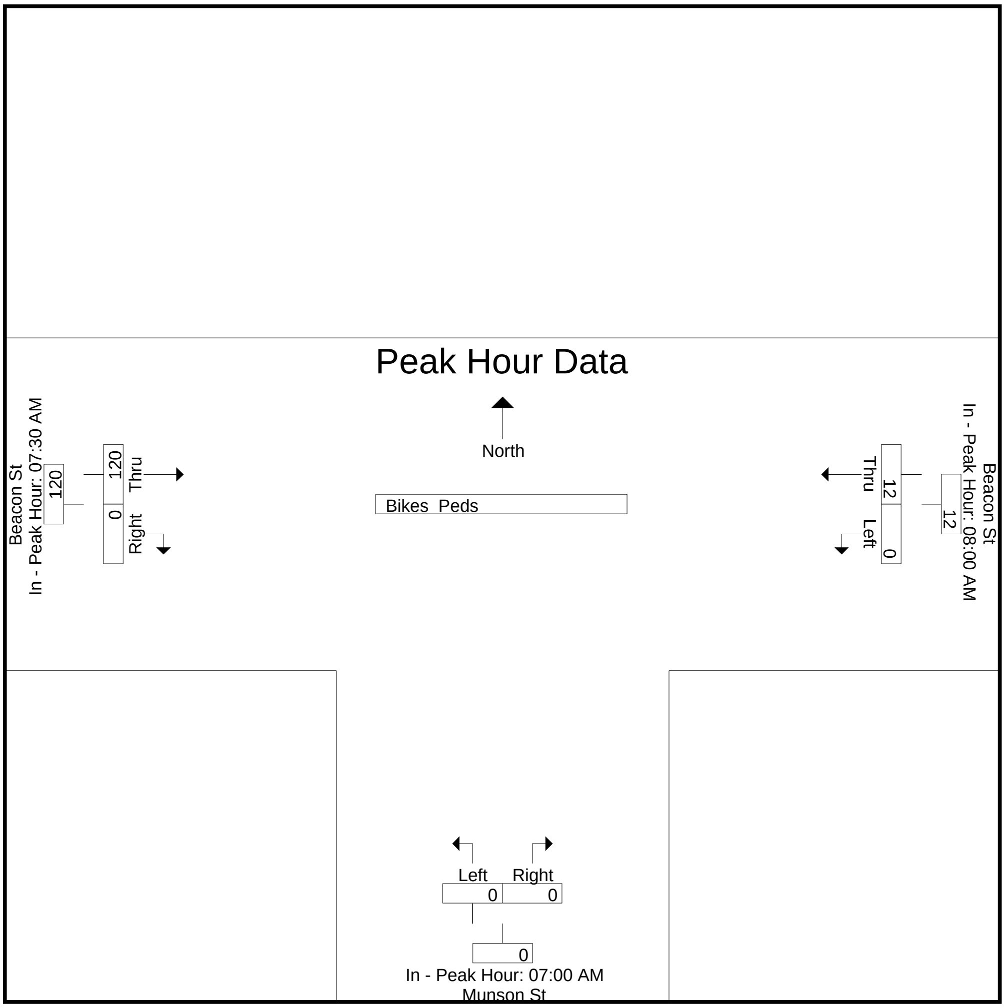


Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 1

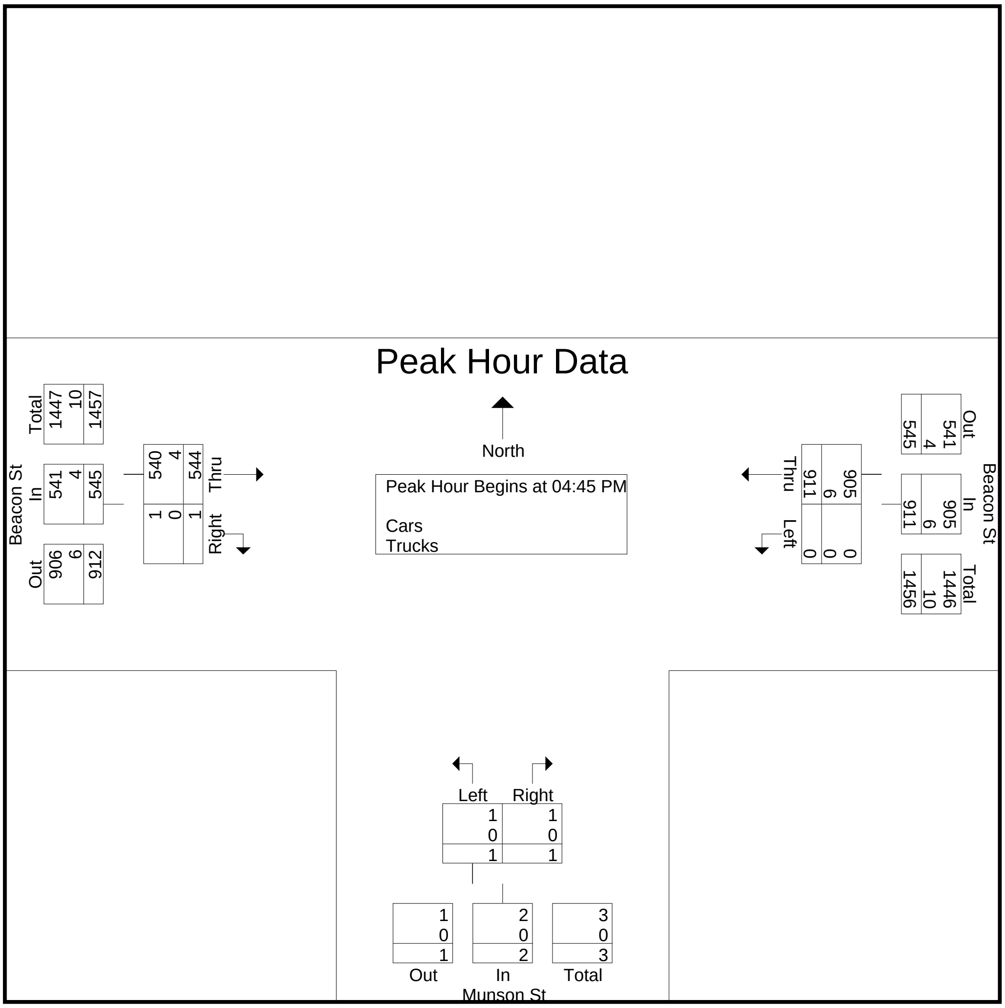
Groups Printed- Cars - Trucks

	Beacon St From East		Munson St From South		Beacon St From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	1	191	0	0	123	1	316
04:15 PM	0	208	0	0	123	1	332
04:30 PM	1	213	0	0	141	1	356
04:45 PM	0	247	0	1	129	0	377
Total	2	859	0	1	516	3	1381
05:00 PM	0	234	0	0	136	1	371
05:15 PM	0	207	0	0	146	0	353
05:30 PM	0	223	1	0	133	0	357
05:45 PM	2	213	2	1	128	0	346
Total	2	877	3	1	543	1	1427
Grand Total	4	1736	3	2	1059	4	2808
Apprch %	0.2	99.8	60	40	99.6	0.4	
Total %	0.1	61.8	0.1	0.1	37.7	0.1	
Cars	4	1722	3	2	1051	4	2786
% Cars	100	99.2	100	100	99.2	100	99.2
Trucks	0	14	0	0	8	0	22
% Trucks	0	0.8	0	0	0.8	0	0.8

	Beacon St From East			Munson St From South			Beacon St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	**247**	**247**	0	**1**	**1**	129	0	129	**377**
05:00 PM	0	234	234	0	0	0	136	**1**	137	371
05:15 PM	0	207	207	0	0	0	**146**	0	**146**	353
05:30 PM	0	223	223	**1**	0	1	133	0	133	357
Total Volume	0	911	911	1	1	2	544	1	545	1458
% App. Total	0	100		50	50		99.8	0.2		
PHF	.000	.922	.922	.250	.250	.500	.932	.250	.933	.967
Cars	0	905	905	1	1	2	540	1	541	1448
% Cars	0	99.3	99.3	100	100	100	99.3	100	99.3	99.3
Trucks	0	6	6	0	0	0	4	0	4	10
% Trucks	0	0.7	0.7	0	0	0	0.7	0	0.7	0.7

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 2



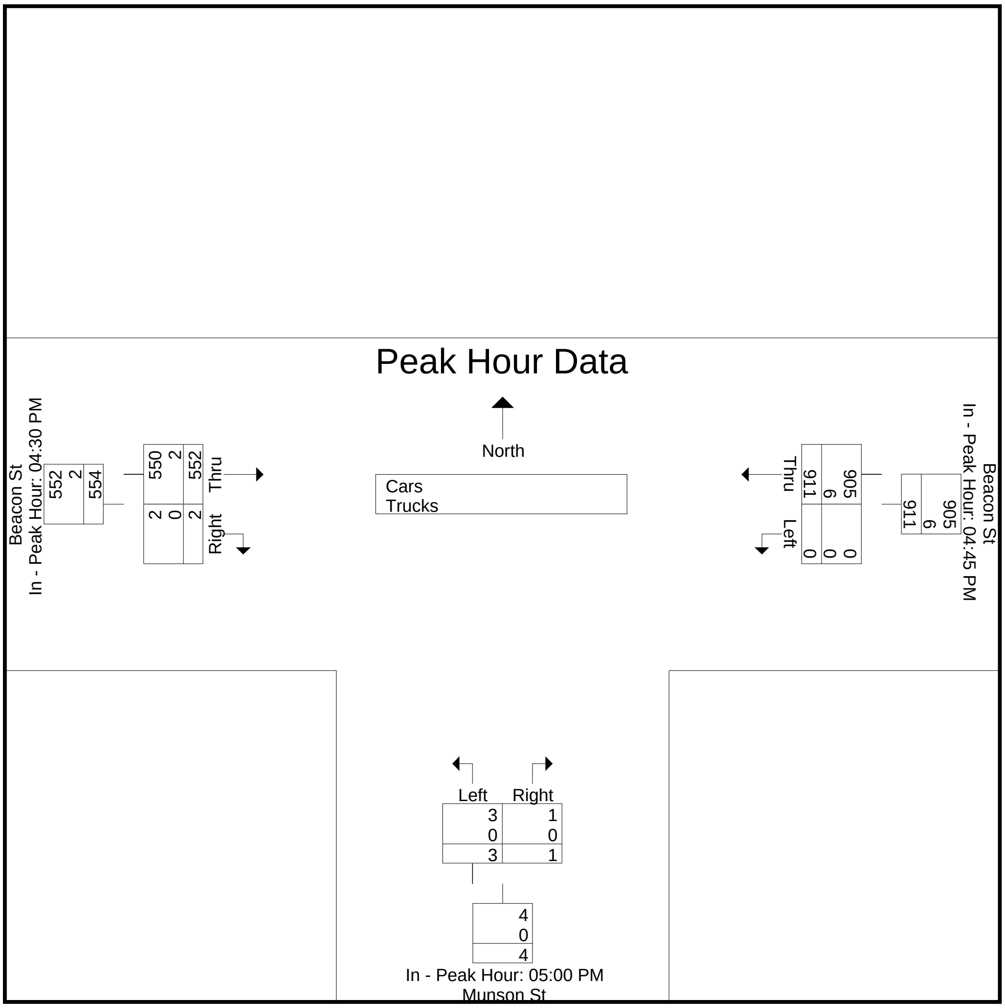
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			05:00 PM			04:30 PM		
+0 mins.	0	**247**	**247**	0	0	0	141	**1**	142
+15 mins.	0	234	234	0	0	0	129	0	129
+30 mins.	0	207	207	1	0	1	136	1	137
+45 mins.	0	223	223	**2**	**1**	**3**	**146**	0	**146**
Total Volume	0	911	911	3	1	4	552	2	554
% App. Total	0	100		75	25		99.6	0.4	
PHF	.000	.922	.922	.375	.250	.333	.945	.500	.949
Cars	0	905	905	3	1	4	550	2	552
% Cars	0	99.3	99.3	100	100	100	99.6	100	99.6
Trucks	0	6	6	0	0	0	2	0	2
% Trucks	0	0.7	0.7	0	0	0	0.4	0	0.4

Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012

Groups Printed- Cars

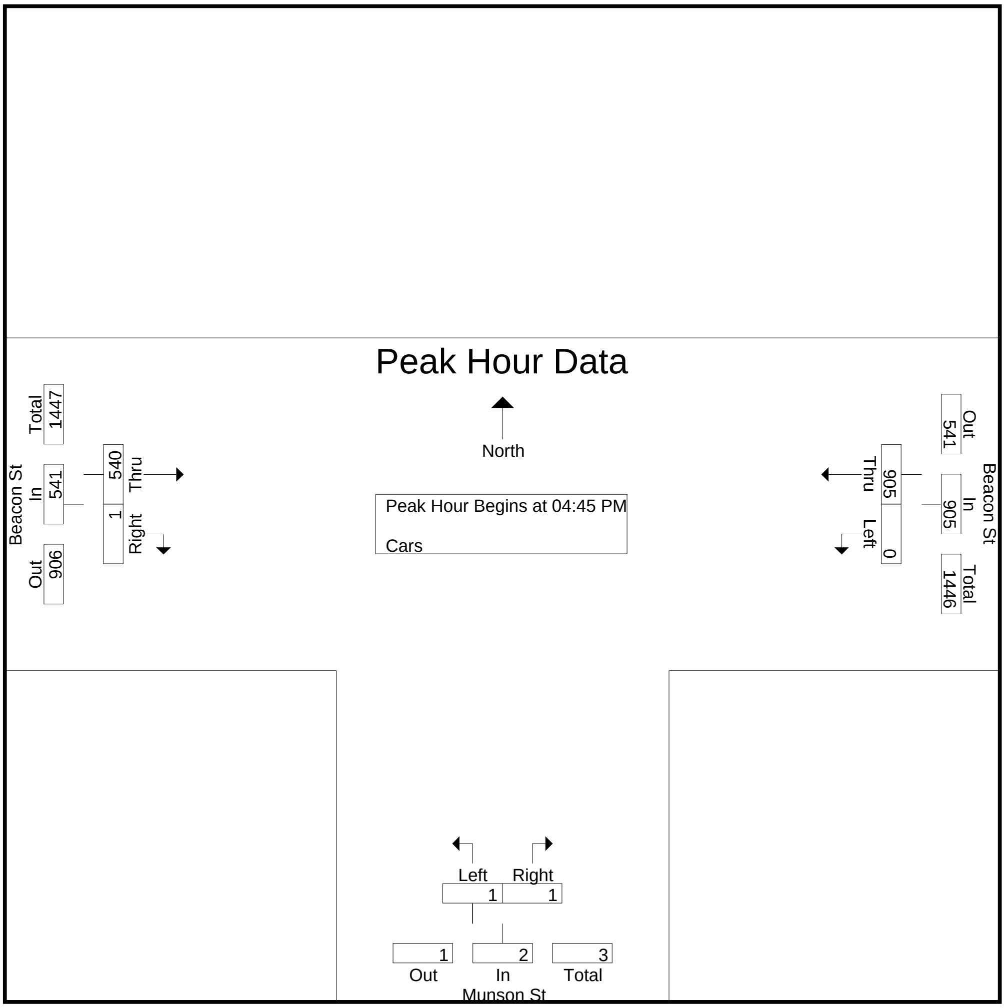
	Beacon St From East		Munson St From South		Beacon St From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	1	190	0	0	120	1	312
04:15 PM	0	206	0	0	123	1	330
04:30 PM	1	209	0	0	141	1	352
04:45 PM	0	246	0	1	129	0	376
Total	2	851	0	1	513	3	1370
05:00 PM	0	232	0	0	136	1	369
05:15 PM	0	206	0	0	144	0	350
05:30 PM	0	221	1	0	131	0	353
05:45 PM	2	212	2	1	127	0	344
Total	2	871	3	1	538	1	1416
Grand Total	4	1722	3	2	1051	4	2786
Apprch %	0.2	99.8	60	40	99.6	0.4	
Total %	0.1	61.8	0.1	0.1	37.7	0.1	

	Beacon St From East			Munson St From South			Beacon St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	**246**	**246**	0	**1**	**1**	129	0	129	**376**
05:00 PM	0	232	232	0	0	0	136	**1**	137	369
05:15 PM	0	206	206	0	0	0	**144**	0	**144**	350
05:30 PM	0	221	221	**1**	0	1	131	0	131	353
Total Volume	0	905	905	1	1	2	540	1	541	1448
% App. Total	0	100		50	50		99.8	0.2		
PHF	.000	.920	.920	.250	.250	.500	.938	.250	.939	.963

Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 2



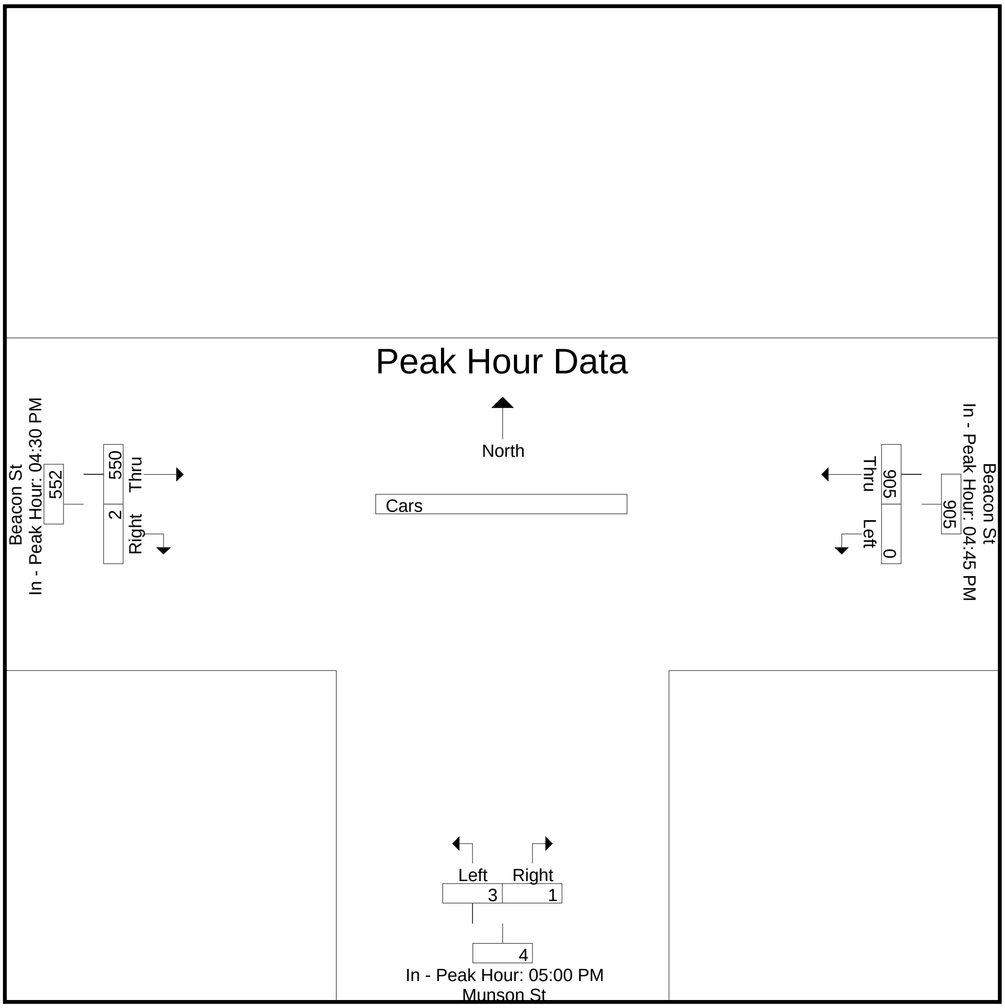
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			05:00 PM			04:30 PM		
+0 mins.	0	**246**	**246**	0	0	0	141	**1**	142
+15 mins.	0	232	232	0	0	0	129	0	129
+30 mins.	0	206	206	1	0	1	136	1	137
+45 mins.	0	221	221	**2**	**1**	**3**	**144**	0	**144**
Total Volume	0	905	905	3	1	4	550	2	552
% App. Total	0	100		75	25		99.6	0.4	
PHF	.000	.920	.920	.375	.250	.333	.955	.500	.958

Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012

Groups Printed- Trucks

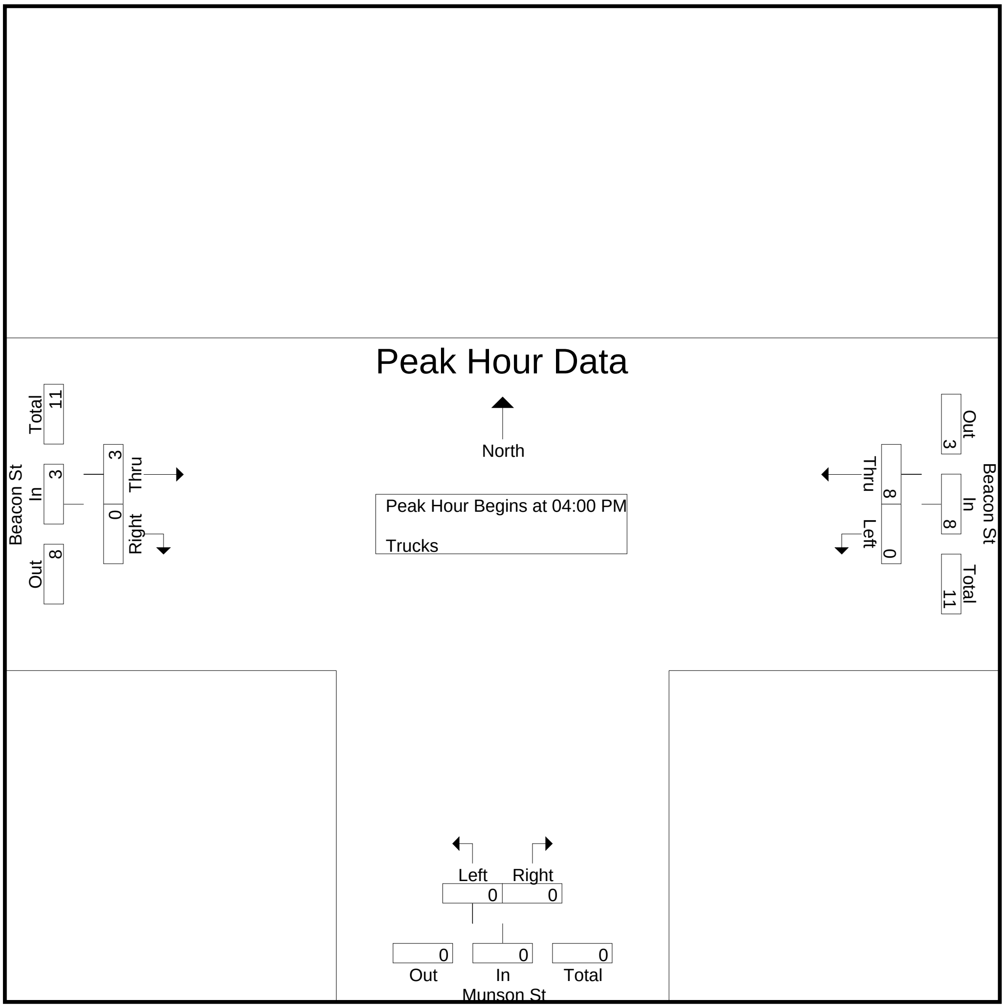
	Beacon St From East		Munson St From South		Beacon St From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	0	1	0	0	3	0	4
04:15 PM	0	2	0	0	0	0	2
04:30 PM	0	4	0	0	0	0	4
04:45 PM	0	1	0	0	0	0	1
Total	0	8	0	0	3	0	11
05:00 PM	0	2	0	0	0	0	2
05:15 PM	0	1	0	0	2	0	3
05:30 PM	0	2	0	0	2	0	4
05:45 PM	0	1	0	0	1	0	2
Total	0	6	0	0	5	0	11
Grand Total	0	14	0	0	8	0	22
Apprch %	0	100	0	0	100	0	
Total %	0	63.6	0	0	36.4	0	

	Beacon St From East			Munson St From South			Beacon St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	1	1	0	0	0	**3**	0	**3**	**4**
04:15 PM	0	2	2	0	0	0	0	0	0	2
04:30 PM	0	**4**	**4**	0	0	0	0	0	0	4
04:45 PM	0	1	1	0	0	0	0	0	0	1
Total Volume	0	8	8	0	0	0	3	0	3	11
% App. Total	0	100		0	0		100	0		
PHF	.000	.500	.500	.000	.000	.000	.250	.000	.250	.688

Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 2



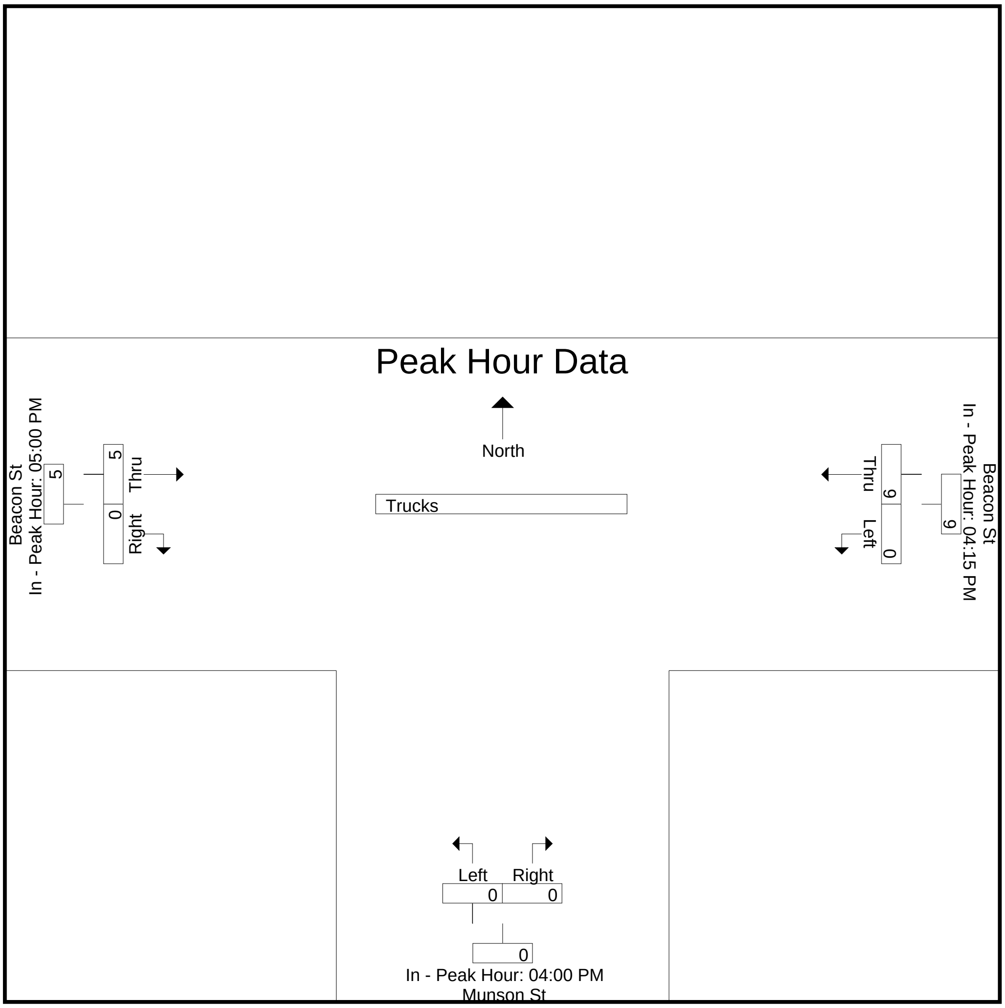
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:00 PM			05:00 PM		
+0 mins.	0	2	2	0	0	0	0	0	0
+15 mins.	0	**4**	**4**	0	0	0	**2**	0	**2**
+30 mins.	0	1	1	0	0	0	2	0	2
+45 mins.	0	2	2	0	0	0	1	0	1
Total Volume	0	9	9	0	0	0	5	0	5
% App. Total	0	100		0	0		100	0	
PHF	.000	.563	.563	.000	.000	.000	.625	.000	.625

Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 1

Groups Printed- Bikes Peds

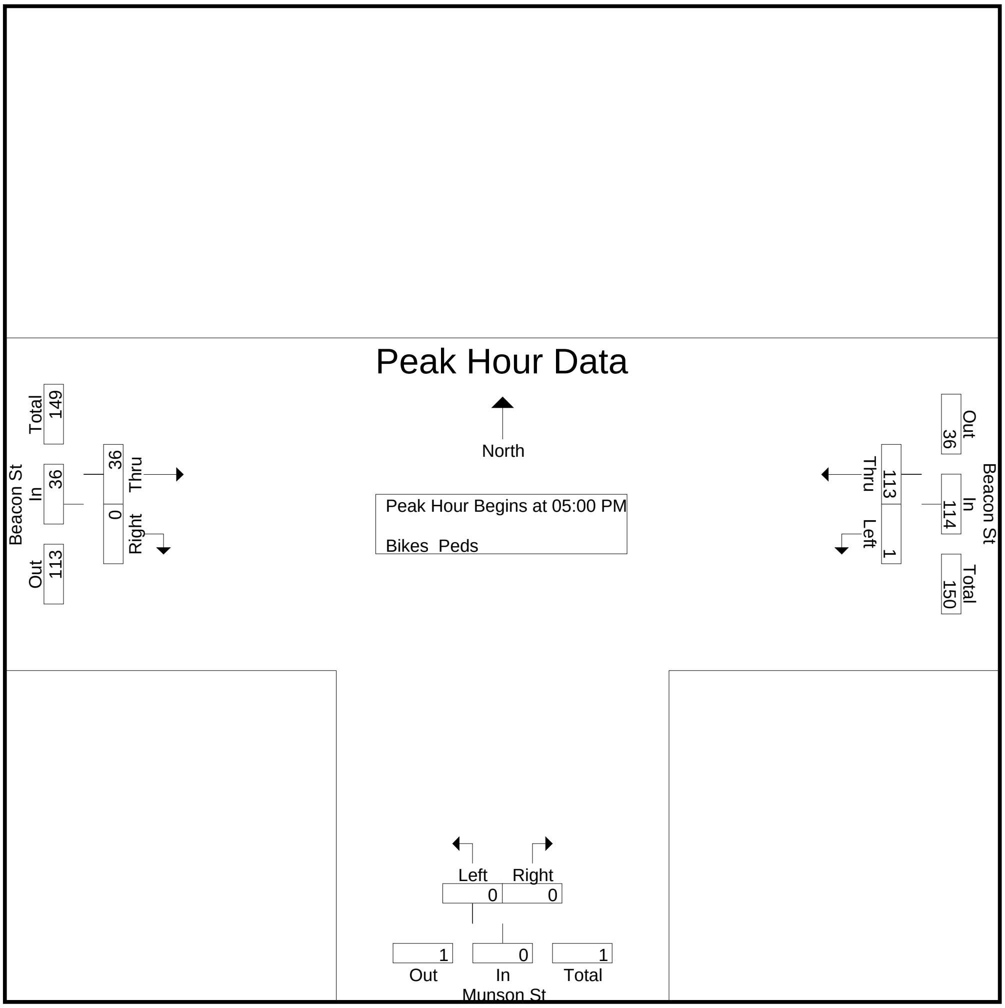
	Beacon St From East			Munson St From South			Beacon St From West					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	13	2	0	0	26	2	0	0	28	15	43
04:15 PM	0	4	3	0	0	23	1	0	3	29	5	34
04:30 PM	0	16	7	0	0	27	4	0	1	35	20	55
04:45 PM	0	26	2	1	0	29	4	0	1	32	31	63
Total	0	59	14	1	0	105	11	0	5	124	71	195
05:00 PM	0	18	4	0	0	37	10	0	1	42	28	70
05:15 PM	0	34	2	0	0	34	9	0	4	40	43	83
05:30 PM	0	33	2	0	0	31	9	0	1	34	42	76
05:45 PM	1	28	2	0	0	35	8	0	6	43	37	80
Total	1	113	10	0	0	137	36	0	12	159	150	309
Grand Total	1	172	24	1	0	242	47	0	17	283	221	504
Apprch %	0.6	99.4		100	0		100	0				
Total %	0.5	77.8		0.5	0		21.3	0		56.2	43.8	

	Beacon St From East			Munson St From South			Beacon St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	18	18	0	0	0	**10**	0	**10**	28
05:15 PM	0	**34**	**34**	0	0	0	9	0	9	**43**
05:30 PM	0	33	33	0	0	0	9	0	9	42
05:45 PM	**1**	28	29	0	0	0	8	0	8	37
Total Volume	1	113	114	0	0	0	36	0	36	150
% App. Total	0.9	99.1		0	0		100	0		
PHF	.250	.831	.838	.000	.000	.000	.900	.000	.900	.872

Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 2



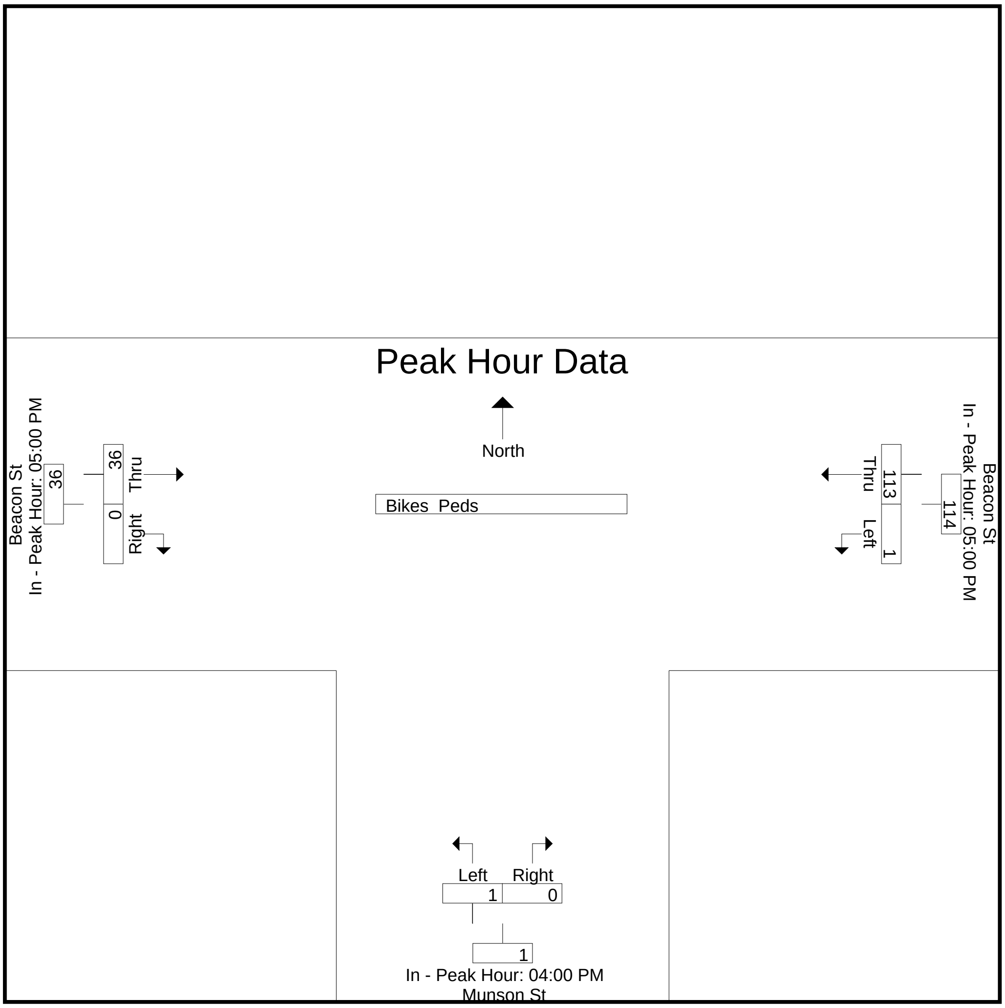
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			04:00 PM			05:00 PM		
+0 mins.	0	18	18	0	0	0	**10**	0	**10**
+15 mins.	0	**34**	**34**	0	0	0	9	0	9
+30 mins.	0	33	33	0	0	0	9	0	9
+45 mins.	**1**	28	29	**1**	0	**1**	8	0	8
Total Volume	1	113	114	1	0	1	36	0	36
% App. Total	0.9	99.1		100	0		100	0	
PHF	.250	.831	.838	.250	.000	.250	.900	.000	.900

Accurate Counts
978-664-2565

N/S Street : Munson Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970003
Site Code : 94970003
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

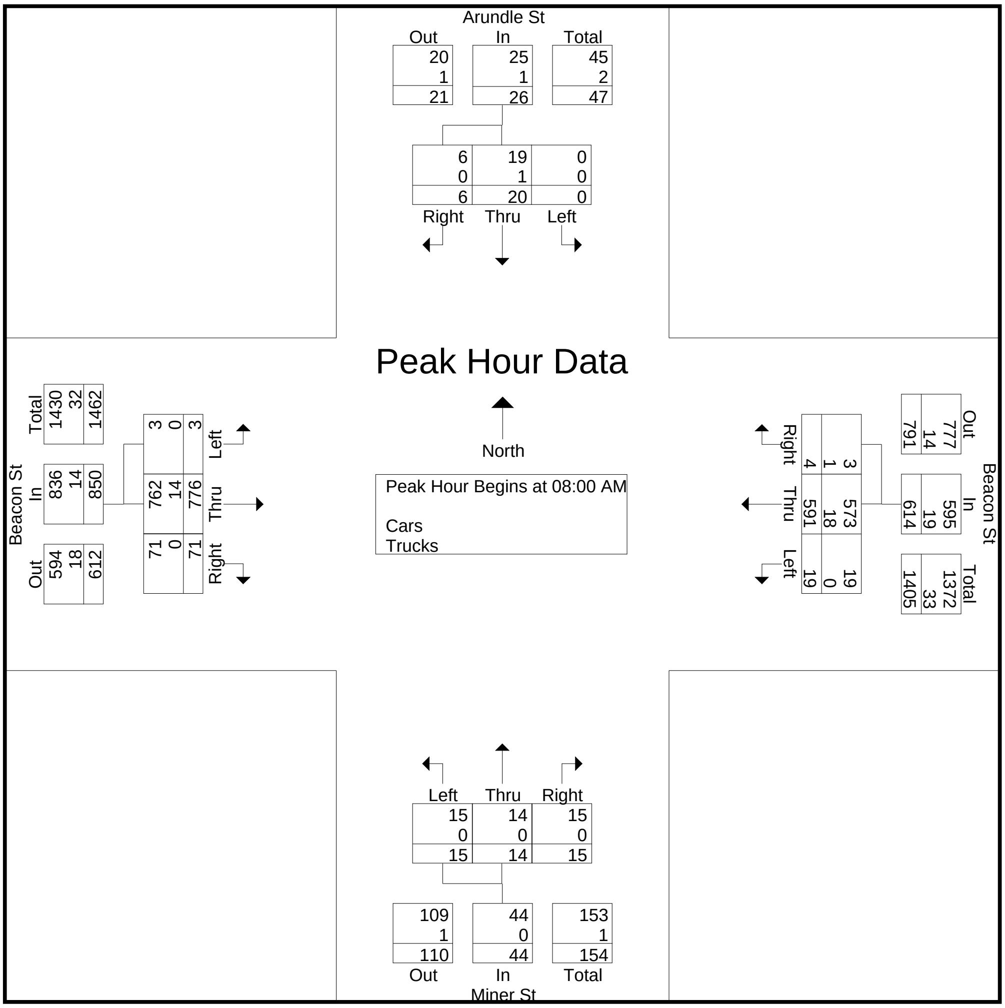
	Arundle St From North			Beacon St From East			Miner St From South			Beacon St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	1	2	0	6	110	1	4	1	2	2	99	7	235
07:15 AM	0	1	0	3	146	1	1	2	2	1	106	12	275
07:30 AM	1	0	4	4	149	0	2	1	3	0	143	16	323
07:45 AM	0	0	0	6	166	0	4	3	2	0	155	22	358
Total	2	3	4	19	571	2	11	7	9	3	503	57	1191
08:00 AM	0	7	2	6	144	0	5	6	4	1	195	21	391
08:15 AM	0	4	2	4	153	1	3	1	3	0	196	17	384
08:30 AM	0	5	1	5	153	0	3	4	3	1	211	10	396
08:45 AM	0	4	1	4	141	3	4	3	5	1	174	23	363
Total	0	20	6	19	591	4	15	14	15	3	776	71	1534
Grand Total	2	23	10	38	1162	6	26	21	24	6	1279	128	2725
Apprch %	5.7	65.7	28.6	3.2	96.4	0.5	36.6	29.6	33.8	0.4	90.5	9.1	
Total %	0.1	0.8	0.4	1.4	42.6	0.2	1	0.8	0.9	0.2	46.9	4.7	
Cars	2	22	10	38	1126	5	26	21	24	6	1252	128	2660
% Cars	100	95.7	100	100	96.9	83.3	100	100	100	100	97.9	100	97.6
Trucks	0	1	0	0	36	1	0	0	0	0	27	0	65
% Trucks	0	4.3	0	0	3.1	16.7	0	0	0	0	2.1	0	2.4

	Arundle St From North				Beacon St From East				Miner St From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	**7**	**2**	**9**	**6**	144	0	150	**5**	**6**	4	**15**	**1**	195	21	217	391
08:15 AM	0	4	2	6	4	**153**	1	**158**	3	1	3	7	0	196	17	213	384
08:30 AM	0	5	1	6	5	153	0	158	3	4	3	10	1	**211**	10	**222**	**396**
08:45 AM	0	4	1	5	4	141	**3**	148	4	3	**5**	12	1	174	**23**	198	363
Total Volume	0	20	6	26	19	591	4	614	15	14	15	44	3	776	71	850	1534
% App. Total	0	76.9	23.1		3.1	96.3	0.7		34.1	31.8	34.1		0.4	91.3	8.4		
PHF	.000	.714	.750	.722	.792	.966	.333	.972	.750	.583	.750	.733	.750	.919	.772	.957	.968
Cars	0	19	6	25	19	573	3	595	15	14	15	44	3	762	71	836	1500
% Cars	0	95.0	100	96.2	100	97.0	75.0	96.9	100	100	100	100	100	98.2	100	98.4	97.8
Trucks	0	1	0	1	0	18	1	19	0	0	0	0	0	14	0	14	34
% Trucks	0	5.0	0	3.8	0	3.0	25.0	3.1	0	0	0	0	0	1.8	0	1.6	2.2

Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 2



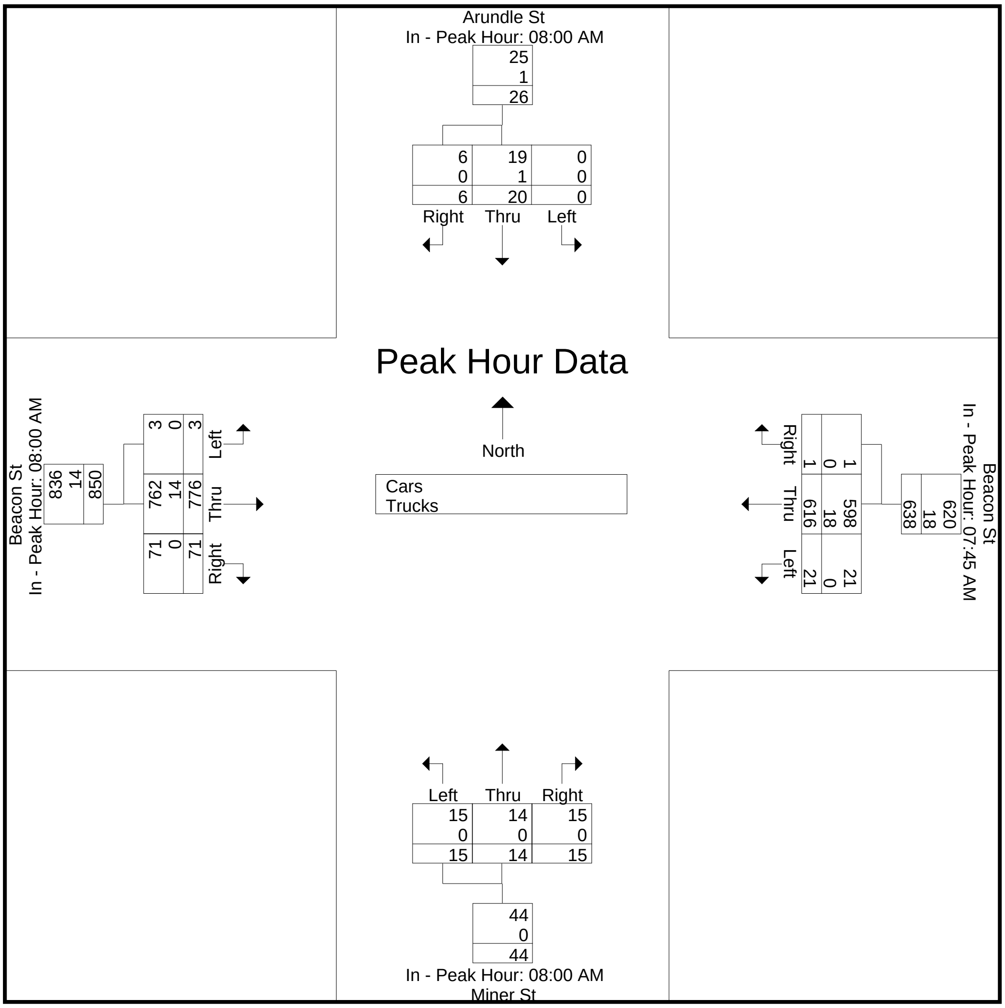
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:45 AM				08:00 AM				08:00 AM			
+0 mins.	0	**7**	**2**	**9**	**6**	**166**	0	**172**	**5**	**6**	4	**15**	**1**	195	21	217
+15 mins.	0	4	2	6	6	144	0	150	3	1	3	7	0	196	17	213
+30 mins.	0	5	1	6	4	153	**1**	158	3	4	3	10	1	**211**	10	**222**
+45 mins.	0	4	1	5	5	153	0	158	4	3	**5**	12	1	174	**23**	198
Total Volume	0	20	6	26	21	616	1	638	15	14	15	44	3	776	71	850
% App. Total	0	76.9	23.1		3.3	96.6	0.2		34.1	31.8	34.1		0.4	91.3	8.4	
PHF	.000	.714	.750	.722	.875	.928	.250	.927	.750	.583	.750	.733	.750	.919	.772	.957
Cars	0	19	6	25	21	598	1	620	15	14	15	44	3	762	71	836
% Cars	0	95	100	96.2	100	97.1	100	97.2	100	100	100	100	100	98.2	100	98.4
Trucks	0	1	0	1	0	18	0	18	0	0	0	0	0	14	0	14
% Trucks	0	5	0	3.8	0	2.9	0	2.8	0	0	0	0	0	1.8	0	1.6

Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars

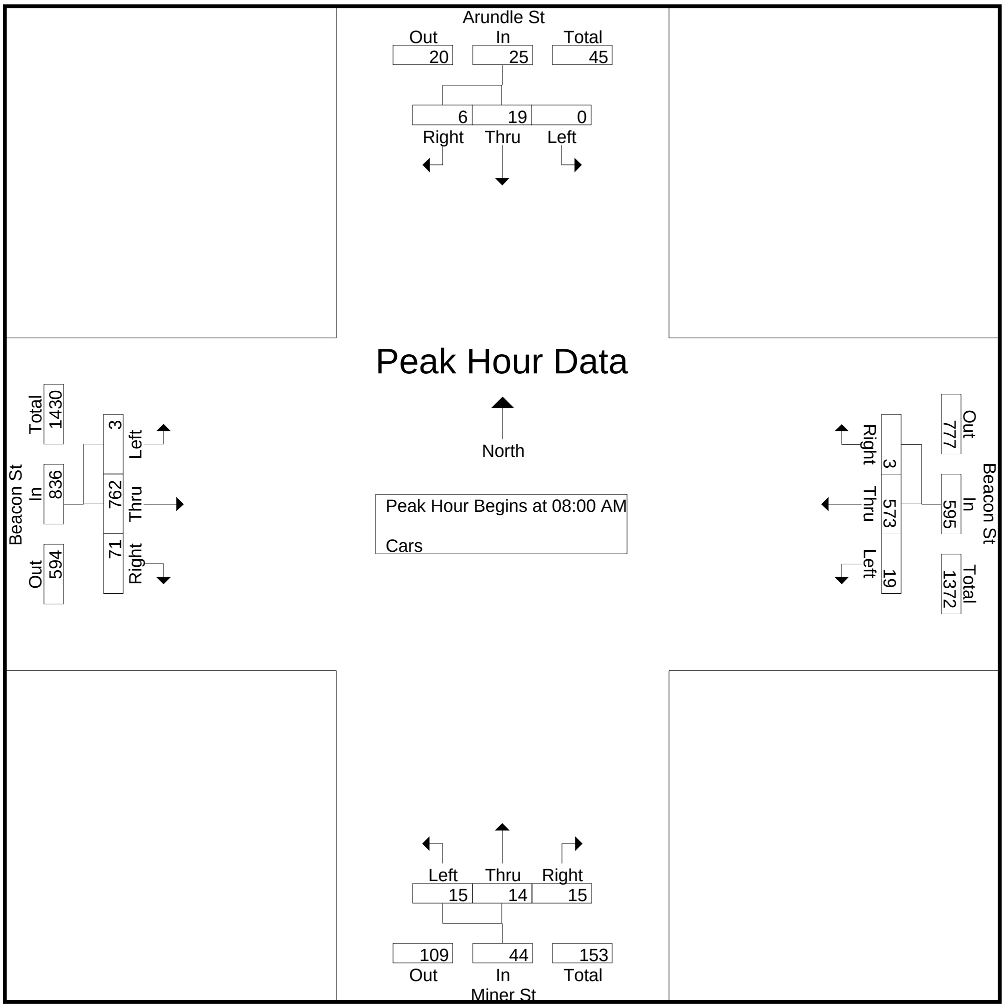
	Arundle St From North			Beacon St From East			Miner St From South			Beacon St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	1	2	0	6	103	1	4	1	2	2	97	7	226
07:15 AM	0	1	0	3	142	1	1	2	2	1	102	12	267
07:30 AM	1	0	4	4	145	0	2	1	3	0	141	16	317
07:45 AM	0	0	0	6	163	0	4	3	2	0	150	22	350
Total	2	3	4	19	553	2	11	7	9	3	490	57	1160
08:00 AM	0	7	2	6	139	0	5	6	4	1	193	21	384
08:15 AM	0	4	2	4	147	1	3	1	3	0	191	17	373
08:30 AM	0	5	1	5	149	0	3	4	3	1	207	10	388
08:45 AM	0	3	1	4	138	2	4	3	5	1	171	23	355
Total	0	19	6	19	573	3	15	14	15	3	762	71	1500
Grand Total	2	22	10	38	1126	5	26	21	24	6	1252	128	2660
Apprch %	5.9	64.7	29.4	3.3	96.3	0.4	36.6	29.6	33.8	0.4	90.3	9.2	
Total %	0.1	0.8	0.4	1.4	42.3	0.2	1	0.8	0.9	0.2	47.1	4.8	

	Arundle St From North				Beacon St From East				Miner St From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	**7**	**2**	**9**	**6**	139	0	145	**5**	**6**	4	**15**	**1**	193	21	215	384
08:15 AM	0	4	2	6	4	147	1	152	3	1	3	7	0	191	17	208	373
08:30 AM	0	5	1	6	5	**149**	0	**154**	3	4	3	10	1	**207**	10	**218**	**388**
08:45 AM	0	3	1	4	4	138	**2**	144	4	3	**5**	12	1	171	**23**	195	355
Total Volume	0	19	6	25	19	573	3	595	15	14	15	44	3	762	71	836	1500
% App. Total	0	76	24		3.2	96.3	0.5		34.1	31.8	34.1		0.4	91.1	8.5		
PHF	.000	.679	.750	.694	.792	.961	.375	.966	.750	.583	.750	.733	.750	.920	.772	.959	.966

Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 2

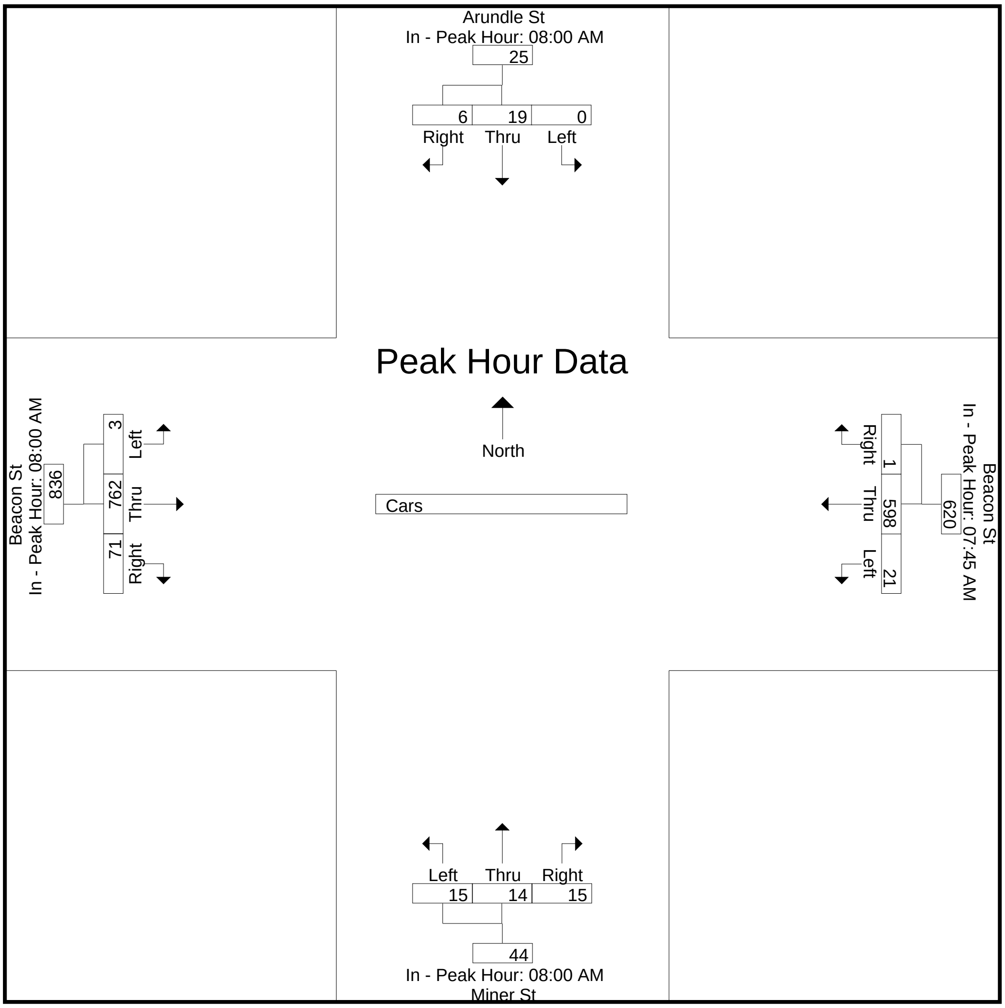


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:45 AM				08:00 AM				08:00 AM			
+0 mins.	0	**7**	**2**	**9**	**6**	**163**	0	**169**	**5**	**6**	4	**15**	**1**	193	21	215
+15 mins.	0	4	2	6	6	139	0	145	3	1	3	7	0	191	17	208
+30 mins.	0	5	1	6	4	147	**1**	152	3	4	3	10	1	**207**	10	**218**
+45 mins.	0	3	1	4	5	149	0	154	4	3	**5**	12	1	171	**23**	195
Total Volume	0	19	6	25	21	598	1	620	15	14	15	44	3	762	71	836
% App. Total	0	76	24		3.4	96.5	0.2		34.1	31.8	34.1		0.4	91.1	8.5	
PHF	.000	.679	.750	.694	.875	.917	.250	.917	.750	.583	.750	.733	.750	.920	.772	.959

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012

Groups Printed- Trucks

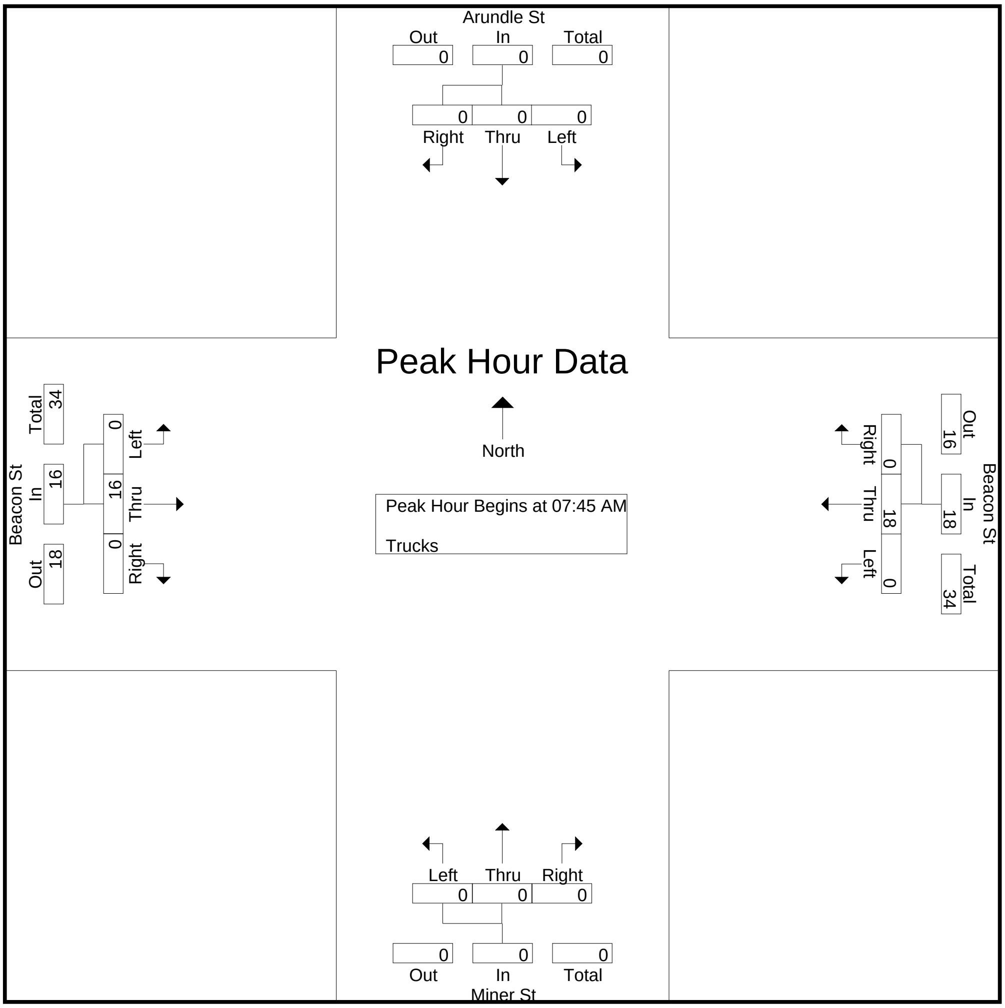
	Arundle St From North			Beacon St From East			Miner St From South			Beacon St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	0	7	0	0	0	0	0	2	0	9
07:15 AM	0	0	0	0	4	0	0	0	0	0	4	0	8
07:30 AM	0	0	0	0	4	0	0	0	0	0	2	0	6
07:45 AM	0	0	0	0	3	0	0	0	0	0	5	0	8
Total	0	0	0	0	18	0	0	0	0	0	13	0	31
08:00 AM	0	0	0	0	5	0	0	0	0	0	2	0	7
08:15 AM	0	0	0	0	6	0	0	0	0	0	5	0	11
08:30 AM	0	0	0	0	4	0	0	0	0	0	4	0	8
08:45 AM	0	1	0	0	3	1	0	0	0	0	3	0	8
Total	0	1	0	0	18	1	0	0	0	0	14	0	34
Grand Total	0	1	0	0	36	1	0	0	0	0	27	0	65
Apprch %	0	100	0	0	97.3	2.7	0	0	0	0	100	0	
Total %	0	1.5	0	0	55.4	1.5	0	0	0	0	41.5	0	

	Arundle St From North				Beacon St From East				Miner St From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	**5**	0	**5**	8
08:00 AM	0	0	0	0	0	5	0	5	0	0	0	0	0	2	0	2	7
08:15 AM	0	0	0	0	0	**6**	0	**6**	0	0	0	0	0	5	0	5	**11**
08:30 AM	0	0	0	0	0	4	0	4	0	0	0	0	0	4	0	4	8
Total Volume	0	0	0	0	0	18	0	18	0	0	0	0	0	16	0	16	34
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.750	.000	.750	.000	.000	.000	.000	.000	.800	.000	.800	.773

Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 2



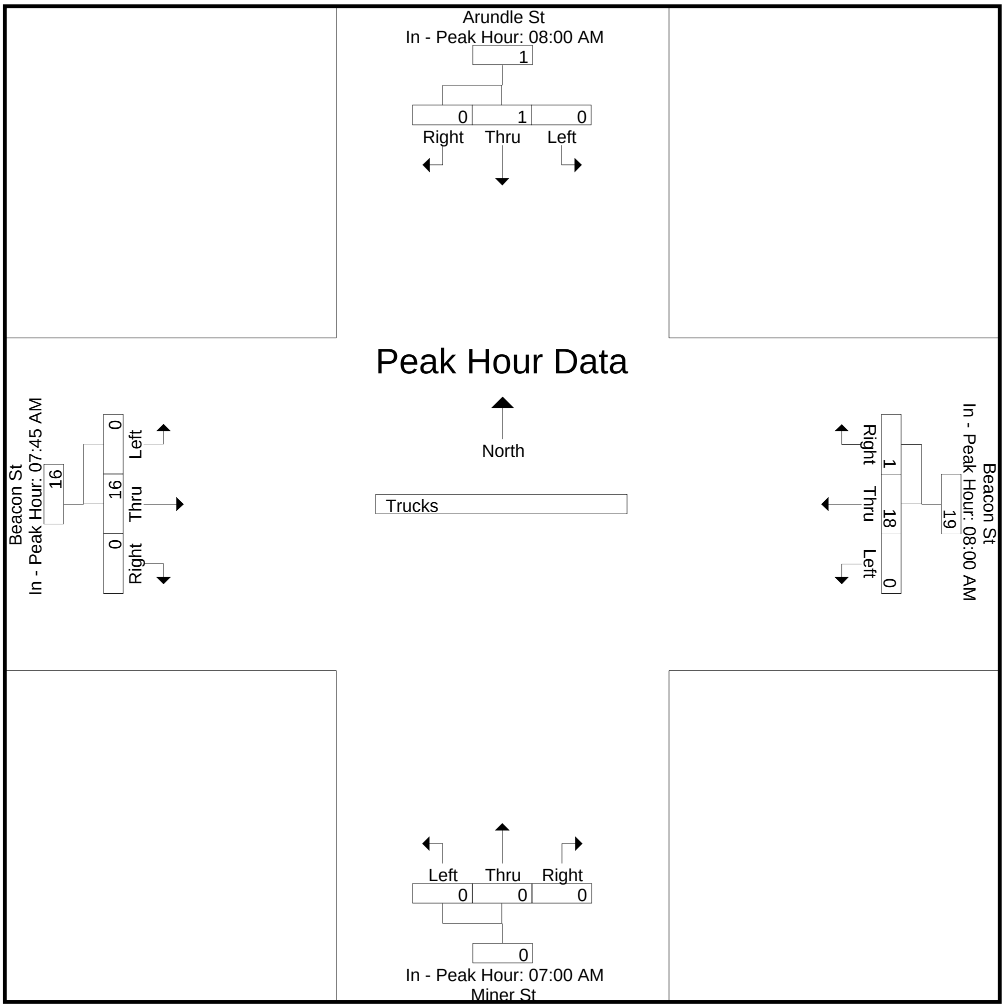
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				07:00 AM				07:45 AM			
+0 mins.	0	0	0	0	0	5	0	5	0	0	0	0	0	**5**	0	**5**
+15 mins.	0	0	0	0	0	**6**	0	**6**	0	0	0	0	0	2	0	2
+30 mins.	0	0	0	0	0	4	0	4	0	0	0	0	0	5	0	5
+45 mins.	0	**1**	0	**1**	0	3	**1**	4	0	0	0	0	0	4	0	4
Total Volume	0	1	0	1	0	18	1	19	0	0	0	0	0	16	0	16
% App. Total	0	100	0		0	94.7	5.3		0	0	0		0	100	0	
PHF	.000	.250	.000	.250	.000	.750	.250	.792	.000	.000	.000	.000	.000	.800	.000	.800

Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 1

Groups Printed- Bikes Peds

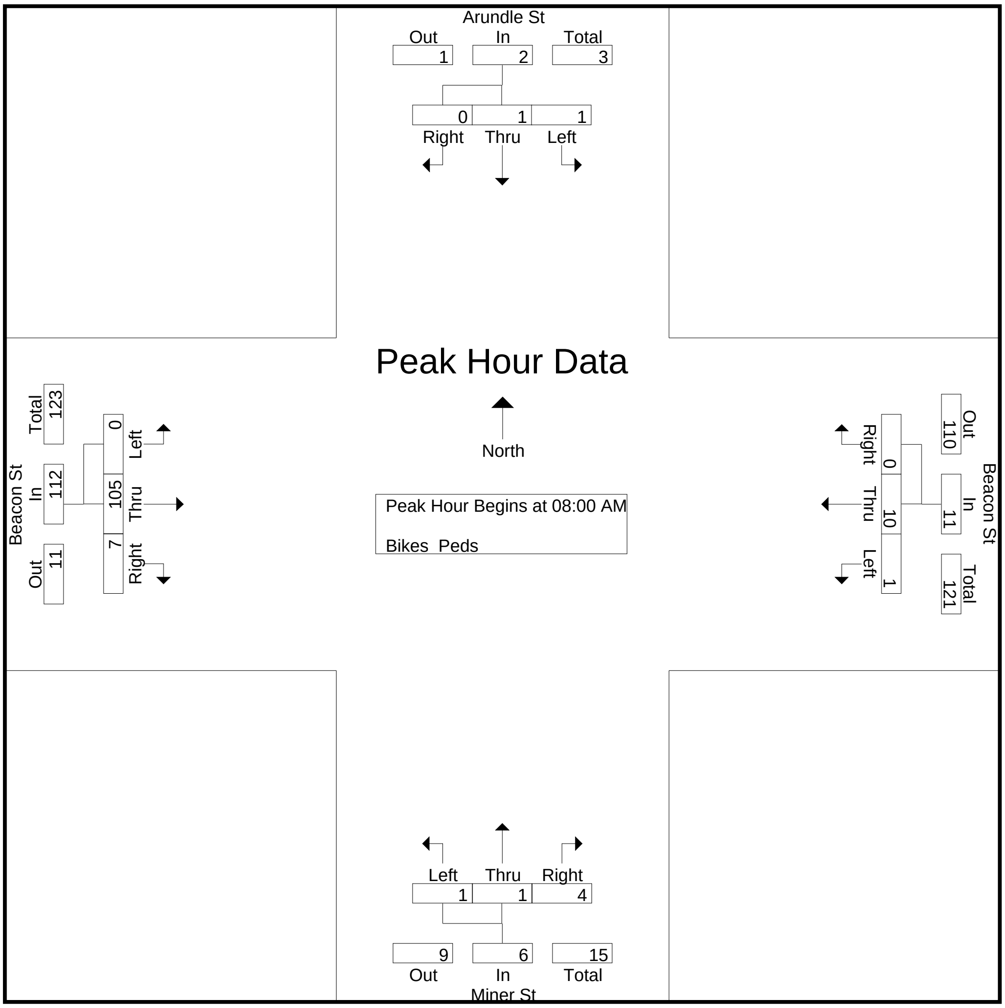
	Arundle St From North				Beacon St From East				Miner St From South				Beacon St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	10	0	2	0	0	0	1	0	8	0	14	1	3	21	18	39
07:15 AM	0	0	0	6	0	1	0	0	0	1	0	10	0	14	2	4	20	18	38
07:30 AM	0	1	0	9	0	1	0	0	0	0	1	11	0	27	2	4	24	32	56
07:45 AM	0	0	0	9	0	2	0	2	0	0	1	15	0	24	1	10	36	28	64
Total	0	1	0	34	0	6	0	2	0	2	2	44	0	79	6	21	101	96	197
08:00 AM	0	0	0	11	0	2	0	1	0	0	1	14	0	17	1	7	33	21	54
08:15 AM	0	0	0	9	0	5	0	1	0	0	2	25	0	29	2	15	50	38	88
08:30 AM	1	1	0	26	1	2	0	1	0	1	0	15	0	33	3	6	48	42	90
08:45 AM	0	0	0	18	0	1	0	2	1	0	1	25	0	26	1	10	55	30	85
Total	1	1	0	64	1	10	0	5	1	1	4	79	0	105	7	38	186	131	317
Grand Total	1	2	0	98	1	16	0	7	1	3	6	123	0	184	13	59	287	227	514
Apprch %	33.3	66.7	0		5.9	94.1	0		10	30	60		0	93.4	6.6				
Total %	0.4	0.9	0		0.4	7	0		0.4	1.3	2.6		0	81.1	5.7		55.8	44.2	

	Arundle St From North				Beacon St From East				Miner St From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	0	0	0	2	0	2	0	0	1	1	0	17	1	18	21
08:15 AM	0	0	0	0	0	**5**	0	**5**	0	0	**2**	**2**	0	29	2	31	38
08:30 AM	**1**	**1**	0	**2**	**1**	2	0	3	0	**1**	0	1	0	**33**	**3**	**36**	**42**
08:45 AM	0	0	0	0	0	1	0	1	**1**	0	1	2	0	26	1	27	30
Total Volume	1	1	0	2	1	10	0	11	1	1	4	6	0	105	7	112	131
% App. Total	50	50	0		9.1	90.9	0		16.7	16.7	66.7		0	93.8	6.2		
PHF	.250	.250	.000	.250	.250	.500	.000	.550	.250	.250	.500	.750	.000	.795	.583	.778	.780

Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 2



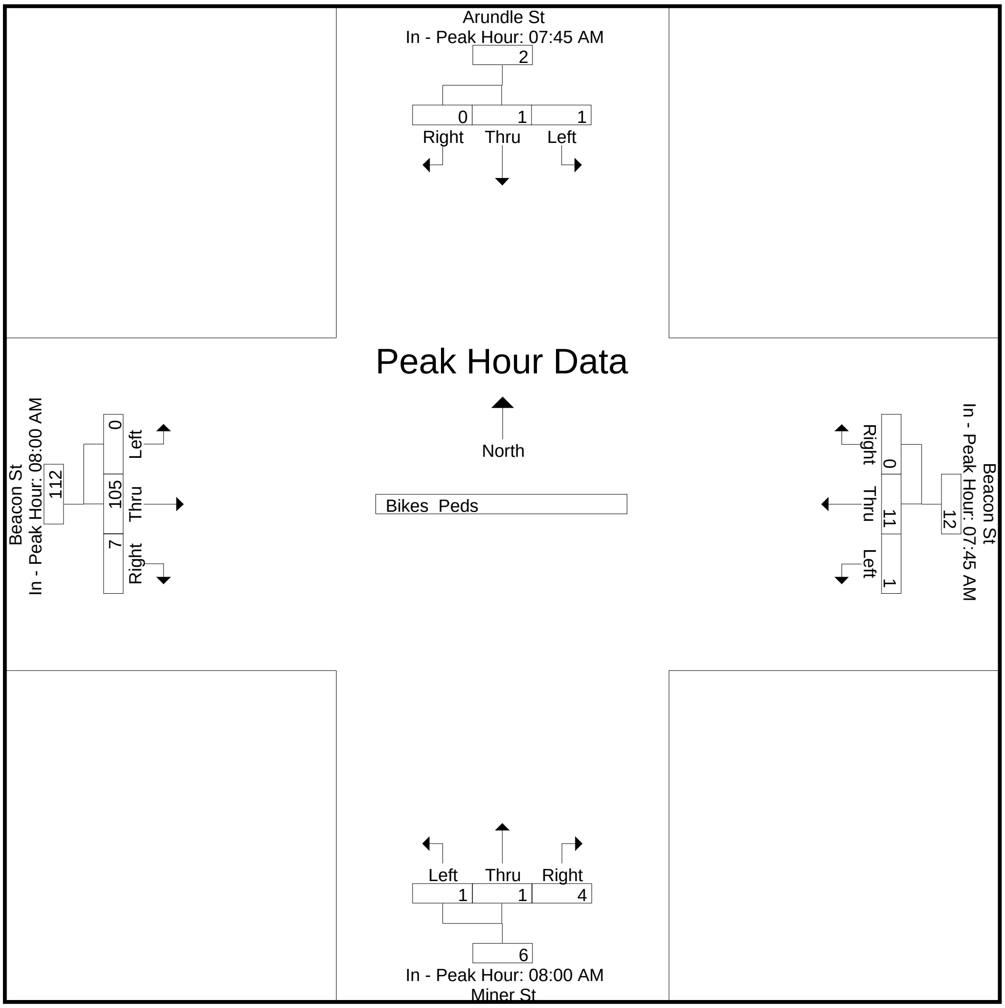
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:45 AM				08:00 AM				08:00 AM			
+0 mins.	0	0	0	0	0	2	0	2	0	0	1	1	0	17	1	18
+15 mins.	0	0	0	0	0	2	0	2	0	0	**2**	**2**	0	29	2	31
+30 mins.	0	0	0	0	0	**5**	0	**5**	0	**1**	0	1	0	**33**	**3**	**36**
+45 mins.	**1**	**1**	0	**2**	**1**	2	0	3	**1**	0	1	2	0	26	1	27
Total Volume	1	1	0	2	1	11	0	12	1	1	4	6	0	105	7	112
% App. Total	50	50	0		8.3	91.7	0		16.7	16.7	66.7		0	93.8	6.2	
PHF	.250	.250	.000	.250	.250	.550	.000	.600	.250	.250	.500	.750	.000	.795	.583	.778

Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

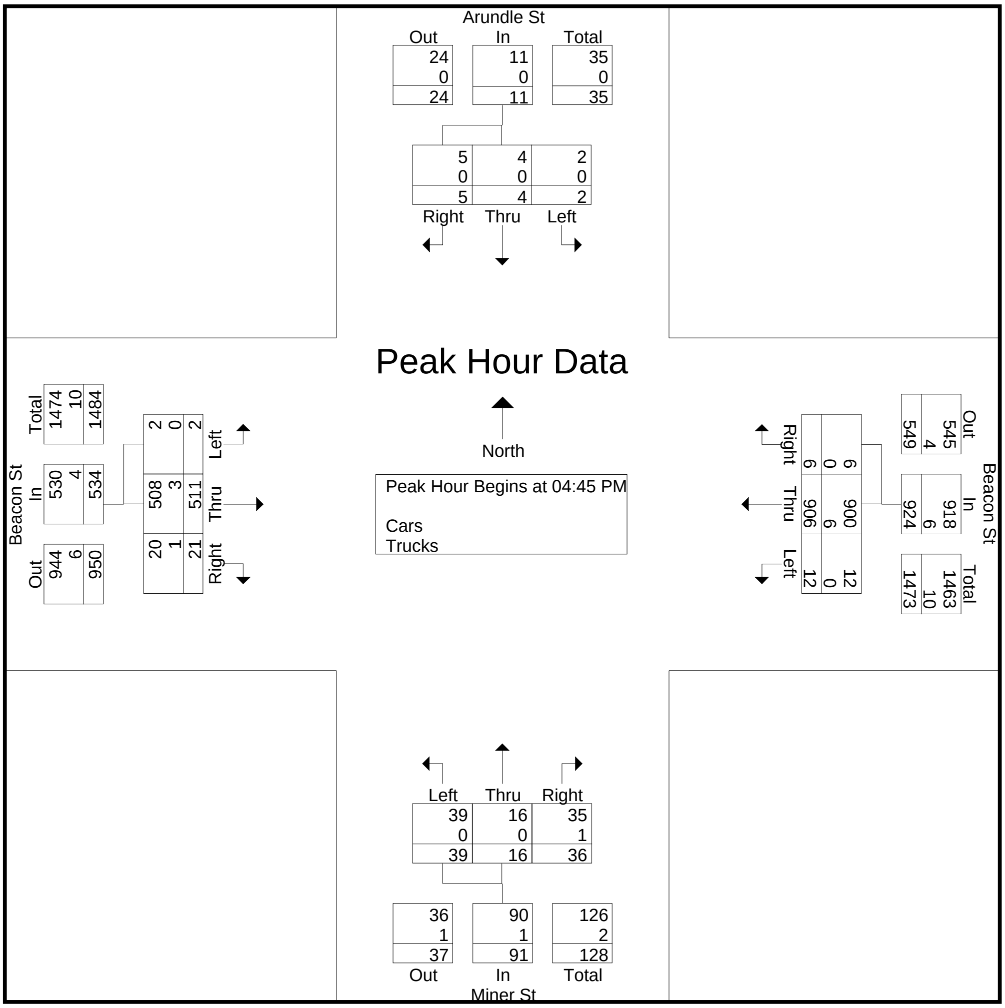
	Arundle St From North			Beacon St From East			Miner St From South			Beacon St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	1	1	3	1	186	1	5	6	12	3	114	8	341
04:15 PM	1	2	1	5	206	2	4	3	13	1	104	3	345
04:30 PM	2	1	1	6	189	3	7	6	15	0	128	6	364
04:45 PM	0	1	1	3	260	1	8	2	6	1	125	3	411
Total	4	5	6	15	841	7	24	17	46	5	471	20	1461
05:00 PM	1	1	1	3	209	1	13	3	10	0	120	6	368
05:15 PM	1	2	1	2	224	1	11	7	9	0	141	4	403
05:30 PM	0	0	2	4	213	3	7	4	11	1	125	8	378
05:45 PM	0	1	1	4	202	0	9	6	8	0	117	6	354
Total	2	4	5	13	848	5	40	20	38	1	503	24	1503
Grand Total	6	9	11	28	1689	12	64	37	84	6	974	44	2964
Apprch %	23.1	34.6	42.3	1.6	97.7	0.7	34.6	20	45.4	0.6	95.1	4.3	
Total %	0.2	0.3	0.4	0.9	57	0.4	2.2	1.2	2.8	0.2	32.9	1.5	
Cars	6	9	11	27	1676	12	64	37	83	6	967	43	2941
% Cars	100	100	100	96.4	99.2	100	100	100	98.8	100	99.3	97.7	99.2
Trucks	0	0	0	1	13	0	0	0	1	0	7	1	23
% Trucks	0	0	0	3.6	0.8	0	0	0	1.2	0	0.7	2.3	0.8

	Arundle St From North				Beacon St From East				Miner St From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	1	1	2	3	**260**	1	**264**	8	2	6	16	**1**	125	3	129	**411**
05:00 PM	**1**	1	1	3	3	209	1	213	**13**	3	10	26	0	120	6	126	368
05:15 PM	1	**2**	1	**4**	2	224	1	227	11	**7**	9	**27**	0	**141**	4	**145**	403
05:30 PM	0	0	**2**	2	**4**	213	**3**	220	7	4	**11**	22	1	125	**8**	134	378
Total Volume	2	4	5	11	12	906	6	924	39	16	36	91	2	511	21	534	1560
% App. Total	18.2	36.4	45.5		1.3	98.1	0.6		42.9	17.6	39.6		0.4	95.7	3.9		
PHF	.500	.500	.625	.688	.750	.871	.500	.875	.750	.571	.818	.843	.500	.906	.656	.921	.949
Cars	2	4	5	11	12	900	6	918	39	16	35	90	2	508	20	530	1549
% Cars	100	100	100	100	100	99.3	100	99.4	100	100	97.2	98.9	100	99.4	95.2	99.3	99.3
Trucks	0	0	0	0	0	6	0	6	0	0	1	1	0	3	1	4	11
% Trucks	0	0	0	0	0	0.7	0	0.6	0	0	2.8	1.1	0	0.6	4.8	0.7	0.7

Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 2



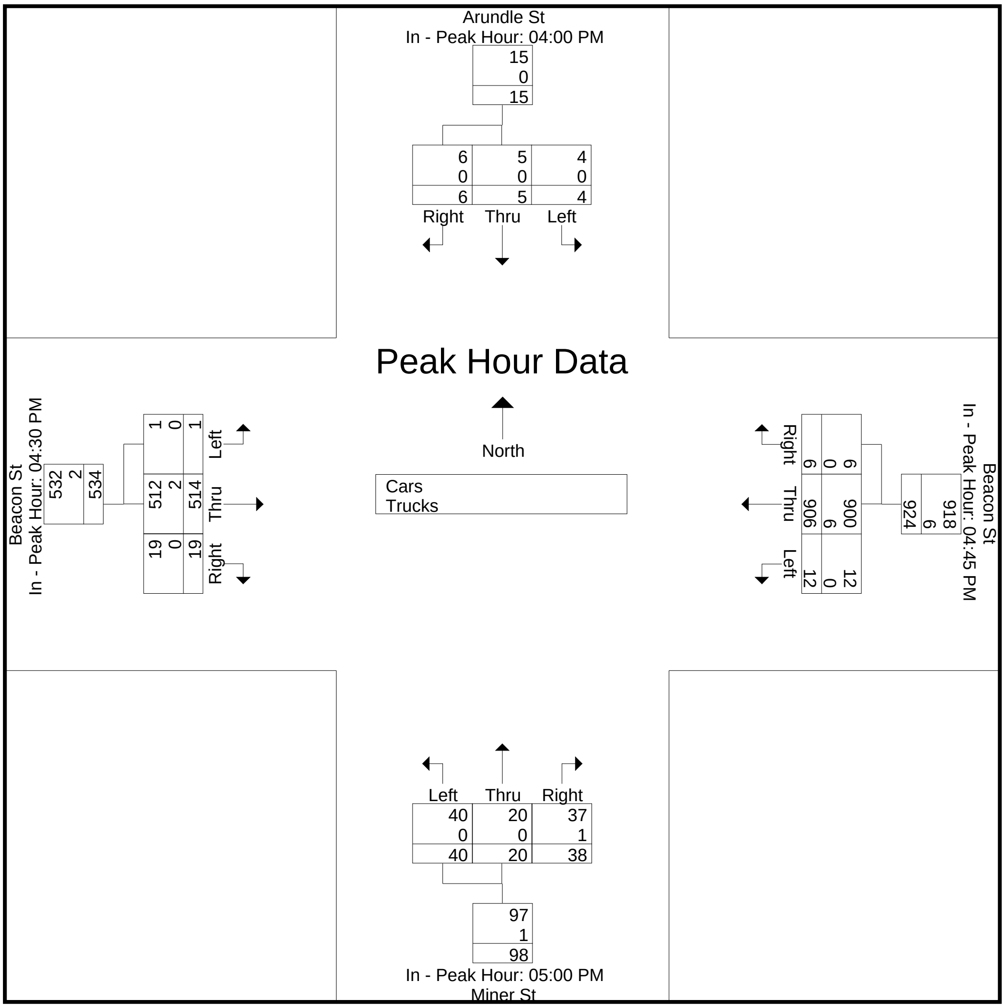
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:45 PM				05:00 PM				04:30 PM			
+0 mins.	1	1	**3**	**5**	3	**260**	1	**264**	**13**	3	10	26	0	128	**6**	134
+15 mins.	1	**2**	1	4	3	209	1	213	11	**7**	9	**27**	**1**	125	3	129
+30 mins.	**2**	1	1	4	2	224	1	227	7	4	**11**	22	0	120	6	126
+45 mins.	0	1	1	2	**4**	213	**3**	220	9	6	8	23	0	**141**	4	**145**
Total Volume	4	5	6	15	12	906	6	924	40	20	38	98	1	514	19	534
% App. Total	26.7	33.3	40		1.3	98.1	0.6		40.8	20.4	38.8		0.2	96.3	3.6	
PHF	.500	.625	.500	.750	.750	.871	.500	.875	.769	.714	.864	.907	.250	.911	.792	.921
Cars	4	5	6	15	12	900	6	918	40	20	37	97	1	512	19	532
% Cars	100	100	100	100	100	99.3	100	99.4	100	100	97.4	99	100	99.6	100	99.6
Trucks	0	0	0	0	0	6	0	6	0	0	1	1	0	2	0	2
% Trucks	0	0	0	0	0	0.7	0	0.6	0	0	2.6	1	0	0.4	0	0.4

Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars

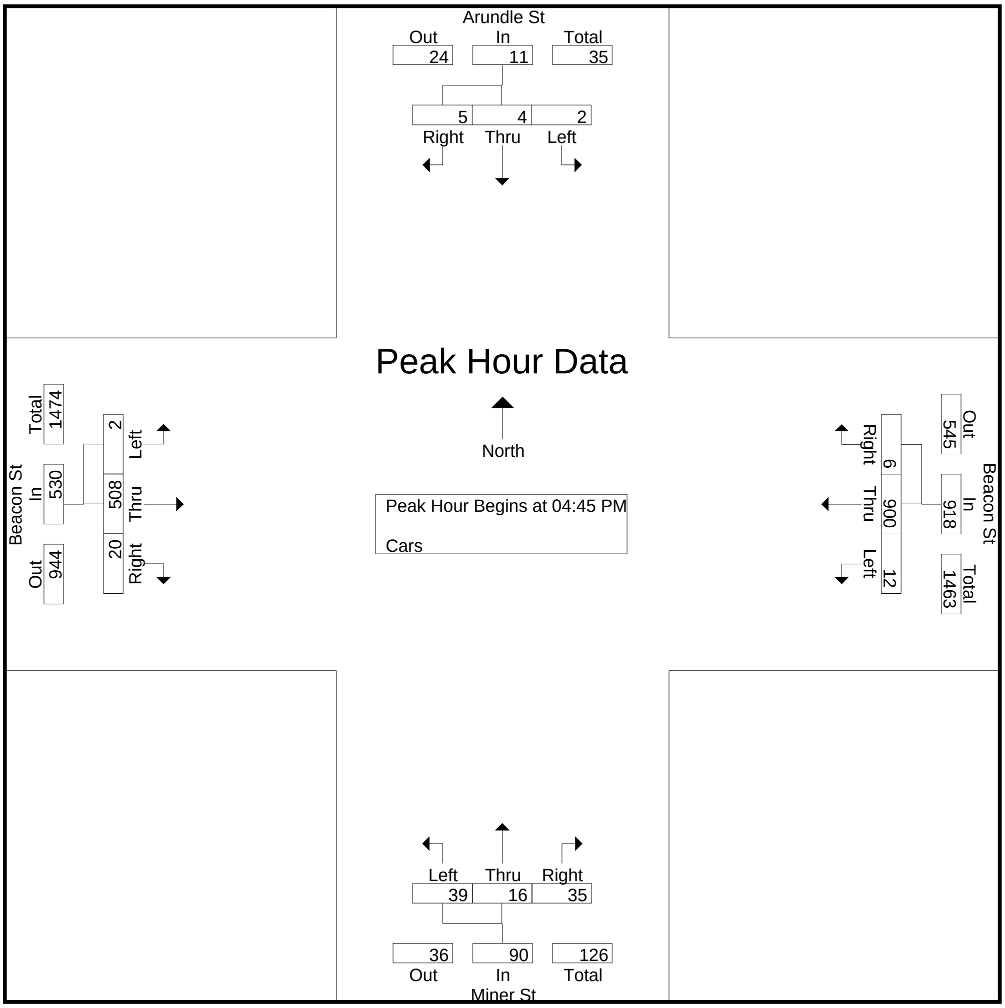
	Arundle St From North			Beacon St From East			Miner St From South			Beacon St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	1	1	3	1	185	1	5	6	12	3	111	8	337
04:15 PM	1	2	1	5	204	2	4	3	13	1	104	3	343
04:30 PM	2	1	1	5	186	3	7	6	15	0	128	6	360
04:45 PM	0	1	1	3	259	1	8	2	6	1	125	3	410
Total	4	5	6	14	834	7	24	17	46	5	468	20	1450
05:00 PM	1	1	1	3	207	1	13	3	10	0	120	6	366
05:15 PM	1	2	1	2	223	1	11	7	9	0	139	4	400
05:30 PM	0	0	2	4	211	3	7	4	10	1	124	7	373
05:45 PM	0	1	1	4	201	0	9	6	8	0	116	6	352
Total	2	4	5	13	842	5	40	20	37	1	499	23	1491
Grand Total	6	9	11	27	1676	12	64	37	83	6	967	43	2941
Apprch %	23.1	34.6	42.3	1.6	97.7	0.7	34.8	20.1	45.1	0.6	95.2	4.2	
Total %	0.2	0.3	0.4	0.9	57	0.4	2.2	1.3	2.8	0.2	32.9	1.5	

	Arundle St From North				Beacon St From East				Miner St From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	1	1	2	3	**259**	1	**263**	8	2	6	16	**1**	125	3	129	**410**
05:00 PM	**1**	1	1	3	3	207	1	211	**13**	3	**10**	26	0	120	6	126	366
05:15 PM	1	**2**	1	**4**	2	223	1	226	11	**7**	9	**27**	0	**139**	4	**143**	400
05:30 PM	0	0	**2**	2	**4**	211	**3**	218	7	4	10	21	1	124	**7**	132	373
Total Volume	2	4	5	11	12	900	6	918	39	16	35	90	2	508	20	530	1549
% App. Total	18.2	36.4	45.5		1.3	98	0.7		43.3	17.8	38.9		0.4	95.8	3.8		
PHF	.500	.500	.625	.688	.750	.869	.500	.873	.750	.571	.875	.833	.500	.914	.714	.927	.945

Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 2



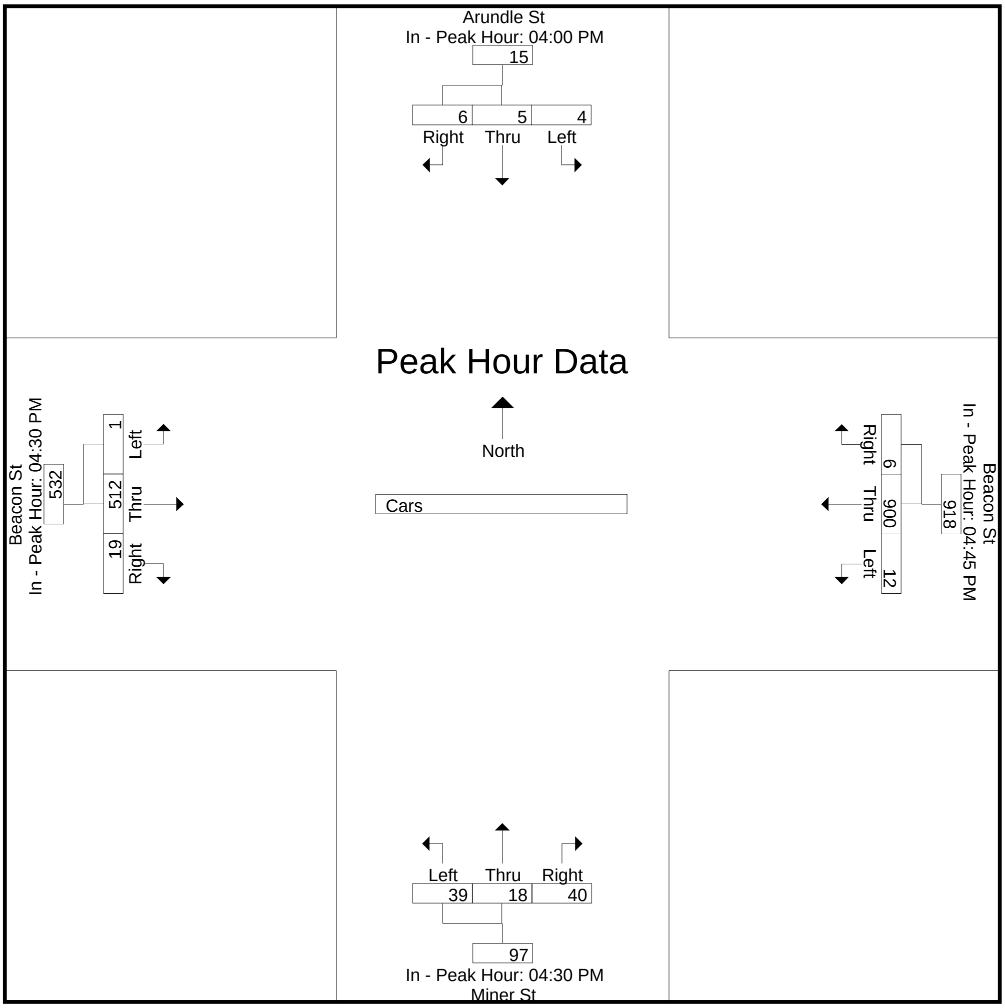
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:45 PM				04:30 PM				04:30 PM			
+0 mins.	1	1	**3**	**5**	3	**259**	1	**263**	7	6	**15**	**28**	0	128	**6**	134
+15 mins.	1	**2**	1	4	3	207	1	211	8	2	6	16	**1**	125	3	129
+30 mins.	**2**	1	1	4	2	223	1	226	**13**	3	10	26	0	120	6	126
+45 mins.	0	1	1	2	**4**	211	**3**	218	11	**7**	9	27	0	**139**	4	**143**
Total Volume	4	5	6	15	12	900	6	918	39	18	40	97	1	512	19	532
% App. Total	26.7	33.3	40		1.3	98	0.7		40.2	18.6	41.2		0.2	96.2	3.6	
PHF	.500	.625	.500	.750	.750	.869	.500	.873	.750	.643	.667	.866	.250	.921	.792	.930

Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 1

Groups Printed- Trucks

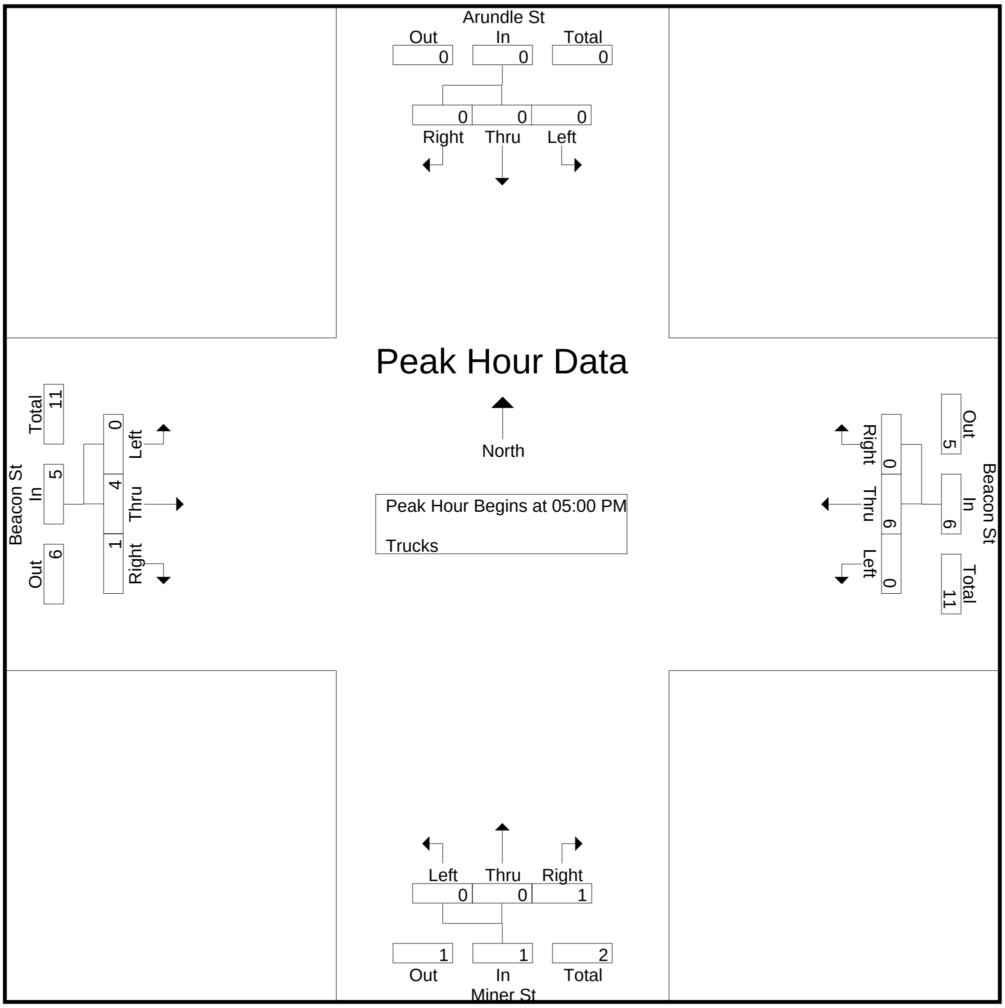
	Arundle St From North			Beacon St From East			Miner St From South			Beacon St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	0	1	0	0	0	0	0	3	0	4
04:15 PM	0	0	0	0	2	0	0	0	0	0	0	0	2
04:30 PM	0	0	0	1	3	0	0	0	0	0	0	0	4
04:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	1	7	0	0	0	0	0	3	0	11
05:00 PM	0	0	0	0	2	0	0	0	0	0	0	0	2
05:15 PM	0	0	0	0	1	0	0	0	0	0	2	0	3
05:30 PM	0	0	0	0	2	0	0	0	1	0	1	1	5
05:45 PM	0	0	0	0	1	0	0	0	0	0	1	0	2
Total	0	0	0	0	6	0	0	0	1	0	4	1	12
Grand Total	0	0	0	1	13	0	0	0	1	0	7	1	23
Apprch %	0	0	0	7.1	92.9	0	0	0	100	0	87.5	12.5	
Total %	0	0	0	4.3	56.5	0	0	0	4.3	0	30.4	4.3	

	Arundle St From North				Beacon St From East				Miner St From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	0	0	0	2
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	**2**	0	**2**	3
05:30 PM	0	0	0	0	0	2	0	2	0	0	**1**	**1**	0	1	**1**	2	**5**
05:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Total Volume	0	0	0	0	0	6	0	6	0	0	1	1	0	4	1	5	12
% App. Total	0	0	0		0	100	0		0	0	100		0	80	20		
PHF	.000	.000	.000	.000	.000	.750	.000	.750	.000	.000	.250	.250	.000	.500	.250	.625	.600

Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 2



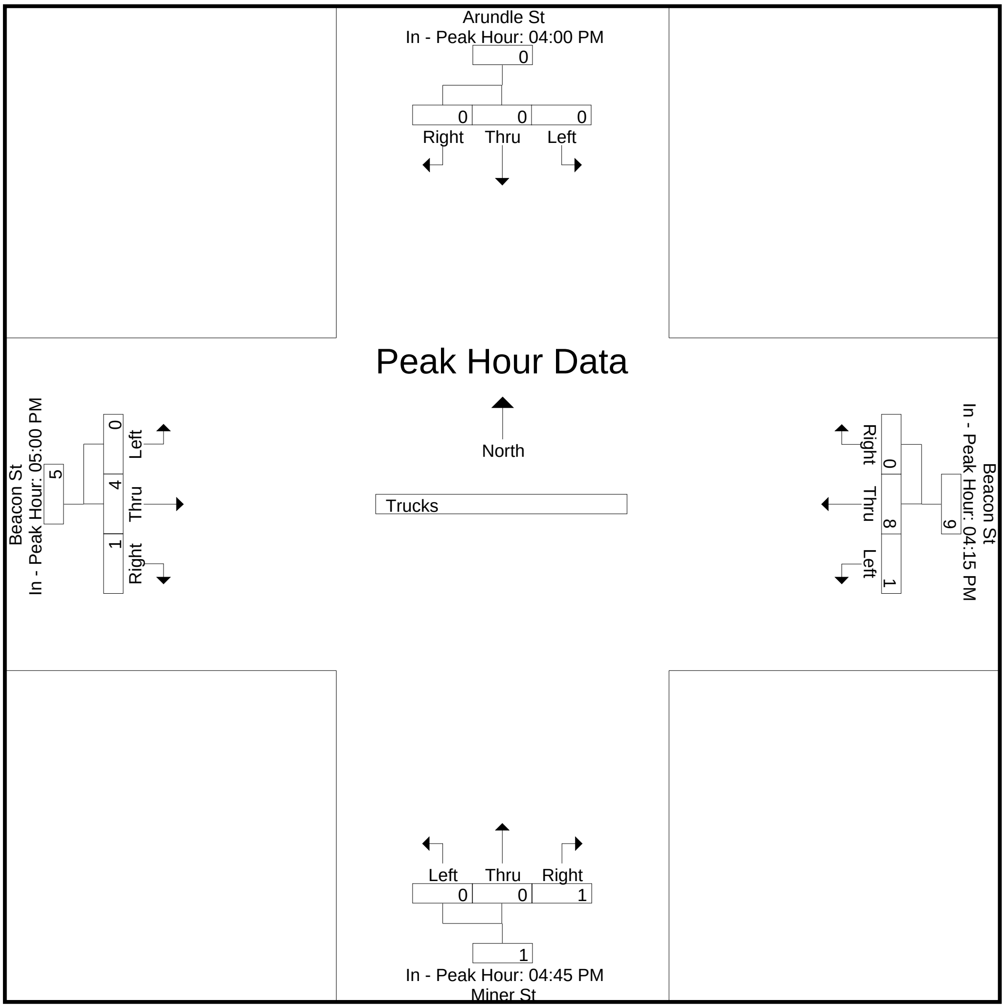
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:15 PM				04:45 PM				05:00 PM			
+0 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	**1**	**3**	0	**4**	0	0	0	0	0	**2**	0	**2**
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	1	**1**	2
+45 mins.	0	0	0	0	0	2	0	2	0	0	**1**	**1**	0	1	0	1
Total Volume	0	0	0	0	1	8	0	9	0	0	1	1	0	4	1	5
% App. Total	0	0	0		11.1	88.9	0		0	0	100		0	80	20	
PHF	.000	.000	.000	.000	.250	.667	.000	.563	.000	.000	.250	.250	.000	.500	.250	.625

Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012

Groups Printed- Bikes Peds

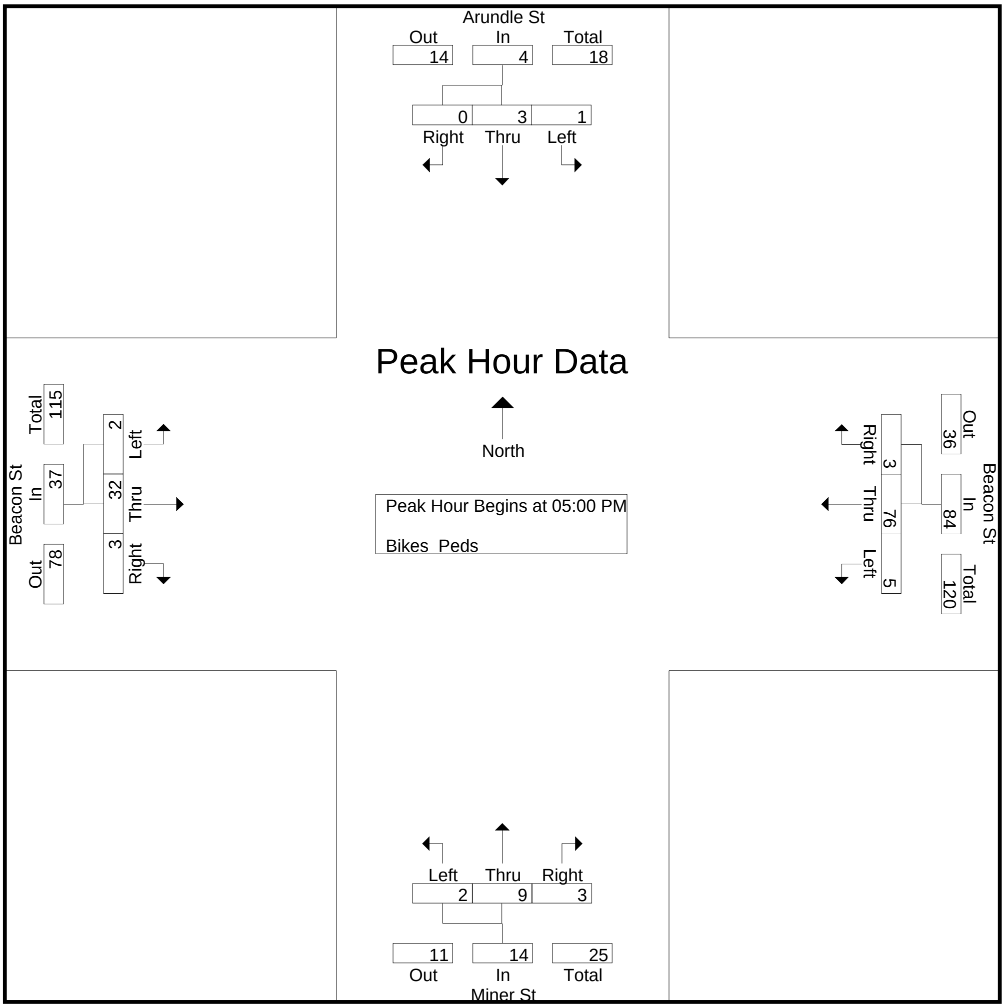
	Arundle St				Beacon St				Miner St				Beacon St						
	From North				From East				From South				From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	1	1	0	29	0	14	0	1	1	0	0	26	0	3	1	19	75	21	96
04:15 PM	0	1	0	31	1	2	1	3	0	1	1	16	1	6	1	10	60	15	75
04:30 PM	1	1	0	26	0	18	2	0	1	0	0	28	1	5	0	24	78	29	107
04:45 PM	0	1	0	31	0	23	0	2	1	0	0	30	0	6	0	22	85	31	116
Total	2	4	0	117	1	57	3	6	3	1	1	100	2	20	2	75	298	96	394
05:00 PM	0	0	0	39	0	10	2	3	0	3	1	23	1	11	2	25	90	30	120
05:15 PM	1	0	0	40	3	18	0	2	1	2	1	32	1	4	0	23	97	31	128
05:30 PM	0	3	0	34	2	20	1	2	1	2	1	30	0	9	1	19	85	40	125
05:45 PM	0	0	0	41	0	28	0	2	0	2	0	32	0	8	0	13	88	38	126
Total	1	3	0	154	5	76	3	9	2	9	3	117	2	32	3	80	360	139	499
Grand Total	3	7	0	271	6	133	6	15	5	10	4	217	4	52	5	155	658	235	893
Apprch %	30	70	0		4.1	91.7	4.1		26.3	52.6	21.1		6.6	85.2	8.2				
Total %	1.3	3	0		2.6	56.6	2.6		2.1	4.3	1.7		1.7	22.1	2.1		73.7	26.3	

	Arundle St				Beacon St				Miner St				Beacon St				
	From North				From East				From South				From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	10	**2**	12	0	**3**	**1**	**4**	**1**	**11**	**2**	**14**	30
05:15 PM	**1**	0	0	1	**3**	18	0	21	**1**	2	1	4	1	4	0	5	31
05:30 PM	0	**3**	0	**3**	2	20	1	23	1	2	1	4	0	9	1	10	**40**
05:45 PM	0	0	0	0	0	**28**	0	**28**	0	2	0	2	0	8	0	8	38
Total Volume	1	3	0	4	5	76	3	84	2	9	3	14	2	32	3	37	139
% App. Total	25	75	0		6	90.5	3.6		14.3	64.3	21.4		5.4	86.5	8.1		
PHF	.250	.250	.000	.333	.417	.679	.375	.750	.500	.750	.750	.875	.500	.727	.375	.661	.869

Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012



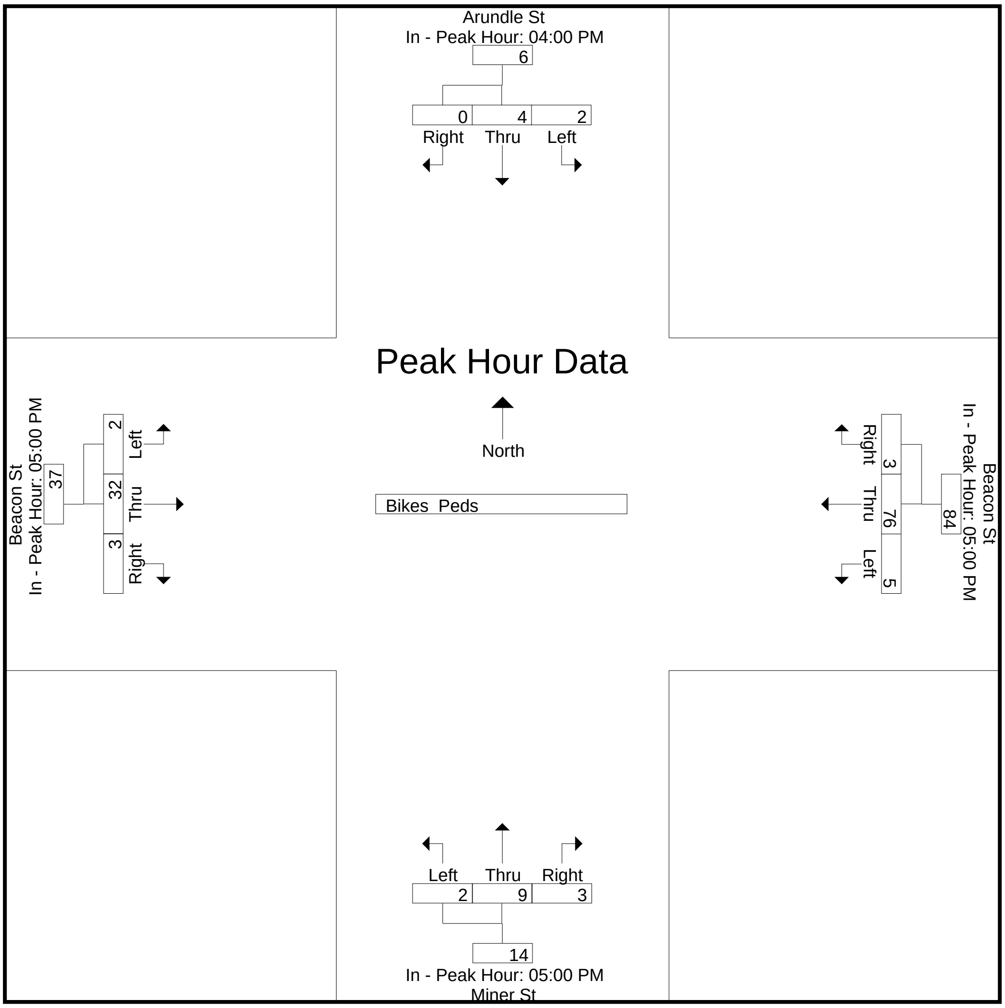
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	**1**	**1**	0	**2**	0	10	**2**	12	0	**3**	**1**	**4**	**1**	**11**	**2**	**14**
+15 mins.	0	1	0	1	**3**	18	0	21	**1**	2	1	4	1	4	0	5
+30 mins.	1	1	0	2	2	20	1	23	1	2	1	4	0	9	1	10
+45 mins.	0	1	0	1	0	**28**	0	**28**	0	2	0	2	0	8	0	8
Total Volume	2	4	0	6	5	76	3	84	2	9	3	14	2	32	3	37
% App. Total	33.3	66.7	0		6	90.5	3.6		14.3	64.3	21.4		5.4	86.5	8.1	
PHF	.500	1.000	.000	.750	.417	.679	.375	.750	.500	.750	.750	.875	.500	.727	.375	.661

Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

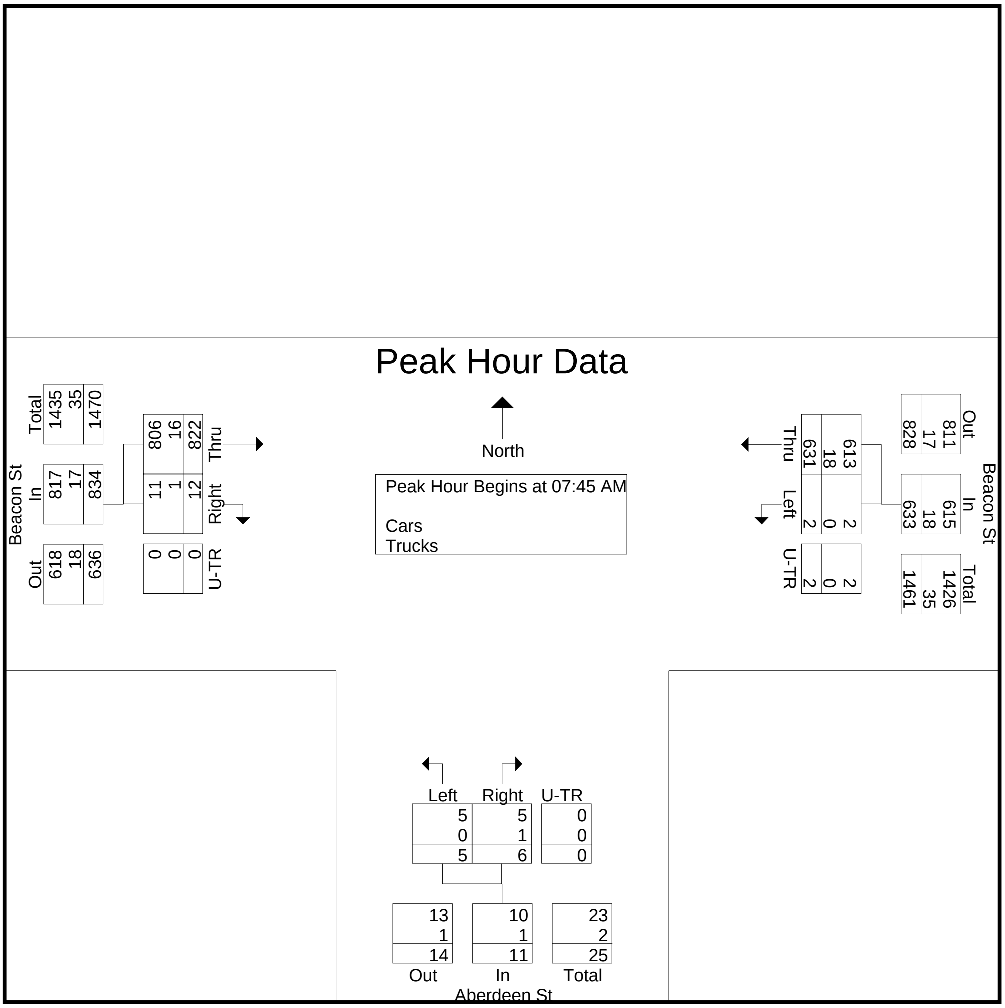
	Beacon St From East			Aberdeen St From South			Beacon St From West			
Start Time	Left	Thru	U-TR	Left	Right	U-TR	Thru	Right	U-TR	Int. Total
07:00 AM	0	117	0	1	0	0	116	1	0	235
07:15 AM	0	150	0	0	0	0	111	0	0	261
07:30 AM	1	150	0	0	3	0	155	2	1	312
07:45 AM	2	156	0	3	2	0	184	5	0	352
Total	3	573	0	4	5	0	566	8	1	1160
08:00 AM	0	155	1	1	2	0	204	2	0	365
08:15 AM	0	158	1	1	0	0	209	3	0	372
08:30 AM	0	162	0	0	2	0	225	2	0	391
08:45 AM	1	147	0	2	3	0	193	3	0	349
Total	1	622	2	4	7	0	831	10	0	1477
Grand Total	4	1195	2	8	12	0	1397	18	1	2637
Apprch %	0.3	99.5	0.2	40	60	0	98.7	1.3	0.1	
Total %	0.2	45.3	0.1	0.3	0.5	0	53	0.7	0	
Cars	4	1160	2	8	11	0	1370	17	1	2573
% Cars	100	97.1	100	100	91.7	0	98.1	94.4	100	97.6
Trucks	0	35	0	0	1	0	27	1	0	64
% Trucks	0	2.9	0	0	8.3	0	1.9	5.6	0	2.4

	Beacon St From East				Aberdeen St From South				Beacon St From West				
Start Time	Left	Thru	U-TR	App. Total	Left	Right	U-TR	App. Total	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	**2**	156	0	158	**3**	**2**	0	**5**	184	**5**	0	189	352
08:00 AM	0	155	**1**	156	1	2	0	3	204	2	0	206	365
08:15 AM	0	158	1	159	1	0	0	1	209	3	0	212	372
08:30 AM	0	**162**	0	**162**	0	2	0	2	**225**	2	0	**227**	**391**
Total Volume	2	631	2	635	5	6	0	11	822	12	0	834	1480
% App. Total	0.3	99.4	0.3		45.5	54.5	0		98.6	1.4	0		
PHF	.250	.974	.500	.980	.417	.750	.000	.550	.913	.600	.000	.919	.946
Cars	2	613	2	617	5	5	0	10	806	11	0	817	1444
% Cars	100	97.1	100	97.2	100	83.3	0	90.9	98.1	91.7	0	98.0	97.6
Trucks	0	18	0	18	0	1	0	1	16	1	0	17	36
% Trucks	0	2.9	0	2.8	0	16.7	0	9.1	1.9	8.3	0	2.0	2.4

Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012



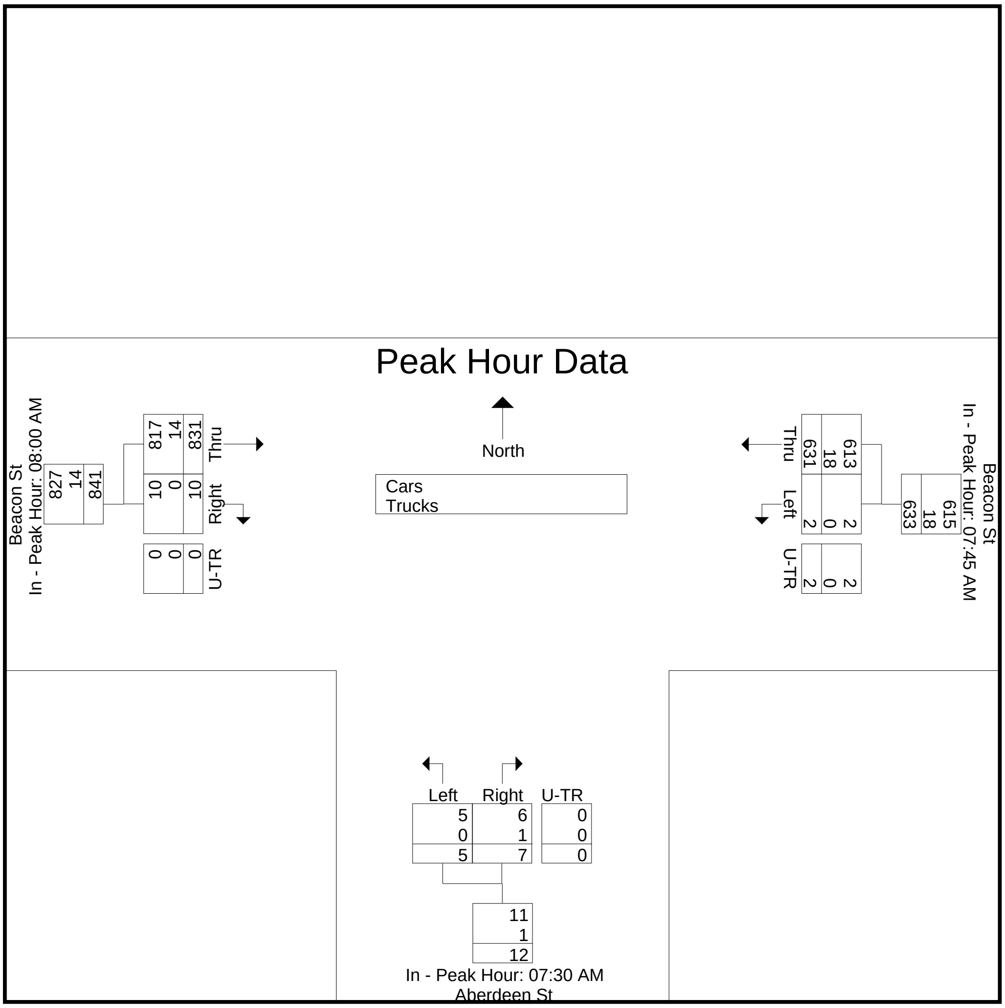
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:30 AM				08:00 AM			
+0 mins.	**2**	156	0	158	0	**3**	0	3	204	2	0	206
+15 mins.	0	155	**1**	156	**3**	2	0	**5**	209	**3**	0	212
+30 mins.	0	158	1	159	1	2	0	3	**225**	2	0	**227**
+45 mins.	0	**162**	0	**162**	1	0	0	1	193	3	0	196
Total Volume	2	631	2	635	5	7	0	12	831	10	0	841
% App. Total	0.3	99.4	0.3		41.7	58.3	0		98.8	1.2	0	
PHF	.250	.974	.500	.980	.417	.583	.000	.600	.923	.833	.000	.926
Cars	2	613	2	617	5	6	0	11	817	10	0	827
% Cars	100	97.1	100	97.2	100	85.7	0	91.7	98.3	100	0	98.3
Trucks	0	18	0	18	0	1	0	1	14	0	0	14
% Trucks	0	2.9	0	2.8	0	14.3	0	8.3	1.7	0	0	1.7

Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars

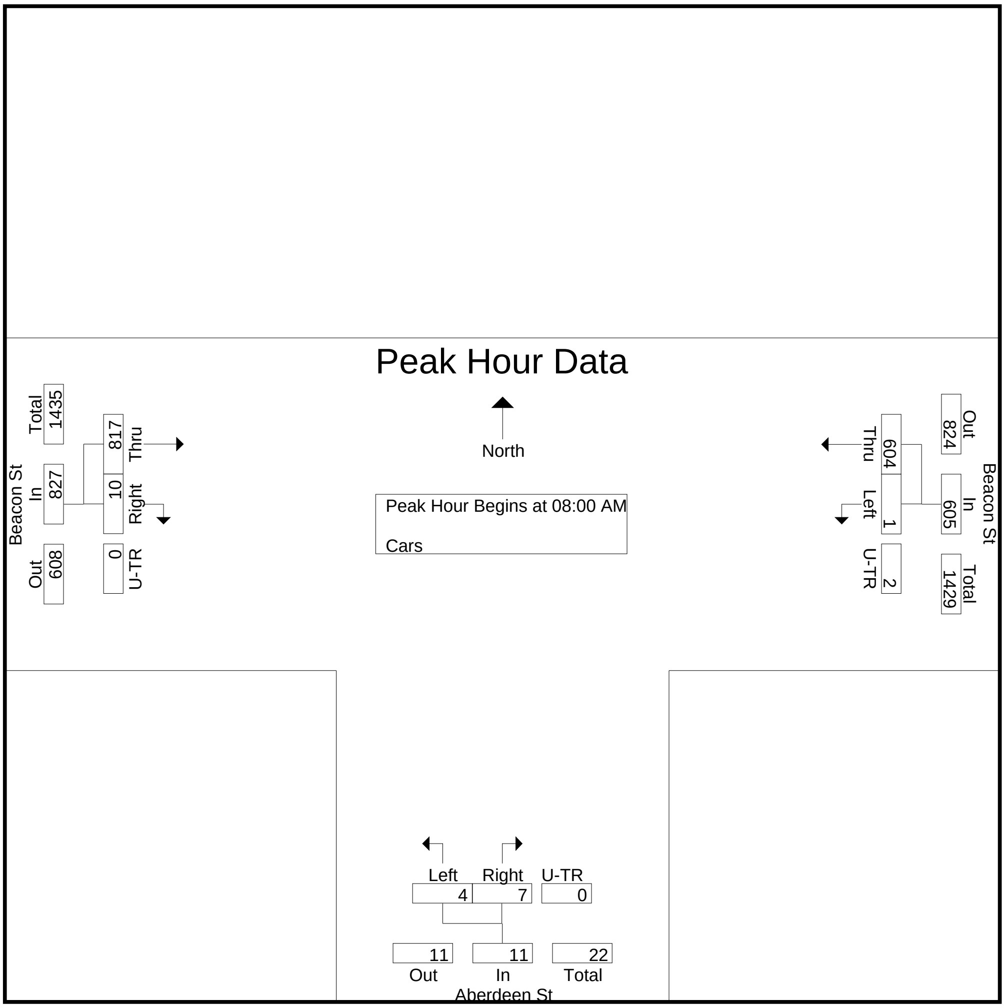
	Beacon St From East			**Aberdeen St From South**			**Beacon St From West**			
Start Time	Left	Thru	U-TR	Left	Right	U-TR	Thru	Right	U-TR	Int. Total
07:00 AM	0	111	0	1	0	0	114	1	0	227
07:15 AM	0	146	0	0	0	0	108	0	0	254
07:30 AM	1	146	0	0	3	0	152	2	1	305
07:45 AM	2	153	0	3	1	0	179	4	0	342
Total	3	556	0	4	4	0	553	7	1	1128
08:00 AM	0	150	1	1	2	0	202	2	0	358
08:15 AM	0	153	1	1	0	0	204	3	0	362
08:30 AM	0	157	0	0	2	0	221	2	0	382
08:45 AM	1	144	0	2	3	0	190	3	0	343
Total	1	604	2	4	7	0	817	10	0	1445
Grand Total	4	1160	2	8	11	0	1370	17	1	2573
Apprch %	0.3	99.5	0.2	42.1	57.9	0	98.7	1.2	0.1	
Total %	0.2	45.1	0.1	0.3	0.4	0	53.2	0.7	0	

	Beacon St From East				**Aberdeen St From South**				**Beacon St From West**				
Start Time	Left	Thru	U-TR	App. Total	Left	Right	U-TR	App. Total	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	0	150	**1**	151	1	2	0	3	202	2	0	204	358
08:15 AM	0	153	1	154	1	0	0	1	204	**3**	0	207	362
08:30 AM	0	**157**	0	**157**	0	2	0	2	**221**	2	0	**223**	**382**
08:45 AM	**1**	144	0	145	**2**	**3**	0	**5**	190	3	0	193	343
Total Volume	1	604	2	607	4	7	0	11	817	10	0	827	1445
% App. Total	0.2	99.5	0.3		36.4	63.6	0		98.8	1.2	0		
PHF	.250	.962	.500	.967	.500	.583	.000	.550	.924	.833	.000	.927	.946

Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 2



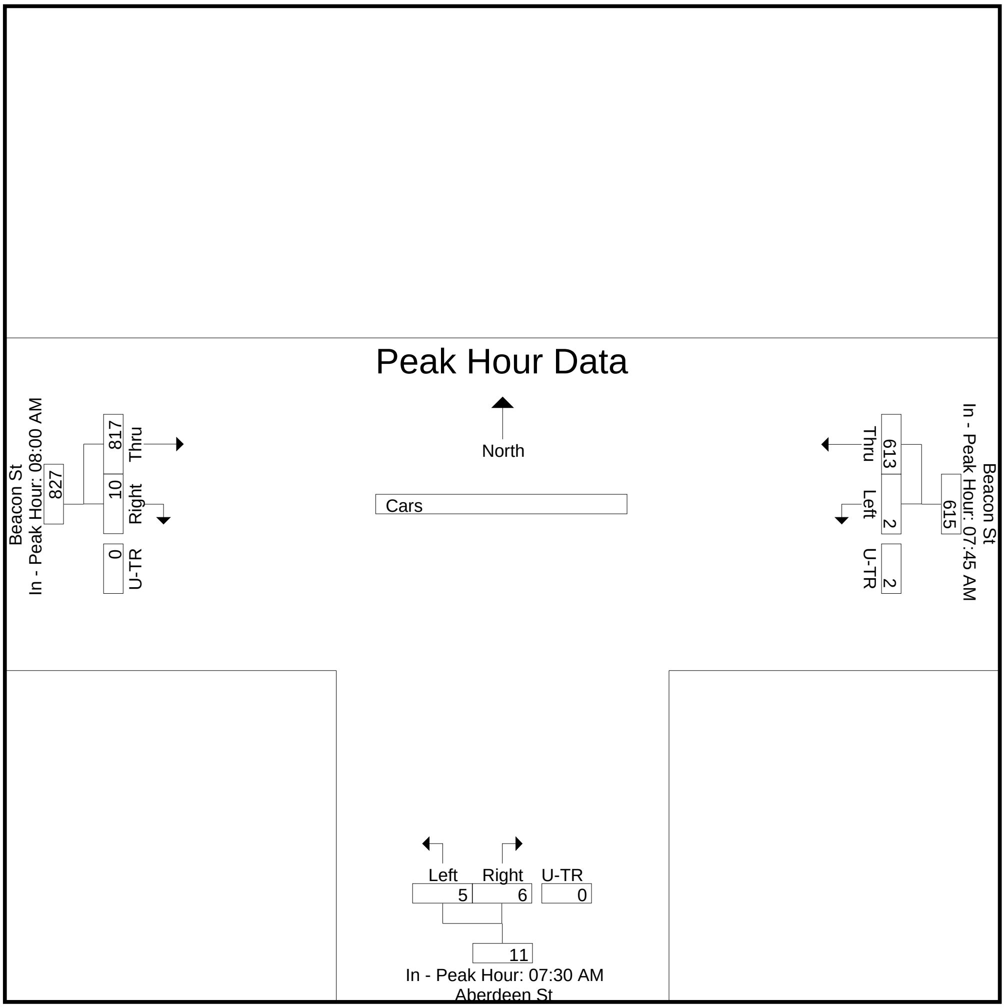
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:30 AM				08:00 AM			
+0 mins.	**2**	153	0	155	0	**3**	0	3	202	2	0	204
+15 mins.	0	150	**1**	151	**3**	1	0	**4**	204	**3**	0	207
+30 mins.	0	153	1	154	1	2	0	3	**221**	2	0	**223**
+45 mins.	0	**157**	0	**157**	1	0	0	1	190	3	0	193
Total Volume	2	613	2	617	5	6	0	11	817	10	0	827
% App. Total	0.3	99.4	0.3		45.5	54.5	0		98.8	1.2	0	
PHF	.250	.976	.500	.982	.417	.500	.000	.688	.924	.833	.000	.927

Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 1

Groups Printed- Trucks

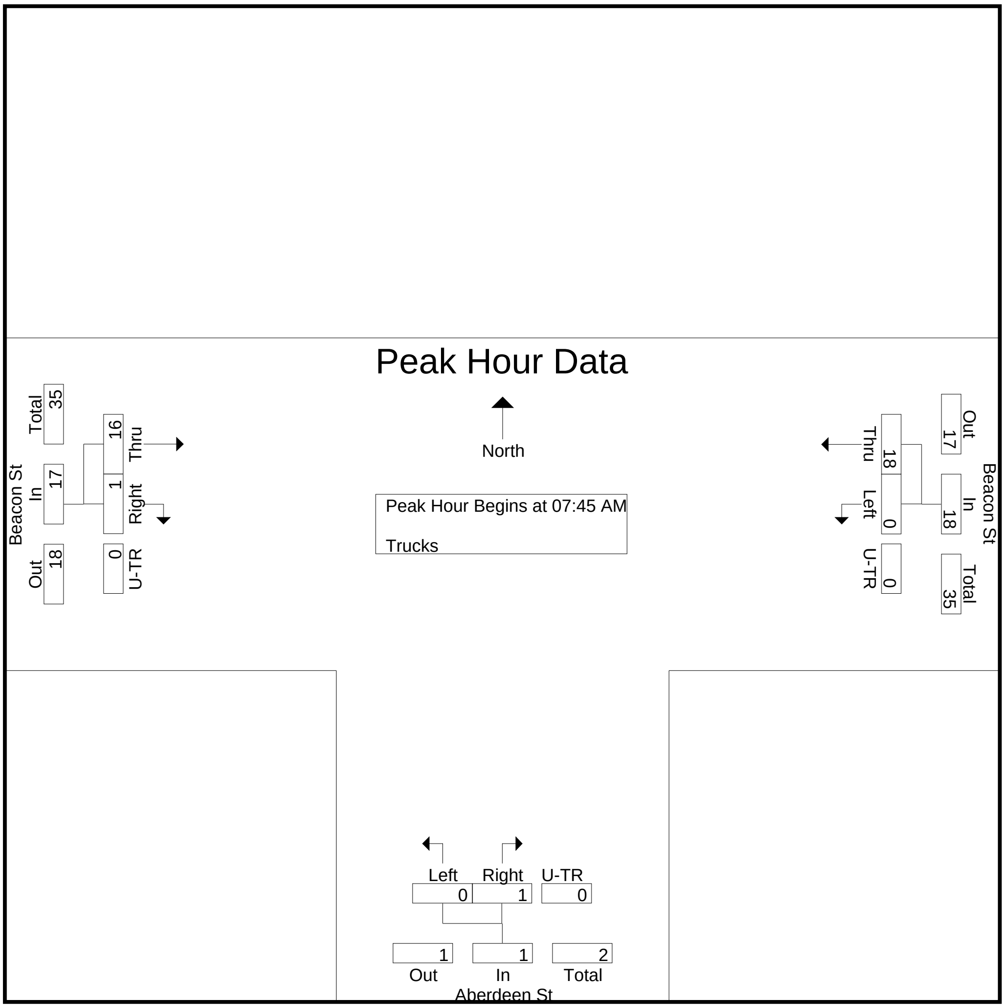
	Beacon St From East			Aberdeen St From South			Beacon St From West			
Start Time	Left	Thru	U-TR	Left	Right	U-TR	Thru	Right	U-TR	Int. Total
07:00 AM	0	6	0	0	0	0	2	0	0	8
07:15 AM	0	4	0	0	0	0	3	0	0	7
07:30 AM	0	4	0	0	0	0	3	0	0	7
07:45 AM	0	3	0	0	1	0	5	1	0	10
Total	0	17	0	0	1	0	13	1	0	32
08:00 AM	0	5	0	0	0	0	2	0	0	7
08:15 AM	0	5	0	0	0	0	5	0	0	10
08:30 AM	0	5	0	0	0	0	4	0	0	9
08:45 AM	0	3	0	0	0	0	3	0	0	6
Total	0	18	0	0	0	0	14	0	0	32
Grand Total	0	35	0	0	1	0	27	1	0	64
Apprch %	0	100	0	0	100	0	96.4	3.6	0	
Total %	0	54.7	0	0	1.6	0	42.2	1.6	0	

	Beacon St From East				Aberdeen St From South				Beacon St From West				
Start Time	Left	Thru	U-TR	App. Total	Left	Right	U-TR	App. Total	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	0	3	0	3	0	**1**	0	**1**	**5**	**1**	0	**6**	**10**
08:00 AM	0	**5**	0	**5**	0	0	0	0	2	0	0	2	7
08:15 AM	0	5	0	5	0	0	0	0	5	0	0	5	10
08:30 AM	0	5	0	5	0	0	0	0	4	0	0	4	9
Total Volume	0	18	0	18	0	1	0	1	16	1	0	17	36
% App. Total	0	100	0		0	100	0		94.1	5.9	0		
PHF	.000	.900	.000	.900	.000	.250	.000	.250	.800	.250	.000	.708	.900

Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 2



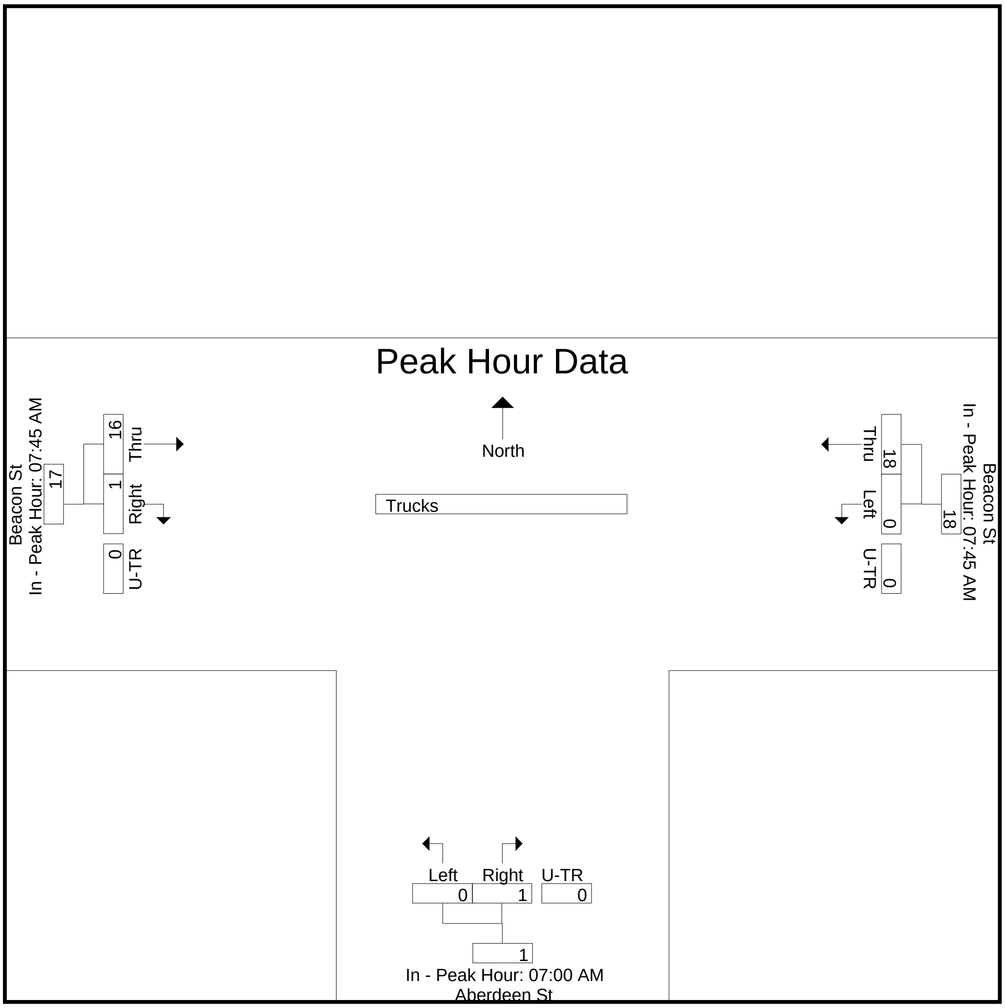
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:00 AM				07:45 AM			
+0 mins.	0	3	0	3	0	0	0	0	**5**	**1**	0	**6**
+15 mins.	0	**5**	0	**5**	0	0	0	0	2	0	0	2
+30 mins.	0	5	0	5	0	0	0	0	5	0	0	5
+45 mins.	0	5	0	5	0	**1**	0	**1**	4	0	0	4
Total Volume	0	18	0	18	0	1	0	1	16	1	0	17
% App. Total	0	100	0		0	100	0		94.1	5.9	0	
PHF	.000	.900	.000	.900	.000	.250	.000	.250	.800	.250	.000	.708

Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 1

Groups Printed- Bikes Peds

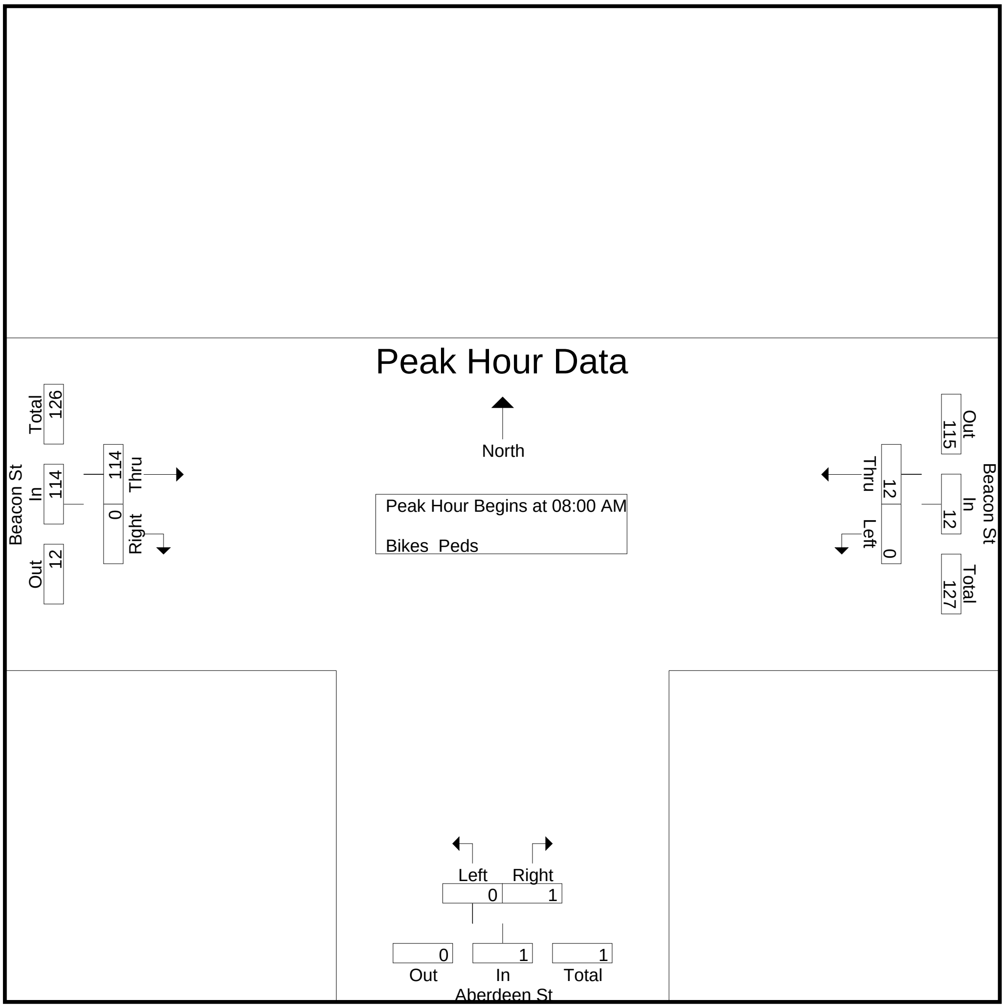
	Beacon St From East			Aberdeen St From South			Beacon St From West					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	3	0	0	0	9	17	0	1	10	20	30
07:15 AM	0	0	0	0	0	12	16	0	0	12	16	28
07:30 AM	0	1	1	0	0	18	32	0	0	19	33	52
07:45 AM	0	1	0	0	0	13	28	0	0	13	29	42
Total	0	5	1	0	0	52	93	0	1	54	98	152
08:00 AM	0	1	3	0	0	15	22	0	1	19	23	42
08:15 AM	0	3	1	0	0	16	32	0	0	17	35	52
08:30 AM	0	6	2	0	1	21	30	0	1	24	37	61
08:45 AM	0	2	1	0	0	21	30	0	4	26	32	58
Total	0	12	7	0	1	73	114	0	6	86	127	213
Grand Total	0	17	8	0	1	125	207	0	7	140	225	365
Apprch %	0	100		0	100		100	0				
Total %	0	7.6		0	0.4		92	0		38.4	61.6	

	Beacon St From East			Aberdeen St From South			Beacon St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	0	1	1	0	0	0	22	0	22	23
08:15 AM	0	3	3	0	0	0	**32**	0	**32**	35
08:30 AM	0	**6**	**6**	0	**1**	**1**	30	0	30	**37**
08:45 AM	0	2	2	0	0	0	30	0	30	32
Total Volume	0	12	12	0	1	1	114	0	114	127
% App. Total	0	100		0	100		100	0		
PHF	.000	.500	.500	.000	.250	.250	.891	.000	.891	.858

Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 2



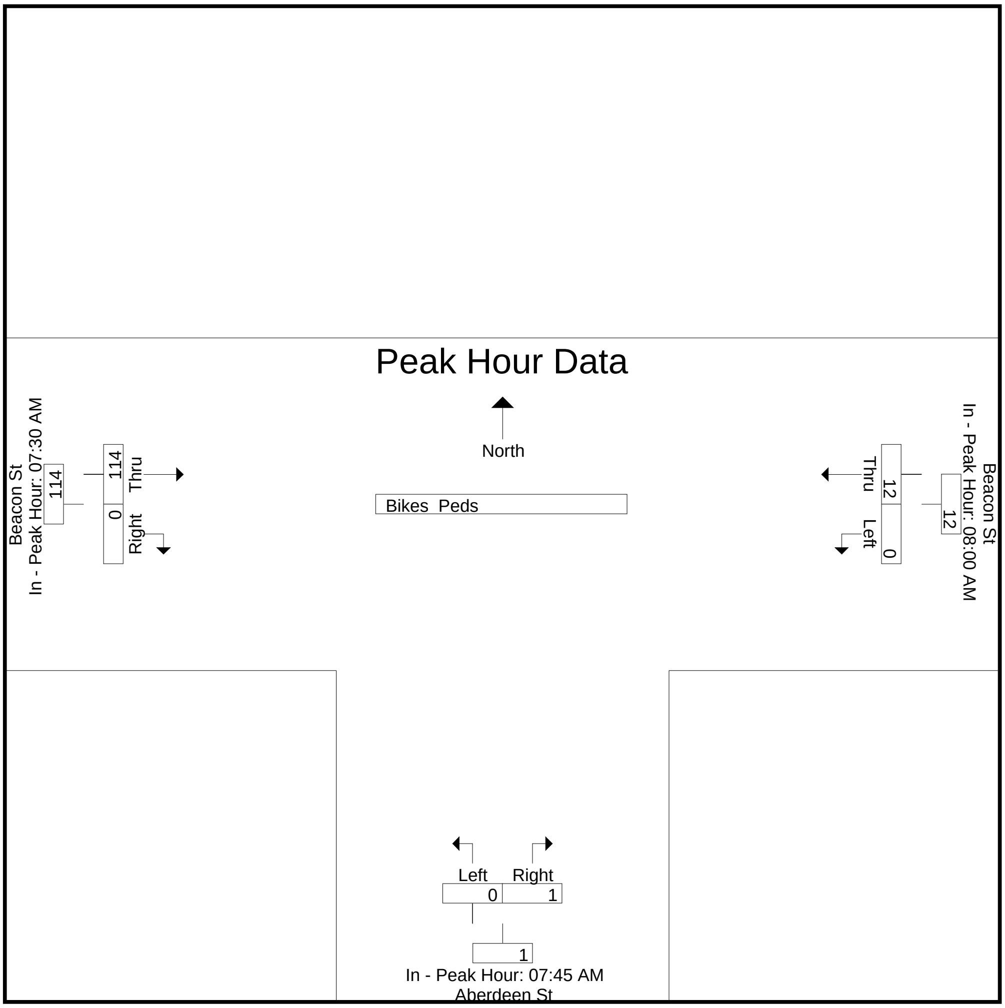
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			07:45 AM			07:30 AM		
+0 mins.	0	1	1	0	0	0	**32**	0	**32**
+15 mins.	0	3	3	0	0	0	28	0	28
+30 mins.	0	**6**	**6**	0	0	0	22	0	22
+45 mins.	0	2	2	0	**1**	**1**	32	0	32
Total Volume	0	12	12	0	1	1	114	0	114
% App. Total	0	100		0	100		100	0	
PHF	.000	.500	.500	.000	.250	.250	.891	.000	.891

Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

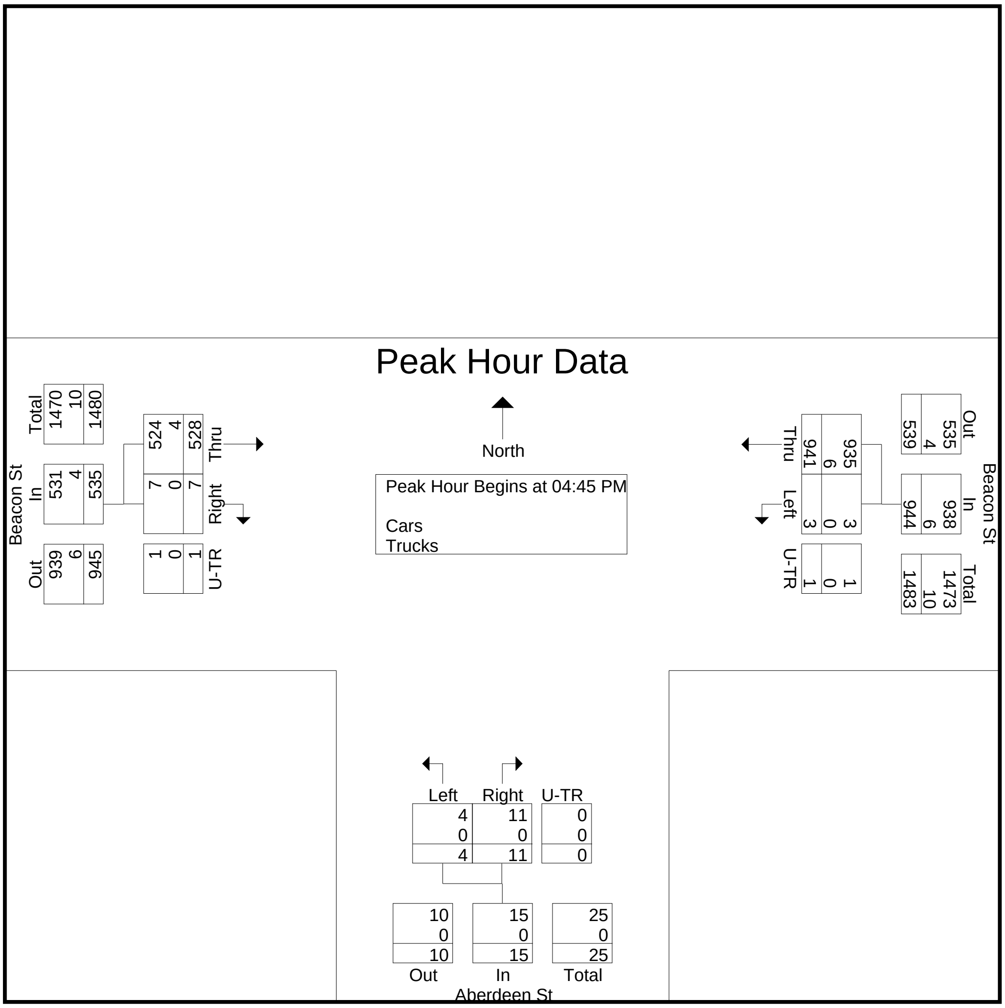
	Beacon St From East			Aberdeen St From South			Beacon St From West			
Start Time	Left	Thru	U-TR	Left	Right	U-TR	Thru	Right	U-TR	Int. Total
04:00 PM	0	192	0	1	3	0	215	3	0	414
04:15 PM	1	213	1	0	0	0	110	2	1	328
04:30 PM	0	206	1	1	0	0	130	1	1	340
04:45 PM	1	261	0	2	5	0	128	2	0	399
Total	2	872	2	4	8	0	583	8	2	1481
05:00 PM	1	226	1	2	3	0	124	1	1	359
05:15 PM	1	238	0	0	1	0	142	2	0	384
05:30 PM	0	216	0	0	2	0	134	2	0	354
05:45 PM	2	212	0	2	3	0	121	1	0	341
Total	4	892	1	4	9	0	521	6	1	1438
Grand Total	6	1764	3	8	17	0	1104	14	3	2919
Apprch %	0.3	99.5	0.2	32	68	0	98.5	1.2	0.3	
Total %	0.2	60.4	0.1	0.3	0.6	0	37.8	0.5	0.1	
Cars	6	1752	3	8	17	0	1096	14	3	2899
% Cars	100	99.3	100	100	100	0	99.3	100	100	99.3
Trucks	0	12	0	0	0	0	8	0	0	20
% Trucks	0	0.7	0	0	0	0	0.7	0	0	0.7

	Beacon St From East				Aberdeen St From South				Beacon St From West				
Start Time	Left	Thru	U-TR	App. Total	Left	Right	U-TR	App. Total	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	**1**	**261**	0	**262**	**2**	**5**	0	**7**	128	**2**	0	130	**399**
05:00 PM	1	226	**1**	228	2	3	0	5	124	1	**1**	126	359
05:15 PM	1	238	0	239	0	1	0	1	**142**	2	0	**144**	384
05:30 PM	0	216	0	216	0	2	0	2	134	2	0	136	354
Total Volume	3	941	1	945	4	11	0	15	528	7	1	536	1496
% App. Total	0.3	99.6	0.1		26.7	73.3	0		98.5	1.3	0.2		
PHF	.750	.901	.250	.902	.500	.550	.000	.536	.930	.875	.250	.931	.937
Cars	3	935	1	939	4	11	0	15	524	7	1	532	1486
% Cars	100	99.4	100	99.4	100	100	0	100	99.2	100	100	99.3	99.3
Trucks	0	6	0	6	0	0	0	0	4	0	0	4	10
% Trucks	0	0.6	0	0.6	0	0	0	0	0.8	0	0	0.7	0.7

Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:00 PM			
+0 mins.	**1**	**261**	0	**262**	**2**	**5**	0	**7**	**215**	**3**	0	**218**
+15 mins.	1	226	**1**	228	2	3	0	5	110	2	**1**	113
+30 mins.	1	238	0	239	0	1	0	1	130	1	1	132
+45 mins.	0	216	0	216	0	2	0	2	128	2	0	130
Total Volume	3	941	1	945	4	11	0	15	583	8	2	593
% App. Total	0.3	99.6	0.1		26.7	73.3	0		98.3	1.3	0.3	
PHF	.750	.901	.250	.902	.500	.550	.000	.536	.678	.667	.500	.680
Cars	3	935	1	939	4	11	0	15	580	8	2	590
% Cars	100	99.4	100	99.4	100	100	0	100	99.5	100	100	99.5
Trucks	0	6	0	6	0	0	0	0	3	0	0	3
% Trucks	0	0.6	0	0.6	0	0	0	0	0.5	0	0	0.5

Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
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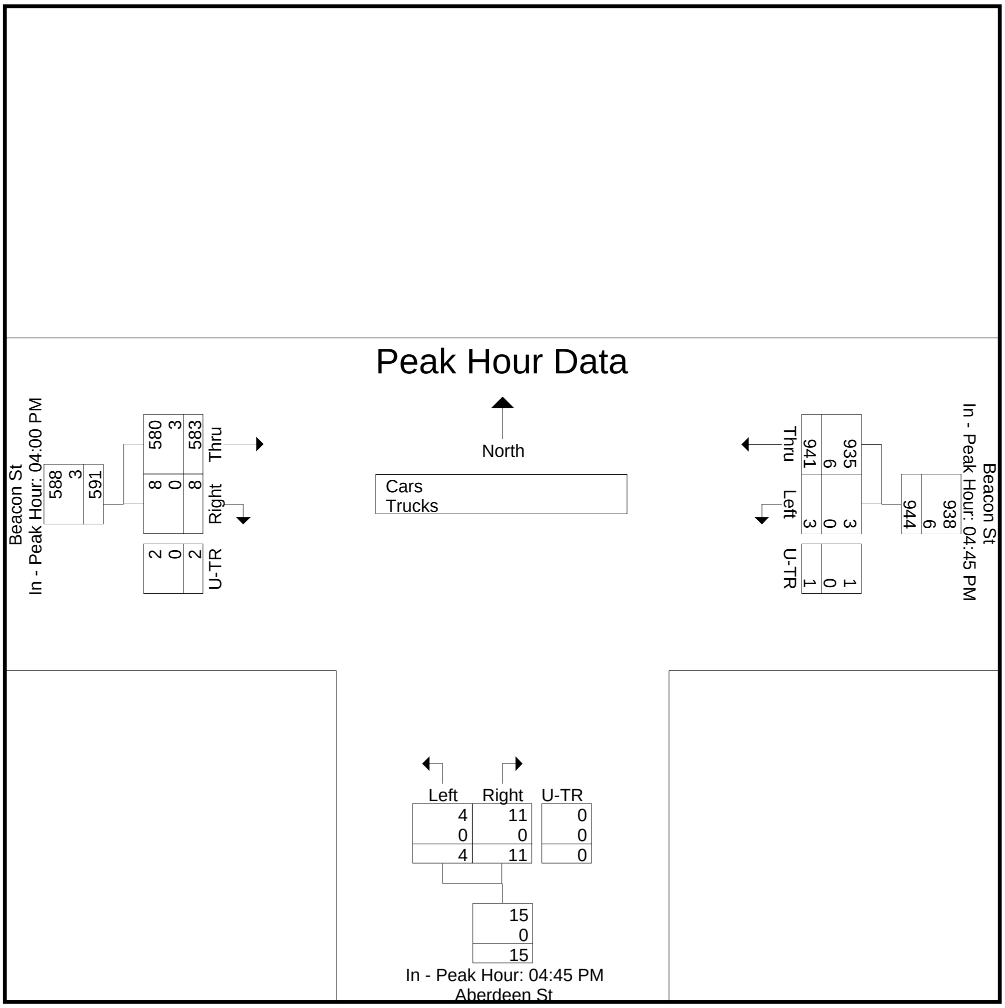


Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 1

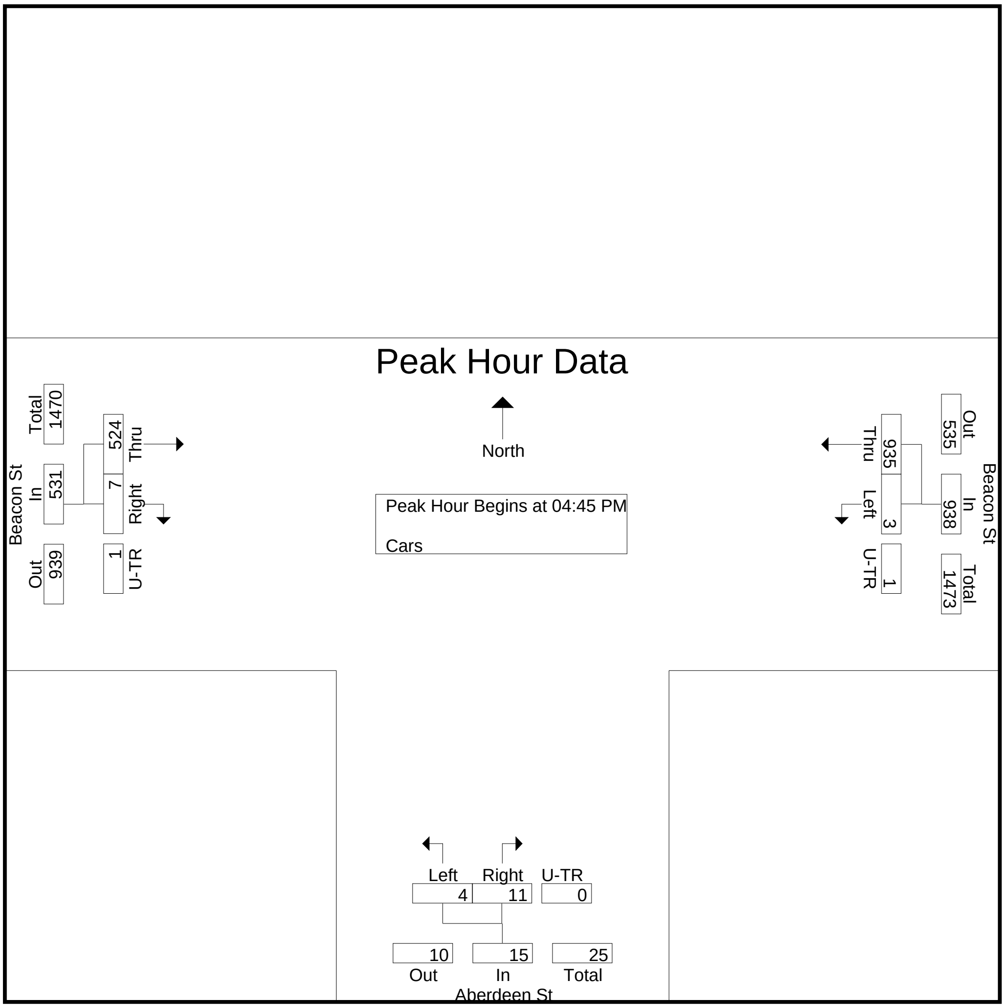
Groups Printed- Cars

	Beacon St From East			Aberdeen St From South			Beacon St From West			
Start Time	Left	Thru	U-TR	Left	Right	U-TR	Thru	Right	U-TR	Int. Total
04:00 PM	0	191	0	1	3	0	212	3	0	410
04:15 PM	1	211	1	0	0	0	110	2	1	326
04:30 PM	0	204	1	1	0	0	130	1	1	338
04:45 PM	1	260	0	2	5	0	128	2	0	398
Total	2	866	2	4	8	0	580	8	2	1472
05:00 PM	1	224	1	2	3	0	124	1	1	357
05:15 PM	1	237	0	0	1	0	140	2	0	381
05:30 PM	0	214	0	0	2	0	132	2	0	350
05:45 PM	2	211	0	2	3	0	120	1	0	339
Total	4	886	1	4	9	0	516	6	1	1427
Grand Total	6	1752	3	8	17	0	1096	14	3	2899
Apprch %	0.3	99.5	0.2	32	68	0	98.5	1.3	0.3	
Total %	0.2	60.4	0.1	0.3	0.6	0	37.8	0.5	0.1	

	Beacon St From East				Aberdeen St From South				Beacon St From West				
Start Time	Left	Thru	U-TR	App. Total	Left	Right	U-TR	App. Total	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	**1**	**260**	0	**261**	**2**	**5**	0	**7**	128	**2**	0	130	**398**
05:00 PM	1	224	**1**	226	2	3	0	5	124	1	**1**	126	357
05:15 PM	1	237	0	238	0	1	0	1	**140**	2	0	**142**	381
05:30 PM	0	214	0	214	0	2	0	2	132	2	0	134	350
Total Volume	3	935	1	939	4	11	0	15	524	7	1	532	1486
% App. Total	0.3	99.6	0.1		26.7	73.3	0		98.5	1.3	0.2		
PHF	.750	.899	.250	.899	.500	.550	.000	.536	.936	.875	.250	.937	.933

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012



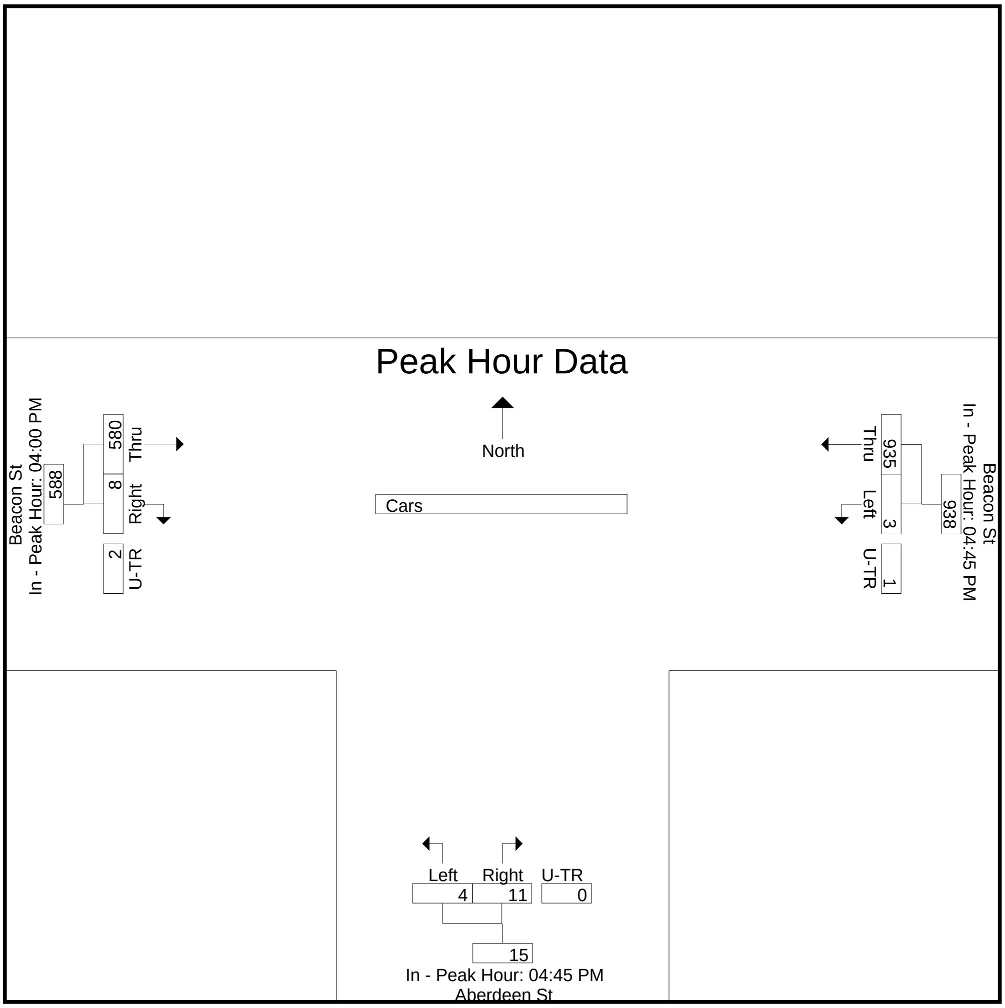
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:00 PM			
+0 mins.	**1**	**260**	0	**261**	**2**	**5**	0	**7**	**212**	**3**	0	**215**
+15 mins.	1	224	**1**	226	2	3	0	5	110	2	**1**	113
+30 mins.	1	237	0	238	0	1	0	1	130	1	1	132
+45 mins.	0	214	0	214	0	2	0	2	128	2	0	130
Total Volume	3	935	1	939	4	11	0	15	580	8	2	590
% App. Total	0.3	99.6	0.1		26.7	73.3	0		98.3	1.4	0.3	
PHF	.750	.899	.250	.899	.500	.550	.000	.536	.684	.667	.500	.686

Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 1

Groups Printed- Trucks

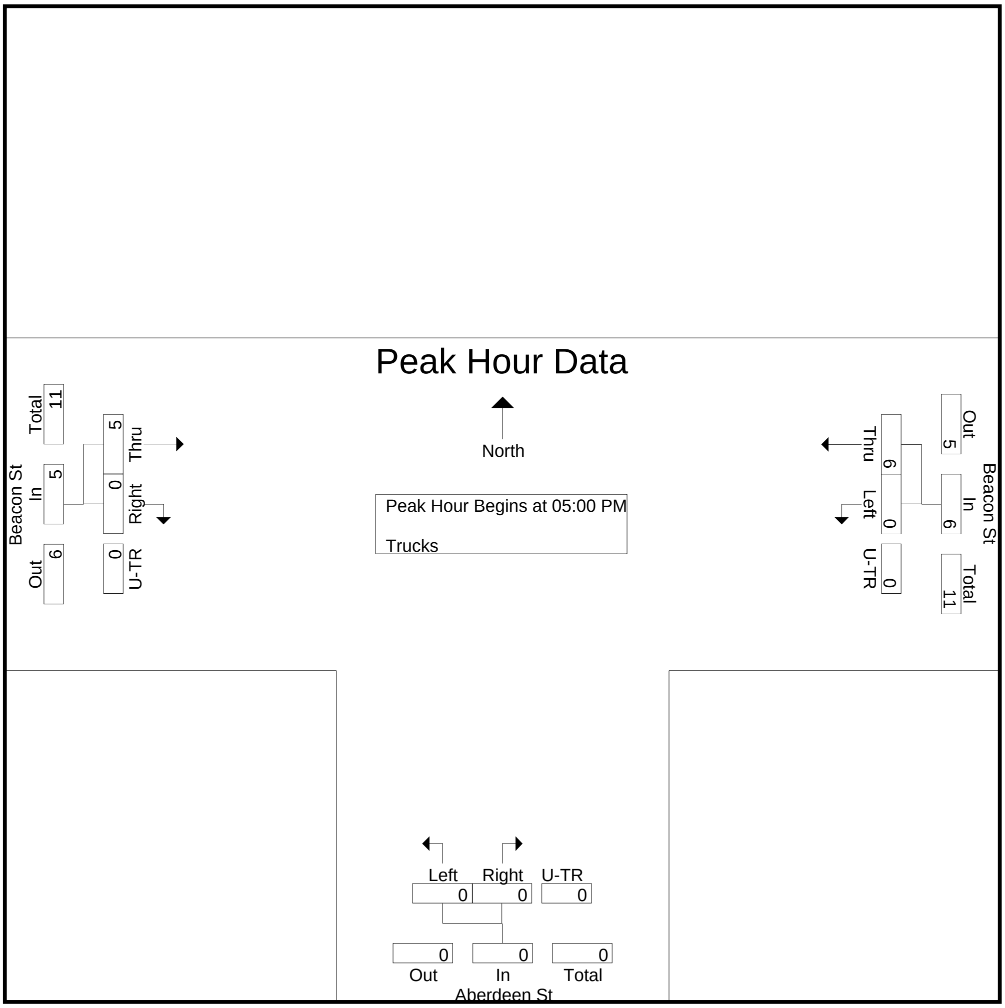
	Beacon St From East			Aberdeen St From South			Beacon St From West			
Start Time	Left	Thru	U-TR	Left	Right	U-TR	Thru	Right	U-TR	Int. Total
04:00 PM	0	1	0	0	0	0	3	0	0	4
04:15 PM	0	2	0	0	0	0	0	0	0	2
04:30 PM	0	2	0	0	0	0	0	0	0	2
04:45 PM	0	1	0	0	0	0	0	0	0	1
Total	0	6	0	0	0	0	3	0	0	9
05:00 PM	0	2	0	0	0	0	0	0	0	2
05:15 PM	0	1	0	0	0	0	2	0	0	3
05:30 PM	0	2	0	0	0	0	2	0	0	4
05:45 PM	0	1	0	0	0	0	1	0	0	2
Total	0	6	0	0	0	0	5	0	0	11
Grand Total	0	12	0	0	0	0	8	0	0	20
Apprch %	0	100	0	0	0	0	100	0	0	
Total %	0	60	0	0	0	0	40	0	0	

	Beacon St From East				Aberdeen St From South				Beacon St From West				
Start Time	Left	Thru	U-TR	App. Total	Left	Right	U-TR	App. Total	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	0	**2**	0	**2**	0	0	0	0	0	0	0	0	2
05:15 PM	0	1	0	1	0	0	0	0	**2**	0	0	**2**	3
05:30 PM	0	2	0	2	0	0	0	0	2	0	0	2	**4**
05:45 PM	0	1	0	1	0	0	0	0	1	0	0	1	2
Total Volume	0	6	0	6	0	0	0	0	5	0	0	5	11
% App. Total	0	100	0		0	0	0		100	0	0		
PHF	.000	.750	.000	.750	.000	.000	.000	.000	.625	.000	.000	.625	.688

Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 2



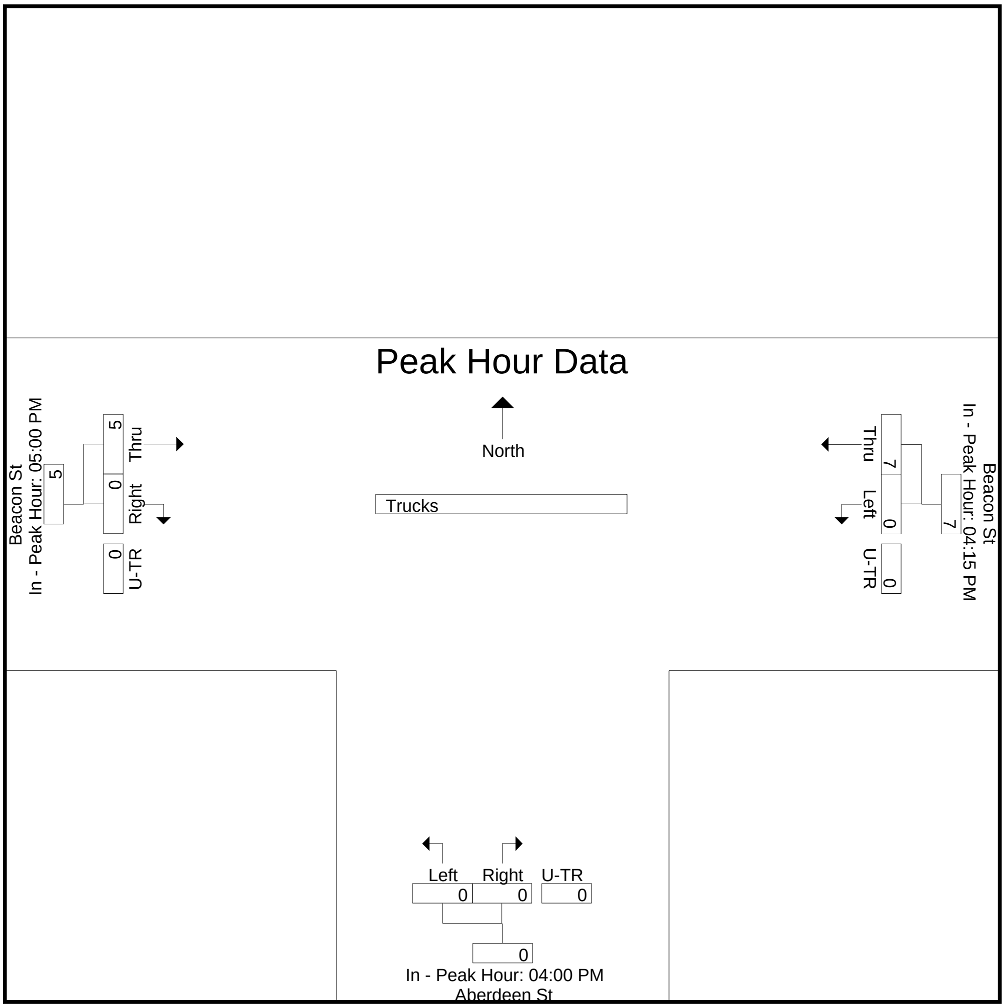
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:00 PM				05:00 PM			
+0 mins.	0	**2**	0	**2**	0	0	0	0	0	0	0	0
+15 mins.	0	2	0	2	0	0	0	0	**2**	0	0	**2**
+30 mins.	0	1	0	1	0	0	0	0	2	0	0	2
+45 mins.	0	2	0	2	0	0	0	0	1	0	0	1
Total Volume	0	7	0	7	0	0	0	0	5	0	0	5
% App. Total	0	100	0		0	0	0		100	0	0	
PHF	.000	.875	.000	.875	.000	.000	.000	.000	.625	.000	.000	.625

Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012



Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 1

Groups Printed- Bikes Peds

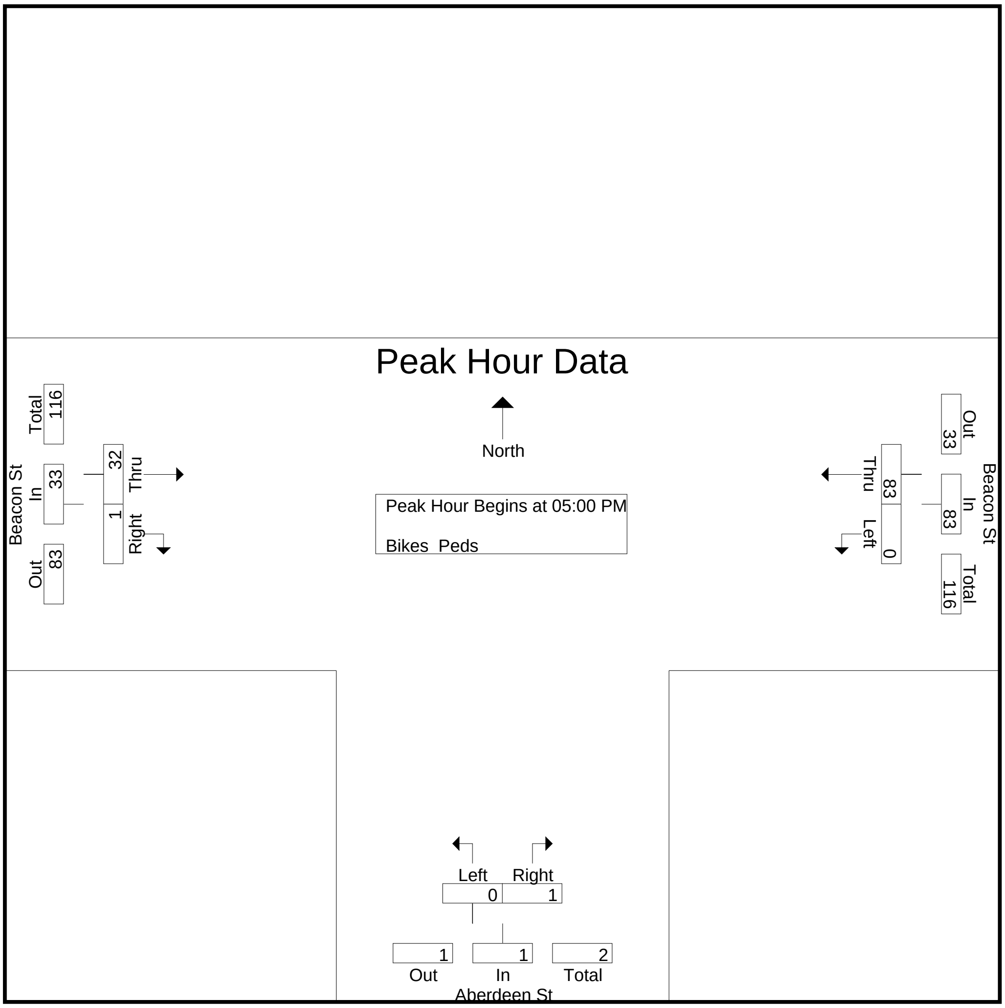
	Beacon St From East			Aberdeen St From South			Beacon St From West					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	10	3	0	0	29	4	0	2	34	14	48
04:15 PM	0	5	6	0	0	17	4	0	2	25	9	34
04:30 PM	0	17	2	0	0	28	7	0	4	34	24	58
04:45 PM	0	23	3	0	0	22	3	0	6	31	26	57
Total	0	55	14	0	0	96	18	0	14	124	73	197
05:00 PM	0	15	5	0	0	25	9	1	2	32	25	57
05:15 PM	0	20	1	0	0	42	5	0	8	51	25	76
05:30 PM	0	23	2	0	0	30	10	0	5	37	33	70
05:45 PM	0	25	4	0	1	39	8	0	0	43	34	77
Total	0	83	12	0	1	136	32	1	15	163	117	280
Grand Total	0	138	26	0	1	232	50	1	29	287	190	477
Apprch %	0	100		0	100		98	2				
Total %	0	72.6		0	0.5		26.3	0.5		60.2	39.8	

	Beacon St From East			Aberdeen St From South			Beacon St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	15	15	0	0	0	9	**1**	**10**	25
05:15 PM	0	20	20	0	0	0	5	0	5	25
05:30 PM	0	23	23	0	0	0	**10**	0	10	33
05:45 PM	0	**25**	**25**	0	**1**	**1**	8	0	8	**34**
Total Volume	0	83	83	0	1	1	32	1	33	117
% App. Total	0	100		0	100		97	3		
PHF	.000	.830	.830	.000	.250	.250	.800	.250	.825	.860

Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 2



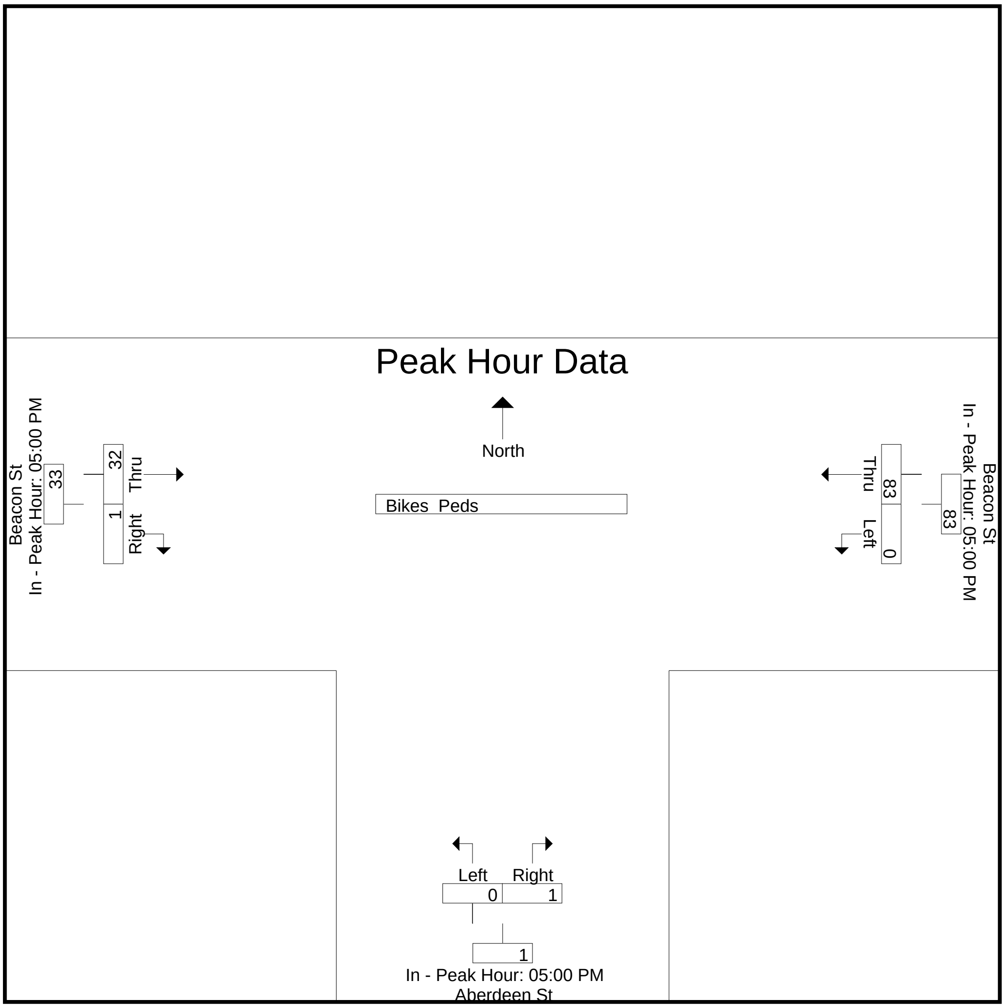
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	0	15	15	0	0	0	9	**1**	**10**
+15 mins.	0	20	20	0	0	0	5	0	5
+30 mins.	0	23	23	0	0	0	**10**	0	10
+45 mins.	0	**25**	**25**	0	**1**	**1**	8	0	8
Total Volume	0	83	83	0	1	1	32	1	33
% App. Total	0	100		0	100		97	3	
PHF	.000	.830	.830	.000	.250	.250	.800	.250	.825

Accurate Counts
978-664-2565

N/S Street : Aberdeen Street
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970005
Site Code : 94970005
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

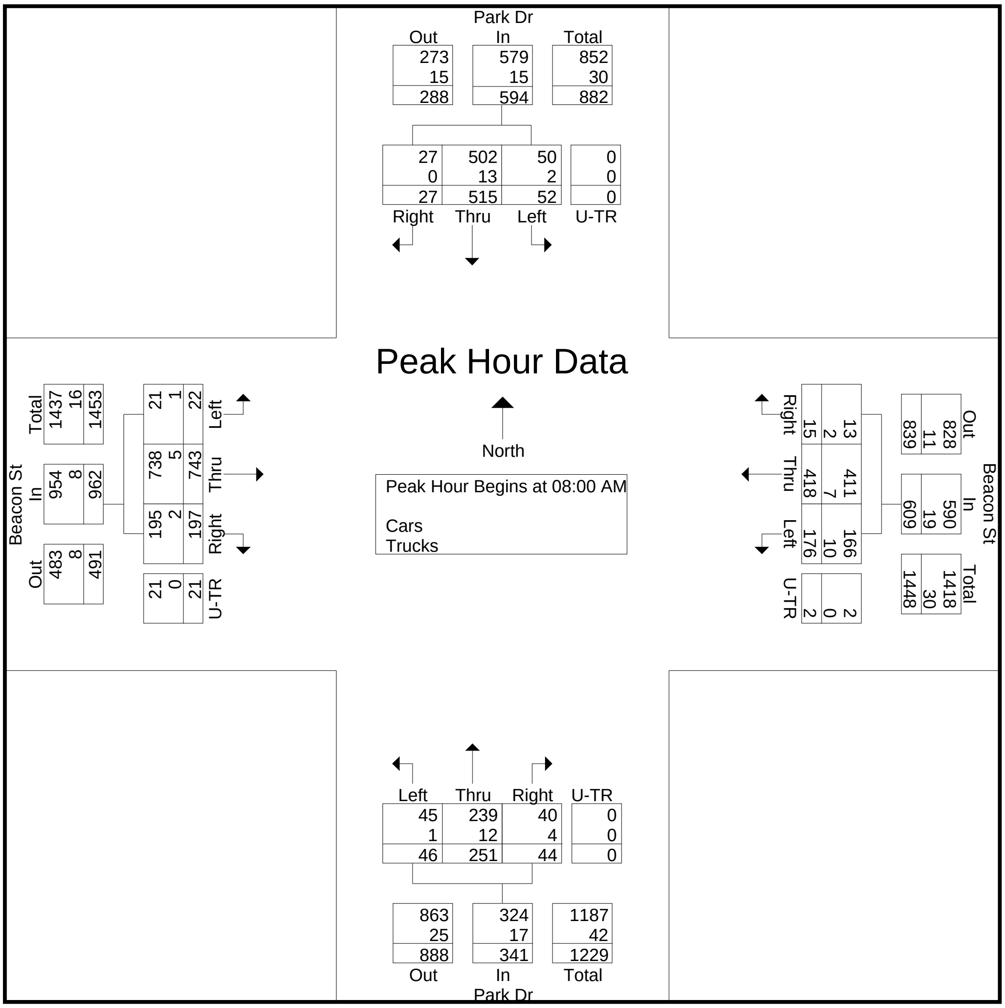
	Park Dr From North				Beacon St From East				Park Dr From South				Beacon St From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
07:00 AM	6	114	6	0	27	83	5	0	15	44	7	0	7	94	24	4	436
07:15 AM	12	127	4	0	49	103	3	0	8	51	12	0	5	92	48	6	520
07:30 AM	8	148	2	0	52	93	3	2	19	57	11	0	4	139	36	0	574
07:45 AM	13	107	9	0	61	102	3	1	16	72	8	0	8	162	51	2	615
Total	39	496	21	0	189	381	14	3	58	224	38	0	24	487	159	12	2145
08:00 AM	11	125	8	0	47	103	4	1	6	75	12	0	3	180	48	0	623
08:15 AM	13	101	3	0	36	114	2	0	5	66	9	0	10	182	37	9	587
08:30 AM	14	126	9	0	49	105	4	1	18	56	13	0	5	203	61	3	667
08:45 AM	14	163	7	0	44	96	5	0	17	54	10	0	4	178	51	9	652
Total	52	515	27	0	176	418	15	2	46	251	44	0	22	743	197	21	2529
Grand Total	91	1011	48	0	365	799	29	5	104	475	82	0	46	1230	356	33	4674
Apprch %	7.9	87.9	4.2	0	30.5	66.7	2.4	0.4	15.7	71.9	12.4	0	2.8	73.9	21.4	2	
Total %	1.9	21.6	1	0	7.8	17.1	0.6	0.1	2.2	10.2	1.8	0	1	26.3	7.6	0.7	
Cars	86	981	46	0	350	779	26	5	103	453	69	0	41	1222	352	33	4546
% Cars	94.5	97	95.8	0	95.9	97.5	89.7	100	99	95.4	84.1	0	89.1	99.3	98.9	100	97.3
Trucks	5	30	2	0	15	20	3	0	1	22	13	0	5	8	4	0	128
% Trucks	5.5	3	4.2	0	4.1	2.5	10.3	0	1	4.6	15.9	0	10.9	0.7	1.1	0	2.7

	Park Dr From North					Beacon St From East					Park Dr From South					Beacon St From West					
Start Time	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	11	125	8	0	144	47	103	4	**1**	155	6	**75**	12	0	**93**	3	180	48	0	231	623
08:15 AM	13	101	3	0	117	36	**114**	2	0	152	5	66	9	0	80	**10**	182	37	**9**	238	587
08:30 AM	**14**	126	**9**	0	149	**49**	105	4	1	**159**	**18**	56	**13**	0	87	5	**203**	**61**	3	**272**	**667**
08:45 AM	14	**163**	7	0	**184**	44	96	**5**	0	145	17	54	10	0	81	4	178	51	9	242	652
Total Volume	52	515	27	0	594	176	418	15	2	611	46	251	44	0	341	22	743	197	21	983	2529
% App. Total	8.8	86.7	4.5	0		28.8	68.4	2.5	0.3		13.5	73.6	12.9	0		2.2	75.6	20	2.1		
PHF	.929	.790	.750	.000	.807	.898	.917	.750	.500	.961	.639	.837	.846	.000	.917	.550	.915	.807	.583	.903	.948
Cars	50	502	27	0	579	166	411	13	2	592	45	239	40	0	324	21	738	195	21	975	2470
% Cars	96.2	97.5	100	0	97.5	94.3	98.3	86.7	100	96.9	97.8	95.2	90.9	0	95.0	95.5	99.3	99.0	100	99.2	97.7
Trucks	2	13	0	0	15	10	7	2	0	19	1	12	4	0	17	1	5	2	0	8	59
% Trucks	3.8	2.5	0	0	2.5	5.7	1.7	13.3	0	3.1	2.2	4.8	9.1	0	5.0	4.5	0.7	1.0	0	0.8	2.3

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 2



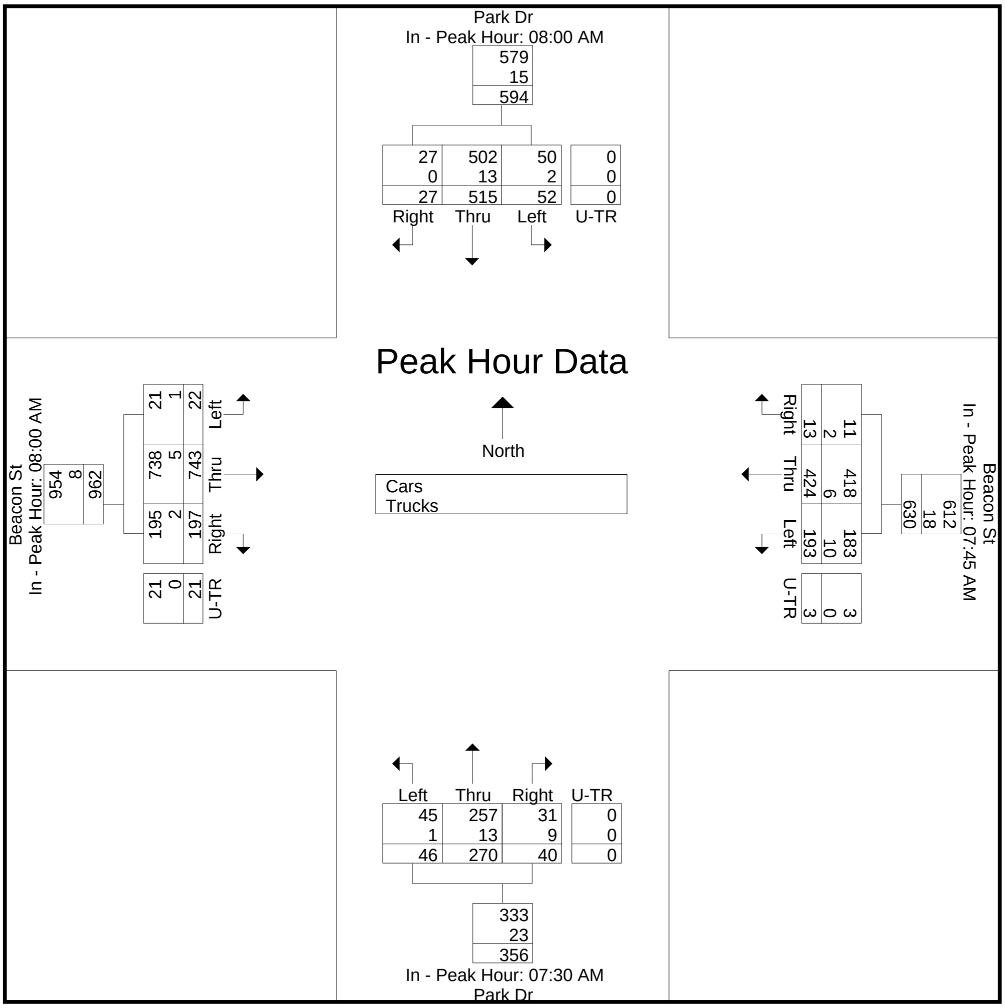
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM					07:45 AM					07:30 AM					08:00 AM				
+0 mins.	11	125	8	0	144	**61**	102	3	**1**	**167**	**19**	57	11	0	87	3	180	48	0	231
+15 mins.	13	101	3	0	117	47	103	**4**	1	155	16	72	8	0	**96**	**10**	182	37	**9**	238
+30 mins.	**14**	126	**9**	0	149	36	**114**	2	0	152	6	**75**	**12**	0	93	5	**203**	**61**	3	**272**
+45 mins.	14	**163**	7	0	**184**	49	105	4	1	159	5	66	9	0	80	4	178	51	9	242
Total Volume	52	515	27	0	594	193	424	13	3	633	46	270	40	0	356	22	743	197	21	983
% App. Total	8.8	86.7	4.5	0		30.5	67	2.1	0.5		12.9	75.8	11.2	0		2.2	75.6	20	2.1	
PHF	.929	.790	.750	.000	.807	.791	.930	.813	.750	.948	.605	.900	.833	.000	.927	.550	.915	.807	.583	.903
Cars	50	502	27	0	579	183	418	11	3	615	45	257	31	0	333	21	738	195	21	975
% Cars	96.2	97.5	100	0	97.5	94.8	98.6	84.6	100	97.2	97.8	95.2	77.5	0	93.5	95.5	99.3	99	100	99.2
Trucks	2	13	0	0	15	10	6	2	0	18	1	13	9	0	23	1	5	2	0	8
% Trucks	3.8	2.5	0	0	2.5	5.2	1.4	15.4	0	2.8	2.2	4.8	22.5	0	6.5	4.5	0.7	1	0	0.8

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars

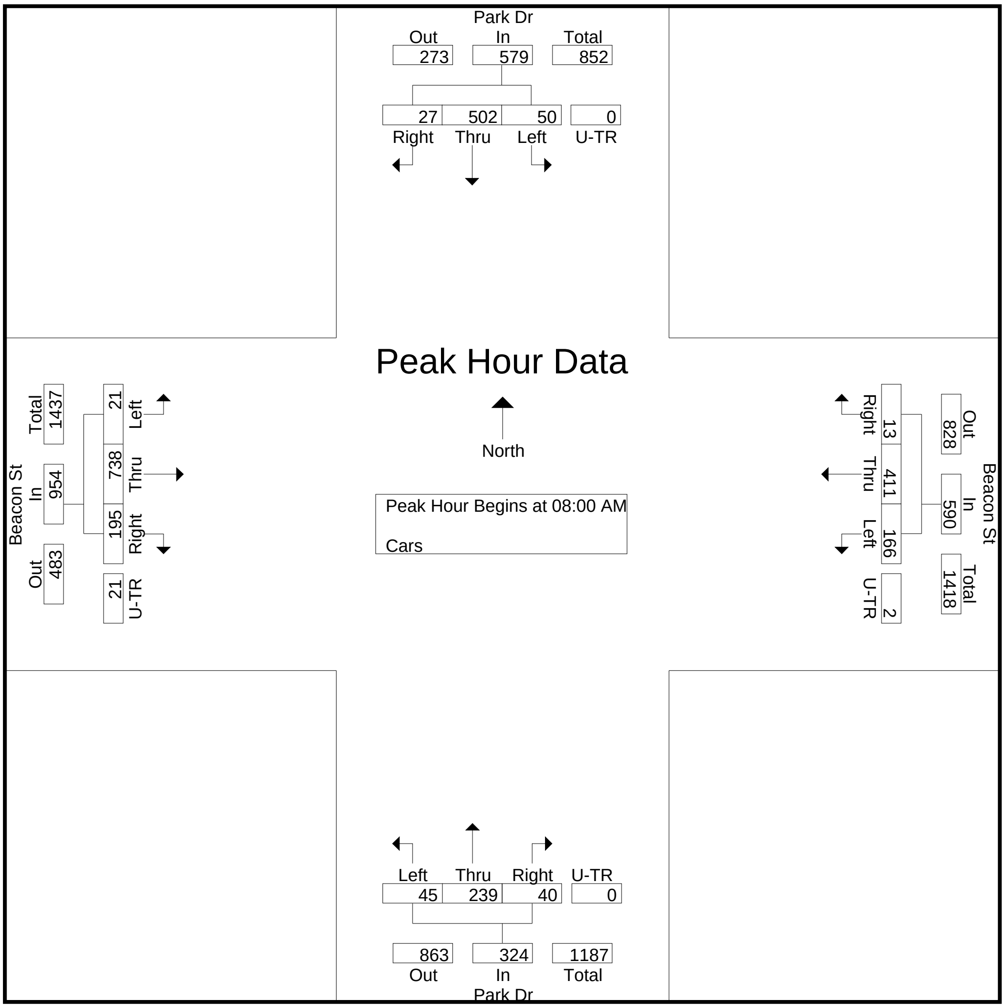
	Park Dr From North				**Beacon St From East**				**Park Dr From South**				**Beacon St From West**				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
07:00 AM	5	112	5	0	26	79	4	0	15	41	7	0	4	93	24	4	419
07:15 AM	11	125	3	0	48	100	3	0	8	49	10	0	5	91	46	6	505
07:30 AM	8	139	2	0	51	87	3	2	19	56	7	0	3	139	36	0	552
07:45 AM	12	103	9	0	59	102	3	1	16	68	5	0	8	161	51	2	600
Total	36	479	19	0	184	368	13	3	58	214	29	0	20	484	157	12	2076
08:00 AM	11	122	8	0	45	102	3	1	5	70	11	0	3	180	46	0	607
08:15 AM	12	98	3	0	31	111	1	0	5	63	8	0	9	180	37	9	567
08:30 AM	14	121	9	0	48	103	4	1	18	53	12	0	5	200	61	3	652
08:45 AM	13	161	7	0	42	95	5	0	17	53	9	0	4	178	51	9	644
Total	50	502	27	0	166	411	13	2	45	239	40	0	21	738	195	21	2470
Grand Total	86	981	46	0	350	779	26	5	103	453	69	0	41	1222	352	33	4546
Apprch %	7.7	88.1	4.1	0	30.2	67.2	2.2	0.4	16.5	72.5	11	0	2.5	74.2	21.4	2	
Total %	1.9	21.6	1	0	7.7	17.1	0.6	0.1	2.3	10	1.5	0	0.9	26.9	7.7	0.7	

	Park Dr From North					**Beacon St From East**					**Park Dr From South**					**Beacon St From West**					
Start Time	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	11	122	8	0	141	45	102	3	**1**	151	5	**70**	11	0	**86**	3	180	46	0	229	607
08:15 AM	12	98	3	0	113	31	**111**	1	0	143	5	63	8	0	76	**9**	180	37	**9**	235	567
08:30 AM	**14**	121	**9**	0	144	**48**	103	4	1	**156**	**18**	53	**12**	0	83	5	**200**	**61**	3	**269**	**652**
08:45 AM	13	**161**	7	0	**181**	42	95	**5**	0	142	17	53	9	0	79	4	178	51	9	242	644
Total Volume	50	502	27	0	579	166	411	13	2	592	45	239	40	0	324	21	738	195	21	975	2470
% App. Total	8.6	86.7	4.7	0		28	69.4	2.2	0.3		13.9	73.8	12.3	0		2.2	75.7	20	2.2		
PHF	.893	.780	.750	.000	.800	.865	.926	.650	.500	.949	.625	.854	.833	.000	.942	.583	.923	.799	.583	.906	.947

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 2



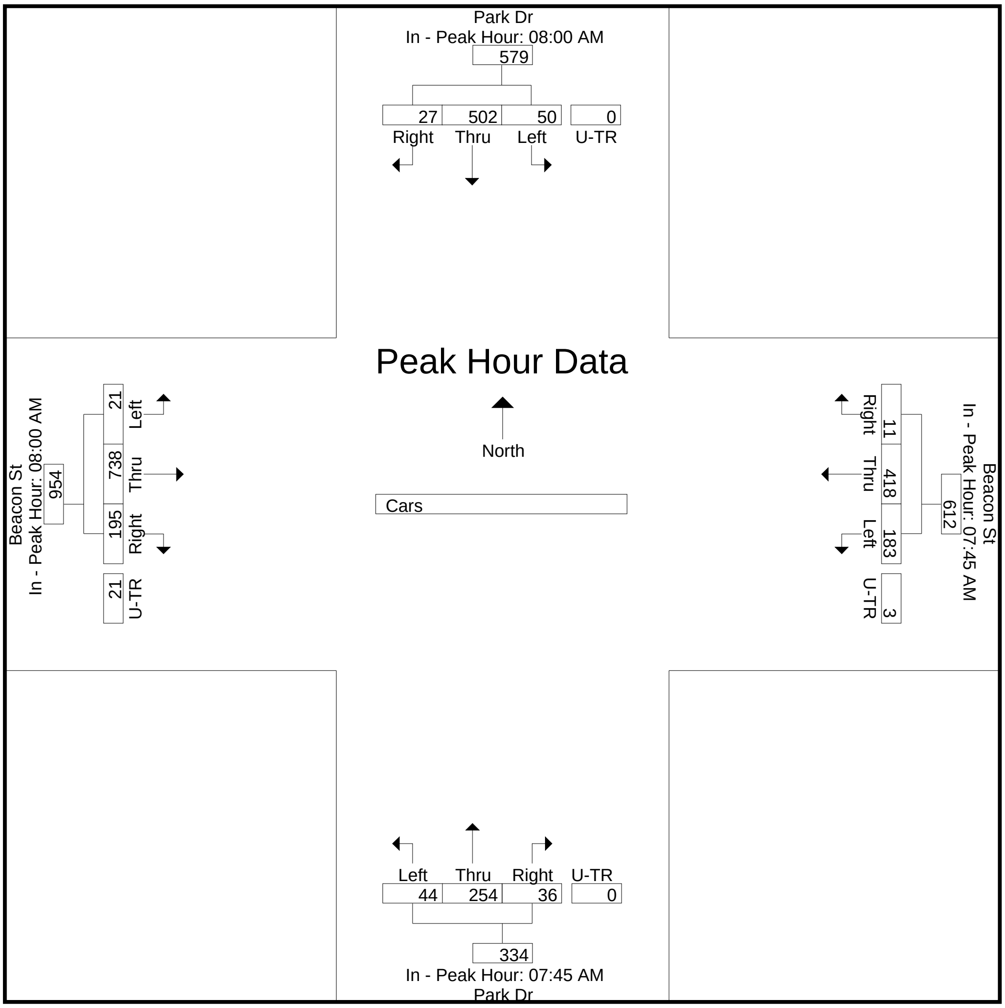
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM					07:45 AM					07:45 AM					08:00 AM				
+0 mins.	11	122	8	0	141	**59**	102	3	**1**	**165**	16	68	5	0	**89**	3	180	46	0	229
+15 mins.	12	98	3	0	113	45	102	3	1	151	5	**70**	11	0	86	**9**	180	37	**9**	235
+30 mins.	**14**	121	**9**	0	144	31	**111**	1	0	143	5	63	8	0	76	5	**200**	**61**	3	**269**
+45 mins.	13	**161**	7	0	**181**	48	103	**4**	1	156	**18**	53	**12**	0	83	4	178	51	9	242
Total Volume	50	502	27	0	579	183	418	11	3	615	44	254	36	0	334	21	738	195	21	975
% App. Total	8.6	86.7	4.7	0		29.8	68	1.8	0.5		13.2	76	10.8	0		2.2	75.7	20	2.2	
PHF	.893	.780	.750	.000	.800	.775	.941	.688	.750	.932	.611	.907	.750	.000	.938	.583	.923	.799	.583	.906

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 1

Groups Printed- Trucks

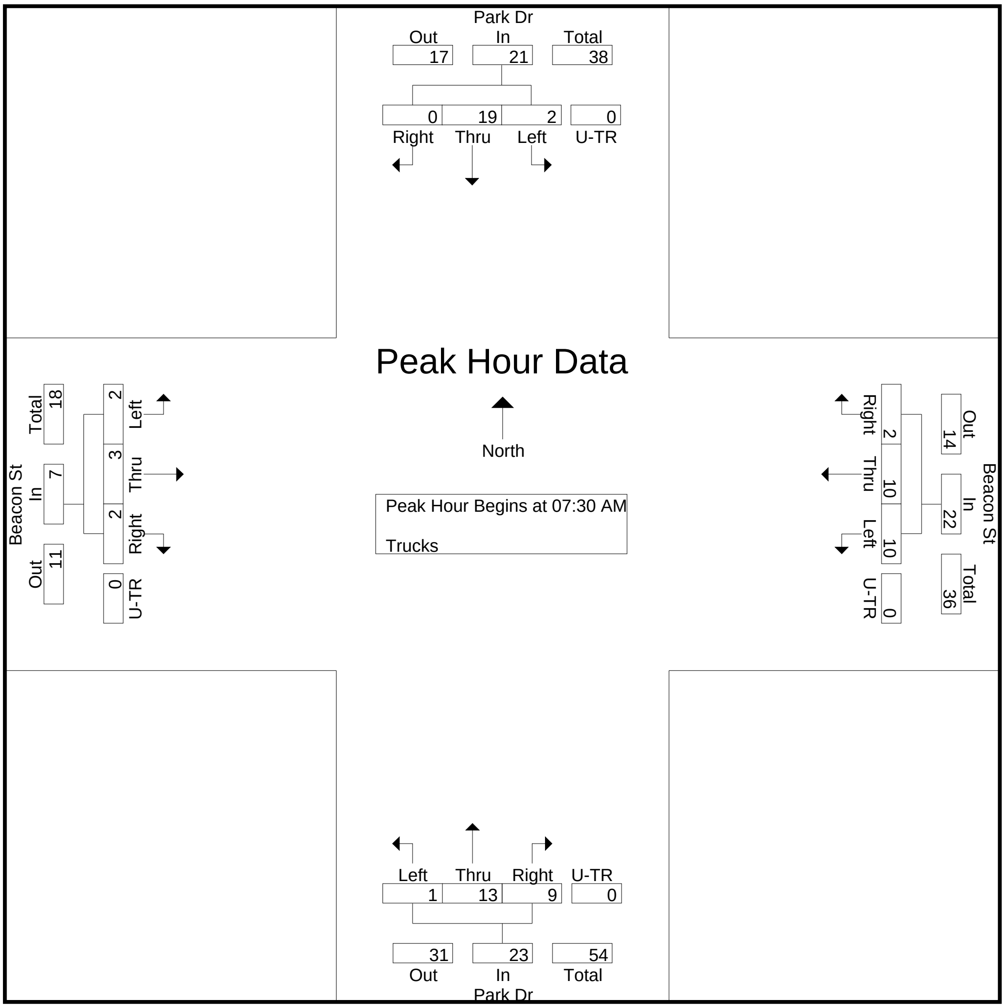
	Park Dr From North				Beacon St From East				Park Dr From South				Beacon St From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
07:00 AM	1	2	1	0	1	4	1	0	0	3	0	0	3	1	0	0	17
07:15 AM	1	2	1	0	1	3	0	0	0	2	2	0	0	1	2	0	15
07:30 AM	0	9	0	0	1	6	0	0	0	1	4	0	1	0	0	0	22
07:45 AM	1	4	0	0	2	0	0	0	0	4	3	0	0	1	0	0	15
Total	3	17	2	0	5	13	1	0	0	10	9	0	4	3	2	0	69
08:00 AM	0	3	0	0	2	1	1	0	1	5	1	0	0	0	2	0	16
08:15 AM	1	3	0	0	5	3	1	0	0	3	1	0	1	2	0	0	20
08:30 AM	0	5	0	0	1	2	0	0	0	3	1	0	0	3	0	0	15
08:45 AM	1	2	0	0	2	1	0	0	0	1	1	0	0	0	0	0	8
Total	2	13	0	0	10	7	2	0	1	12	4	0	1	5	2	0	59
Grand Total	5	30	2	0	15	20	3	0	1	22	13	0	5	8	4	0	128
Apprch %	13.5	81.1	5.4	0	39.5	52.6	7.9	0	2.8	61.1	36.1	0	29.4	47.1	23.5	0	
Total %	3.9	23.4	1.6	0	11.7	15.6	2.3	0	0.8	17.2	10.2	0	3.9	6.2	3.1	0	

	Park Dr From North					Beacon St From East					Park Dr From South					Beacon St From West					
Start Time	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	**9**	0	0	**9**	1	**6**	0	0	7	0	1	**4**	0	5	**1**	0	0	0	1	**22**
07:45 AM	**1**	4	0	0	5	2	0	0	0	2	0	4	3	0	**7**	0	1	0	0	1	15
08:00 AM	0	3	0	0	3	2	1	**1**	0	4	**1**	**5**	1	0	7	0	0	**2**	0	2	16
08:15 AM	1	3	0	0	4	**5**	3	1	0	**9**	0	3	1	0	4	1	**2**	0	0	**3**	20
Total Volume	2	19	0	0	21	10	10	2	0	22	1	13	9	0	23	2	3	2	0	7	73
% App. Total	9.5	90.5	0	0		45.5	45.5	9.1	0		4.3	56.5	39.1	0		28.6	42.9	28.6	0		
PHF	.500	.528	.000	.000	.583	.500	.417	.500	.000	.611	.250	.650	.563	.000	.821	.500	.375	.250	.000	.583	.830

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 2



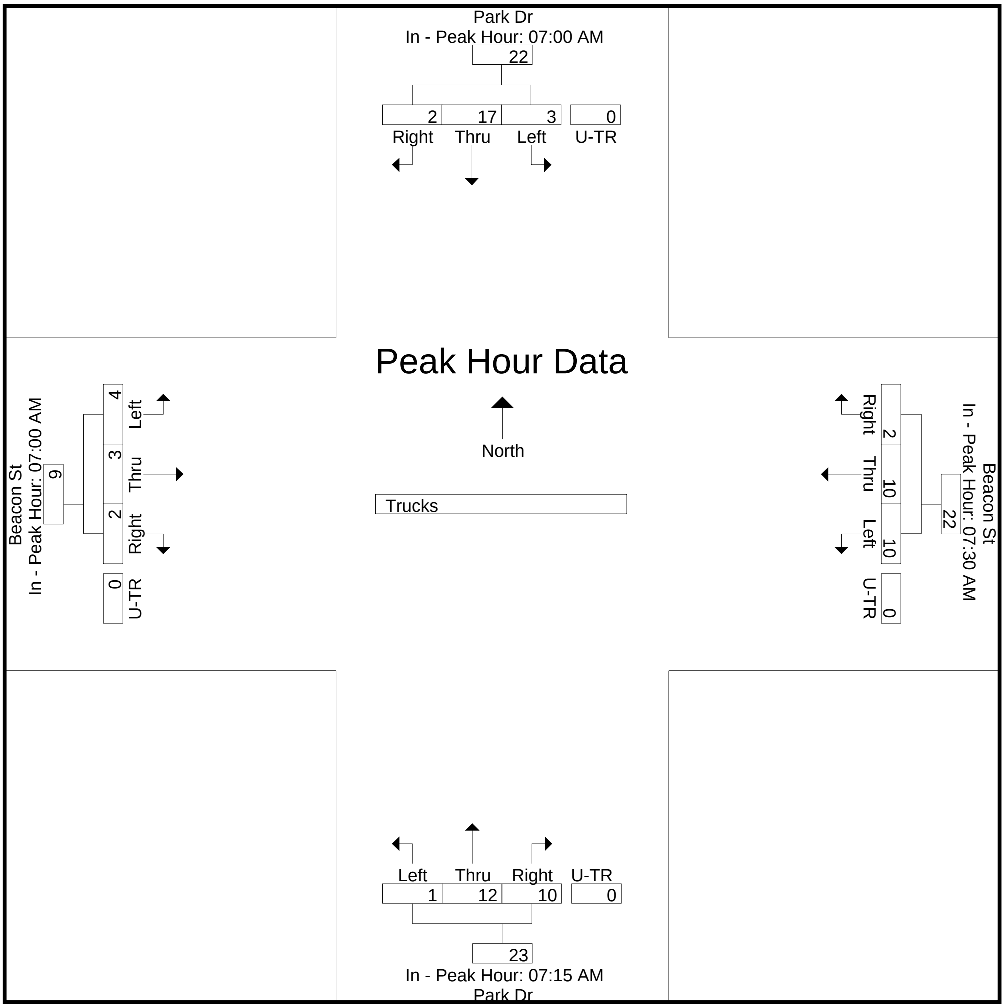
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM					07:30 AM					07:15 AM					07:00 AM				
+0 mins.	**1**	2	**1**	0	4	1	**6**	0	0	7	0	2	2	0	4	**3**	**1**	0	0	**4**
+15 mins.	1	2	1	0	4	2	0	0	0	2	0	1	**4**	0	5	0	1	**2**	0	3
+30 mins.	0	**9**	0	0	**9**	2	1	**1**	0	4	0	4	3	0	**7**	1	0	0	0	1
+45 mins.	1	4	0	0	5	**5**	3	1	0	**9**	**1**	**5**	1	0	7	0	1	0	0	1
Total Volume	3	17	2	0	22	10	10	2	0	22	1	12	10	0	23	4	3	2	0	9
% App. Total	13.6	77.3	9.1	0		45.5	45.5	9.1	0		4.3	52.2	43.5	0		44.4	33.3	22.2	0	
PHF	.750	.472	.500	.000	.611	.500	.417	.500	.000	.611	.250	.600	.625	.000	.821	.333	.750	.250	.000	.563

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 1

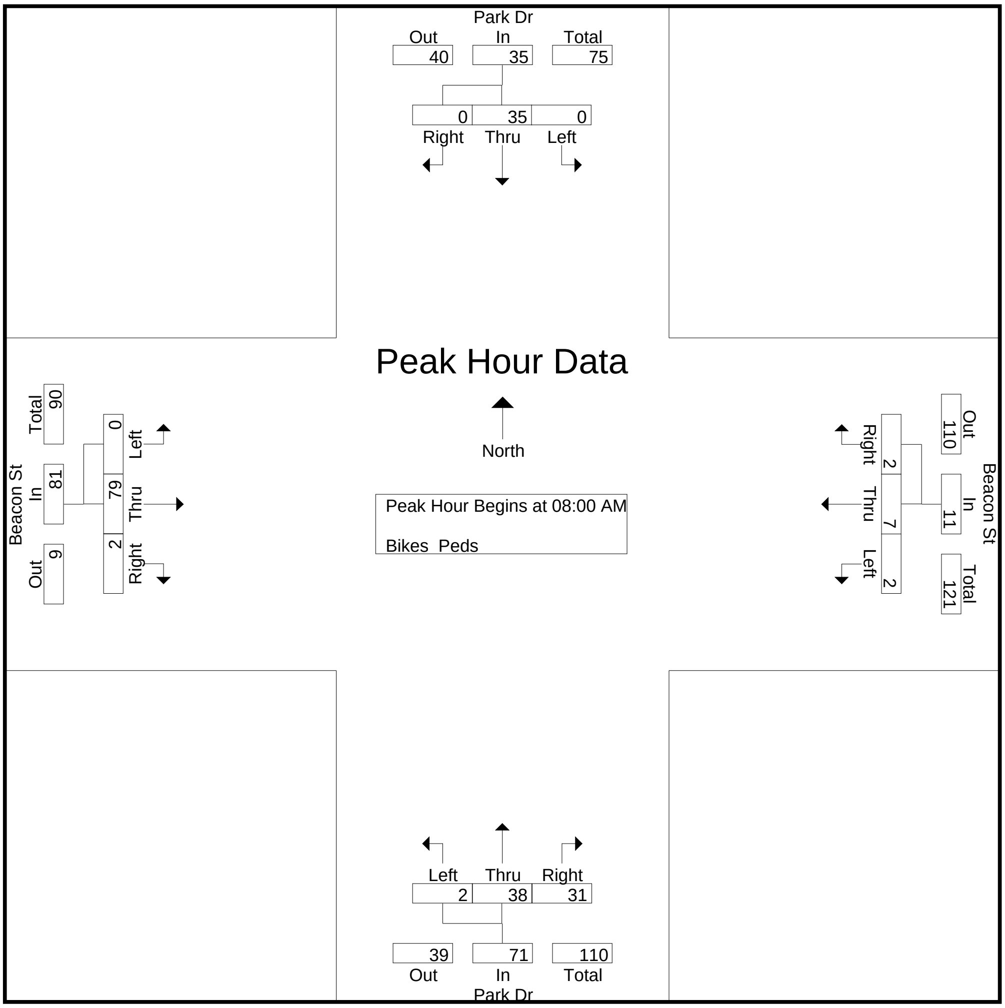
Groups Printed- Bikes Peds

	Park Dr From North				Beacon St From East				Park Dr From South				Beacon St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	2	0	31	0	3	0	11	0	1	1	6	0	16	1	10	58	24	82
07:15 AM	1	4	0	6	0	0	0	11	1	7	4	9	0	9	2	5	31	28	59
07:30 AM	2	3	0	9	0	1	0	16	1	8	10	17	0	20	1	5	47	46	93
07:45 AM	0	9	0	6	0	1	0	15	1	2	4	10	0	24	0	13	44	41	85
Total	3	18	0	52	0	5	0	53	3	18	19	42	0	69	4	33	180	139	319
08:00 AM	0	12	0	12	0	0	0	22	0	9	4	15	0	15	0	11	60	40	100
08:15 AM	0	8	0	33	0	2	1	20	1	10	8	20	0	24	0	24	97	54	151
08:30 AM	0	6	0	14	1	5	1	19	0	5	10	14	0	19	0	21	68	47	115
08:45 AM	0	9	0	13	1	0	0	17	1	14	9	30	0	21	2	18	78	57	135
Total	0	35	0	72	2	7	2	78	2	38	31	79	0	79	2	74	303	198	501
Grand Total	3	53	0	124	2	12	2	131	5	56	50	121	0	148	6	107	483	337	820
Apprch %	5.4	94.6	0		12.5	75	12.5		4.5	50.5	45		0	96.1	3.9				
Total %	0.9	15.7	0		0.6	3.6	0.6		1.5	16.6	14.8		0	43.9	1.8		58.9	41.1	

	Park Dr From North				Beacon St From East				Park Dr From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	**12**	0	**12**	0	0	0	0	0	9	4	13	0	15	0	15	40
08:15 AM	0	8	0	8	0	2	**1**	3	**1**	10	8	19	0	**24**	0	**24**	54
08:30 AM	0	6	0	6	**1**	**5**	1	**7**	0	5	**10**	15	0	19	0	19	47
08:45 AM	0	9	0	9	1	0	0	1	1	**14**	9	**24**	0	21	**2**	23	**57**
Total Volume	0	35	0	35	2	7	2	11	2	38	31	71	0	79	2	81	198
% App. Total	0	100	0		18.2	63.6	18.2		2.8	53.5	43.7		0	97.5	2.5		
PHF	.000	.729	.000	.729	.500	.350	.500	.393	.500	.679	.775	.740	.000	.823	.250	.844	.868

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 2



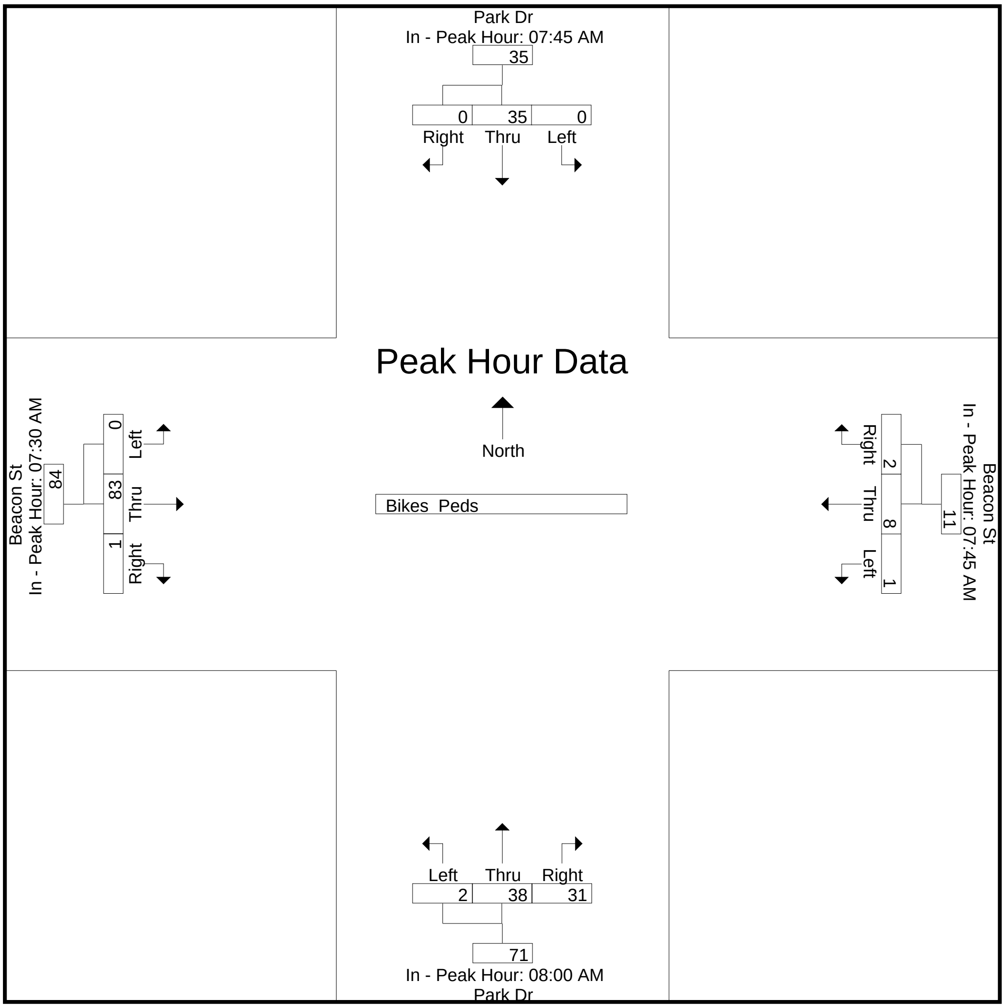
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:45 AM				08:00 AM				07:30 AM			
+0 mins.	0	9	0	9	0	1	0	1	0	9	4	13	0	20	**1**	21
+15 mins.	0	**12**	0	**12**	0	0	0	0	**1**	10	8	19	0	**24**	0	**24**
+30 mins.	0	8	0	8	0	2	**1**	3	0	5	**10**	15	0	15	0	15
+45 mins.	0	6	0	6	**1**	**5**	1	**7**	1	**14**	9	**24**	0	24	0	24
Total Volume	0	35	0	35	1	8	2	11	2	38	31	71	0	83	1	84
% App. Total	0	100	0		9.1	72.7	18.2		2.8	53.5	43.7		0	98.8	1.2	
PHF	.000	.729	.000	.729	.250	.400	.500	.393	.500	.679	.775	.740	.000	.865	.250	.875

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

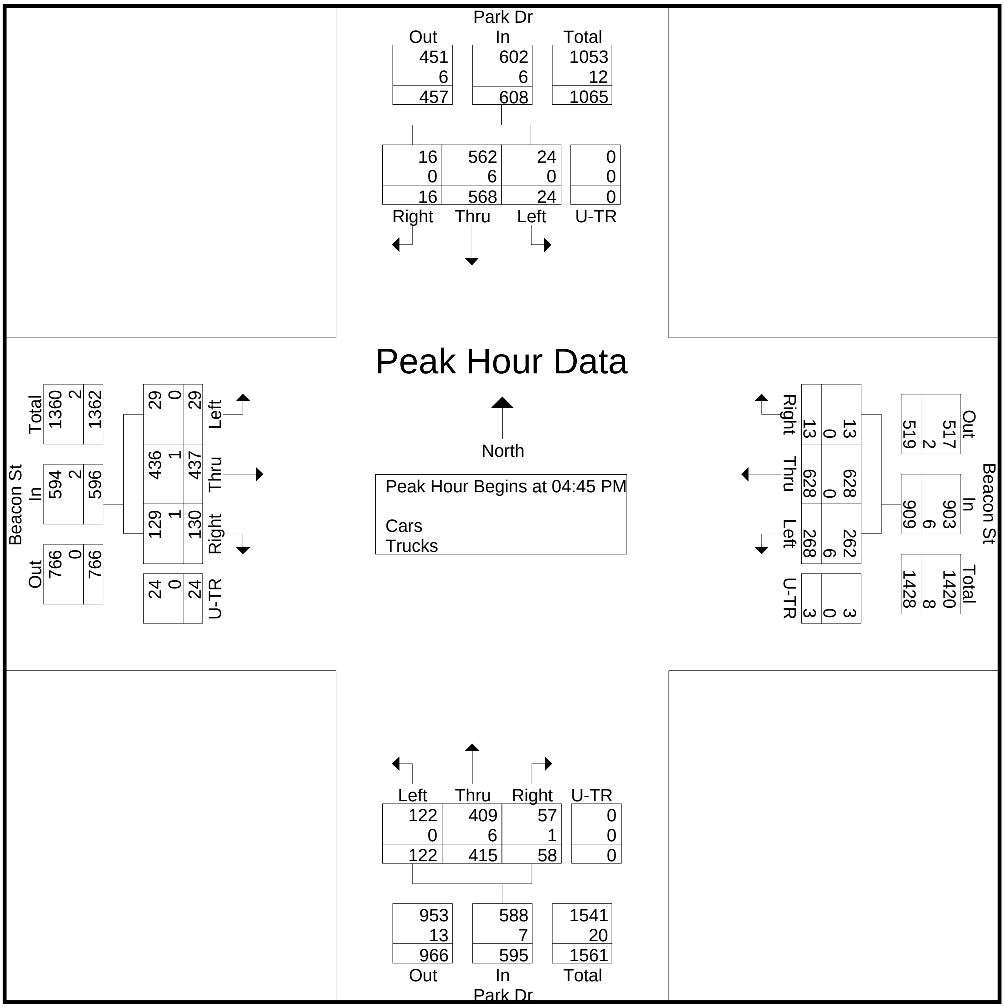
	Park Dr From North				Beacon St From East				Park Dr From South				Beacon St From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
04:00 PM	9	141	8	0	84	126	1	1	22	95	15	0	3	79	12	8	604
04:15 PM	8	126	4	0	53	137	4	0	29	90	15	0	8	105	28	6	613
04:30 PM	5	140	3	0	65	133	9	0	15	100	15	0	6	90	44	5	630
04:45 PM	7	138	3	0	73	156	3	1	19	112	12	0	4	111	35	9	683
Total	29	545	18	0	275	552	17	2	85	397	57	0	21	385	119	28	2530
05:00 PM	5	150	5	0	66	160	4	0	33	95	16	0	9	91	26	6	666
05:15 PM	4	150	2	0	62	160	2	1	39	119	17	0	6	111	37	4	714
05:30 PM	8	130	6	0	67	152	4	1	31	89	13	0	10	124	32	5	672
05:45 PM	11	146	4	0	52	146	3	0	33	90	12	0	6	112	27	7	649
Total	28	576	17	0	247	618	13	2	136	393	58	0	31	438	122	22	2701
Grand Total	57	1121	35	0	522	1170	30	4	221	790	115	0	52	823	241	50	5231
Apprch %	4.7	92.4	2.9	0	30.2	67.8	1.7	0.2	19.6	70.2	10.2	0	4.5	70.6	20.7	4.3	
Total %	1.1	21.4	0.7	0	10	22.4	0.6	0.1	4.2	15.1	2.2	0	1	15.7	4.6	1	
Cars	56	1105	35	0	511	1169	30	4	221	775	114	0	51	819	240	50	5180
% Cars	98.2	98.6	100	0	97.9	99.9	100	100	100	98.1	99.1	0	98.1	99.5	99.6	100	99
Trucks	1	16	0	0	11	1	0	0	0	15	1	0	1	4	1	0	51
% Trucks	1.8	1.4	0	0	2.1	0.1	0	0	0	1.9	0.9	0	1.9	0.5	0.4	0	1

	Park Dr From North					Beacon St From East					Park Dr From South					Beacon St From West					
Start Time	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	7	138	3	0	148	**73**	156	3	**1**	**233**	19	112	12	0	143	4	111	35	**9**	159	683
05:00 PM	5	**150**	5	0	**160**	66	**160**	**4**	0	230	33	95	16	0	144	9	91	26	6	132	666
05:15 PM	4	150	2	0	156	62	160	2	1	225	**39**	**119**	**17**	0	**175**	6	111	**37**	4	158	**714**
05:30 PM	**8**	130	**6**	0	144	67	152	4	1	224	31	89	13	0	133	**10**	**124**	32	5	**171**	672
Total Volume	24	568	16	0	608	268	628	13	3	912	122	415	58	0	595	29	437	130	24	620	2735
% App. Total	3.9	93.4	2.6	0		29.4	68.9	1.4	0.3		20.5	69.7	9.7	0		4.7	70.5	21	3.9		
PHF	.750	.947	.667	.000	.950	.918	.981	.813	.750	.979	.782	.872	.853	.000	.850	.725	.881	.878	.667	.906	.958
Cars	24	562	16	0	602	262	628	13	3	906	122	409	57	0	588	29	436	129	24	618	2714
% Cars	100	98.9	100	0	99.0	97.8	100	100	100	99.3	100	98.6	98.3	0	98.8	100	99.8	99.2	100	99.7	99.2
Trucks	0	6	0	0	6	6	0	0	0	6	0	6	1	0	7	0	1	1	0	2	21
% Trucks	0	1.1	0	0	1.0	2.2	0	0	0	0.7	0	1.4	1.7	0	1.2	0	0.2	0.8	0	0.3	0.8

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 2



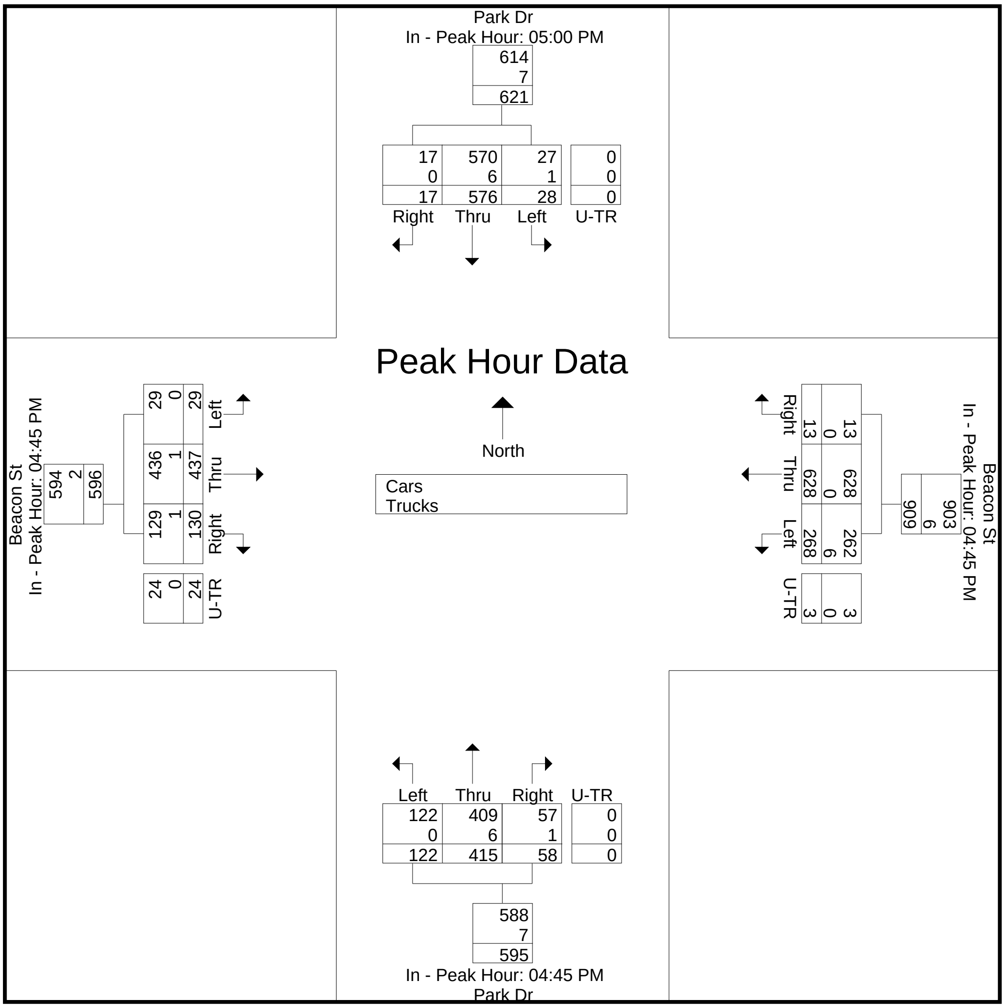
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM					04:45 PM					04:45 PM					04:45 PM				
+0 mins.	5	**150**	5	0	160	**73**	156	3	**1**	**233**	19	112	12	0	143	4	111	35	**9**	159
+15 mins.	4	150	2	0	156	66	**160**	**4**	0	230	33	95	16	0	144	9	91	26	6	132
+30 mins.	8	130	**6**	0	144	62	160	2	1	225	**39**	**119**	**17**	0	**175**	6	111	**37**	4	158
+45 mins.	**11**	146	4	0	**161**	67	152	4	1	224	31	89	13	0	133	**10**	**124**	32	5	**171**
Total Volume	28	576	17	0	621	268	628	13	3	912	122	415	58	0	595	29	437	130	24	620
% App. Total	4.5	92.8	2.7	0		29.4	68.9	1.4	0.3		20.5	69.7	9.7	0		4.7	70.5	21	3.9	
PHF	.636	.960	.708	.000	.964	.918	.981	.813	.750	.979	.782	.872	.853	.000	.850	.725	.881	.878	.667	.906
Cars	27	570	17	0	614	262	628	13	3	906	122	409	57	0	588	29	436	129	24	618
% Cars	96.4	99	100	0	98.9	97.8	100	100	100	99.3	100	98.6	98.3	0	98.8	100	99.8	99.2	100	99.7
Trucks	1	6	0	0	7	6	0	0	0	6	0	6	1	0	7	0	1	1	0	2
% Trucks	3.6	1	0	0	1.1	2.2	0	0	0	0.7	0	1.4	1.7	0	1.2	0	0.2	0.8	0	0.3

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars

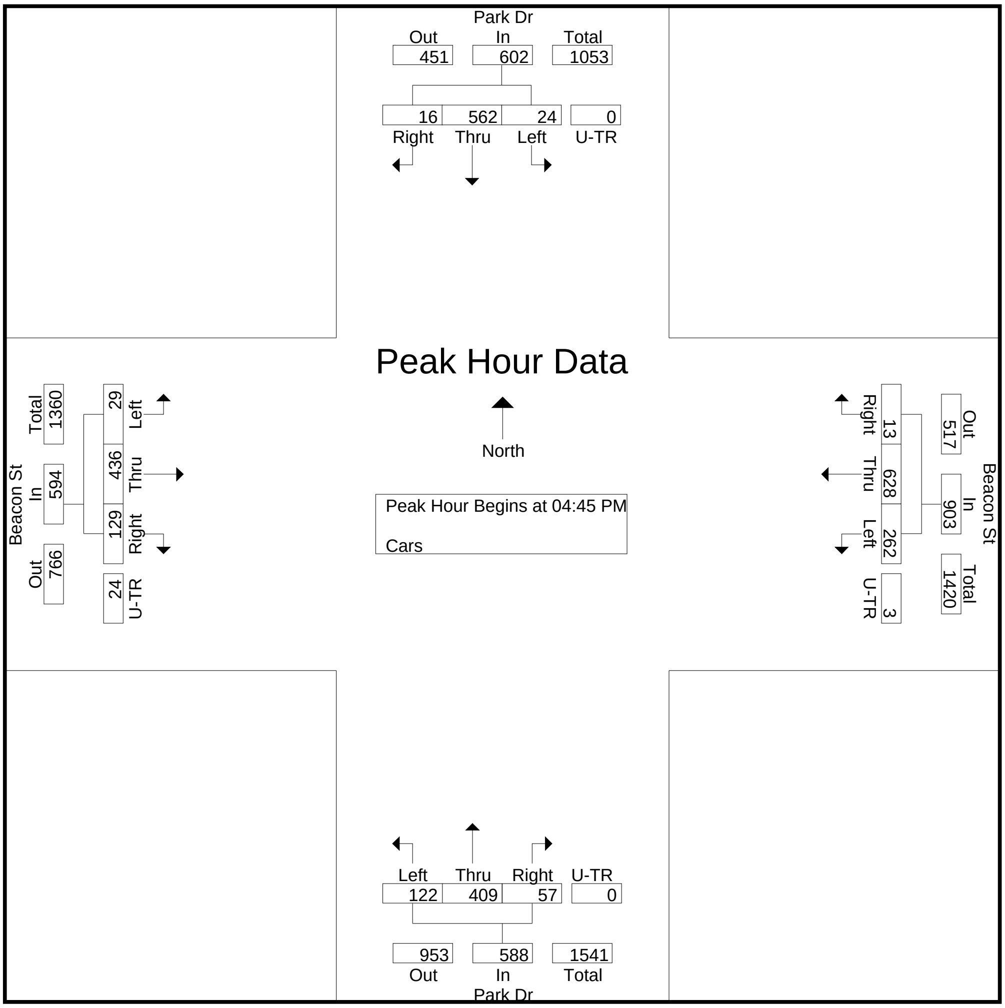
	Park Dr From North				Beacon St From East				Park Dr From South				Beacon St From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
04:00 PM	9	138	8	0	83	126	1	1	22	92	15	0	3	76	12	8	594
04:15 PM	8	124	4	0	52	136	4	0	29	89	15	0	7	105	28	6	607
04:30 PM	5	137	3	0	63	133	9	0	15	97	15	0	6	90	44	5	622
04:45 PM	7	136	3	0	72	156	3	1	19	111	12	0	4	111	35	9	679
Total	29	535	18	0	270	551	17	2	85	389	57	0	20	382	119	28	2502
05:00 PM	5	148	5	0	64	160	4	0	33	93	16	0	9	91	26	6	660
05:15 PM	4	150	2	0	61	160	2	1	39	117	16	0	6	111	36	4	709
05:30 PM	8	128	6	0	65	152	4	1	31	88	13	0	10	123	32	5	666
05:45 PM	10	144	4	0	51	146	3	0	33	88	12	0	6	112	27	7	643
Total	27	570	17	0	241	618	13	2	136	386	57	0	31	437	121	22	2678
Grand Total	56	1105	35	0	511	1169	30	4	221	775	114	0	51	819	240	50	5180
Apprch %	4.7	92.4	2.9	0	29.8	68.2	1.8	0.2	19.9	69.8	10.3	0	4.4	70.6	20.7	4.3	
Total %	1.1	21.3	0.7	0	9.9	22.6	0.6	0.1	4.3	15	2.2	0	1	15.8	4.6	1	

	Park Dr From North					Beacon St From East					Park Dr From South					Beacon St From West					
Start Time	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	7	136	3	0	146	**72**	156	3	**1**	**232**	19	111	12	0	142	4	111	35	**9**	159	679
05:00 PM	5	148	5	0	**158**	64	**160**	**4**	0	228	33	93	**16**	0	142	9	91	26	6	132	660
05:15 PM	4	**150**	2	0	156	61	160	2	1	224	**39**	**117**	16	0	**172**	6	111	**36**	4	157	**709**
05:30 PM	**8**	128	**6**	0	142	65	152	4	1	222	31	88	13	0	132	**10**	**123**	32	5	**170**	666
Total Volume	24	562	16	0	602	262	628	13	3	906	122	409	57	0	588	29	436	129	24	618	2714
% App. Total	4	93.4	2.7	0		28.9	69.3	1.4	0.3		20.7	69.6	9.7	0		4.7	70.6	20.9	3.9		
PHF	.750	.937	.667	.000	.953	.910	.981	.813	.750	.976	.782	.874	.891	.000	.855	.725	.886	.896	.667	.909	.957

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM					04:45 PM					04:45 PM					04:45 PM				
+0 mins.	5	148	5	0	**158**	**72**	156	3	**1**	**232**	19	111	12	0	142	4	111	35	**9**	159
+15 mins.	4	**150**	2	0	156	64	**160**	**4**	0	228	33	93	**16**	0	142	9	91	26	6	132
+30 mins.	8	128	**6**	0	142	61	160	2	1	224	**39**	**117**	16	0	**172**	6	111	**36**	4	157
+45 mins.	**10**	144	4	0	158	65	152	4	1	222	31	88	13	0	132	**10**	**123**	32	5	**170**
Total Volume	27	570	17	0	614	262	628	13	3	906	122	409	57	0	588	29	436	129	24	618
% App. Total	4.4	92.8	2.8	0		28.9	69.3	1.4	0.3		20.7	69.6	9.7	0		4.7	70.6	20.9	3.9	
PHF	.675	.950	.708	.000	.972	.910	.981	.813	.750	.976	.782	.874	.891	.000	.855	.725	.886	.896	.667	.909

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
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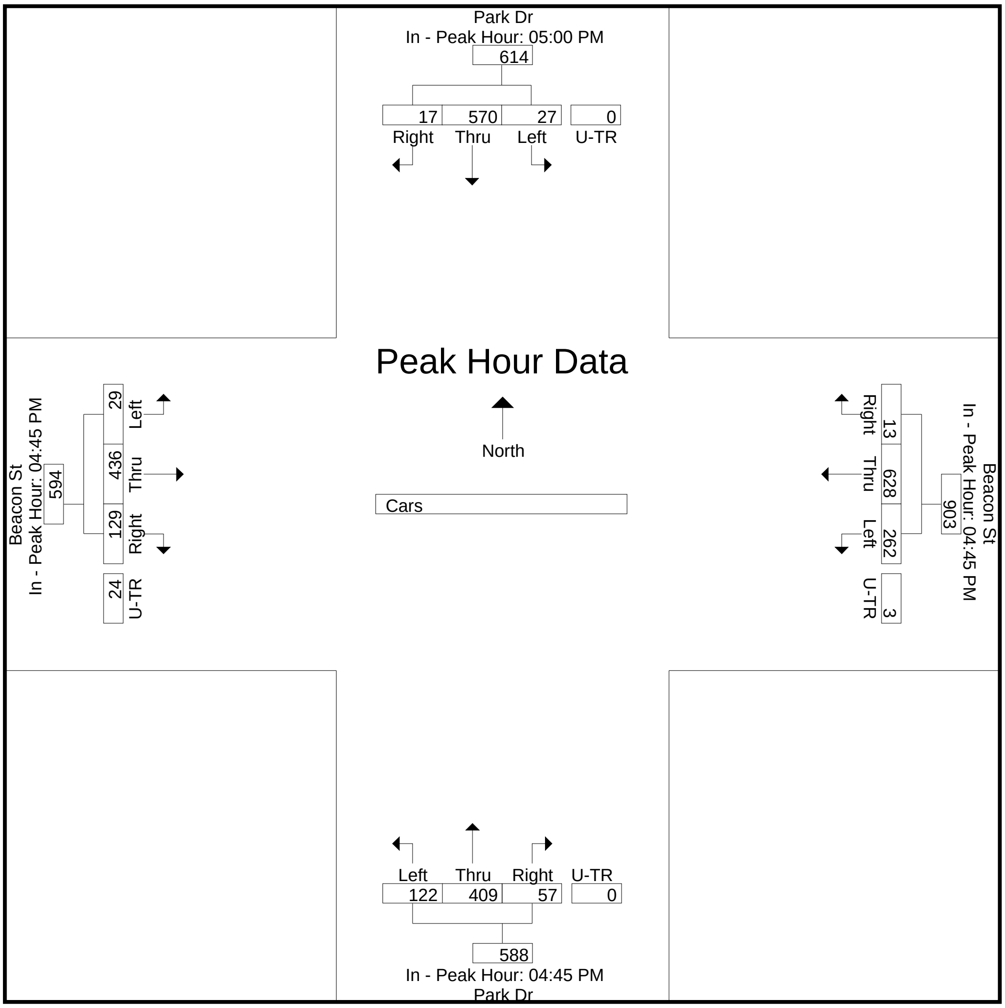


Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 1

Groups Printed- Trucks

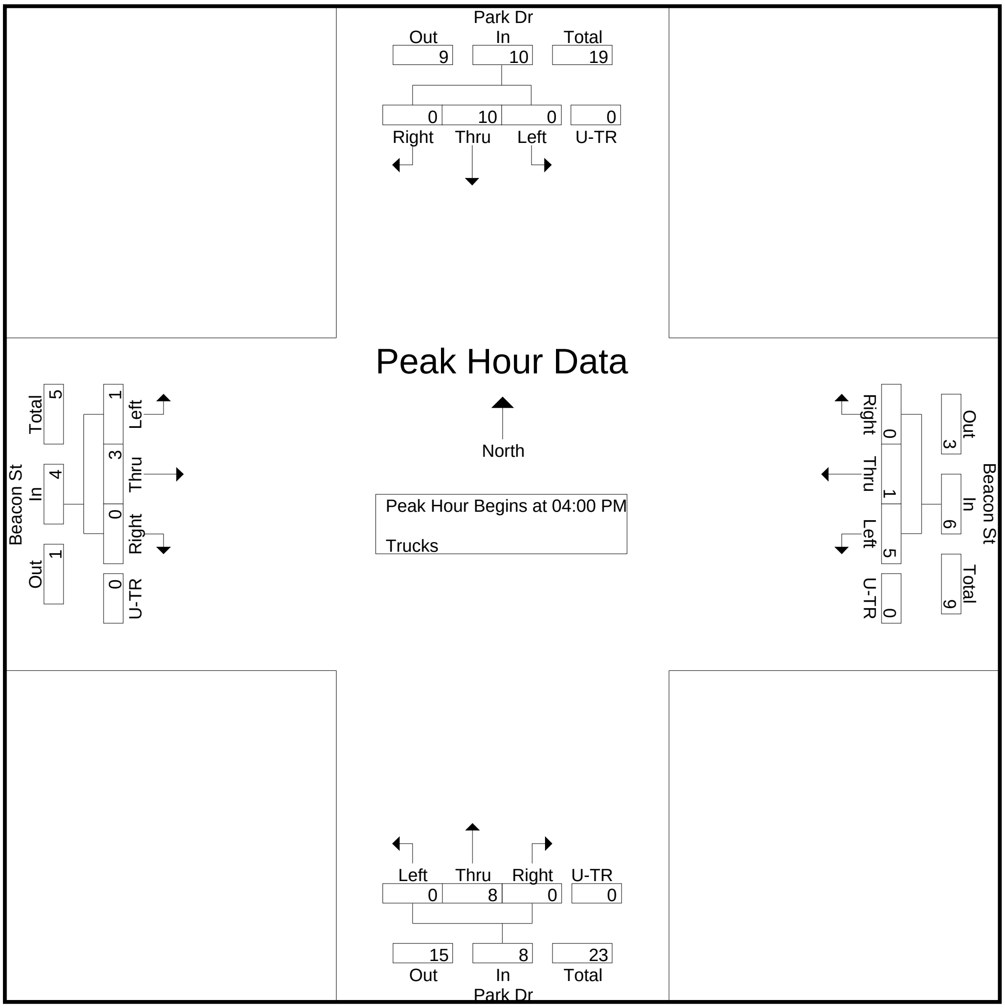
	Park Dr From North				Beacon St From East				Park Dr From South				Beacon St From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
04:00 PM	0	3	0	0	1	0	0	0	0	3	0	0	0	3	0	0	10
04:15 PM	0	2	0	0	1	1	0	0	0	1	0	0	1	0	0	0	6
04:30 PM	0	3	0	0	2	0	0	0	0	3	0	0	0	0	0	0	8
04:45 PM	0	2	0	0	1	0	0	0	0	1	0	0	0	0	0	0	4
Total	0	10	0	0	5	1	0	0	0	8	0	0	1	3	0	0	28
05:00 PM	0	2	0	0	2	0	0	0	0	2	0	0	0	0	0	0	6
05:15 PM	0	0	0	0	1	0	0	0	0	2	1	0	0	0	1	0	5
05:30 PM	0	2	0	0	2	0	0	0	0	1	0	0	0	1	0	0	6
05:45 PM	1	2	0	0	1	0	0	0	0	2	0	0	0	0	0	0	6
Total	1	6	0	0	6	0	0	0	0	7	1	0	0	1	1	0	23
Grand Total	1	16	0	0	11	1	0	0	0	15	1	0	1	4	1	0	51
Apprch %	5.9	94.1	0	0	91.7	8.3	0	0	0	93.8	6.2	0	16.7	66.7	16.7	0	
Total %	2	31.4	0	0	21.6	2	0	0	0	29.4	2	0	2	7.8	2	0	

	Park Dr From North					Beacon St From East					Park Dr From South					Beacon St From West					
Start Time	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	**3**	0	0	**3**	1	0	0	0	1	0	**3**	0	0	**3**	0	**3**	0	0	**3**	**10**
04:15 PM	0	2	0	0	2	1	**1**	0	0	**2**	0	1	0	0	1	**1**	0	0	0	1	6
04:30 PM	0	3	0	0	3	**2**	0	0	0	2	0	3	0	0	3	0	0	0	0	0	8
04:45 PM	0	2	0	0	2	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	4
Total Volume	0	10	0	0	10	5	1	0	0	6	0	8	0	0	8	1	3	0	0	4	28
% App. Total	0	100	0	0		83.3	16.7	0	0		0	100	0	0		25	75	0	0		
PHF	.000	.833	.000	.000	.833	.625	.250	.000	.000	.750	.000	.667	.000	.000	.667	.250	.250	.000	.000	.333	.700

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 2



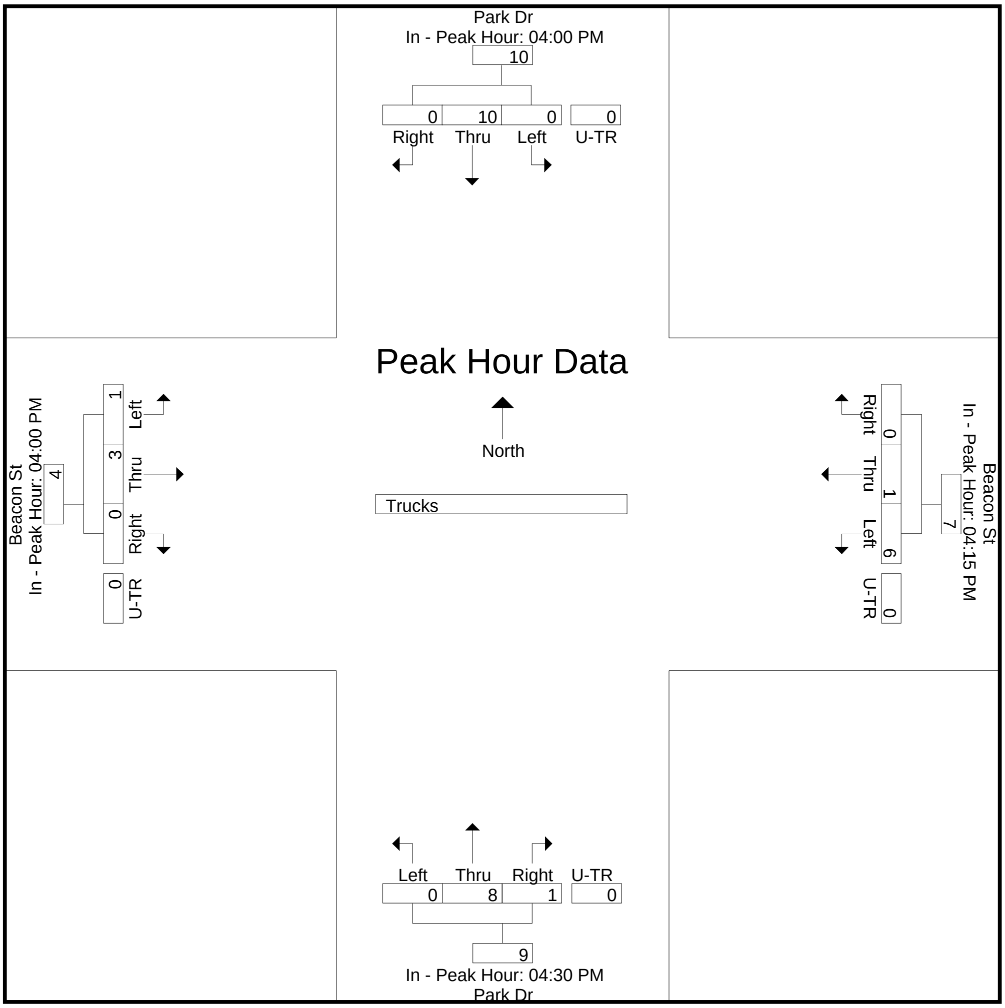
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM					04:15 PM					04:30 PM					04:00 PM				
+0 mins.	0	**3**	0	0	**3**	1	**1**	0	0	**2**	0	**3**	0	0	**3**	0	**3**	0	0	**3**
+15 mins.	0	2	0	0	2	**2**	0	0	0	2	0	1	0	0	1	**1**	0	0	0	1
+30 mins.	0	3	0	0	3	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0
+45 mins.	0	2	0	0	2	2	0	0	0	2	0	2	**1**	0	3	0	0	0	0	0
Total Volume	0	10	0	0	10	6	1	0	0	7	0	8	1	0	9	1	3	0	0	4
% App. Total	0	100	0	0		85.7	14.3	0	0		0	88.9	11.1	0		25	75	0	0	
PHF	.000	.833	.000	.000	.833	.750	.250	.000	.000	.875	.000	.667	.250	.000	.750	.250	.250	.000	.000	.333

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 1

Groups Printed- Bikes Peds

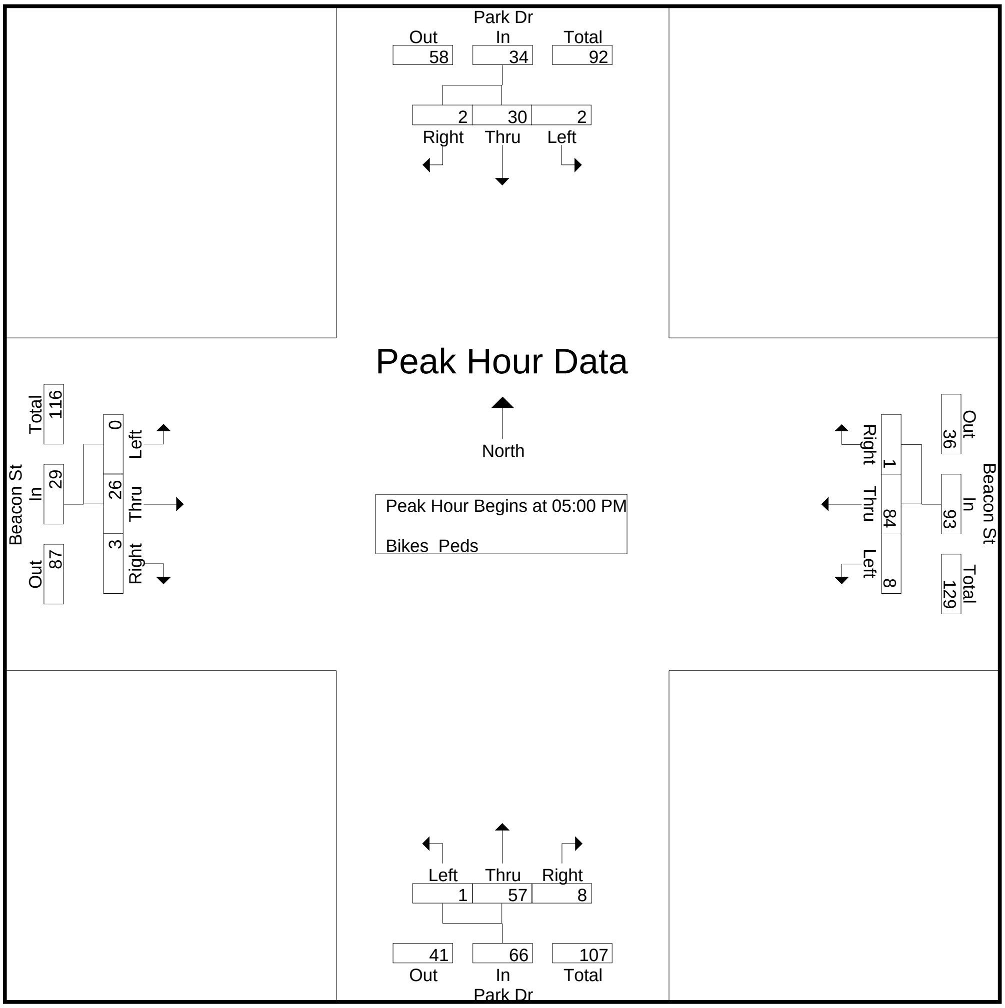
	Park Dr From North				Beacon St From East				Park Dr From South				Beacon St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	7	0	16	5	6	1	38	0	4	0	22	1	3	0	17	93	27	120
04:15 PM	0	2	0	21	0	3	0	35	1	12	0	20	0	6	0	14	90	24	114
04:30 PM	0	6	0	18	0	16	0	27	0	13	2	23	0	3	1	12	80	41	121
04:45 PM	0	8	1	33	0	22	1	28	0	6	1	24	0	2	1	16	101	42	143
Total	0	23	1	88	5	47	2	128	1	35	3	89	1	14	2	59	364	134	498
05:00 PM	1	6	0	42	2	20	0	38	0	13	4	10	0	6	1	13	103	53	156
05:15 PM	0	6	0	37	3	18	0	59	0	16	2	36	0	6	1	28	160	52	212
05:30 PM	1	13	1	23	1	22	0	56	1	11	1	35	0	8	0	17	131	59	190
05:45 PM	0	5	1	32	2	24	1	47	0	17	1	34	0	6	1	23	136	58	194
Total	2	30	2	134	8	84	1	200	1	57	8	115	0	26	3	81	530	222	752
Grand Total	2	53	3	222	13	131	3	328	2	92	11	204	1	40	5	140	894	356	1250
Apprch %	3.4	91.4	5.2		8.8	89.1	2		1.9	87.6	10.5		2.2	87	10.9				
Total %	0.6	14.9	0.8		3.7	36.8	0.8		0.6	25.8	3.1		0.3	11.2	1.4		71.5	28.5	

	Park Dr From North				Beacon St From East				Park Dr From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**1**	6	0	7	2	20	0	22	0	13	**4**	17	0	6	**1**	7	53
05:15 PM	0	6	0	6	**3**	18	0	21	0	16	2	**18**	0	6	1	7	52
05:30 PM	1	**13**	**1**	**15**	1	22	0	23	**1**	11	1	13	0	**8**	0	**8**	**59**
05:45 PM	0	5	1	6	2	**24**	**1**	**27**	0	**17**	1	18	0	6	1	7	58
Total Volume	2	30	2	34	8	84	1	93	1	57	8	66	0	26	3	29	222
% App. Total	5.9	88.2	5.9		8.6	90.3	1.1		1.5	86.4	12.1		0	89.7	10.3		
PHF	.500	.577	.500	.567	.667	.875	.250	.861	.250	.838	.500	.917	.000	.813	.750	.906	.941

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 2



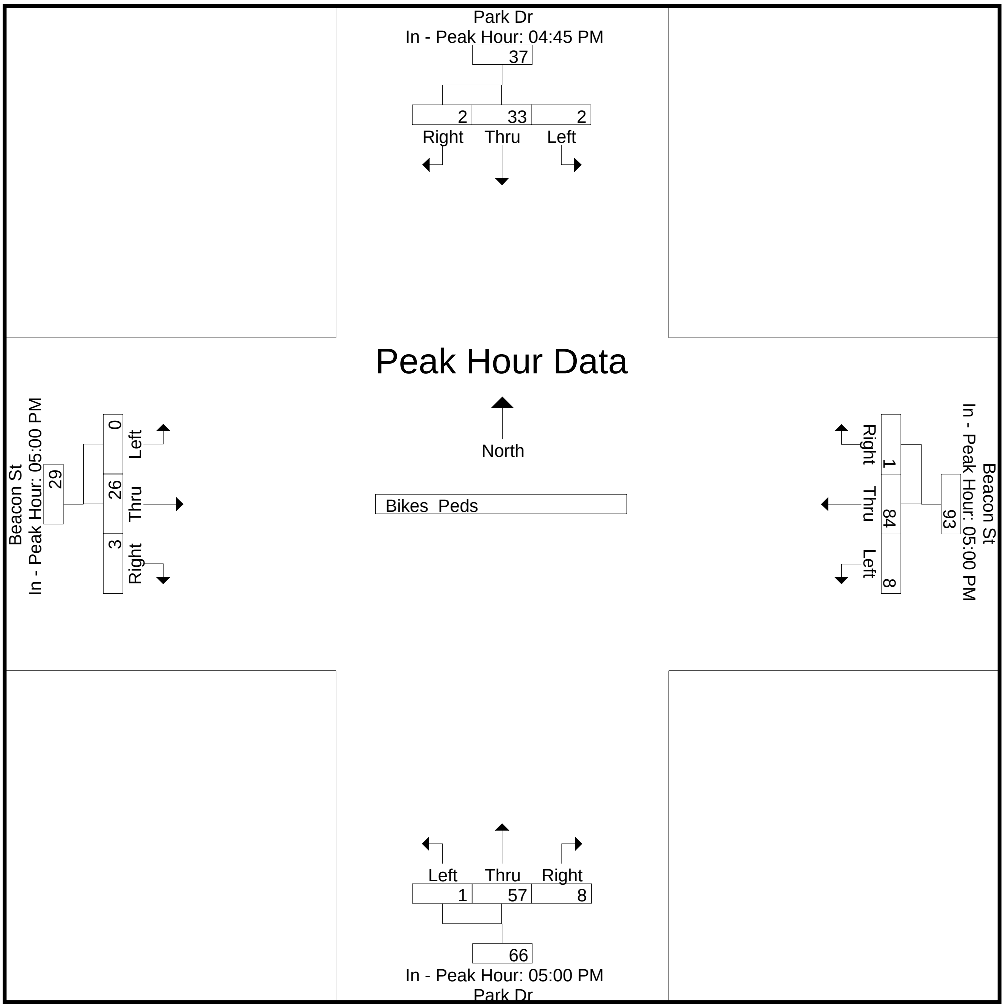
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	8	**1**	9	2	20	0	22	0	13	**4**	17	0	6	**1**	7
+15 mins.	**1**	6	0	7	**3**	18	0	21	0	16	2	**18**	0	6	1	7
+30 mins.	0	6	0	6	1	22	0	23	**1**	11	1	13	0	**8**	0	**8**
+45 mins.	1	**13**	1	**15**	2	**24**	**1**	**27**	0	**17**	1	18	0	6	1	7
Total Volume	2	33	2	37	8	84	1	93	1	57	8	66	0	26	3	29
% App. Total	5.4	89.2	5.4		8.6	90.3	1.1		1.5	86.4	12.1		0	89.7	10.3	
PHF	.500	.635	.500	.617	.667	.875	.250	.861	.250	.838	.500	.917	.000	.813	.750	.906

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

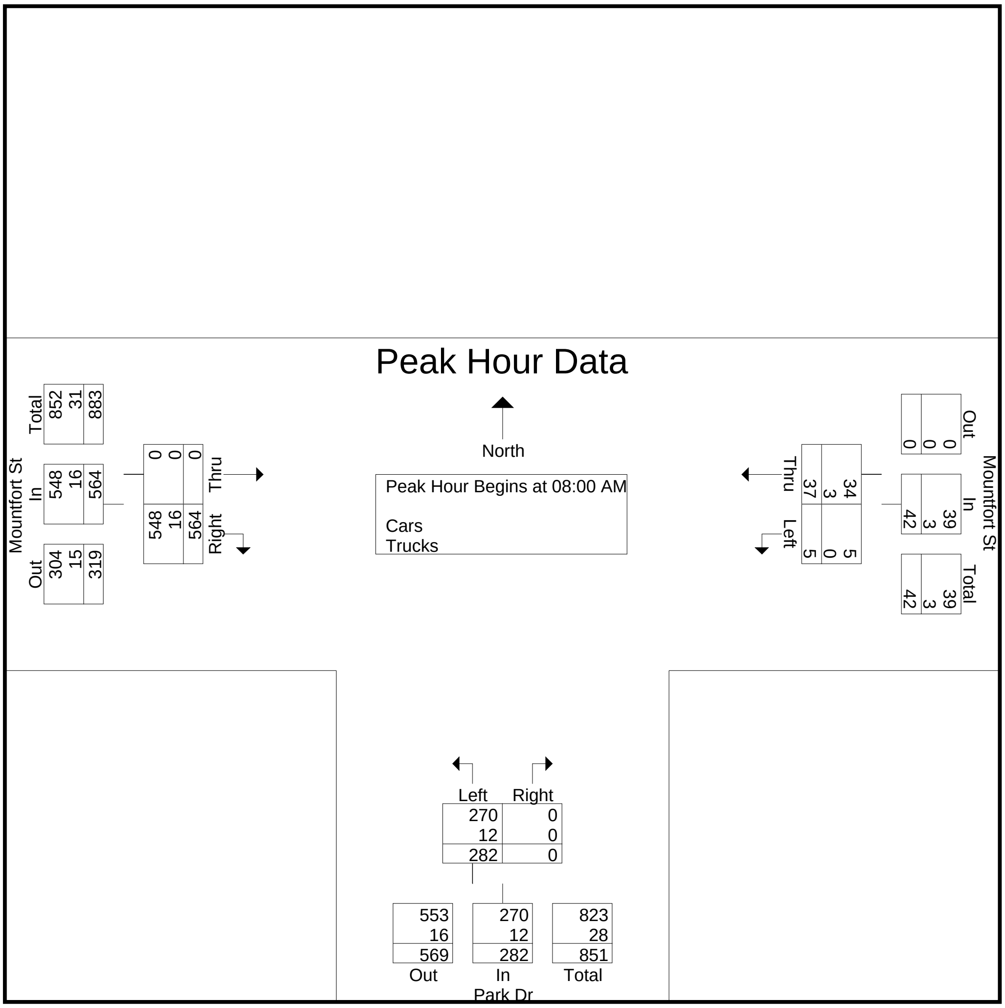
	Mountfort St From East		**Park Dr From South**		**Mountfort St From West**		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	1	3	55	0	0	114	173
07:15 AM	1	6	56	0	0	137	200
07:30 AM	1	4	63	0	0	153	221
07:45 AM	2	8	89	0	0	133	232
Total	5	21	263	0	0	537	826
08:00 AM	1	12	76	0	0	126	215
08:15 AM	1	12	75	0	0	130	218
08:30 AM	1	7	69	0	0	142	219
08:45 AM	2	6	62	0	0	166	236
Total	5	37	282	0	0	564	888
Grand Total	10	58	545	0	0	1101	1714
Apprch %	14.7	85.3	100	0	0	100	
Total %	0.6	3.4	31.8	0	0	64.2	
Cars	10	55	520	0	0	1068	1653
% Cars	100	94.8	95.4	0	0	97	96.4
Trucks	0	3	25	0	0	33	61
% Trucks	0	5.2	4.6	0	0	3	3.6

	Mountfort St From East			**Park Dr From South**			**Mountfort St From West**			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	1	**12**	**13**	**76**	0	**76**	0	126	126	215
08:15 AM	1	12	13	75	0	75	0	130	130	218
08:30 AM	1	7	8	69	0	69	0	142	142	219
08:45 AM	**2**	6	8	62	0	62	0	**166**	**166**	**236**
Total Volume	5	37	42	282	0	282	0	564	564	888
% App. Total	11.9	88.1		100	0		0	100		
PHF	.625	.771	.808	.928	.000	.928	.000	.849	.849	.941
Cars	5	34	39	270	0	270	0	548	548	857
% Cars	100	91.9	92.9	95.7	0	95.7	0	97.2	97.2	96.5
Trucks	0	3	3	12	0	12	0	16	16	31
% Trucks	0	8.1	7.1	4.3	0	4.3	0	2.8	2.8	3.5

Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 2



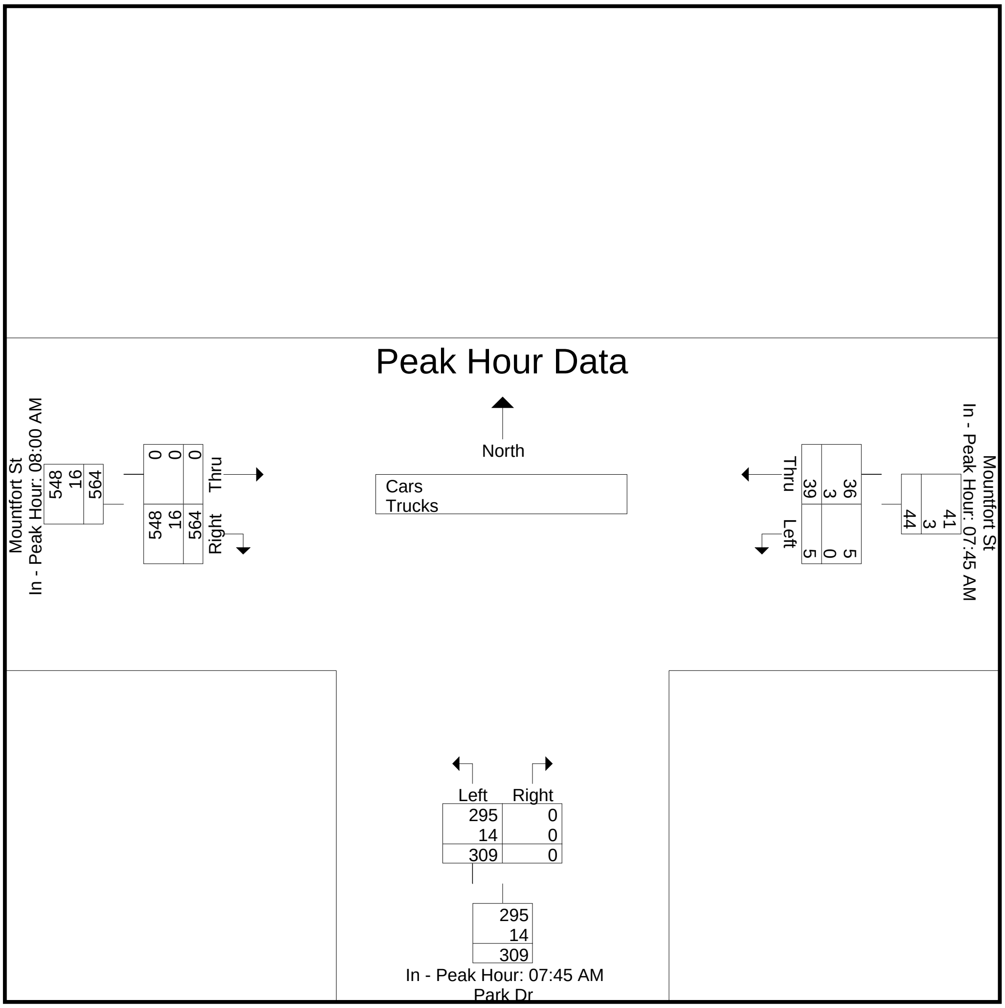
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			07:45 AM			08:00 AM		
+0 mins.	**2**	8	10	**89**	0	**89**	0	126	126
+15 mins.	1	**12**	**13**	76	0	76	0	130	130
+30 mins.	1	12	13	75	0	75	0	142	142
+45 mins.	1	7	8	69	0	69	0	**166**	**166**
Total Volume	5	39	44	309	0	309	0	564	564
% App. Total	11.4	88.6		100	0		0	100	
PHF	.625	.813	.846	.868	.000	.868	.000	.849	.849
Cars	5	36	41	295	0	295	0	548	548
% Cars	100	92.3	93.2	95.5	0	95.5	0	97.2	97.2
Trucks	0	3	3	14	0	14	0	16	16
% Trucks	0	7.7	6.8	4.5	0	4.5	0	2.8	2.8

Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012

Groups Printed- Cars

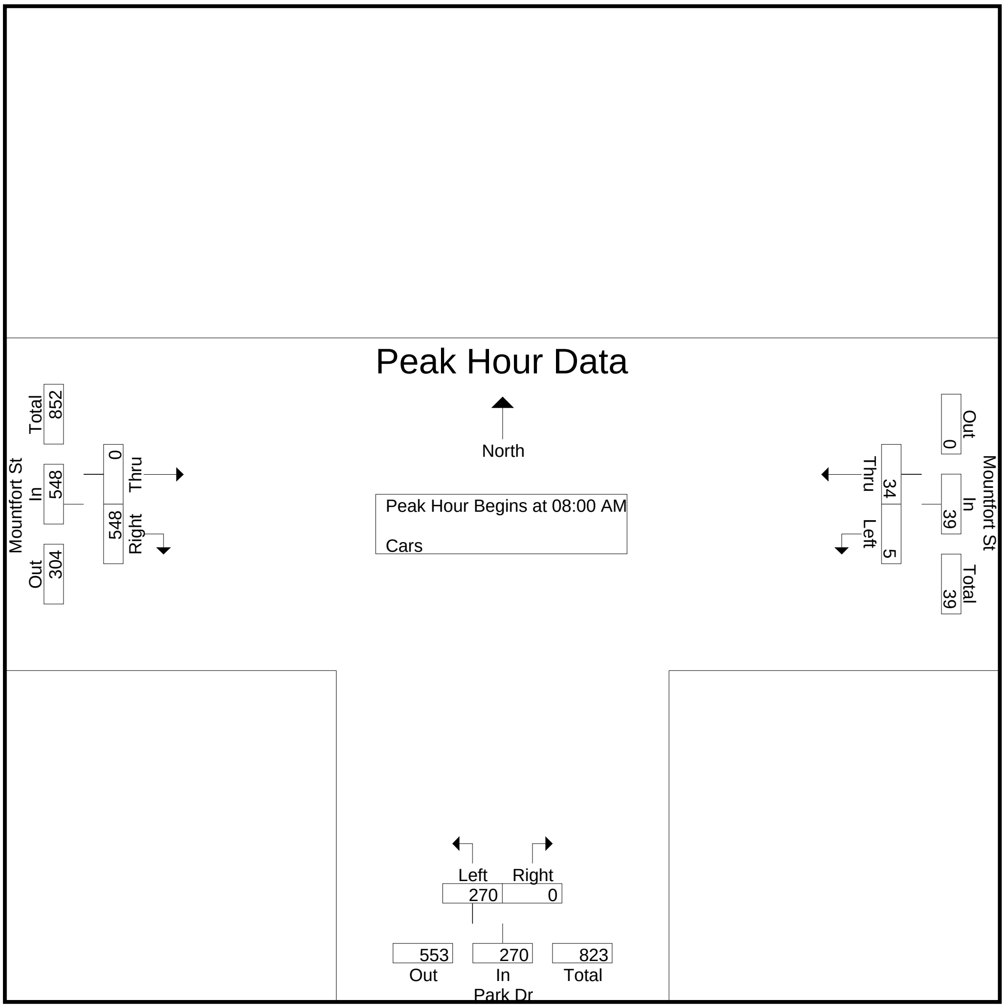
	Mountfort St From East		Park Dr From South		Mountfort St From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	1	3	49	0	0	110	163
07:15 AM	1	6	55	0	0	136	198
07:30 AM	1	4	61	0	0	146	212
07:45 AM	2	8	85	0	0	128	223
Total	5	21	250	0	0	520	796
08:00 AM	1	10	73	0	0	125	209
08:15 AM	1	11	71	0	0	123	206
08:30 AM	1	7	66	0	0	137	211
08:45 AM	2	6	60	0	0	163	231
Total	5	34	270	0	0	548	857
Grand Total	10	55	520	0	0	1068	1653
Apprch %	15.4	84.6	100	0	0	100	
Total %	0.6	3.3	31.5	0	0	64.6	

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 08:00 AM

	Mountfort St From East			Park Dr From South			Mountfort St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
08:00 AM	1	10	11	**73**	0	**73**	0	125	125	209
08:15 AM	1	**11**	**12**	71	0	71	0	123	123	206
08:30 AM	1	7	8	66	0	66	0	137	137	211
08:45 AM	**2**	6	8	60	0	60	0	**163**	**163**	**231**
Total Volume	5	34	39	270	0	270	0	548	548	857
% App. Total	12.8	87.2		100	0		0	100		
PHF	.625	.773	.813	.925	.000	.925	.000	.840	.840	.927

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012



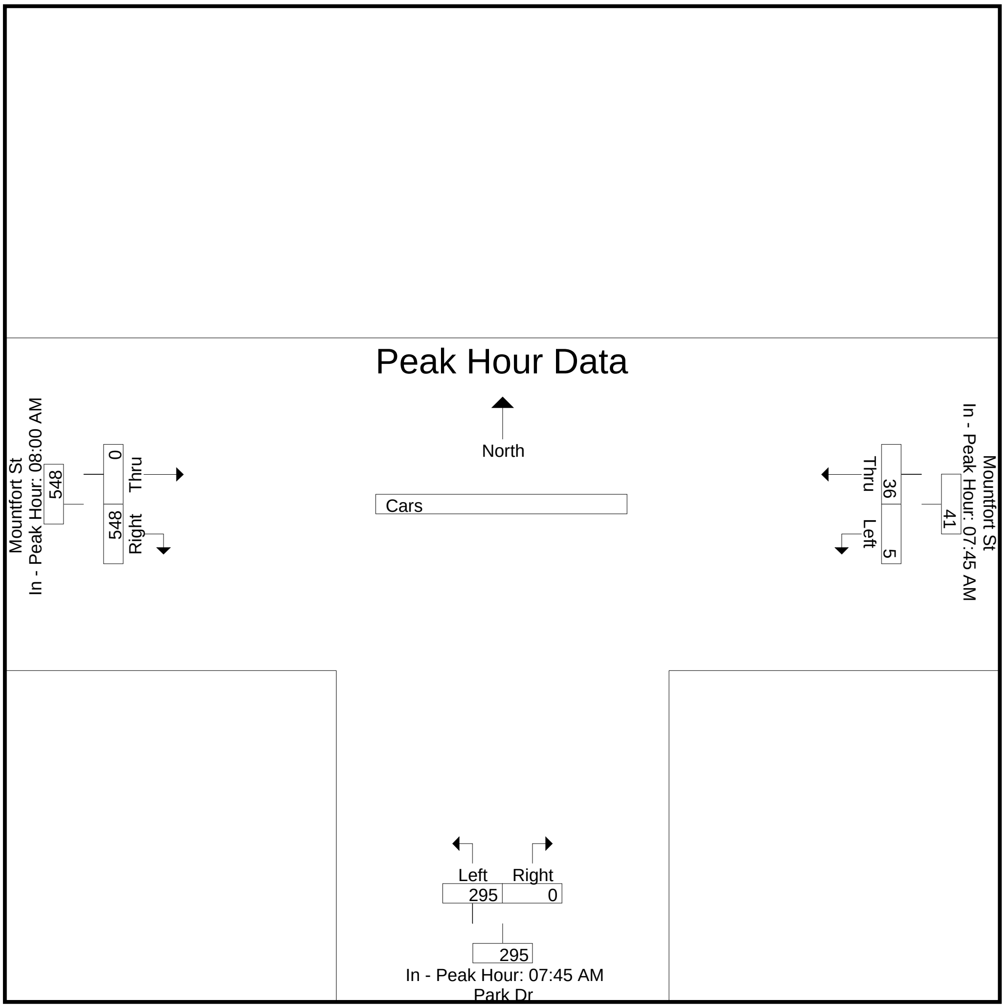
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			07:45 AM			08:00 AM		
+0 mins.	**2**	8	10	**85**	0	**85**	0	125	125
+15 mins.	1	10	11	73	0	73	0	123	123
+30 mins.	1	**11**	**12**	71	0	71	0	137	137
+45 mins.	1	7	8	66	0	66	0	**163**	**163**
Total Volume	5	36	41	295	0	295	0	548	548
% App. Total	12.2	87.8		100	0		0	100	
PHF	.625	.818	.854	.868	.000	.868	.000	.840	.840

Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 1

Groups Printed- Trucks

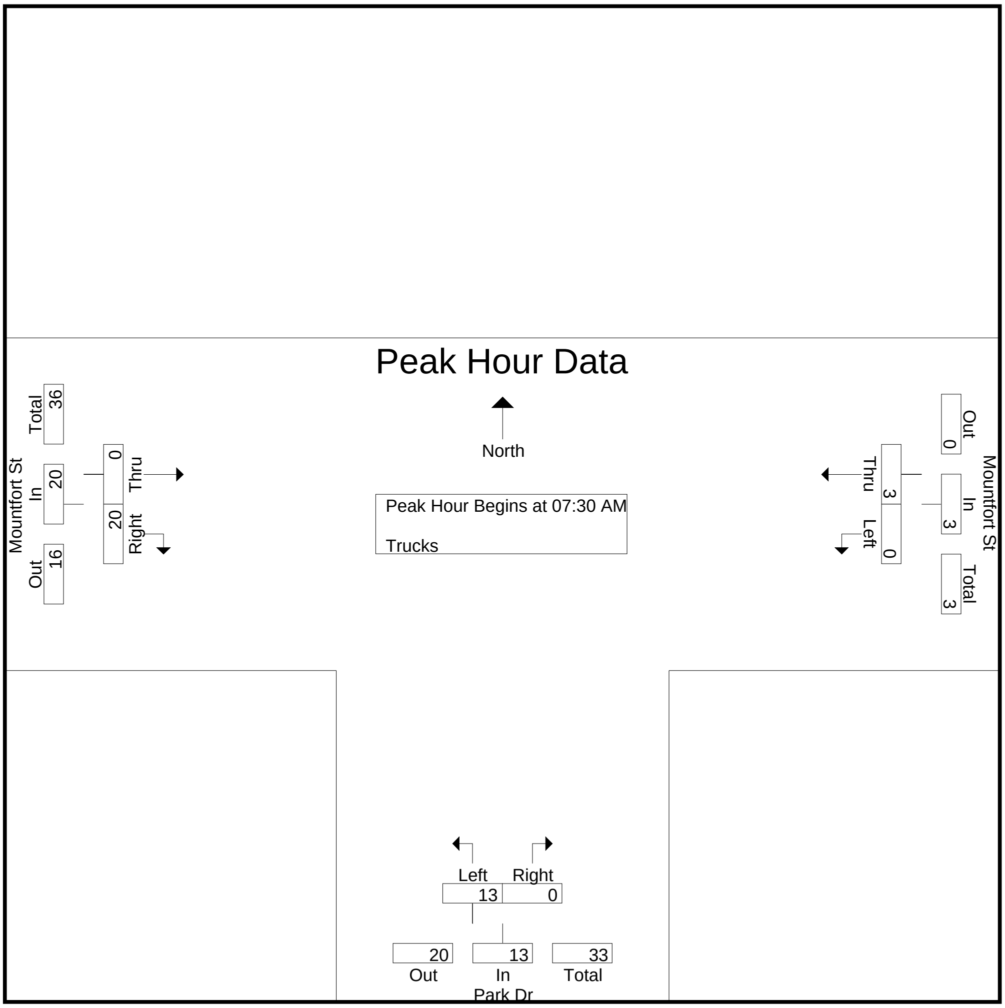
	Mountfort St From East		Park Dr From South		Mountfort St From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	0	0	6	0	0	4	10
07:15 AM	0	0	1	0	0	1	2
07:30 AM	0	0	2	0	0	7	9
07:45 AM	0	0	4	0	0	5	9
Total	0	0	13	0	0	17	30
08:00 AM	0	2	3	0	0	1	6
08:15 AM	0	1	4	0	0	7	12
08:30 AM	0	0	3	0	0	5	8
08:45 AM	0	0	2	0	0	3	5
Total	0	3	12	0	0	16	31
Grand Total	0	3	25	0	0	33	61
Apprch %	0	100	100	0	0	100	
Total %	0	4.9	41	0	0	54.1	

	Mountfort St From East			Park Dr From South			Mountfort St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	0	0	2	0	2	0	**7**	**7**	9
07:45 AM	0	0	0	**4**	0	**4**	0	5	5	9
08:00 AM	0	**2**	**2**	3	0	3	0	1	1	6
08:15 AM	0	1	1	4	0	4	0	7	7	**12**
Total Volume	0	3	3	13	0	13	0	20	20	36
% App. Total	0	100		100	0		0	100		
PHF	.000	.375	.375	.813	.000	.813	.000	.714	.714	.750

Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 2



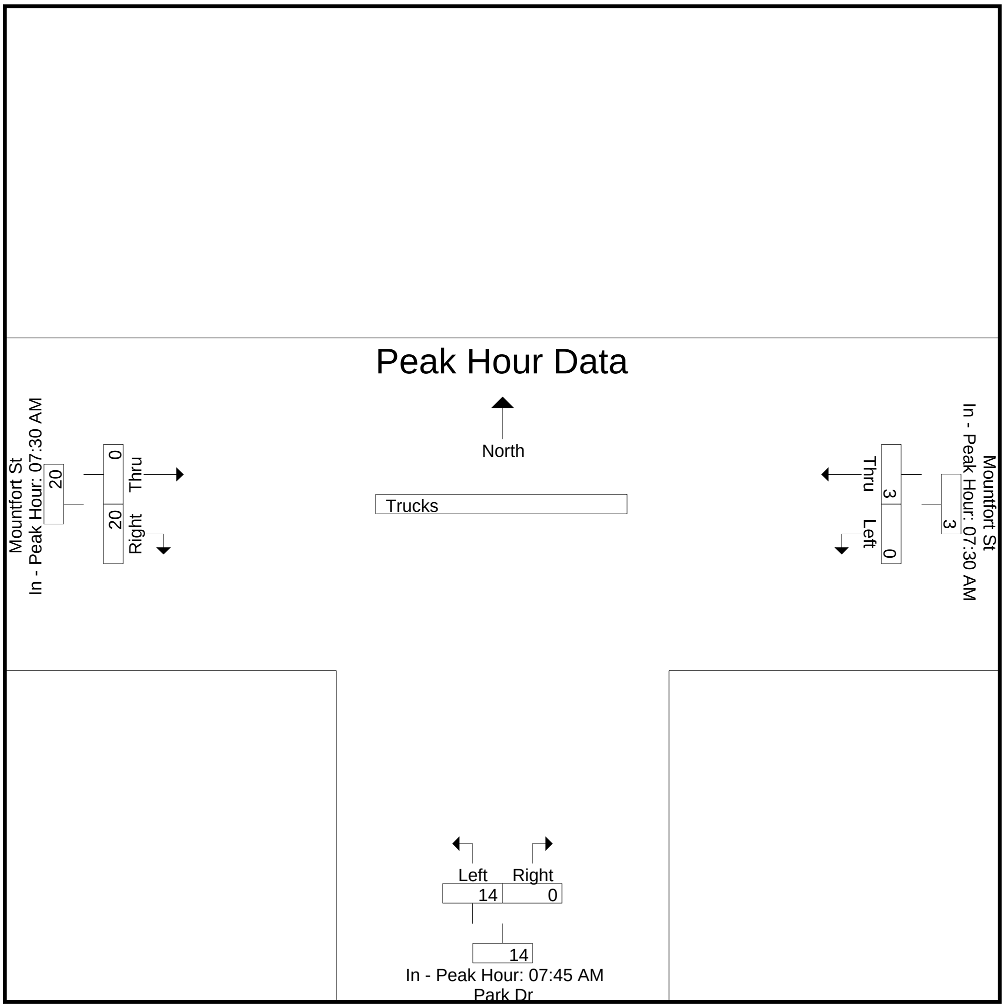
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:45 AM			07:30 AM		
+0 mins.	0	0	0	**4**	0	**4**	0	**7**	**7**
+15 mins.	0	0	0	3	0	3	0	5	5
+30 mins.	0	**2**	**2**	4	0	4	0	1	1
+45 mins.	0	1	1	3	0	3	0	7	7
Total Volume	0	3	3	14	0	14	0	20	20
% App. Total	0	100		100	0		0	100	
PHF	.000	.375	.375	.875	.000	.875	.000	.714	.714

Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 1

Groups Printed- Bikes Peds

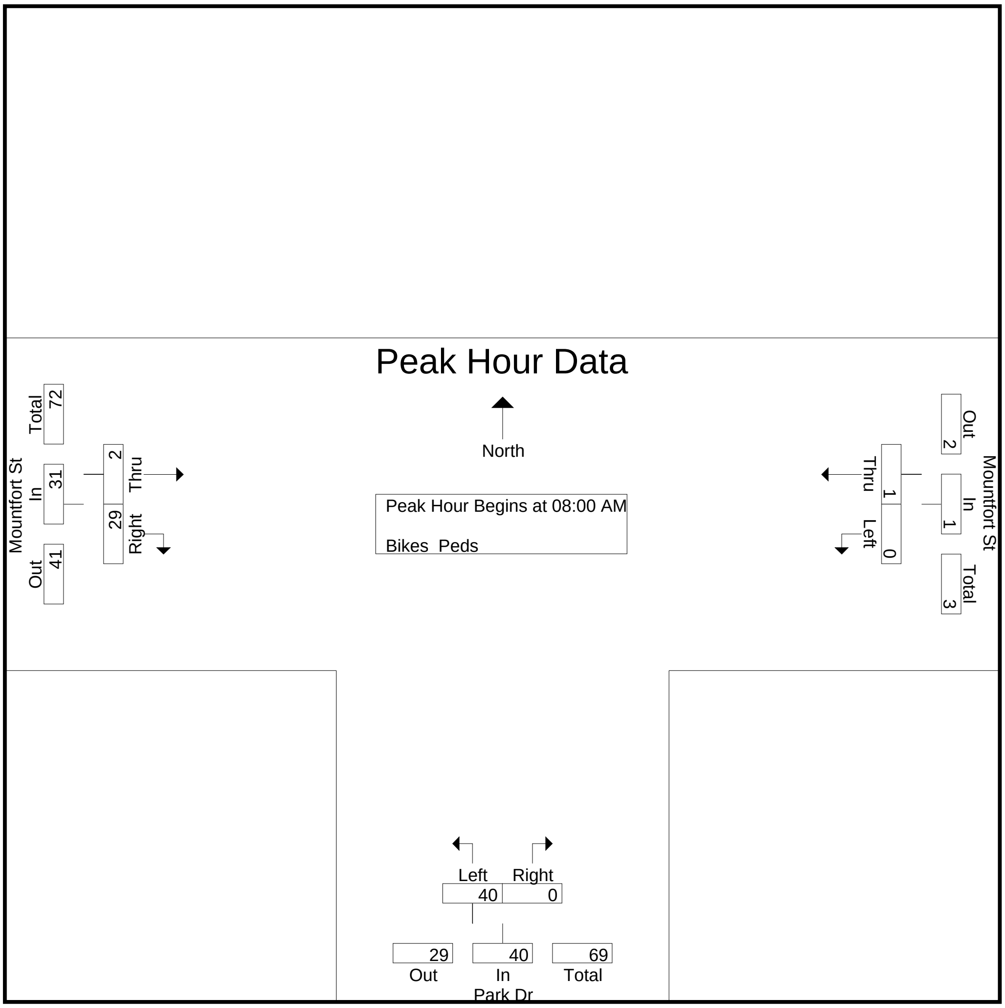
	Mountfort St From East			Park Dr From South			Mountfort St From West					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	1	9	0	0	3	0	1	0	12	2	14
07:15 AM	0	2	11	6	0	0	2	2	1	12	12	24
07:30 AM	0	1	3	8	0	2	1	6	0	5	16	21
07:45 AM	0	0	11	3	0	0	2	7	2	13	12	25
Total	0	4	34	17	0	5	5	16	3	42	42	84
08:00 AM	0	0	16	13	0	2	0	7	1	19	20	39
08:15 AM	0	0	15	10	0	0	0	6	0	15	16	31
08:30 AM	0	1	25	4	0	1	2	7	2	28	14	42
08:45 AM	0	0	20	13	0	0	0	9	2	22	22	44
Total	0	1	76	40	0	3	2	29	5	84	72	156
Grand Total	0	5	110	57	0	8	7	45	8	126	114	240
Apprch %	0	100		100	0		13.5	86.5				
Total %	0	4.4		50	0		6.1	39.5		52.5	47.5	

	Mountfort St From East			Park Dr From South			Mountfort St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	0	0	0	**13**	0	**13**	0	7	7	20
08:15 AM	0	0	0	10	0	10	0	6	6	16
08:30 AM	0	**1**	**1**	4	0	4	**2**	7	**9**	14
08:45 AM	0	0	0	13	0	13	0	**9**	9	**22**
Total Volume	0	1	1	40	0	40	2	29	31	72
% App. Total	0	100		100	0		6.5	93.5		
PHF	.000	.250	.250	.769	.000	.769	.250	.806	.861	.818

Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 2



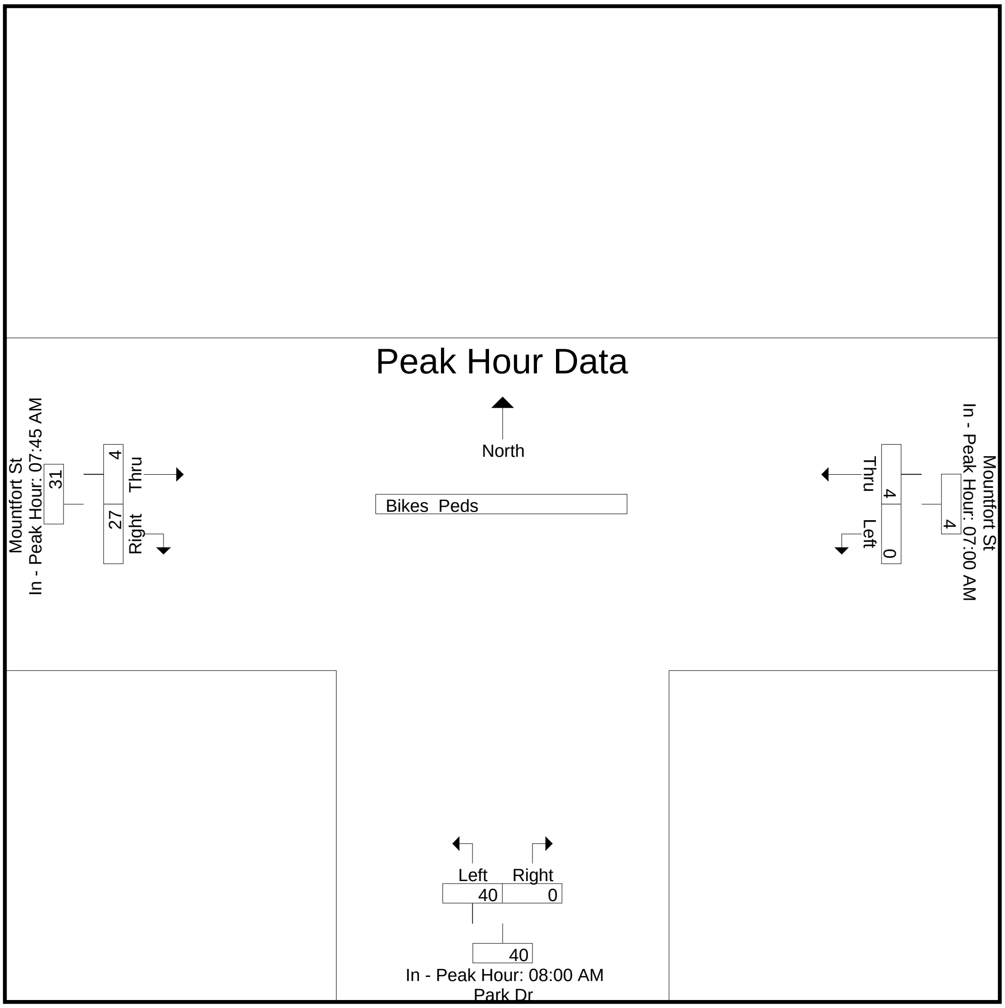
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			08:00 AM			07:45 AM		
+0 mins.	0	1	1	**13**	0	**13**	**2**	**7**	**9**
+15 mins.	0	**2**	**2**	10	0	10	0	7	7
+30 mins.	0	1	1	4	0	4	0	6	6
+45 mins.	0	0	0	13	0	13	2	7	9
Total Volume	0	4	4	40	0	40	4	27	31
% App. Total	0	100		100	0		12.9	87.1	
PHF	.000	.500	.500	.769	.000	.769	.500	.964	.861

Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

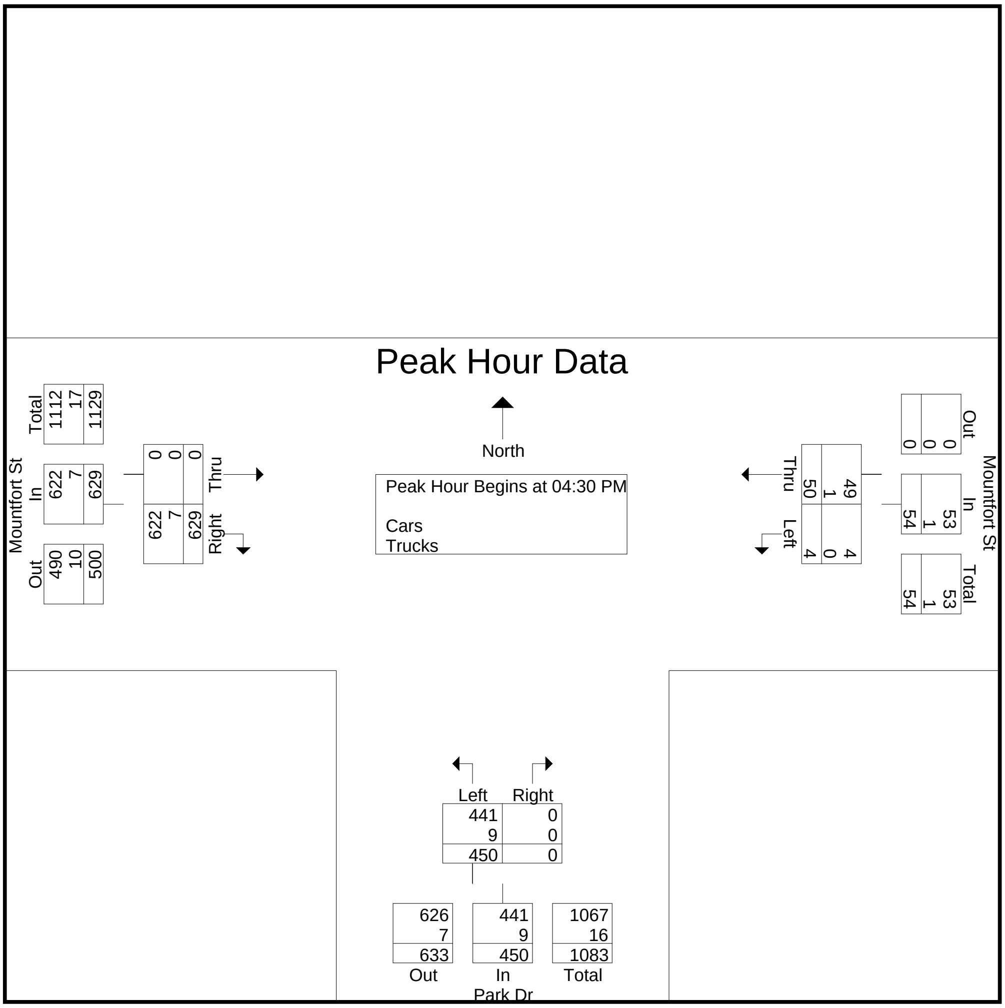
	Mountfort St From East		Park Dr From South		Mountfort St From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	2	21	106	0	0	149	278
04:15 PM	1	17	101	0	0	145	264
04:30 PM	2	13	123	0	0	156	294
04:45 PM	0	12	107	0	0	155	274
Total	5	63	437	0	0	605	1110
05:00 PM	1	12	101	0	0	165	279
05:15 PM	1	13	119	0	0	153	286
05:30 PM	3	9	105	0	0	174	291
05:45 PM	1	14	99	0	0	139	253
Total	6	48	424	0	0	631	1109
Grand Total	11	111	861	0	0	1236	2219
Apprch %	9	91	100	0	0	100	
Total %	0.5	5	38.8	0	0	55.7	
Cars	11	109	847	0	0	1221	2188
% Cars	100	98.2	98.4	0	0	98.8	98.6
Trucks	0	2	14	0	0	15	31
% Trucks	0	1.8	1.6	0	0	1.2	1.4

	Mountfort St From East			Park Dr From South			Mountfort St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	**2**	**13**	**15**	**123**	0	**123**	0	156	156	**294**
04:45 PM	0	12	12	107	0	107	0	155	155	274
05:00 PM	1	12	13	101	0	101	0	**165**	**165**	279
05:15 PM	1	13	14	119	0	119	0	153	153	286
Total Volume	4	50	54	450	0	450	0	629	629	1133
% App. Total	7.4	92.6		100	0		0	100		
PHF	.500	.962	.900	.915	.000	.915	.000	.953	.953	.963
Cars	4	49	53	441	0	441	0	622	622	1116
% Cars	100	98.0	98.1	98.0	0	98.0	0	98.9	98.9	98.5
Trucks	0	1	1	9	0	9	0	7	7	17
% Trucks	0	2.0	1.9	2.0	0	2.0	0	1.1	1.1	1.5

Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 2



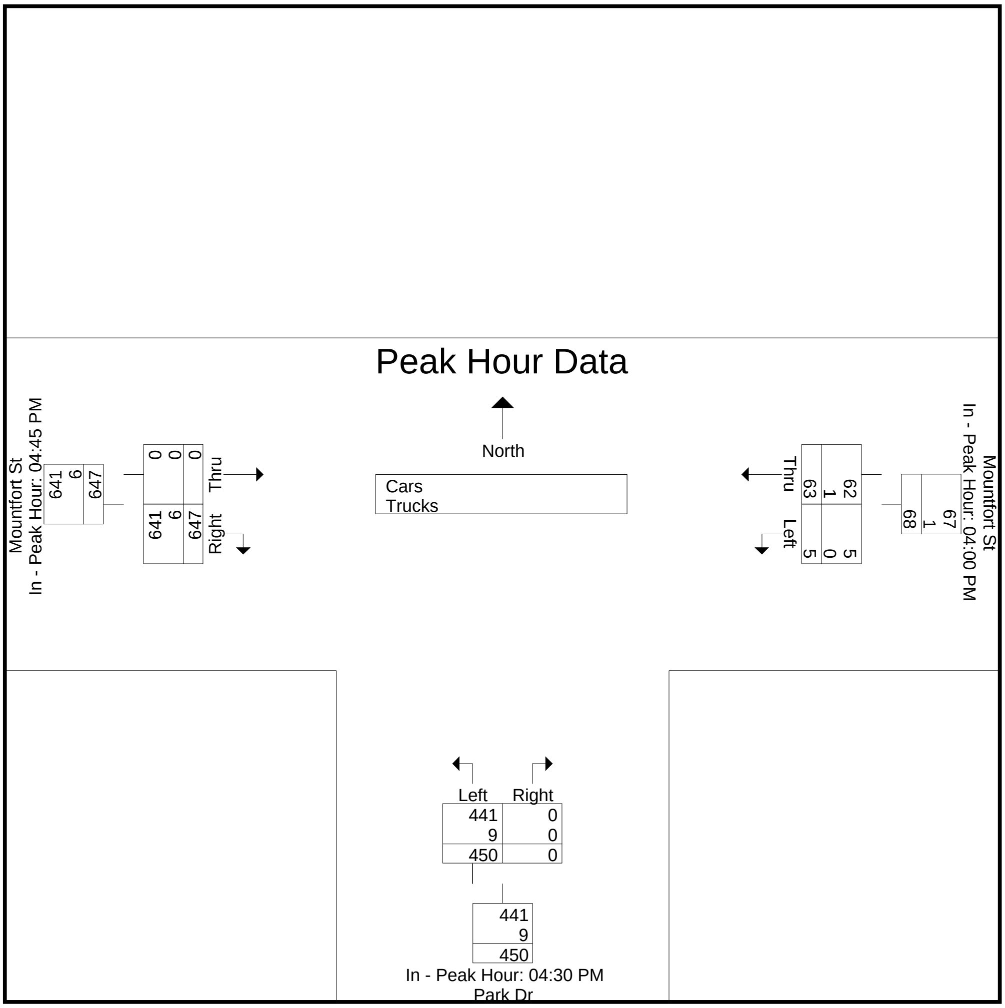
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:30 PM			04:45 PM		
+0 mins.	**2**	**21**	**23**	**123**	0	**123**	0	155	155
+15 mins.	1	17	18	107	0	107	0	165	165
+30 mins.	2	13	15	101	0	101	0	153	153
+45 mins.	0	12	12	119	0	119	0	**174**	**174**
Total Volume	5	63	68	450	0	450	0	647	647
% App. Total	7.4	92.6		100	0		0	100	
PHF	.625	.750	.739	.915	.000	.915	.000	.930	.930
Cars	5	62	67	441	0	441	0	641	641
% Cars	100	98.4	98.5	98	0	98	0	99.1	99.1
Trucks	0	1	1	9	0	9	0	6	6
% Trucks	0	1.6	1.5	2	0	2	0	0.9	0.9

Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012

Groups Printed- Cars

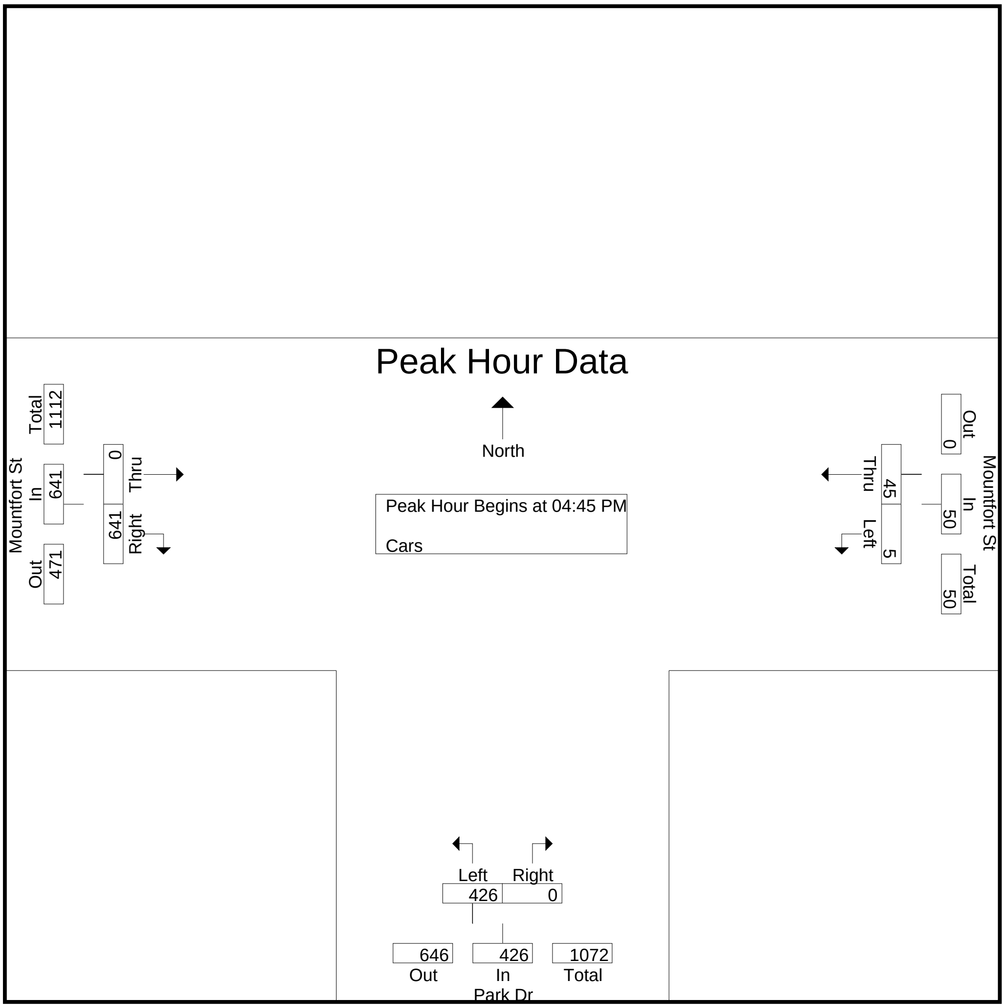
	Mountfort St From East		Park Dr From South		Mountfort St From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	2	20	105	0	0	147	274
04:15 PM	1	17	99	0	0	143	260
04:30 PM	2	13	119	0	0	153	287
04:45 PM	0	12	106	0	0	153	271
Total	5	62	429	0	0	596	1092
05:00 PM	1	11	99	0	0	164	275
05:15 PM	1	13	117	0	0	152	283
05:30 PM	3	9	104	0	0	172	288
05:45 PM	1	14	98	0	0	137	250
Total	6	47	418	0	0	625	1096
Grand Total	11	109	847	0	0	1221	2188
Apprch %	9.2	90.8	100	0	0	100	
Total %	0.5	5	38.7	0	0	55.8	

	Mountfort St From East			Park Dr From South			Mountfort St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	12	12	106	0	106	0	153	153	271
05:00 PM	1	11	12	99	0	99	0	164	164	275
05:15 PM	1	**13**	**14**	**117**	0	**117**	0	152	152	283
05:30 PM	**3**	9	12	104	0	104	0	**172**	**172**	**288**
Total Volume	5	45	50	426	0	426	0	641	641	1117
% App. Total	10	90		100	0		0	100		
PHF	.417	.865	.893	.910	.000	.910	.000	.932	.932	.970

Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 2



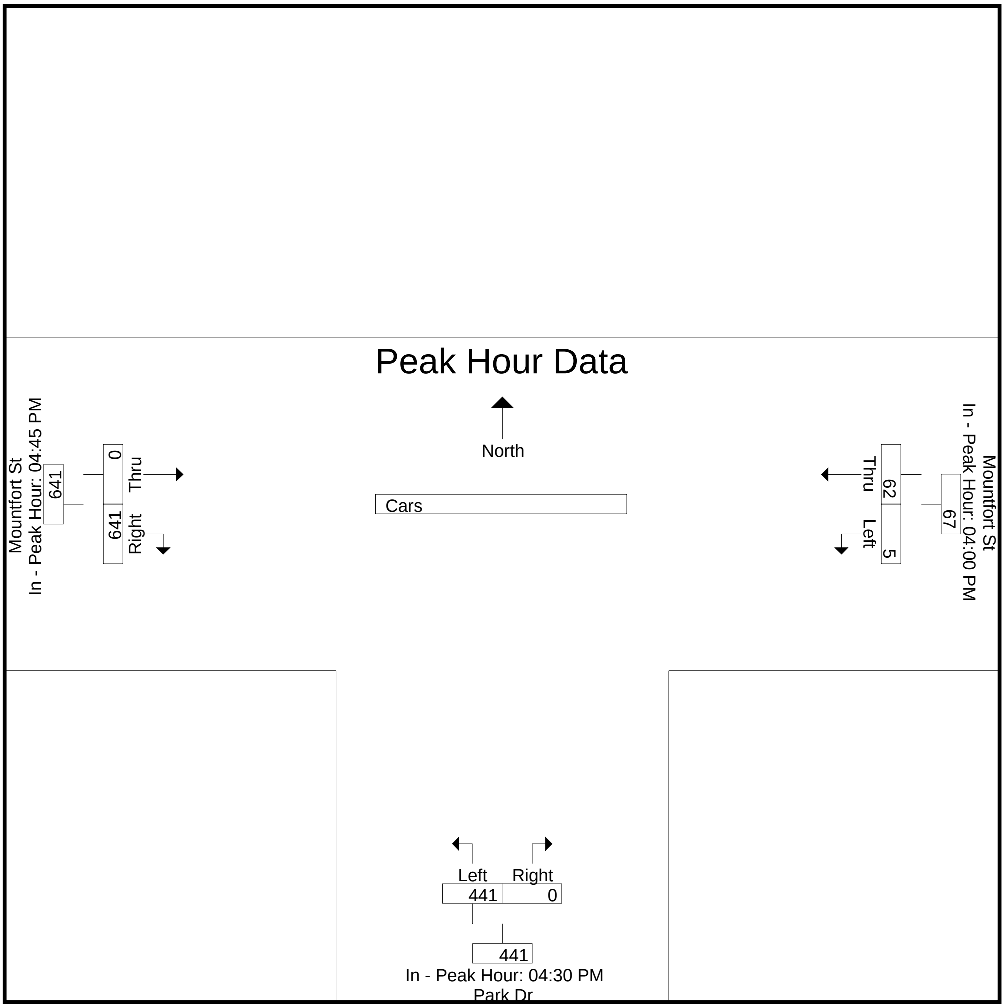
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:30 PM			04:45 PM		
+0 mins.	**2**	**20**	**22**	**119**	0	**119**	0	153	153
+15 mins.	1	17	18	106	0	106	0	164	164
+30 mins.	2	13	15	99	0	99	0	152	152
+45 mins.	0	12	12	117	0	117	0	**172**	**172**
Total Volume	5	62	67	441	0	441	0	641	641
% App. Total	7.5	92.5		100	0		0	100	
PHF	.625	.775	.761	.926	.000	.926	.000	.932	.932

Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 1

Groups Printed- Trucks

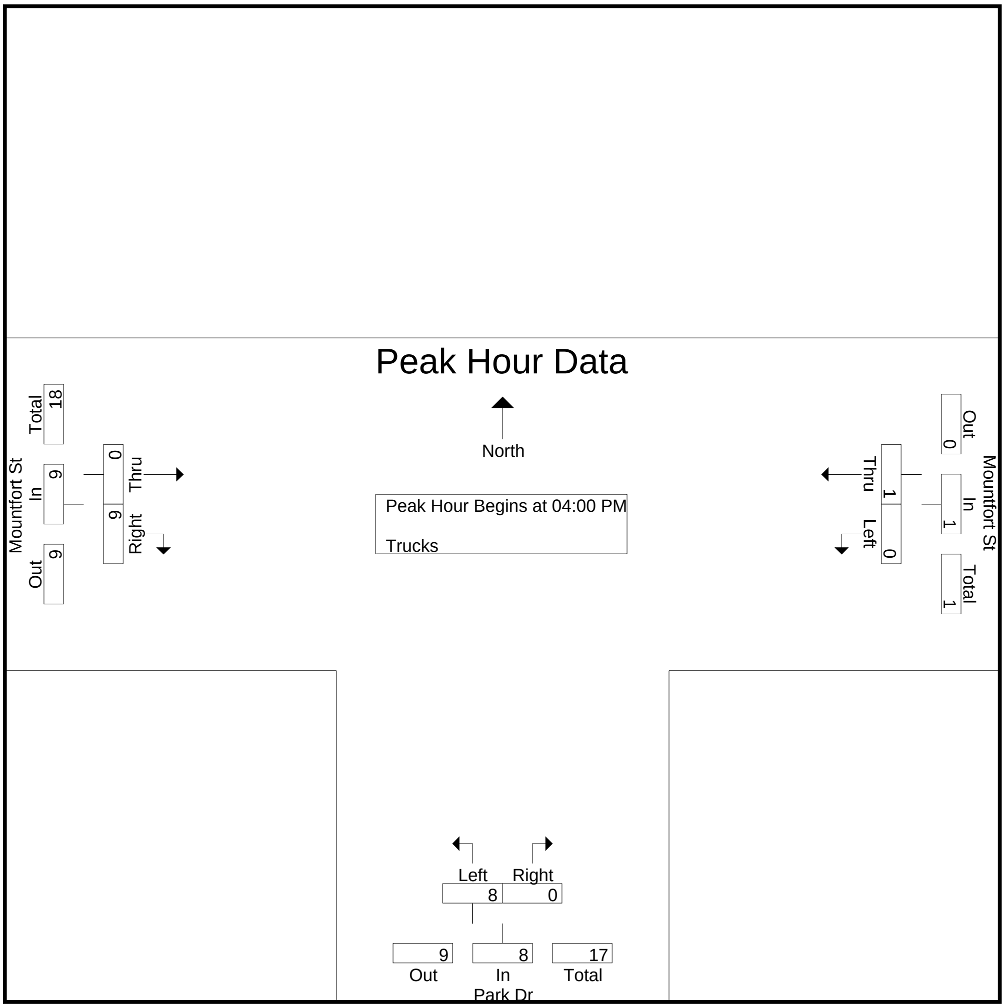
	Mountfort St From East		Park Dr From South		Mountfort St From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	0	1	1	0	0	2	4
04:15 PM	0	0	2	0	0	2	4
04:30 PM	0	0	4	0	0	3	7
04:45 PM	0	0	1	0	0	2	3
Total	0	1	8	0	0	9	18
05:00 PM	0	1	2	0	0	1	4
05:15 PM	0	0	2	0	0	1	3
05:30 PM	0	0	1	0	0	2	3
05:45 PM	0	0	1	0	0	2	3
Total	0	1	6	0	0	6	13
Grand Total	0	2	14	0	0	15	31
Apprch %	0	100	100	0	0	100	
Total %	0	6.5	45.2	0	0	48.4	

	Mountfort St From East			Park Dr From South			Mountfort St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	**1**	**1**	1	0	1	0	2	2	4
04:15 PM	0	0	0	2	0	2	0	2	2	4
04:30 PM	0	0	0	**4**	0	**4**	0	**3**	**3**	**7**
04:45 PM	0	0	0	1	0	1	0	2	2	3
Total Volume	0	1	1	8	0	8	0	9	9	18
% App. Total	0	100		100	0		0	100		
PHF	.000	.250	.250	.500	.000	.500	.000	.750	.750	.643

Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 2



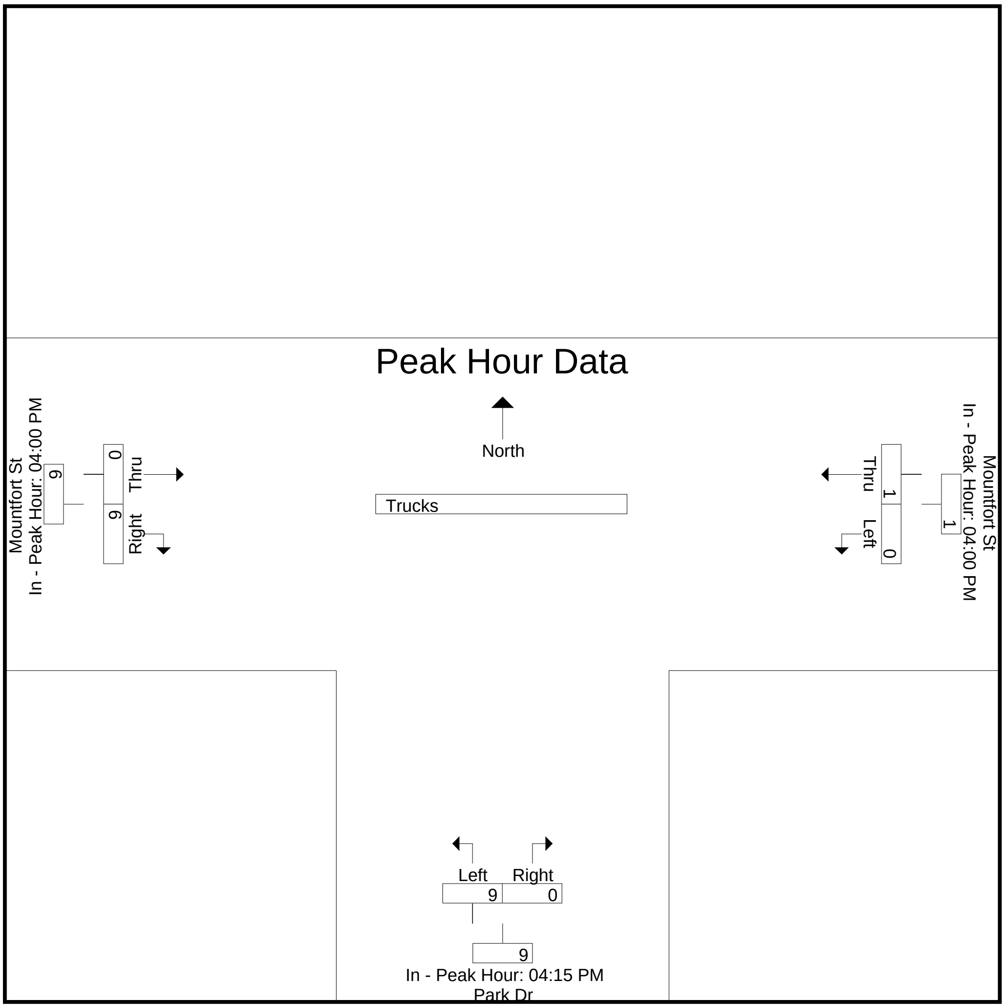
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:15 PM			04:00 PM		
+0 mins.	0	**1**	**1**	2	0	2	0	2	2
+15 mins.	0	0	0	**4**	0	**4**	0	2	2
+30 mins.	0	0	0	1	0	1	0	**3**	**3**
+45 mins.	0	0	0	2	0	2	0	2	2
Total Volume	0	1	1	9	0	9	0	9	9
% App. Total	0	100		100	0		0	100	
PHF	.000	.250	.250	.563	.000	.563	.000	.750	.750

Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 1

Groups Printed- Bikes Peds

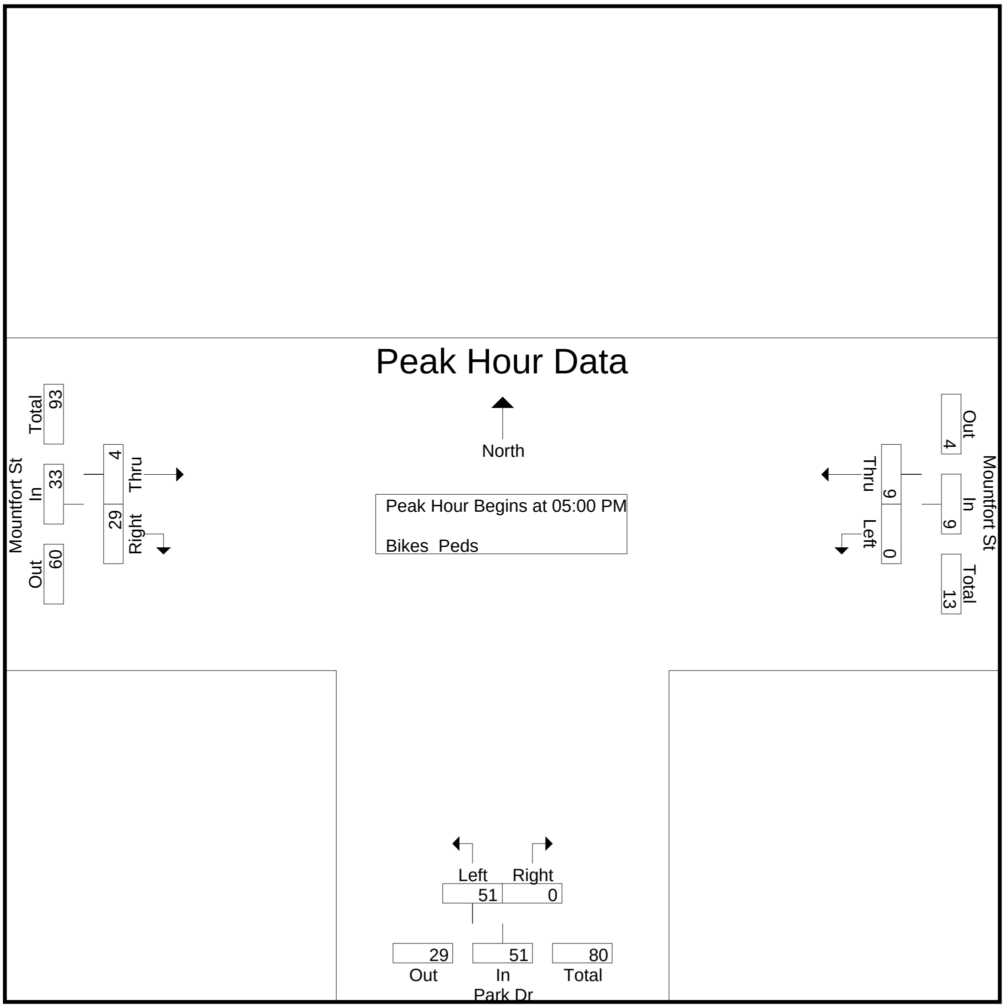
	Mountfort St From East			Park Dr From South			Mountfort St From West					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	1	37	5	0	2	1	3	2	41	10	51
04:15 PM	0	1	27	5	0	1	1	2	5	33	9	42
04:30 PM	0	3	35	10	0	4	0	6	6	45	19	64
04:45 PM	0	4	31	3	0	2	2	6	9	42	15	57
Total	0	9	130	23	0	9	4	17	22	161	53	214
05:00 PM	0	4	44	14	0	1	0	6	5	50	24	74
05:15 PM	0	2	38	12	0	0	0	12	3	41	26	67
05:30 PM	0	2	46	7	0	0	0	8	2	48	17	65
05:45 PM	0	1	41	18	0	2	4	3	1	44	26	70
Total	0	9	169	51	0	3	4	29	11	183	93	276
Grand Total	0	18	299	74	0	12	8	46	33	344	146	490
Apprch %	0	100		100	0		14.8	85.2				
Total %	0	12.3		50.7	0		5.5	31.5		70.2	29.8	

	Mountfort St From East			Park Dr From South			Mountfort St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	**4**	**4**	14	0	14	0	6	6	24
05:15 PM	0	2	2	12	0	12	0	**12**	**12**	**26**
05:30 PM	0	2	2	7	0	7	0	8	8	17
05:45 PM	0	1	1	**18**	0	**18**	**4**	3	7	26
Total Volume	0	9	9	51	0	51	4	29	33	93
% App. Total	0	100		100	0		12.1	87.9		
PHF	.000	.563	.563	.708	.000	.708	.250	.604	.688	.894

Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012



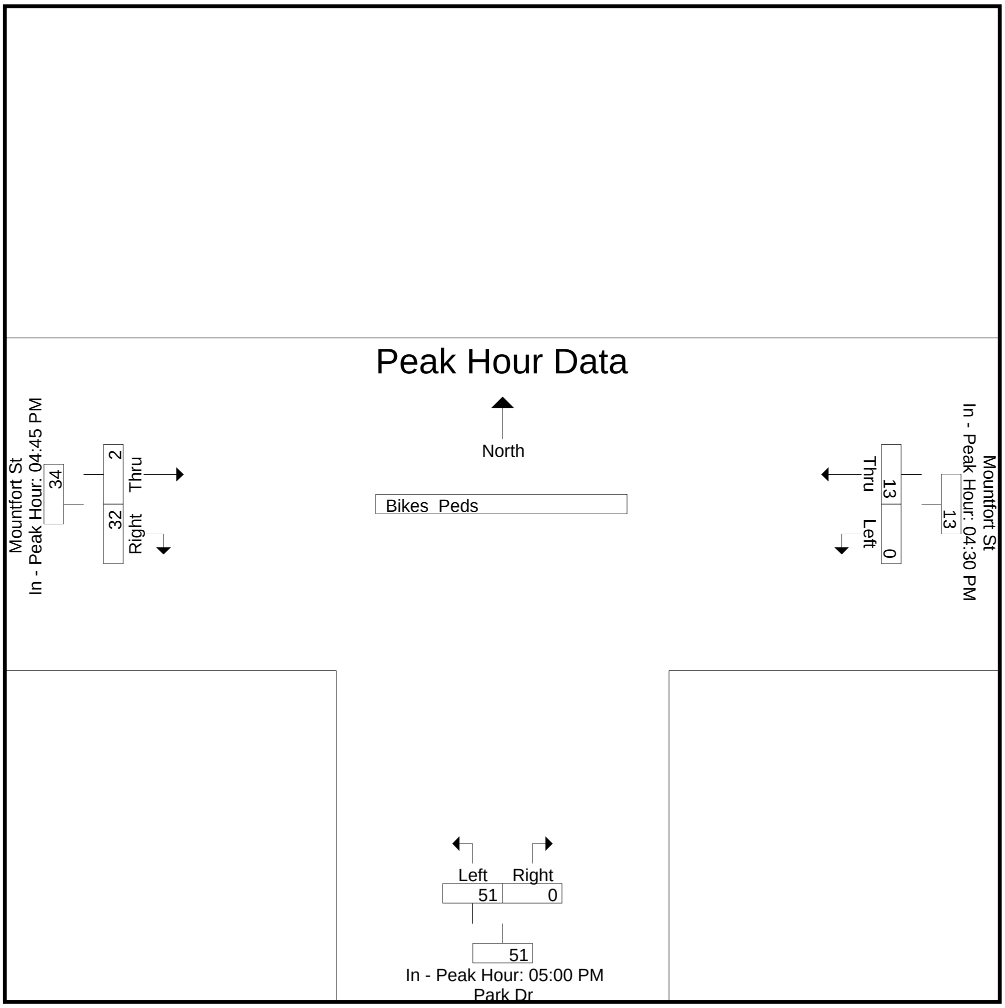
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			05:00 PM			04:45 PM		
+0 mins.	0	3	3	14	0	14	**2**	6	8
+15 mins.	0	**4**	**4**	12	0	12	0	6	6
+30 mins.	0	4	4	7	0	7	0	**12**	**12**
+45 mins.	0	2	2	**18**	0	**18**	0	8	8
Total Volume	0	13	13	51	0	51	2	32	34
% App. Total	0	100		100	0		5.9	94.1	
PHF	.000	.813	.813	.708	.000	.708	.250	.667	.708

Accurate Counts
978-664-2565

N/S Street : Mountfort Street
E/W Street : Park Drive
City/State : Boston, MA
Weather : Drizzle

File Name : 94970007
Site Code : 94970007
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 1

Groups Printed- Cars - Trucks

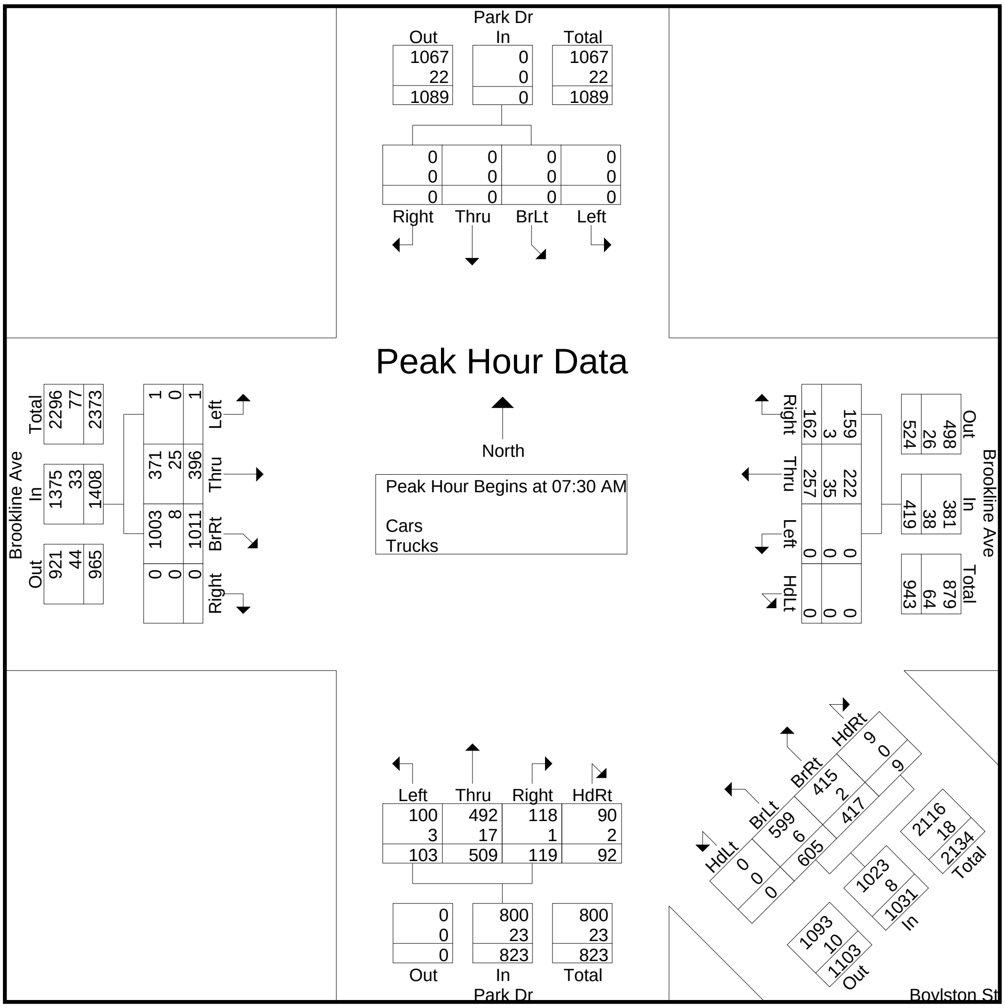
	Park Dr From North				Brookline Ave From East				Boylston St From Southeast				Park Dr From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
07:00 AM	0	0	0	0	0	0	40	21	0	146	93	3	10	82	15	19	1	74	239	0	743
07:15 AM	0	0	0	0	0	0	52	30	0	144	109	1	23	116	15	24	0	63	229	0	806
07:30 AM	0	0	0	0	0	0	63	32	0	150	117	4	23	118	24	24	0	99	246	0	900
07:45 AM	0	0	0	0	0	0	68	52	0	164	114	2	32	134	32	31	0	106	260	0	995
Total	0	0	0	0	0	0	223	135	0	604	433	10	88	450	86	98	1	342	974	0	3444
08:00 AM	0	0	0	0	0	0	74	52	0	149	98	0	30	133	32	19	0	100	261	0	948
08:15 AM	0	0	0	0	0	0	52	26	0	142	88	3	18	124	31	18	1	91	244	0	838
08:30 AM	0	0	0	0	0	0	65	38	0	135	81	5	21	123	36	14	0	112	223	0	853
08:45 AM	0	0	0	0	0	0	61	61	0	147	112	1	21	134	30	21	2	99	206	0	895
Total	0	0	0	0	0	0	252	177	0	573	379	9	90	514	129	72	3	402	934	0	3534
Grand Total	0	0	0	0	0	0	475	312	0	1177	812	19	178	964	215	170	4	744	1908	0	6978
Apprch %	0	0	0	0	0	0	60.4	39.6	0	58.6	40.4	0.9	11.7	63.1	14.1	11.1	0.2	28	71.8	0	
Total %	0	0	0	0	0	0	6.8	4.5	0	16.9	11.6	0.3	2.6	13.8	3.1	2.4	0.1	10.7	27.3	0	
Cars	0	0	0	0	0	0	399	305	0	1166	810	18	175	934	211	165	4	685	1895	0	6767
% Cars	0	0	0	0	0	0	84	97.8	0	99.1	99.8	94.7	98.3	96.9	98.1	97.1	100	92.1	99.3	0	97
Trucks	0	0	0	0	0	0	76	7	0	11	2	1	3	30	4	5	0	59	13	0	211
% Trucks	0	0	0	0	0	0	16	2.2	0	0.9	0.2	5.3	1.7	3.1	1.9	2.9	0	7.9	0.7	0	3

	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:30 AM																										
07:30 AM	0	0	0	0	0	0	0	63	32	95	0	150	**117**	**4**	271	23	118	24	24	189	0	99	246	0	345	900
07:45 AM	0	0	0	0	0	0	0	68	**52**	120	0	**164**	114	2	**280**	**32**	**134**	**32**	**31**	**229**	0	**106**	260	0	**366**	**995**
08:00 AM	0	0	0	0	0	0	0	**74**	52	**126**	0	149	98	0	247	30	133	32	19	214	0	100	**261**	0	361	948
08:15 AM	0	0	0	0	0	0	0	52	26	78	0	142	88	3	233	18	124	31	18	191	**1**	91	244	0	336	838
Total Volume	0	0	0	0	0	0	0	257	162	419	0	605	417	9	1031	103	509	119	92	823	1	396	1011	0	1408	3681
% App. Total	0	0	0	0		0	0	61.3	38.7		0	58.7	40.4	0.9		12.5	61.8	14.5	11.2		0.1	28.1	71.8	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.868	.779	.831	.000	.922	.891	.563	.921	.805	.950	.930	.742	.898	.250	.934	.968	.000	.962	.925
Cars	0	0	0	0	0	0	0	222	159	381	0	599	415	9	1023	100	492	118	90	800	1	371	1003	0	1375	3579
% Cars	0	0	0	0	0	0	0	86.4	98.1	90.9	0	99.0	99.5	100	99.2	97.1	96.7	99.2	97.8	97.2	100	93.7	99.2	0	97.7	97.2
Trucks	0	0	0	0	0	0	0	35	3	38	0	6	2	0	8	3	17	1	2	23	0	25	8	0	33	102
% Trucks	0	0	0	0	0	0	0	13.6	1.9	9.1	0	1.0	0.5	0	0.8	2.9	3.3	0.8	2.2	2.8	0	6.3	0.8	0	2.3	2.8

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 2



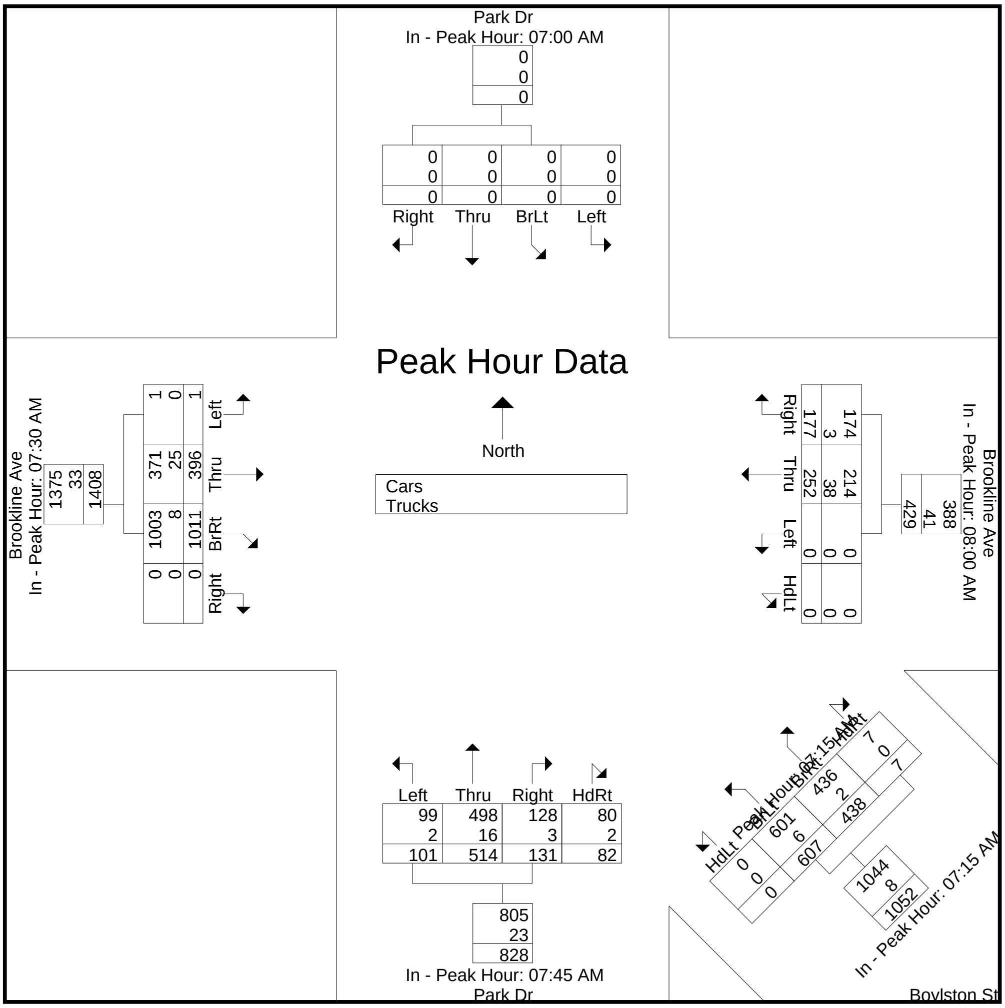
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM					08:00 AM					07:15 AM					07:45 AM					07:30 AM				
+0 mins.	0	0	0	0	0	0	0	**74**	52	**126**	0	144	109	1	254	**32**	**134**	32	**31**	**229**	0	99	246	0	345
+15 mins.	0	0	0	0	0	0	0	52	26	78	0	150	**117**	**4**	271	30	133	32	19	214	0	**106**	260	0	**366**
+30 mins.	0	0	0	0	0	0	0	65	38	103	0	**164**	114	2	**280**	18	124	31	18	191	0	100	**261**	0	361
+45 mins.	0	0	0	0	0	0	0	61	**61**	122	0	149	98	0	247	21	123	**36**	14	194	**1**	91	244	0	336
Total Volume	0	0	0	0	0	0	0	252	177	429	0	607	438	7	1052	101	514	131	82	828	1	396	1011	0	1408
% App. Total	0	0	0	0		0	0	58.7	41.3		0	57.7	41.6	0.7		12.2	62.1	15.8	9.9		0.1	28.1	71.8	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.851	.725	.851	.000	.925	.936	.438	.939	.789	.959	.910	.661	.904	.250	.934	.968	.000	.962
Cars	0	0	0	0	0	0	0	214	174	388	0	601	436	7	1044	99	498	128	80	805	1	371	1003	0	1375
% Cars	0	0	0	0	0	0	0	84.9	98.3	90.4	0	99	99.5	100	99.2	98	96.9	97.7	97.6	97.2	100	93.7	99.2	0	97.7
Trucks	0	0	0	0	0	0	0	38	3	41	0	6	2	0	8	2	16	3	2	23	0	25	8	0	33
% Trucks	0	0	0	0	0	0	0	15.1	1.7	9.6	0	1	0.5	0	0.8	2	3.1	2.3	2.4	2.8	0	6.3	0.8	0	2.3

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 1

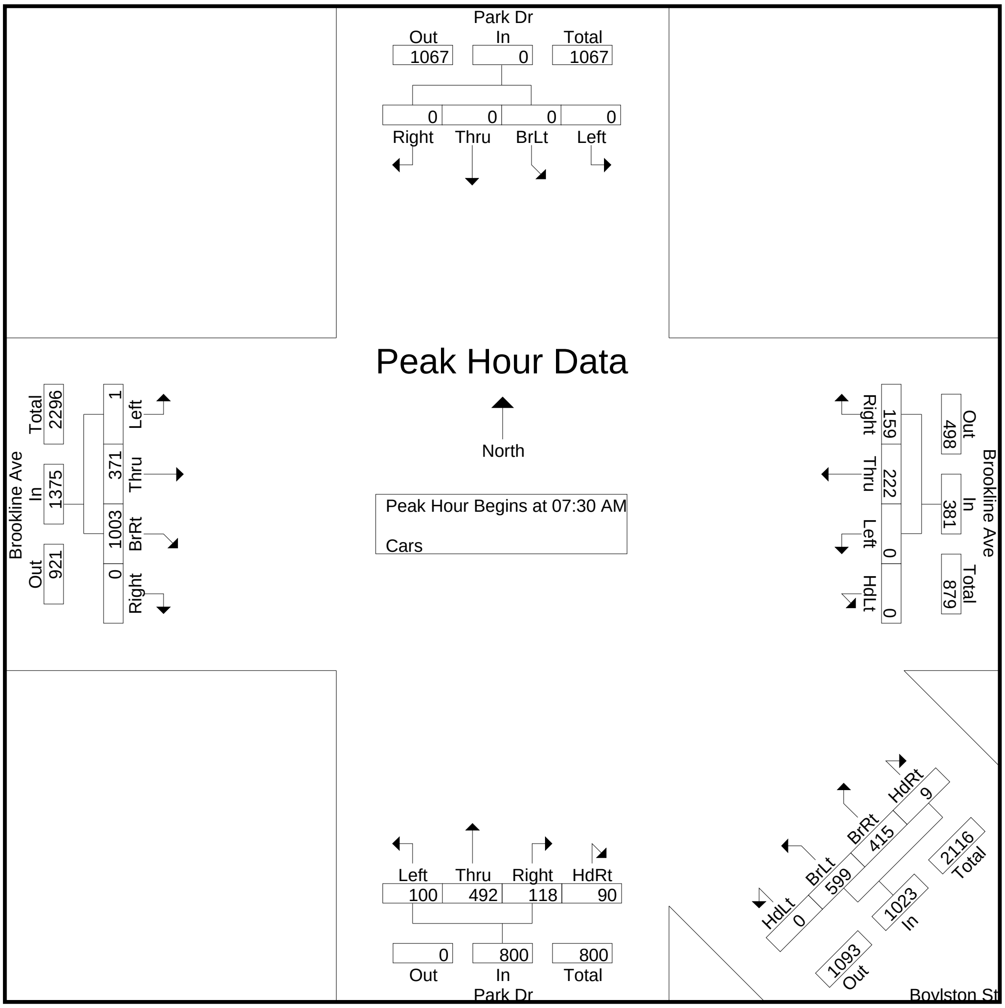
Groups Printed- Cars

	Park Dr From North				Brookline Ave From East				Boylston St From Southeast				Park Dr From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
07:00 AM	0	0	0	0	0	0	30	21	0	144	93	3	10	78	14	17	1	67	237	0	715
07:15 AM	0	0	0	0	0	0	45	29	0	143	109	1	23	113	15	23	0	57	228	0	786
07:30 AM	0	0	0	0	0	0	50	31	0	147	117	4	22	115	24	24	0	95	243	0	872
07:45 AM	0	0	0	0	0	0	60	50	0	163	113	2	31	130	32	31	0	98	258	0	968
Total	0	0	0	0	0	0	185	131	0	597	432	10	86	436	85	95	1	317	966	0	3341
08:00 AM	0	0	0	0	0	0	64	52	0	148	97	0	29	129	32	17	0	93	259	0	920
08:15 AM	0	0	0	0	0	0	48	26	0	141	88	3	18	118	30	18	1	85	243	0	819
08:30 AM	0	0	0	0	0	0	55	36	0	134	81	5	21	121	34	14	0	100	222	0	823
08:45 AM	0	0	0	0	0	0	47	60	0	146	112	0	21	130	30	21	2	90	205	0	864
Total	0	0	0	0	0	0	214	174	0	569	378	8	89	498	126	70	3	368	929	0	3426
Grand Total	0	0	0	0	0	0	399	305	0	1166	810	18	175	934	211	165	4	685	1895	0	6767
Apprch %	0	0	0	0	0	0	56.7	43.3	0	58.5	40.6	0.9	11.8	62.9	14.2	11.1	0.2	26.5	73.3	0	
Total %	0	0	0	0	0	0	5.9	4.5	0	17.2	12	0.3	2.6	13.8	3.1	2.4	0.1	10.1	28	0	

	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:30 AM																										
07:30 AM	0	0	0	0	0	0	0	50	31	81	0	147	**117**	**4**	268	22	115	24	24	185	0	95	243	0	338	872
07:45 AM	0	0	0	0	0	0	0	60	50	110	0	**163**	113	2	**278**	**31**	**130**	**32**	**31**	**224**	0	**98**	258	0	**356**	**968**
08:00 AM	0	0	0	0	0	0	0	**64**	**52**	**116**	0	148	97	0	245	29	129	32	17	207	0	93	**259**	0	352	920
08:15 AM	0	0	0	0	0	0	0	48	26	74	0	141	88	3	232	18	118	30	18	184	**1**	85	243	0	329	819
Total Volume	0	0	0	0	0	0	0	222	159	381	0	599	415	9	1023	100	492	118	90	800	1	371	1003	0	1375	3579
% App. Total	0	0	0	0		0	0	58.3	41.7		0	58.6	40.6	0.9		12.5	61.5	14.8	11.2		0.1	27	72.9	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.867	.764	.821	.000	.919	.887	.563	.920	.806	.946	.922	.726	.893	.250	.946	.968	.000	.966	.924

Accurate Counts
978-664-2565

N/S Street : Park Drive	File Name : 9497008a
E/W Street: Brookline Ave / Boylston St	Site Code : 9497008A
City/State : Boston, MA	Start Date : 5/22/2012
Weather : Drizzle	Page No : 2



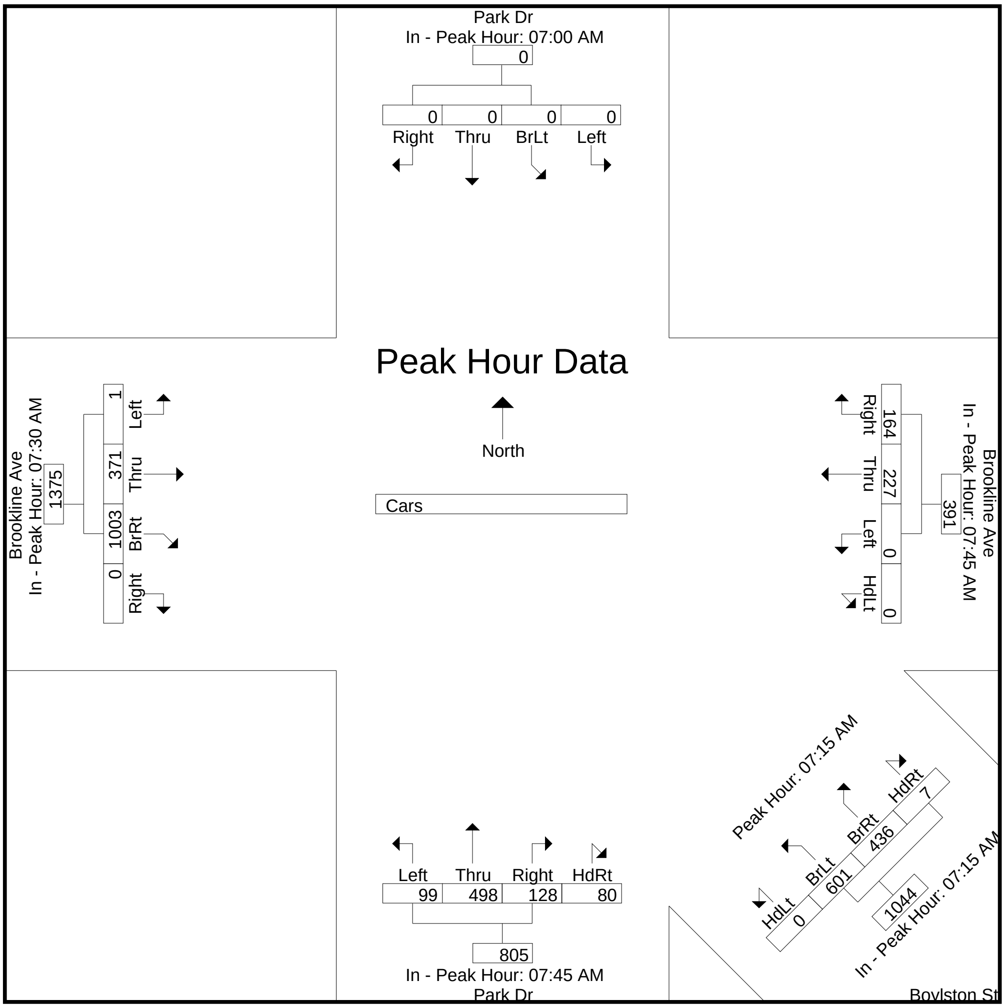
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM					07:45 AM					07:15 AM					07:45 AM					07:30 AM				
+0 mins.	0	0	0	0	0	0	0	60	50	110	0	143	109	1	253	**31**	**130**	32	**31**	**224**	0	95	243	0	338
+15 mins.	0	0	0	0	0	0	0	**64**	**52**	**116**	0	147	**117**	**4**	268	29	129	32	17	207	0	**98**	258	0	**356**
+30 mins.	0	0	0	0	0	0	0	48	26	74	0	**163**	113	2	**278**	18	118	30	18	184	0	93	**259**	0	352
+45 mins.	0	0	0	0	0	0	0	55	36	91	0	148	97	0	245	21	121	**34**	14	190	**1**	85	243	0	329
Total Volume	0	0	0	0	0	0	0	227	164	391	0	601	436	7	1044	99	498	128	80	805	1	371	1003	0	1375
% App. Total	0	0	0	0		0	0	58.1	41.9		0	57.6	41.8	0.7		12.3	61.9	15.9	9.9		0.1	27	72.9	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.887	.788	.843	.000	.922	.932	.438	.939	.798	.958	.941	.645	.898	.250	.946	.968	.000	.966

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 1

Groups Printed- Trucks

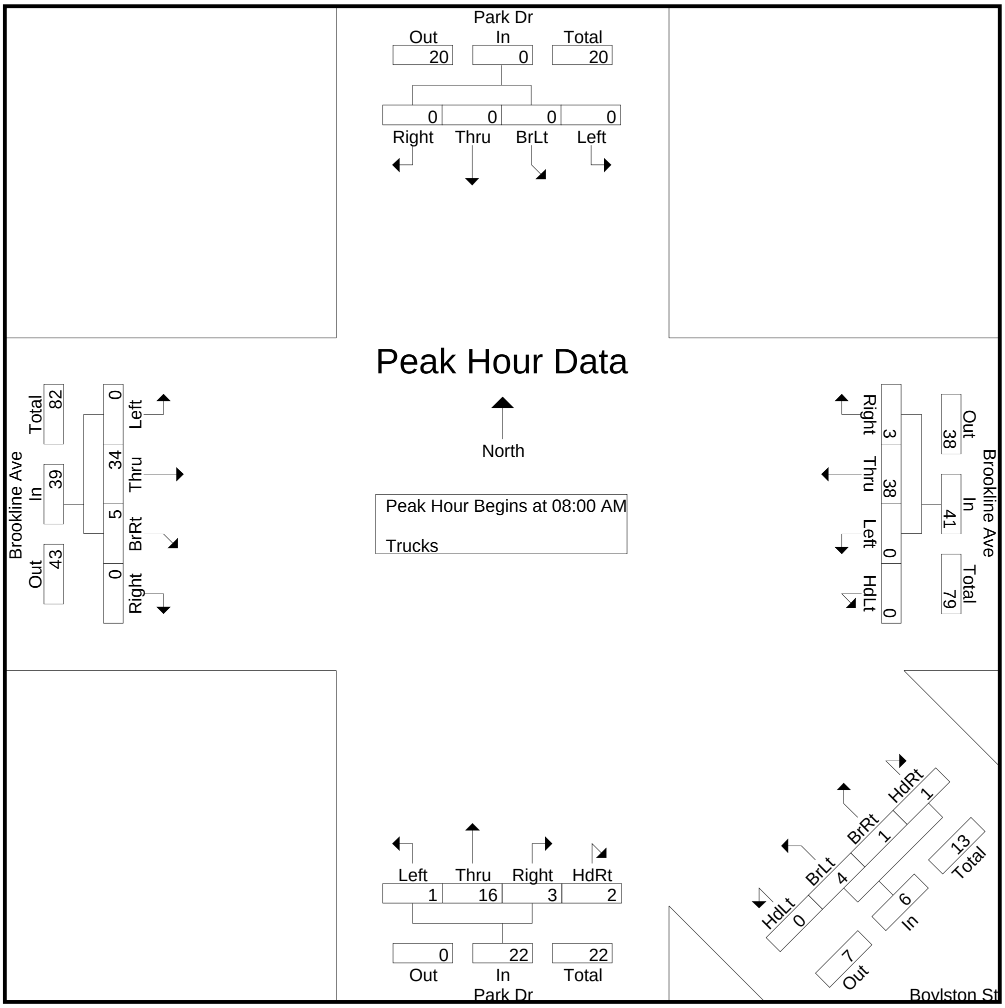
	Park Dr From North				**Brookline Ave From East**				**Boylston St From Southeast**				**Park Dr From South**				**Brookline Ave From West**				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
07:00 AM	0	0	0	0	0	0	10	0	0	2	0	0	0	4	1	2	0	7	2	0	28
07:15 AM	0	0	0	0	0	0	7	1	0	1	0	0	0	3	0	1	0	6	1	0	20
07:30 AM	0	0	0	0	0	0	13	1	0	3	0	0	1	3	0	0	0	4	3	0	28
07:45 AM	0	0	0	0	0	0	8	2	0	1	1	0	1	4	0	0	0	8	2	0	27
Total	0	0	0	0	0	0	38	4	0	7	1	0	2	14	1	3	0	25	8	0	103
08:00 AM	0	0	0	0	0	0	10	0	0	1	1	0	1	4	0	2	0	7	2	0	28
08:15 AM	0	0	0	0	0	0	4	0	0	1	0	0	0	6	1	0	0	6	1	0	19
08:30 AM	0	0	0	0	0	0	10	2	0	1	0	0	0	2	2	0	0	12	1	0	30
08:45 AM	0	0	0	0	0	0	14	1	0	1	0	1	0	4	0	0	0	9	1	0	31
Total	0	0	0	0	0	0	38	3	0	4	1	1	1	16	3	2	0	34	5	0	108
Grand Total	0	0	0	0	0	0	76	7	0	11	2	1	3	30	4	5	0	59	13	0	211
Apprch %	0	0	0	0	0	0	91.6	8.4	0	78.6	14.3	7.1	7.1	71.4	9.5	11.9	0	81.9	18.1	0	
Total %	0	0	0	0	0	0	36	3.3	0	5.2	0.9	0.5	1.4	14.2	1.9	2.4	0	28	6.2	0	

	Park Dr From North					**Brookline Ave From East**					**Boylston St From Southeast**					**Park Dr From South**					**Brookline Ave From West**					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 08:00 AM																										
08:00 AM	0	0	0	0	0	0	0	10	0	10	0	**1**	**1**	0	**2**	**1**	4	0	**2**	**7**	0	7	**2**	0	9	28
08:15 AM	0	0	0	0	0	0	0	4	0	4	0	1	0	0	1	0	**6**	1	0	7	0	6	1	0	7	19
08:30 AM	0	0	0	0	0	0	0	10	**2**	12	0	1	0	0	1	0	2	**2**	0	4	0	**12**	1	0	**13**	30
08:45 AM	0	0	0	0	0	0	0	**14**	1	**15**	0	1	0	**1**	2	0	4	0	0	4	0	9	1	0	10	**31**
Total Volume	0	0	0	0	0	0	0	38	3	41	0	4	1	1	6	1	16	3	2	22	0	34	5	0	39	108
% App. Total	0	0	0	0		0	0	92.7	7.3		0	66.7	16.7	16.7		4.5	72.7	13.6	9.1		0	87.2	12.8	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.679	.375	.683	.000	1.00	.250	.250	.750	.250	.667	.375	.250	.786	.000	.708	.625	.000	.750	.871

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 2



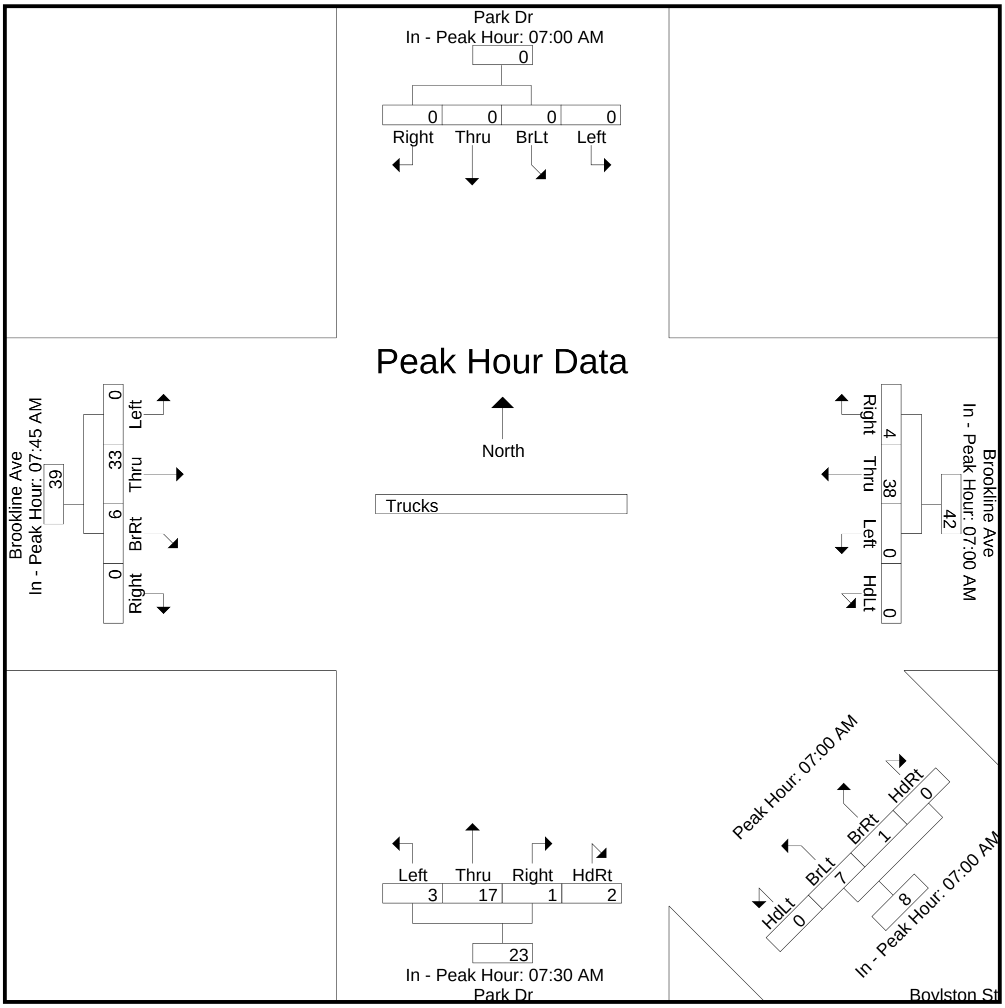
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM					07:00 AM					07:00 AM					07:30 AM					07:45 AM				
+0 mins.	0	0	0	0	0	0	0	10	0	10	0	2	0	0	2	**1**	3	0	0	4	0	8	**2**	0	10
+15 mins.	0	0	0	0	0	0	0	7	1	8	0	1	0	0	1	1	4	0	0	5	0	7	2	0	9
+30 mins.	0	0	0	0	0	0	0	**13**	1	**14**	0	**3**	0	0	**3**	1	4	0	**2**	**7**	0	6	1	0	7
+45 mins.	0	0	0	0	0	0	0	8	**2**	10	0	1	**1**	0	2	0	**6**	**1**	0	7	0	**12**	1	0	**13**
Total Volume	0	0	0	0	0	0	0	38	4	42	0	7	1	0	8	3	17	1	2	23	0	33	6	0	39
% App. Total	0	0	0	0		0	0	90.5	9.5		0	87.5	12.5	0		13	73.9	4.3	8.7		0	84.6	15.4	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.731	.500	.750	.000	.583	.250	.000	.667	.750	.708	.250	.250	.821	.000	.688	.750	.000	.750

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 1

Groups Printed- Bikes Peds

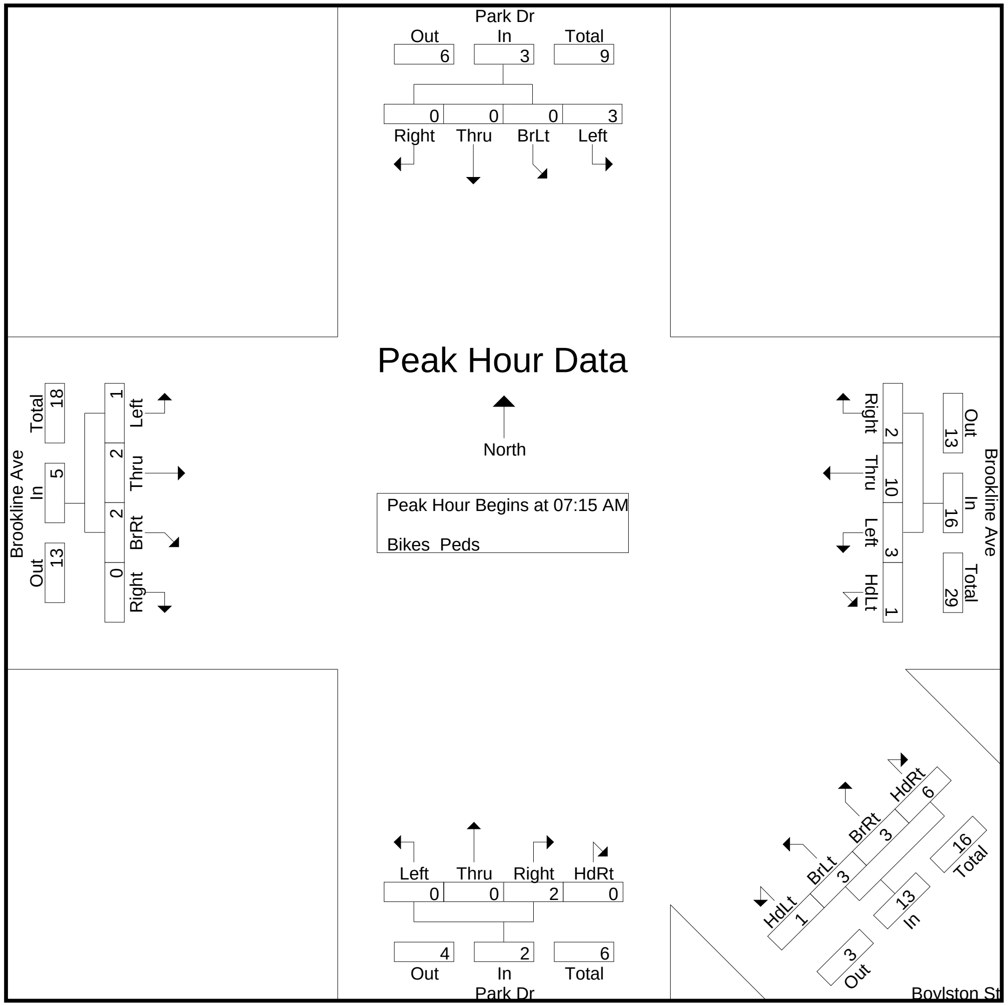
	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West							
Start Time	Left	BrLt	Thru	Right	Peds	HdLt	Left	Thru	Right	Peds	HdLt	BrLt	BrRt	HdRt	Peds	Left	Thru	Right	HdRt	Peds	Left	Thru	BrRt	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	22	0	0	1	0	20	0	0	0	0	32	0	0	0	0	12	0	1	1	0	0	86	3	89
07:15 AM	0	0	0	0	17	1	1	2	0	21	0	1	0	4	48	0	0	1	0	14	1	1	1	0	0	100	13	113
07:30 AM	0	0	0	0	25	0	0	3	1	21	1	2	0	2	42	0	0	1	0	21	0	0	0	0	0	109	10	119
07:45 AM	3	0	0	0	31	0	2	2	0	21	0	0	3	0	57	0	0	0	0	20	0	1	0	0	0	129	11	140
Total	3	0	0	0	95	1	3	8	1	83	1	3	3	6	179	0	0	2	0	67	1	3	2	0	0	424	37	461
08:00 AM	0	0	0	0	33	0	0	3	1	25	0	0	0	0	62	0	0	0	0	31	0	0	1	0	0	151	5	156
08:15 AM	1	1	0	0	28	1	0	2	1	42	0	0	0	1	62	0	0	1	0	32	0	1	0	0	0	164	9	173
08:30 AM	0	0	0	0	13	0	1	1	0	43	1	0	0	1	58	0	3	0	0	20	0	4	0	0	1	135	11	146
08:45 AM	1	0	0	0	27	0	1	1	0	36	0	0	0	0	69	0	0	2	0	36	0	1	0	0	0	168	6	174
Total	2	1	0	0	101	1	2	7	2	146	1	0	0	2	251	0	3	3	0	119	0	6	1	0	1	618	31	649
Grand Total	5	1	0	0	196	2	5	15	3	229	2	3	3	8	430	0	3	5	0	186	1	9	3	0	1	1042	68	1110
Apprch %	83.3	16.7	0	0		8	20	60	12		12.5	18.8	18.8	50		0	37.5	62.5	0		7.7	69.2	23.1	0				
Total %	7.4	1.5	0	0		2.9	7.4	22.1	4.4		2.9	4.4	4.4	11.8		0	4.4	7.4	0		1.5	13.2	4.4	0		93.9	6.1	

	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:15 AM																										
07:15 AM	0	0	0	0	0	**1**	1	2	0	**4**	0	1	0	**4**	**5**	0	0	**1**	0	**1**	**1**	**1**	**1**	0	**3**	**13**
07:30 AM	0	0	0	0	0	0	0	**3**	**1**	4	**1**	**2**	0	2	5	0	0	1	0	1	0	0	0	0	0	10
07:45 AM	**3**	0	0	0	**3**	0	**2**	2	0	4	0	0	**3**	0	3	0	0	0	0	0	0	1	0	0	1	11
08:00 AM	0	0	0	0	0	0	0	3	1	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	5
Total Volume	3	0	0	0	3	1	3	10	2	16	1	3	3	6	13	0	0	2	0	2	1	2	2	0	5	39
% App. Total	100	0	0	0		6.2	18.8	62.5	12.5		7.7	23.1	23.1	46.2		0	0	100	0		20	40	40	0		
PHF	.250	.000	.000	.000	.250	.250	.375	.833	.500	1.00	.250	.375	.250	.375	.650	.000	.000	.500	.000	.500	.250	.500	.500	.000	.417	.750

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 2



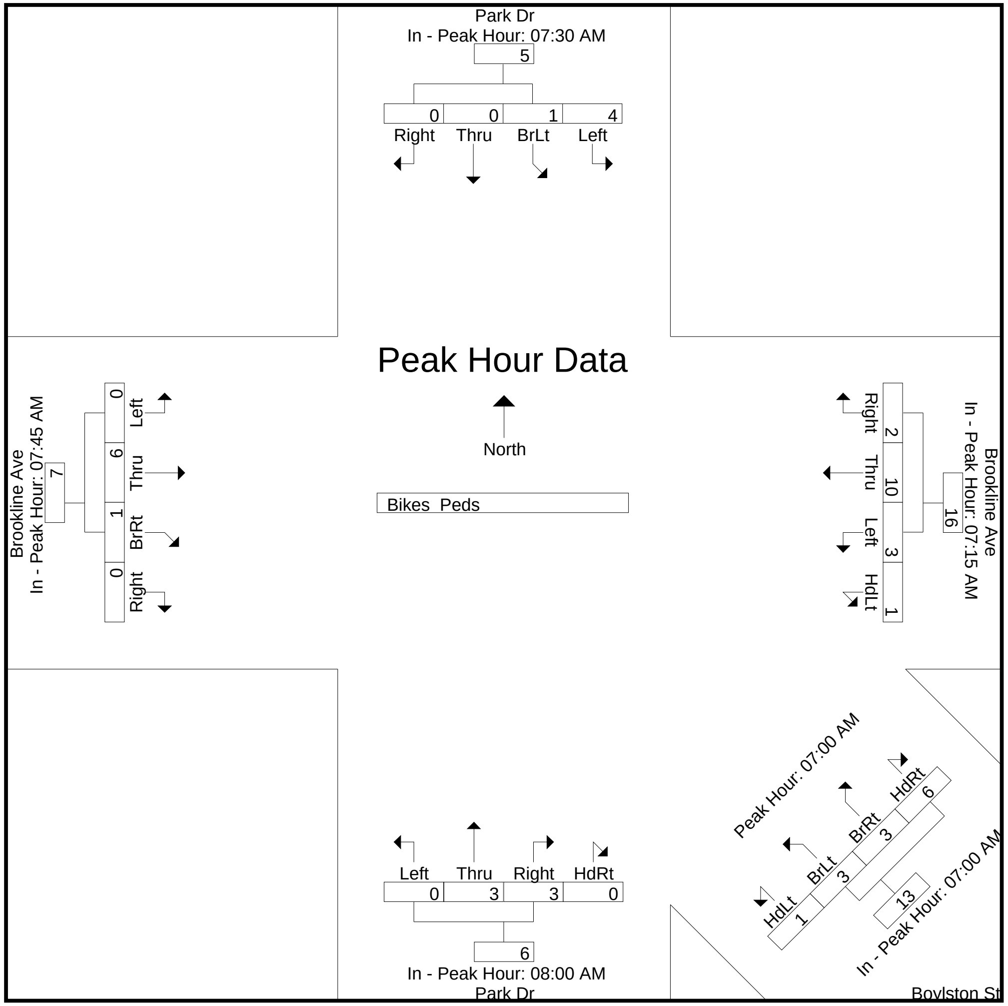
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM					07:15 AM					07:00 AM					08:00 AM					07:45 AM				
+0 mins.	0	0	0	0	0	**1**	1	2	0	**4**	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
+15 mins.	**3**	0	0	0	**3**	0	0	**3**	**1**	4	0	1	0	**4**	**5**	0	0	1	0	1	0	0	**1**	0	1
+30 mins.	0	0	0	0	0	0	**2**	2	0	4	**1**	**2**	0	2	5	0	**3**	0	0	**3**	0	1	0	0	1
+45 mins.	1	**1**	0	0	2	0	0	3	1	4	0	0	**3**	0	3	0	0	**2**	0	2	0	**4**	0	0	**4**
Total Volume	4	1	0	0	5	1	3	10	2	16	1	3	3	6	13	0	3	3	0	6	0	6	1	0	7
% App. Total	80	20	0	0		6.2	18.8	62.5	12.5		7.7	23.1	23.1	46.2		0	50	50	0		0	85.7	14.3	0	
PHF	.333	.250	.000	.000	.417	.250	.375	.833	.500	1.000	.250	.375	.250	.375	.650	.000	.250	.375	.000	.500	.000	.375	.250	.000	.438

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 1

Groups Printed- Cars - Trucks

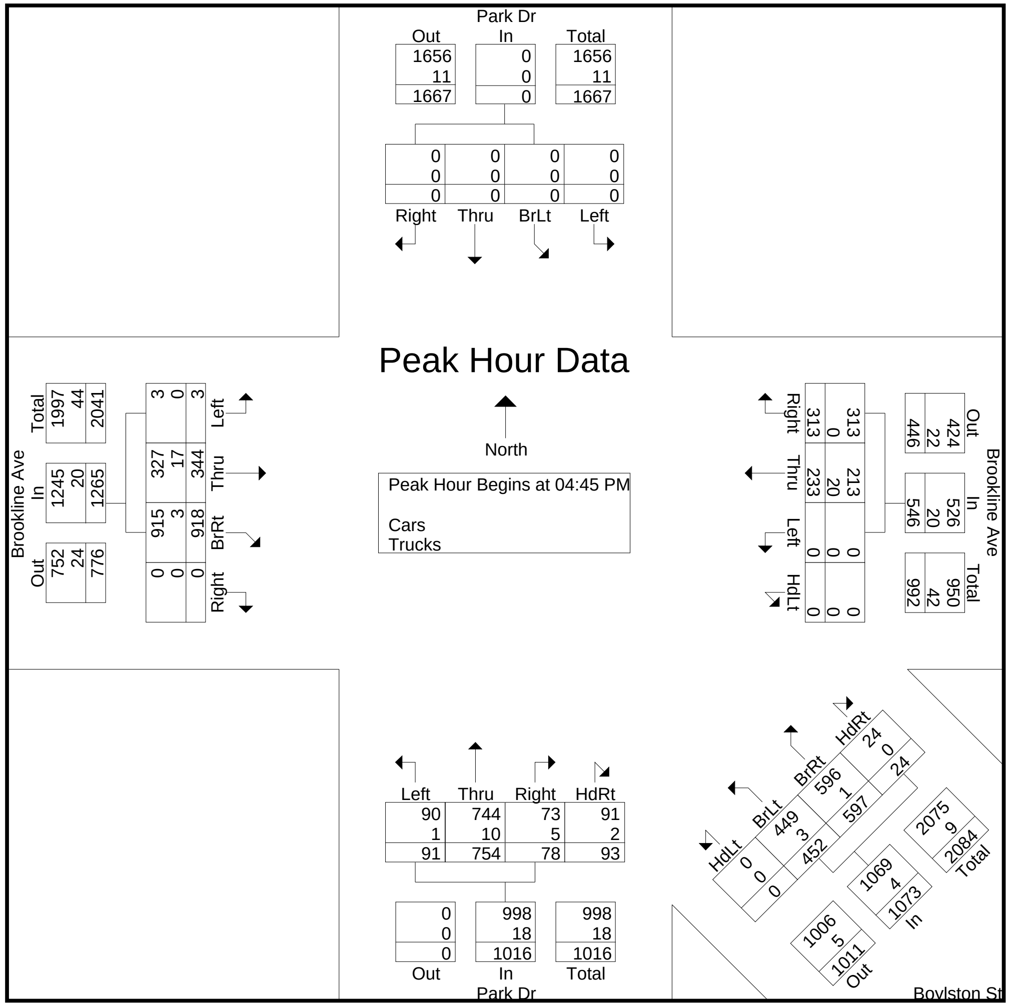
	Park Dr From North				Brookline Ave From East				Boylston St From Southeast				Park Dr From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
04:00 PM	0	0	0	0	0	0	70	73	0	105	132	3	21	179	11	27	2	92	216	0	931
04:15 PM	0	0	0	0	0	0	69	70	0	113	137	2	14	175	18	17	1	102	234	0	952
04:30 PM	0	0	0	0	0	0	77	69	0	100	141	4	12	153	20	20	1	98	230	0	925
04:45 PM	0	0	0	0	0	0	58	74	0	108	137	8	19	217	19	34	1	78	238	0	991
Total	0	0	0	0	0	0	274	286	0	426	547	17	66	724	68	98	5	370	918	0	3799
05:00 PM	0	0	0	0	0	0	51	89	0	103	155	6	28	163	20	18	0	92	203	0	928
05:15 PM	0	0	0	0	0	0	68	76	0	129	158	5	26	178	15	18	1	94	262	0	1030
05:30 PM	0	0	0	0	0	0	56	74	0	112	147	5	18	196	24	23	1	80	215	0	951
05:45 PM	0	0	0	0	0	0	52	78	0	118	125	6	14	180	22	18	1	82	208	0	904
Total	0	0	0	0	0	0	227	317	0	462	585	22	86	717	81	77	3	348	888	0	3813
Grand Total	0	0	0	0	0	0	501	603	0	888	1132	39	152	1441	149	175	8	718	1806	0	7612
Apprch %	0	0	0	0	0	0	45.4	54.6	0	43.1	55	1.9	7.9	75.2	7.8	9.1	0.3	28.4	71.3	0	
Total %	0	0	0	0	0	0	6.6	7.9	0	11.7	14.9	0.5	2	18.9	2	2.3	0.1	9.4	23.7	0	
Cars	0	0	0	0	0	0	458	602	0	881	1129	38	151	1422	143	173	8	676	1800	0	7481
% Cars	0	0	0	0	0	0	91.4	99.8	0	99.2	99.7	97.4	99.3	98.7	96	98.9	100	94.2	99.7	0	98.3
Trucks	0	0	0	0	0	0	43	1	0	7	3	1	1	19	6	2	0	42	6	0	131
% Trucks	0	0	0	0	0	0	8.6	0.2	0	0.8	0.3	2.6	0.7	1.3	4	1.1	0	5.8	0.3	0	1.7

	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:45 PM																										
04:45 PM	0	0	0	0	0	0	0	58	74	132	0	108	137	**8**	253	19	**217**	19	**34**	**289**	**1**	78	238	0	317	991
05:00 PM	0	0	0	0	0	0	0	51	**89**	140	0	103	155	6	264	**28**	163	20	18	229	0	92	203	0	295	928
05:15 PM	0	0	0	0	0	0	0	**68**	76	**144**	0	**129**	**158**	5	**292**	26	178	15	18	237	1	**94**	**262**	0	**357**	**1030**
05:30 PM	0	0	0	0	0	0	0	56	74	130	0	112	147	5	264	18	196	**24**	23	261	1	80	215	0	296	951
Total Volume	0	0	0	0	0	0	0	233	313	546	0	452	597	24	1073	91	754	78	93	1016	3	344	918	0	1265	3900
% App. Total	0	0	0	0		0	0	42.7	57.3		0	42.1	55.6	2.2		9	74.2	7.7	9.2		0.2	27.2	72.6	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.857	.879	.948	.000	.876	.945	.750	.919	.813	.869	.813	.684	.879	.750	.915	.876	.000	.886	.947
Cars	0	0	0	0	0	0	0	213	313	526	0	449	596	24	1069	90	744	73	91	998	3	327	915	0	1245	3838
% Cars	0	0	0	0	0	0	0	91.4	100	96.3	0	99.3	99.8	100	99.6	98.9	98.7	93.6	97.8	98.2	100	95.1	99.7	0	98.4	98.4
Trucks	0	0	0	0	0	0	0	20	0	20	0	3	1	0	4	1	10	5	2	18	0	17	3	0	20	62
% Trucks	0	0	0	0	0	0	0	8.6	0	3.7	0	0.7	0.2	0	0.4	1.1	1.3	6.4	2.2	1.8	0	4.9	0.3	0	1.6	1.6

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

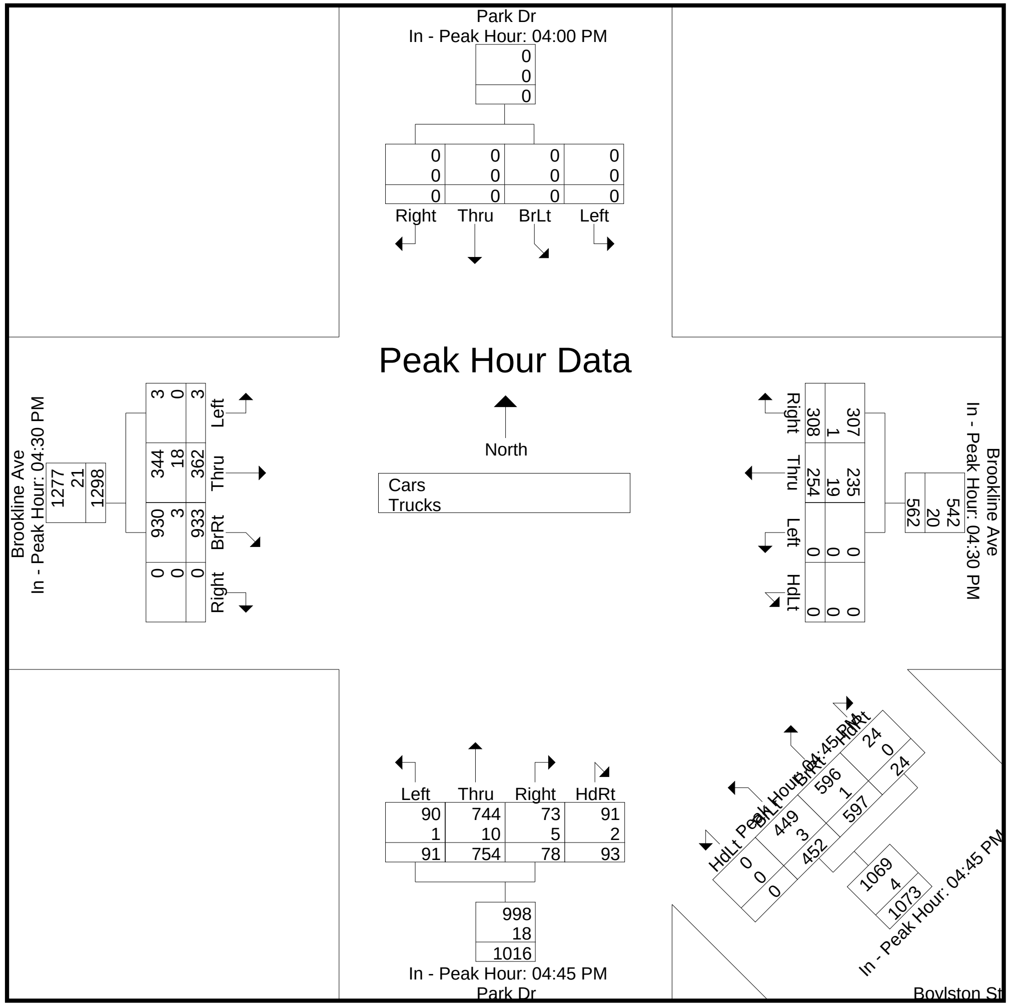
File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM					04:30 PM					04:45 PM					04:45 PM					04:30 PM				
+0 mins.	0	0	0	0	0	0	0	**77**	69	**146**	0	108	137	**8**	253	19	**217**	19	**34**	**289**	**1**	**98**	230	0	329
+15 mins.	0	0	0	0	0	0	0	58	74	132	0	103	155	6	264	**28**	163	20	18	229	1	78	238	0	317
+30 mins.	0	0	0	0	0	0	0	51	**89**	140	0	**129**	**158**	5	**292**	26	178	15	18	237	0	92	203	0	295
+45 mins.	0	0	0	0	0	0	0	68	76	144	0	112	147	5	264	18	196	**24**	23	261	1	94	**262**	0	**357**
Total Volume	0	0	0	0	0	0	0	254	308	562	0	452	597	24	1073	91	754	78	93	1016	3	362	933	0	1298
% App. Total	0	0	0	0		0	0	45.2	54.8		0	42.1	55.6	2.2		9	74.2	7.7	9.2		0.2	27.9	71.9	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.825	.865	.962	.000	.876	.945	.750	.919	.813	.869	.813	.684	.879	.750	.923	.890	.000	.909
Cars	0	0	0	0	0	0	0	235	307	542	0	449	596	24	1069	90	744	73	91	998	3	344	930	0	1277
% Cars	0	0	0	0	0	0	0	92.5	99.7	96.4	0	99.3	99.8	100	99.6	98.9	98.7	93.6	97.8	98.2	100	95	99.7	0	98.4
Trucks	0	0	0	0	0	0	0	19	1	20	0	3	1	0	4	1	10	5	2	18	0	18	3	0	21

Accurate Counts
978-664-2565



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 1

Groups Printed- Cars

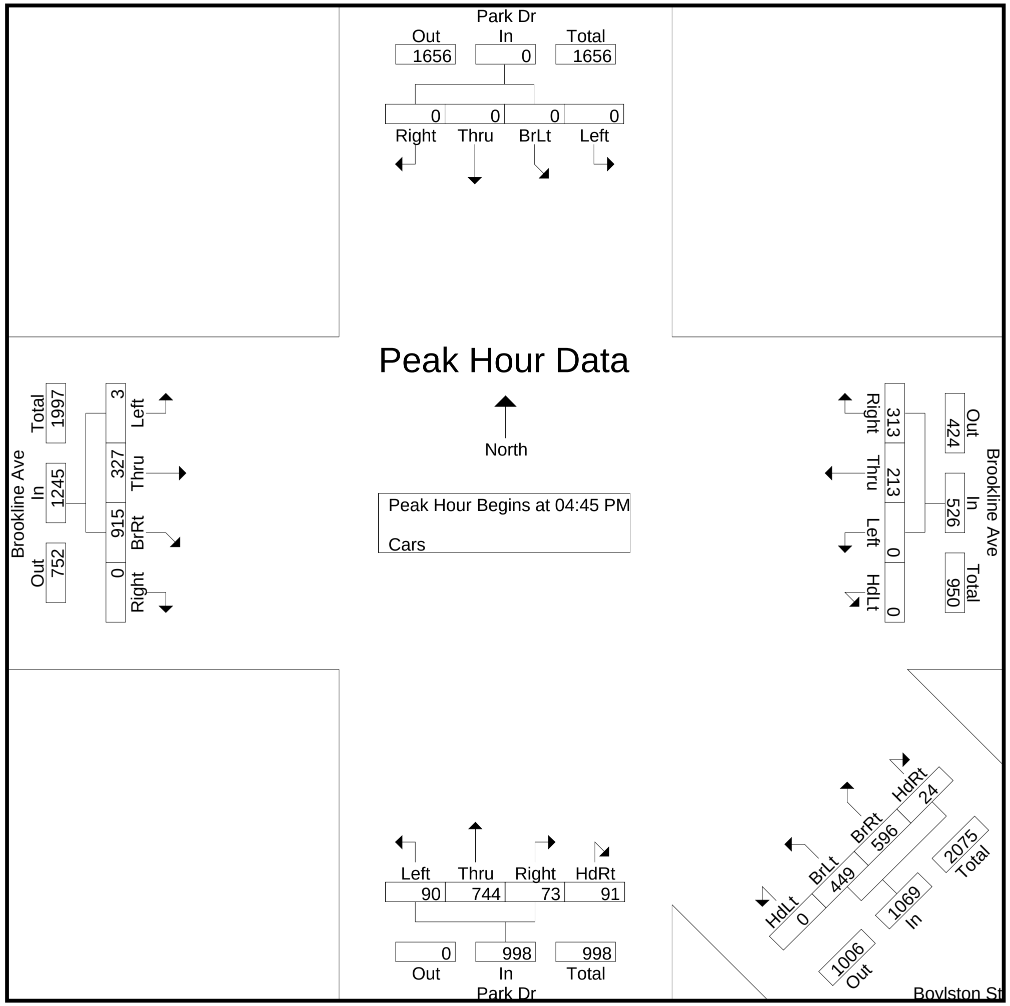
	Park Dr From North				Brookline Ave From East				Boylston St From Southeast				Park Dr From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
04:00 PM	0	0	0	0	0	0	65	73	0	104	131	3	21	177	11	27	2	87	216	0	917
04:15 PM	0	0	0	0	0	0	64	70	0	112	137	2	14	172	18	17	1	94	232	0	933
04:30 PM	0	0	0	0	0	0	71	68	0	100	141	4	12	151	19	20	1	92	230	0	909
04:45 PM	0	0	0	0	0	0	53	74	0	108	137	8	19	215	15	32	1	75	237	0	974
Total	0	0	0	0	0	0	253	285	0	424	546	17	66	715	63	96	5	348	915	0	3733
05:00 PM	0	0	0	0	0	0	45	89	0	102	155	6	28	159	20	18	0	87	202	0	911
05:15 PM	0	0	0	0	0	0	66	76	0	128	157	5	25	176	14	18	1	90	261	0	1017
05:30 PM	0	0	0	0	0	0	49	74	0	111	147	5	18	194	24	23	1	75	215	0	936
05:45 PM	0	0	0	0	0	0	45	78	0	116	124	5	14	178	22	18	1	76	207	0	884
Total	0	0	0	0	0	0	205	317	0	457	583	21	85	707	80	77	3	328	885	0	3748
Grand Total	0	0	0	0	0	0	458	602	0	881	1129	38	151	1422	143	173	8	676	1800	0	7481
Apprch %	0	0	0	0	0	0	43.2	56.8	0	43	55.1	1.9	8	75.3	7.6	9.2	0.3	27.2	72.5	0	
Total %	0	0	0	0	0	0	6.1	8	0	11.8	15.1	0.5	2	19	1.9	2.3	0.1	9	24.1	0	

	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:45 PM																										
04:45 PM	0	0	0	0	0	0	0	53	74	127	0	108	137	**8**	253	19	**215**	15	**32**	**281**	**1**	75	237	0	313	974
05:00 PM	0	0	0	0	0	0	0	45	**89**	134	0	102	155	6	263	**28**	159	20	18	225	0	87	202	0	289	911
05:15 PM	0	0	0	0	0	0	0	**66**	76	**142**	0	**128**	**157**	5	**290**	25	176	14	18	233	1	**90**	**261**	0	**352**	**1017**
05:30 PM	0	0	0	0	0	0	0	49	74	123	0	111	147	5	263	18	194	**24**	23	259	1	75	215	0	291	936
Total Volume	0	0	0	0	0	0	0	213	313	526	0	449	596	24	1069	90	744	73	91	998	3	327	915	0	1245	3838
% App. Total	0	0	0	0		0	0	40.5	59.5		0	42	55.8	2.2		9	74.5	7.3	9.1		0.2	26.3	73.5	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.807	.879	.926	.000	.877	.949	.750	.922	.804	.865	.760	.711	.888	.750	.908	.876	.000	.884	.943

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 2



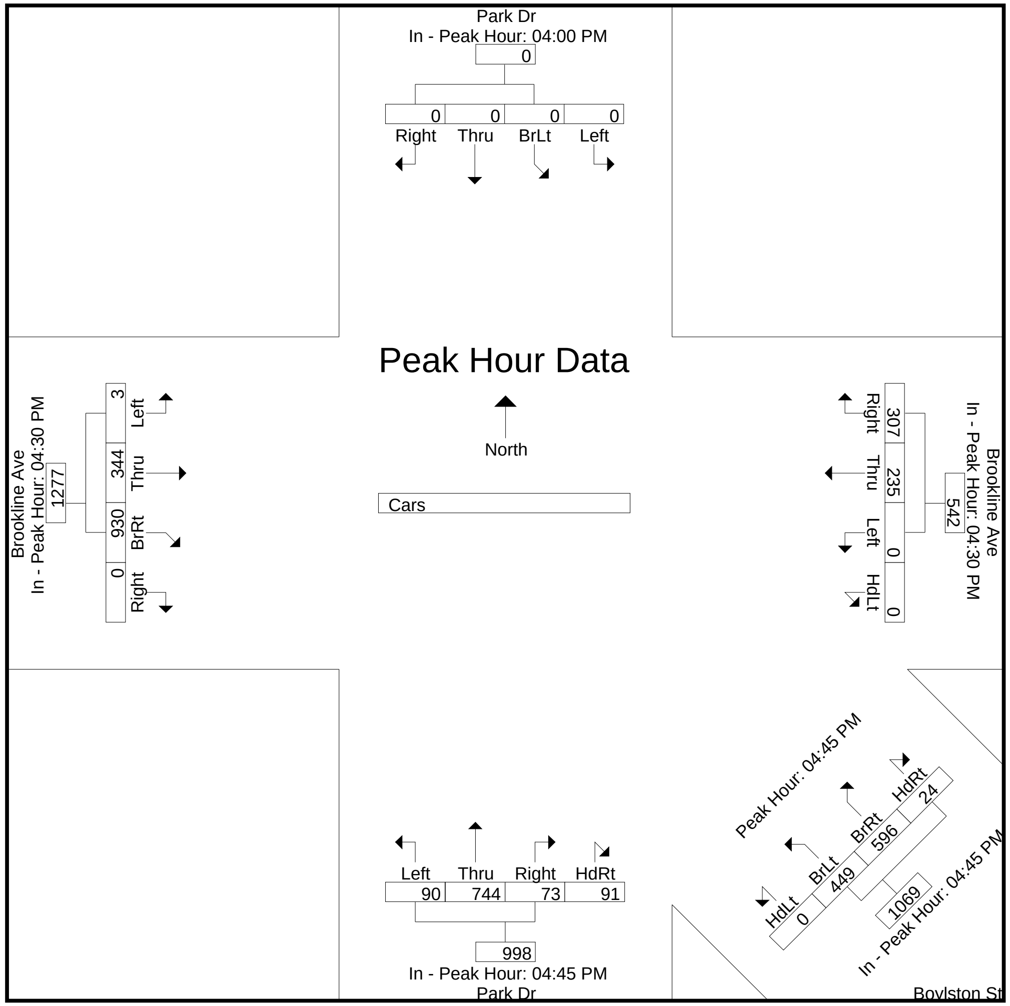
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM					04:30 PM					04:45 PM					04:45 PM					04:30 PM				
+0 mins.	0	0	0	0	0	0	0	**71**	68	139	0	108	137	**8**	253	19	**215**	15	**32**	**281**	**1**	**92**	230	0	323
+15 mins.	0	0	0	0	0	0	0	53	74	127	0	102	155	6	263	**28**	159	20	18	225	1	75	237	0	313
+30 mins.	0	0	0	0	0	0	0	45	**89**	134	0	**128**	**157**	5	**290**	25	176	14	18	233	0	87	202	0	289
+45 mins.	0	0	0	0	0	0	0	66	76	**142**	0	111	147	5	263	18	194	**24**	23	259	1	90	**261**	0	**352**
Total Volume	0	0	0	0	0	0	0	235	307	542	0	449	596	24	1069	90	744	73	91	998	3	344	930	0	1277
% App. Total	0	0	0	0		0	0	43.4	56.6		0	42	55.8	2.2		9	74.5	7.3	9.1		0.2	26.9	72.8	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.827	.862	.954	.000	.877	.949	.750	.922	.804	.865	.760	.711	.888	.750	.935	.891	.000	.907

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 1

Groups Printed- Trucks

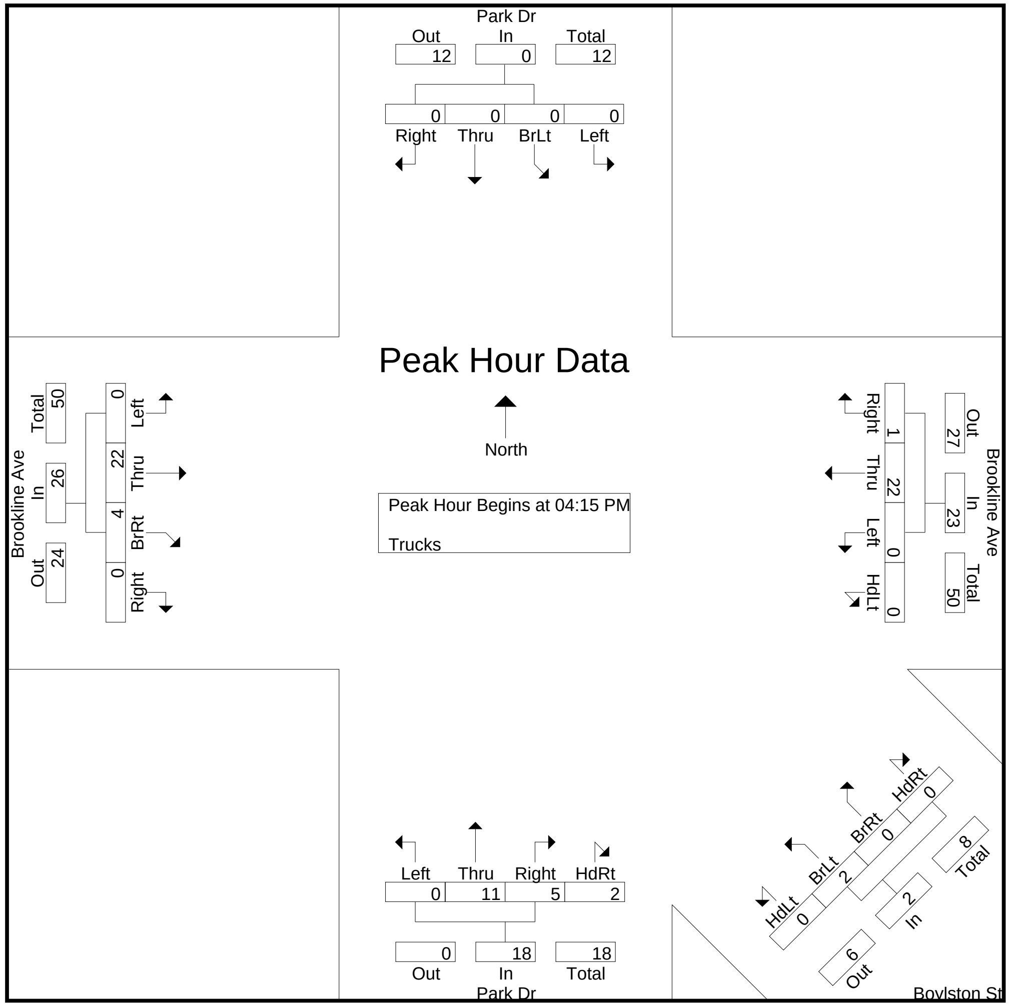
	Park Dr From North				Brookline Ave From East				Boylston St From Southeast				Park Dr From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
04:00 PM	0	0	0	0	0	0	5	0	0	1	1	0	0	2	0	0	0	5	0	0	14
04:15 PM	0	0	0	0	0	0	5	0	0	1	0	0	0	3	0	0	0	8	2	0	19
04:30 PM	0	0	0	0	0	0	6	1	0	0	0	0	0	2	1	0	0	6	0	0	16
04:45 PM	0	0	0	0	0	0	5	0	0	0	0	0	0	2	4	2	0	3	1	0	17
Total	0	0	0	0	0	0	21	1	0	2	1	0	0	9	5	2	0	22	3	0	66
05:00 PM	0	0	0	0	0	0	6	0	0	1	0	0	0	4	0	0	0	5	1	0	17
05:15 PM	0	0	0	0	0	0	2	0	0	1	1	0	1	2	1	0	0	4	1	0	13
05:30 PM	0	0	0	0	0	0	7	0	0	1	0	0	0	2	0	0	0	5	0	0	15
05:45 PM	0	0	0	0	0	0	7	0	0	2	1	1	0	2	0	0	0	6	1	0	20
Total	0	0	0	0	0	0	22	0	0	5	2	1	1	10	1	0	0	20	3	0	65
Grand Total	0	0	0	0	0	0	43	1	0	7	3	1	1	19	6	2	0	42	6	0	131
Apprch %	0	0	0	0	0	0	97.7	2.3	0	63.6	27.3	9.1	3.6	67.9	21.4	7.1	0	87.5	12.5	0	
Total %	0	0	0	0	0	0	32.8	0.8	0	5.3	2.3	0.8	0.8	14.5	4.6	1.5	0	32.1	4.6	0	

	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:15 PM																										
04:15 PM	0	0	0	0	0	0	0	5	0	5	0	**1**	0	0	**1**	0	3	0	0	3	0	**8**	**2**	0	**10**	**19**
04:30 PM	0	0	0	0	0	0	0	**6**	**1**	**7**	0	0	0	0	0	0	2	1	0	3	0	6	0	0	6	16
04:45 PM	0	0	0	0	0	0	0	5	0	5	0	0	0	0	0	0	2	**4**	**2**	**8**	0	3	1	0	4	17
05:00 PM	0	0	0	0	0	0	0	6	0	6	0	1	0	0	1	0	**4**	0	0	4	0	5	1	0	6	17
Total Volume	0	0	0	0	0	0	0	22	1	23	0	2	0	0	2	0	11	5	2	18	0	22	4	0	26	69
% App. Total	0	0	0	0		0	0	95.7	4.3		0	100	0	0		0	61.1	27.8	11.1		0	84.6	15.4	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.917	.250	.821	.000	.500	.000	.000	.500	.000	.688	.313	.250	.563	.000	.688	.500	.000	.650	.908

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 2



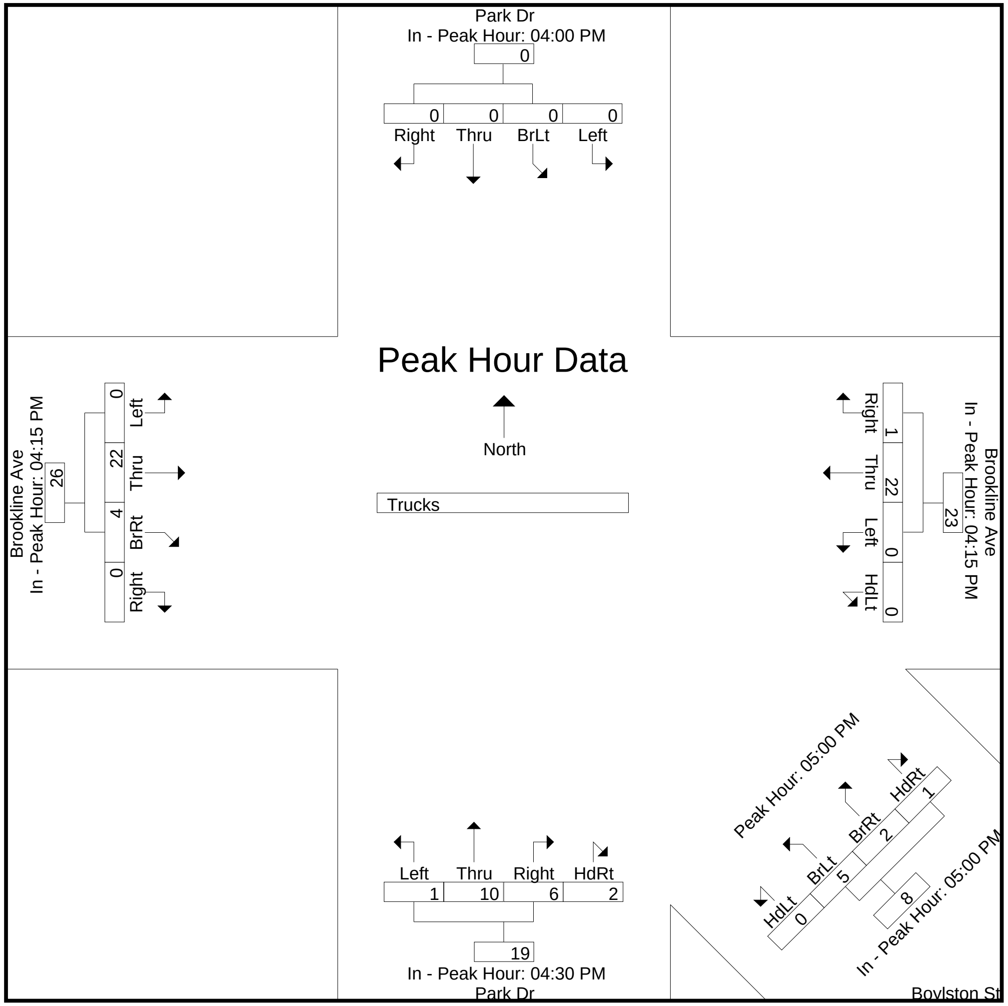
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM					04:15 PM					05:00 PM					04:30 PM					04:15 PM				
+0 mins.	0	0	0	0	0	0	0	5	0	5	0	1	0	0	1	0	2	1	0	3	0	**8**	**2**	0	**10**
+15 mins.	0	0	0	0	0	0	0	**6**	**1**	**7**	0	1	**1**	0	2	0	2	**4**	**2**	**8**	0	6	0	0	6
+30 mins.	0	0	0	0	0	0	0	5	0	5	0	1	0	0	1	0	**4**	0	0	4	0	3	1	0	4
+45 mins.	0	0	0	0	0	0	0	6	0	6	0	**2**	1	**1**	**4**	**1**	2	1	0	4	0	5	1	0	6
Total Volume	0	0	0	0	0	0	0	22	1	23	0	5	2	1	8	1	10	6	2	19	0	22	4	0	26
% App. Total	0	0	0	0		0	0	95.7	4.3		0	62.5	25	12.5		5.3	52.6	31.6	10.5		0	84.6	15.4	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.917	.250	.821	.000	.625	.500	.250	.500	.250	.625	.375	.250	.594	.000	.688	.500	.000	.650

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 1

Groups Printed- Bikes Peds

	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West							
Start Time	Left	BrLt	Thru	Right	Peds	HdLt	Left	Thru	Right	Peds	HdLt	BrLt	BrRt	HdRt	Peds	Left	Thru	Right	HdRt	Peds	Left	Thru	BrRt	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	1	0	0	54	0	0	1	0	27	0	0	0	0	64	0	2	0	0	26	0	1	1	0	1	172	6	178
04:15 PM	1	1	0	0	73	3	0	2	0	46	1	0	2	2	84	0	3	0	0	37	0	2	0	0	0	240	17	257
04:30 PM	0	0	0	0	39	0	2	0	0	56	1	0	0	1	97	0	0	0	0	48	0	1	2	0	2	242	7	249
04:45 PM	2	0	0	0	35	0	1	3	0	34	0	0	0	3	71	0	5	1	0	49	0	1	1	0	0	189	17	206
Total	3	2	0	0	201	3	3	6	0	163	2	0	2	6	316	0	10	1	0	160	0	5	4	0	3	843	47	890
05:00 PM	1	0	0	0	89	1	2	1	1	49	0	0	1	2	114	0	7	3	0	51	0	2	1	0	2	305	22	327
05:15 PM	0	0	0	0	40	1	2	2	0	38	0	0	1	0	96	0	6	4	0	50	1	5	3	0	0	224	25	249
05:30 PM	1	2	0	0	50	0	2	6	0	59	0	0	0	0	89	0	7	1	0	40	0	0	2	0	0	238	21	259
05:45 PM	1	1	0	0	32	0	0	1	1	53	1	0	1	5	97	0	2	2	2	56	2	1	0	0	0	238	20	258
Total	3	3	0	0	211	2	6	10	2	199	1	0	3	7	396	0	22	10	2	197	3	8	6	0	2	1005	88	1093
Grand Total	6	5	0	0	412	5	9	16	2	362	3	0	5	13	712	0	32	11	2	357	3	13	10	0	5	1848	135	1983
Apprch %	54.5	45.5	0	0		15.6	28.1	50	6.2		14.3	0	23.8	61.9		0	71.1	24.4	4.4		11.5	50	38.5	0				
Total %	4.4	3.7	0	0		3.7	6.7	11.9	1.5		2.2	0	3.7	9.6		0	23.7	8.1	1.5		2.2	9.6	7.4	0		93.2	6.8	

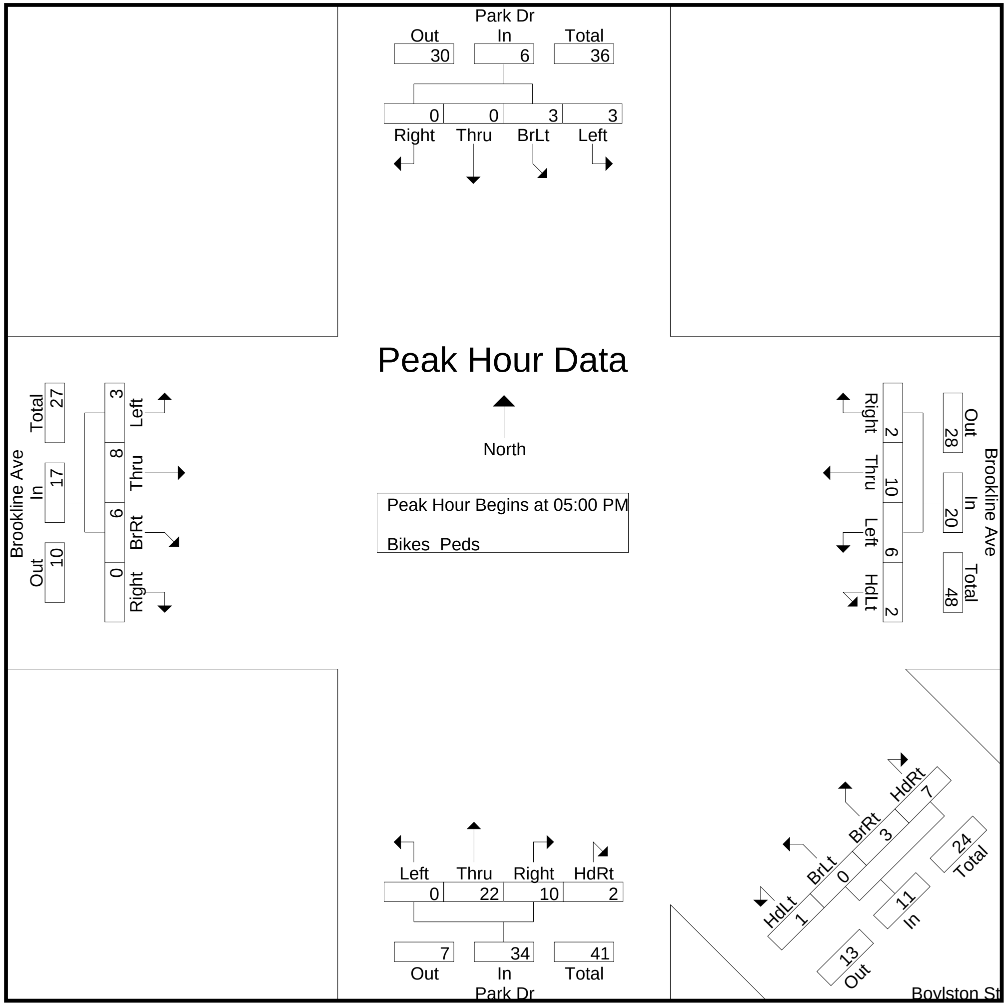
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 05:00 PM

	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
05:00 PM	**1**	0	0	0	1	**1**	**2**	1	**1**	5	0	0	**1**	2	3	0	**7**	3	0	**10**	0	2	1	0	3	22
05:15 PM	0	0	0	0	0	1	2	2	0	5	0	0	1	0	1	0	6	**4**	0	10	1	**5**	**3**	0	**9**	**25**
05:30 PM	1	**2**	0	0	**3**	0	2	**6**	0	**8**	0	0	0	0	0	0	7	1	0	8	0	0	2	0	2	21
05:45 PM	1	1	0	0	2	0	0	1	1	2	**1**	0	1	**5**	**7**	0	2	2	**2**	6	**2**	1	0	0	3	20
Total Volume	3	3	0	0	6	2	6	10	2	20	1	0	3	7	11	0	22	10	2	34	3	8	6	0	17	88
% App. Total	50	50	0	0		10	30	50	10		9.1	0	27.3	63.6		0	64.7	29.4	5.9		17.6	47.1	35.3	0		
PHF	.750	.375	.000	.000	.500	.500	.750	.417	.500	.625	.250	.000	.750	.350	.393	.000	.786	.625	.250	.850	.375	.400	.500	.000	.472	.880

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 2



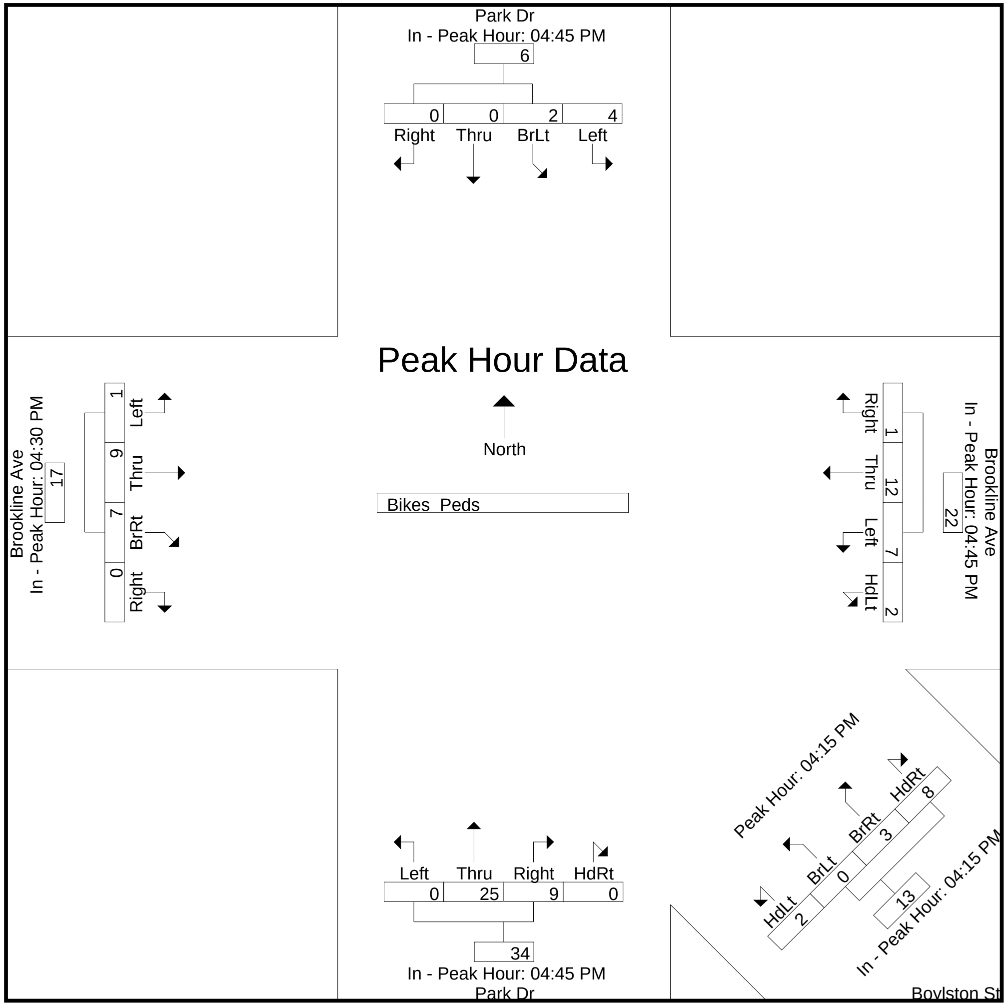
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM					04:45 PM					04:15 PM					04:45 PM					04:30 PM				
+0 mins.	**2**	0	0	0	2	0	1	3	0	4	**1**	0	**2**	2	**5**	0	5	1	0	6	0	1	2	0	3
+15 mins.	1	0	0	0	1	**1**	**2**	1	**1**	5	1	0	0	1	2	0	**7**	3	0	**10**	0	1	1	0	2
+30 mins.	0	0	0	0	0	1	2	2	0	5	0	0	0	**3**	3	0	6	**4**	0	10	0	2	1	0	3
+45 mins.	1	**2**	0	0	**3**	0	2	**6**	0	**8**	0	0	1	2	3	0	7	1	0	8	**1**	**5**	**3**	0	**9**
Total Volume	4	2	0	0	6	2	7	12	1	22	2	0	3	8	13	0	25	9	0	34	1	9	7	0	17
% App. Total	66.7	33.3	0	0		9.1	31.8	54.5	4.5		15.4	0	23.1	61.5		0	73.5	26.5	0		5.9	52.9	41.2	0	
PHF	.500	.250	.000	.000	.500	.500	.875	.500	.250	.688	.500	.000	.375	.667	.650	.000	.893	.563	.000	.850	.250	.450	.583	.000	.472

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

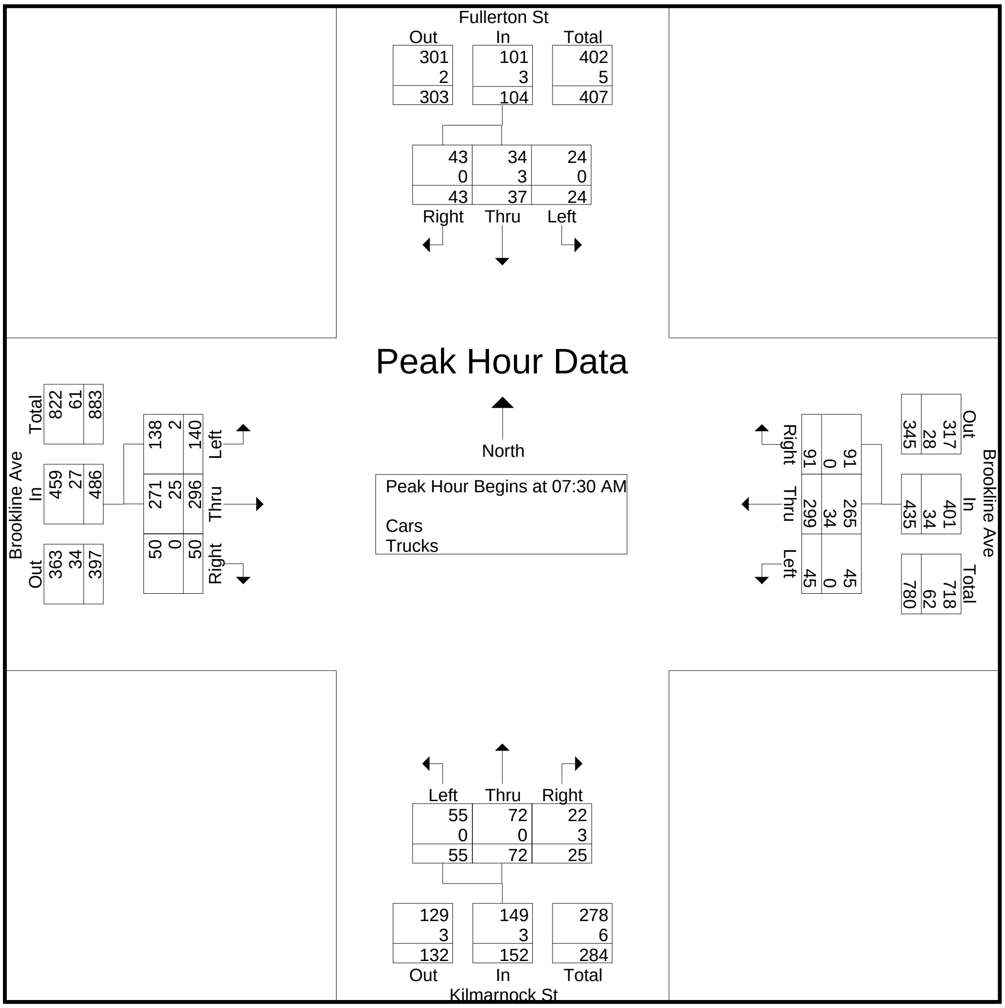
	Fullerton St From North			**Brookline Ave From East**			**Kilmarnock St From South**			**Brookline Ave From West**			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	2	6	2	6	69	26	1	15	8	25	66	7	233
07:15 AM	3	7	11	7	72	20	9	21	3	41	57	6	257
07:30 AM	5	8	6	13	77	22	10	23	8	38	60	10	280
07:45 AM	4	10	8	14	77	16	14	16	3	36	89	12	299
Total	14	31	27	40	295	84	34	75	22	140	272	35	1069
08:00 AM	5	8	13	8	60	24	19	13	7	28	66	5	256
08:15 AM	10	11	16	10	85	29	12	20	7	38	81	23	342
08:30 AM	2	8	16	13	59	14	8	12	2	32	47	6	219
08:45 AM	9	14	11	8	71	20	6	19	3	43	57	8	269
Total	26	41	56	39	275	87	45	64	19	141	251	42	1086
Grand Total	40	72	83	79	570	171	79	139	41	281	523	77	2155
Apprch %	20.5	36.9	42.6	9.6	69.5	20.9	30.5	53.7	15.8	31.9	59.4	8.7	
Total %	1.9	3.3	3.9	3.7	26.5	7.9	3.7	6.5	1.9	13	24.3	3.6	
Cars	40	68	80	78	492	168	78	138	37	279	472	77	2007
% Cars	100	94.4	96.4	98.7	86.3	98.2	98.7	99.3	90.2	99.3	90.2	100	93.1
Trucks	0	4	3	1	78	3	1	1	4	2	51	0	148
% Trucks	0	5.6	3.6	1.3	13.7	1.8	1.3	0.7	9.8	0.7	9.8	0	6.9

	Fullerton St From North				**Brookline Ave From East**				**Kilmarnock St From South**				**Brookline Ave From West**				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	5	8	6	19	13	77	22	112	10	**23**	**8**	**41**	**38**	60	10	108	280
07:45 AM	4	10	8	22	**14**	77	16	107	14	16	3	33	36	**89**	12	137	299
08:00 AM	5	8	13	26	8	60	24	92	**19**	13	7	39	28	66	5	99	256
08:15 AM	**10**	**11**	**16**	**37**	10	**85**	**29**	**124**	12	20	7	39	38	81	**23**	**142**	**342**
Total Volume	24	37	43	104	45	299	91	435	55	72	25	152	140	296	50	486	1177
% App. Total	23.1	35.6	41.3		10.3	68.7	20.9		36.2	47.4	16.4		28.8	60.9	10.3		
PHF	.600	.841	.672	.703	.804	.879	.784	.877	.724	.783	.781	.927	.921	.831	.543	.856	.860
Cars	24	34	43	101	45	265	91	401	55	72	22	149	138	271	50	459	1110
% Cars	100	91.9	100	97.1	100	88.6	100	92.2	100	100	88.0	98.0	98.6	91.6	100	94.4	94.3
Trucks	0	3	0	3	0	34	0	34	0	0	3	3	2	25	0	27	67
% Trucks	0	8.1	0	2.9	0	11.4	0	7.8	0	0	12.0	2.0	1.4	8.4	0	5.6	5.7

Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 2



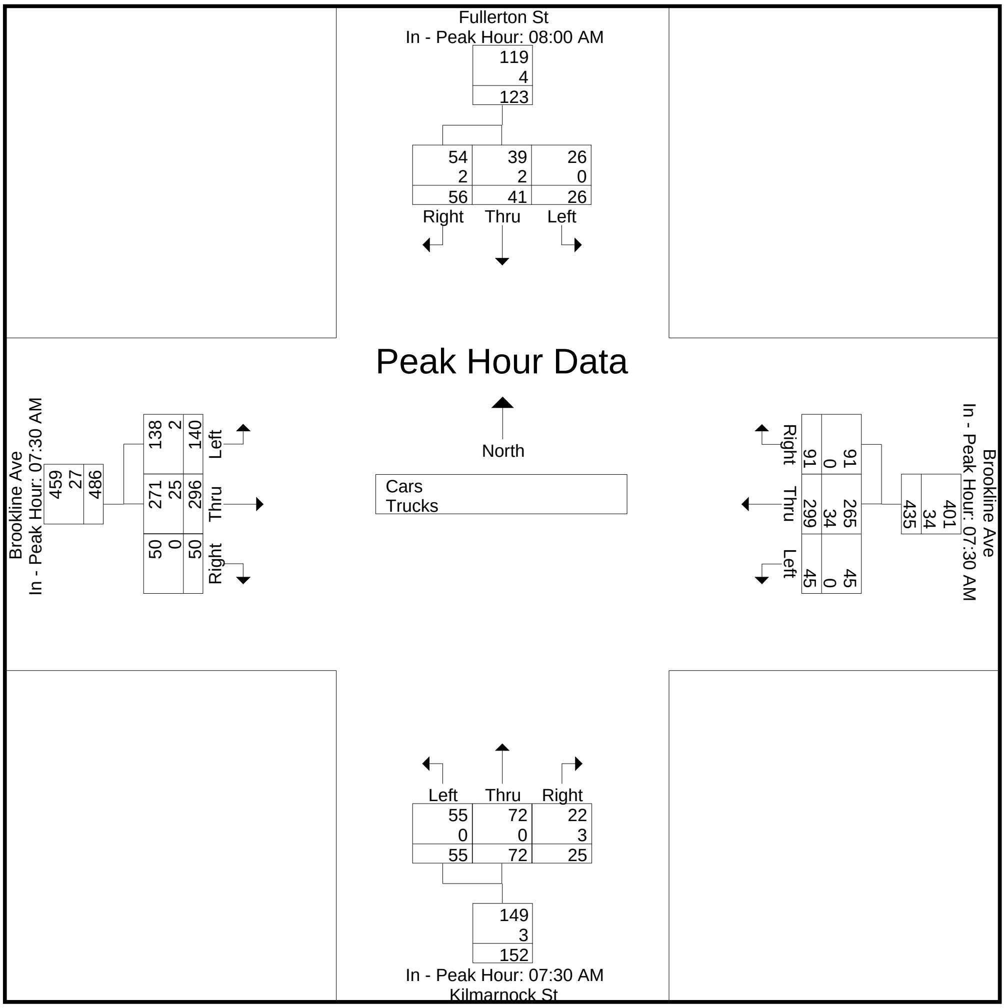
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	5	8	13	26	13	77	22	112	10	**23**	**8**	**41**	**38**	60	10	108
+15 mins.	**10**	11	**16**	**37**	**14**	77	16	107	14	16	3	33	36	**89**	12	137
+30 mins.	2	8	16	26	8	60	24	92	**19**	13	7	39	28	66	5	99
+45 mins.	9	**14**	11	34	10	**85**	**29**	**124**	12	20	7	39	38	81	**23**	**142**
Total Volume	26	41	56	123	45	299	91	435	55	72	25	152	140	296	50	486
% App. Total	21.1	33.3	45.5		10.3	68.7	20.9		36.2	47.4	16.4		28.8	60.9	10.3	
PHF	.650	.732	.875	.831	.804	.879	.784	.877	.724	.783	.781	.927	.921	.831	.543	.856
Cars	26	39	54	119	45	265	91	401	55	72	22	149	138	271	50	459
% Cars	100	95.1	96.4	96.7	100	88.6	100	92.2	100	100	88	98	98.6	91.6	100	94.4
Trucks	0	2	2	4	0	34	0	34	0	0	3	3	2	25	0	27
% Trucks	0	4.9	3.6	3.3	0	11.4	0	7.8	0	0	12	2	1.4	8.4	0	5.6

Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars

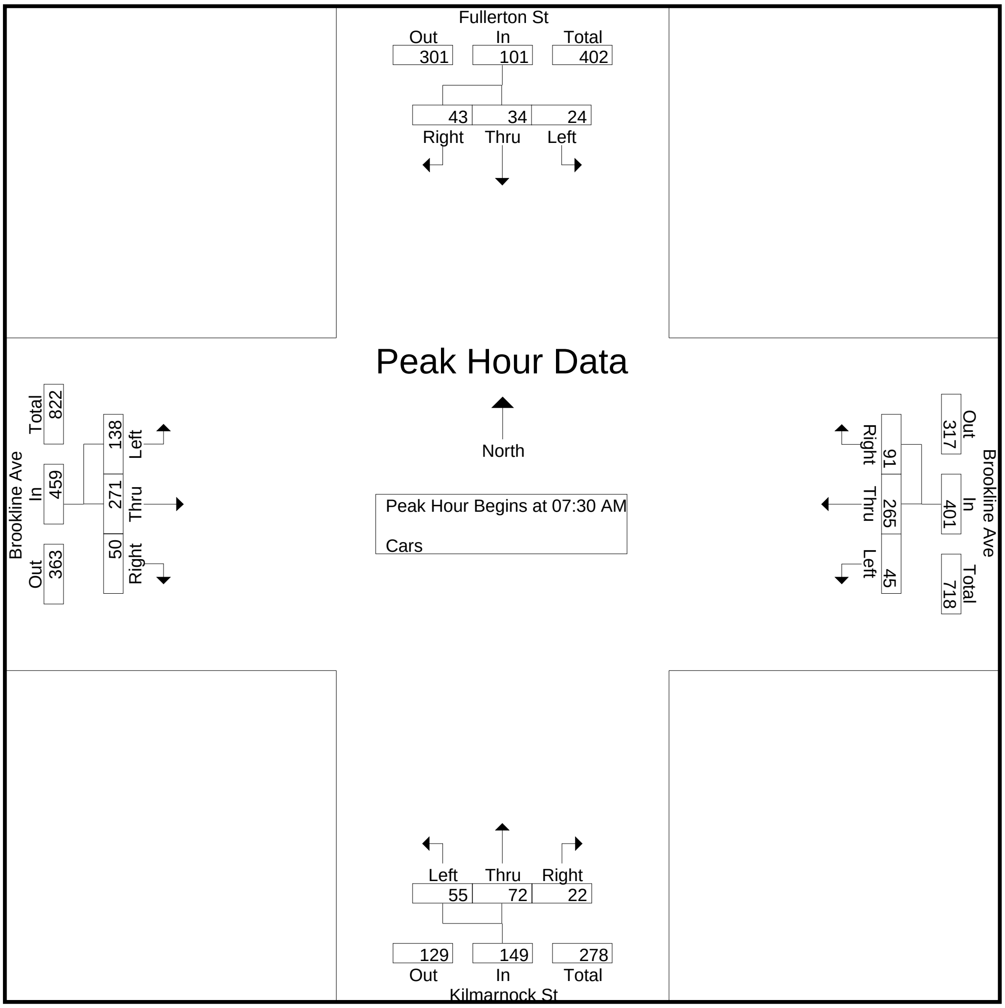
	Fullerton St From North			**Brookline Ave From East**			**Kilmarnock St From South**			**Brookline Ave From West**			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	2	6	2	6	58	24	1	14	8	25	59	7	212
07:15 AM	3	6	10	7	63	20	9	21	3	41	50	6	239
07:30 AM	5	7	6	13	68	22	10	23	6	38	56	10	264
07:45 AM	4	10	8	14	68	16	14	16	3	36	80	12	281
Total	14	29	26	40	257	82	34	74	20	140	245	35	996
08:00 AM	5	7	13	8	52	24	19	13	6	27	59	5	238
08:15 AM	10	10	16	10	77	29	12	20	7	37	76	23	327
08:30 AM	2	8	15	13	46	14	8	12	1	32	41	6	198
08:45 AM	9	14	10	7	60	19	5	19	3	43	51	8	248
Total	26	39	54	38	235	86	44	64	17	139	227	42	1011
Grand Total	40	68	80	78	492	168	78	138	37	279	472	77	2007
Apprch %	21.3	36.2	42.6	10.6	66.7	22.8	30.8	54.5	14.6	33.7	57	9.3	
Total %	2	3.4	4	3.9	24.5	8.4	3.9	6.9	1.8	13.9	23.5	3.8	

	Fullerton St From North				**Brookline Ave From East**				**Kilmarnock St From South**				**Brookline Ave From West**				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	5	7	6	18	13	68	22	103	10	**23**	6	**39**	**38**	56	10	104	264
07:45 AM	4	**10**	8	22	**14**	68	16	98	14	16	3	33	36	**80**	12	128	281
08:00 AM	5	7	13	25	8	52	24	84	**19**	13	6	38	27	59	5	91	238
08:15 AM	**10**	10	**16**	**36**	10	**77**	**29**	**116**	12	20	**7**	39	37	76	**23**	**136**	**327**
Total Volume	24	34	43	101	45	265	91	401	55	72	22	149	138	271	50	459	1110
% App. Total	23.8	33.7	42.6		11.2	66.1	22.7		36.9	48.3	14.8		30.1	59	10.9		
PHF	.600	.850	.672	.701	.804	.860	.784	.864	.724	.783	.786	.955	.908	.847	.543	.844	.849

Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012



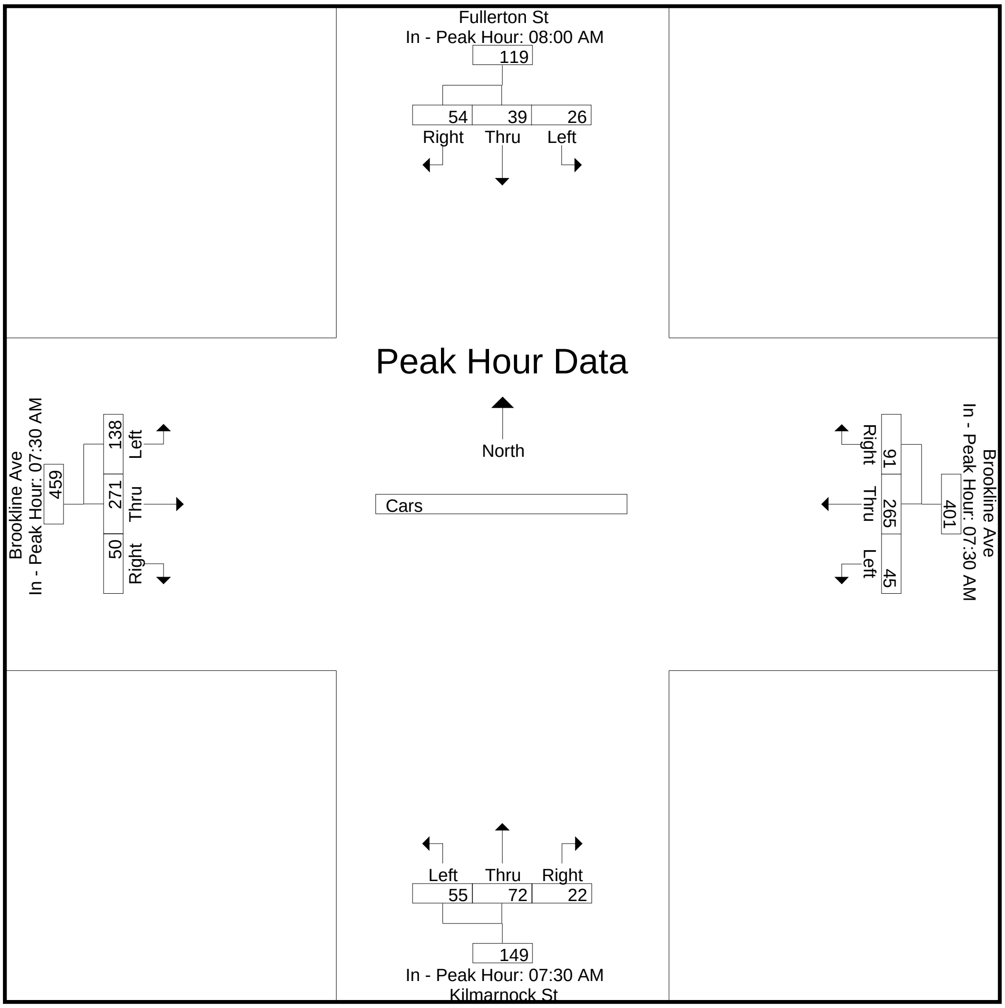
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	5	7	13	25	13	68	22	103	10	**23**	6	**39**	**38**	56	10	104
+15 mins.	**10**	10	**16**	**36**	**14**	68	16	98	14	16	3	33	36	**80**	12	128
+30 mins.	2	8	15	25	8	52	24	84	**19**	13	6	38	27	59	5	91
+45 mins.	9	**14**	10	33	10	**77**	**29**	**116**	12	20	**7**	39	37	76	**23**	**136**
Total Volume	26	39	54	119	45	265	91	401	55	72	22	149	138	271	50	459
% App. Total	21.8	32.8	45.4		11.2	66.1	22.7		36.9	48.3	14.8		30.1	59	10.9	
PHF	.650	.696	.844	.826	.804	.860	.784	.864	.724	.783	.786	.955	.908	.847	.543	.844

Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 1

Groups Printed- Trucks

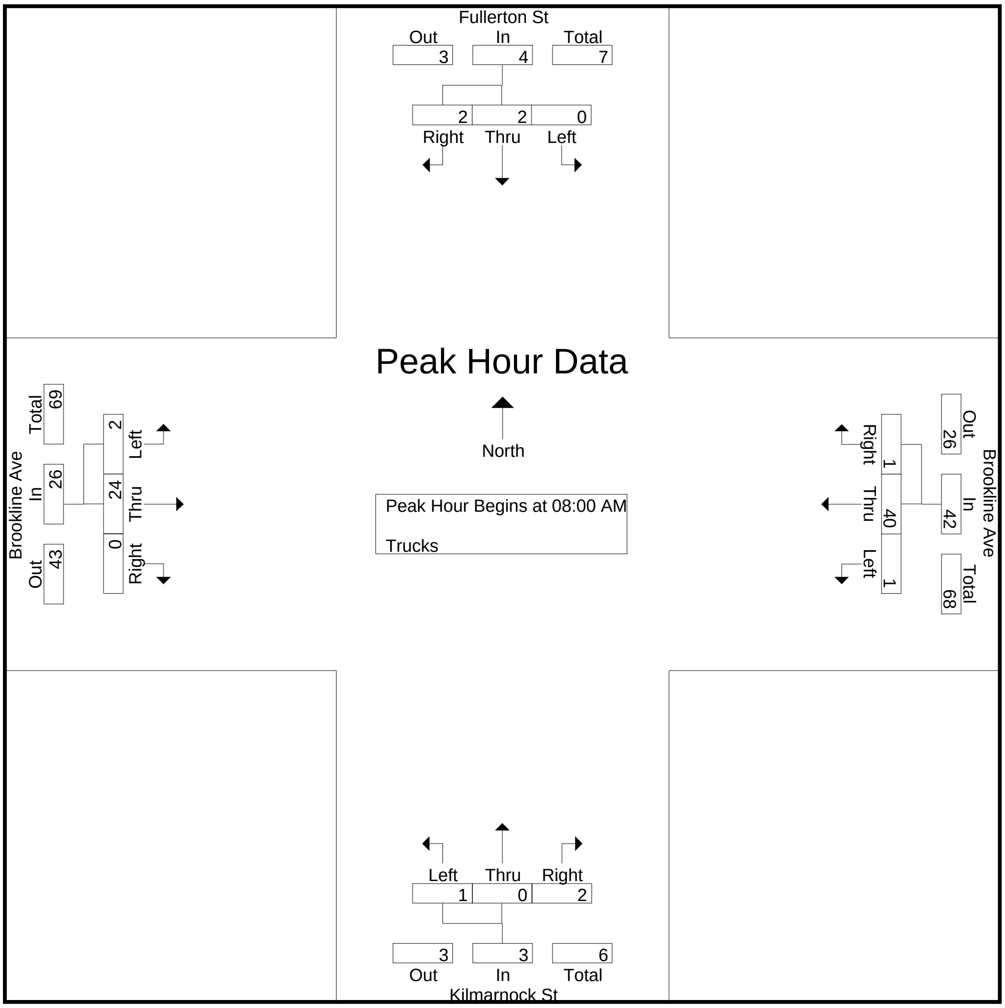
	Fullerton St From North			Brookline Ave From East			Kilmarnock St From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	0	11	2	0	1	0	0	7	0	21
07:15 AM	0	1	1	0	9	0	0	0	0	0	7	0	18
07:30 AM	0	1	0	0	9	0	0	0	2	0	4	0	16
07:45 AM	0	0	0	0	9	0	0	0	0	0	9	0	18
Total	0	2	1	0	38	2	0	1	2	0	27	0	73
08:00 AM	0	1	0	0	8	0	0	0	1	1	7	0	18
08:15 AM	0	1	0	0	8	0	0	0	0	1	5	0	15
08:30 AM	0	0	1	0	13	0	0	0	1	0	6	0	21
08:45 AM	0	0	1	1	11	1	1	0	0	0	6	0	21
Total	0	2	2	1	40	1	1	0	2	2	24	0	75
Grand Total	0	4	3	1	78	3	1	1	4	2	51	0	148
Apprch %	0	57.1	42.9	1.2	95.1	3.7	16.7	16.7	66.7	3.8	96.2	0	
Total %	0	2.7	2	0.7	52.7	2	0.7	0.7	2.7	1.4	34.5	0	

	Fullerton St From North				Brookline Ave From East				Kilmarnock St From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	**1**	0	**1**	0	8	0	8	0	0	**1**	**1**	**1**	**7**	0	**8**	18
08:15 AM	0	1	0	1	0	8	0	8	0	0	0	0	1	5	0	6	15
08:30 AM	0	0	**1**	1	0	**13**	0	**13**	0	0	1	1	0	6	0	6	**21**
08:45 AM	0	0	1	1	**1**	11	**1**	13	**1**	0	0	1	0	6	0	6	21
Total Volume	0	2	2	4	1	40	1	42	1	0	2	3	2	24	0	26	75
% App. Total	0	50	50		2.4	95.2	2.4		33.3	0	66.7		7.7	92.3	0		
PHF	.000	.500	.500	1.00	.250	.769	.250	.808	.250	.000	.500	.750	.500	.857	.000	.813	.893

Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 2



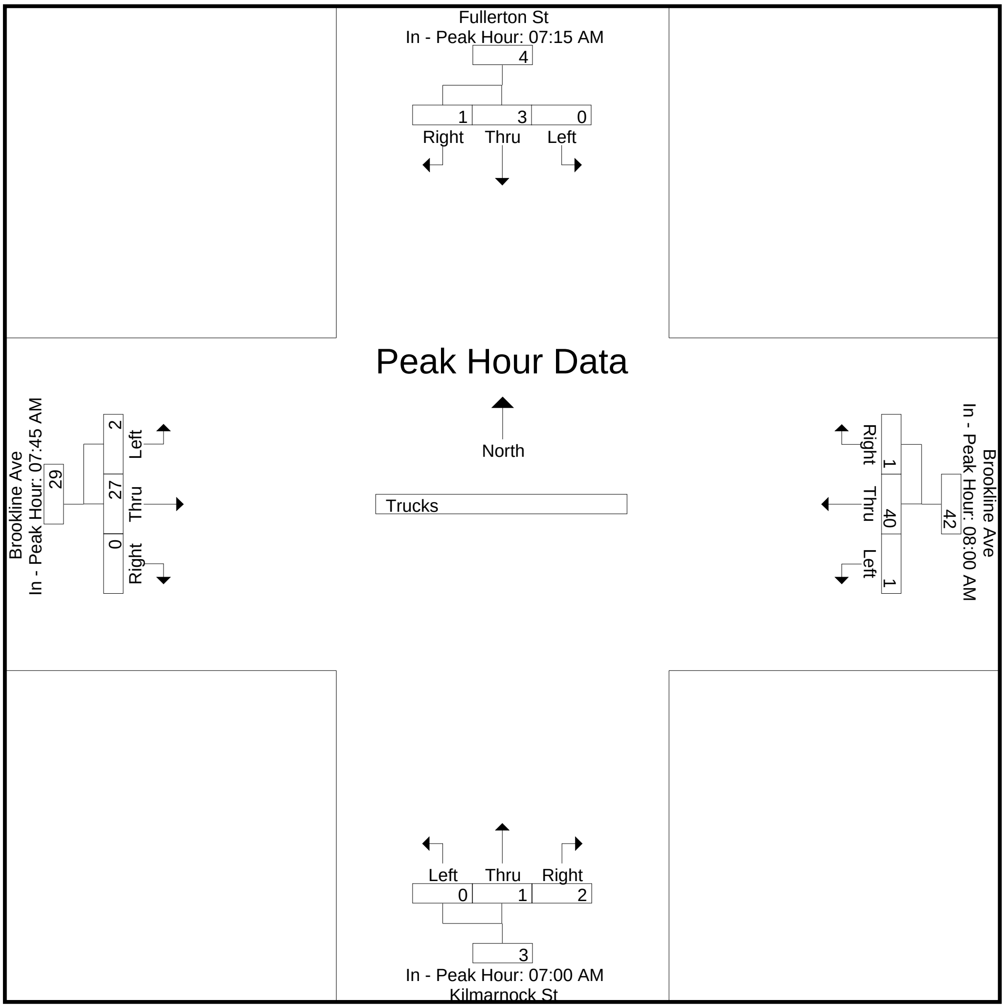
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				08:00 AM				07:00 AM				07:45 AM			
+0 mins.	0	**1**	**1**	**2**	0	8	0	8	0	**1**	0	1	0	**9**	0	**9**
+15 mins.	0	1	0	1	0	8	0	8	0	0	0	0	**1**	7	0	8
+30 mins.	0	0	0	0	0	**13**	0	**13**	0	0	**2**	**2**	1	5	0	6
+45 mins.	0	1	0	1	**1**	11	**1**	13	0	0	0	0	0	6	0	6
Total Volume	0	3	1	4	1	40	1	42	0	1	2	3	2	27	0	29
% App. Total	0	75	25		2.4	95.2	2.4		0	33.3	66.7		6.9	93.1	0	
PHF	.000	.750	.250	.500	.250	.769	.250	.808	.000	.250	.250	.375	.500	.750	.000	.806

Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 1

Groups Printed- Bikes Peds

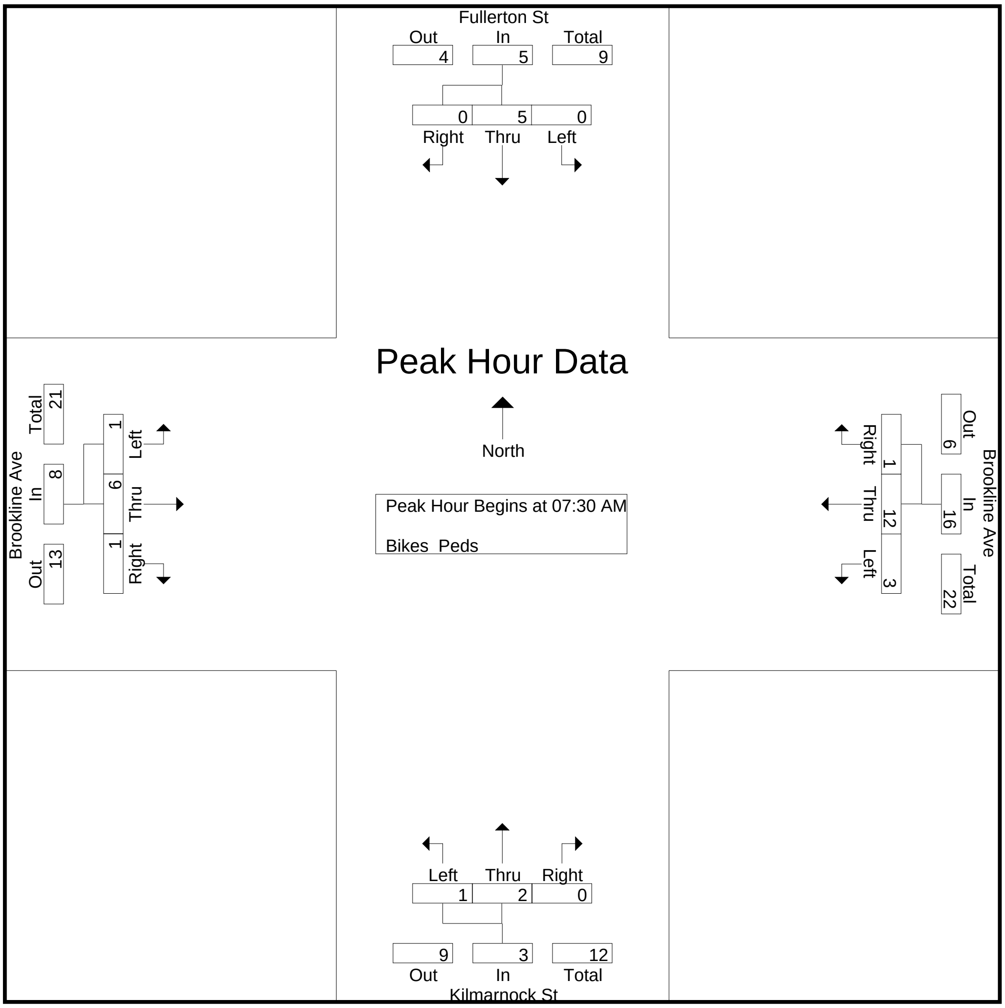
	Fullerton St From North				Brookline Ave From East				Kilmarnock St From South				Brookline Ave From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	1	28	0	1	1	12	1	0	0	6	0	1	0	14	60	5	65
07:15 AM	0	1	0	32	0	0	0	25	0	0	0	24	0	0	0	20	101	1	102
07:30 AM	0	1	0	36	0	2	0	23	0	0	0	13	1	1	0	8	80	5	85
07:45 AM	0	2	0	31	1	4	0	42	0	0	0	20	0	3	0	31	124	10	134
Total	0	4	1	127	1	7	1	102	1	0	0	63	1	5	0	73	365	21	386
08:00 AM	0	1	0	40	1	2	1	19	0	1	0	17	0	1	0	27	103	7	110
08:15 AM	0	1	0	28	1	4	0	29	1	1	0	21	0	1	1	27	105	10	115
08:30 AM	0	0	0	21	0	2	0	22	0	0	0	17	1	1	0	18	78	4	82
08:45 AM	0	3	0	71	0	2	0	24	0	0	0	20	0	2	0	32	147	7	154
Total	0	5	0	160	2	10	1	94	1	2	0	75	1	5	1	104	433	28	461
Grand Total	0	9	1	287	3	17	2	196	2	2	0	138	2	10	1	177	798	49	847
Apprch %	0	90	10		13.6	77.3	9.1		50	50	0		15.4	76.9	7.7				
Total %	0	18.4	2		6.1	34.7	4.1		4.1	4.1	0		4.1	20.4	2		94.2	5.8	

	Fullerton St From North				Brookline Ave From East				Kilmarnock St From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	1	0	1	0	2	0	2	0	0	0	0	**1**	1	0	2	5
07:45 AM	0	**2**	0	**2**	**1**	**4**	0	**5**	0	0	0	0	0	**3**	0	**3**	**10**
08:00 AM	0	1	0	1	1	2	**1**	4	0	**1**	0	1	0	1	0	1	7
08:15 AM	0	1	0	1	1	4	0	5	**1**	1	0	**2**	0	1	**1**	2	10
Total Volume	0	5	0	5	3	12	1	16	1	2	0	3	1	6	1	8	32
% App. Total	0	100	0		18.8	75	6.2		33.3	66.7	0		12.5	75	12.5		
PHF	.000	.625	.000	.625	.750	.750	.250	.800	.250	.500	.000	.375	.250	.500	.250	.667	.800

Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 2

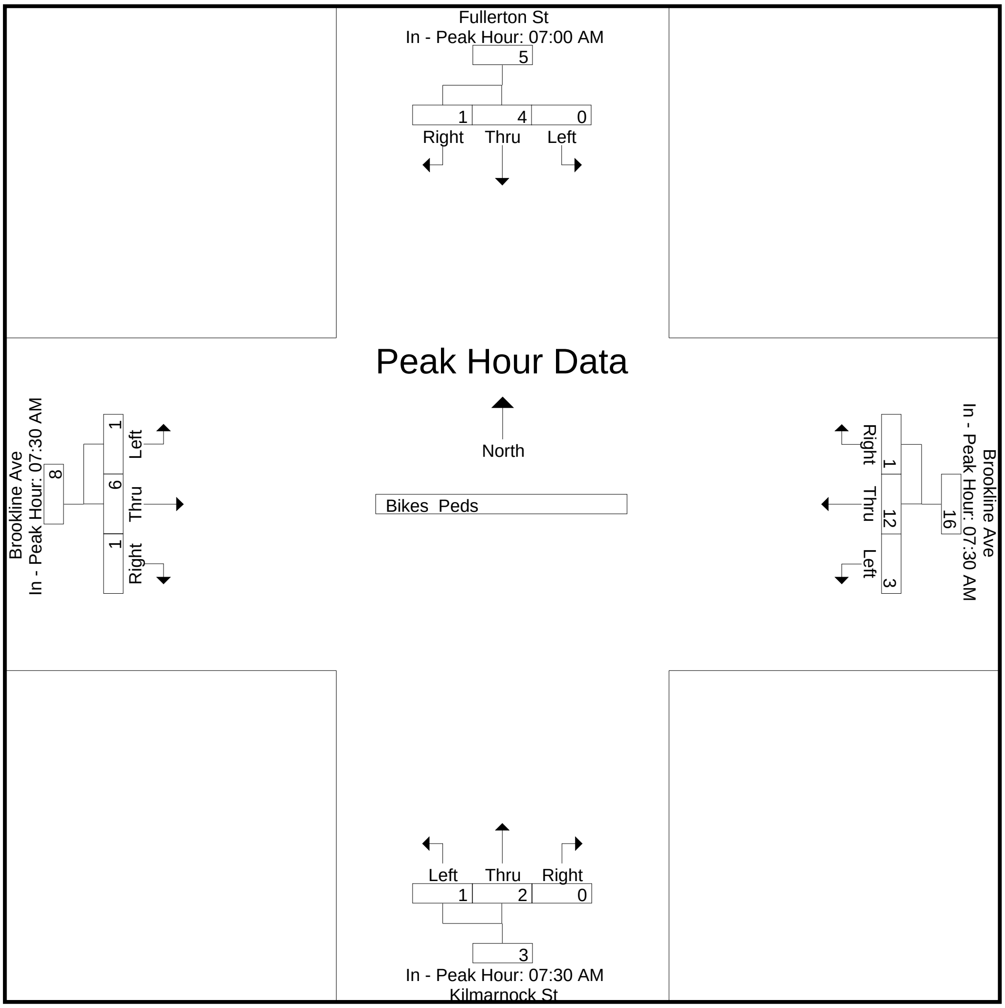


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	**1**	1	0	2	0	2	0	0	0	0	**1**	1	0	2
+15 mins.	0	1	0	1	**1**	**4**	0	**5**	0	0	0	0	0	**3**	0	**3**
+30 mins.	0	1	0	1	1	2	**1**	4	0	**1**	0	1	0	1	0	1
+45 mins.	0	**2**	0	**2**	1	4	0	5	**1**	1	0	**2**	0	1	**1**	2
Total Volume	0	4	1	5	3	12	1	16	1	2	0	3	1	6	1	8
% App. Total	0	80	20		18.8	75	6.2		33.3	66.7	0		12.5	75	12.5	
PHF	.000	.500	.250	.625	.750	.750	.250	.800	.250	.500	.000	.375	.250	.500	.250	.667

Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St	File Name : 94970010
E/W Street : Brookline Avenue	Site Code : 94970010
City/State : Boston, MA	Start Date : 5/17/2012
Weather : Drizzle	Page No : 3



Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

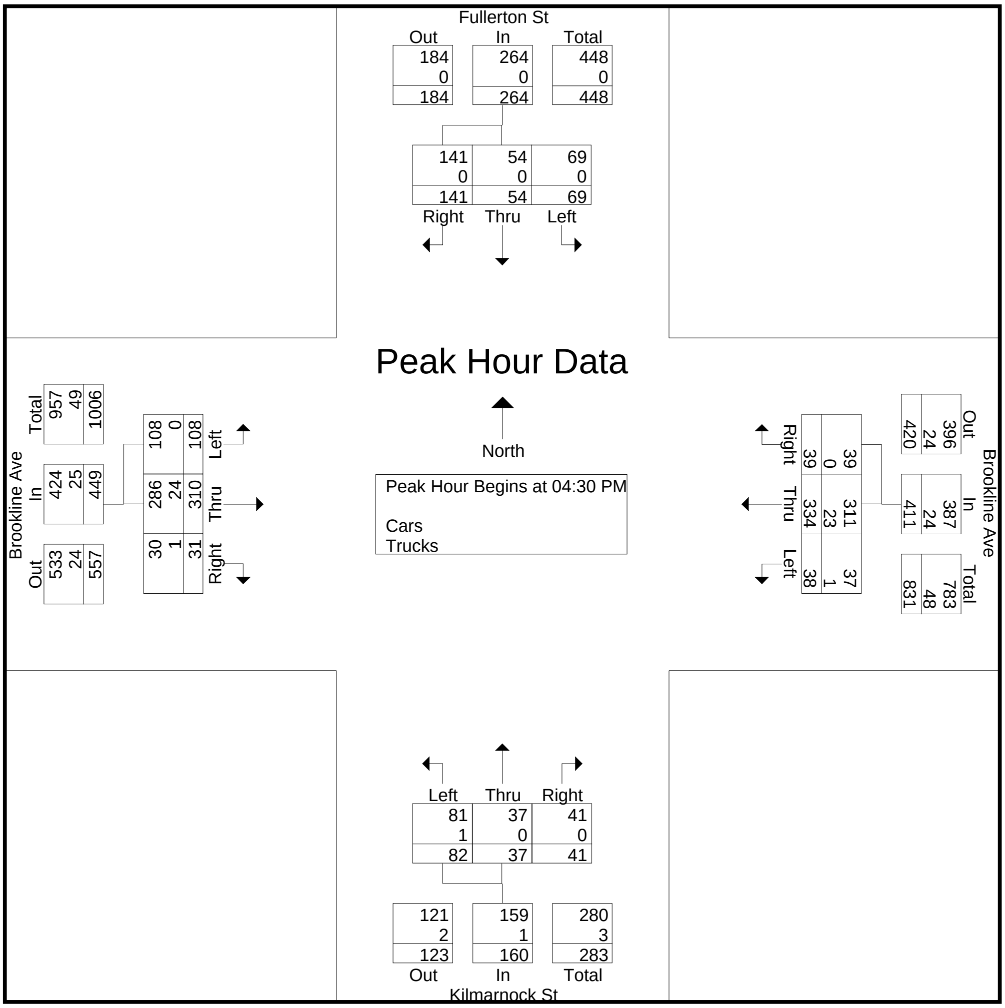
	Fullerton St From North			Brookline Ave From East			Kilmarnock St From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	16	3	28	6	70	15	32	6	9	27	70	8	290
04:15 PM	12	8	26	13	81	6	24	11	8	34	77	2	302
04:30 PM	23	9	27	10	100	12	17	10	10	32	89	7	346
04:45 PM	13	16	27	7	57	9	21	10	7	24	78	12	281
Total	64	36	108	36	308	42	94	37	34	117	314	29	1219
05:00 PM	16	14	46	6	79	7	20	9	13	27	72	6	315
05:15 PM	17	15	41	15	98	11	24	8	11	25	71	6	342
05:30 PM	15	19	21	12	81	9	25	7	16	14	69	7	295
05:45 PM	12	14	28	16	73	4	22	8	11	12	82	8	290
Total	60	62	136	49	331	31	91	32	51	78	294	27	1242
Grand Total	124	98	244	85	639	73	185	69	85	195	608	56	2461
Apprch %	26.6	21	52.4	10.7	80.2	9.2	54.6	20.4	25.1	22.7	70.8	6.5	
Total %	5	4	9.9	3.5	26	3	7.5	2.8	3.5	7.9	24.7	2.3	
Cars	124	98	243	82	601	73	184	69	85	195	562	55	2371
% Cars	100	100	99.6	96.5	94.1	100	99.5	100	100	100	92.4	98.2	96.3
Trucks	0	0	1	3	38	0	1	0	0	0	46	1	90
% Trucks	0	0	0.4	3.5	5.9	0	0.5	0	0	0	7.6	1.8	3.7

	Fullerton St From North				Brookline Ave From East				Kilmarnock St From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	**23**	9	27	59	10	**100**	**12**	122	17	**10**	10	37	**32**	**89**	7	**128**	**346**
04:45 PM	13	**16**	27	56	7	57	9	73	21	10	7	38	24	78	**12**	114	281
05:00 PM	16	14	**46**	**76**	6	79	7	92	20	9	**13**	42	27	72	6	105	315
05:15 PM	17	15	41	73	**15**	98	11	**124**	**24**	8	11	**43**	25	71	6	102	342
Total Volume	69	54	141	264	38	334	39	411	82	37	41	160	108	310	31	449	1284
% App. Total	26.1	20.5	53.4		9.2	81.3	9.5		51.2	23.1	25.6		24.1	69	6.9		
PHF	.750	.844	.766	.868	.633	.835	.813	.829	.854	.925	.788	.930	.844	.871	.646	.877	.928
Cars	69	54	141	264	37	311	39	387	81	37	41	159	108	286	30	424	1234
% Cars	100	100	100	100	97.4	93.1	100	94.2	98.8	100	100	99.4	100	92.3	96.8	94.4	96.1
Trucks	0	0	0	0	1	23	0	24	1	0	0	1	0	24	1	25	50
% Trucks	0	0	0	0	2.6	6.9	0	5.8	1.2	0	0	0.6	0	7.7	3.2	5.6	3.9

Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012



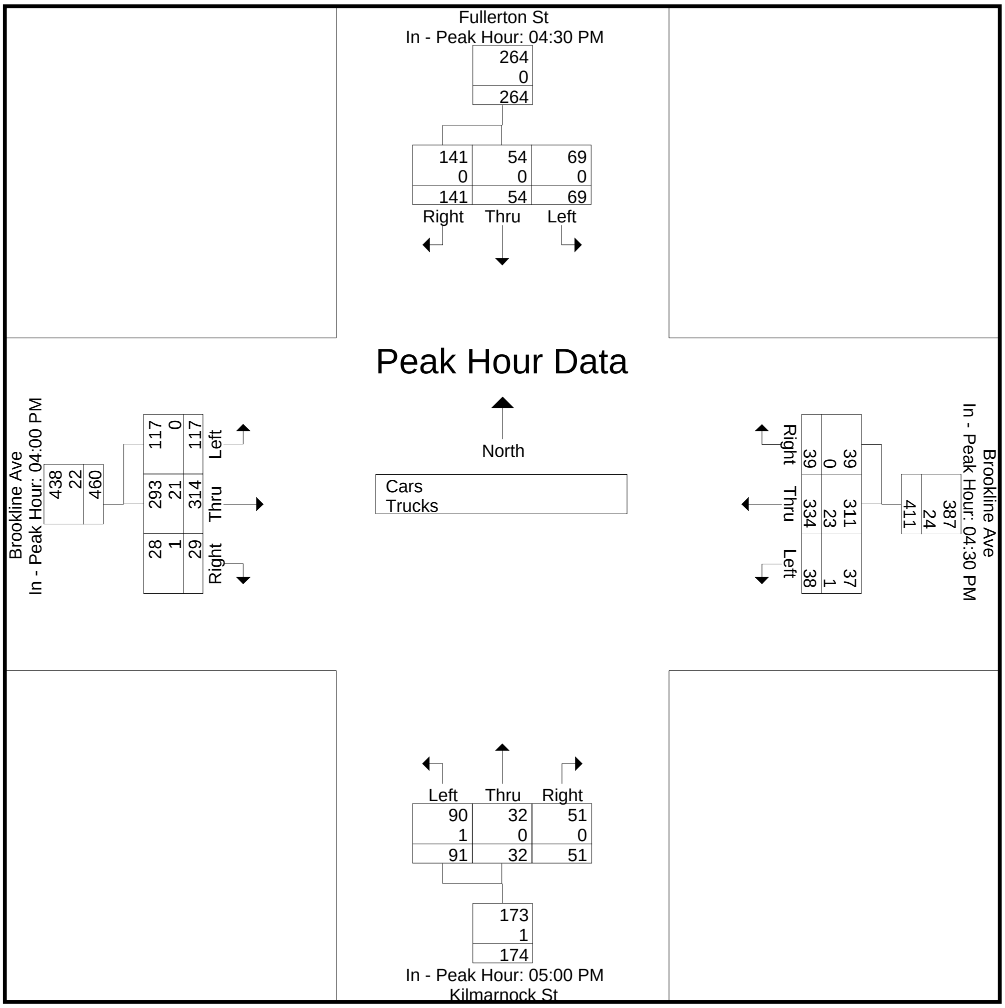
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				05:00 PM				04:00 PM			
+0 mins.	**23**	9	27	59	10	**100**	**12**	122	20	**9**	13	42	27	70	8	105
+15 mins.	13	**16**	27	56	7	57	9	73	24	8	11	43	**34**	77	2	113
+30 mins.	16	14	**46**	**76**	6	79	7	92	**25**	7	**16**	**48**	32	**89**	7	**128**
+45 mins.	17	15	41	73	**15**	98	11	**124**	22	8	11	41	24	78	**12**	114
Total Volume	69	54	141	264	38	334	39	411	91	32	51	174	117	314	29	460
% App. Total	26.1	20.5	53.4		9.2	81.3	9.5		52.3	18.4	29.3		25.4	68.3	6.3	
PHF	.750	.844	.766	.868	.633	.835	.813	.829	.910	.889	.797	.906	.860	.882	.604	.898
Cars	69	54	141	264	37	311	39	387	90	32	51	173	117	293	28	438
% Cars	100	100	100	100	97.4	93.1	100	94.2	98.9	100	100	99.4	100	93.3	96.6	95.2
Trucks	0	0	0	0	1	23	0	24	1	0	0	1	0	21	1	22
% Trucks	0	0	0	0	2.6	6.9	0	5.8	1.1	0	0	0.6	0	6.7	3.4	4.8

Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars

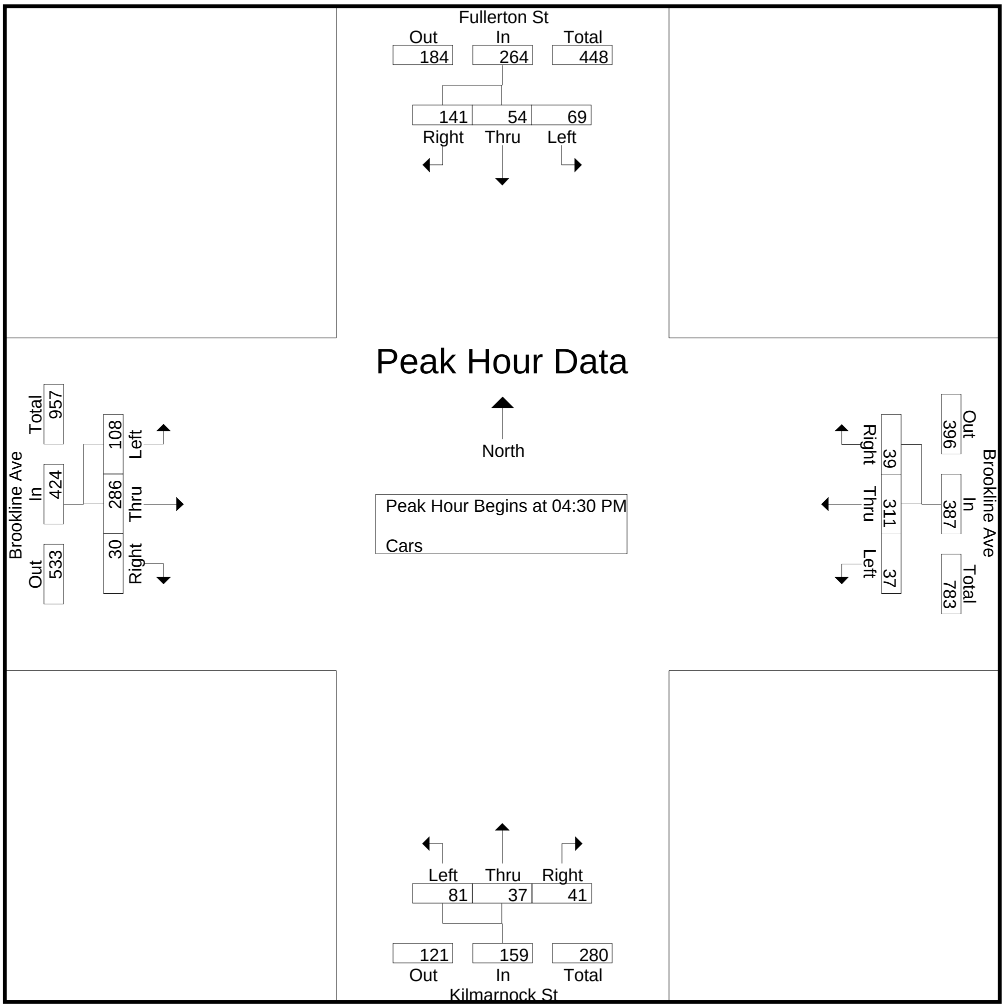
	Fullerton St From North			Brookline Ave From East			Kilmarnock St From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	16	3	28	6	67	15	32	6	9	27	63	8	280
04:15 PM	12	8	26	13	77	6	24	11	8	34	74	2	295
04:30 PM	23	9	27	10	93	12	17	10	10	32	82	7	332
04:45 PM	13	16	27	6	54	9	21	10	7	24	74	11	272
Total	64	36	108	35	291	42	94	37	34	117	293	28	1179
05:00 PM	16	14	46	6	73	7	19	9	13	27	64	6	300
05:15 PM	17	15	41	15	91	11	24	8	11	25	66	6	330
05:30 PM	15	19	20	11	75	9	25	7	16	14	67	7	285
05:45 PM	12	14	28	15	71	4	22	8	11	12	72	8	277
Total	60	62	135	47	310	31	90	32	51	78	269	27	1192
Grand Total	124	98	243	82	601	73	184	69	85	195	562	55	2371
Apprch %	26.7	21.1	52.3	10.8	79.5	9.7	54.4	20.4	25.1	24	69.2	6.8	
Total %	5.2	4.1	10.2	3.5	25.3	3.1	7.8	2.9	3.6	8.2	23.7	2.3	

	Fullerton St From North				Brookline Ave From East				Kilmarnock St From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	**23**	9	27	59	10	**93**	**12**	115	17	**10**	10	37	**32**	**82**	7	**121**	**332**
04:45 PM	13	**16**	27	56	6	54	9	69	21	10	7	38	24	74	**11**	109	272
05:00 PM	16	14	**46**	**76**	6	73	7	86	19	9	**13**	41	27	64	6	97	300
05:15 PM	17	15	41	73	**15**	91	11	**117**	**24**	8	11	**43**	25	66	6	97	330
Total Volume	69	54	141	264	37	311	39	387	81	37	41	159	108	286	30	424	1234
% App. Total	26.1	20.5	53.4		9.6	80.4	10.1		50.9	23.3	25.8		25.5	67.5	7.1		
PHF	.750	.844	.766	.868	.617	.836	.813	.827	.844	.925	.788	.924	.844	.872	.682	.876	.929

Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012



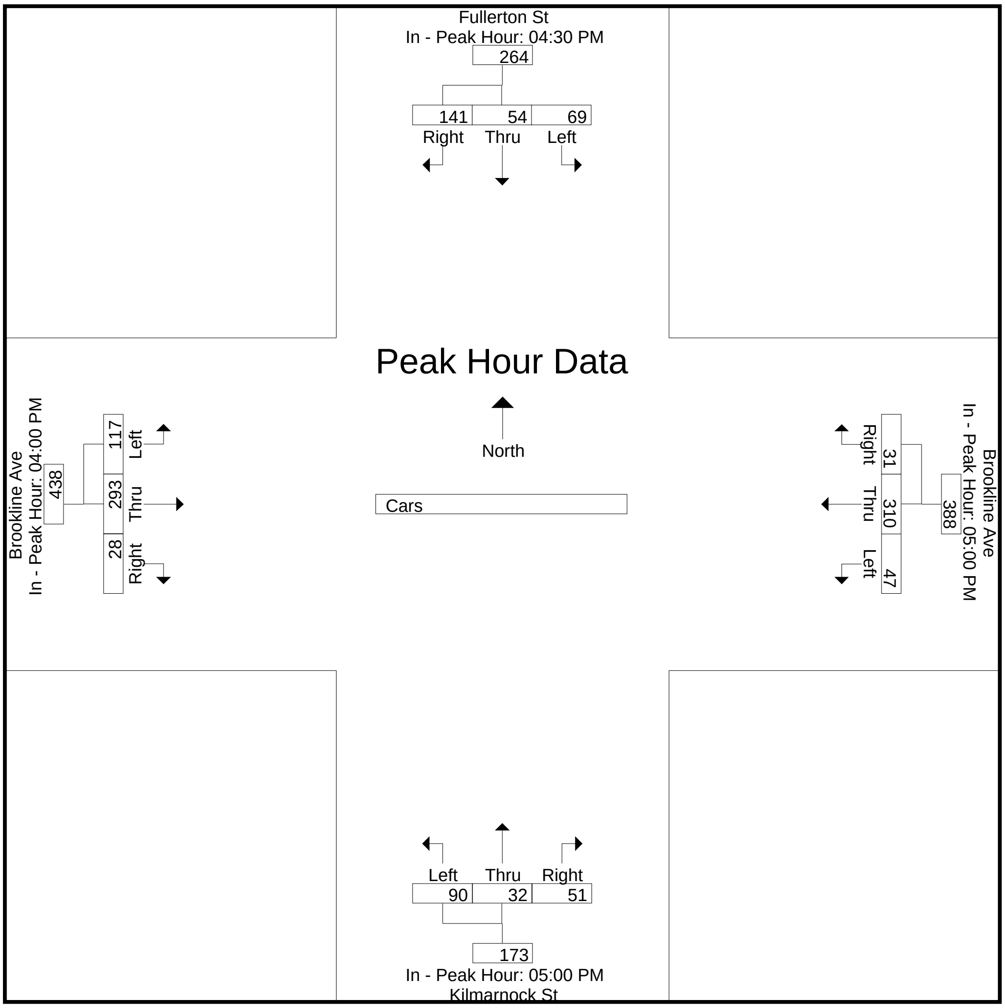
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				05:00 PM				05:00 PM				04:00 PM			
+0 mins.	**23**	9	27	59	6	73	7	86	19	**9**	13	41	27	63	8	98
+15 mins.	13	**16**	27	56	**15**	**91**	**11**	**117**	24	8	11	43	**34**	74	2	110
+30 mins.	16	14	**46**	**76**	11	75	9	95	**25**	7	**16**	**48**	32	**82**	7	**121**
+45 mins.	17	15	41	73	15	71	4	90	22	8	11	41	24	74	**11**	109
Total Volume	69	54	141	264	47	310	31	388	90	32	51	173	117	293	28	438
% App. Total	26.1	20.5	53.4		12.1	79.9	8		52	18.5	29.5		26.7	66.9	6.4	
PHF	.750	.844	.766	.868	.783	.852	.705	.829	.900	.889	.797	.901	.860	.893	.636	.905

Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012

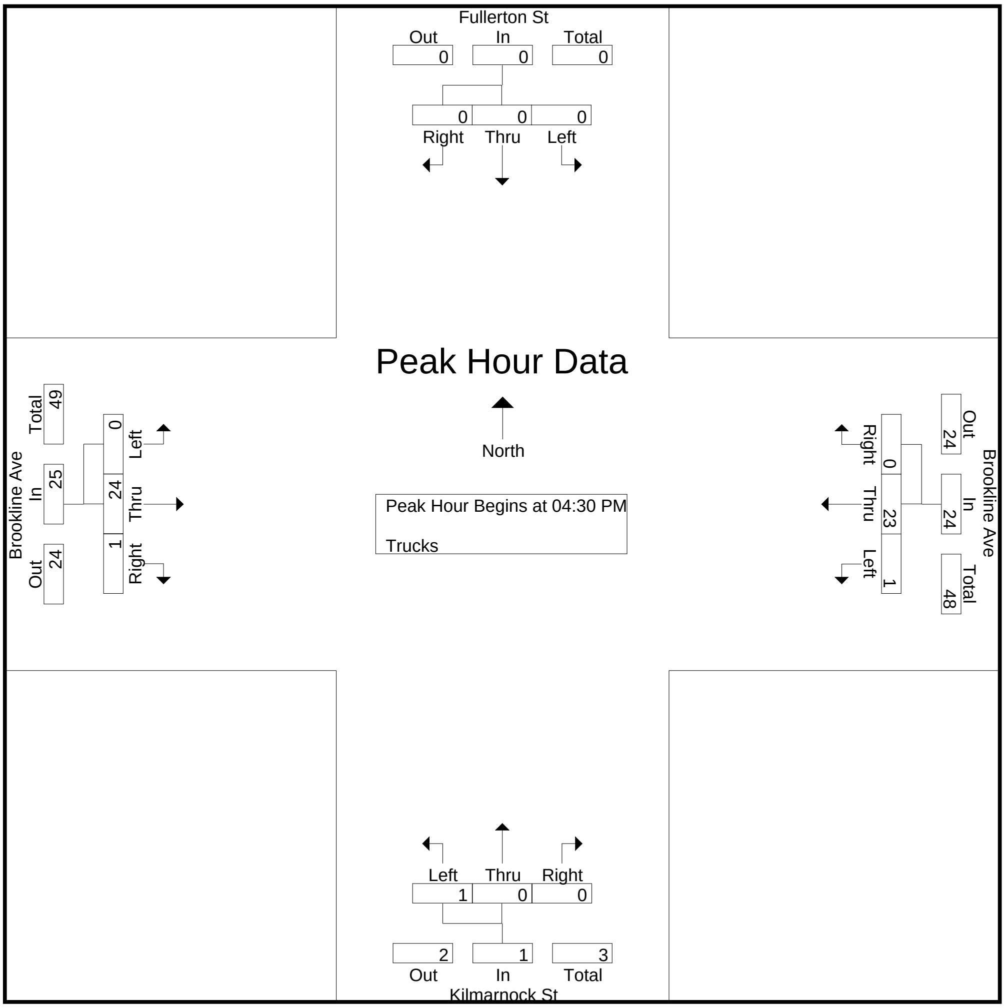
Groups Printed- Trucks

	Fullerton St From North			Brookline Ave From East			Kilmarnock St From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	0	3	0	0	0	0	0	7	0	10
04:15 PM	0	0	0	0	4	0	0	0	0	0	3	0	7
04:30 PM	0	0	0	0	7	0	0	0	0	0	7	0	14
04:45 PM	0	0	0	1	3	0	0	0	0	0	4	1	9
Total	0	0	0	1	17	0	0	0	0	0	21	1	40
05:00 PM	0	0	0	0	6	0	1	0	0	0	8	0	15
05:15 PM	0	0	0	0	7	0	0	0	0	0	5	0	12
05:30 PM	0	0	1	1	6	0	0	0	0	0	2	0	10
05:45 PM	0	0	0	1	2	0	0	0	0	0	10	0	13
Total	0	0	1	2	21	0	1	0	0	0	25	0	50
Grand Total	0	0	1	3	38	0	1	0	0	0	46	1	90
Apprch %	0	0	100	7.3	92.7	0	100	0	0	0	97.9	2.1	
Total %	0	0	1.1	3.3	42.2	0	1.1	0	0	0	51.1	1.1	

	Fullerton St From North				Brookline Ave From East				Kilmarnock St From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	**7**	0	**7**	0	0	0	0	0	7	0	7	14
04:45 PM	0	0	0	0	**1**	3	0	4	0	0	0	0	0	4	**1**	5	9
05:00 PM	0	0	0	0	0	6	0	6	**1**	0	0	**1**	0	**8**	0	**8**	**15**
05:15 PM	0	0	0	0	0	7	0	7	0	0	0	0	0	5	0	5	12
Total Volume	0	0	0	0	1	23	0	24	1	0	0	1	0	24	1	25	50
% App. Total	0	0	0		4.2	95.8	0		100	0	0		0	96	4		
PHF	.000	.000	.000	.000	.250	.821	.000	.857	.250	.000	.000	.250	.000	.750	.250	.781	.833

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 2



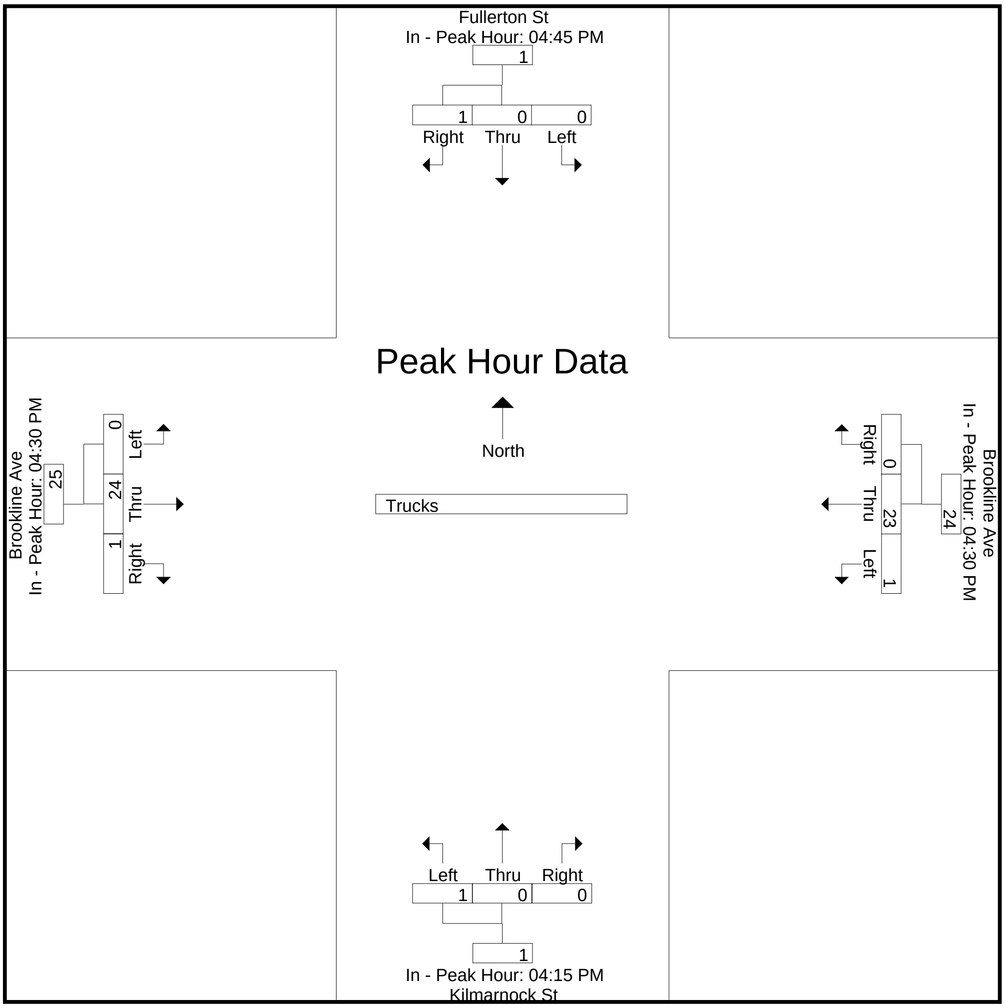
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:30 PM				04:15 PM				04:30 PM			
+0 mins.	0	0	0	0	0	**7**	0	**7**	0	0	0	0	0	7	0	7
+15 mins.	0	0	0	0	**1**	3	0	4	0	0	0	0	0	4	**1**	5
+30 mins.	0	0	0	0	0	6	0	6	0	0	0	0	0	**8**	0	**8**
+45 mins.	0	0	**1**	**1**	0	7	0	7	**1**	0	0	**1**	0	5	0	5
Total Volume	0	0	1	1	1	23	0	24	1	0	0	1	0	24	1	25
% App. Total	0	0	100		4.2	95.8	0		100	0	0		0	96	4	
PHF	.000	.000	.250	.250	.250	.821	.000	.857	.250	.000	.000	.250	.000	.750	.250	.781

Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 1

Groups Printed- Bikes Peds

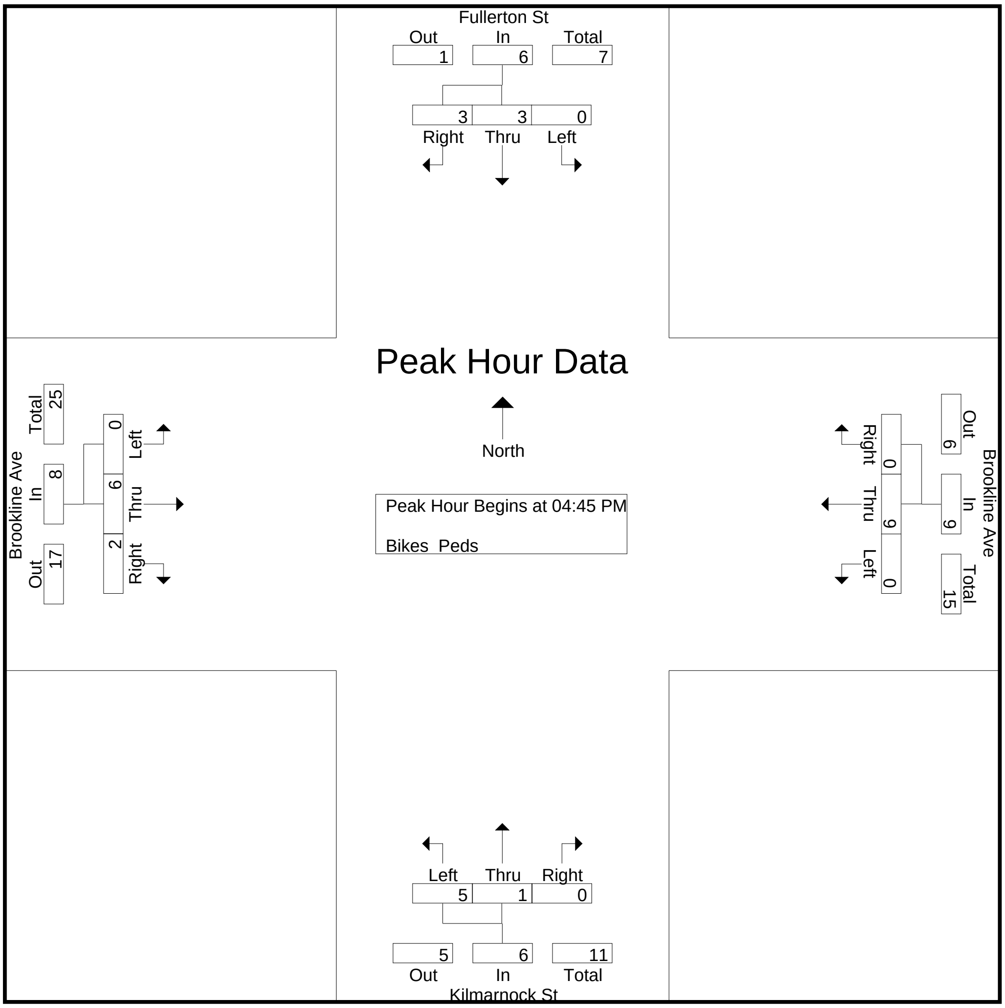
	Fullerton St From North				Brookline Ave From East				Kilmarnock St From South				Brookline Ave From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	55	0	2	0	20	0	0	0	27	0	3	0	46	148	5	153
04:15 PM	0	1	0	42	0	2	0	43	1	0	0	40	0	3	0	45	170	7	177
04:30 PM	0	0	0	64	0	1	0	35	1	0	0	56	0	3	1	62	217	6	223
04:45 PM	0	1	1	95	0	5	0	30	1	0	0	53	0	2	0	33	211	10	221
Total	0	2	1	256	0	10	0	128	3	0	0	176	0	11	1	186	746	28	774
05:00 PM	0	0	0	88	0	1	0	39	0	0	0	38	0	1	1	37	202	3	205
05:15 PM	0	2	2	100	0	2	0	31	1	1	0	48	0	0	1	27	206	9	215
05:30 PM	0	0	0	106	0	1	0	31	3	0	0	50	0	3	0	42	229	7	236
05:45 PM	0	1	0	82	0	1	0	32	1	1	0	45	1	3	0	51	210	8	218
Total	0	3	2	376	0	5	0	133	5	2	0	181	1	7	2	157	847	27	874
Grand Total	0	5	3	632	0	15	0	261	8	2	0	357	1	18	3	343	1593	55	1648
Apprch %	0	62.5	37.5		0	100	0		80	20	0		4.5	81.8	13.6				
Total %	0	9.1	5.5		0	27.3	0		14.5	3.6	0		1.8	32.7	5.5		96.7	3.3	

	Fullerton St From North				Brookline Ave From East				Kilmarnock St From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	1	1	2	0	**5**	0	**5**	1	0	0	1	0	2	0	2	**10**
05:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	**1**	2	3
05:15 PM	0	**2**	**2**	**4**	0	2	0	2	1	**1**	0	2	0	0	1	1	9
05:30 PM	0	0	0	0	0	1	0	1	**3**	0	0	**3**	0	**3**	0	**3**	7
Total Volume	0	3	3	6	0	9	0	9	5	1	0	6	0	6	2	8	29
% App. Total	0	50	50		0	100	0		83.3	16.7	0		0	75	25		
PHF	.000	.375	.375	.375	.000	.450	.000	.450	.417	.250	.000	.500	.000	.500	.500	.667	.725

Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 2



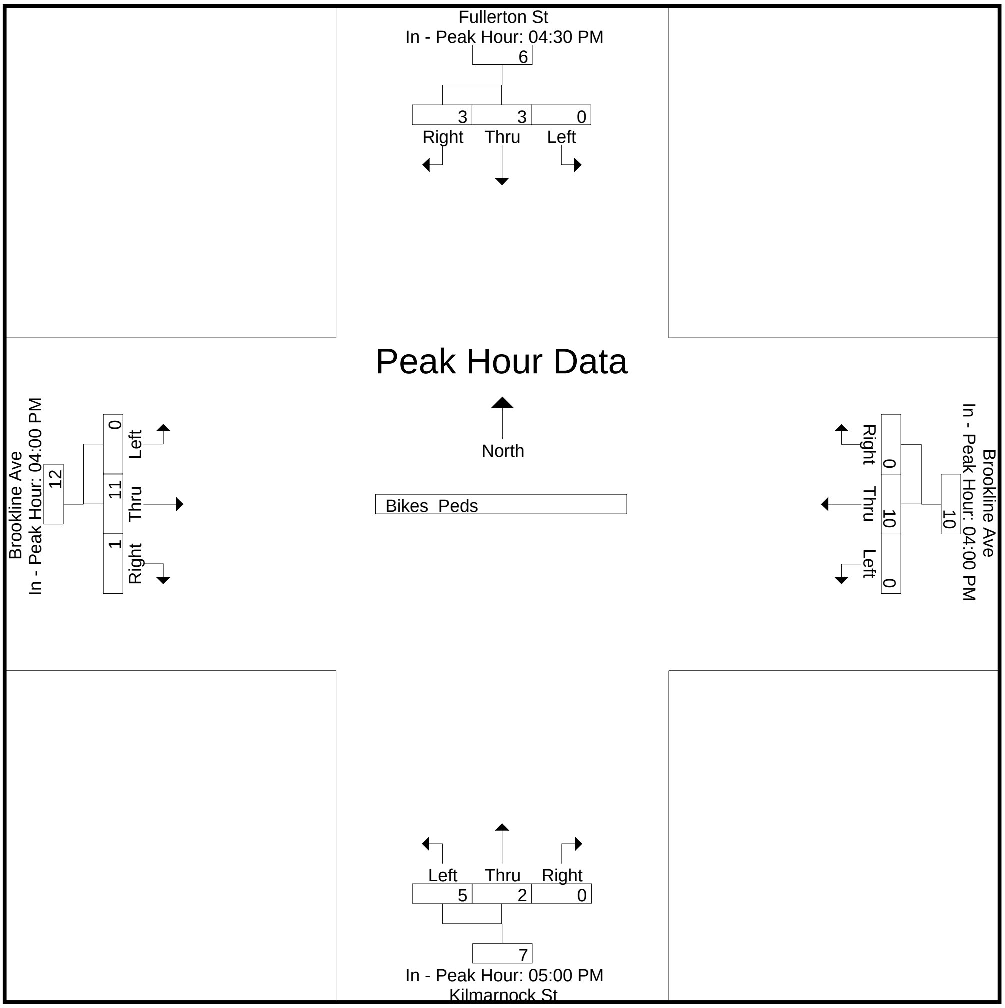
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:00 PM				05:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	**3**	0	3
+15 mins.	0	1	1	2	0	2	0	2	1	**1**	0	2	0	3	0	3
+30 mins.	0	0	0	0	0	1	0	1	**3**	0	0	**3**	0	3	**1**	**4**
+45 mins.	0	**2**	**2**	**4**	0	**5**	0	**5**	1	1	0	2	0	2	0	2
Total Volume	0	3	3	6	0	10	0	10	5	2	0	7	0	11	1	12
% App. Total	0	50	50		0	100	0		71.4	28.6	0		0	91.7	8.3	
PHF	.000	.375	.375	.375	.000	.500	.000	.500	.417	.500	.000	.583	.000	.917	.250	.750

Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

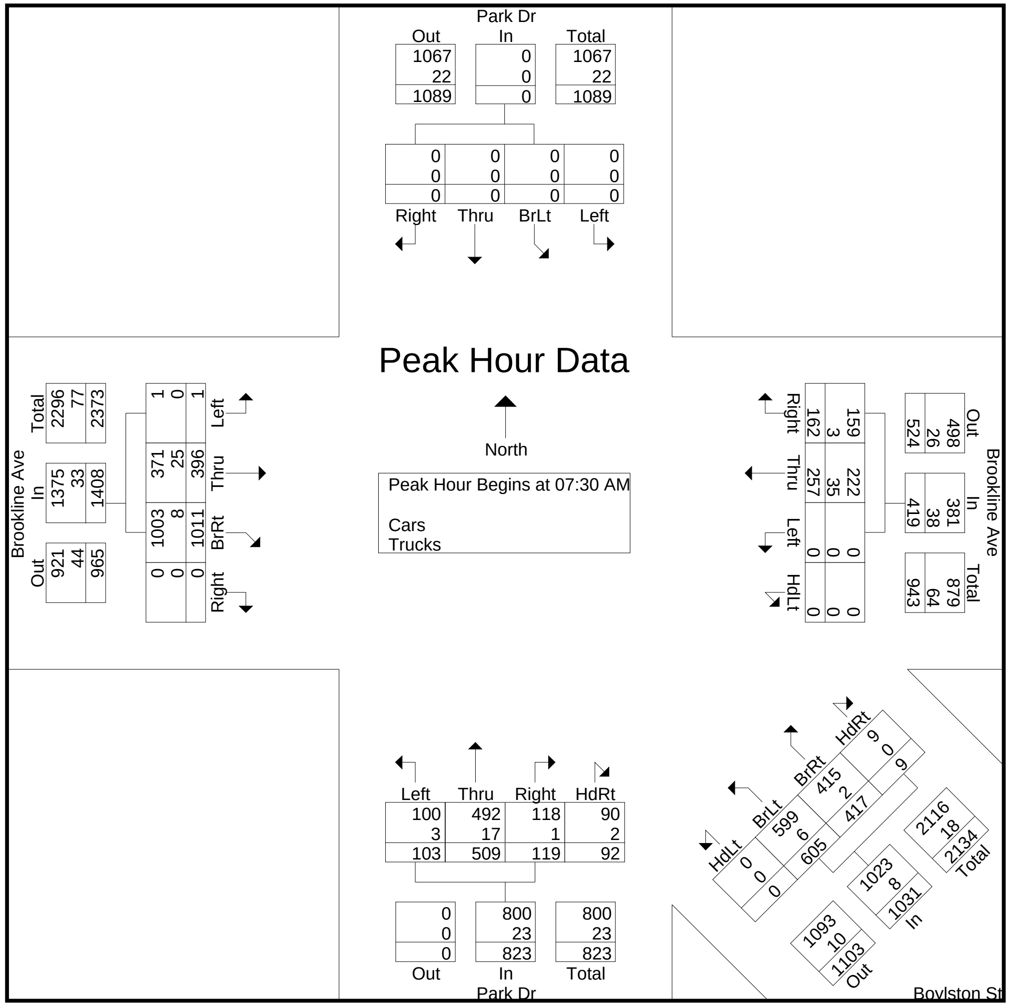
	Park Dr From North				Brookline Ave From East				Boylston St From Southeast				Park Dr From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
07:00 AM	0	0	0	0	0	0	40	21	0	146	93	3	10	82	15	19	1	74	239	0	743
07:15 AM	0	0	0	0	0	0	52	30	0	144	109	1	23	116	15	24	0	63	229	0	806
07:30 AM	0	0	0	0	0	0	63	32	0	150	117	4	23	118	24	24	0	99	246	0	900
07:45 AM	0	0	0	0	0	0	68	52	0	164	114	2	32	134	32	31	0	106	260	0	995
Total	0	0	0	0	0	0	223	135	0	604	433	10	88	450	86	98	1	342	974	0	3444
08:00 AM	0	0	0	0	0	0	74	52	0	149	98	0	30	133	32	19	0	100	261	0	948
08:15 AM	0	0	0	0	0	0	52	26	0	142	88	3	18	124	31	18	1	91	244	0	838
08:30 AM	0	0	0	0	0	0	65	38	0	135	81	5	21	123	36	14	0	112	223	0	853
08:45 AM	0	0	0	0	0	0	61	61	0	147	112	1	21	134	30	21	2	99	206	0	895
Total	0	0	0	0	0	0	252	177	0	573	379	9	90	514	129	72	3	402	934	0	3534
Grand Total	0	0	0	0	0	0	475	312	0	1177	812	19	178	964	215	170	4	744	1908	0	6978
Apprch %	0	0	0	0	0	0	60.4	39.6	0	58.6	40.4	0.9	11.7	63.1	14.1	11.1	0.2	28	71.8	0	
Total %	0	0	0	0	0	0	6.8	4.5	0	16.9	11.6	0.3	2.6	13.8	3.1	2.4	0.1	10.7	27.3	0	
Cars	0	0	0	0	0	0	399	305	0	1166	810	18	175	934	211	165	4	685	1895	0	6767
% Cars	0	0	0	0	0	0	84	97.8	0	99.1	99.8	94.7	98.3	96.9	98.1	97.1	100	92.1	99.3	0	97
Trucks	0	0	0	0	0	0	76	7	0	11	2	1	3	30	4	5	0	59	13	0	211
% Trucks	0	0	0	0	0	0	16	2.2	0	0.9	0.2	5.3	1.7	3.1	1.9	2.9	0	7.9	0.7	0	3

	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:30 AM																										
07:30 AM	0	0	0	0	0	0	0	63	32	95	0	150	**117**	**4**	271	23	118	24	24	189	0	99	246	0	345	900
07:45 AM	0	0	0	0	0	0	0	68	**52**	120	0	**164**	114	2	**280**	**32**	**134**	**32**	**31**	**229**	0	**106**	260	0	**366**	**995**
08:00 AM	0	0	0	0	0	0	0	**74**	52	**126**	0	149	98	0	247	30	133	32	19	214	0	100	**261**	0	361	948
08:15 AM	0	0	0	0	0	0	0	52	26	78	0	142	88	3	233	18	124	31	18	191	**1**	91	244	0	336	838
Total Volume	0	0	0	0	0	0	0	257	162	419	0	605	417	9	1031	103	509	119	92	823	1	396	1011	0	1408	3681
% App. Total	0	0	0	0		0	0	61.3	38.7		0	58.7	40.4	0.9		12.5	61.8	14.5	11.2		0.1	28.1	71.8	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.868	.779	.831	.000	.922	.891	.563	.921	.805	.950	.930	.742	.898	.250	.934	.968	.000	.962	.925
Cars	0	0	0	0	0	0	0	222	159	381	0	599	415	9	1023	100	492	118	90	800	1	371	1003	0	1375	3579
% Cars	0	0	0	0	0	0	0	86.4	98.1	90.9	0	99.0	99.5	100	99.2	97.1	96.7	99.2	97.8	97.2	100	93.7	99.2	0	97.7	97.2
Trucks	0	0	0	0	0	0	0	35	3	38	0	6	2	0	8	3	17	1	2	23	0	25	8	0	33	102
% Trucks	0	0	0	0	0	0	0	13.6	1.9	9.1	0	1.0	0.5	0	0.8	2.9	3.3	0.8	2.2	2.8	0	6.3	0.8	0	2.3	2.8

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

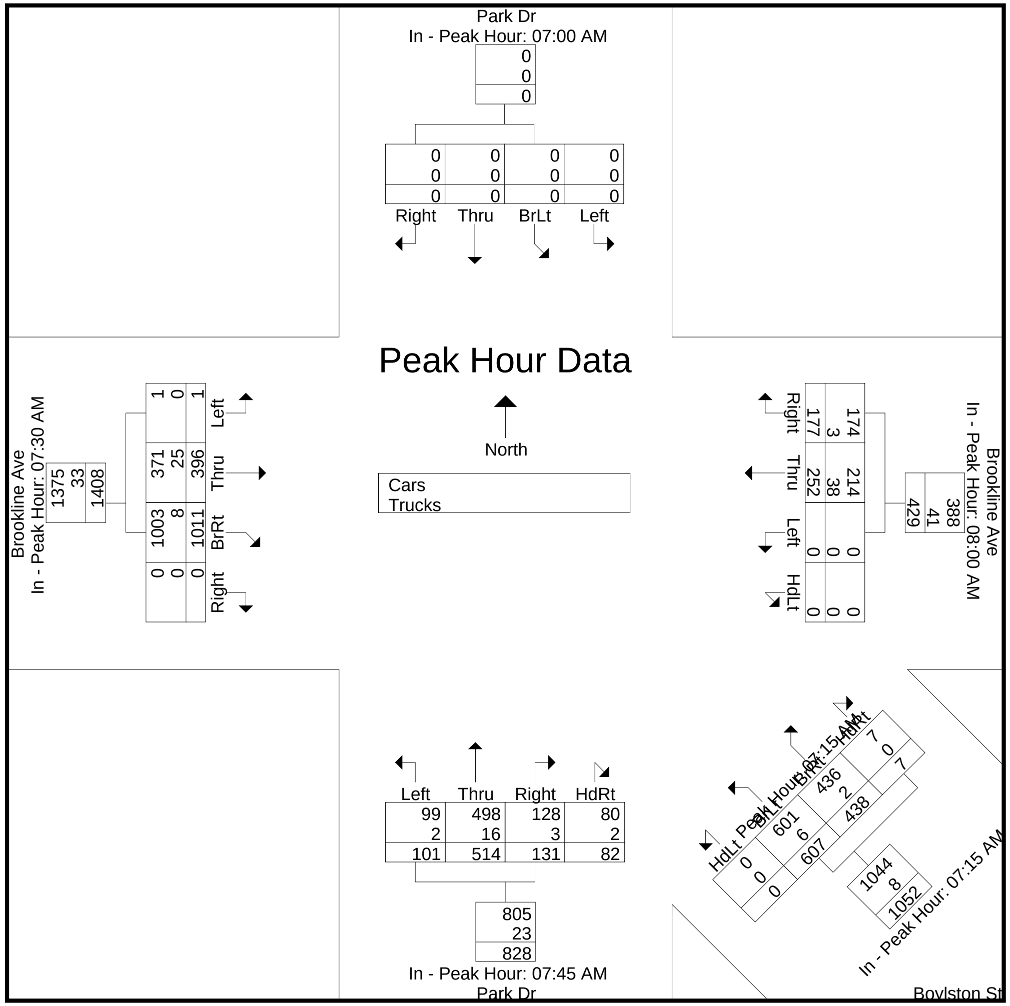
File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM					08:00 AM					07:15 AM					07:45 AM					07:30 AM				
+0 mins.	0	0	0	0	0	0	0	**74**	52	**126**	0	144	109	1	254	**32**	**134**	32	**31**	**229**	0	99	246	0	345
+15 mins.	0	0	0	0	0	0	0	52	26	78	0	150	**117**	**4**	271	30	133	32	19	214	0	**106**	260	0	**366**
+30 mins.	0	0	0	0	0	0	0	65	38	103	0	**164**	114	2	**280**	18	124	31	18	191	0	100	**261**	0	361
+45 mins.	0	0	0	0	0	0	0	61	**61**	122	0	149	98	0	247	21	123	**36**	14	194	**1**	91	244	0	336
Total Volume	0	0	0	0	0	0	0	252	177	429	0	607	438	7	1052	101	514	131	82	828	1	396	1011	0	1408
% App. Total	0	0	0	0		0	0	58.7	41.3		0	57.7	41.6	0.7		12.2	62.1	15.8	9.9		0.1	28.1	71.8	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.851	.725	.851	.000	.925	.936	.438	.939	.789	.959	.910	.661	.904	.250	.934	.968	.000	.962
Cars	0	0	0	0	0	0	0	214	174	388	0	601	436	7	1044	99	498	128	80	805	1	371	1003	0	1375
% Cars	0	0	0	0	0	0	0	84.9	98.3	90.4	0	99	99.5	100	99.2	98	96.9	97.7	97.6	97.2	100	93.7	99.2	0	97.7
Trucks	0	0	0	0	0	0	0	38	3	41	0	6	2	0	8	2	16	3	2	23	0	25	8	0	33

Accurate Counts
978-664-2565



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

	Park Dr From North				**Brookline Ave From East**				**Boylston St From Southeast**				**Park Dr From South**				**Brookline Ave From West**				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
07:00 AM	0	0	0	0	0	0	30	21	0	144	93	3	10	78	14	17	1	67	237	0	715
07:15 AM	0	0	0	0	0	0	45	29	0	143	109	1	23	113	15	23	0	57	228	0	786
07:30 AM	0	0	0	0	0	0	50	31	0	147	117	4	22	115	24	24	0	95	243	0	872
07:45 AM	0	0	0	0	0	0	60	50	0	163	113	2	31	130	32	31	0	98	258	0	968
Total	0	0	0	0	0	0	185	131	0	597	432	10	86	436	85	95	1	317	966	0	3341
08:00 AM	0	0	0	0	0	0	64	52	0	148	97	0	29	129	32	17	0	93	259	0	920
08:15 AM	0	0	0	0	0	0	48	26	0	141	88	3	18	118	30	18	1	85	243	0	819
08:30 AM	0	0	0	0	0	0	55	36	0	134	81	5	21	121	34	14	0	100	222	0	823
08:45 AM	0	0	0	0	0	0	47	60	0	146	112	0	21	130	30	21	2	90	205	0	864
Total	0	0	0	0	0	0	214	174	0	569	378	8	89	498	126	70	3	368	929	0	3426
Grand Total	0	0	0	0	0	0	399	305	0	1166	810	18	175	934	211	165	4	685	1895	0	6767
Apprch %	0	0	0	0	0	0	56.7	43.3	0	58.5	40.6	0.9	11.8	62.9	14.2	11.1	0.2	26.5	73.3	0	
Total %	0	0	0	0	0	0	5.9	4.5	0	17.2	12	0.3	2.6	13.8	3.1	2.4	0.1	10.1	28	0	

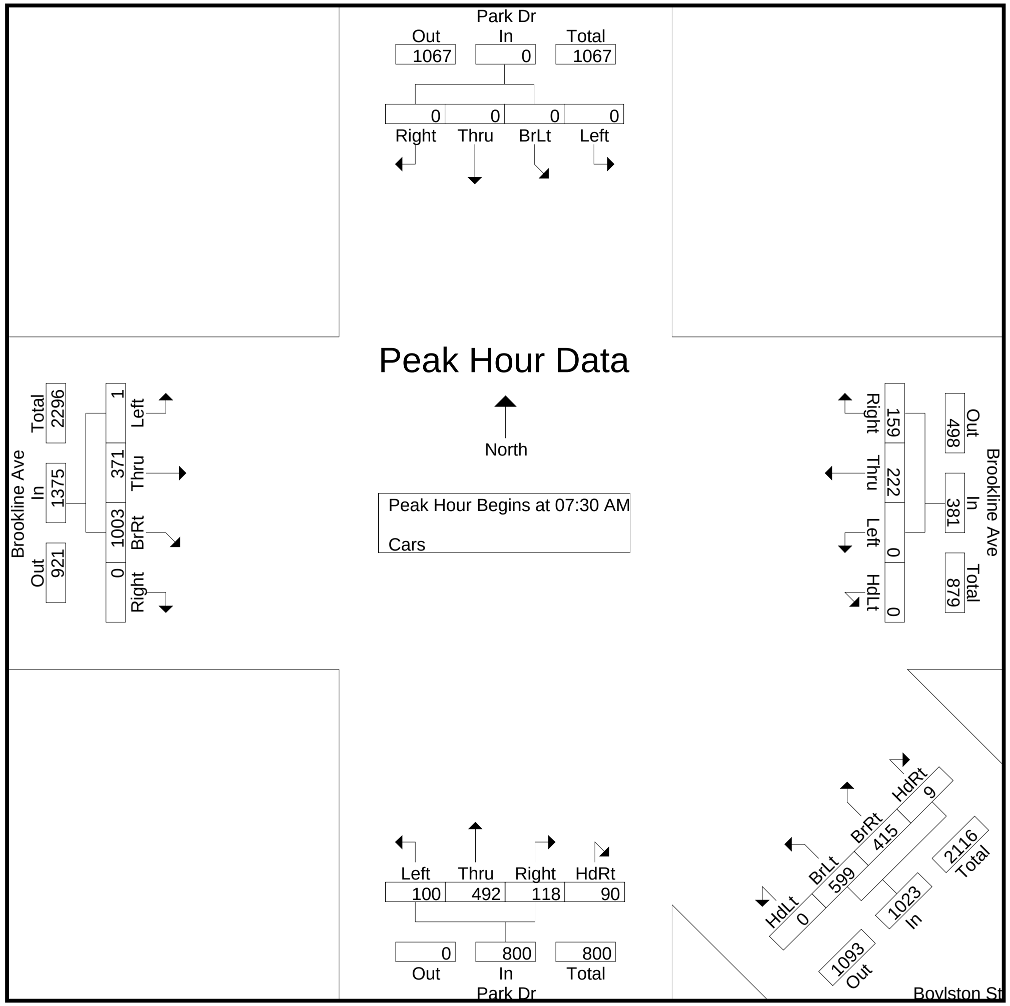
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 07:30 AM

	Park Dr From North					**Brookline Ave From East**					**Boylston St From Southeast**					**Park Dr From South**					**Brookline Ave From West**					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
07:30 AM	0	0	0	0	0	0	0	50	31	81	0	147	**117**	**4**	268	22	115	24	24	185	0	95	243	0	338	872
07:45 AM	0	0	0	0	0	0	0	60	50	110	0	**163**	113	2	**278**	**31**	**130**	**32**	**31**	**224**	0	**98**	258	0	**356**	**968**
08:00 AM	0	0	0	0	0	0	0	**64**	**52**	**116**	0	148	97	0	245	29	129	32	17	207	0	93	**259**	0	352	920
08:15 AM	0	0	0	0	0	0	0	48	26	74	0	141	88	3	232	18	118	30	18	184	**1**	85	243	0	329	819
Total Volume	0	0	0	0	0	0	0	222	159	381	0	599	415	9	1023	100	492	118	90	800	1	371	1003	0	1375	3579
% App. Total	0	0	0	0		0	0	58.3	41.7		0	58.6	40.6	0.9		12.5	61.5	14.8	11.2		0.1	27	72.9	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.867	.764	.821	.000	.919	.887	.563	.920	.806	.946	.922	.726	.893	.250	.946	.968	.000	.966	.924

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 2



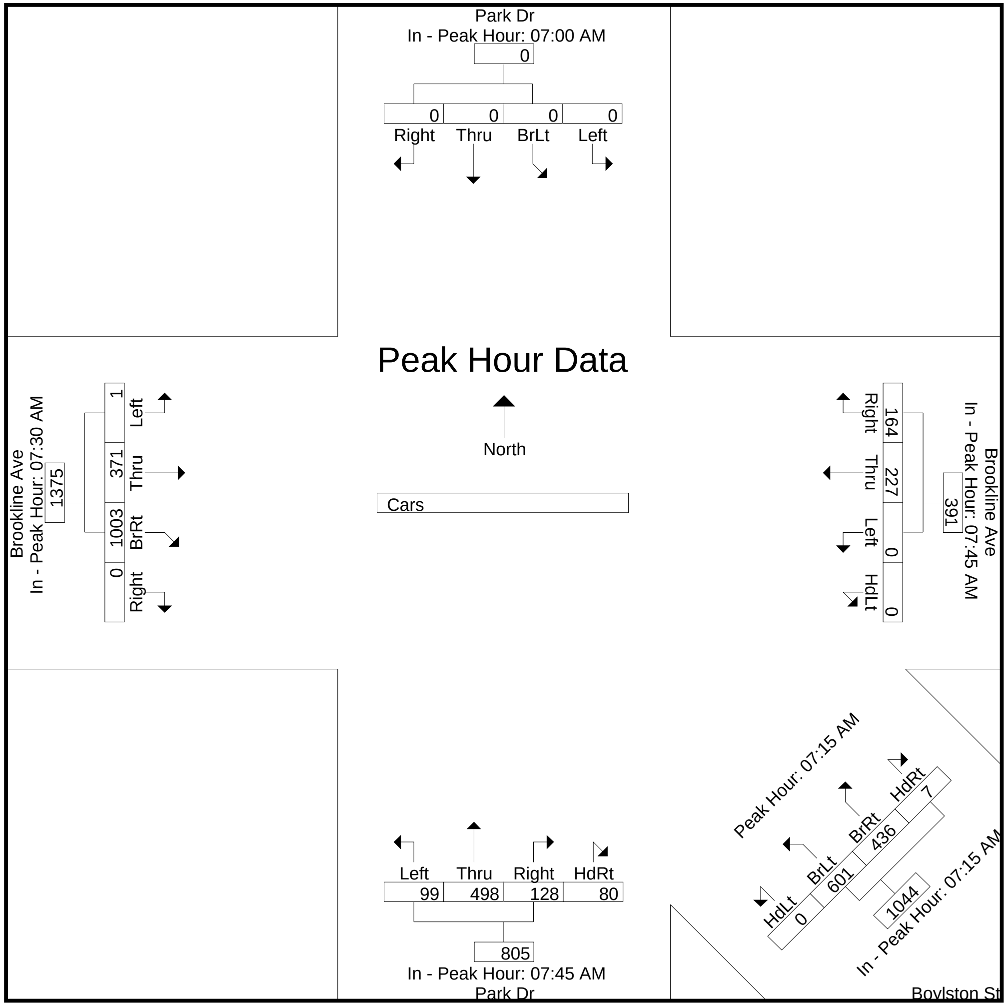
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM					07:45 AM					07:15 AM					07:45 AM					07:30 AM				
+0 mins.	0	0	0	0	0	0	0	60	50	110	0	143	109	1	253	**31**	**130**	32	**31**	**224**	0	95	243	0	338
+15 mins.	0	0	0	0	0	0	0	**64**	**52**	**116**	0	147	**117**	**4**	268	29	129	32	17	207	0	**98**	258	0	**356**
+30 mins.	0	0	0	0	0	0	0	48	26	74	0	**163**	113	2	**278**	18	118	30	18	184	0	93	**259**	0	352
+45 mins.	0	0	0	0	0	0	0	55	36	91	0	148	97	0	245	21	121	**34**	14	190	**1**	85	243	0	329
Total Volume	0	0	0	0	0	0	0	227	164	391	0	601	436	7	1044	99	498	128	80	805	1	371	1003	0	1375
% App. Total	0	0	0	0		0	0	58.1	41.9		0	57.6	41.8	0.7		12.3	61.9	15.9	9.9		0.1	27	72.9	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.887	.788	.843	.000	.922	.932	.438	.939	.798	.958	.941	.645	.898	.250	.946	.968	.000	.966

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

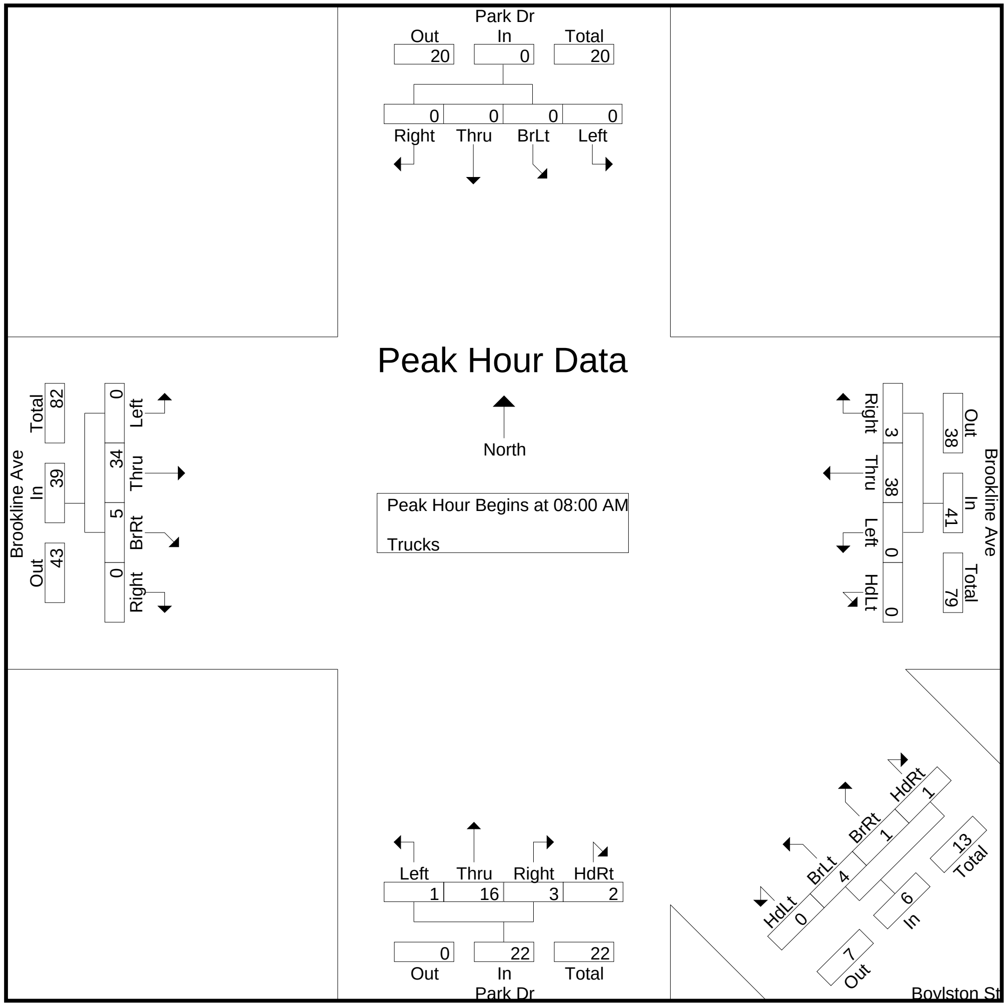
	Park Dr From North				**Brookline Ave From East**				**Boylston St From Southeast**				**Park Dr From South**				**Brookline Ave From West**				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
07:00 AM	0	0	0	0	0	0	10	0	0	2	0	0	0	4	1	2	0	7	2	0	28
07:15 AM	0	0	0	0	0	0	7	1	0	1	0	0	0	3	0	1	0	6	1	0	20
07:30 AM	0	0	0	0	0	0	13	1	0	3	0	0	1	3	0	0	0	4	3	0	28
07:45 AM	0	0	0	0	0	0	8	2	0	1	1	0	1	4	0	0	0	8	2	0	27
Total	0	0	0	0	0	0	38	4	0	7	1	0	2	14	1	3	0	25	8	0	103
08:00 AM	0	0	0	0	0	0	10	0	0	1	1	0	1	4	0	2	0	7	2	0	28
08:15 AM	0	0	0	0	0	0	4	0	0	1	0	0	0	6	1	0	0	6	1	0	19
08:30 AM	0	0	0	0	0	0	10	2	0	1	0	0	0	2	2	0	0	12	1	0	30
08:45 AM	0	0	0	0	0	0	14	1	0	1	0	1	0	4	0	0	0	9	1	0	31
Total	0	0	0	0	0	0	38	3	0	4	1	1	1	16	3	2	0	34	5	0	108
Grand Total	0	0	0	0	0	0	76	7	0	11	2	1	3	30	4	5	0	59	13	0	211
Apprch %	0	0	0	0	0	0	91.6	8.4	0	78.6	14.3	7.1	7.1	71.4	9.5	11.9	0	81.9	18.1	0	
Total %	0	0	0	0	0	0	36	3.3	0	5.2	0.9	0.5	1.4	14.2	1.9	2.4	0	28	6.2	0	

	Park Dr From North					**Brookline Ave From East**					**Boylston St From Southeast**					**Park Dr From South**					**Brookline Ave From West**					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 08:00 AM																										
08:00 AM	0	0	0	0	0	0	0	10	0	10	0	**1**	**1**	0	**2**	**1**	4	0	**2**	**7**	0	7	**2**	0	9	28
08:15 AM	0	0	0	0	0	0	0	4	0	4	0	1	0	0	1	0	**6**	1	0	7	0	6	1	0	7	19
08:30 AM	0	0	0	0	0	0	0	10	**2**	12	0	1	0	0	1	0	2	**2**	0	4	0	**12**	1	0	**13**	30
08:45 AM	0	0	0	0	0	0	0	**14**	1	**15**	0	1	0	**1**	2	0	4	0	0	4	0	9	1	0	10	**31**
Total Volume	0	0	0	0	0	0	0	38	3	41	0	4	1	1	6	1	16	3	2	22	0	34	5	0	39	108
% App. Total	0	0	0	0		0	0	92.7	7.3		0	66.7	16.7	16.7		4.5	72.7	13.6	9.1		0	87.2	12.8	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.679	.375	.683	.000	1.00	.250	.250	.750	.250	.667	.375	.250	.786	.000	.708	.625	.000	.750	.871

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012



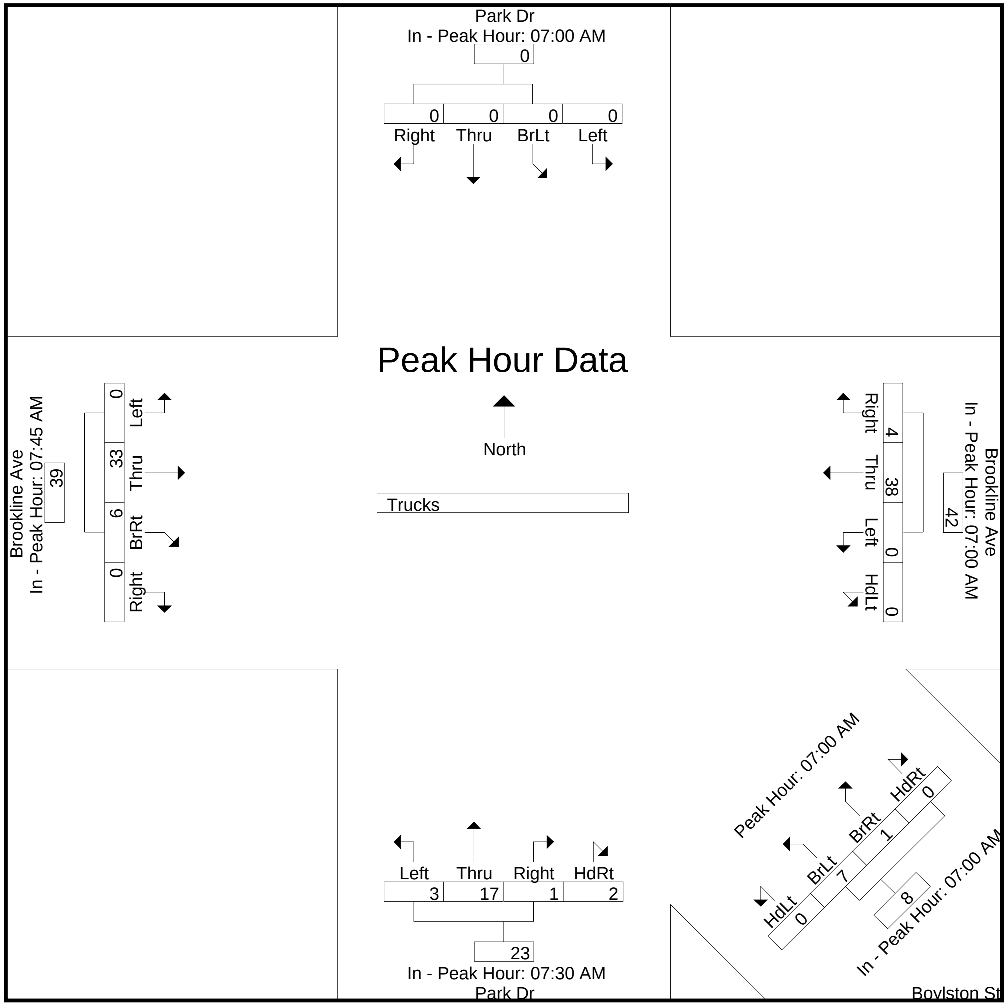
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM					07:00 AM					07:00 AM					07:30 AM					07:45 AM				
+0 mins.	0	0	0	0	0	0	0	10	0	10	0	2	0	0	2	**1**	3	0	0	4	0	8	**2**	0	10
+15 mins.	0	0	0	0	0	0	0	7	1	8	0	1	0	0	1	1	4	0	0	5	0	7	2	0	9
+30 mins.	0	0	0	0	0	0	0	**13**	1	**14**	0	**3**	0	0	**3**	1	4	0	**2**	**7**	0	6	1	0	7
+45 mins.	0	0	0	0	0	0	0	8	**2**	10	0	1	**1**	0	2	0	**6**	**1**	0	7	0	**12**	1	0	**13**
Total Volume	0	0	0	0	0	0	0	38	4	42	0	7	1	0	8	3	17	1	2	23	0	33	6	0	39
% App. Total	0	0	0	0		0	0	90.5	9.5		0	87.5	12.5	0		13	73.9	4.3	8.7		0	84.6	15.4	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.731	.500	.750	.000	.583	.250	.000	.667	.750	.708	.250	.250	.821	.000	.688	.750	.000	.750

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

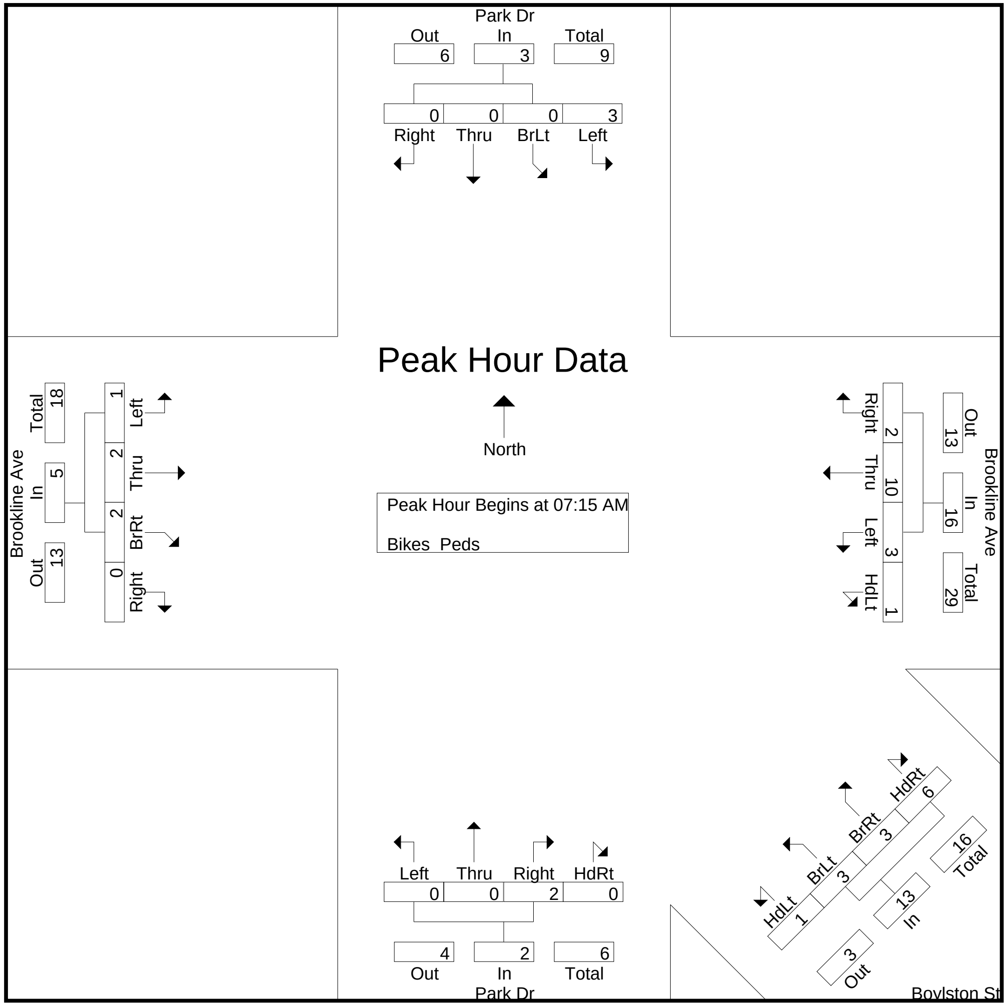
	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West							
Start Time	Left	BrLt	Thru	Right	Peds	HdLt	Left	Thru	Right	Peds	HdLt	BrLt	BrRt	HdRt	Peds	Left	Thru	Right	HdRt	Peds	Left	Thru	BrRt	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	22	0	0	1	0	20	0	0	0	0	32	0	0	0	0	12	0	1	1	0	0	86	3	89
07:15 AM	0	0	0	0	17	1	1	2	0	21	0	1	0	4	48	0	0	1	0	14	1	1	1	0	0	100	13	113
07:30 AM	0	0	0	0	25	0	0	3	1	21	1	2	0	2	42	0	0	1	0	21	0	0	0	0	0	109	10	119
07:45 AM	3	0	0	0	31	0	2	2	0	21	0	0	3	0	57	0	0	0	0	20	0	1	0	0	0	129	11	140
Total	3	0	0	0	95	1	3	8	1	83	1	3	3	6	179	0	0	2	0	67	1	3	2	0	0	424	37	461
08:00 AM	0	0	0	0	33	0	0	3	1	25	0	0	0	0	62	0	0	0	0	31	0	0	1	0	0	151	5	156
08:15 AM	1	1	0	0	28	1	0	2	1	42	0	0	0	1	62	0	0	1	0	32	0	1	0	0	0	164	9	173
08:30 AM	0	0	0	0	13	0	1	1	0	43	1	0	0	1	58	0	3	0	0	20	0	4	0	0	1	135	11	146
08:45 AM	1	0	0	0	27	0	1	1	0	36	0	0	0	0	69	0	0	2	0	36	0	1	0	0	0	168	6	174
Total	2	1	0	0	101	1	2	7	2	146	1	0	0	2	251	0	3	3	0	119	0	6	1	0	1	618	31	649
Grand Total	5	1	0	0	196	2	5	15	3	229	2	3	3	8	430	0	3	5	0	186	1	9	3	0	1	1042	68	1110
Apprch %	83.3	16.7	0	0		8	20	60	12		12.5	18.8	18.8	50		0	37.5	62.5	0		7.7	69.2	23.1	0				
Total %	7.4	1.5	0	0		2.9	7.4	22.1	4.4		2.9	4.4	4.4	11.8		0	4.4	7.4	0		1.5	13.2	4.4	0		93.9	6.1	

	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:15 AM																										
07:15 AM	0	0	0	0	0	**1**	1	2	0	**4**	0	1	0	**4**	**5**	0	0	**1**	0	**1**	**1**	**1**	**1**	0	**3**	**13**
07:30 AM	0	0	0	0	0	0	0	**3**	**1**	4	**1**	**2**	0	2	5	0	0	1	0	1	0	0	0	0	0	10
07:45 AM	**3**	0	0	0	**3**	0	**2**	2	0	4	0	0	**3**	0	3	0	0	0	0	0	0	1	0	0	1	11
08:00 AM	0	0	0	0	0	0	0	3	1	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	5
Total Volume	3	0	0	0	3	1	3	10	2	16	1	3	3	6	13	0	0	2	0	2	1	2	2	0	5	39
% App. Total	100	0	0	0		6.2	18.8	62.5	12.5		7.7	23.1	23.1	46.2		0	0	100	0		20	40	40	0		
PHF	.250	.000	.000	.000	.250	.250	.375	.833	.500	1.00	.250	.375	.250	.375	.650	.000	.000	.500	.000	.500	.250	.500	.500	.000	.417	.750

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 2



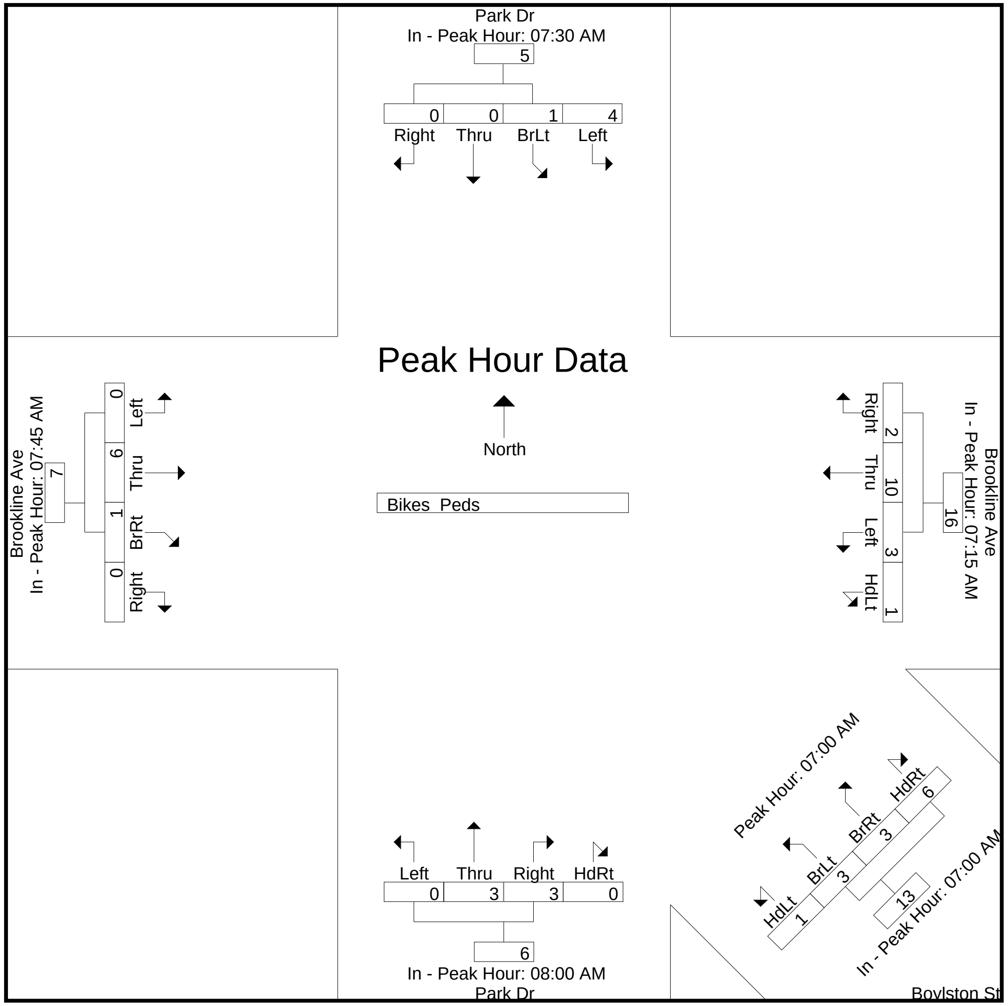
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM					07:15 AM					07:00 AM					08:00 AM					07:45 AM				
+0 mins.	0	0	0	0	0	**1**	1	2	0	**4**	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
+15 mins.	**3**	0	0	0	**3**	0	0	**3**	**1**	4	0	1	0	**4**	**5**	0	0	1	0	1	0	0	**1**	0	1
+30 mins.	0	0	0	0	0	0	**2**	2	0	4	**1**	**2**	0	2	5	0	**3**	0	0	**3**	0	1	0	0	1
+45 mins.	1	**1**	0	0	2	0	0	3	1	4	0	0	**3**	0	3	0	0	**2**	0	2	0	**4**	0	0	**4**
Total Volume	4	1	0	0	5	1	3	10	2	16	1	3	3	6	13	0	3	3	0	6	0	6	1	0	7
% App. Total	80	20	0	0		6.2	18.8	62.5	12.5		7.7	23.1	23.1	46.2		0	50	50	0		0	85.7	14.3	0	
PHF	.333	.250	.000	.000	.417	.250	.375	.833	.500	1.000	.250	.375	.250	.375	.650	.000	.250	.375	.000	.500	.000	.375	.250	.000	.438

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

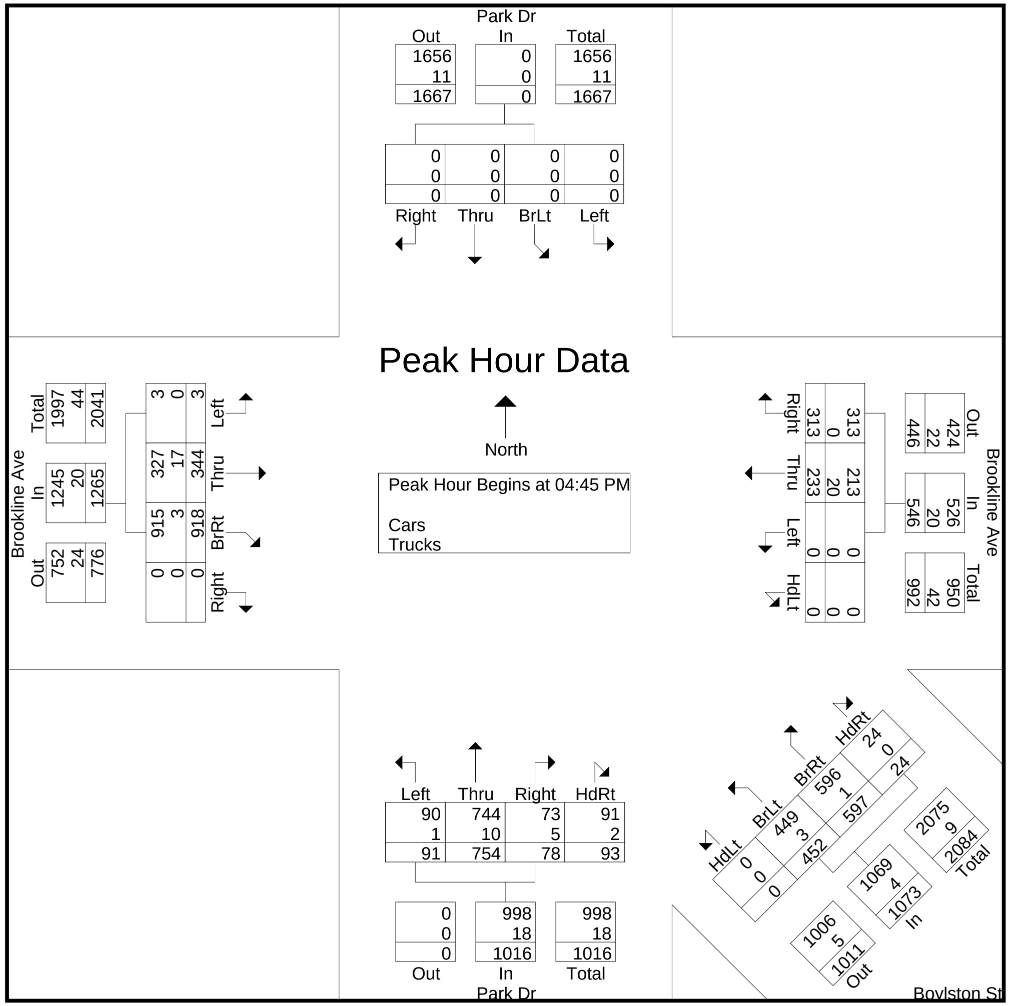
	Park Dr From North				Brookline Ave From East				Boylston St From Southeast				Park Dr From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
04:00 PM	0	0	0	0	0	0	70	73	0	105	132	3	21	179	11	27	2	92	216	0	931
04:15 PM	0	0	0	0	0	0	69	70	0	113	137	2	14	175	18	17	1	102	234	0	952
04:30 PM	0	0	0	0	0	0	77	69	0	100	141	4	12	153	20	20	1	98	230	0	925
04:45 PM	0	0	0	0	0	0	58	74	0	108	137	8	19	217	19	34	1	78	238	0	991
Total	0	0	0	0	0	0	274	286	0	426	547	17	66	724	68	98	5	370	918	0	3799
05:00 PM	0	0	0	0	0	0	51	89	0	103	155	6	28	163	20	18	0	92	203	0	928
05:15 PM	0	0	0	0	0	0	68	76	0	129	158	5	26	178	15	18	1	94	262	0	1030
05:30 PM	0	0	0	0	0	0	56	74	0	112	147	5	18	196	24	23	1	80	215	0	951
05:45 PM	0	0	0	0	0	0	52	78	0	118	125	6	14	180	22	18	1	82	208	0	904
Total	0	0	0	0	0	0	227	317	0	462	585	22	86	717	81	77	3	348	888	0	3813
Grand Total	0	0	0	0	0	0	501	603	0	888	1132	39	152	1441	149	175	8	718	1806	0	7612
Apprch %	0	0	0	0	0	0	45.4	54.6	0	43.1	55	1.9	7.9	75.2	7.8	9.1	0.3	28.4	71.3	0	
Total %	0	0	0	0	0	0	6.6	7.9	0	11.7	14.9	0.5	2	18.9	2	2.3	0.1	9.4	23.7	0	
Cars	0	0	0	0	0	0	458	602	0	881	1129	38	151	1422	143	173	8	676	1800	0	7481
% Cars	0	0	0	0	0	0	91.4	99.8	0	99.2	99.7	97.4	99.3	98.7	96	98.9	100	94.2	99.7	0	98.3
Trucks	0	0	0	0	0	0	43	1	0	7	3	1	1	19	6	2	0	42	6	0	131
% Trucks	0	0	0	0	0	0	8.6	0.2	0	0.8	0.3	2.6	0.7	1.3	4	1.1	0	5.8	0.3	0	1.7

	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:45 PM																										
04:45 PM	0	0	0	0	0	0	0	58	74	132	0	108	137	**8**	253	19	**217**	19	**34**	**289**	**1**	78	238	0	317	991
05:00 PM	0	0	0	0	0	0	0	51	**89**	140	0	103	155	6	264	**28**	163	20	18	229	0	92	203	0	295	928
05:15 PM	0	0	0	0	0	0	0	**68**	76	**144**	0	**129**	**158**	5	**292**	26	178	15	18	237	1	**94**	**262**	0	**357**	**1030**
05:30 PM	0	0	0	0	0	0	0	56	74	130	0	112	147	5	264	18	196	**24**	23	261	1	80	215	0	296	951
Total Volume	0	0	0	0	0	0	0	233	313	546	0	452	597	24	1073	91	754	78	93	1016	3	344	918	0	1265	3900
% App. Total	0	0	0	0		0	0	42.7	57.3		0	42.1	55.6	2.2		9	74.2	7.7	9.2		0.2	27.2	72.6	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.857	.879	.948	.000	.876	.945	.750	.919	.813	.869	.813	.684	.879	.750	.915	.876	.000	.886	.947
Cars	0	0	0	0	0	0	0	213	313	526	0	449	596	24	1069	90	744	73	91	998	3	327	915	0	1245	3838
% Cars	0	0	0	0	0	0	0	91.4	100	96.3	0	99.3	99.8	100	99.6	98.9	98.7	93.6	97.8	98.2	100	95.1	99.7	0	98.4	98.4
Trucks	0	0	0	0	0	0	0	20	0	20	0	3	1	0	4	1	10	5	2	18	0	17	3	0	20	62
% Trucks	0	0	0	0	0	0	0	8.6	0	3.7	0	0.7	0.2	0	0.4	1.1	1.3	6.4	2.2	1.8	0	4.9	0.3	0	1.6	1.6

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 2

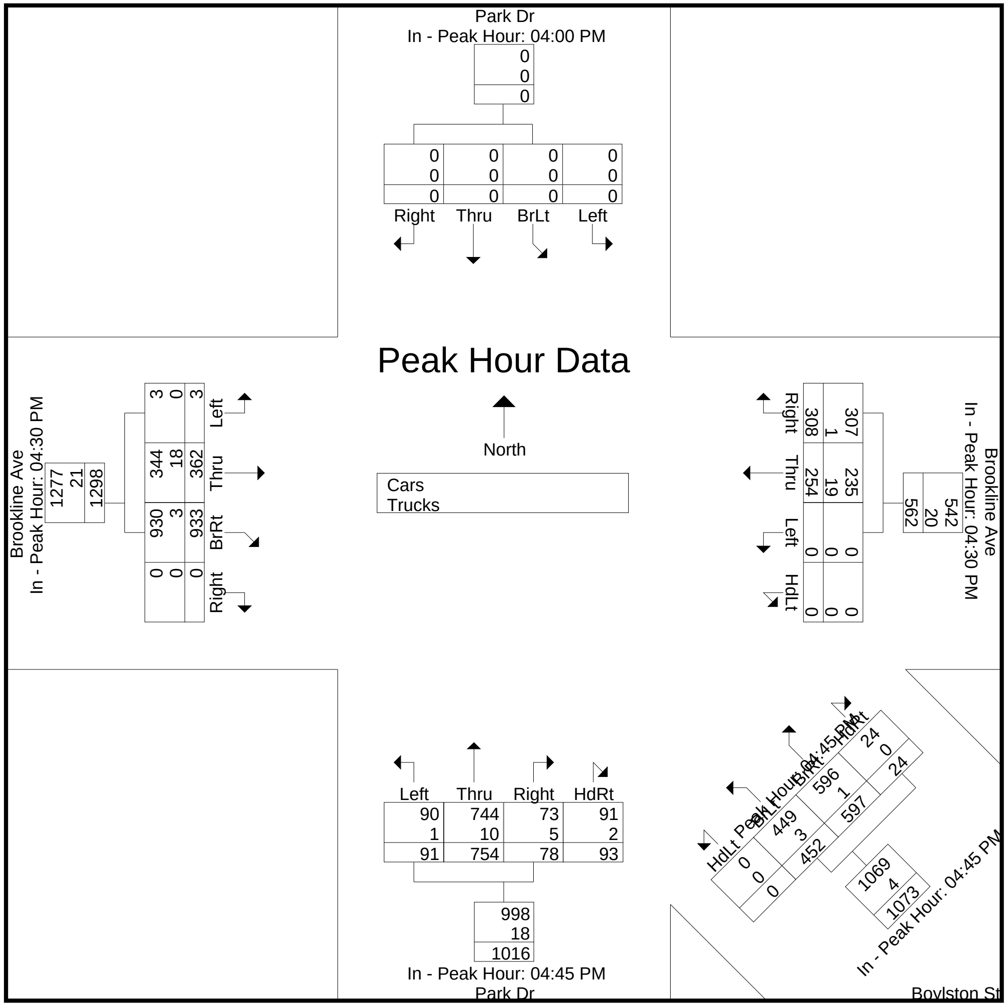


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM					04:30 PM					04:45 PM					04:45 PM					04:30 PM				
+0 mins.	0	0	0	0	0	0	0	**77**	69	**146**	0	108	137	**8**	253	19	**217**	19	**34**	**289**	**1**	**98**	230	0	329
+15 mins.	0	0	0	0	0	0	0	58	74	132	0	103	155	6	264	**28**	163	20	18	229	1	78	238	0	317
+30 mins.	0	0	0	0	0	0	0	51	**89**	140	0	**129**	**158**	5	**292**	26	178	15	18	237	0	92	203	0	295
+45 mins.	0	0	0	0	0	0	0	68	76	144	0	112	147	5	264	18	196	**24**	23	261	1	94	**262**	0	**357**
Total Volume	0	0	0	0	0	0	0	254	308	562	0	452	597	24	1073	91	754	78	93	1016	3	362	933	0	1298
% App. Total	0	0	0	0		0	0	45.2	54.8		0	42.1	55.6	2.2		9	74.2	7.7	9.2		0.2	27.9	71.9	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.825	.865	.962	.000	.876	.945	.750	.919	.813	.869	.813	.684	.879	.750	.923	.890	.000	.909
Cars	0	0	0	0	0	0	0	235	307	542	0	449	596	24	1069	90	744	73	91	998	3	344	930	0	1277
% Cars	0	0	0	0	0	0	0	92.5	99.7	96.4	0	99.3	99.8	100	99.6	98.9	98.7	93.6	97.8	98.2	100	95	99.7	0	98.4
Trucks	0	0	0	0	0	0	0	19	1	20	0	3	1	0	4	1	10	5	2	18	0	18	3	0	21

Accurate Counts

978-664-2565



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

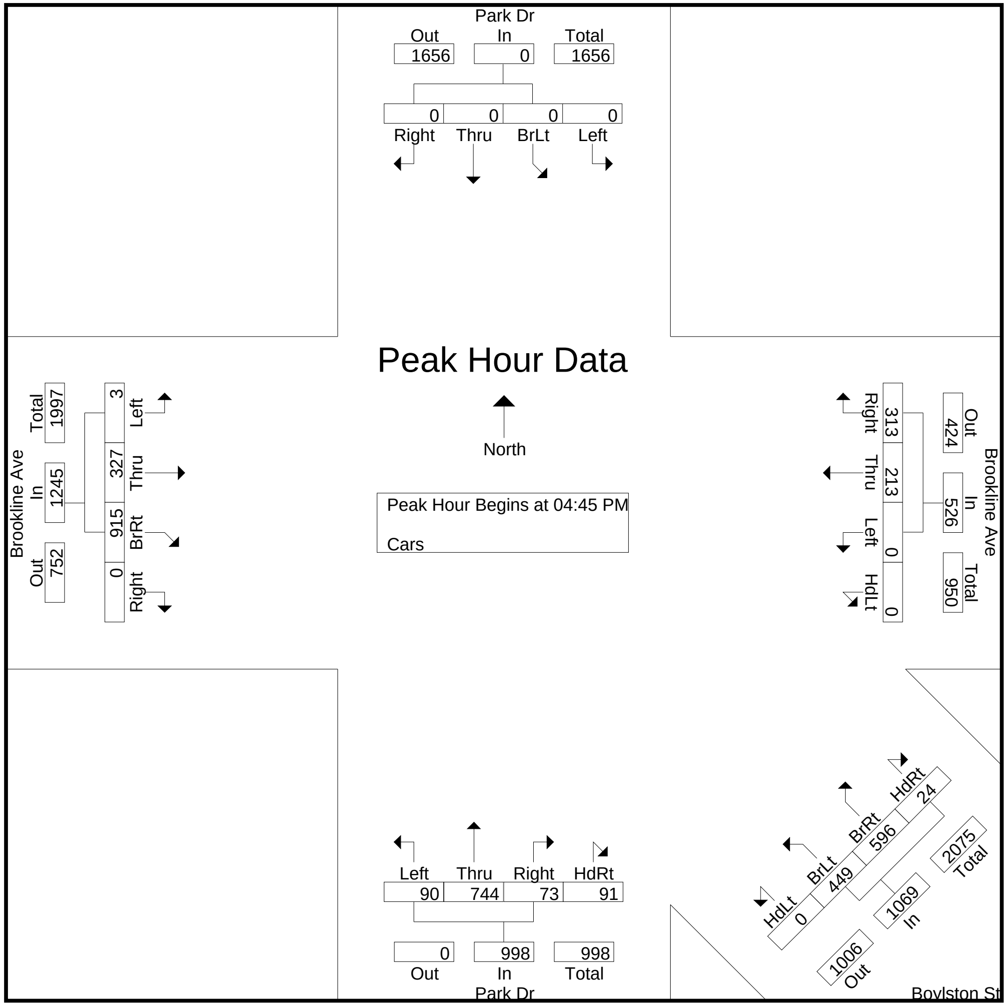
	Park Dr From North				Brookline Ave From East				Boylston St From Southeast				Park Dr From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
04:00 PM	0	0	0	0	0	0	65	73	0	104	131	3	21	177	11	27	2	87	216	0	917
04:15 PM	0	0	0	0	0	0	64	70	0	112	137	2	14	172	18	17	1	94	232	0	933
04:30 PM	0	0	0	0	0	0	71	68	0	100	141	4	12	151	19	20	1	92	230	0	909
04:45 PM	0	0	0	0	0	0	53	74	0	108	137	8	19	215	15	32	1	75	237	0	974
Total	0	0	0	0	0	0	253	285	0	424	546	17	66	715	63	96	5	348	915	0	3733
05:00 PM	0	0	0	0	0	0	45	89	0	102	155	6	28	159	20	18	0	87	202	0	911
05:15 PM	0	0	0	0	0	0	66	76	0	128	157	5	25	176	14	18	1	90	261	0	1017
05:30 PM	0	0	0	0	0	0	49	74	0	111	147	5	18	194	24	23	1	75	215	0	936
05:45 PM	0	0	0	0	0	0	45	78	0	116	124	5	14	178	22	18	1	76	207	0	884
Total	0	0	0	0	0	0	205	317	0	457	583	21	85	707	80	77	3	328	885	0	3748
Grand Total	0	0	0	0	0	0	458	602	0	881	1129	38	151	1422	143	173	8	676	1800	0	7481
Apprch %	0	0	0	0	0	0	43.2	56.8	0	43	55.1	1.9	8	75.3	7.6	9.2	0.3	27.2	72.5	0	
Total %	0	0	0	0	0	0	6.1	8	0	11.8	15.1	0.5	2	19	1.9	2.3	0.1	9	24.1	0	

	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:45 PM																										
04:45 PM	0	0	0	0	0	0	0	53	74	127	0	108	137	**8**	253	19	**215**	15	**32**	**281**	**1**	75	237	0	313	974
05:00 PM	0	0	0	0	0	0	0	45	**89**	134	0	102	155	6	263	**28**	159	20	18	225	0	87	202	0	289	911
05:15 PM	0	0	0	0	0	0	0	**66**	76	**142**	0	**128**	**157**	5	**290**	25	176	14	18	233	1	**90**	**261**	0	**352**	**1017**
05:30 PM	0	0	0	0	0	0	0	49	74	123	0	111	147	5	263	18	194	**24**	23	259	1	75	215	0	291	936
Total Volume	0	0	0	0	0	0	0	213	313	526	0	449	596	24	1069	90	744	73	91	998	3	327	915	0	1245	3838
% App. Total	0	0	0	0		0	0	40.5	59.5		0	42	55.8	2.2		9	74.5	7.3	9.1		0.2	26.3	73.5	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.807	.879	.926	.000	.877	.949	.750	.922	.804	.865	.760	.711	.888	.750	.908	.876	.000	.884	.943

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 2



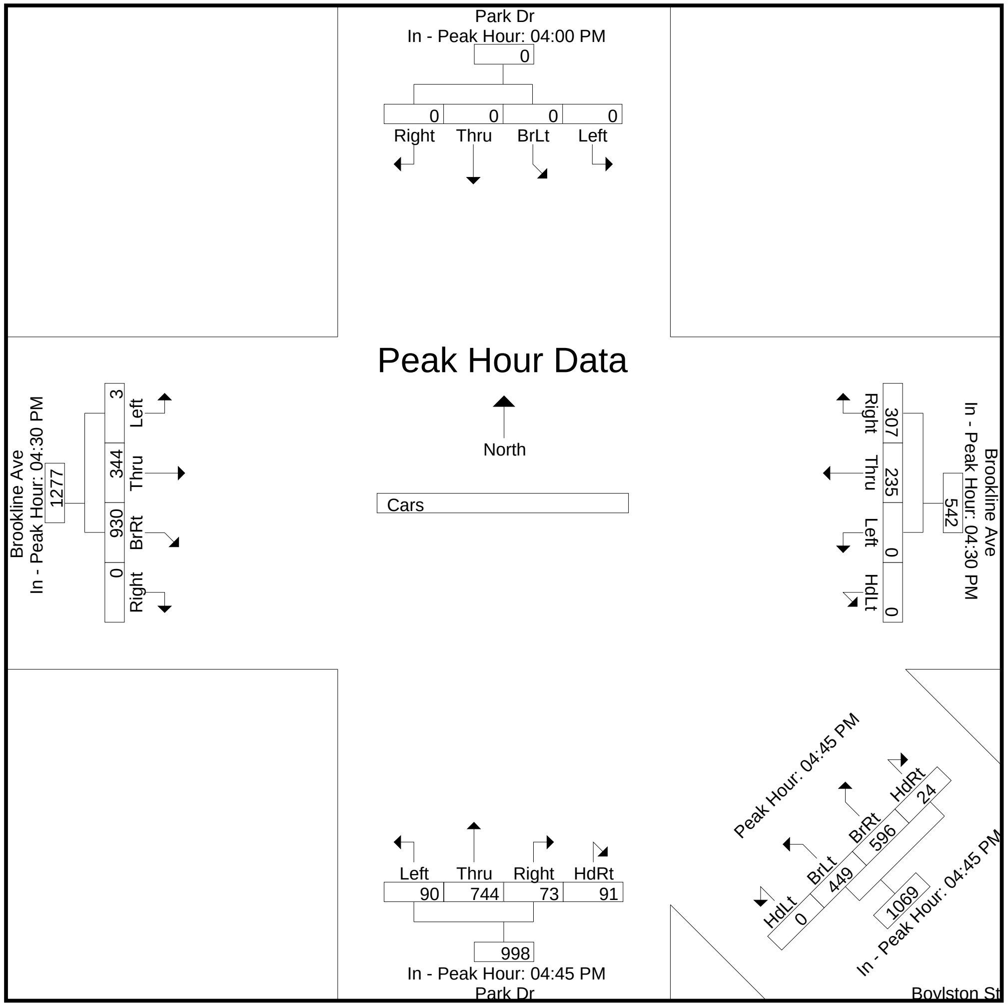
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM					04:30 PM					04:45 PM					04:45 PM					04:30 PM				
+0 mins.	0	0	0	0	0	0	0	**71**	68	139	0	108	137	**8**	253	19	**215**	15	**32**	**281**	**1**	**92**	230	0	323
+15 mins.	0	0	0	0	0	0	0	53	74	127	0	102	155	6	263	**28**	159	20	18	225	1	75	237	0	313
+30 mins.	0	0	0	0	0	0	0	45	**89**	134	0	**128**	**157**	5	**290**	25	176	14	18	233	0	87	202	0	289
+45 mins.	0	0	0	0	0	0	0	66	76	**142**	0	111	147	5	263	18	194	**24**	23	259	1	90	**261**	0	**352**
Total Volume	0	0	0	0	0	0	0	235	307	542	0	449	596	24	1069	90	744	73	91	998	3	344	930	0	1277
% App. Total	0	0	0	0		0	0	43.4	56.6		0	42	55.8	2.2		9	74.5	7.3	9.1		0.2	26.9	72.8	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.827	.862	.954	.000	.877	.949	.750	.922	.804	.865	.760	.711	.888	.750	.935	.891	.000	.907

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

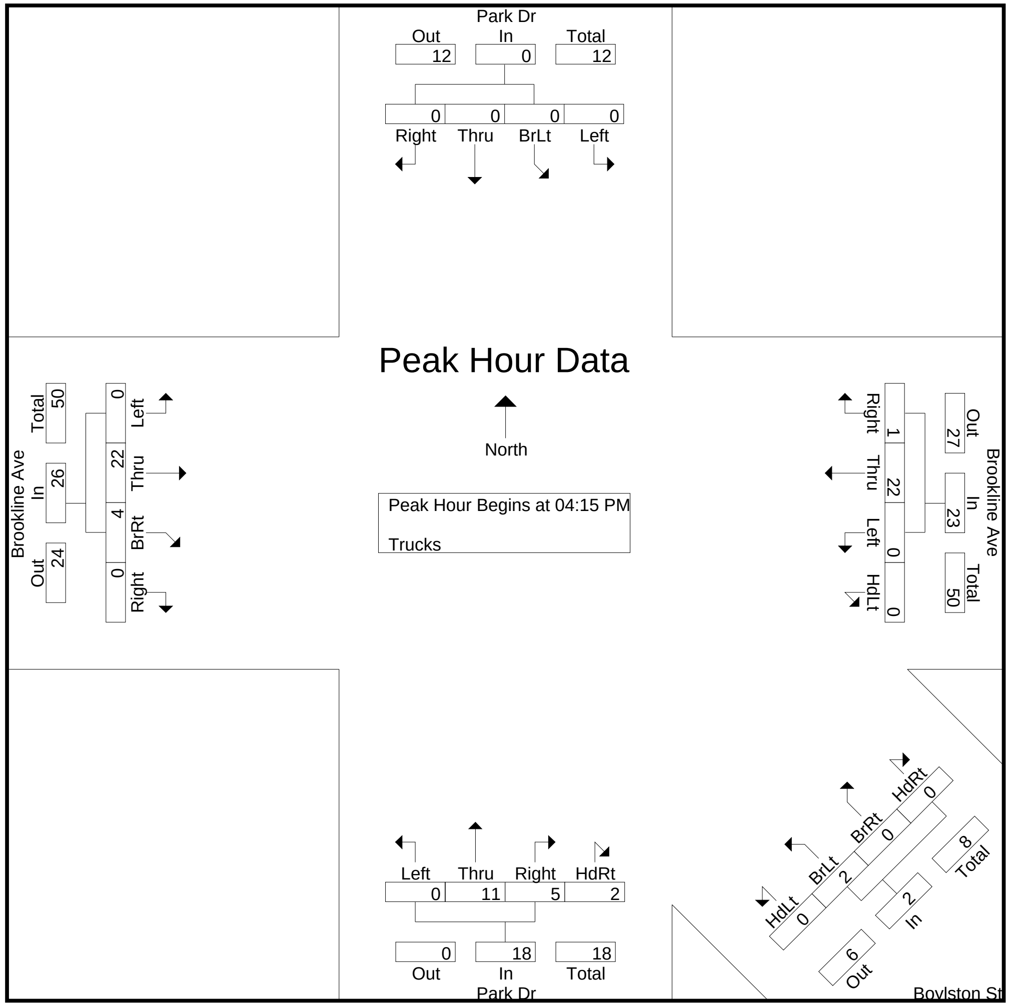
	Park Dr From North				Brookline Ave From East				Boylston St From Southeast				Park Dr From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
04:00 PM	0	0	0	0	0	0	5	0	0	1	1	0	0	2	0	0	0	5	0	0	14
04:15 PM	0	0	0	0	0	0	5	0	0	1	0	0	0	3	0	0	0	8	2	0	19
04:30 PM	0	0	0	0	0	0	6	1	0	0	0	0	0	2	1	0	0	6	0	0	16
04:45 PM	0	0	0	0	0	0	5	0	0	0	0	0	0	2	4	2	0	3	1	0	17
Total	0	0	0	0	0	0	21	1	0	2	1	0	0	9	5	2	0	22	3	0	66
05:00 PM	0	0	0	0	0	0	6	0	0	1	0	0	0	4	0	0	0	5	1	0	17
05:15 PM	0	0	0	0	0	0	2	0	0	1	1	0	1	2	1	0	0	4	1	0	13
05:30 PM	0	0	0	0	0	0	7	0	0	1	0	0	0	2	0	0	0	5	0	0	15
05:45 PM	0	0	0	0	0	0	7	0	0	2	1	1	0	2	0	0	0	6	1	0	20
Total	0	0	0	0	0	0	22	0	0	5	2	1	1	10	1	0	0	20	3	0	65
Grand Total	0	0	0	0	0	0	43	1	0	7	3	1	1	19	6	2	0	42	6	0	131
Apprch %	0	0	0	0	0	0	97.7	2.3	0	63.6	27.3	9.1	3.6	67.9	21.4	7.1	0	87.5	12.5	0	
Total %	0	0	0	0	0	0	32.8	0.8	0	5.3	2.3	0.8	0.8	14.5	4.6	1.5	0	32.1	4.6	0	

	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:15 PM																										
04:15 PM	0	0	0	0	0	0	0	5	0	5	0	**1**	0	0	**1**	0	3	0	0	3	0	**8**	**2**	0	**10**	**19**
04:30 PM	0	0	0	0	0	0	0	**6**	**1**	**7**	0	0	0	0	0	0	2	1	0	3	0	6	0	0	6	16
04:45 PM	0	0	0	0	0	0	0	5	0	5	0	0	0	0	0	0	2	**4**	**2**	**8**	0	3	1	0	4	17
05:00 PM	0	0	0	0	0	0	0	6	0	6	0	1	0	0	1	0	**4**	0	0	4	0	5	1	0	6	17
Total Volume	0	0	0	0	0	0	0	22	1	23	0	2	0	0	2	0	11	5	2	18	0	22	4	0	26	69
% App. Total	0	0	0	0		0	0	95.7	4.3		0	100	0	0		0	61.1	27.8	11.1		0	84.6	15.4	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.917	.250	.821	.000	.500	.000	.000	.500	.000	.688	.313	.250	.563	.000	.688	.500	.000	.650	.908

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 2



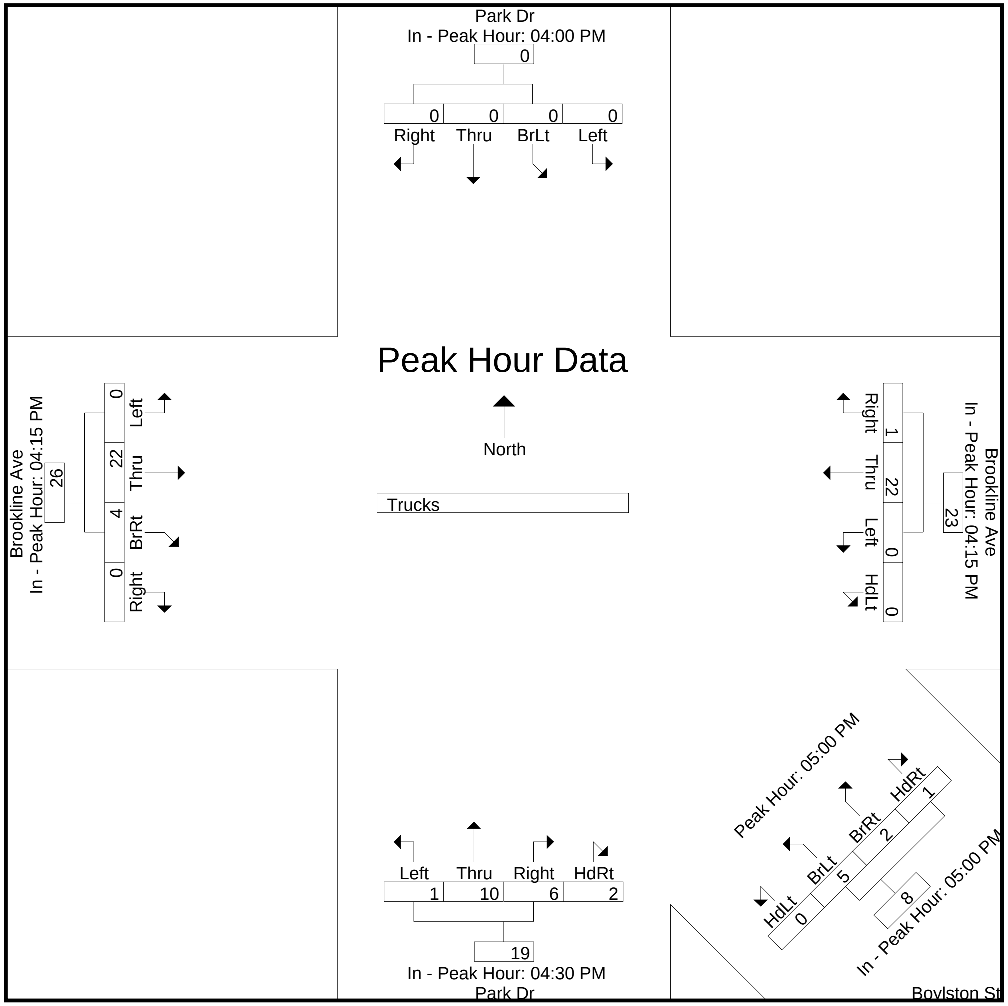
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM					04:15 PM					05:00 PM					04:30 PM					04:15 PM				
+0 mins.	0	0	0	0	0	0	0	5	0	5	0	1	0	0	1	0	2	1	0	3	0	**8**	**2**	0	**10**
+15 mins.	0	0	0	0	0	0	0	**6**	**1**	**7**	0	1	**1**	0	2	0	2	**4**	**2**	**8**	0	6	0	0	6
+30 mins.	0	0	0	0	0	0	0	5	0	5	0	1	0	0	1	0	**4**	0	0	4	0	3	1	0	4
+45 mins.	0	0	0	0	0	0	0	6	0	6	0	**2**	1	**1**	**4**	**1**	2	1	0	4	0	5	1	0	6
Total Volume	0	0	0	0	0	0	0	22	1	23	0	5	2	1	8	1	10	6	2	19	0	22	4	0	26
% App. Total	0	0	0	0		0	0	95.7	4.3		0	62.5	25	12.5		5.3	52.6	31.6	10.5		0	84.6	15.4	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.917	.250	.821	.000	.625	.500	.250	.500	.250	.625	.375	.250	.594	.000	.688	.500	.000	.650

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

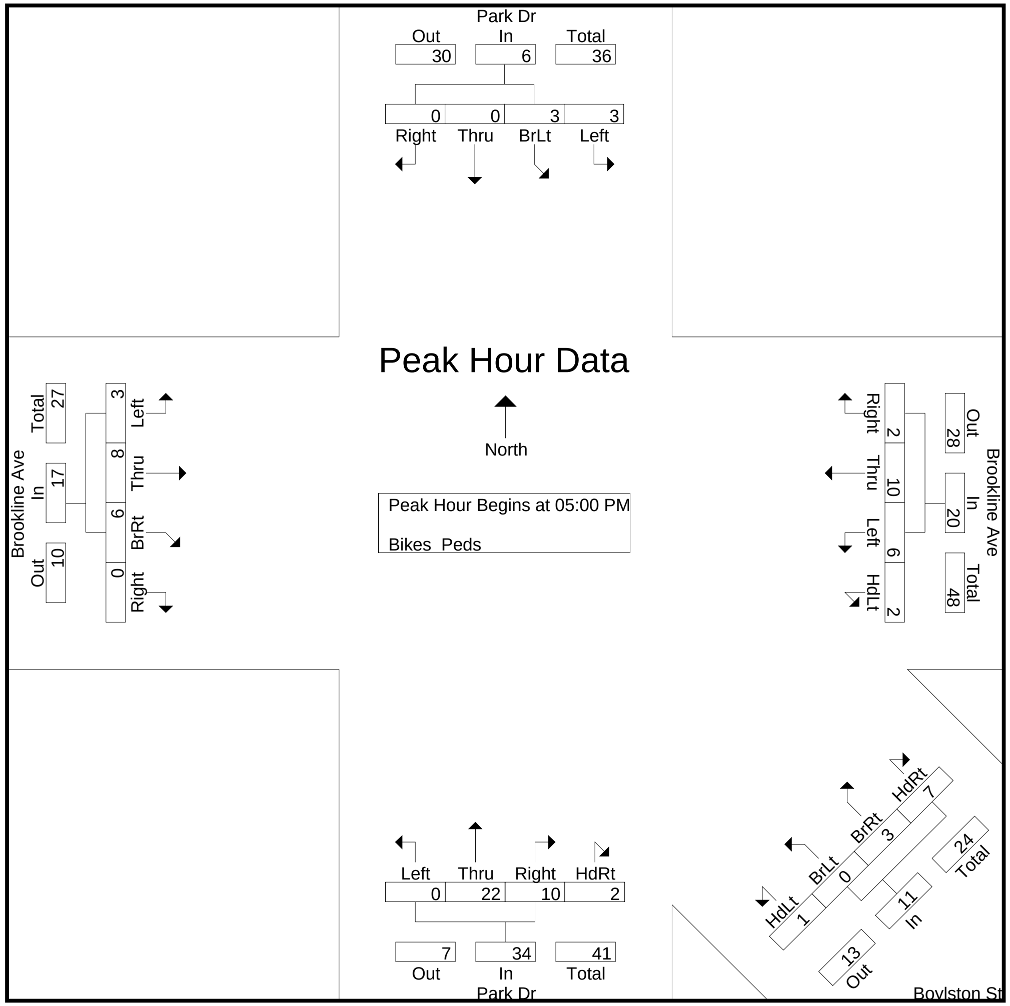
	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West							
Start Time	Left	BrLt	Thru	Right	Peds	HdLt	Left	Thru	Right	Peds	HdLt	BrLt	BrRt	HdRt	Peds	Left	Thru	Right	HdRt	Peds	Left	Thru	BrRt	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	1	0	0	54	0	0	1	0	27	0	0	0	0	64	0	2	0	0	26	0	1	1	0	1	172	6	178
04:15 PM	1	1	0	0	73	3	0	2	0	46	1	0	2	2	84	0	3	0	0	37	0	2	0	0	0	240	17	257
04:30 PM	0	0	0	0	39	0	2	0	0	56	1	0	0	1	97	0	0	0	0	48	0	1	2	0	2	242	7	249
04:45 PM	2	0	0	0	35	0	1	3	0	34	0	0	0	3	71	0	5	1	0	49	0	1	1	0	0	189	17	206
Total	3	2	0	0	201	3	3	6	0	163	2	0	2	6	316	0	10	1	0	160	0	5	4	0	3	843	47	890
05:00 PM	1	0	0	0	89	1	2	1	1	49	0	0	1	2	114	0	7	3	0	51	0	2	1	0	2	305	22	327
05:15 PM	0	0	0	0	40	1	2	2	0	38	0	0	1	0	96	0	6	4	0	50	1	5	3	0	0	224	25	249
05:30 PM	1	2	0	0	50	0	2	6	0	59	0	0	0	0	89	0	7	1	0	40	0	0	2	0	0	238	21	259
05:45 PM	1	1	0	0	32	0	0	1	1	53	1	0	1	5	97	0	2	2	2	56	2	1	0	0	0	238	20	258
Total	3	3	0	0	211	2	6	10	2	199	1	0	3	7	396	0	22	10	2	197	3	8	6	0	2	1005	88	1093
Grand Total	6	5	0	0	412	5	9	16	2	362	3	0	5	13	712	0	32	11	2	357	3	13	10	0	5	1848	135	1983
Apprch %	54.5	45.5	0	0		15.6	28.1	50	6.2		14.3	0	23.8	61.9		0	71.1	24.4	4.4		11.5	50	38.5	0				
Total %	4.4	3.7	0	0		3.7	6.7	11.9	1.5		2.2	0	3.7	9.6		0	23.7	8.1	1.5		2.2	9.6	7.4	0		93.2	6.8	

	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 05:00 PM																										
05:00 PM	**1**	0	0	0	1	**1**	**2**	1	**1**	5	0	0	**1**	2	3	0	**7**	3	0	**10**	0	2	1	0	3	22
05:15 PM	0	0	0	0	0	1	2	2	0	5	0	0	1	0	1	0	6	**4**	0	10	1	**5**	**3**	0	**9**	**25**
05:30 PM	1	**2**	0	0	**3**	0	2	**6**	0	**8**	0	0	0	0	0	0	7	1	0	8	0	0	2	0	2	21
05:45 PM	1	1	0	0	2	0	0	1	1	2	**1**	0	1	**5**	**7**	0	2	2	**2**	6	**2**	1	0	0	3	20
Total Volume	3	3	0	0	6	2	6	10	2	20	1	0	3	7	11	0	22	10	2	34	3	8	6	0	17	88
% App. Total	50	50	0	0		10	30	50	10		9.1	0	27.3	63.6		0	64.7	29.4	5.9		17.6	47.1	35.3	0		
PHF	.750	.375	.000	.000	.500	.500	.750	.417	.500	.625	.250	.000	.750	.350	.393	.000	.786	.625	.250	.850	.375	.400	.500	.000	.472	.880

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012



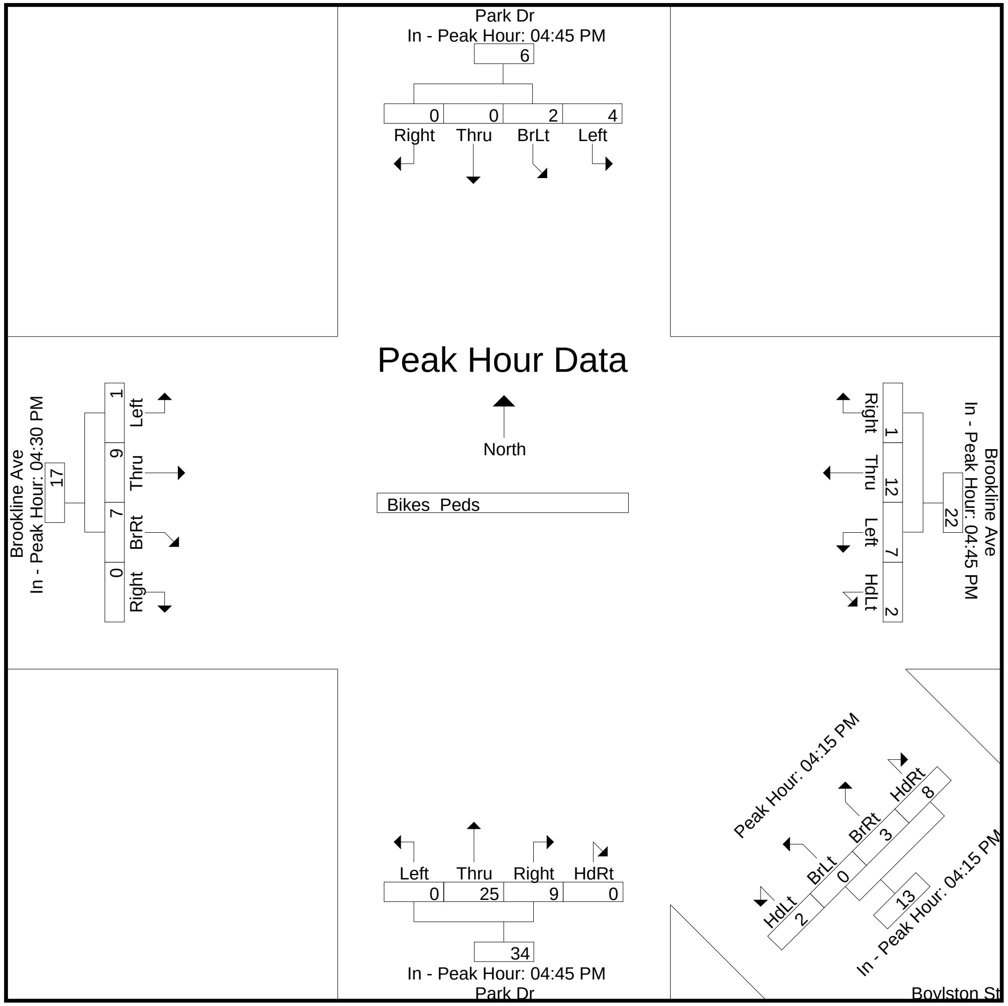
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM					04:45 PM					04:15 PM					04:45 PM					04:30 PM				
+0 mins.	**2**	0	0	0	2	0	1	3	0	4	**1**	0	**2**	2	**5**	0	5	1	0	6	0	1	2	0	3
+15 mins.	1	0	0	0	1	**1**	**2**	1	**1**	5	1	0	0	1	2	0	**7**	3	0	**10**	0	1	1	0	2
+30 mins.	0	0	0	0	0	1	2	2	0	5	0	0	0	**3**	3	0	6	**4**	0	10	0	2	1	0	3
+45 mins.	1	**2**	0	0	**3**	0	2	**6**	0	**8**	0	0	1	2	3	0	7	1	0	8	**1**	**5**	**3**	0	**9**
Total Volume	4	2	0	0	6	2	7	12	1	22	2	0	3	8	13	0	25	9	0	34	1	9	7	0	17
% App. Total	66.7	33.3	0	0		9.1	31.8	54.5	4.5		15.4	0	23.1	61.5		0	73.5	26.5	0		5.9	52.9	41.2	0	
PHF	.500	.250	.000	.000	.500	.500	.875	.500	.250	.688	.500	.000	.375	.667	.650	.000	.893	.563	.000	.850	.250	.450	.583	.000	.472

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

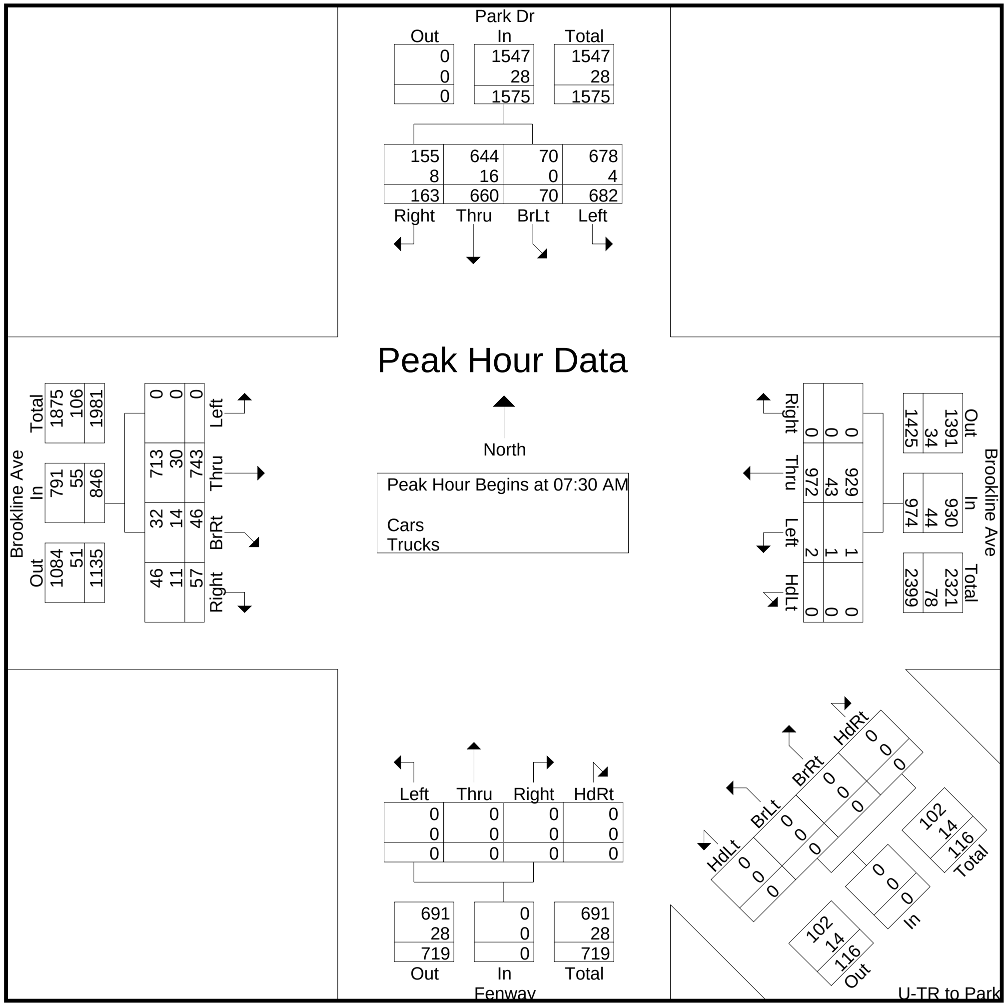
	Park Dr From North				Brookline Ave From East				U-TR to Park From Southeast				Fenway From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
07:00 AM	152	14	176	24	0	0	203	0	0	0	0	0	0	0	0	0	0	154	10	9	742
07:15 AM	168	12	208	33	0	1	210	0	0	0	0	0	0	0	0	0	0	136	6	8	782
07:30 AM	155	17	192	39	0	0	241	0	0	0	0	0	0	0	0	0	0	184	7	12	847
07:45 AM	180	13	134	46	0	0	241	0	0	0	0	0	0	0	0	0	0	196	12	16	838
Total	655	56	710	142	0	1	895	0	0	0	0	0	0	0	0	0	0	670	35	45	3209
08:00 AM	187	20	144	49	0	1	270	0	0	0	0	0	0	0	0	0	0	178	13	15	877
08:15 AM	160	20	190	29	0	1	220	0	0	0	0	0	0	0	0	0	0	185	14	14	833
08:30 AM	147	18	188	44	0	0	212	0	0	0	0	0	0	0	0	0	0	175	11	12	807
08:45 AM	133	14	195	30	0	0	241	0	0	0	0	0	0	0	0	0	0	181	9	10	813
Total	627	72	717	152	0	2	943	0	0	0	0	0	0	0	0	0	0	719	47	51	3330
Grand Total	1282	128	1427	294	0	3	1838	0	0	0	0	0	0	0	0	0	0	1389	82	96	6539
Apprch %	40.9	4.1	45.6	9.4	0	0.2	99.8	0	0	0	0	0	0	0	0	0	0	88.6	5.2	6.1	
Total %	19.6	2	21.8	4.5	0	0	28.1	0	0	0	0	0	0	0	0	0	0	21.2	1.3	1.5	
Cars	1276	128	1395	278	0	2	1749	0	0	0	0	0	0	0	0	0	0	1322	58	76	6284
% Cars	99.5	100	97.8	94.6	0	66.7	95.2	0	0	0	0	0	0	0	0	0	0	95.2	70.7	79.2	96.1
Trucks	6	0	32	16	0	1	89	0	0	0	0	0	0	0	0	0	0	67	24	20	255
% Trucks	0.5	0	2.2	5.4	0	33.3	4.8	0	0	0	0	0	0	0	0	0	0	4.8	29.3	20.8	3.9

	Park Dr From North					Brookline Ave From East					U-TR to Park From Southeast					Fenway From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:30 AM																										
07:30 AM	155	17	**192**	39	**403**	0	0	241	0	241	0	0	0	0	0	0	0	0	0	0	0	184	7	12	203	847
07:45 AM	180	13	134	46	373	0	0	241	0	241	0	0	0	0	0	0	0	0	0	0	0	**196**	12	**16**	**224**	838
08:00 AM	**187**	**20**	144	**49**	400	0	**1**	**270**	0	**271**	0	0	0	0	0	0	0	0	0	0	0	178	13	15	206	**877**
08:15 AM	160	20	190	29	399	0	1	220	0	221	0	0	0	0	0	0	0	0	0	0	0	185	**14**	14	213	833
Total Volume	682	70	660	163	1575	0	2	972	0	974	0	0	0	0	0	0	0	0	0	0	0	743	46	57	846	3395
% App. Total	43.3	4.4	41.9	10.3		0	0.2	99.8	0		0	0	0	0		0	0	0	0		0	87.8	5.4	6.7		
PHF	.912	.875	.859	.832	.977	.000	.500	.900	.000	.899	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.948	.821	.891	.944	.968
Cars	678	70	644	155	1547	0	1	929	0	930	0	0	0	0	0	0	0	0	0	0	0	713	32	46	791	3268
% Cars	99.4	100	97.6	95.1	98.2	0	50.0	95.6	0	95.5	0	0	0	0	0	0	0	0	0	0	0	96.0	69.6	80.7	93.5	96.3
Trucks	4	0	16	8	28	0	1	43	0	44	0	0	0	0	0	0	0	0	0	0	0	30	14	11	55	127
% Trucks	0.6	0	2.4	4.9	1.8	0	50.0	4.4	0	4.5	0	0	0	0	0	0	0	0	0	0	0	4.0	30.4	19.3	6.5	3.7

Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 2

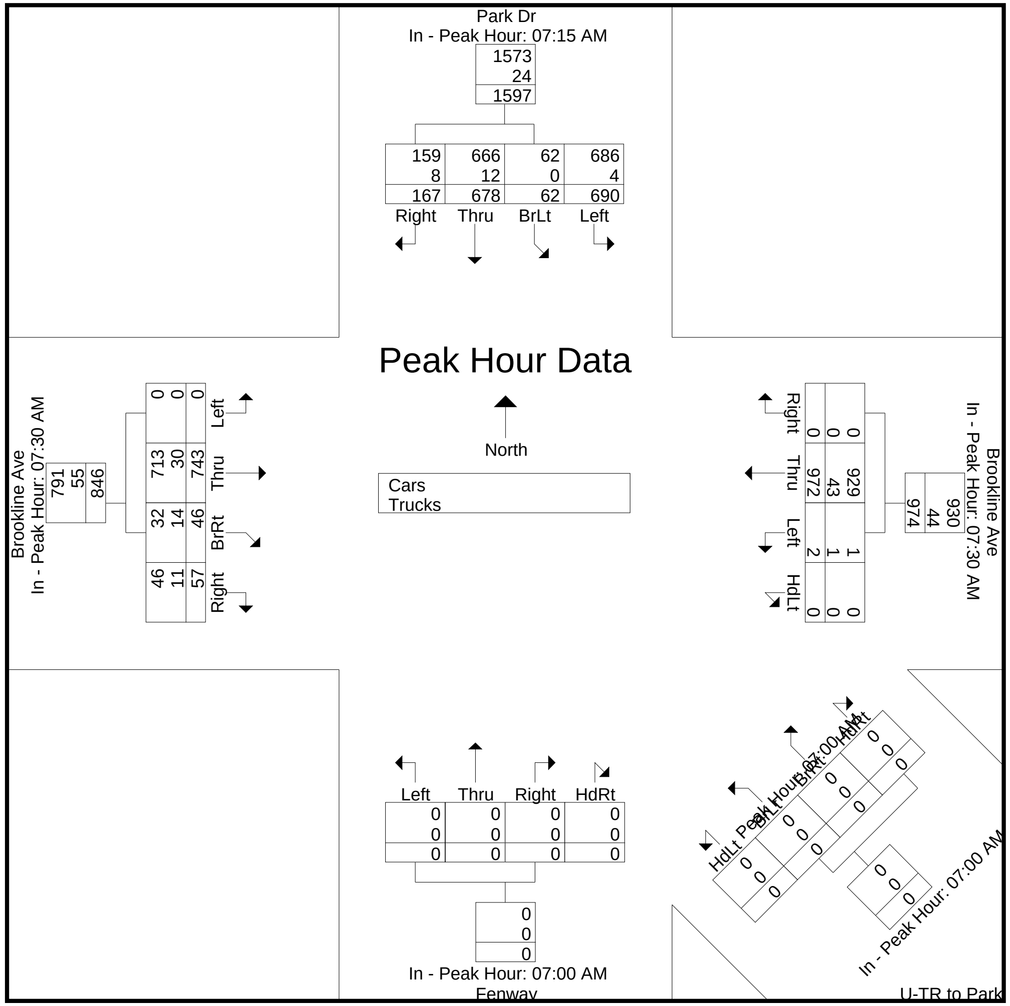


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM					07:30 AM					07:00 AM					07:00 AM					07:30 AM				
+0 mins.	168	12	**208**	33	**421**	0	0	241	0	241	0	0	0	0	0	0	0	0	0	0	0	184	7	12	203
+15 mins.	155	17	192	39	403	0	0	241	0	241	0	0	0	0	0	0	0	0	0	0	0	**196**	12	**16**	**224**
+30 mins.	180	13	134	46	373	0	**1**	**270**	0	**271**	0	0	0	0	0	0	0	0	0	0	0	178	13	15	206
+45 mins.	**187**	**20**	144	**49**	400	0	1	220	0	221	0	0	0	0	0	0	0	0	0	0	0	185	**14**	14	213
Total Volume	690	62	678	167	1597	0	2	972	0	974	0	0	0	0	0	0	0	0	0	0	0	743	46	57	846
% App. Total	43.2	3.9	42.5	10.5		0	0.2	99.8	0		0	0	0	0		0	0	0	0		0	87.8	5.4	6.7	
PHF	.922	.775	.815	.852	.948	.000	.500	.900	.000	.899	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.948	.821	.891	.944
Cars	686	62	666	159	1573	0	1	929	0	930	0	0	0	0	0	0	0	0	0	0	0	713	32	46	791
% Cars	99.4	100	98.2	95.2	98.5	0	50	95.6	0	95.5	0	0	0	0	0	0	0	0	0	0	0	96	69.6	80.7	93.5
Trucks	4	0	12	8	24	0	1	43	0	44	0	0	0	0	0	0	0	0	0	0	0	30	14	11	55

Accurate Counts

978-664-2565



Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

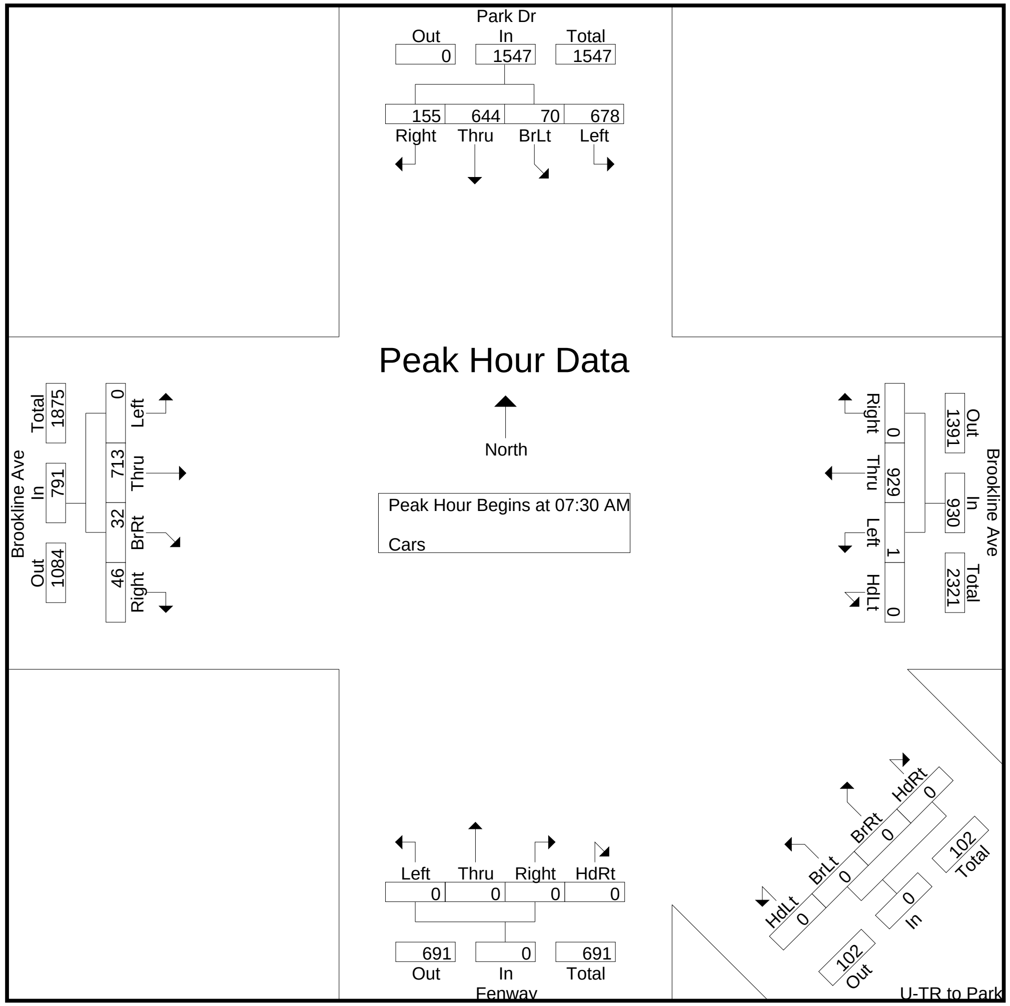
	Park Dr From North				Brookline Ave From East				U-TR to Park From Southeast				Fenway From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
07:00 AM	152	14	173	23	0	0	191	0	0	0	0	0	0	0	0	0	0	146	7	6	712
07:15 AM	167	12	207	31	0	1	202	0	0	0	0	0	0	0	0	0	0	130	2	7	759
07:30 AM	155	17	188	36	0	0	224	0	0	0	0	0	0	0	0	0	0	174	3	10	807
07:45 AM	179	13	130	46	0	0	231	0	0	0	0	0	0	0	0	0	0	189	8	13	809
Total	653	56	698	136	0	1	848	0	0	0	0	0	0	0	0	0	0	639	20	36	3087
08:00 AM	185	20	141	46	0	1	258	0	0	0	0	0	0	0	0	0	0	171	9	11	842
08:15 AM	159	20	185	27	0	0	216	0	0	0	0	0	0	0	0	0	0	179	12	12	810
08:30 AM	147	18	182	41	0	0	201	0	0	0	0	0	0	0	0	0	0	164	9	10	772
08:45 AM	132	14	189	28	0	0	226	0	0	0	0	0	0	0	0	0	0	169	8	7	773
Total	623	72	697	142	0	1	901	0	0	0	0	0	0	0	0	0	0	683	38	40	3197
Grand Total	1276	128	1395	278	0	2	1749	0	0	0	0	0	0	0	0	0	0	1322	58	76	6284
Apprch %	41.5	4.2	45.3	9	0	0.1	99.9	0	0	0	0	0	0	0	0	0	0	90.8	4	5.2	
Total %	20.3	2	22.2	4.4	0	0	27.8	0	0	0	0	0	0	0	0	0	0	21	0.9	1.2	

	Park Dr From North					Brookline Ave From East					U-TR to Park From Southeast					Fenway From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:30 AM																										
07:30 AM	155	17	**188**	36	**396**	0	0	224	0	224	0	0	0	0	0	0	0	0	0	0	0	174	3	10	187	807
07:45 AM	179	13	130	**46**	368	0	0	231	0	231	0	0	0	0	0	0	0	0	0	0	0	**189**	8	**13**	**210**	809
08:00 AM	**185**	**20**	141	46	392	0	**1**	**258**	0	**259**	0	0	0	0	0	0	0	0	0	0	0	171	9	11	191	**842**
08:15 AM	159	20	185	27	391	0	0	216	0	216	0	0	0	0	0	0	0	0	0	0	0	179	**12**	12	203	810
Total Volume	678	70	644	155	1547	0	1	929	0	930	0	0	0	0	0	0	0	0	0	0	0	713	32	46	791	3268
% App. Total	43.8	4.5	41.6	10		0	0.1	99.9	0		0	0	0	0		0	0	0	0		0	90.1	4	5.8		
PHF	.916	.875	.856	.842	.977	.000	.250	.900	.000	.898	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.943	.667	.885	.942	.970

Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 2



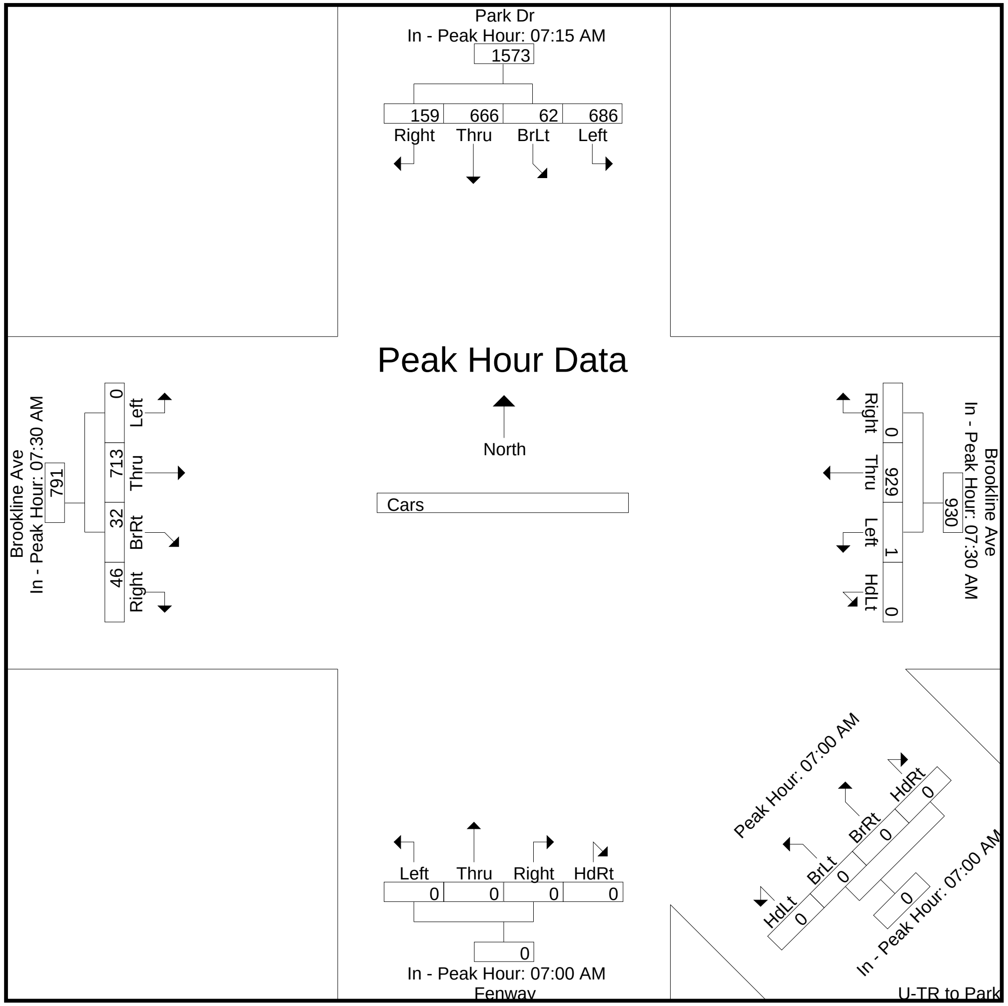
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM					07:30 AM					07:00 AM					07:00 AM					07:30 AM				
+0 mins.	167	12	**207**	31	**417**	0	0	224	0	224	0	0	0	0	0	0	0	0	0	0	0	174	3	10	187
+15 mins.	155	17	188	36	396	0	0	231	0	231	0	0	0	0	0	0	0	0	0	0	0	**189**	8	**13**	**210**
+30 mins.	179	13	130	**46**	368	0	**1**	**258**	0	**259**	0	0	0	0	0	0	0	0	0	0	0	171	9	11	191
+45 mins.	**185**	**20**	141	46	392	0	0	216	0	216	0	0	0	0	0	0	0	0	0	0	0	179	**12**	12	203
Total Volume	686	62	666	159	1573	0	1	929	0	930	0	0	0	0	0	0	0	0	0	0	0	713	32	46	791
% App. Total	43.6	3.9	42.3	10.1		0	0.1	99.9	0		0	0	0	0		0	0	0	0		0	90.1	4	5.8	
PHF	.927	.775	.804	.864	.943	.000	.250	.900	.000	.898	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.943	.667	.885	.942

Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

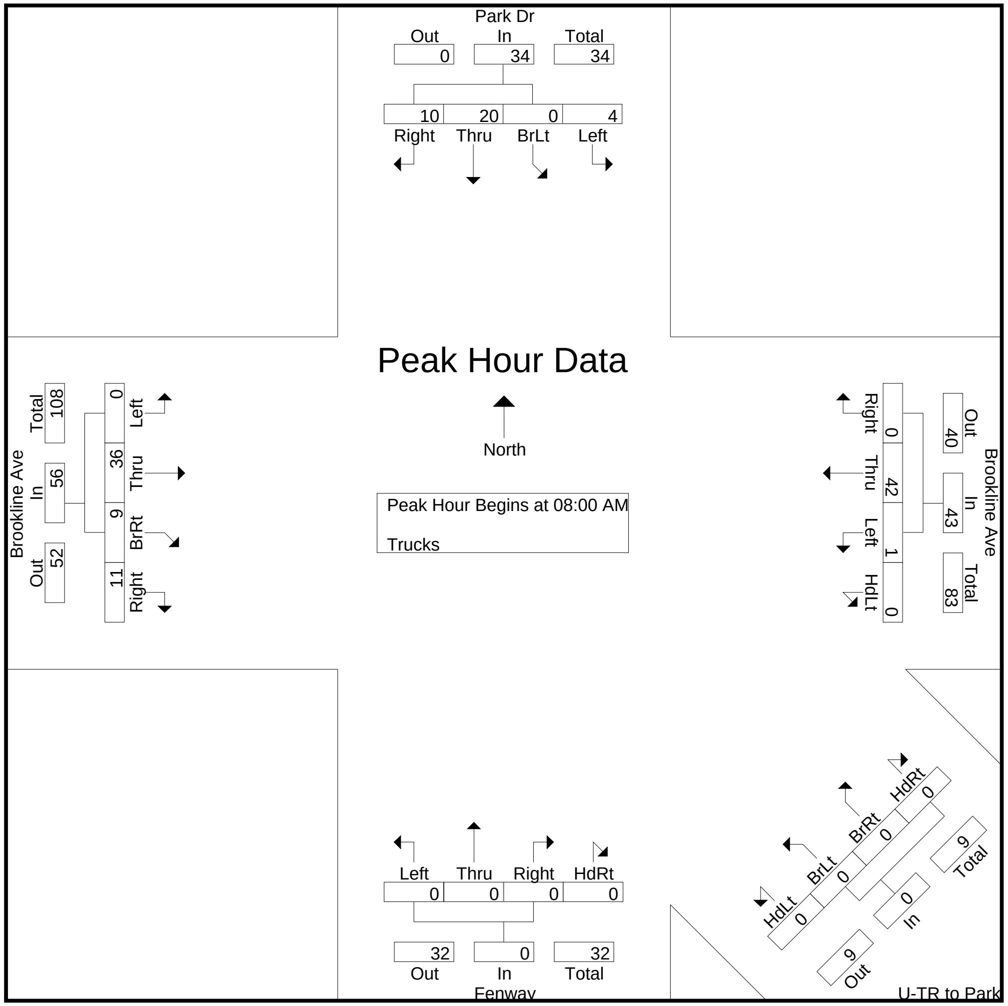
	Park Dr From North				Brookline Ave From East				U-TR to Park From Southeast				Fenway From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
07:00 AM	0	0	3	1	0	0	12	0	0	0	0	0	0	0	0	0	0	8	3	3	30
07:15 AM	1	0	1	2	0	0	8	0	0	0	0	0	0	0	0	0	0	6	4	1	23
07:30 AM	0	0	4	3	0	0	17	0	0	0	0	0	0	0	0	0	0	10	4	2	40
07:45 AM	1	0	4	0	0	0	10	0	0	0	0	0	0	0	0	0	0	7	4	3	29
Total	2	0	12	6	0	0	47	0	0	0	0	0	0	0	0	0	0	31	15	9	122
08:00 AM	2	0	3	3	0	0	12	0	0	0	0	0	0	0	0	0	0	7	4	4	35
08:15 AM	1	0	5	2	0	1	4	0	0	0	0	0	0	0	0	0	0	6	2	2	23
08:30 AM	0	0	6	3	0	0	11	0	0	0	0	0	0	0	0	0	0	11	2	2	35
08:45 AM	1	0	6	2	0	0	15	0	0	0	0	0	0	0	0	0	0	12	1	3	40
Total	4	0	20	10	0	1	42	0	0	0	0	0	0	0	0	0	0	36	9	11	133
Grand Total	6	0	32	16	0	1	89	0	0	0	0	0	0	0	0	0	0	67	24	20	255
Apprch %	11.1	0	59.3	29.6	0	1.1	98.9	0	0	0	0	0	0	0	0	0	0	60.4	21.6	18	
Total %	2.4	0	12.5	6.3	0	0.4	34.9	0	0	0	0	0	0	0	0	0	0	26.3	9.4	7.8	

	Park Dr From North					Brookline Ave From East					U-TR to Park From Southeast					Fenway From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 08:00 AM																										
08:00 AM	**2**	0	3	**3**	8	0	0	12	0	12	0	0	0	0	0	0	0	0	0	0	0	7	**4**	**4**	15	35
08:15 AM	1	0	5	2	8	0	**1**	4	0	5	0	0	0	0	0	0	0	0	0	0	0	6	2	2	10	23
08:30 AM	0	0	**6**	3	**9**	0	0	11	0	11	0	0	0	0	0	0	0	0	0	0	0	11	2	2	15	35
08:45 AM	1	0	6	2	9	0	0	**15**	0	**15**	0	0	0	0	0	0	0	0	0	0	0	**12**	1	3	**16**	**40**
Total Volume	4	0	20	10	34	0	1	42	0	43	0	0	0	0	0	0	0	0	0	0	0	36	9	11	56	133
% App. Total	11.8	0	58.8	29.4		0	2.3	97.7	0		0	0	0	0		0	0	0	0		0	64.3	16.1	19.6		
PHF	.500	.000	.833	.833	.944	.000	.250	.700	.000	.717	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.750	.563	.688	.875	.831

Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012



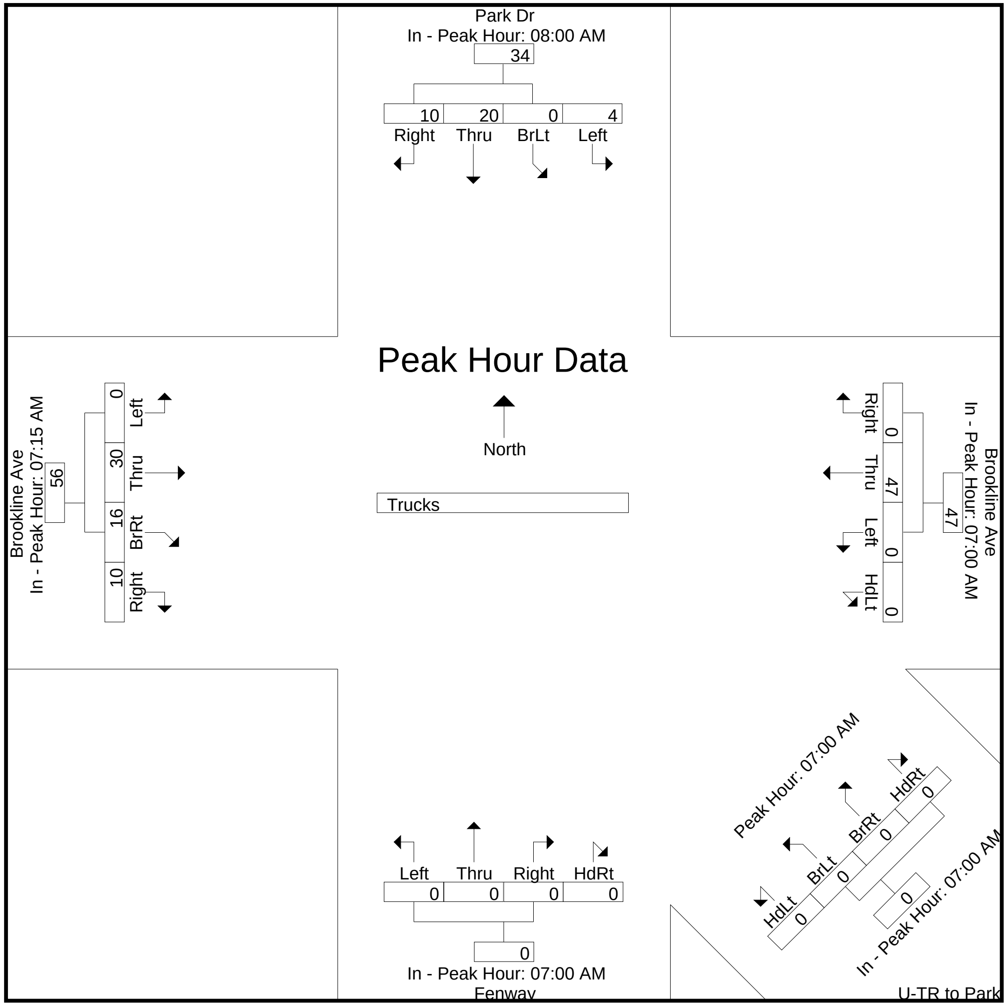
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM					07:00 AM					07:00 AM					07:00 AM					07:15 AM				
+0 mins.	**2**	0	3	**3**	8	0	0	12	0	12	0	0	0	0	0	0	0	0	0	0	0	6	**4**	1	11
+15 mins.	1	0	5	2	8	0	0	8	0	8	0	0	0	0	0	0	0	0	0	0	0	**10**	4	2	**16**
+30 mins.	0	0	**6**	3	**9**	0	0	**17**	0	**17**	0	0	0	0	0	0	0	0	0	0	0	7	4	3	14
+45 mins.	1	0	6	2	9	0	0	10	0	10	0	0	0	0	0	0	0	0	0	0	0	7	4	**4**	15
Total Volume	4	0	20	10	34	0	0	47	0	47	0	0	0	0	0	0	0	0	0	0	0	30	16	10	56
% App. Total	11.8	0	58.8	29.4		0	0	100	0		0	0	0	0		0	0	0	0		0	53.6	28.6	17.9	
PHF	.500	.000	.833	.833	.944	.000	.000	.691	.000	.691	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.750	1.000	.625	.875

Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

	Park Dr From North					Brookline Ave From East					U-TR to Park From Southeast					Fenway From South					Brookline Ave From West							
Start Time	Left	BrLt	Thru	Right	Peds	HdLt	Left	Thru	Right	Peds	HdLt	BrLt	BrRt	HdRt	Peds	Left	Thru	Right	HdRt	Peds	Left	Thru	BrRt	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	1	0	32	0	1	2	0	0	0	0	0	0	0	0	0	0	0	19	0	0	0	0	7	58	4	62
07:15 AM	1	0	5	0	27	0	0	2	0	0	0	0	0	0	0	1	0	0	0	31	0	0	0	0	16	74	9	83
07:30 AM	0	0	3	7	34	0	0	2	0	0	0	0	0	0	0	0	0	0	0	33	0	0	0	0	11	78	12	90
07:45 AM	0	0	7	1	30	0	0	3	0	0	0	0	0	0	0	0	1	0	0	47	0	3	0	1	22	99	16	115
Total	1	0	16	8	123	0	1	9	0	0	0	0	0	0	0	1	1	0	0	130	0	3	0	1	56	309	41	350
08:00 AM	1	0	3	1	27	0	0	1	0	0	0	0	0	0	0	0	0	0	0	28	0	2	0	0	18	73	8	81
08:15 AM	0	0	4	3	29	0	0	5	0	0	0	0	0	0	0	0	0	0	0	40	0	3	0	0	22	91	15	106
08:30 AM	0	0	2	1	24	0	1	4	0	0	0	0	0	0	0	0	0	0	0	17	0	1	0	1	19	60	10	70
08:45 AM	0	0	13	1	35	0	0	2	0	0	0	0	0	0	0	0	0	0	0	32	0	1	0	0	21	88	17	105
Total	1	0	22	6	115	0	1	12	0	0	0	0	0	0	0	0	0	0	0	117	0	7	0	1	80	312	50	362
Grand Total	2	0	38	14	238	0	2	21	0	0	0	0	0	0	0	1	1	0	0	247	0	10	0	2	136	621	91	712
Apprch %	3.7	0	70.4	25.9		0	8.7	91.3	0		0	0	0	0		50	50	0	0		0	83.3	0	16.7				
Total %	2.2	0	41.8	15.4		0	2.2	23.1	0		0	0	0	0		1.1	1.1	0	0		0	11	0	2.2		87.2	12.8	

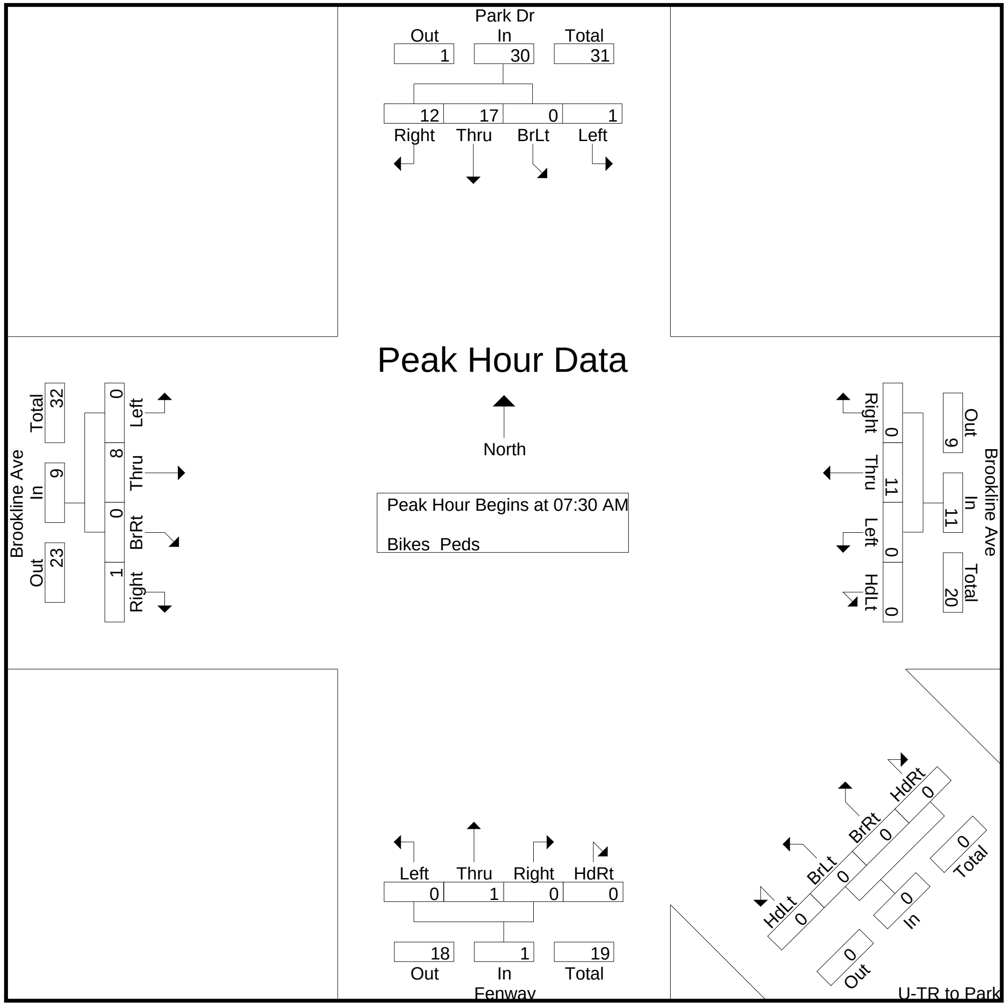
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 07:30 AM

	Park Dr From North					Brookline Ave From East					U-TR to Park From Southeast					Fenway From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
07:30 AM	0	0	3	**7**	**10**	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
07:45 AM	0	0	**7**	1	8	0	0	3	0	3	0	0	0	0	0	0	**1**	0	0	**1**	0	**3**	0	**1**	**4**	**16**
08:00 AM	**1**	0	3	1	5	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	8
08:15 AM	0	0	4	3	7	0	0	**5**	0	**5**	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	15
Total Volume	1	0	17	12	30	0	0	11	0	11	0	0	0	0	0	0	1	0	0	1	0	8	0	1	9	51
% App. Total	3.3	0	56.7	40		0	0	100	0		0	0	0	0		0	100	0	0		0	88.9	0	11.1		
PHF	.250	.000	.607	.429	.750	.000	.000	.550	.000	.550	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.000	.667	.000	.250	.563	.797

Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 2



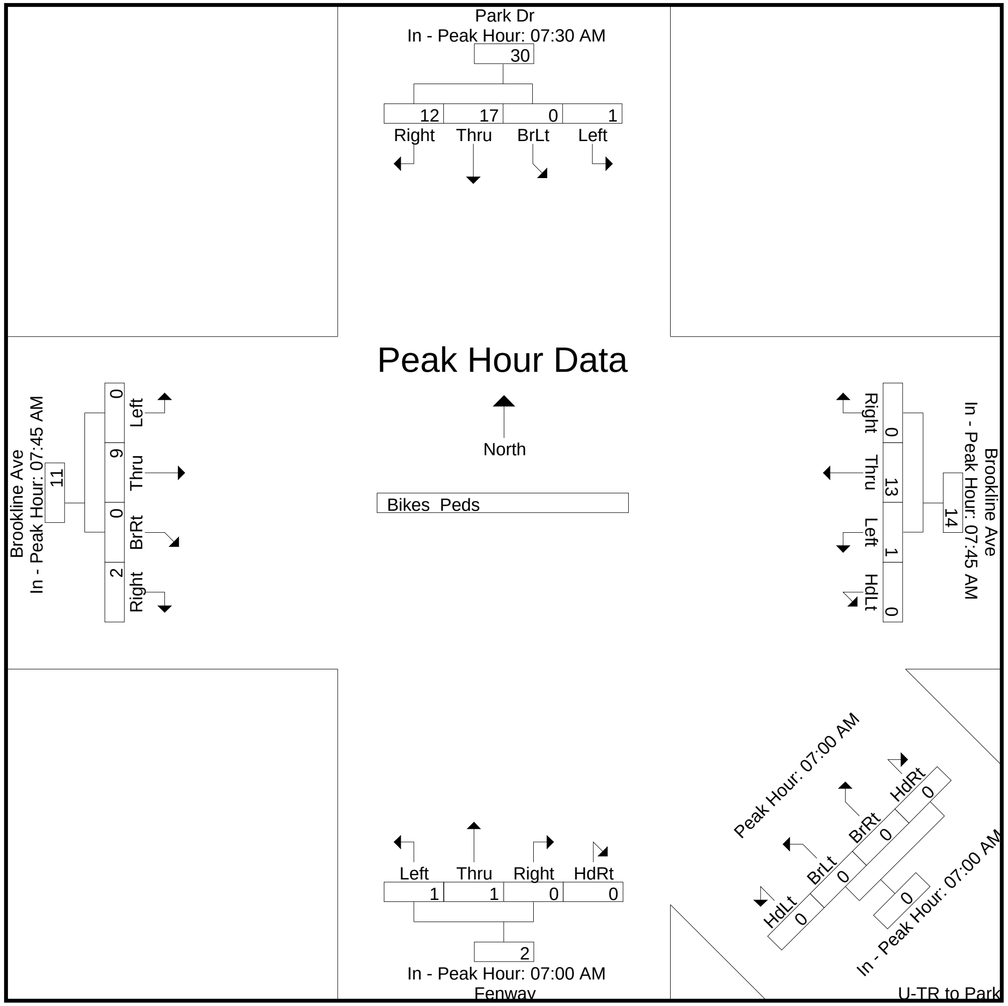
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM					07:45 AM					07:00 AM					07:00 AM					07:45 AM				
+0 mins.	0	0	3	**7**	**10**	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	**3**	0	**1**	**4**
+15 mins.	0	0	**7**	1	8	0	0	1	0	1	0	0	0	0	0	**1**	0	0	0	**1**	0	2	0	0	2
+30 mins.	**1**	0	3	1	5	0	0	**5**	0	**5**	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
+45 mins.	0	0	4	3	7	0	**1**	4	0	5	0	0	0	0	0	0	**1**	0	0	1	0	1	0	1	2
Total Volume	1	0	17	12	30	0	1	13	0	14	0	0	0	0	0	1	1	0	0	2	0	9	0	2	11
% App. Total	3.3	0	56.7	40		0	7.1	92.9	0		0	0	0	0		50	50	0	0		0	81.8	0	18.2	
PHF	.250	.000	.607	.429	.750	.000	.250	.650	.000	.700	.000	.000	.000	.000	.000	.250	.250	.000	.000	.500	.000	.750	.000	.500	.688

Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

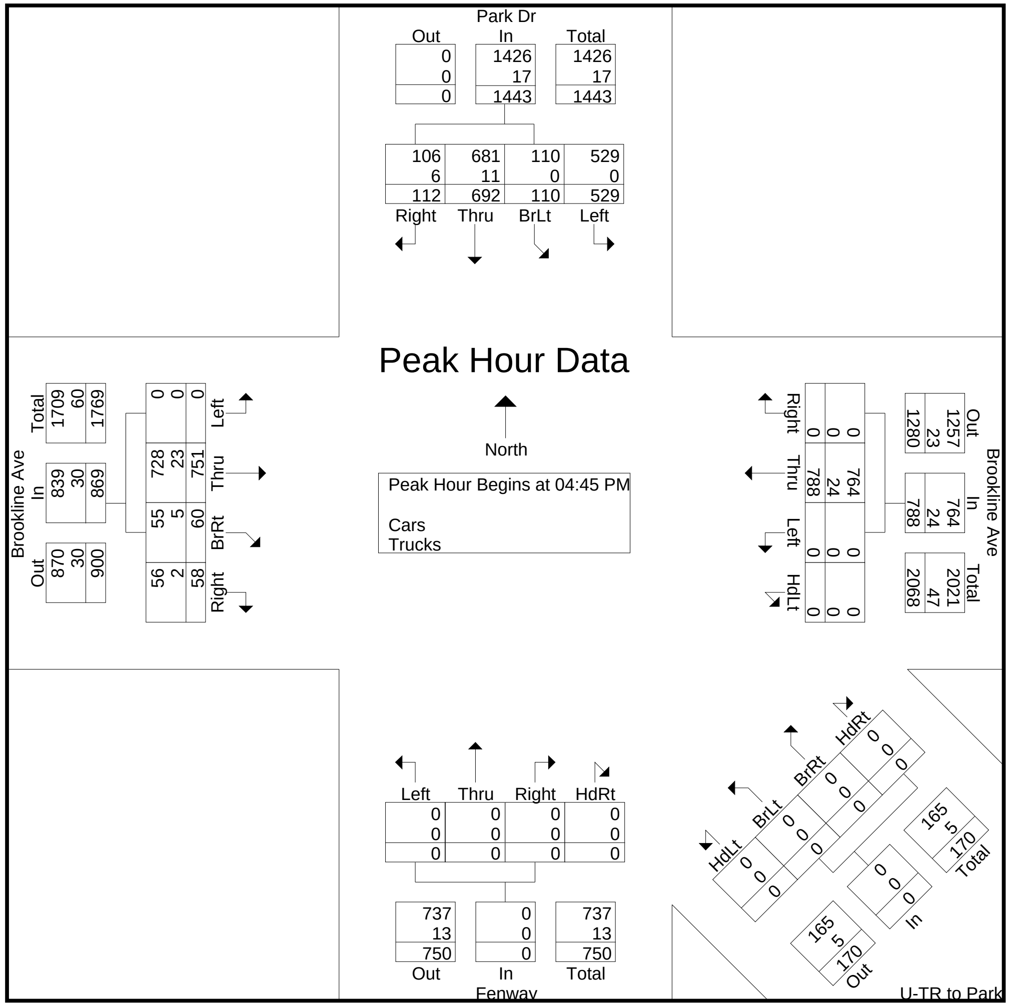
	Park Dr From North				Brookline Ave From East				U-TR to Park From Southeast				Fenway From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
04:00 PM	165	23	100	38	0	0	202	0	0	0	0	0	0	0	0	0	0	154	12	13	707
04:15 PM	182	36	104	36	0	0	193	0	0	0	0	0	0	0	0	0	0	143	22	21	737
04:30 PM	126	25	114	35	0	0	178	0	0	0	0	0	0	0	0	0	0	192	8	13	691
04:45 PM	157	32	135	31	0	0	196	0	0	0	0	0	0	0	0	0	0	179	18	12	760
Total	630	116	453	140	0	0	769	0	0	0	0	0	0	0	0	0	0	668	60	59	2895
05:00 PM	115	27	188	25	0	0	189	0	0	0	0	0	0	0	0	0	0	156	11	14	725
05:15 PM	135	22	164	29	0	0	210	0	0	0	0	0	0	0	0	0	0	234	18	19	831
05:30 PM	122	29	205	27	0	0	193	0	0	0	0	0	0	0	0	0	0	182	13	13	784
05:45 PM	119	26	146	35	0	0	188	0	0	0	0	0	0	0	0	0	0	176	10	14	714
Total	491	104	703	116	0	0	780	0	0	0	0	0	0	0	0	0	0	748	52	60	3054
Grand Total	1121	220	1156	256	0	0	1549	0	0	0	0	0	0	0	0	0	0	1416	112	119	5949
Apprch %	40.7	8	42	9.3	0	0	100	0	0	0	0	0	0	0	0	0	0	86	6.8	7.2	
Total %	18.8	3.7	19.4	4.3	0	0	26	0	0	0	0	0	0	0	0	0	0	23.8	1.9	2	
Cars	1120	218	1139	242	0	0	1498	0	0	0	0	0	0	0	0	0	0	1368	104	113	5802
% Cars	99.9	99.1	98.5	94.5	0	0	96.7	0	0	0	0	0	0	0	0	0	0	96.6	92.9	95	97.5
Trucks	1	2	17	14	0	0	51	0	0	0	0	0	0	0	0	0	0	48	8	6	147
% Trucks	0.1	0.9	1.5	5.5	0	0	3.3	0	0	0	0	0	0	0	0	0	0	3.4	7.1	5	2.5

	Park Dr From North					Brookline Ave From East					U-TR to Park From Southeast					Fenway From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:45 PM																										
04:45 PM	**157**	**32**	135	**31**	355	0	0	196	0	196	0	0	0	0	0	0	0	0	0	0	0	179	**18**	12	209	760
05:00 PM	115	27	188	25	355	0	0	189	0	189	0	0	0	0	0	0	0	0	0	0	0	156	11	14	181	725
05:15 PM	135	22	164	29	350	0	0	**210**	0	**210**	0	0	0	0	0	0	0	0	0	0	0	**234**	18	**19**	**271**	**831**
05:30 PM	122	29	**205**	27	**383**	0	0	193	0	193	0	0	0	0	0	0	0	0	0	0	0	182	13	13	208	784
Total Volume	529	110	692	112	1443	0	0	788	0	788	0	0	0	0	0	0	0	0	0	0	0	751	60	58	869	3100
% App. Total	36.7	7.6	48	7.8		0	0	100	0		0	0	0	0		0	0	0	0		0	86.4	6.9	6.7		
PHF	.842	.859	.844	.903	.942	.000	.000	.938	.000	.938	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.802	.833	.763	.802	.933
Cars	529	110	681	106	1426	0	0	764	0	764	0	0	0	0	0	0	0	0	0	0	0	728	55	56	839	3029
% Cars	100	100	98.4	94.6	98.8	0	0	97.0	0	97.0	0	0	0	0	0	0	0	0	0	0	0	96.9	91.7	96.6	96.5	97.7
Trucks	0	0	11	6	17	0	0	24	0	24	0	0	0	0	0	0	0	0	0	0	0	23	5	2	30	71
% Trucks	0	0	1.6	5.4	1.2	0	0	3.0	0	3.0	0	0	0	0	0	0	0	0	0	0	0	3.1	8.3	3.4	3.5	2.3

Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

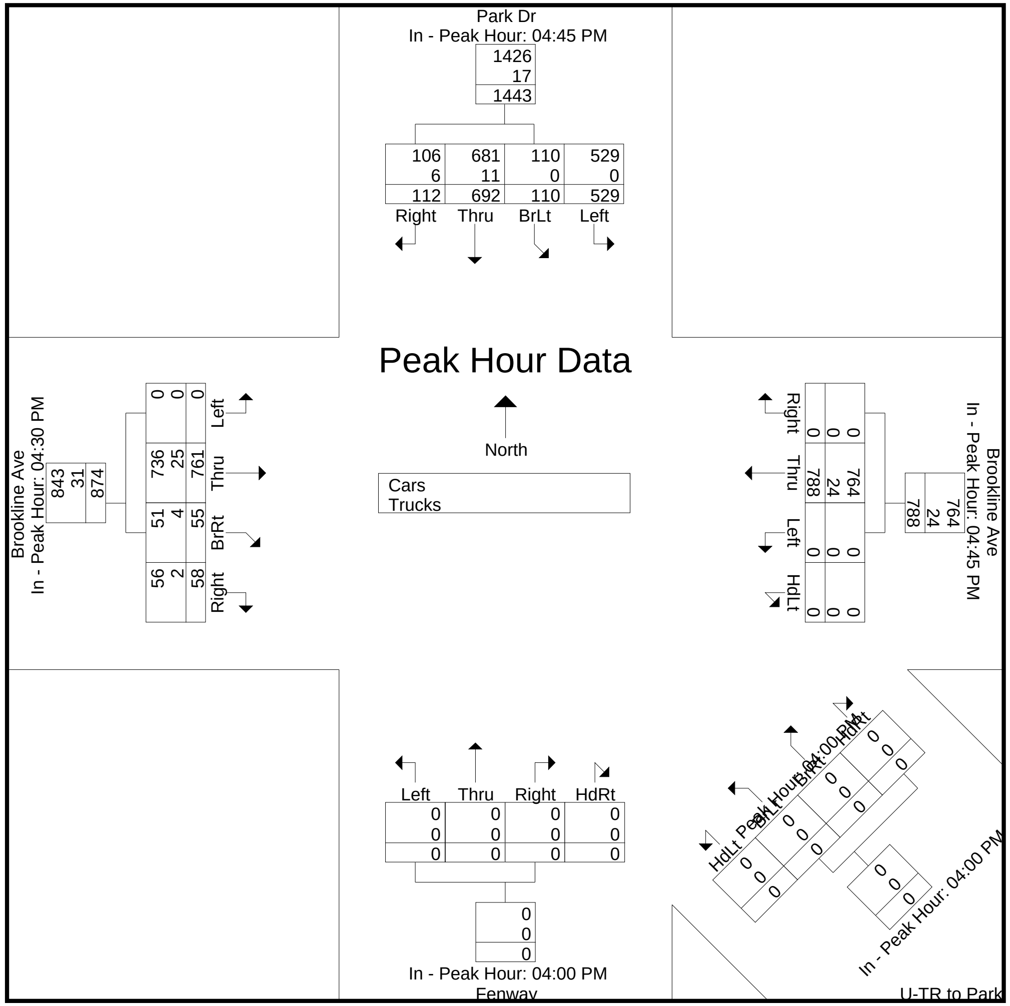
File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM					04:45 PM					04:00 PM					04:00 PM					04:30 PM				
+0 mins.	**157**	**32**	135	**31**	355	0	0	196	0	196	0	0	0	0	0	0	0	0	0	0	0	192	8	13	213
+15 mins.	115	27	188	25	355	0	0	189	0	189	0	0	0	0	0	0	0	0	0	0	0	179	**18**	12	209
+30 mins.	135	22	164	29	350	0	0	**210**	0	**210**	0	0	0	0	0	0	0	0	0	0	0	156	11	14	181
+45 mins.	122	29	**205**	27	**383**	0	0	193	0	193	0	0	0	0	0	0	0	0	0	0	0	**234**	18	**19**	**271**
Total Volume	529	110	692	112	1443	0	0	788	0	788	0	0	0	0	0	0	0	0	0	0	0	761	55	58	874
% App. Total	36.7	7.6	48	7.8		0	0	100	0		0	0	0	0		0	0	0	0		0	87.1	6.3	6.6	
PHF	.842	.859	.844	.903	.942	.000	.000	.938	.000	.938	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.813	.764	.763	.806
Cars	529	110	681	106	1426	0	0	764	0	764	0	0	0	0	0	0	0	0	0	0	0	736	51	56	843
% Cars	100	100	98.4	94.6	98.8	0	0	97	0	97	0	0	0	0	0	0	0	0	0	0	0	96.7	92.7	96.6	96.5
Trucks	0	0	11	6	17	0	0	24	0	24	0	0	0	0	0	0	0	0	0	0	0	25	4	2	31

Accurate Counts
978-664-2565



Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

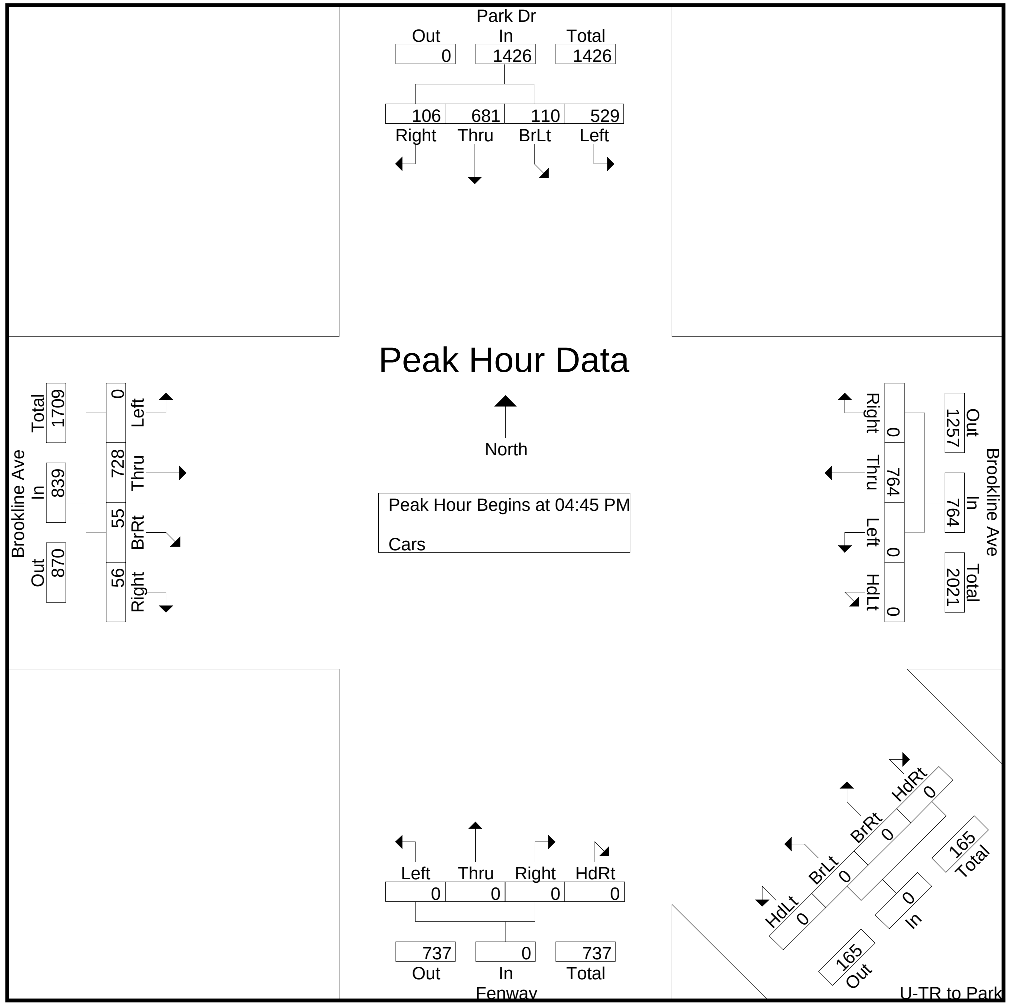
	Park Dr From North				Brookline Ave From East				U-TR to Park From Southeast				Fenway From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
04:00 PM	165	23	98	36	0	0	196	0	0	0	0	0	0	0	0	0	0	149	12	12	691
04:15 PM	182	34	103	35	0	0	187	0	0	0	0	0	0	0	0	0	0	136	20	20	717
04:30 PM	126	25	113	32	0	0	172	0	0	0	0	0	0	0	0	0	0	184	8	12	672
04:45 PM	157	32	133	30	0	0	191	0	0	0	0	0	0	0	0	0	0	173	17	12	745
Total	630	114	447	133	0	0	746	0	0	0	0	0	0	0	0	0	0	642	57	56	2825
05:00 PM	115	27	184	24	0	0	182	0	0	0	0	0	0	0	0	0	0	150	9	13	704
05:15 PM	135	22	161	28	0	0	206	0	0	0	0	0	0	0	0	0	0	229	17	19	817
05:30 PM	122	29	203	24	0	0	185	0	0	0	0	0	0	0	0	0	0	176	12	12	763
05:45 PM	118	26	144	33	0	0	179	0	0	0	0	0	0	0	0	0	0	171	9	13	693
Total	490	104	692	109	0	0	752	0	0	0	0	0	0	0	0	0	0	726	47	57	2977
Grand Total	1120	218	1139	242	0	0	1498	0	0	0	0	0	0	0	0	0	0	1368	104	113	5802
Apprch %	41.2	8	41.9	8.9	0	0	100	0	0	0	0	0	0	0	0	0	0	86.3	6.6	7.1	
Total %	19.3	3.8	19.6	4.2	0	0	25.8	0	0	0	0	0	0	0	0	0	0	23.6	1.8	1.9	

	Park Dr From North					Brookline Ave From East					U-TR to Park From Southeast					Fenway From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:45 PM																										
04:45 PM	**157**	**32**	133	**30**	352	0	0	191	0	191	0	0	0	0	0	0	0	0	0	0	0	173	**17**	12	202	745
05:00 PM	115	27	184	24	350	0	0	182	0	182	0	0	0	0	0	0	0	0	0	0	0	150	9	13	172	704
05:15 PM	135	22	161	28	346	0	0	**206**	0	**206**	0	0	0	0	0	0	0	0	0	0	0	**229**	17	**19**	**265**	**817**
05:30 PM	122	29	**203**	24	**378**	0	0	185	0	185	0	0	0	0	0	0	0	0	0	0	0	176	12	12	200	763
Total Volume	529	110	681	106	1426	0	0	764	0	764	0	0	0	0	0	0	0	0	0	0	0	728	55	56	839	3029
% App. Total	37.1	7.7	47.8	7.4		0	0	100	0		0	0	0	0		0	0	0	0		0	86.8	6.6	6.7		
PHF	.842	.859	.839	.883	.943	.000	.000	.927	.000	.927	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.795	.809	.737	.792	.927

Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 2



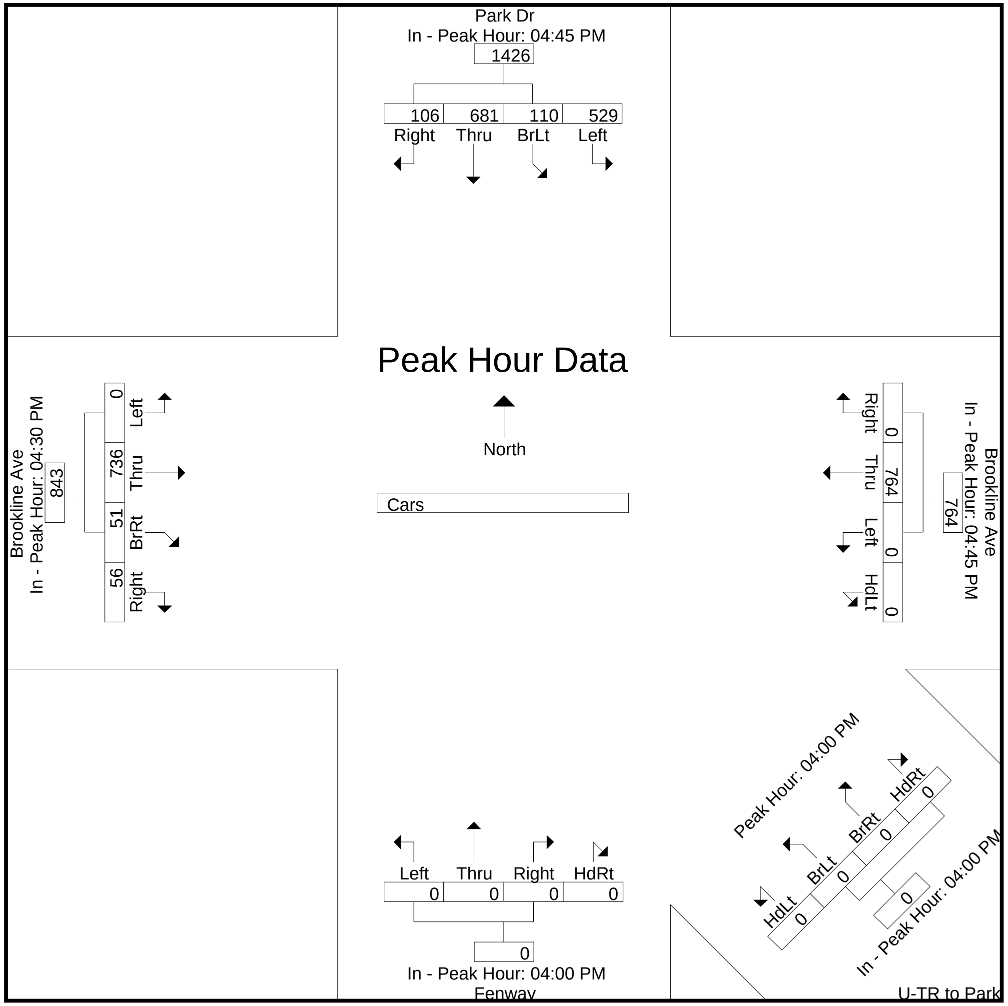
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM					04:45 PM					04:00 PM					04:00 PM					04:30 PM				
+0 mins.	**157**	**32**	133	**30**	352	0	0	191	0	191	0	0	0	0	0	0	0	0	0	0	0	184	8	12	204
+15 mins.	115	27	184	24	350	0	0	182	0	182	0	0	0	0	0	0	0	0	0	0	0	173	**17**	12	202
+30 mins.	135	22	161	28	346	0	0	**206**	0	**206**	0	0	0	0	0	0	0	0	0	0	0	150	9	13	172
+45 mins.	122	29	**203**	24	**378**	0	0	185	0	185	0	0	0	0	0	0	0	0	0	0	0	**229**	17	**19**	**265**
Total Volume	529	110	681	106	1426	0	0	764	0	764	0	0	0	0	0	0	0	0	0	0	0	736	51	56	843
% App. Total	37.1	7.7	47.8	7.4		0	0	100	0		0	0	0	0		0	0	0	0		0	87.3	6	6.6	
PHF	.842	.859	.839	.883	.943	.000	.000	.927	.000	.927	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.803	.750	.737	.795

Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

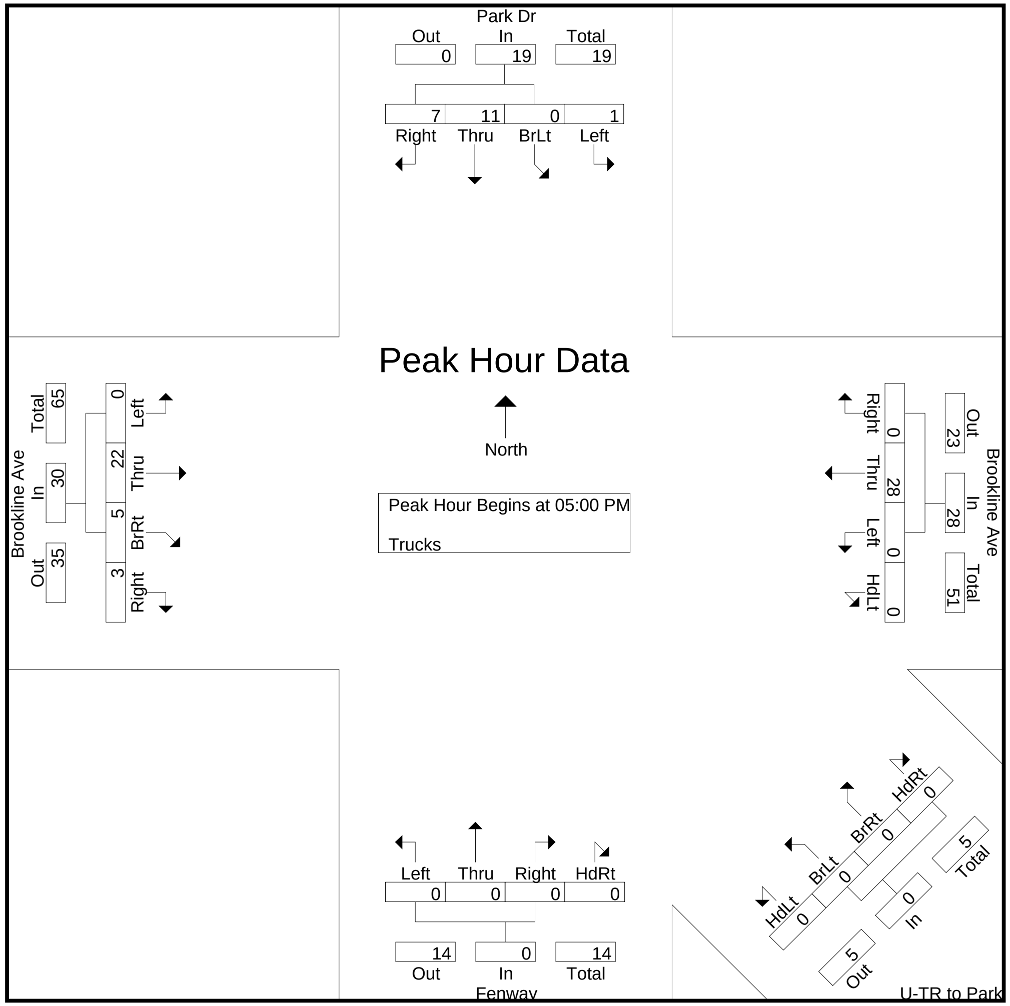
	Park Dr From North				Brookline Ave From East				U-TR to Park From Southeast				Fenway From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
04:00 PM	0	0	2	2	0	0	6	0	0	0	0	0	0	0	0	0	0	5	0	1	16
04:15 PM	0	2	1	1	0	0	6	0	0	0	0	0	0	0	0	0	0	7	2	1	20
04:30 PM	0	0	1	3	0	0	6	0	0	0	0	0	0	0	0	0	0	8	0	1	19
04:45 PM	0	0	2	1	0	0	5	0	0	0	0	0	0	0	0	0	0	6	1	0	15
Total	0	2	6	7	0	0	23	0	0	0	0	0	0	0	0	0	0	26	3	3	70
05:00 PM	0	0	4	1	0	0	7	0	0	0	0	0	0	0	0	0	0	6	2	1	21
05:15 PM	0	0	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0	5	1	0	14
05:30 PM	0	0	2	3	0	0	8	0	0	0	0	0	0	0	0	0	0	6	1	1	21
05:45 PM	1	0	2	2	0	0	9	0	0	0	0	0	0	0	0	0	0	5	1	1	21
Total	1	0	11	7	0	0	28	0	0	0	0	0	0	0	0	0	0	22	5	3	77
Grand Total	1	2	17	14	0	0	51	0	0	0	0	0	0	0	0	0	0	48	8	6	147
Apprch %	2.9	5.9	50	41.2	0	0	100	0	0	0	0	0	0	0	0	0	0	77.4	12.9	9.7	
Total %	0.7	1.4	11.6	9.5	0	0	34.7	0	0	0	0	0	0	0	0	0	0	32.7	5.4	4.1	

	Park Dr From North					Brookline Ave From East					U-TR to Park From Southeast					Fenway From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 05:00 PM																										
05:00 PM	0	0	**4**	1	**5**	0	0	7	0	7	0	0	0	0	0	0	0	0	0	0	0	**6**	**2**	**1**	**9**	**21**
05:15 PM	0	0	3	1	4	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	5	1	0	6	14
05:30 PM	0	0	2	**3**	5	0	0	8	0	8	0	0	0	0	0	0	0	0	0	0	0	6	1	1	8	21
05:45 PM	**1**	0	2	2	5	0	0	**9**	0	**9**	0	0	0	0	0	0	0	0	0	0	0	5	1	1	7	21
Total Volume	1	0	11	7	19	0	0	28	0	28	0	0	0	0	0	0	0	0	0	0	0	22	5	3	30	77
% App. Total	5.3	0	57.9	36.8		0	0	100	0		0	0	0	0		0	0	0	0		0	73.3	16.7	10		
PHF	.250	.000	.688	.583	.950	.000	.000	.778	.000	.778	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.917	.625	.750	.833	.917

Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 2



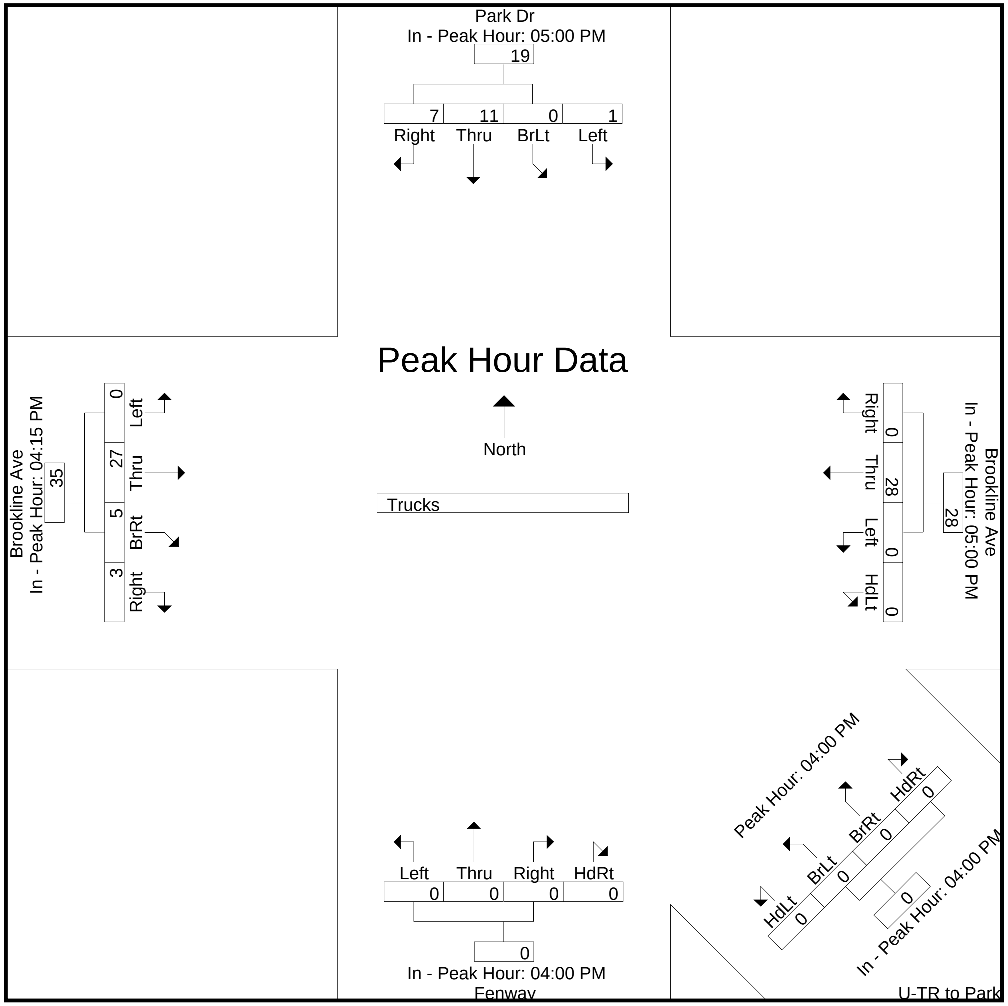
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM					05:00 PM					04:00 PM					04:00 PM					04:15 PM				
+0 mins.	0	0	**4**	1	**5**	0	0	7	0	7	0	0	0	0	0	0	0	0	0	0	0	7	**2**	**1**	**10**
+15 mins.	0	0	3	1	4	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	**8**	0	1	9
+30 mins.	0	0	2	**3**	5	0	0	8	0	8	0	0	0	0	0	0	0	0	0	0	0	6	1	0	7
+45 mins.	**1**	0	2	2	5	0	0	**9**	0	**9**	0	0	0	0	0	0	0	0	0	0	0	6	2	1	9
Total Volume	1	0	11	7	19	0	0	28	0	28	0	0	0	0	0	0	0	0	0	0	0	27	5	3	35
% App. Total	5.3	0	57.9	36.8		0	0	100	0		0	0	0	0		0	0	0	0		0	77.1	14.3	8.6	
PHF	.250	.000	.688	.583	.950	.000	.000	.778	.000	.778	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.844	.625	.750	.875

Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

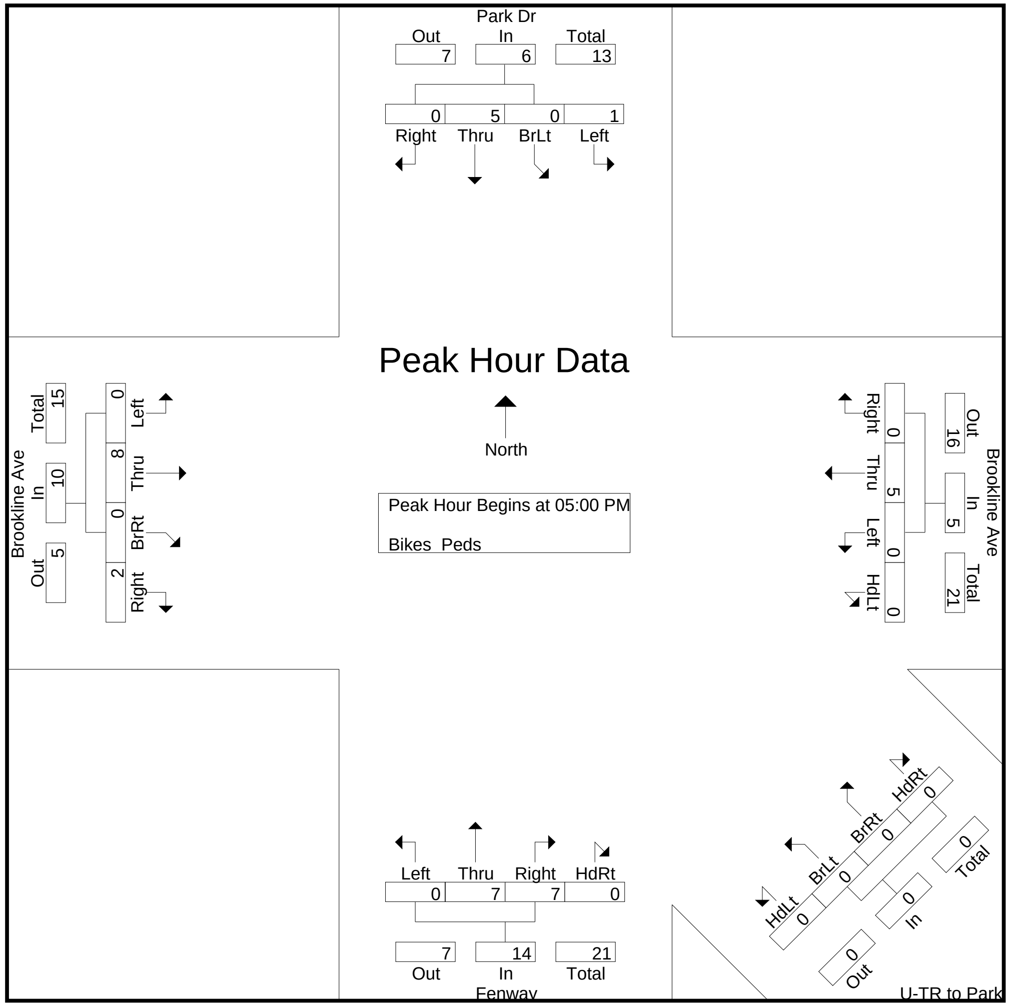
	Park Dr From North					Brookline Ave From East					U-TR to Park From Southeast					Fenway From South					Brookline Ave From West							
Start Time	Left	BrLt	Thru	Right	Peds	HdLt	Left	Thru	Right	Peds	HdLt	BrLt	BrRt	HdRt	Peds	Left	Thru	Right	HdRt	Peds	Left	Thru	BrRt	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	4	1	37	0	0	1	0	0	0	0	0	0	0	0	1	1	0	42	0	1	0	0	21	100	9	109
04:15 PM	0	0	1	2	49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	53	0	3	0	0	23	125	6	131
04:30 PM	2	0	1	0	65	0	0	2	0	0	0	0	0	0	0	0	0	1	0	46	0	0	0	0	32	143	6	149
04:45 PM	0	0	0	0	49	0	0	2	0	5	0	0	0	0	0	0	0	0	0	46	0	3	0	0	19	119	5	124
Total	2	0	6	3	200	0	0	5	0	5	0	0	0	0	0	0	1	2	0	187	0	7	0	0	95	487	26	513
05:00 PM	1	0	1	0	55	0	0	0	0	0	0	0	0	0	0	0	0	1	0	57	0	0	0	0	37	149	3	152
05:15 PM	0	0	0	0	59	0	0	4	0	1	0	0	0	0	0	0	2	5	0	35	0	2	0	1	27	122	14	136
05:30 PM	0	0	1	0	58	0	0	0	0	1	0	0	0	0	0	0	4	1	0	74	0	2	0	1	26	159	9	168
05:45 PM	0	0	3	0	71	0	0	1	0	0	0	0	0	0	0	0	1	0	0	66	0	4	0	0	32	169	9	178
Total	1	0	5	0	243	0	0	5	0	2	0	0	0	0	0	0	7	7	0	232	0	8	0	2	122	599	35	634
Grand Total	3	0	11	3	443	0	0	10	0	7	0	0	0	0	0	0	8	9	0	419	0	15	0	2	217	1086	61	1147
Apprch %	17.6	0	64.7	17.6		0	0	100	0		0	0	0	0		0	47.1	52.9	0		0	88.2	0	11.8				
Total %	4.9	0	18	4.9		0	0	16.4	0		0	0	0	0		0	13.1	14.8	0		0	24.6	0	3.3		94.7	5.3	

	Park Dr From North					Brookline Ave From East					U-TR to Park From Southeast					Fenway From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 05:00 PM																										
05:00 PM	**1**	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3
05:15 PM	0	0	0	0	0	0	0	**4**	0	**4**	0	0	0	0	0	0	2	**5**	0	**7**	0	2	0	**1**	3	**14**
05:30 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	**4**	1	0	5	0	2	0	1	3	9
05:45 PM	0	0	**3**	0	**3**	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	0	**4**	0	0	**4**	9
Total Volume	1	0	5	0	6	0	0	5	0	5	0	0	0	0	0	0	7	7	0	14	0	8	0	2	10	35
% App. Total	16.7	0	83.3	0		0	0	100	0		0	0	0	0		0	50	50	0		0	80	0	20		
PHF	.250	.000	.417	.000	.500	.000	.000	.313	.000	.313	.000	.000	.000	.000	.000	.000	.438	.350	.000	.500	.000	.500	.000	.500	.625	.625

Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 2



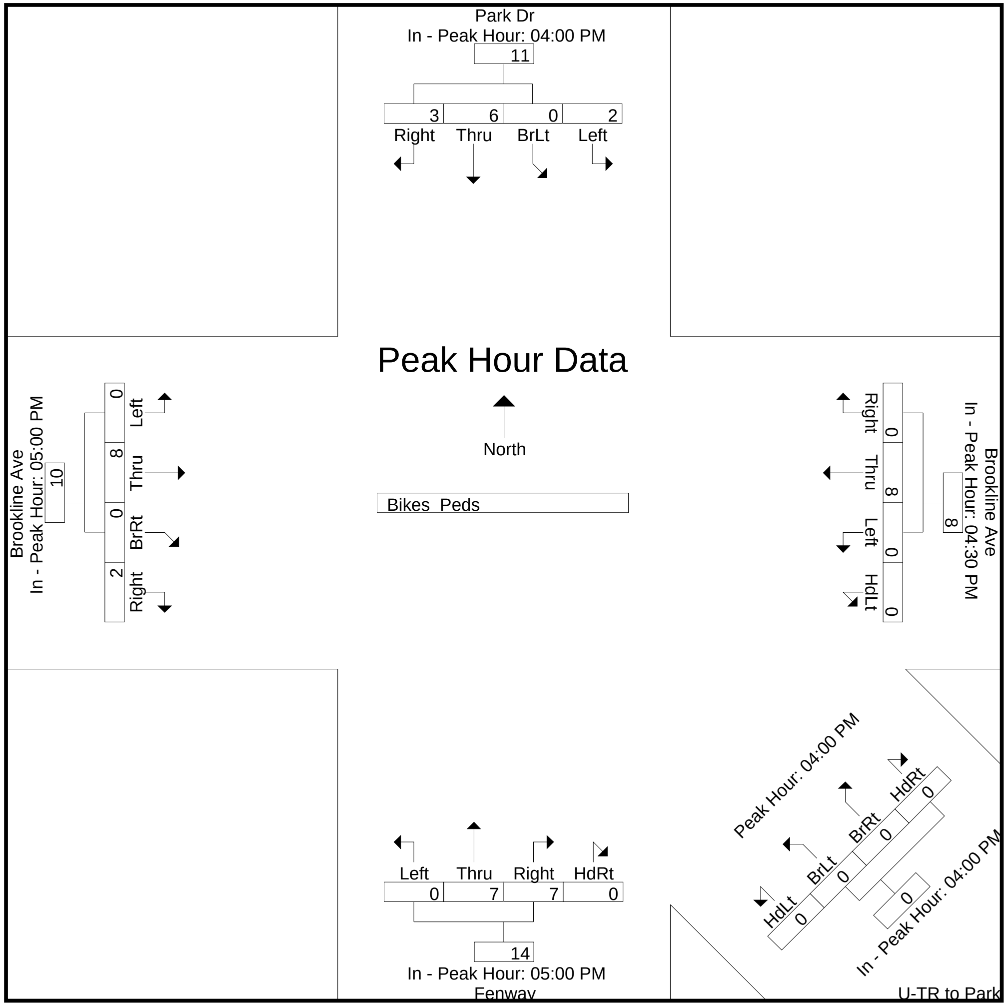
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM					04:30 PM					04:00 PM					05:00 PM					05:00 PM				
+0 mins.	0	0	**4**	1	**5**	0	0	2	0	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
+15 mins.	0	0	1	**2**	3	0	0	2	0	2	0	0	0	0	0	0	2	**5**	0	**7**	0	2	0	**1**	3
+30 mins.	**2**	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	**4**	1	0	5	0	2	0	1	3
+45 mins.	0	0	0	0	0	0	0	**4**	0	**4**	0	0	0	0	0	0	1	0	0	1	0	**4**	0	0	**4**
Total Volume	2	0	6	3	11	0	0	8	0	8	0	0	0	0	0	0	7	7	0	14	0	8	0	2	10
% App. Total	18.2	0	54.5	27.3		0	0	100	0		0	0	0	0		0	50	50	0		0	80	0	20	
PHF	.250	.000	.375	.375	.550	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.000	.438	.350	.000	.500	.000	.500	.000	.500	.625

Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012

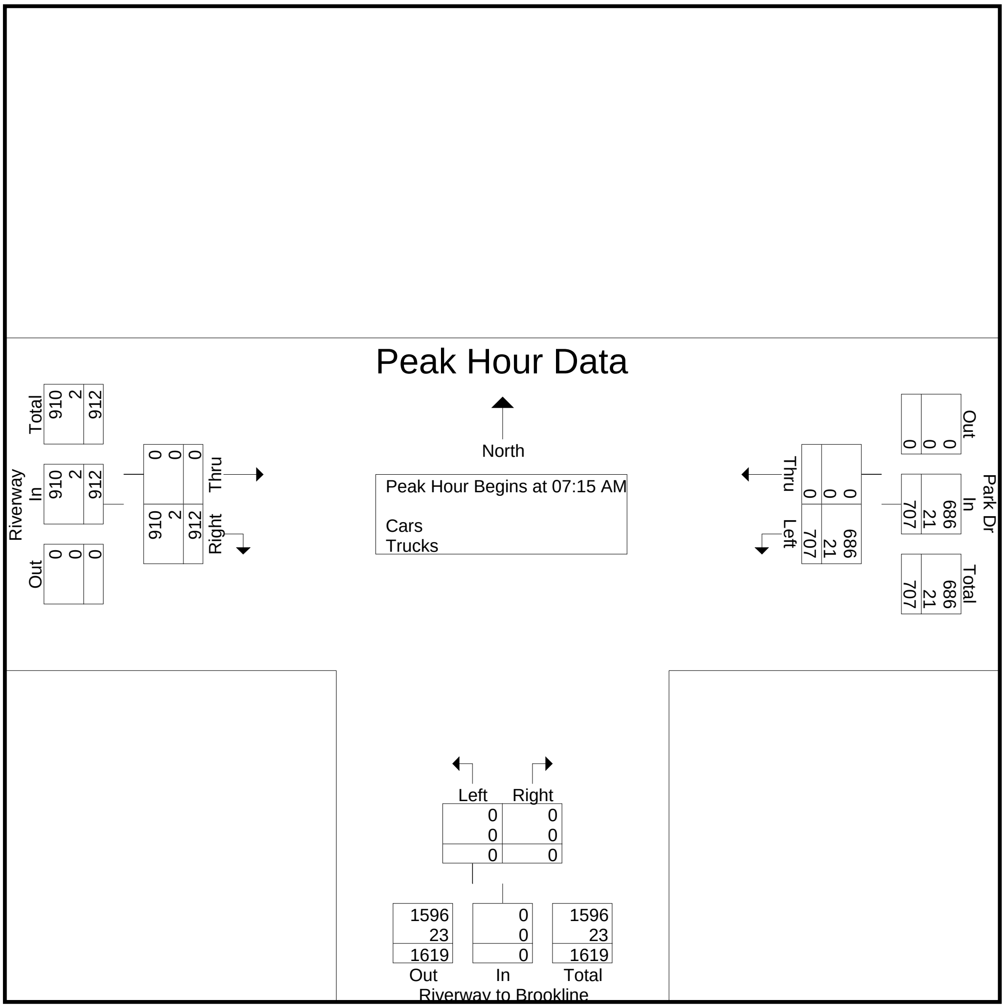
Groups Printed- Cars - Trucks

	Park Dr From East		Riverway to Brookline From South		Riverway From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	157	0	0	0	0	217	374
07:15 AM	192	0	0	0	0	234	426
07:30 AM	159	0	0	0	0	248	407
07:45 AM	168	0	0	0	0	212	380
Total	676	0	0	0	0	911	1587
08:00 AM	188	0	0	0	0	218	406
08:15 AM	191	0	0	0	0	201	392
08:30 AM	197	0	0	0	0	188	385
08:45 AM	204	0	0	0	0	198	402
Total	780	0	0	0	0	805	1585
Grand Total	1456	0	0	0	0	1716	3172
Apprch %	100	0	0	0	0	100	
Total %	45.9	0	0	0	0	54.1	
Cars	1405	0	0	0	0	1711	3116
% Cars	96.5	0	0	0	0	99.7	98.2
Trucks	51	0	0	0	0	5	56
% Trucks	3.5	0	0	0	0	0.3	1.8

	Park Dr From East			Riverway to Brookline From South			Riverway From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	**192**	0	**192**	0	0	0	0	234	234	**426**
07:30 AM	159	0	159	0	0	0	0	**248**	**248**	407
07:45 AM	168	0	168	0	0	0	0	212	212	380
08:00 AM	188	0	188	0	0	0	0	218	218	406
Total Volume	707	0	707	0	0	0	0	912	912	1619
% App. Total	100	0		0	0		0	100		
PHF	.921	.000	.921	.000	.000	.000	.000	.919	.919	.950
Cars	686	0	686	0	0	0	0	910	910	1596
% Cars	97.0	0	97.0	0	0	0	0	99.8	99.8	98.6
Trucks	21	0	21	0	0	0	0	2	2	23
% Trucks	3.0	0	3.0	0	0	0	0	0.2	0.2	1.4

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
Page No : 2



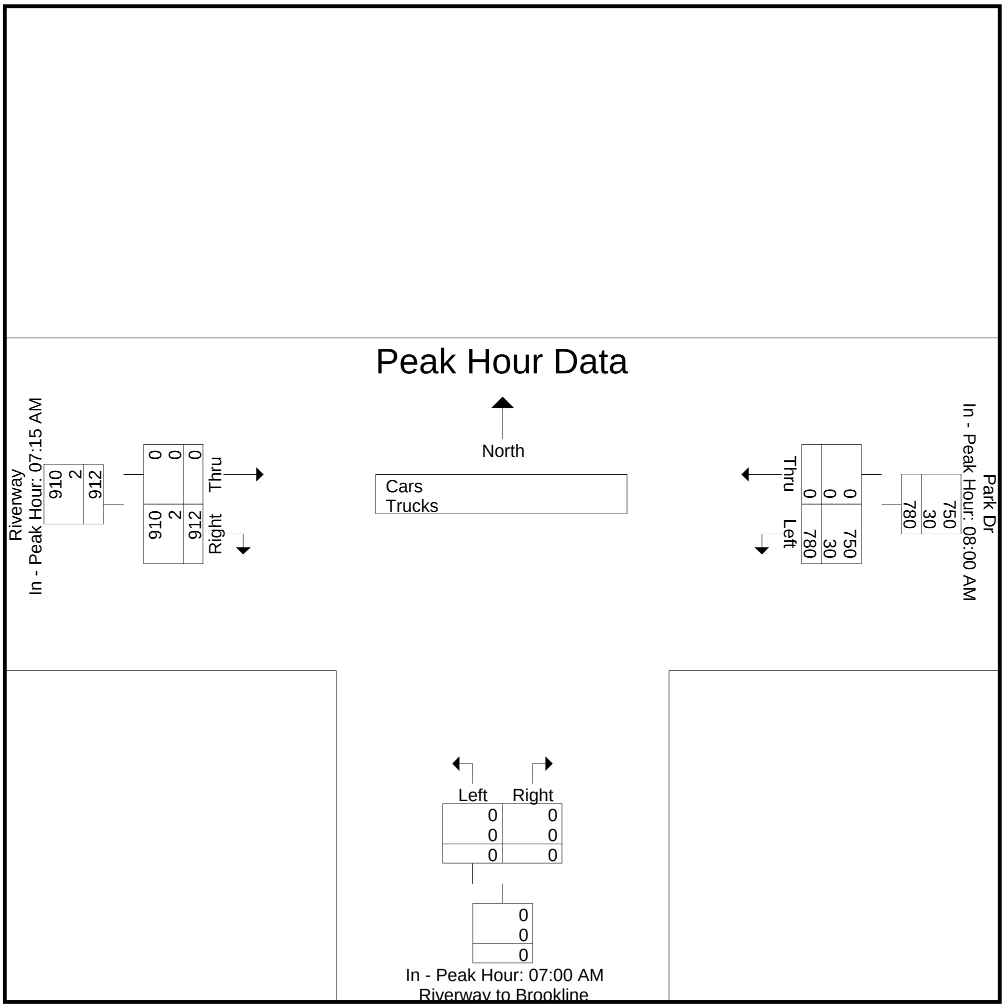
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			07:00 AM			07:15 AM		
+0 mins.	188	0	188	0	0	0	0	234	234
+15 mins.	191	0	191	0	0	0	0	**248**	**248**
+30 mins.	197	0	197	0	0	0	0	212	212
+45 mins.	**204**	0	**204**	0	0	0	0	218	218
Total Volume	780	0	780	0	0	0	0	912	912
% App. Total	100	0		0	0		0	100	
PHF	.956	.000	.956	.000	.000	.000	.000	.919	.919
Cars	750	0	750	0	0	0	0	910	910
% Cars	96.2	0	96.2	0	0	0	0	99.8	99.8
Trucks	30	0	30	0	0	0	0	2	2
% Trucks	3.8	0	3.8	0	0	0	0	0.2	0.2

Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

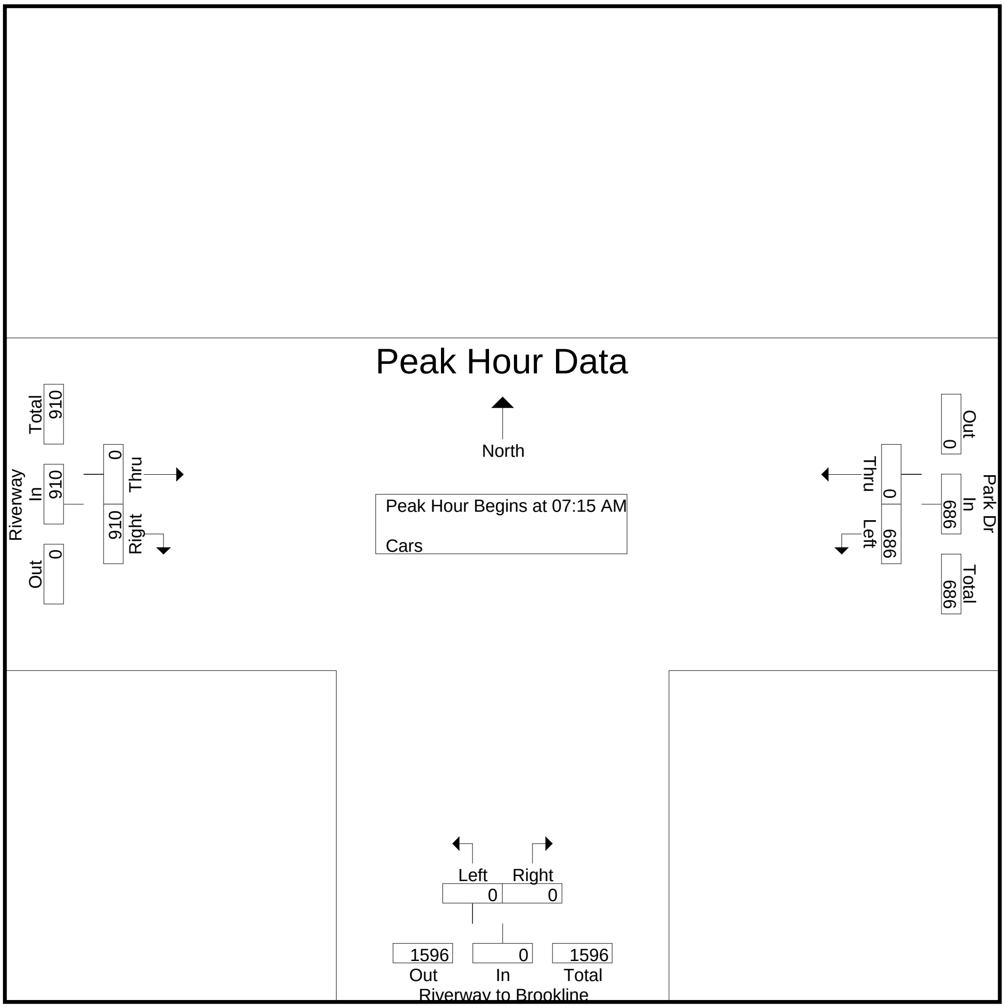
	Park Dr From East		Riverway to Brookline From South		Riverway From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	152	0	0	0	0	217	369
07:15 AM	188	0	0	0	0	234	422
07:30 AM	153	0	0	0	0	248	401
07:45 AM	162	0	0	0	0	211	373
Total	655	0	0	0	0	910	1565
08:00 AM	183	0	0	0	0	217	400
08:15 AM	182	0	0	0	0	200	382
08:30 AM	189	0	0	0	0	186	375
08:45 AM	196	0	0	0	0	198	394
Total	750	0	0	0	0	801	1551
Grand Total	1405	0	0	0	0	1711	3116
Apprch %	100	0	0	0	0	100	
Total %	45.1	0	0	0	0	54.9	

	Park Dr From East			Riverway to Brookline From South			Riverway From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	**188**	0	**188**	0	0	0	0	234	234	**422**
07:30 AM	153	0	153	0	0	0	0	**248**	**248**	401
07:45 AM	162	0	162	0	0	0	0	211	211	373
08:00 AM	183	0	183	0	0	0	0	217	217	400
Total Volume	686	0	686	0	0	0	0	910	910	1596
% App. Total	100	0		0	0		0	100		
PHF	.912	.000	.912	.000	.000	.000	.000	.917	.917	.945

Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012



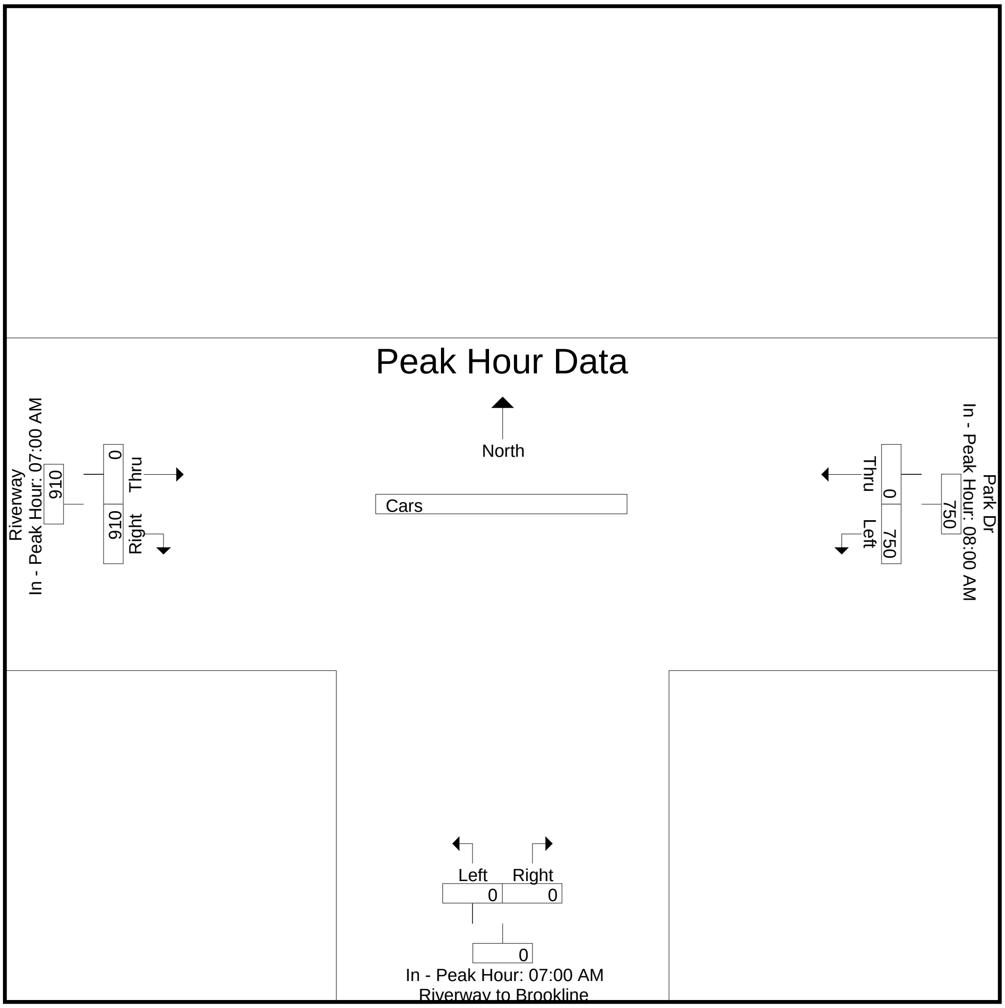
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			07:00 AM			07:00 AM		
+0 mins.	183	0	183	0	0	0	0	217	217
+15 mins.	182	0	182	0	0	0	0	234	234
+30 mins.	189	0	189	0	0	0	0	**248**	**248**
+45 mins.	**196**	0	**196**	0	0	0	0	211	211
Total Volume	750	0	750	0	0	0	0	910	910
% App. Total	100	0		0	0		0	100	
PHF	.957	.000	.957	.000	.000	.000	.000	.917	.917

Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

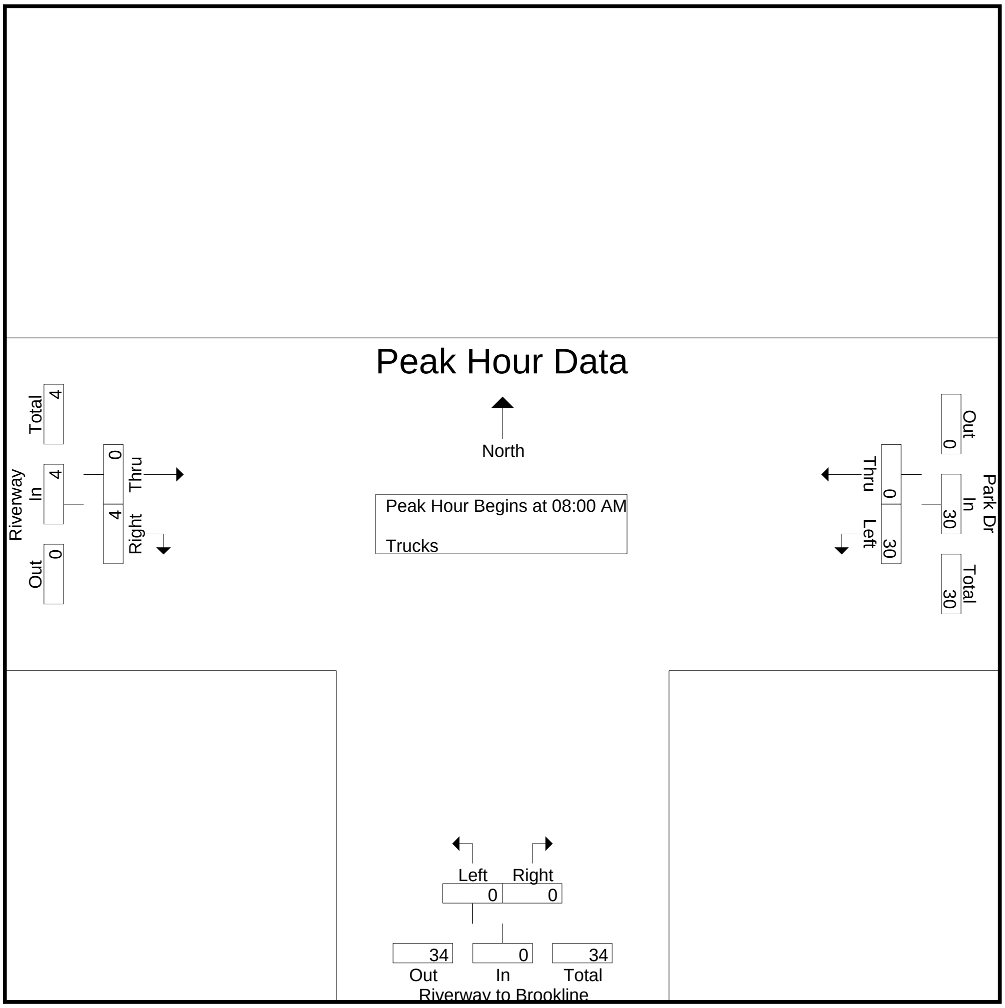
	Park Dr From East		Riverway to Brookline From South		Riverway From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	5	0	0	0	0	0	5
07:15 AM	4	0	0	0	0	0	4
07:30 AM	6	0	0	0	0	0	6
07:45 AM	6	0	0	0	0	1	7
Total	21	0	0	0	0	1	22
08:00 AM	5	0	0	0	0	1	6
08:15 AM	9	0	0	0	0	1	10
08:30 AM	8	0	0	0	0	2	10
08:45 AM	8	0	0	0	0	0	8
Total	30	0	0	0	0	4	34
Grand Total	51	0	0	0	0	5	56
Apprch %	100	0	0	0	0	100	
Total %	91.1	0	0	0	0	8.9	

	Park Dr From East			Riverway to Brookline From South			Riverway From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	5	0	5	0	0	0	0	1	1	6
08:15 AM	**9**	0	**9**	0	0	0	0	1	1	**10**
08:30 AM	8	0	8	0	0	0	0	**2**	**2**	10
08:45 AM	8	0	8	0	0	0	0	0	0	8
Total Volume	30	0	30	0	0	0	0	4	4	34
% App. Total	100	0		0	0		0	100		
PHF	.833	.000	.833	.000	.000	.000	.000	.500	.500	.850

Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			07:00 AM			07:45 AM		
+0 mins.	5	0	5	0	0	0	0	1	1
+15 mins.	**9**	0	**9**	0	0	0	0	1	1
+30 mins.	8	0	8	0	0	0	0	1	1
+45 mins.	8	0	8	0	0	0	0	**2**	**2**
Total Volume	30	0	30	0	0	0	0	5	5
% App. Total	100	0		0	0		0	100	
PHF	.833	.000	.833	.000	.000	.000	.000	.625	.625

Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
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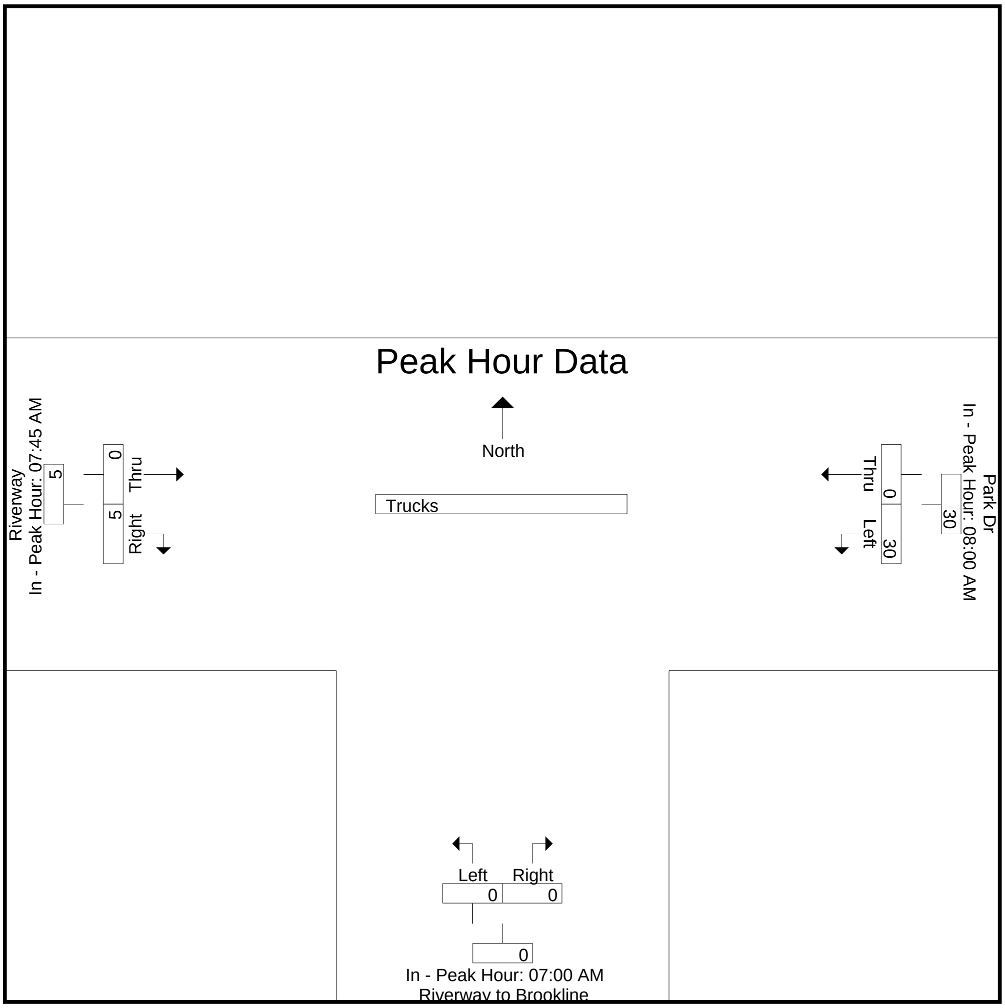


Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

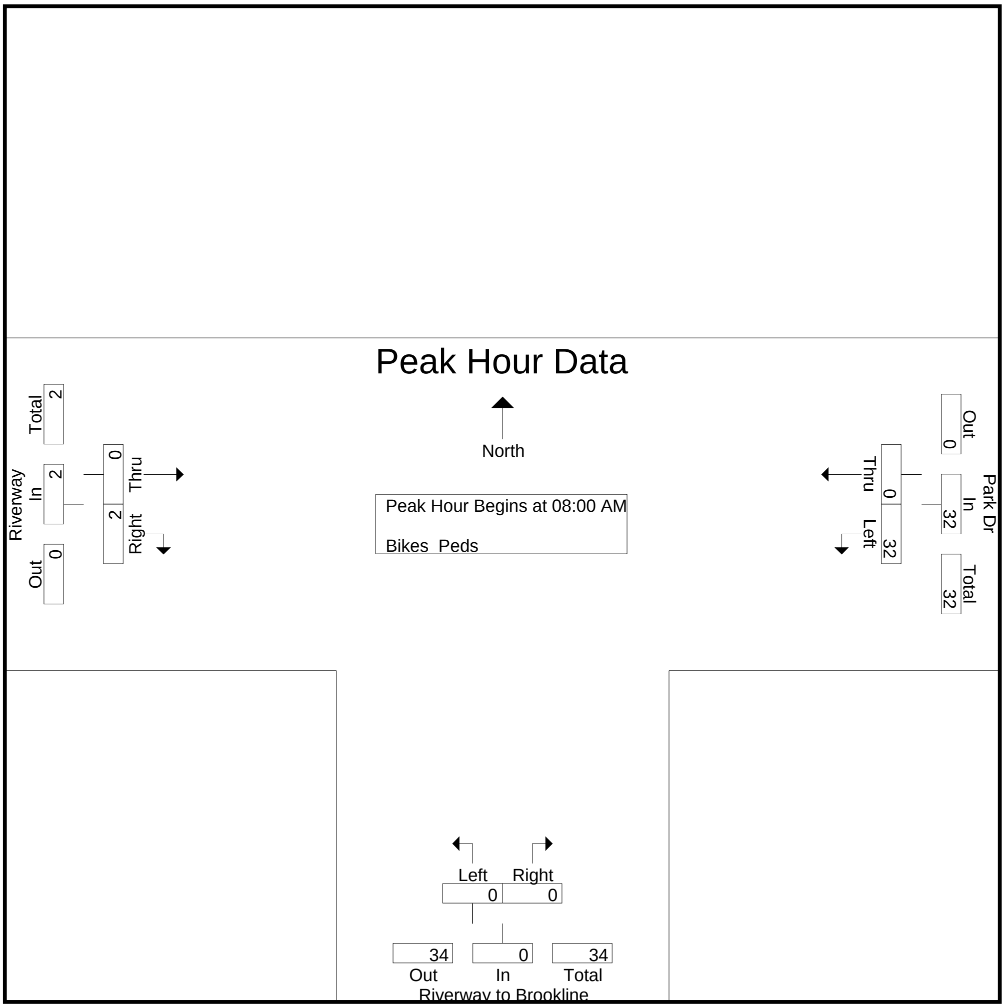
File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

	Park Dr From East			Riverway to Brookline From South			Riverway From West					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	6	0	0	0	0	0	0	0	0	0	6	6
07:15 AM	1	0	0	0	0	0	0	0	0	0	1	1
07:30 AM	6	0	0	0	0	0	0	0	0	0	6	6
07:45 AM	6	0	0	0	0	0	0	0	0	0	6	6
Total	19	0	0	0	0	0	0	0	0	0	19	19
08:00 AM	5	0	0	0	0	0	0	1	1	1	6	7
08:15 AM	7	0	0	0	0	0	0	0	0	0	7	7
08:30 AM	4	0	0	0	0	0	0	1	0	0	5	5
08:45 AM	16	0	0	0	0	0	0	0	0	0	16	16
Total	32	0	0	0	0	0	0	2	1	1	34	35
Grand Total	51	0	0	0	0	0	0	2	1	1	53	54
Apprch %	100	0		0	0		0	100				
Total %	96.2	0		0	0		0	3.8		1.9	98.1	

	Park Dr From East			Riverway to Brookline From South			Riverway From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	5	0	5	0	0	0	0	**1**	**1**	6
08:15 AM	7	0	7	0	0	0	0	0	0	7
08:30 AM	4	0	4	0	0	0	0	1	1	5
08:45 AM	**16**	0	**16**	0	0	0	0	0	0	**16**
Total Volume	32	0	32	0	0	0	0	2	2	34
% App. Total	100	0		0	0		0	100		
PHF	.500	.000	.500	.000	.000	.000	.000	.500	.500	.531

Accurate Counts
978-664-2565



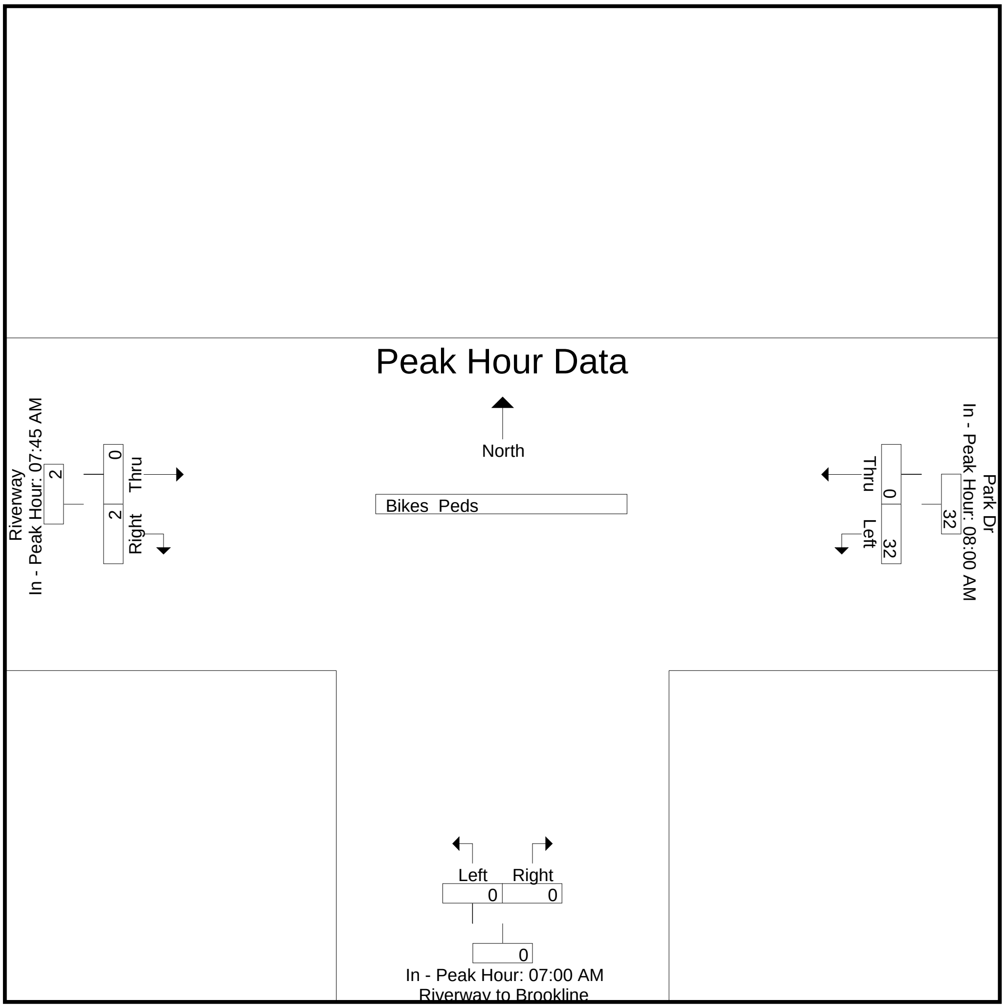
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			07:00 AM			07:45 AM		
+0 mins.	5	0	5	0	0	0	0	0	0
+15 mins.	7	0	7	0	0	0	0	**1**	**1**
+30 mins.	4	0	4	0	0	0	0	0	0
+45 mins.	**16**	0	**16**	0	0	0	0	1	1
Total Volume	32	0	32	0	0	0	0	2	2
% App. Total	100	0		0	0		0	100	
PHF	.500	.000	.500	.000	.000	.000	.000	.500	.500

Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

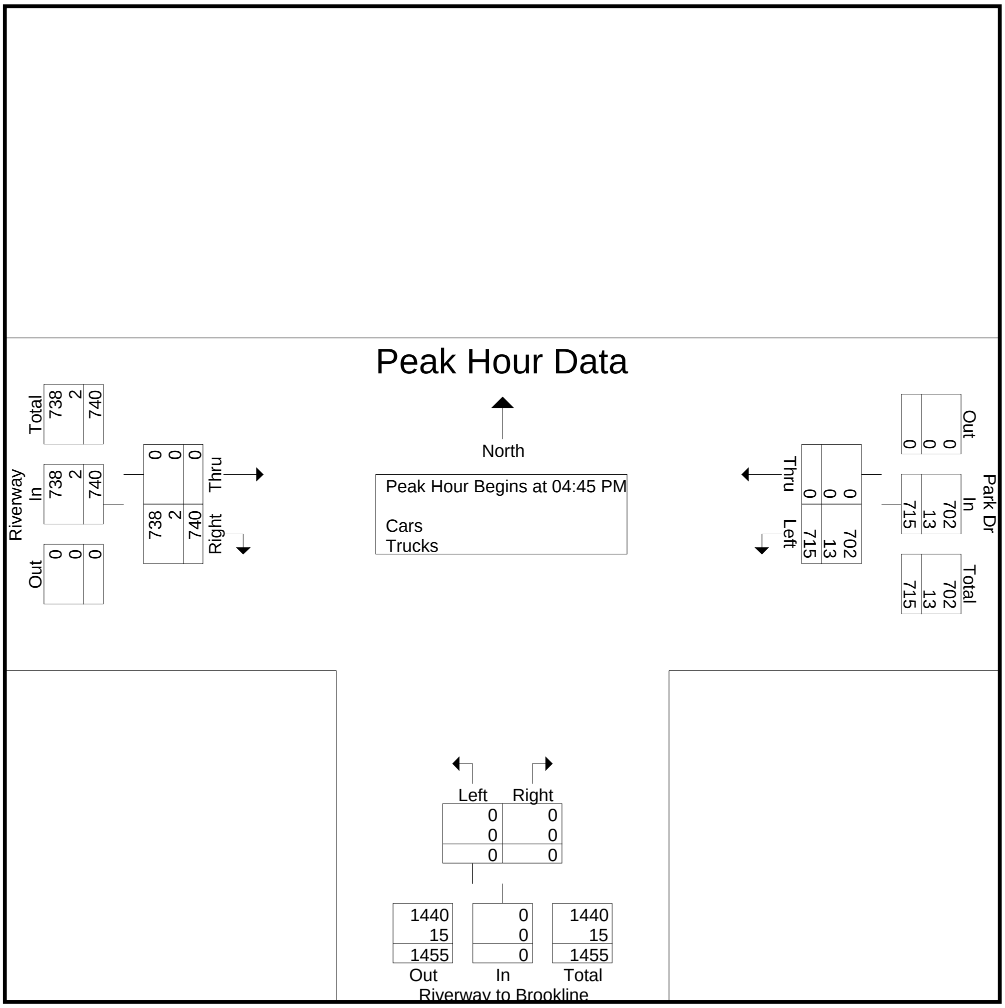
	Park Dr From East		Riverway to Brookline From South		Riverway From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	162	0	0	0	0	169	331
04:15 PM	122	0	0	0	0	199	321
04:30 PM	146	0	0	0	0	178	324
04:45 PM	174	0	0	0	0	170	344
Total	604	0	0	0	0	716	1320
05:00 PM	171	0	0	0	0	198	369
05:15 PM	187	0	0	0	0	179	366
05:30 PM	183	0	0	0	0	193	376
05:45 PM	160	0	0	0	0	151	311
Total	701	0	0	0	0	721	1422
Grand Total	1305	0	0	0	0	1437	2742
Apprch %	100	0	0	0	0	100	
Total %	47.6	0	0	0	0	52.4	
Cars	1276	0	0	0	0	1434	2710
% Cars	97.8	0	0	0	0	99.8	98.8
Trucks	29	0	0	0	0	3	32
% Trucks	2.2	0	0	0	0	0.2	1.2

	Park Dr From East			Riverway to Brookline From South			Riverway From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	174	0	174	0	0	0	0	170	170	344
05:00 PM	171	0	171	0	0	0	0	**198**	**198**	369
05:15 PM	**187**	0	**187**	0	0	0	0	179	179	366
05:30 PM	183	0	183	0	0	0	0	193	193	**376**
Total Volume	715	0	715	0	0	0	0	740	740	1455
% App. Total	100	0		0	0		0	100		
PHF	.956	.000	.956	.000	.000	.000	.000	.934	.934	.967
Cars	702	0	702	0	0	0	0	738	738	1440
% Cars	98.2	0	98.2	0	0	0	0	99.7	99.7	99.0
Trucks	13	0	13	0	0	0	0	2	2	15
% Trucks	1.8	0	1.8	0	0	0	0	0.3	0.3	1.0

Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:00 PM			04:15 PM		
+0 mins.	174	0	174	0	0	0	0	**199**	**199**
+15 mins.	171	0	171	0	0	0	0	178	178
+30 mins.	**187**	0	**187**	0	0	0	0	170	170
+45 mins.	183	0	183	0	0	0	0	198	198
Total Volume	715	0	715	0	0	0	0	745	745
% App. Total	100	0		0	0		0	100	
PHF	.956	.000	.956	.000	.000	.000	.000	.936	.936
Cars	702	0	702	0	0	0	0	743	743
% Cars	98.2	0	98.2	0	0	0	0	99.7	99.7
Trucks	13	0	13	0	0	0	0	2	2
% Trucks	1.8	0	1.8	0	0	0	0	0.3	0.3

Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
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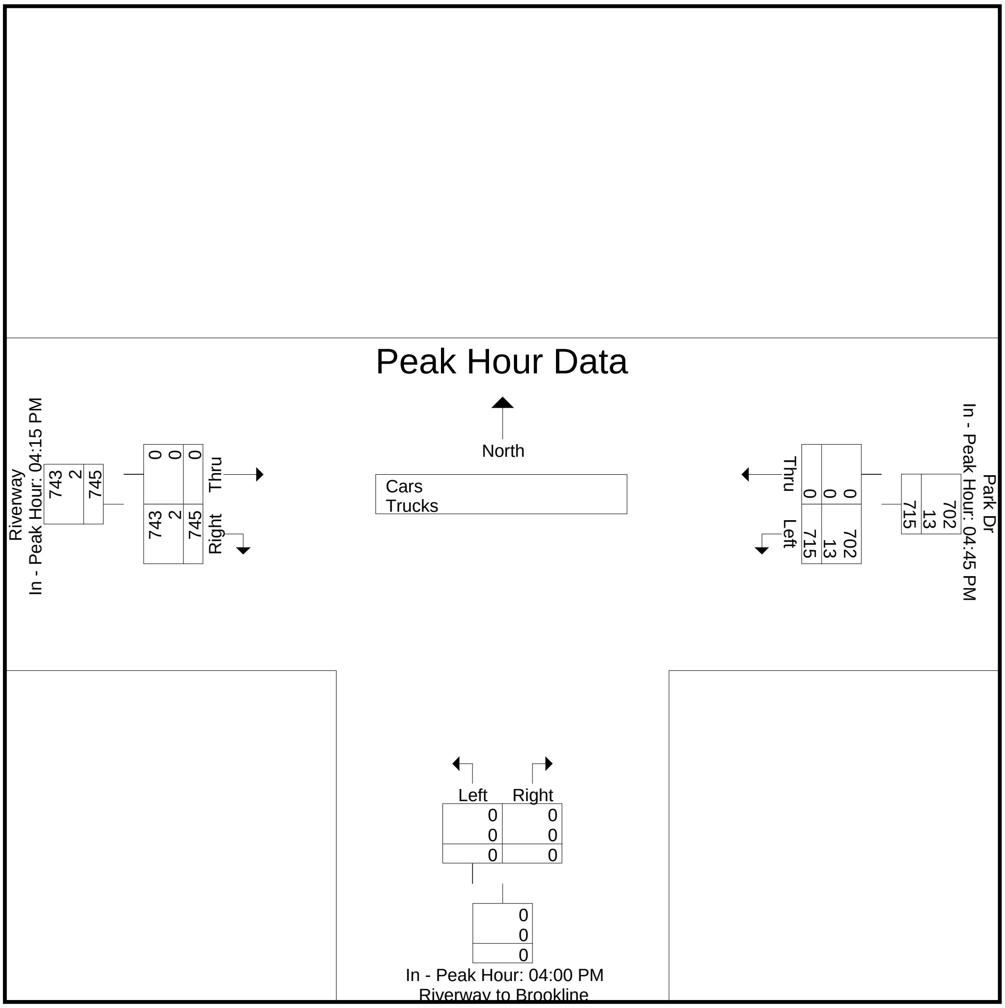


Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

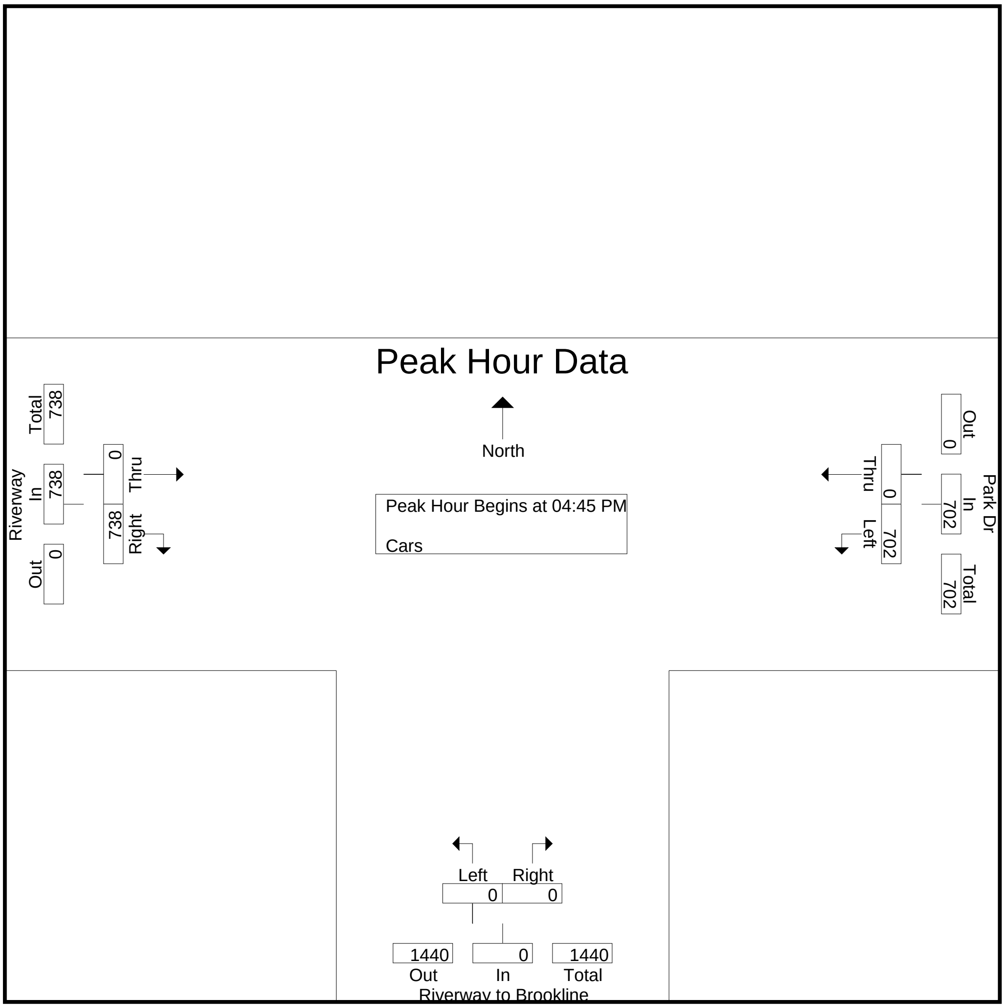
	Park Dr From East		Riverway to Brookline From South		Riverway From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	157	0	0	0	0	169	326
04:15 PM	119	0	0	0	0	199	318
04:30 PM	141	0	0	0	0	177	318
04:45 PM	171	0	0	0	0	169	340
Total	588	0	0	0	0	714	1302
05:00 PM	169	0	0	0	0	198	367
05:15 PM	181	0	0	0	0	178	359
05:30 PM	181	0	0	0	0	193	374
05:45 PM	157	0	0	0	0	151	308
Total	688	0	0	0	0	720	1408
Grand Total	1276	0	0	0	0	1434	2710
Apprch %	100	0	0	0	0	100	
Total %	47.1	0	0	0	0	52.9	

	Park Dr From East			Riverway to Brookline From South			Riverway From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	171	0	171	0	0	0	0	169	169	340
05:00 PM	169	0	169	0	0	0	0	**198**	**198**	367
05:15 PM	**181**	0	**181**	0	0	0	0	178	178	359
05:30 PM	181	0	181	0	0	0	0	193	193	**374**
Total Volume	702	0	702	0	0	0	0	738	738	1440
% App. Total	100	0		0	0		0	100		
PHF	.970	.000	.970	.000	.000	.000	.000	.932	.932	.963

Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
Page No : 2



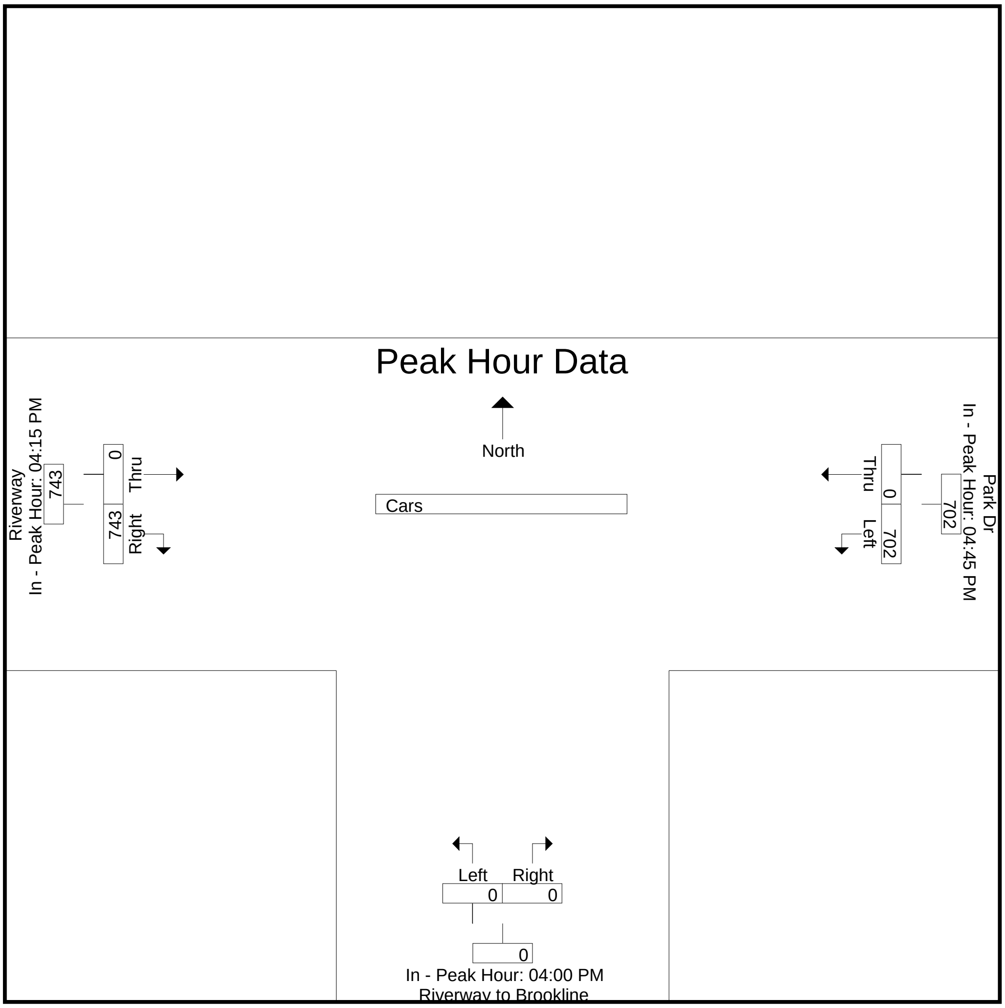
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:00 PM			04:15 PM		
+0 mins.	171	0	171	0	0	0	0	**199**	**199**
+15 mins.	169	0	169	0	0	0	0	177	177
+30 mins.	**181**	0	**181**	0	0	0	0	169	169
+45 mins.	181	0	181	0	0	0	0	198	198
Total Volume	702	0	702	0	0	0	0	743	743
% App. Total	100	0		0	0		0	100	
PHF	.970	.000	.970	.000	.000	.000	.000	.933	.933

Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

	Park Dr From East		Riverway to Brookline From South		Riverway From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	5	0	0	0	0	0	5
04:15 PM	3	0	0	0	0	0	3
04:30 PM	5	0	0	0	0	1	6
04:45 PM	3	0	0	0	0	1	4
Total	16	0	0	0	0	2	18
05:00 PM	2	0	0	0	0	0	2
05:15 PM	6	0	0	0	0	1	7
05:30 PM	2	0	0	0	0	0	2
05:45 PM	3	0	0	0	0	0	3
Total	13	0	0	0	0	1	14
Grand Total	29	0	0	0	0	3	32
Apprch %	100	0	0	0	0	100	
Total %	90.6	0	0	0	0	9.4	

	Park Dr From East			Riverway to Brookline From South			Riverway From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	5	0	5	0	0	0	0	**1**	**1**	6
04:45 PM	3	0	3	0	0	0	0	1	1	4
05:00 PM	2	0	2	0	0	0	0	0	0	2
05:15 PM	**6**	0	**6**	0	0	0	0	1	1	**7**
Total Volume	16	0	16	0	0	0	0	3	3	19
% App. Total	100	0		0	0		0	100		
PHF	.667	.000	.667	.000	.000	.000	.000	.750	.750	.679

Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
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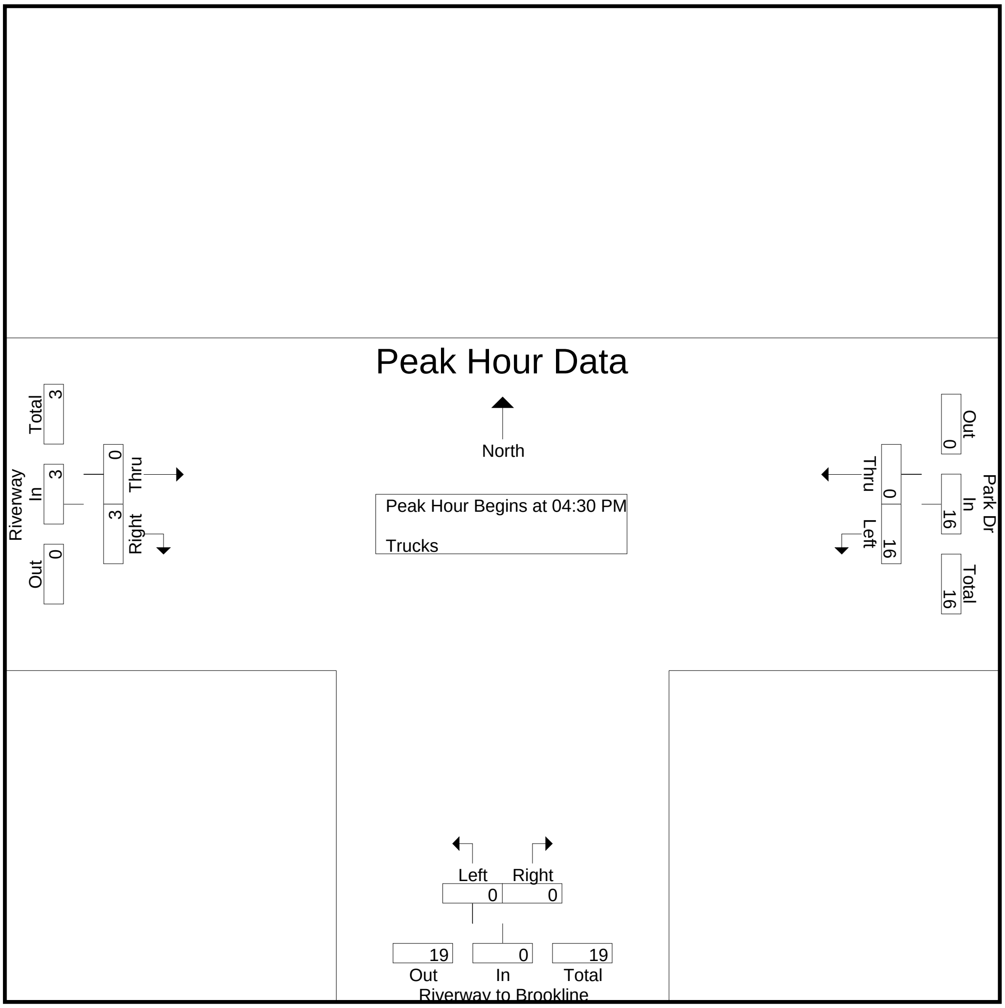

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:30 PM		
+0 mins.	**5**	0	**5**	0	0	0	0	**1**	**1**
+15 mins.	3	0	3	0	0	0	0	1	1
+30 mins.	5	0	5	0	0	0	0	0	0
+45 mins.	3	0	3	0	0	0	0	1	1
Total Volume	16	0	16	0	0	0	0	3	3
% App. Total	100	0		0	0		0	100	
PHF	.800	.000	.800	.000	.000	.000	.000	.750	.750

Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
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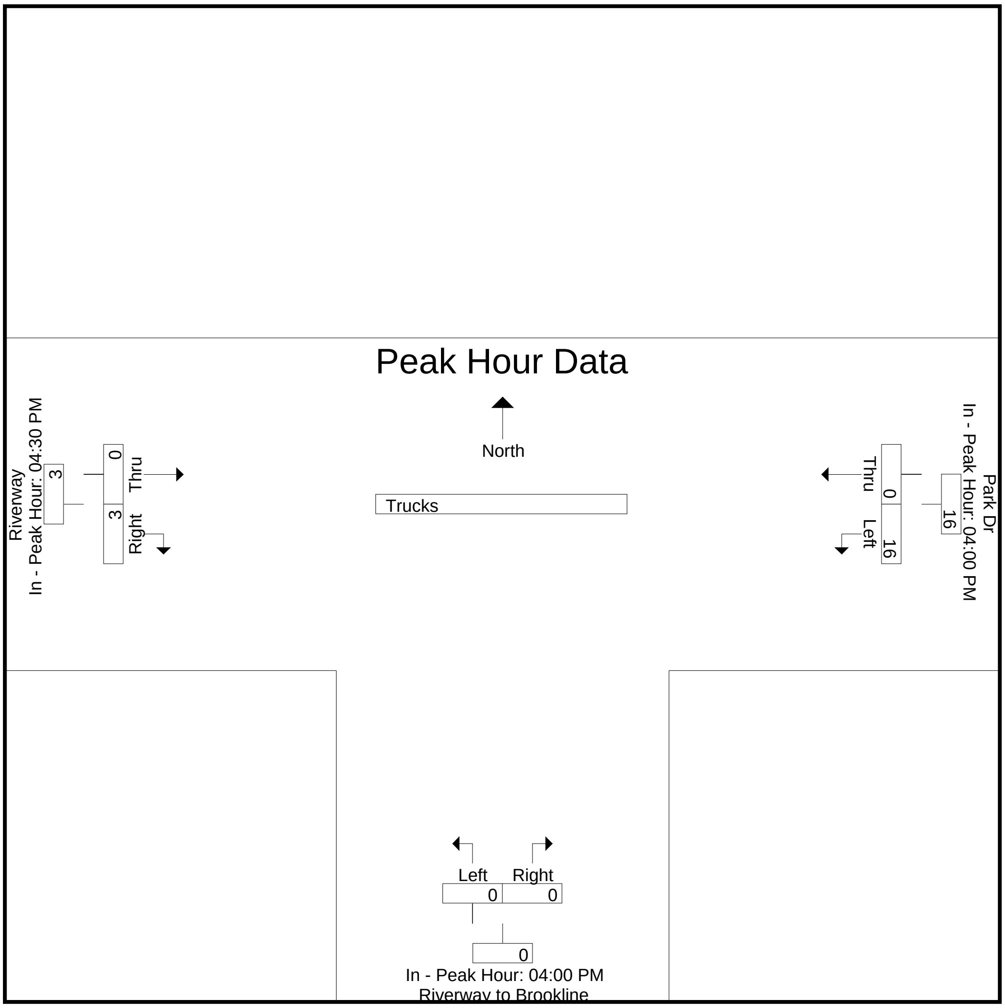


Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

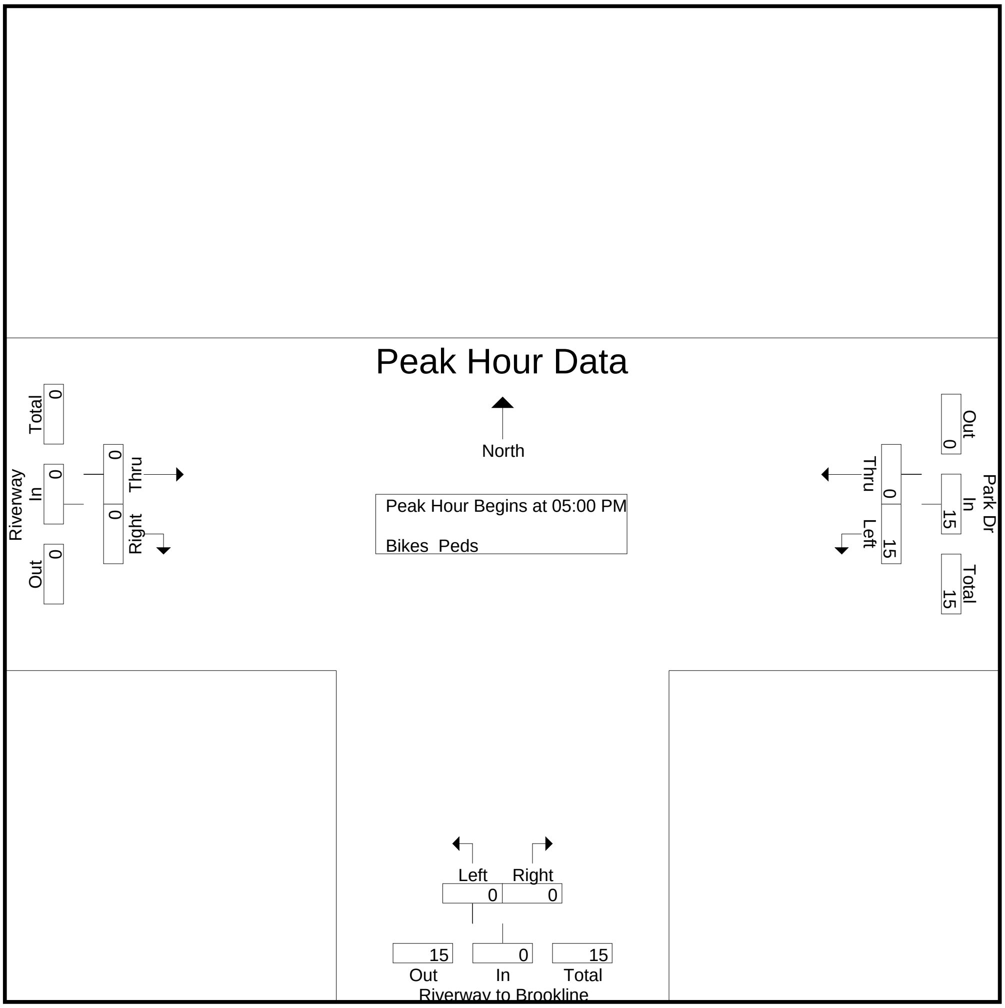
	Park Dr From East			Riverway to Brookline From South			Riverway From West					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	2	0	0	0	0	1	0	0	0	1	2	3
04:15 PM	0	0	0	0	0	1	0	0	0	1	0	1
04:30 PM	1	0	0	0	0	1	0	0	0	1	1	2
04:45 PM	0	0	0	0	0	0	0	1	0	0	1	1
Total	3	0	0	0	0	3	0	1	0	3	4	7
05:00 PM	3	0	0	0	0	0	0	0	0	0	3	3
05:15 PM	5	0	0	0	0	0	0	0	2	2	5	7
05:30 PM	4	0	0	0	0	0	0	0	3	3	4	7
05:45 PM	3	0	0	0	0	0	0	0	3	3	3	6
Total	15	0	0	0	0	0	0	0	8	8	15	23
Grand Total	18	0	0	0	0	3	0	1	8	11	19	30
Apprch %	100	0		0	0		0	100				
Total %	94.7	0		0	0		0	5.3		36.7	63.3	

	Park Dr From East			Riverway to Brookline From South			Riverway From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	3	0	3	0	0	0	0	0	0	3
05:15 PM	**5**	0	**5**	0	0	0	0	0	0	**5**
05:30 PM	4	0	4	0	0	0	0	0	0	4
05:45 PM	3	0	3	0	0	0	0	0	0	3
Total Volume	15	0	15	0	0	0	0	0	0	15
% App. Total	100	0		0	0		0	0		
PHF	.750	.000	.750	.000	.000	.000	.000	.000	.000	.750

Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			04:00 PM			04:00 PM		
+0 mins.	3	0	3	0	0	0	0	0	0
+15 mins.	**5**	0	**5**	0	0	0	0	0	0
+30 mins.	4	0	4	0	0	0	0	0	0
+45 mins.	3	0	3	0	0	0	0	**1**	**1**
Total Volume	15	0	15	0	0	0	0	1	1
% App. Total	100	0		0	0		0	100	
PHF	.750	.000	.750	.000	.000	.000	.000	.250	.250

Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
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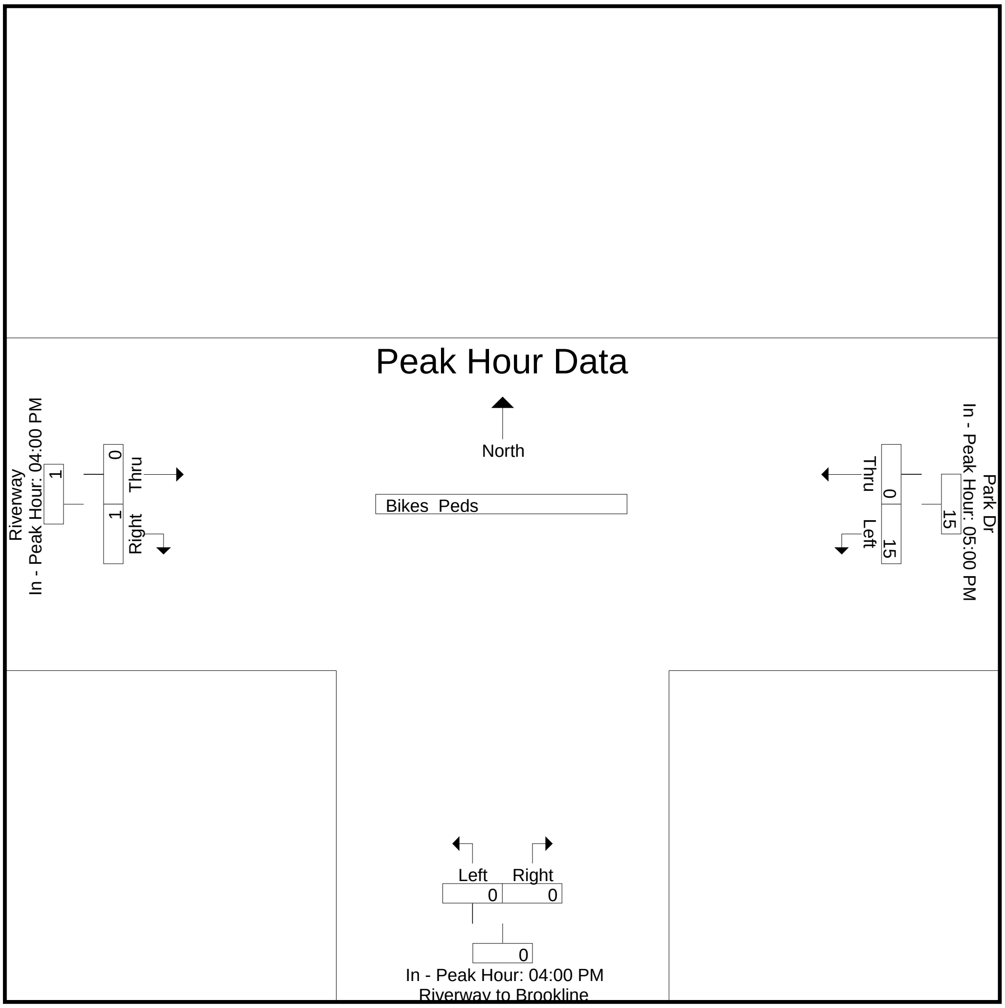


Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

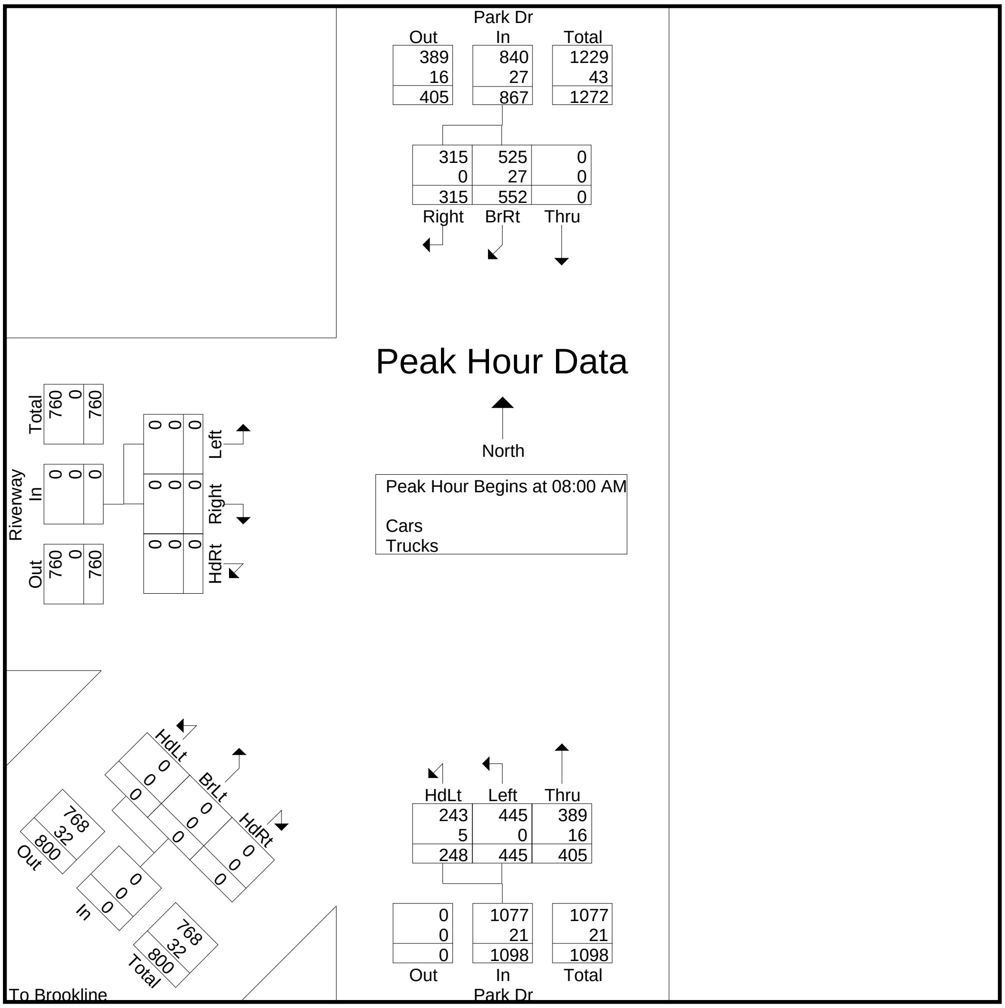
	Park Dr From North			Park Dr From South			To Brookline From Southwest			Riverway From West			
Start Time	Thru	BrRt	Right	HdLt	Left	Thru	HdLt	BrLt	HdRt	Left	Right	HdRt	Int. Total
07:00 AM	0	96	62	57	107	60	0	0	0	0	0	0	382
07:15 AM	0	128	74	64	98	70	0	0	0	0	0	0	434
07:30 AM	0	138	94	45	116	99	0	0	0	0	0	0	492
07:45 AM	0	106	92	55	138	78	0	0	0	0	0	0	469
Total	0	468	322	221	459	307	0	0	0	0	0	0	1777
08:00 AM	0	139	84	63	127	110	0	0	0	0	0	0	523
08:15 AM	0	126	82	54	89	105	0	0	0	0	0	0	456
08:30 AM	0	146	80	64	96	96	0	0	0	0	0	0	482
08:45 AM	0	141	69	67	133	94	0	0	0	0	0	0	504
Total	0	552	315	248	445	405	0	0	0	0	0	0	1965
Grand Total	0	1020	637	469	904	712	0	0	0	0	0	0	3742
Apprch %	0	61.6	38.4	22.5	43.4	34.1	0	0	0	0	0	0	
Total %	0	27.3	17	12.5	24.2	19	0	0	0	0	0	0	
Cars	0	975	635	460	903	681	0	0	0	0	0	0	3654
% Cars	0	95.6	99.7	98.1	99.9	95.6	0	0	0	0	0	0	97.6
Trucks	0	45	2	9	1	31	0	0	0	0	0	0	88
% Trucks	0	4.4	0.3	1.9	0.1	4.4	0	0	0	0	0	0	2.4

	Park Dr From North				Park Dr From South				To Brookline From Southwest				Riverway From West				
Start Time	Thru	BrRt	Right	App. Total	HdLt	Left	Thru	App. Total	HdLt	BrLt	HdRt	App. Total	Left	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	139	**84**	223	63	127	**110**	**300**	0	0	0	0	0	0	0	0	**523**
08:15 AM	0	126	82	208	54	89	105	248	0	0	0	0	0	0	0	0	456
08:30 AM	0	**146**	80	**226**	64	96	96	256	0	0	0	0	0	0	0	0	482
08:45 AM	0	141	69	210	**67**	**133**	94	294	0	0	0	0	0	0	0	0	504
Total Volume	0	552	315	867	248	445	405	1098	0	0	0	0	0	0	0	0	1965
% App. Total	0	63.7	36.3		22.6	40.5	36.9		0	0	0		0	0	0		
PHF	.000	.945	.938	.959	.925	.836	.920	.915	.000	.000	.000	.000	.000	.000	.000	.000	.939
Cars	0	525	315	840	243	445	389	1077	0	0	0	0	0	0	0	0	1917
% Cars	0	95.1	100	96.9	98.0	100	96.0	98.1	0	0	0	0	0	0	0	0	97.6
Trucks	0	27	0	27	5	0	16	21	0	0	0	0	0	0	0	0	48
% Trucks	0	4.9	0	3.1	2.0	0	4.0	1.9	0	0	0	0	0	0	0	0	2.4

Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 2



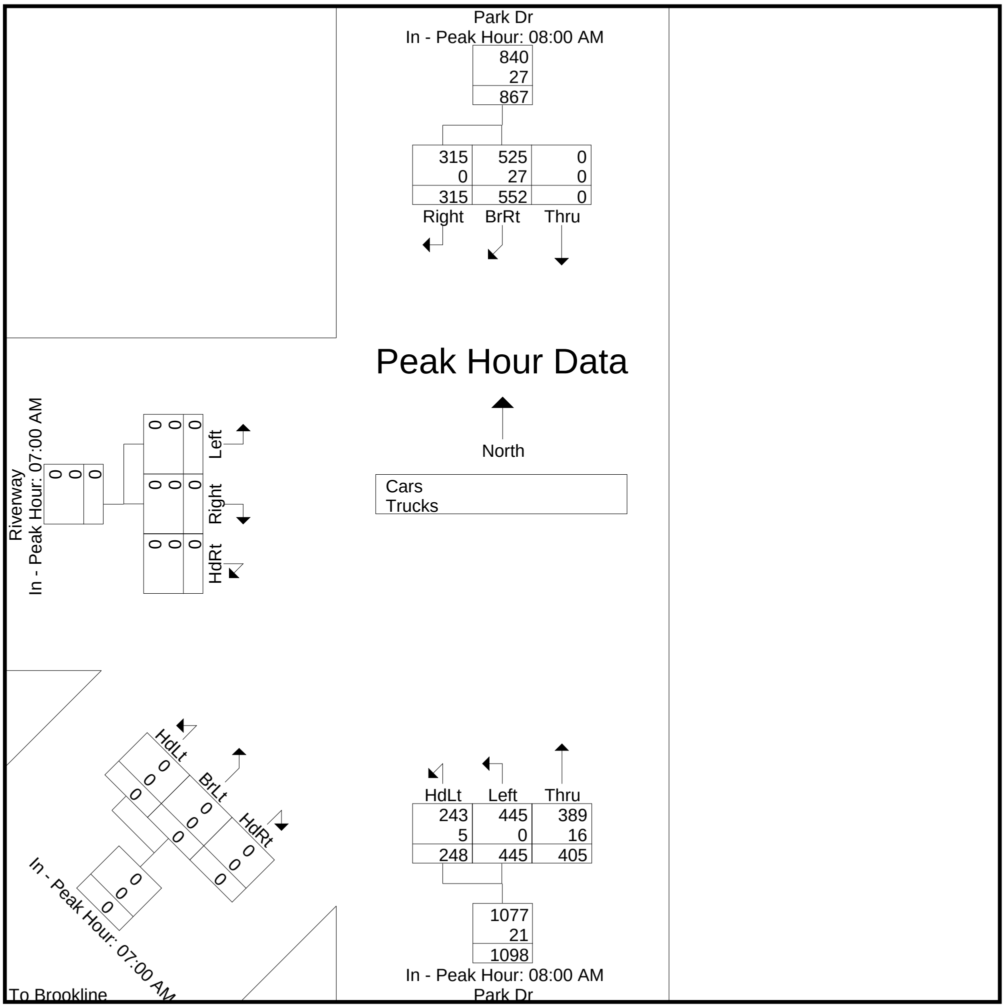
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	139	**84**	223	63	127	**110**	**300**	0	0	0	0	0	0	0	0
+15 mins.	0	126	82	208	54	89	105	248	0	0	0	0	0	0	0	0
+30 mins.	0	**146**	80	**226**	64	96	96	256	0	0	0	0	0	0	0	0
+45 mins.	0	141	69	210	**67**	**133**	94	294	0	0	0	0	0	0	0	0
Total Volume	0	552	315	867	248	445	405	1098	0	0	0	0	0	0	0	0
% App. Total	0	63.7	36.3		22.6	40.5	36.9		0	0	0		0	0	0	
PHF	.000	.945	.938	.959	.925	.836	.920	.915	.000	.000	.000	.000	.000	.000	.000	.000
Cars	0	525	315	840	243	445	389	1077	0	0	0	0	0	0	0	0
% Cars	0	95.1	100	96.9	98	100	96	98.1	0	0	0	0	0	0	0	0
Trucks	0	27	0	27	5	0	16	21	0	0	0	0	0	0	0	0
% Trucks	0	4.9	0	3.1	2	0	4	1.9	0	0	0	0	0	0	0	0

Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

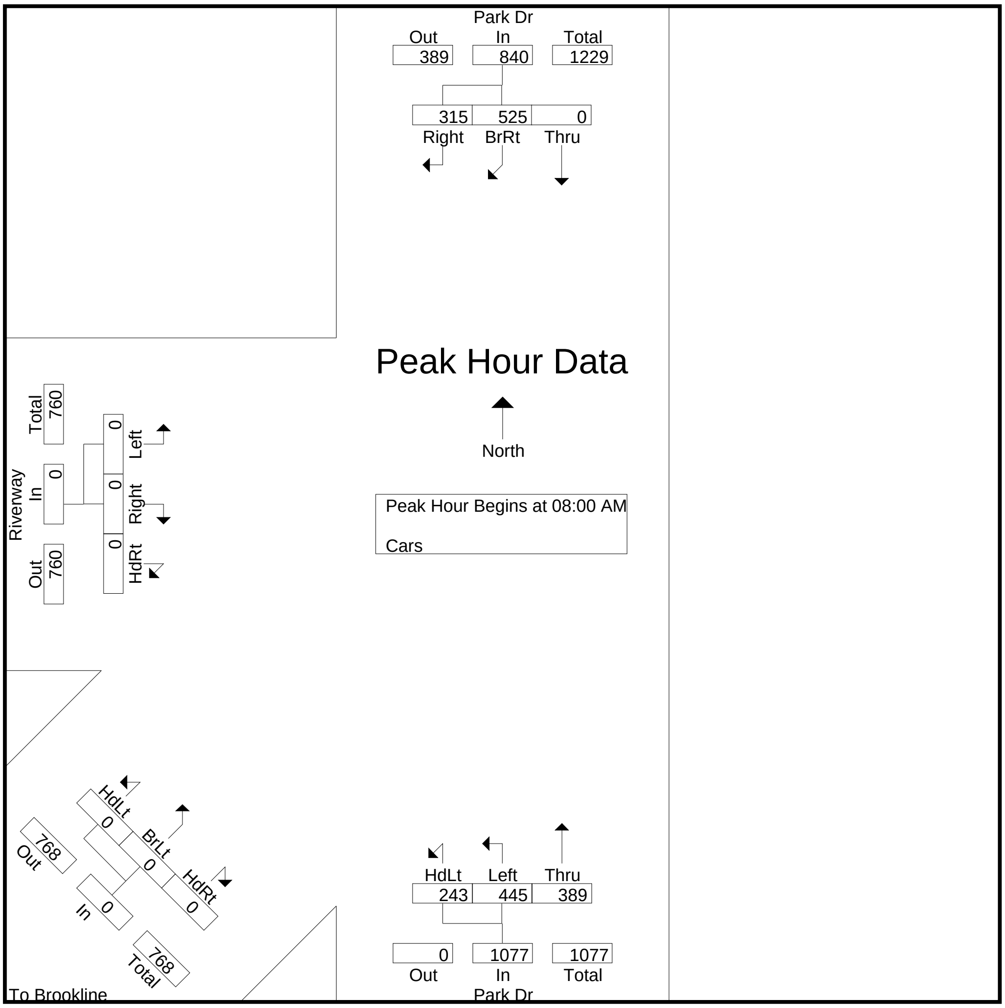
	Park Dr From North			Park Dr From South			To Brookline From Southwest			Riverway From West			
Start Time	Thru	BrRt	Right	HdLt	Left	Thru	HdLt	BrLt	HdRt	Left	Right	HdRt	Int. Total
07:00 AM	0	93	62	55	107	56	0	0	0	0	0	0	373
07:15 AM	0	122	74	64	97	67	0	0	0	0	0	0	424
07:30 AM	0	132	92	44	116	96	0	0	0	0	0	0	480
07:45 AM	0	103	92	54	138	73	0	0	0	0	0	0	460
Total	0	450	320	217	458	292	0	0	0	0	0	0	1737
08:00 AM	0	132	84	62	127	106	0	0	0	0	0	0	511
08:15 AM	0	118	82	53	89	100	0	0	0	0	0	0	442
08:30 AM	0	141	80	63	96	92	0	0	0	0	0	0	472
08:45 AM	0	134	69	65	133	91	0	0	0	0	0	0	492
Total	0	525	315	243	445	389	0	0	0	0	0	0	1917
Grand Total	0	975	635	460	903	681	0	0	0	0	0	0	3654
Apprch %	0	60.6	39.4	22.5	44.2	33.3	0	0	0	0	0	0	
Total %	0	26.7	17.4	12.6	24.7	18.6	0	0	0	0	0	0	

	Park Dr From North				Park Dr From South				To Brookline From Southwest				Riverway From West				
Start Time	Thru	BrRt	Right	App. Total	HdLt	Left	Thru	App. Total	HdLt	BrLt	HdRt	App. Total	Left	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	132	**84**	216	62	127	**106**	**295**	0	0	0	0	0	0	0	0	**511**
08:15 AM	0	118	82	200	53	89	100	242	0	0	0	0	0	0	0	0	442
08:30 AM	0	**141**	80	**221**	63	96	92	251	0	0	0	0	0	0	0	0	472
08:45 AM	0	134	69	203	**65**	**133**	91	289	0	0	0	0	0	0	0	0	492
Total Volume	0	525	315	840	243	445	389	1077	0	0	0	0	0	0	0	0	1917
% App. Total	0	62.5	37.5		22.6	41.3	36.1		0	0	0		0	0	0		
PHF	.000	.931	.938	.950	.935	.836	.917	.913	.000	.000	.000	.000	.000	.000	.000	.000	.938

Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 2



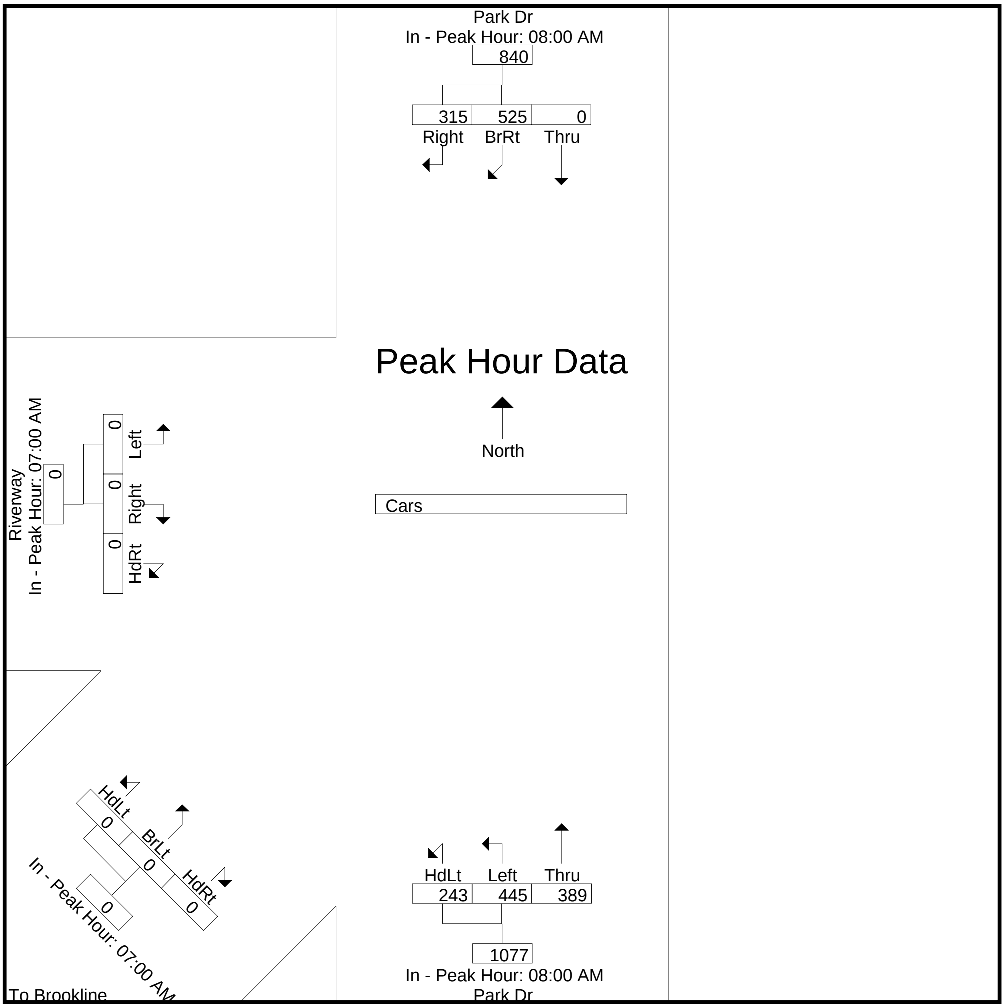
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	132	**84**	216	62	127	**106**	**295**	0	0	0	0	0	0	0	0
+15 mins.	0	118	82	200	53	89	100	242	0	0	0	0	0	0	0	0
+30 mins.	0	**141**	80	**221**	63	96	92	251	0	0	0	0	0	0	0	0
+45 mins.	0	134	69	203	**65**	**133**	91	289	0	0	0	0	0	0	0	0
Total Volume	0	525	315	840	243	445	389	1077	0	0	0	0	0	0	0	0
% App. Total	0	62.5	37.5		22.6	41.3	36.1		0	0	0		0	0	0	
PHF	.000	.931	.938	.950	.935	.836	.917	.913	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

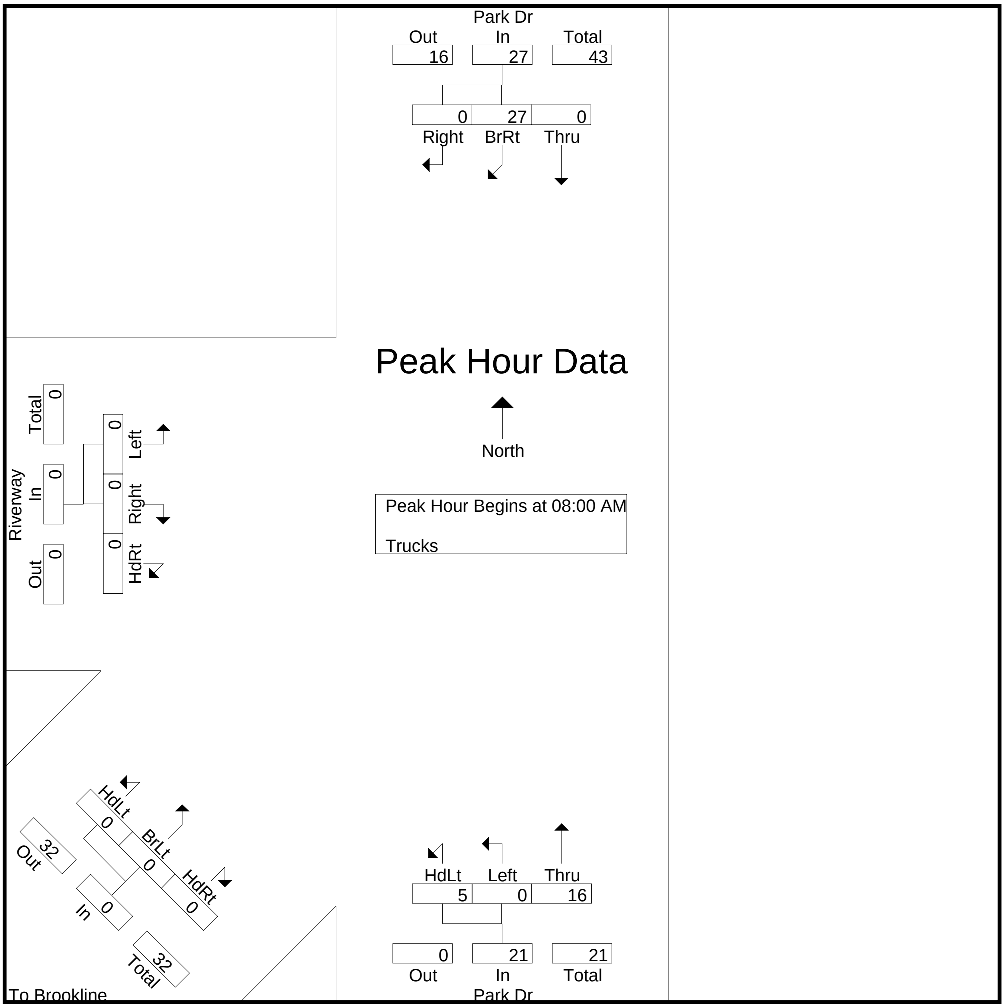
	Park Dr From North			Park Dr From South			To Brookline From Southwest			Riverway From West			
Start Time	Thru	BrRt	Right	HdLt	Left	Thru	HdLt	BrLt	HdRt	Left	Right	HdRt	Int. Total
07:00 AM	0	3	0	2	0	4	0	0	0	0	0	0	9
07:15 AM	0	6	0	0	1	3	0	0	0	0	0	0	10
07:30 AM	0	6	2	1	0	3	0	0	0	0	0	0	12
07:45 AM	0	3	0	1	0	5	0	0	0	0	0	0	9
Total	0	18	2	4	1	15	0	0	0	0	0	0	40
08:00 AM	0	7	0	1	0	4	0	0	0	0	0	0	12
08:15 AM	0	8	0	1	0	5	0	0	0	0	0	0	14
08:30 AM	0	5	0	1	0	4	0	0	0	0	0	0	10
08:45 AM	0	7	0	2	0	3	0	0	0	0	0	0	12
Total	0	27	0	5	0	16	0	0	0	0	0	0	48
Grand Total	0	45	2	9	1	31	0	0	0	0	0	0	88
Apprch %	0	95.7	4.3	22	2.4	75.6	0	0	0	0	0	0	
Total %	0	51.1	2.3	10.2	1.1	35.2	0	0	0	0	0	0	

	Park Dr From North				Park Dr From South				To Brookline From Southwest				Riverway From West				
Start Time	Thru	BrRt	Right	App. Total	HdLt	Left	Thru	App. Total	HdLt	BrLt	HdRt	App. Total	Left	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	7	0	7	1	0	4	5	0	0	0	0	0	0	0	0	12
08:15 AM	0	**8**	0	**8**	1	0	**5**	**6**	0	0	0	0	0	0	0	0	**14**
08:30 AM	0	5	0	5	1	0	4	5	0	0	0	0	0	0	0	0	10
08:45 AM	0	7	0	7	**2**	0	3	5	0	0	0	0	0	0	0	0	12
Total Volume	0	27	0	27	5	0	16	21	0	0	0	0	0	0	0	0	48
% App. Total	0	100	0		23.8	0	76.2		0	0	0		0	0	0		
PHF	.000	.844	.000	.844	.625	.000	.800	.875	.000	.000	.000	.000	.000	.000	.000	.000	.857

Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:45 AM				07:00 AM				07:00 AM			
+0 mins.	0	7	0	7	**1**	0	**5**	**6**	0	0	0	0	0	0	0	0
+15 mins.	0	**8**	0	**8**	1	0	4	5	0	0	0	0	0	0	0	0
+30 mins.	0	5	0	5	1	0	5	6	0	0	0	0	0	0	0	0
+45 mins.	0	7	0	7	1	0	4	5	0	0	0	0	0	0	0	0
Total Volume	0	27	0	27	4	0	18	22	0	0	0	0	0	0	0	0
% App. Total	0	100	0		18.2	0	81.8		0	0	0		0	0	0	
PHF	.000	.844	.000	.844	1.000	.000	.900	.917	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
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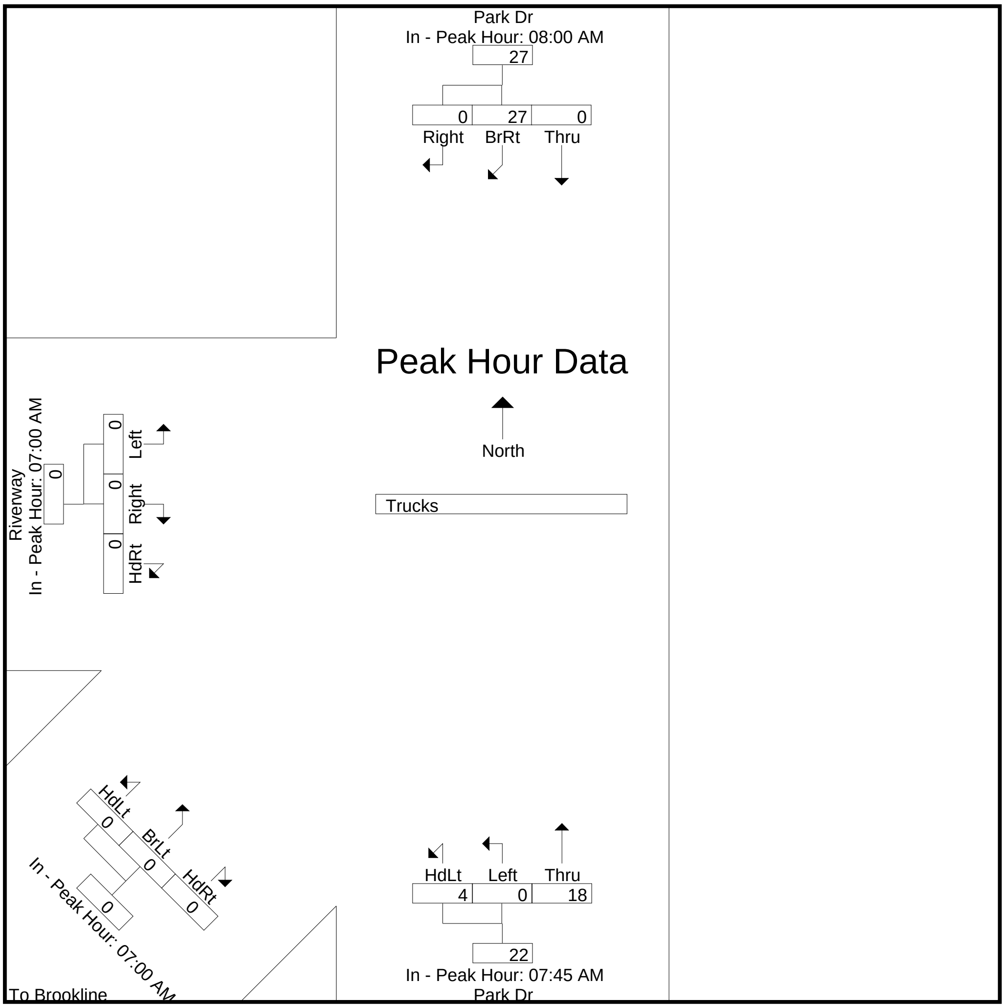


Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

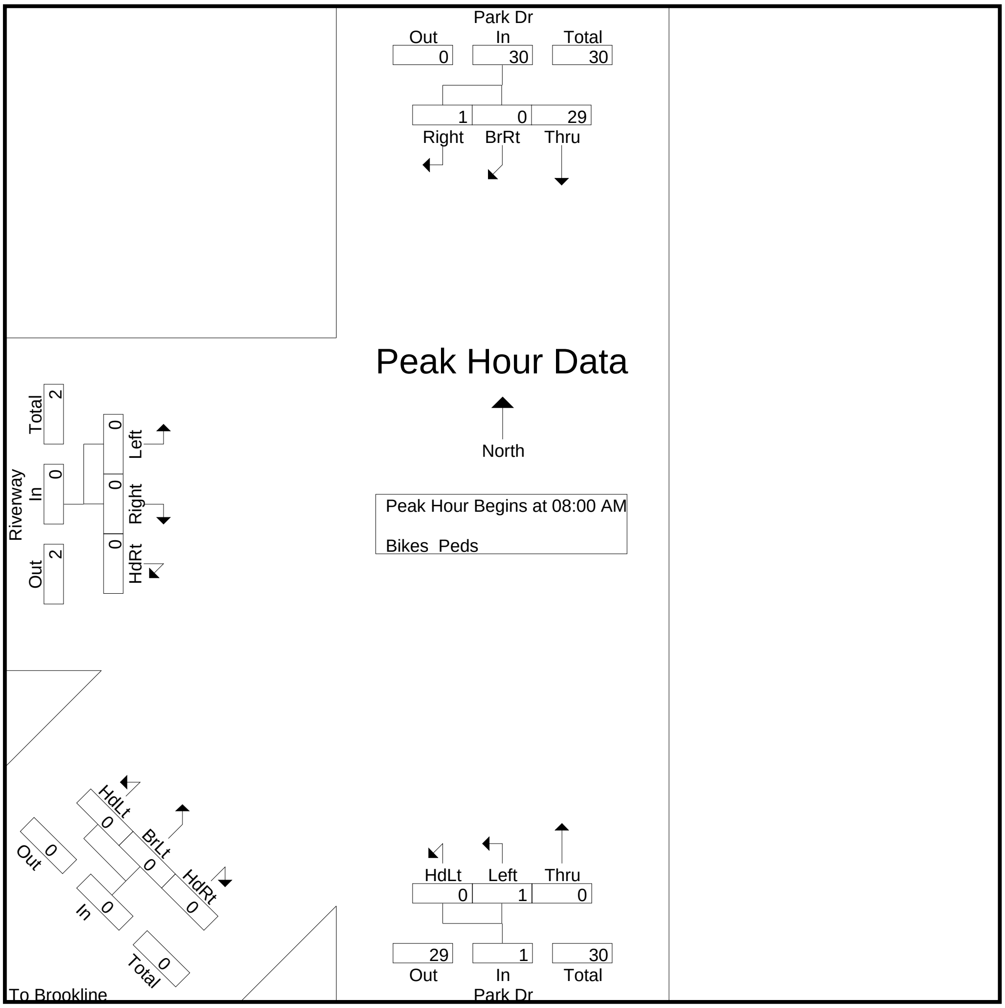
	Park Dr From North				Park Dr From South				To Brookline From Southwest				Riverway From West						
Start Time	Thru	BrRt	Right	Peds	HdLt	Left	Thru	Peds	HdLt	BrLt	HdRt	Peds	Left	Right	HdRt	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	10	13	0	13
07:15 AM	6	0	0	2	0	1	0	3	0	0	0	0	0	0	0	6	11	7	18
07:30 AM	2	0	0	6	0	0	1	2	0	0	0	0	0	0	0	5	13	3	16
07:45 AM	9	0	0	4	0	0	1	3	0	0	0	0	0	0	0	10	17	10	27
Total	17	0	0	14	0	1	2	9	0	0	0	0	0	0	0	31	54	20	74
08:00 AM	5	0	1	8	0	0	0	3	0	0	0	0	0	0	0	12	23	6	29
08:15 AM	7	0	0	10	0	0	0	2	0	0	0	0	0	0	0	11	23	7	30
08:30 AM	4	0	0	10	0	0	0	1	0	0	0	0	0	0	0	21	32	4	36
08:45 AM	13	0	0	4	0	1	0	2	0	0	0	0	0	0	0	13	19	14	33
Total	29	0	1	32	0	1	0	8	0	0	0	0	0	0	0	57	97	31	128
Grand Total	46	0	1	46	0	2	2	17	0	0	0	0	0	0	0	88	151	51	202
Apprch %	97.9	0	2.1		0	50	50		0	0	0		0	0	0				
Total %	90.2	0	2		0	3.9	3.9		0	0	0		0	0	0		74.8	25.2	

	Park Dr From North				Park Dr From South				To Brookline From Southwest				Riverway From West				
Start Time	Thru	BrRt	Right	App. Total	HdLt	Left	Thru	App. Total	HdLt	BrLt	HdRt	App. Total	Left	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	5	0	**1**	6	0	0	0	0	0	0	0	0	0	0	0	0	6
08:15 AM	7	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	7
08:30 AM	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
08:45 AM	**13**	0	0	**13**	0	**1**	0	**1**	0	0	0	0	0	0	0	0	**14**
Total Volume	29	0	1	30	0	1	0	1	0	0	0	0	0	0	0	0	31
% App. Total	96.7	0	3.3		0	100	0		0	0	0		0	0	0		
PHF	.558	.000	.250	.577	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.554

Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 2



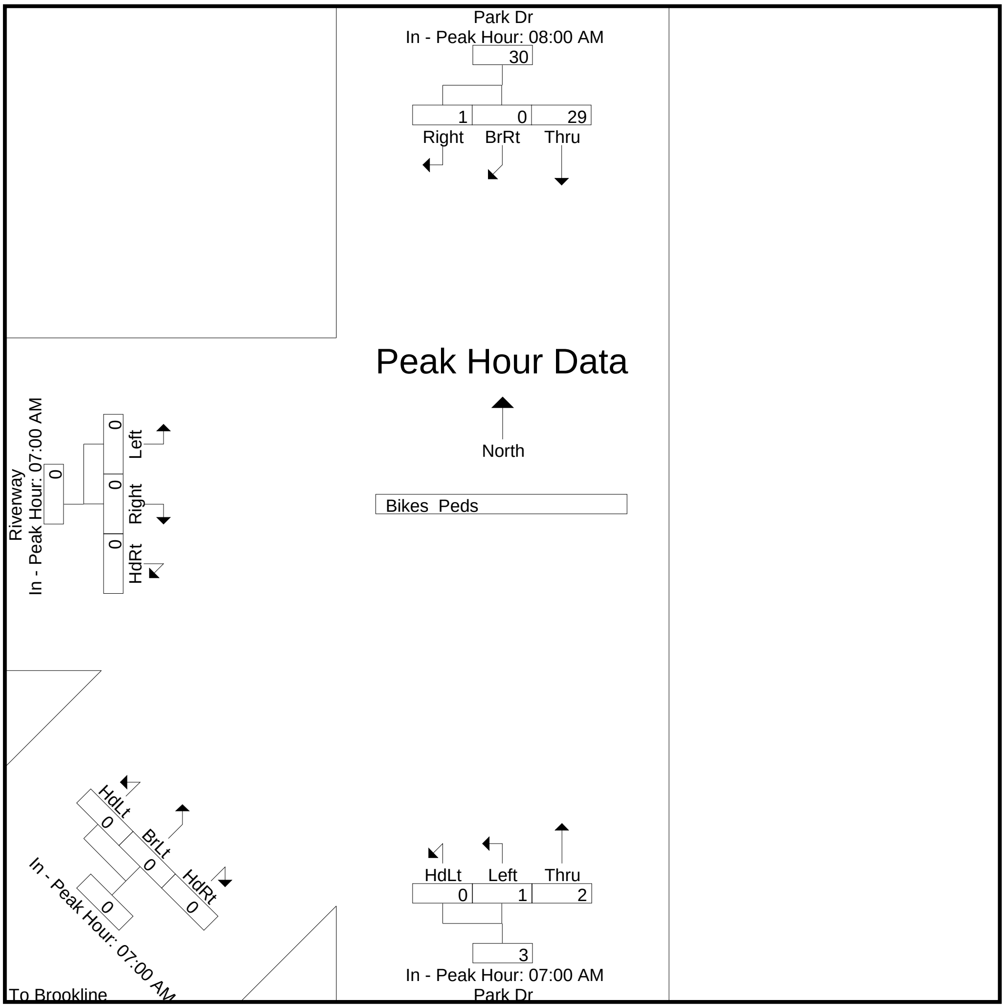
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	5	0	**1**	6	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	7	0	0	7	0	**1**	0	**1**	0	0	0	0	0	0	0	0
+30 mins.	4	0	0	4	0	0	**1**	1	0	0	0	0	0	0	0	0
+45 mins.	**13**	0	0	**13**	0	0	1	1	0	0	0	0	0	0	0	0
Total Volume	29	0	1	30	0	1	2	3	0	0	0	0	0	0	0	0
% App. Total	96.7	0	3.3		0	33.3	66.7		0	0	0		0	0	0	
PHF	.558	.000	.250	.577	.000	.250	.500	.750	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 1

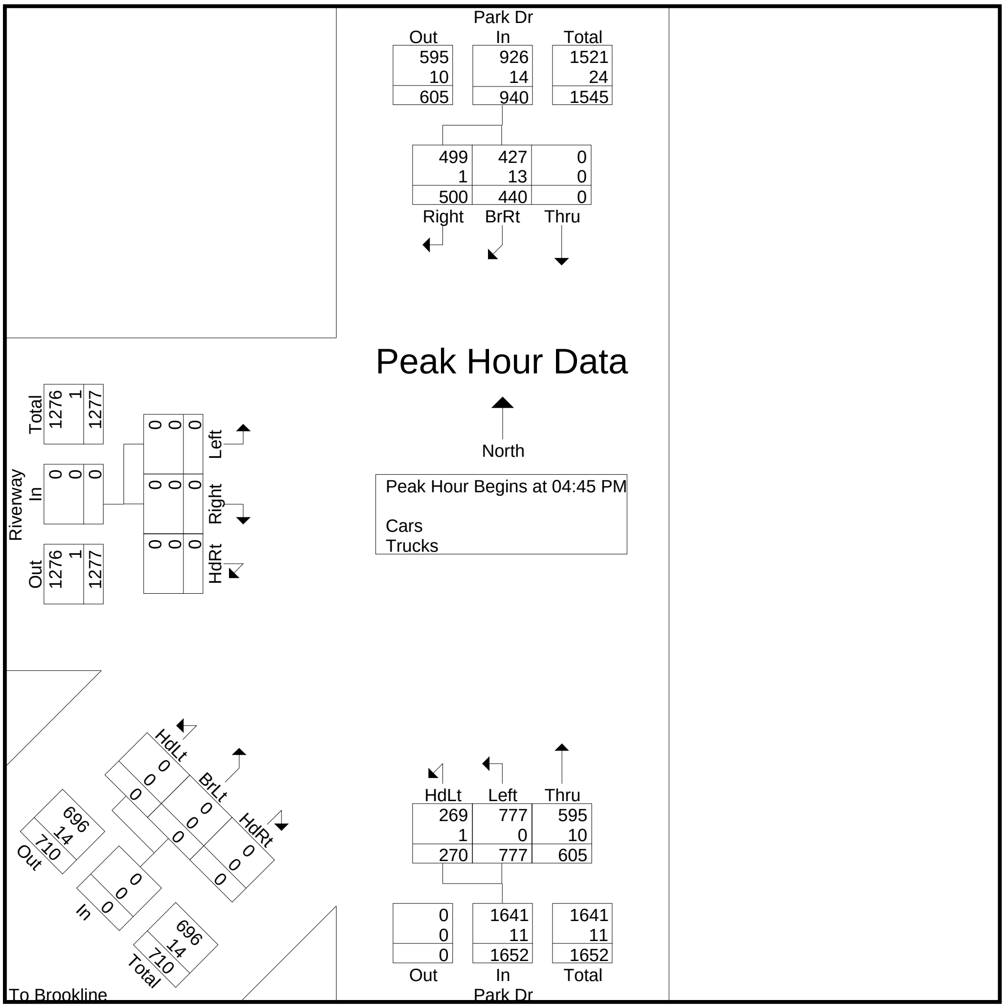
Groups Printed- Cars - Trucks

	Park Dr From North			Park Dr From South			To Brookline From Southwest			Riverway From West			
Start Time	Thru	BrRt	Right	HdLt	Left	Thru	HdLt	BrLt	HdRt	Left	Right	HdRt	Int. Total
04:00 PM	0	111	107	48	213	126	0	0	0	0	0	0	605
04:15 PM	0	96	136	49	192	132	0	0	0	0	0	0	605
04:30 PM	0	95	93	54	196	117	0	0	0	0	0	0	555
04:45 PM	0	83	119	65	199	154	0	0	0	0	0	0	620
Total	0	385	455	216	800	529	0	0	0	0	0	0	2385
05:00 PM	0	131	132	71	196	146	0	0	0	0	0	0	676
05:15 PM	0	108	131	74	204	146	0	0	0	0	0	0	663
05:30 PM	0	118	118	60	178	159	0	0	0	0	0	0	633
05:45 PM	0	84	94	69	186	146	0	0	0	0	0	0	579
Total	0	441	475	274	764	597	0	0	0	0	0	0	2551
Grand Total	0	826	930	490	1564	1126	0	0	0	0	0	0	4936
Apprch %	0	47	53	15.4	49.2	35.4	0	0	0	0	0	0	
Total %	0	16.7	18.8	9.9	31.7	22.8	0	0	0	0	0	0	
Cars	0	799	929	487	1564	1107	0	0	0	0	0	0	4886
% Cars	0	96.7	99.9	99.4	100	98.3	0	0	0	0	0	0	99
Trucks	0	27	1	3	0	19	0	0	0	0	0	0	50
% Trucks	0	3.3	0.1	0.6	0	1.7	0	0	0	0	0	0	1

	Park Dr From North				Park Dr From South				To Brookline From Southwest				Riverway From West				
Start Time	Thru	BrRt	Right	App. Total	HdLt	Left	Thru	App. Total	HdLt	BrLt	HdRt	App. Total	Left	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	83	119	202	65	199	154	418	0	0	0	0	0	0	0	0	620
05:00 PM	0	**131**	**132**	**263**	71	196	146	413	0	0	0	0	0	0	0	0	**676**
05:15 PM	0	108	131	239	**74**	**204**	146	**424**	0	0	0	0	0	0	0	0	663
05:30 PM	0	118	118	236	60	178	**159**	397	0	0	0	0	0	0	0	0	633
Total Volume	0	440	500	940	270	777	605	1652	0	0	0	0	0	0	0	0	2592
% App. Total	0	46.8	53.2		16.3	47	36.6		0	0	0		0	0	0		
PHF	.000	.840	.947	.894	.912	.952	.951	.974	.000	.000	.000	.000	.000	.000	.000	.000	.959
Cars	0	427	499	926	269	777	595	1641	0	0	0	0	0	0	0	0	2567
% Cars	0	97.0	99.8	98.5	99.6	100	98.3	99.3	0	0	0	0	0	0	0	0	99.0
Trucks	0	13	1	14	1	0	10	11	0	0	0	0	0	0	0	0	25
% Trucks	0	3.0	0.2	1.5	0.4	0	1.7	0.7	0	0	0	0	0	0	0	0	1.0

Accurate Counts
978-664-2565

N/S Street : Park Dr	File Name : 9497008D
E/W Street : Riverway	Site Code : 9497008D
City/State : Boston, MA	Start Date : 5/16/2012
Weather : Drizzle	Page No : 2



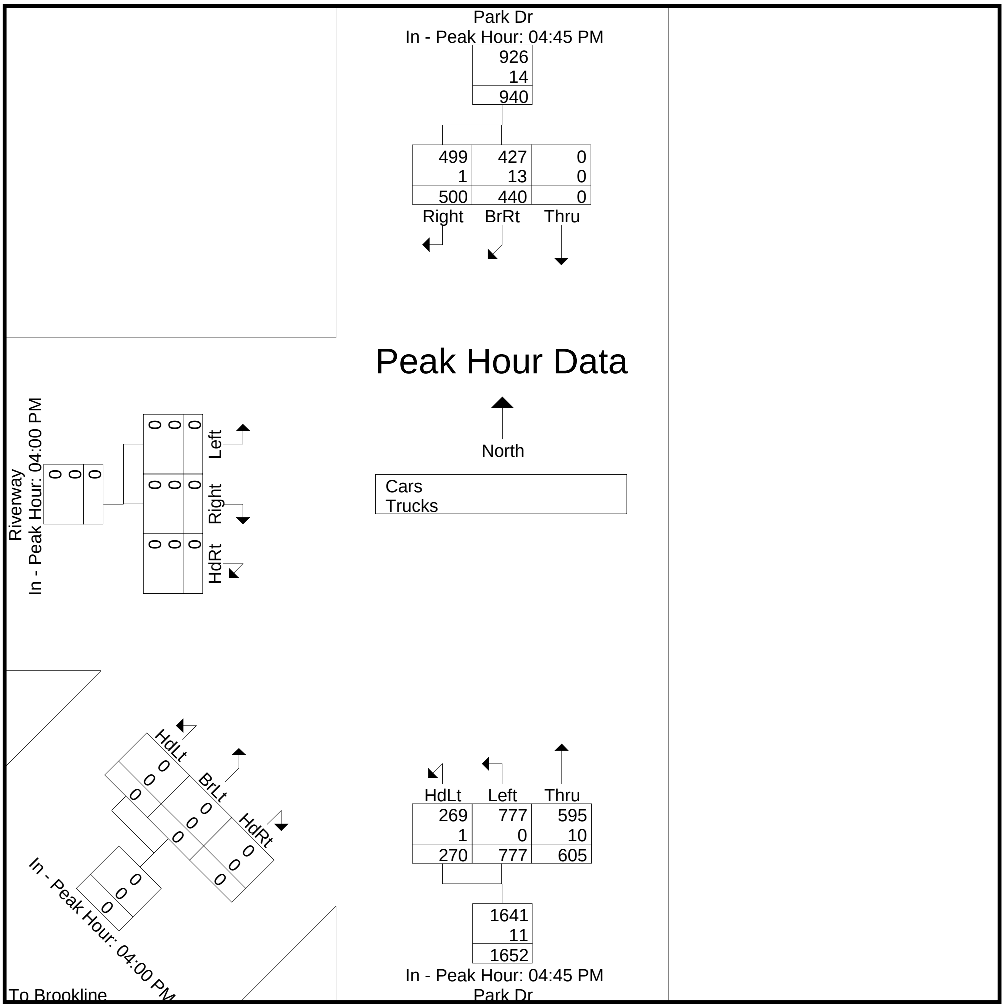
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:00 PM				04:00 PM			
+0 mins.	0	83	119	202	65	199	154	418	0	0	0	0	0	0	0	0
+15 mins.	0	**131**	**132**	**263**	71	196	146	413	0	0	0	0	0	0	0	0
+30 mins.	0	108	131	239	**74**	**204**	146	**424**	0	0	0	0	0	0	0	0
+45 mins.	0	118	118	236	60	178	**159**	397	0	0	0	0	0	0	0	0
Total Volume	0	440	500	940	270	777	605	1652	0	0	0	0	0	0	0	0
% App. Total	0	46.8	53.2		16.3	47	36.6		0	0	0		0	0	0	
PHF	.000	.840	.947	.894	.912	.952	.951	.974	.000	.000	.000	.000	.000	.000	.000	.000
Cars	0	427	499	926	269	777	595	1641	0	0	0	0	0	0	0	0
% Cars	0	97	99.8	98.5	99.6	100	98.3	99.3	0	0	0	0	0	0	0	0
Trucks	0	13	1	14	1	0	10	11	0	0	0	0	0	0	0	0
% Trucks	0	3	0.2	1.5	0.4	0	1.7	0.7	0	0	0	0	0	0	0	0

Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

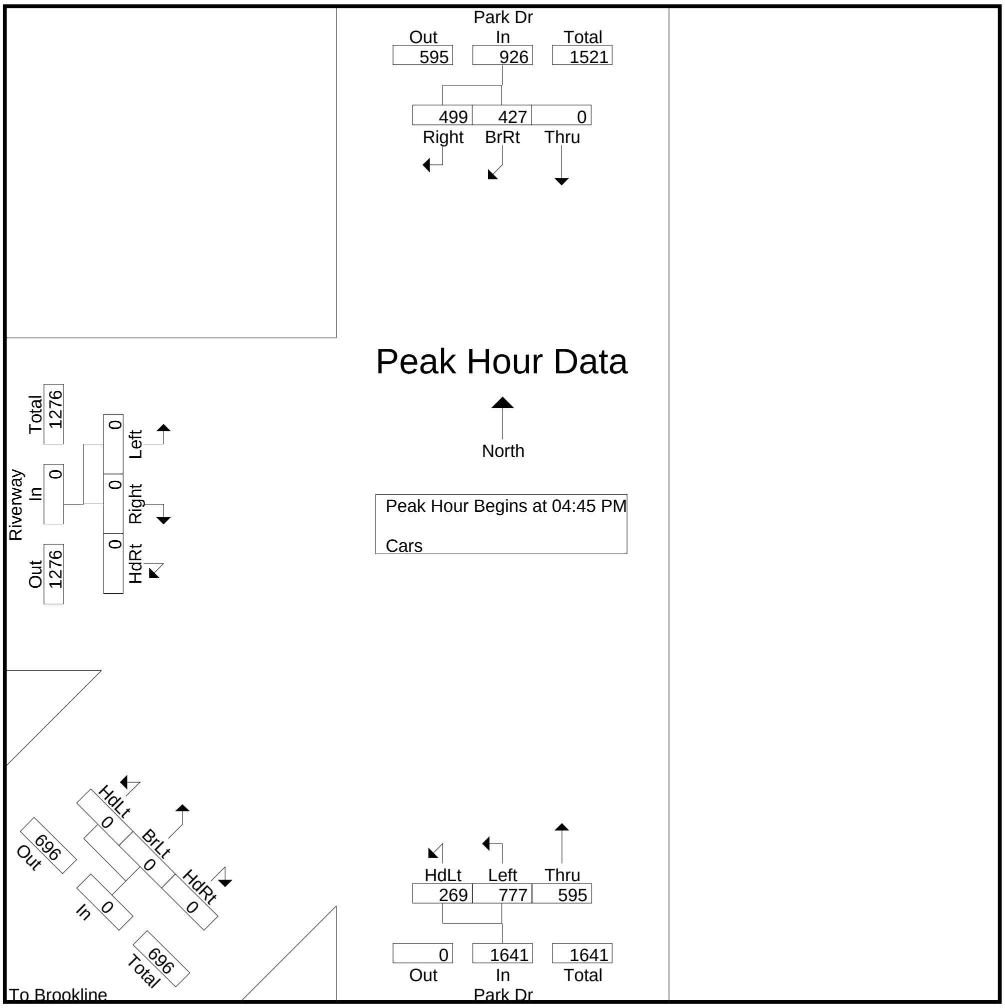
	Park Dr From North			Park Dr From South			To Brookline From Southwest			Riverway From West			
Start Time	Thru	BrRt	Right	HdLt	Left	Thru	HdLt	BrLt	HdRt	Left	Right	HdRt	Int. Total
04:00 PM	0	106	107	48	213	123	0	0	0	0	0	0	597
04:15 PM	0	93	136	49	192	130	0	0	0	0	0	0	600
04:30 PM	0	91	93	53	196	114	0	0	0	0	0	0	547
04:45 PM	0	80	118	65	199	153	0	0	0	0	0	0	615
Total	0	370	454	215	800	520	0	0	0	0	0	0	2359
05:00 PM	0	129	132	71	196	142	0	0	0	0	0	0	670
05:15 PM	0	103	131	73	204	144	0	0	0	0	0	0	655
05:30 PM	0	115	118	60	178	156	0	0	0	0	0	0	627
05:45 PM	0	82	94	68	186	145	0	0	0	0	0	0	575
Total	0	429	475	272	764	587	0	0	0	0	0	0	2527
Grand Total	0	799	929	487	1564	1107	0	0	0	0	0	0	4886
Apprch %	0	46.2	53.8	15.4	49.5	35.1	0	0	0	0	0	0	
Total %	0	16.4	19	10	32	22.7	0	0	0	0	0	0	

	Park Dr From North				Park Dr From South				To Brookline From Southwest				Riverway From West				
Start Time	Thru	BrRt	Right	App. Total	HdLt	Left	Thru	App. Total	HdLt	BrLt	HdRt	App. Total	Left	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	80	118	198	65	199	153	417	0	0	0	0	0	0	0	0	615
05:00 PM	0	**129**	**132**	**261**	71	196	142	409	0	0	0	0	0	0	0	0	**670**
05:15 PM	0	103	131	234	**73**	**204**	144	**421**	0	0	0	0	0	0	0	0	655
05:30 PM	0	115	118	233	60	178	**156**	394	0	0	0	0	0	0	0	0	627
Total Volume	0	427	499	926	269	777	595	1641	0	0	0	0	0	0	0	0	2567
% App. Total	0	46.1	53.9		16.4	47.3	36.3		0	0	0		0	0	0		
PHF	.000	.828	.945	.887	.921	.952	.954	.974	.000	.000	.000	.000	.000	.000	.000	.000	.958

Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 2



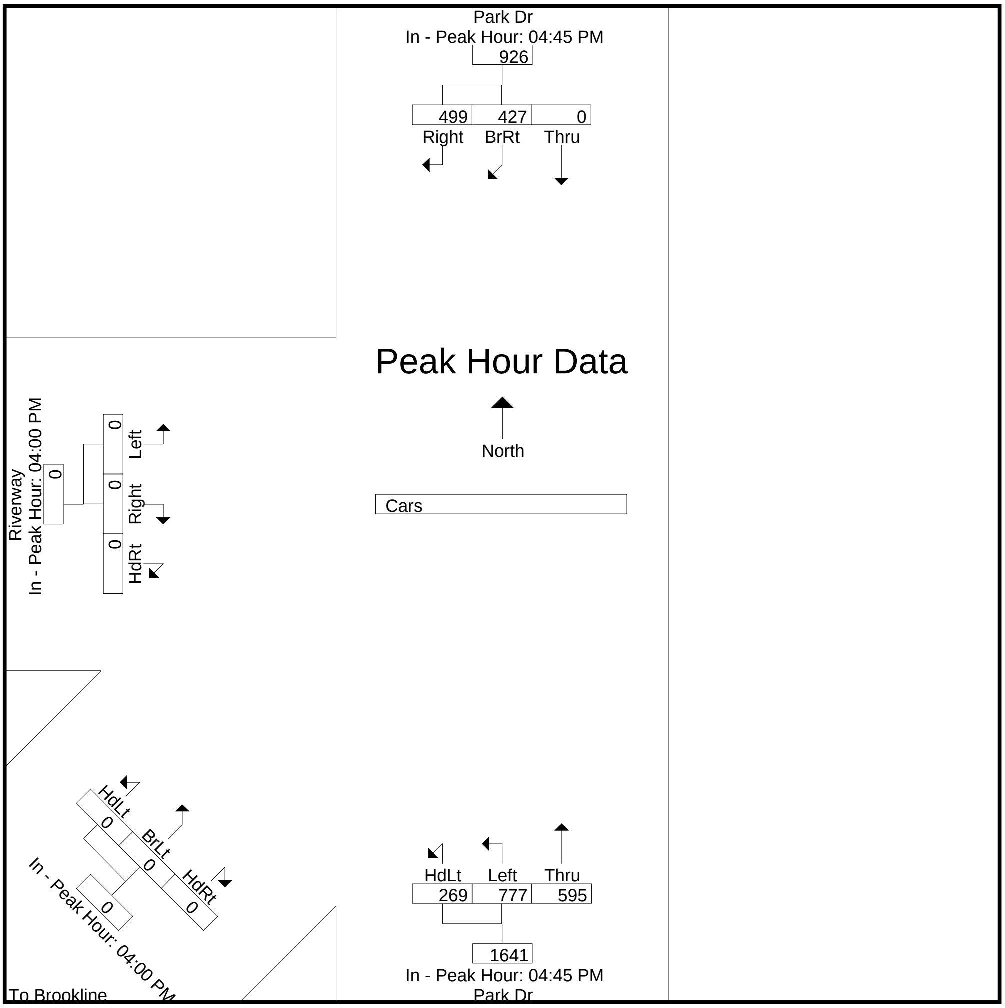
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:00 PM				04:00 PM			
+0 mins.	0	80	118	198	65	199	153	417	0	0	0	0	0	0	0	0
+15 mins.	0	**129**	**132**	**261**	71	196	142	409	0	0	0	0	0	0	0	0
+30 mins.	0	103	131	234	**73**	**204**	144	**421**	0	0	0	0	0	0	0	0
+45 mins.	0	115	118	233	60	178	**156**	394	0	0	0	0	0	0	0	0
Total Volume	0	427	499	926	269	777	595	1641	0	0	0	0	0	0	0	0
% App. Total	0	46.1	53.9		16.4	47.3	36.3		0	0	0		0	0	0	
PHF	.000	.828	.945	.887	.921	.952	.954	.974	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

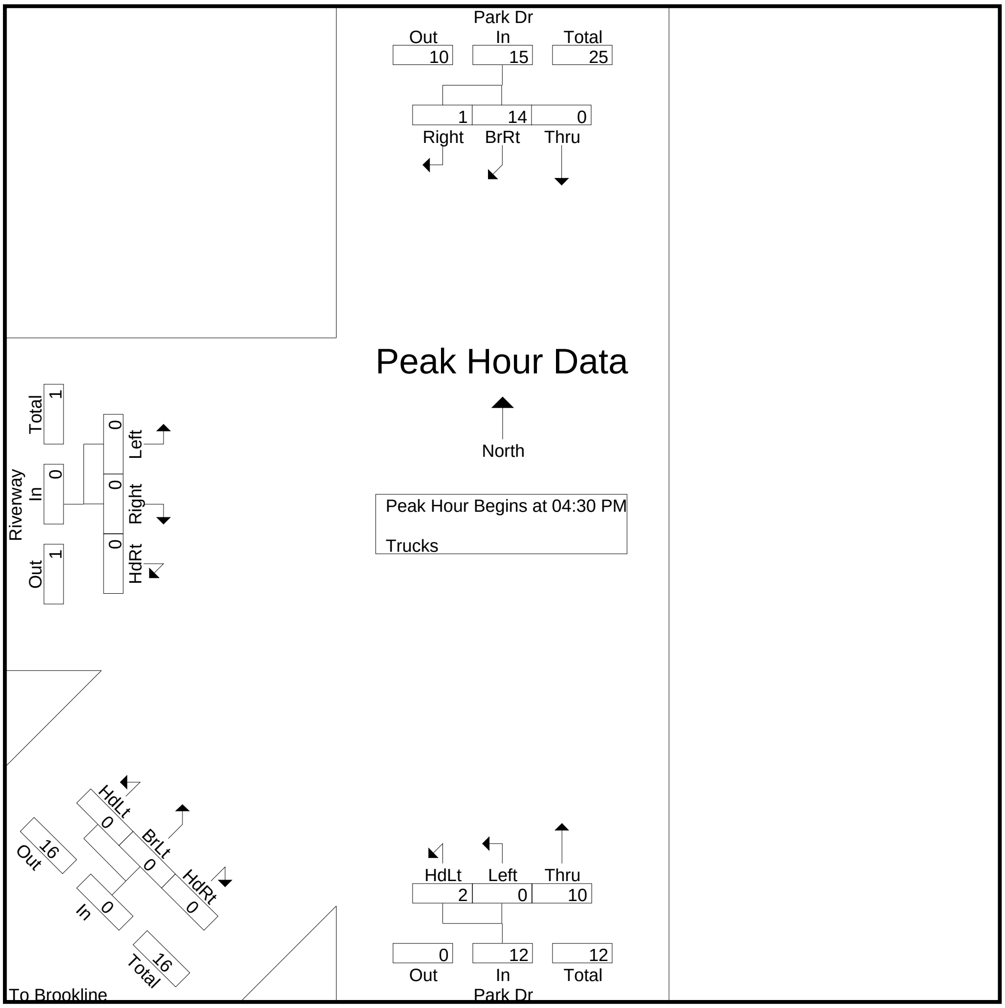
	Park Dr From North			Park Dr From South			To Brookline From Southwest			Riverway From West			
Start Time	Thru	BrRt	Right	HdLt	Left	Thru	HdLt	BrLt	HdRt	Left	Right	HdRt	Int. Total
04:00 PM	0	5	0	0	0	3	0	0	0	0	0	0	8
04:15 PM	0	3	0	0	0	2	0	0	0	0	0	0	5
04:30 PM	0	4	0	1	0	3	0	0	0	0	0	0	8
04:45 PM	0	3	1	0	0	1	0	0	0	0	0	0	5
Total	0	15	1	1	0	9	0	0	0	0	0	0	26
05:00 PM	0	2	0	0	0	4	0	0	0	0	0	0	6
05:15 PM	0	5	0	1	0	2	0	0	0	0	0	0	8
05:30 PM	0	3	0	0	0	3	0	0	0	0	0	0	6
05:45 PM	0	2	0	1	0	1	0	0	0	0	0	0	4
Total	0	12	0	2	0	10	0	0	0	0	0	0	24
Grand Total	0	27	1	3	0	19	0	0	0	0	0	0	50
Apprch %	0	96.4	3.6	13.6	0	86.4	0	0	0	0	0	0	
Total %	0	54	2	6	0	38	0	0	0	0	0	0	

	Park Dr From North				Park Dr From South				To Brookline From Southwest				Riverway From West				
Start Time	Thru	BrRt	Right	App. Total	HdLt	Left	Thru	App. Total	HdLt	BrLt	HdRt	App. Total	Left	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	4	0	4	**1**	0	3	**4**	0	0	0	0	0	0	0	0	**8**
04:45 PM	0	3	**1**	4	0	0	1	1	0	0	0	0	0	0	0	0	5
05:00 PM	0	2	0	2	0	0	**4**	4	0	0	0	0	0	0	0	0	6
05:15 PM	0	**5**	0	**5**	1	0	2	3	0	0	0	0	0	0	0	0	8
Total Volume	0	14	1	15	2	0	10	12	0	0	0	0	0	0	0	0	27
% App. Total	0	93.3	6.7		16.7	0	83.3		0	0	0		0	0	0		
PHF	.000	.700	.250	.750	.500	.000	.625	.750	.000	.000	.000	.000	.000	.000	.000	.000	.844

Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 2



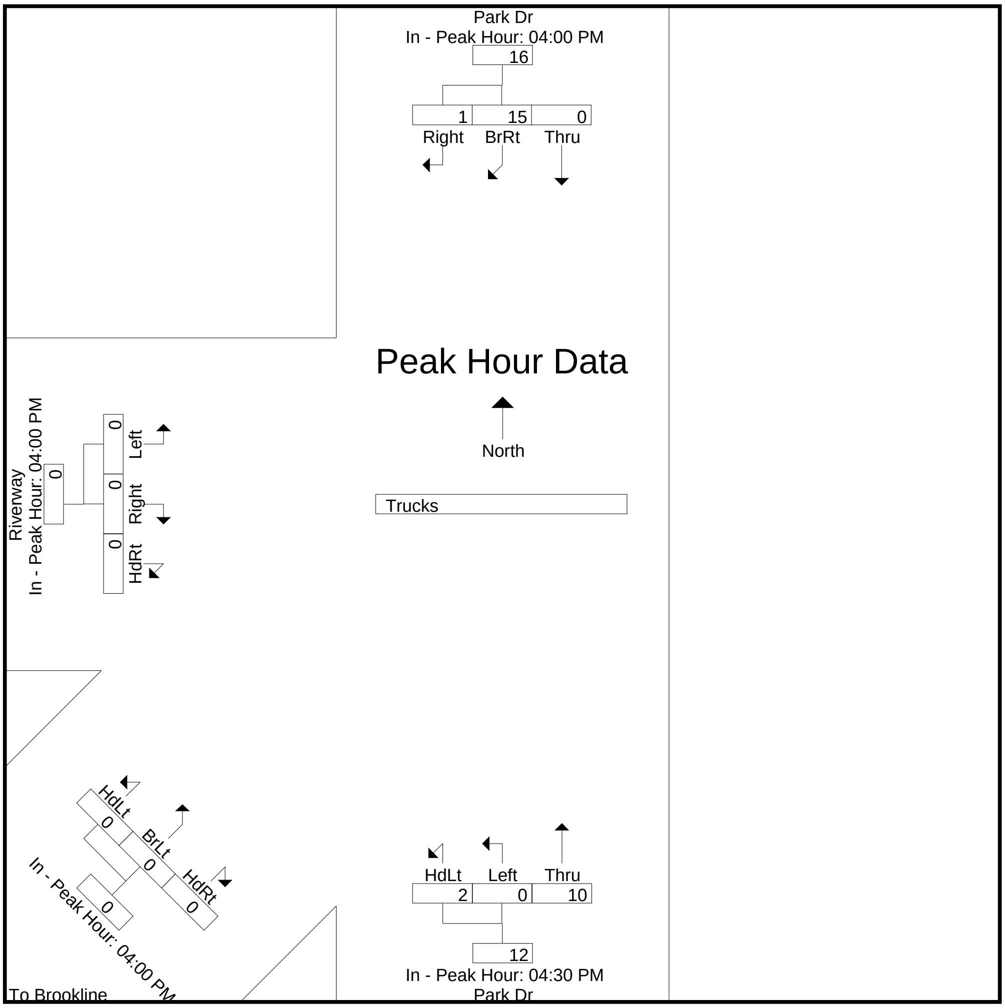
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:00 PM				04:00 PM			
+0 mins.	0	**5**	0	**5**	**1**	0	3	**4**	0	0	0	0	0	0	0	0
+15 mins.	0	3	0	3	0	0	1	1	0	0	0	0	0	0	0	0
+30 mins.	0	4	0	4	0	0	**4**	4	0	0	0	0	0	0	0	0
+45 mins.	0	3	**1**	4	1	0	2	3	0	0	0	0	0	0	0	0
Total Volume	0	15	1	16	2	0	10	12	0	0	0	0	0	0	0	0
% App. Total	0	93.8	6.2		16.7	0	83.3		0	0	0		0	0	0	
PHF	.000	.750	.250	.800	.500	.000	.625	.750	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

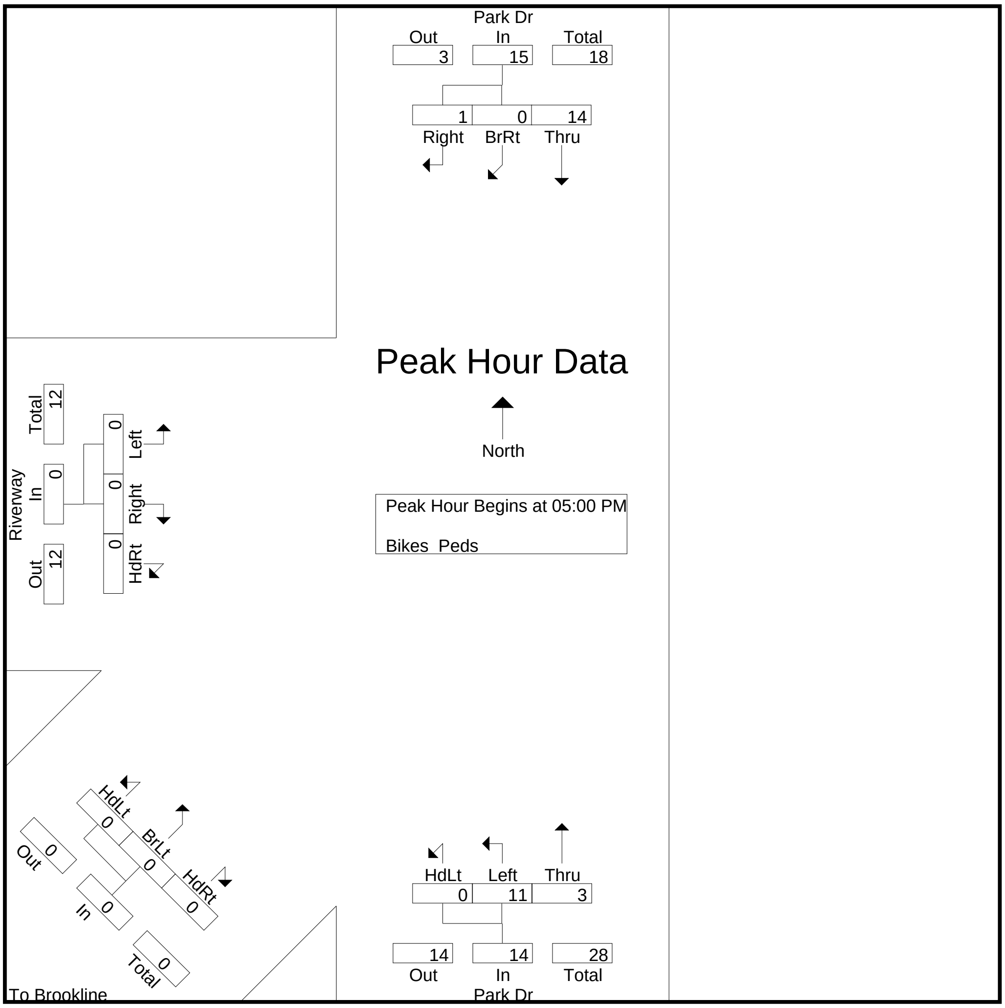
	Park Dr From North				Park Dr From South				To Brookline From Southwest				Riverway From West						
Start Time	Thru	BrRt	Right	Peds	HdLt	Left	Thru	Peds	HdLt	BrLt	HdRt	Peds	Left	Right	HdRt	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	1	0	0	10	0	6	0	1	0	0	0	0	0	0	0	5	16	7	23
04:15 PM	0	0	0	8	0	0	1	2	0	0	0	0	0	1	0	16	26	2	28
04:30 PM	2	0	0	14	0	2	0	7	0	0	0	0	0	0	0	18	39	4	43
04:45 PM	0	0	0	14	0	0	1	1	0	0	0	0	0	0	0	16	31	1	32
Total	3	0	0	46	0	8	2	11	0	0	0	0	0	1	0	55	112	14	126
05:00 PM	3	0	0	19	0	0	2	5	0	0	0	0	0	0	0	24	48	5	53
05:15 PM	4	0	0	9	0	2	0	2	0	0	0	0	0	0	0	15	26	6	32
05:30 PM	4	0	0	20	0	2	1	7	0	0	0	0	0	0	0	11	38	7	45
05:45 PM	3	0	1	22	0	7	0	5	0	0	0	0	0	0	0	30	57	11	68
Total	14	0	1	70	0	11	3	19	0	0	0	0	0	0	0	80	169	29	198
Grand Total	17	0	1	116	0	19	5	30	0	0	0	0	0	1	0	135	281	43	324
Apprch %	94.4	0	5.6		0	79.2	20.8		0	0	0		0	100	0				
Total %	39.5	0	2.3		0	44.2	11.6		0	0	0		0	2.3	0		86.7	13.3	

	Park Dr From North				Park Dr From South				To Brookline From Southwest				Riverway From West				
Start Time	Thru	BrRt	Right	App. Total	HdLt	Left	Thru	App. Total	HdLt	BrLt	HdRt	App. Total	Left	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	3	0	0	3	0	0	**2**	2	0	0	0	0	0	0	0	0	5
05:15 PM	**4**	0	0	**4**	0	2	0	2	0	0	0	0	0	0	0	0	6
05:30 PM	4	0	0	4	0	2	1	3	0	0	0	0	0	0	0	0	7
05:45 PM	3	0	**1**	4	0	**7**	0	**7**	0	0	0	0	0	0	0	0	**11**
Total Volume	14	0	1	15	0	11	3	14	0	0	0	0	0	0	0	0	29
% App. Total	93.3	0	6.7		0	78.6	21.4		0	0	0		0	0	0		
PHF	.875	.000	.250	.938	.000	.393	.375	.500	.000	.000	.000	.000	.000	.000	.000	.000	.659

Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 2



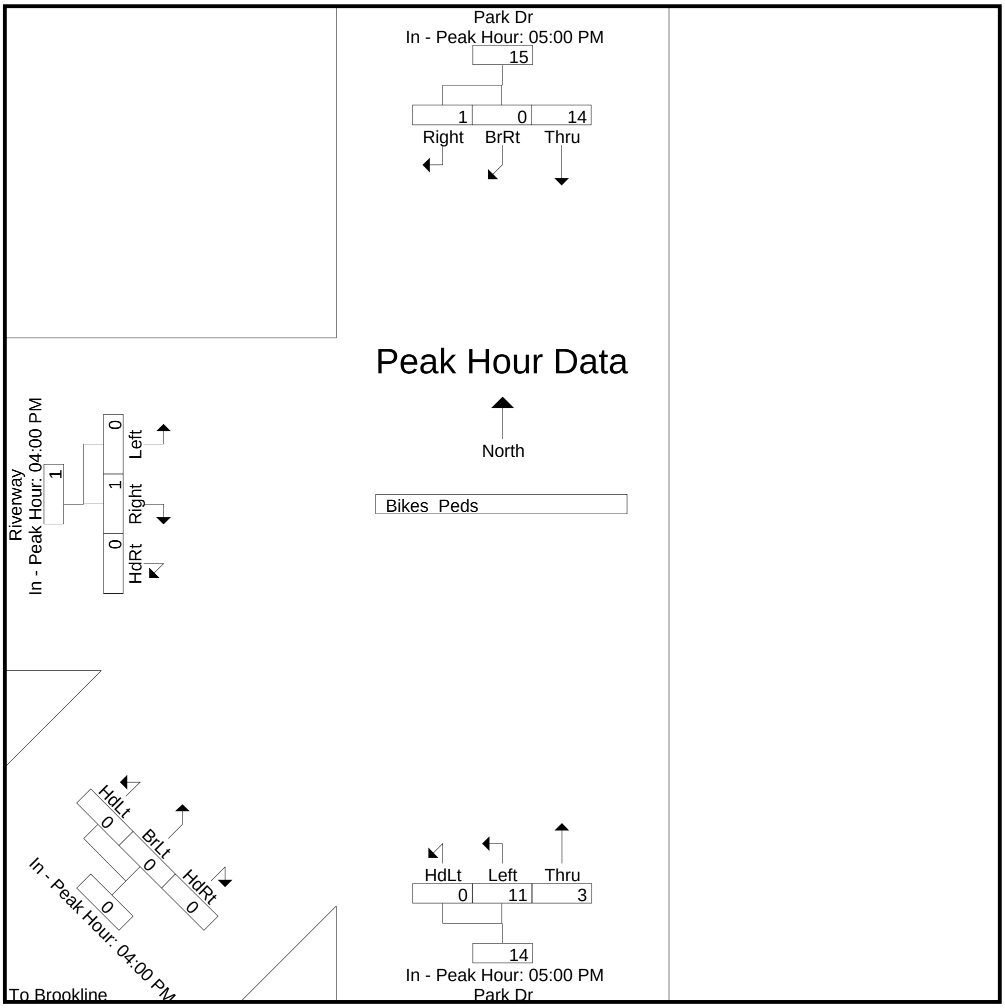
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				04:00 PM				04:00 PM			
+0 mins.	3	0	0	3	0	0	**2**	2	0	0	0	0	0	0	0	0
+15 mins.	**4**	0	0	**4**	0	2	0	2	0	0	0	0	0	**1**	0	**1**
+30 mins.	4	0	0	4	0	2	1	3	0	0	0	0	0	0	0	0
+45 mins.	3	0	**1**	4	0	**7**	0	**7**	0	0	0	0	0	0	0	0
Total Volume	14	0	1	15	0	11	3	14	0	0	0	0	0	1	0	1
% App. Total	93.3	0	6.7		0	78.6	21.4		0	0	0		0	100	0	
PHF	.875	.000	.250	.938	.000	.393	.375	.500	.000	.000	.000	.000	.000	.250	.000	.250

Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

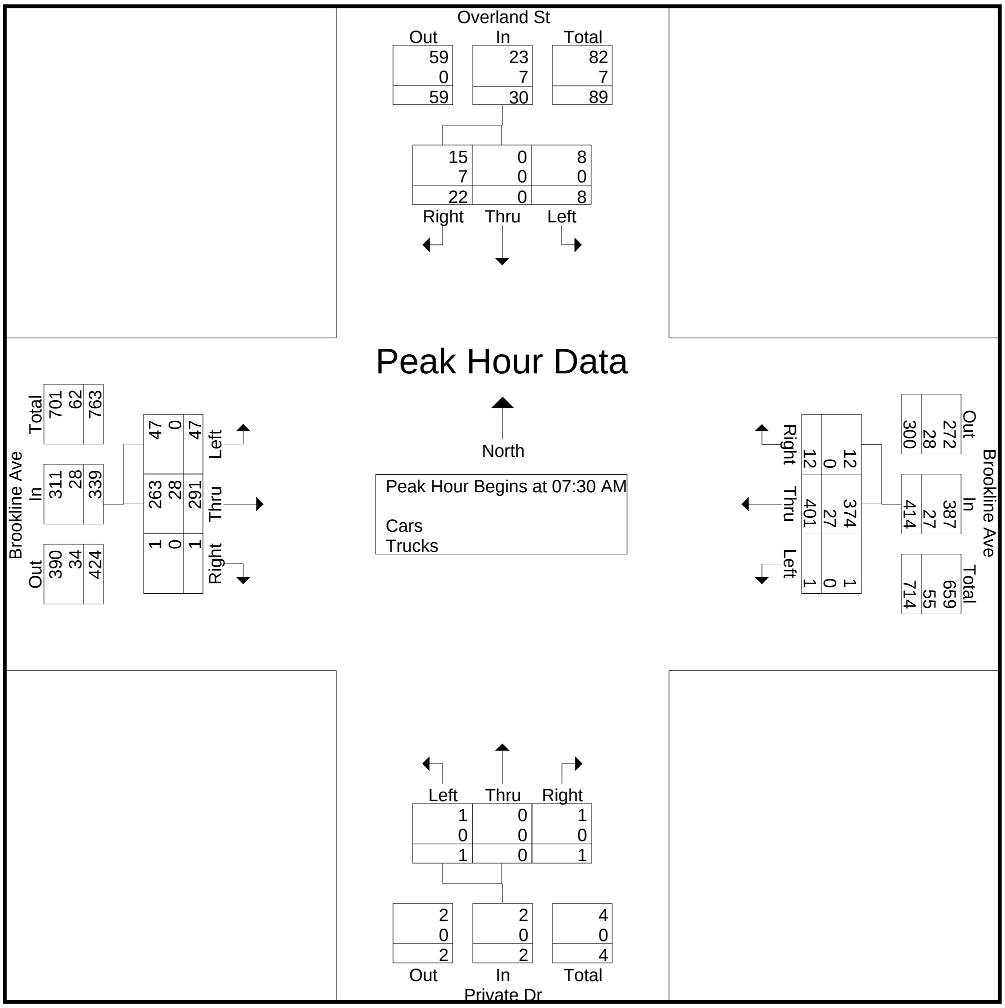
	Overland St From North			Brookline Ave From East			Private Dr From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	1	0	10	0	90	5	0	0	0	11	68	0	185
07:15 AM	1	0	8	0	97	2	0	0	0	5	65	0	178
07:30 AM	0	0	4	0	110	3	0	0	1	14	64	0	196
07:45 AM	2	0	5	0	90	2	1	0	0	12	76	0	188
Total	4	0	27	0	387	12	1	0	1	42	273	0	747
08:00 AM	3	0	6	1	97	3	0	0	0	11	69	1	191
08:15 AM	3	0	7	0	104	4	0	0	0	10	82	0	210
08:30 AM	1	0	6	0	102	5	0	0	0	8	55	1	178
08:45 AM	3	0	8	0	88	6	0	0	0	2	72	0	179
Total	10	0	27	1	391	18	0	0	0	31	278	2	758
Grand Total	14	0	54	1	778	30	1	0	1	73	551	2	1505
Apprch %	20.6	0	79.4	0.1	96.2	3.7	50	0	50	11.7	88	0.3	
Total %	0.9	0	3.6	0.1	51.7	2	0.1	0	0.1	4.9	36.6	0.1	
Cars	14	0	39	1	709	30	1	0	1	72	495	2	1364
% Cars	100	0	72.2	100	91.1	100	100	0	100	98.6	89.8	100	90.6
Trucks	0	0	15	0	69	0	0	0	0	1	56	0	141
% Trucks	0	0	27.8	0	8.9	0	0	0	0	1.4	10.2	0	9.4

	Overland St From North				Brookline Ave From East				Private Dr From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	4	4	0	**110**	3	**113**	0	0	**1**	**1**	**14**	64	0	78	196
07:45 AM	2	0	5	7	0	90	2	92	**1**	0	0	1	12	76	0	88	188
08:00 AM	**3**	0	6	9	**1**	97	3	101	0	0	0	0	11	69	**1**	81	191
08:15 AM	3	0	**7**	**10**	0	104	**4**	108	0	0	0	0	10	**82**	0	**92**	**210**
Total Volume	8	0	22	30	1	401	12	414	1	0	1	2	47	291	1	339	785
% App. Total	26.7	0	73.3		0.2	96.9	2.9		50	0	50		13.9	85.8	0.3		
PHF	.667	.000	.786	.750	.250	.911	.750	.916	.250	.000	.250	.500	.839	.887	.250	.921	.935
Cars	8	0	15	23	1	374	12	387	1	0	1	2	47	263	1	311	723
% Cars	100	0	68.2	76.7	100	93.3	100	93.5	100	0	100	100	100	90.4	100	91.7	92.1
Trucks	0	0	7	7	0	27	0	27	0	0	0	0	0	28	0	28	62
% Trucks	0	0	31.8	23.3	0	6.7	0	6.5	0	0	0	0	0	9.6	0	8.3	7.9

Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 2



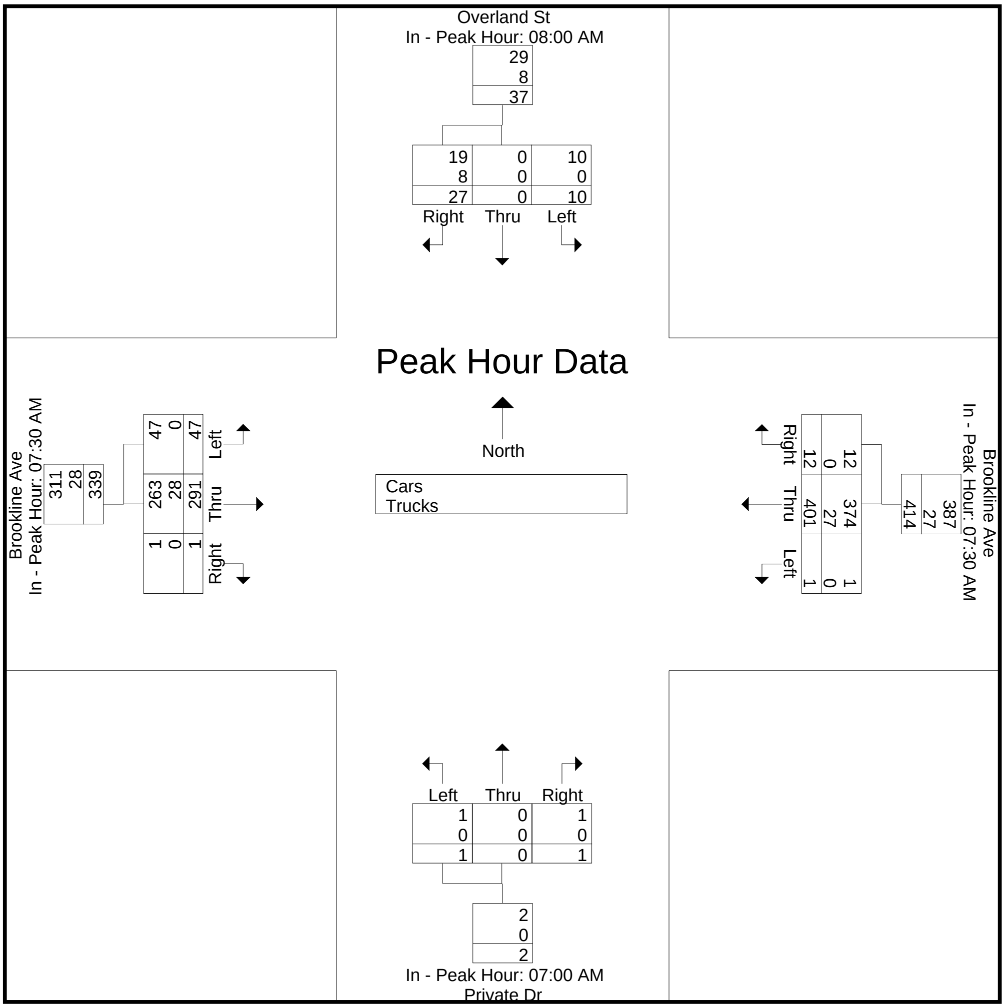
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				07:00 AM				07:30 AM			
+0 mins.	**3**	0	6	9	0	**110**	3	**113**	0	0	0	0	**14**	64	0	78
+15 mins.	3	0	7	10	0	90	2	92	0	0	0	0	12	76	0	88
+30 mins.	1	0	6	7	**1**	97	3	101	0	0	**1**	**1**	11	69	**1**	81
+45 mins.	3	0	**8**	**11**	0	104	**4**	108	**1**	0	0	1	10	**82**	0	**92**
Total Volume	10	0	27	37	1	401	12	414	1	0	1	2	47	291	1	339
% App. Total	27	0	73		0.2	96.9	2.9		50	0	50		13.9	85.8	0.3	
PHF	.833	.000	.844	.841	.250	.911	.750	.916	.250	.000	.250	.500	.839	.887	.250	.921
Cars	10	0	19	29	1	374	12	387	1	0	1	2	47	263	1	311
% Cars	100	0	70.4	78.4	100	93.3	100	93.5	100	0	100	100	100	90.4	100	91.7
Trucks	0	0	8	8	0	27	0	27	0	0	0	0	0	28	0	28
% Trucks	0	0	29.6	21.6	0	6.7	0	6.5	0	0	0	0	0	9.6	0	8.3

Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012

Groups Printed- Cars

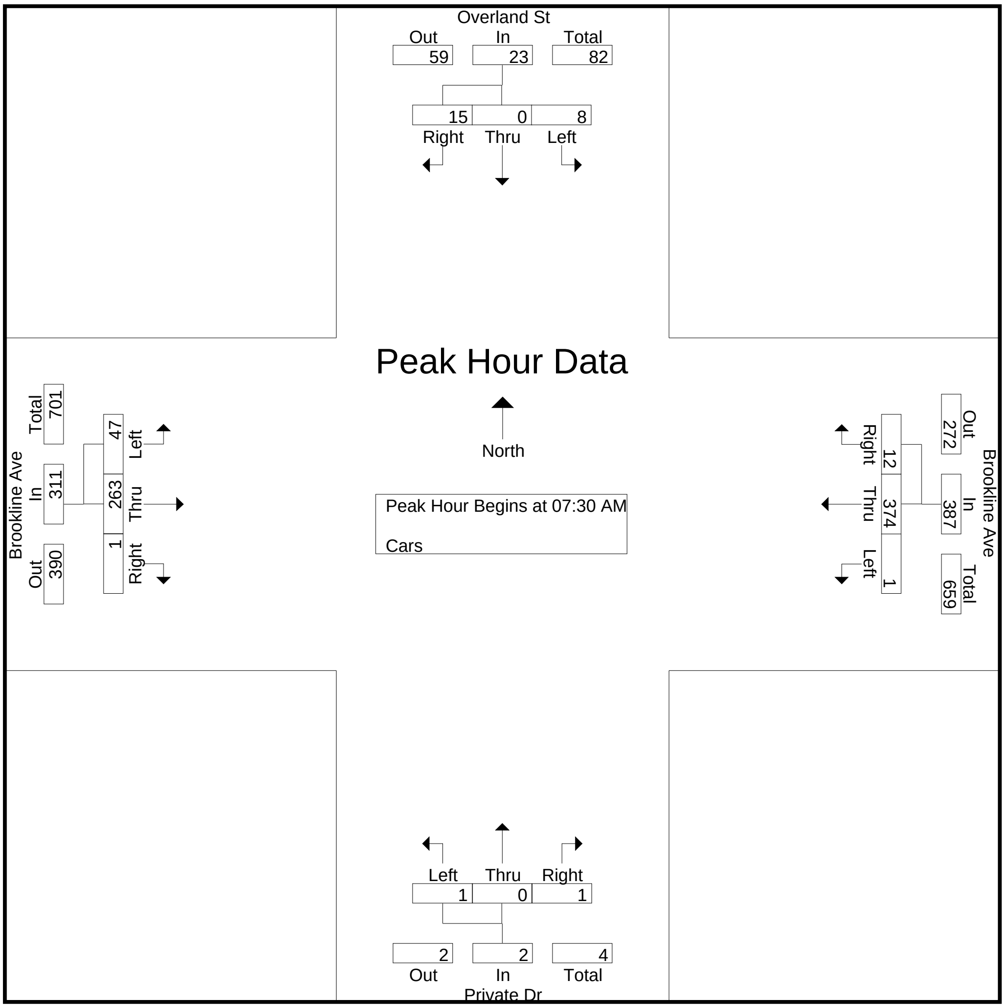
	Overland St From North			Brookline Ave From East			Private Dr From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	1	0	8	0	78	5	0	0	0	11	60	0	163
07:15 AM	1	0	6	0	90	2	0	0	0	5	58	0	162
07:30 AM	0	0	3	0	103	3	0	0	1	14	57	0	181
07:45 AM	2	0	3	0	82	2	1	0	0	12	69	0	171
Total	4	0	20	0	353	12	1	0	1	42	244	0	677
08:00 AM	3	0	4	1	90	3	0	0	0	11	61	1	174
08:15 AM	3	0	5	0	99	4	0	0	0	10	76	0	197
08:30 AM	1	0	5	0	88	5	0	0	0	7	48	1	155
08:45 AM	3	0	5	0	79	6	0	0	0	2	66	0	161
Total	10	0	19	1	356	18	0	0	0	30	251	2	687
Grand Total	14	0	39	1	709	30	1	0	1	72	495	2	1364
Apprch %	26.4	0	73.6	0.1	95.8	4.1	50	0	50	12.7	87	0.4	
Total %	1	0	2.9	0.1	52	2.2	0.1	0	0.1	5.3	36.3	0.1	

	Overland St From North				Brookline Ave From East				Private Dr From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	3	3	0	**103**	3	**106**	0	0	**1**	**1**	**14**	57	0	71	181
07:45 AM	2	0	3	5	0	82	2	84	**1**	0	0	1	12	69	0	81	171
08:00 AM	**3**	0	4	7	**1**	90	3	94	0	0	0	0	11	61	**1**	73	174
08:15 AM	3	0	**5**	**8**	0	99	**4**	103	0	0	0	0	10	**76**	0	**86**	**197**
Total Volume	8	0	15	23	1	374	12	387	1	0	1	2	47	263	1	311	723
% App. Total	34.8	0	65.2		0.3	96.6	3.1		50	0	50		15.1	84.6	0.3		
PHF	.667	.000	.750	.719	.250	.908	.750	.913	.250	.000	.250	.500	.839	.865	.250	.904	.918

Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 2



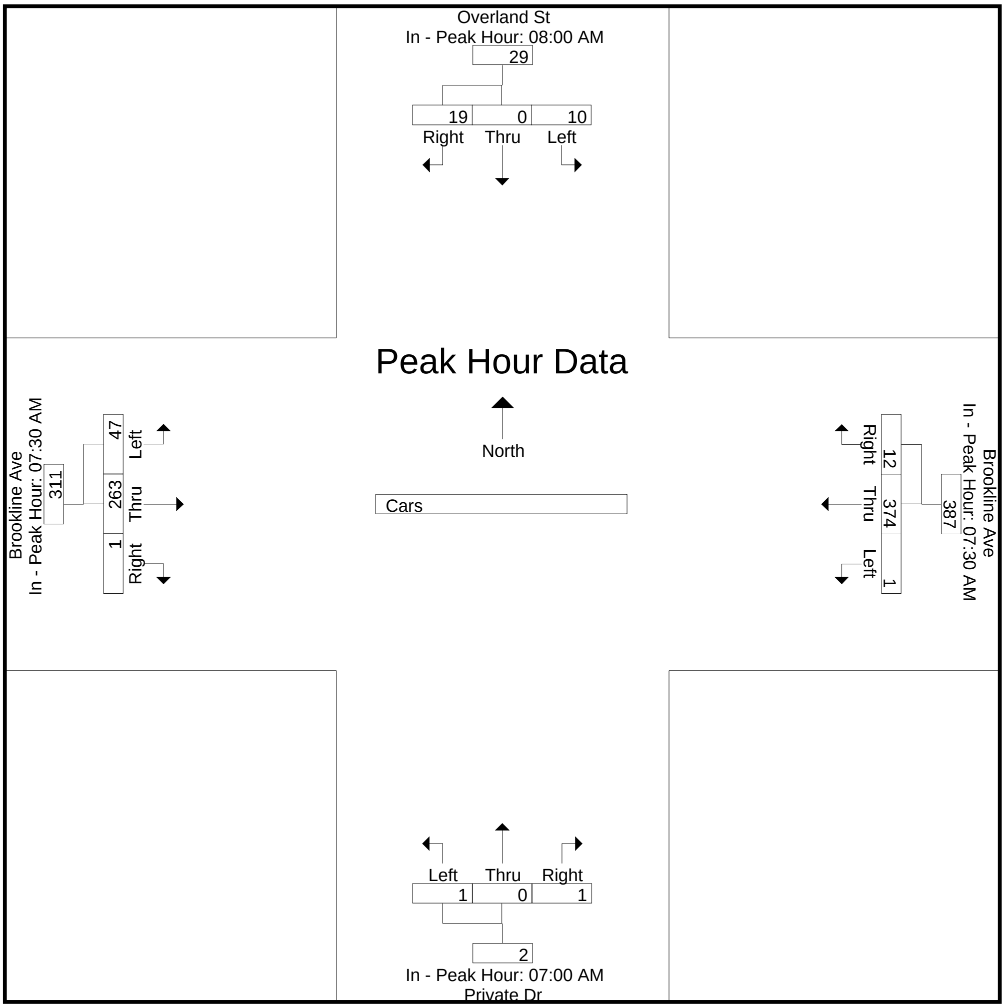
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				07:00 AM				07:30 AM			
+0 mins.	**3**	0	4	7	0	**103**	3	**106**	0	0	0	0	**14**	57	0	71
+15 mins.	3	0	**5**	**8**	0	82	2	84	0	0	0	0	12	69	0	81
+30 mins.	1	0	5	6	**1**	90	3	94	0	0	**1**	**1**	11	61	**1**	73
+45 mins.	3	0	5	8	0	99	**4**	103	**1**	0	0	1	10	**76**	0	**86**
Total Volume	10	0	19	29	1	374	12	387	1	0	1	2	47	263	1	311
% App. Total	34.5	0	65.5		0.3	96.6	3.1		50	0	50		15.1	84.6	0.3	
PHF	.833	.000	.950	.906	.250	.908	.750	.913	.250	.000	.250	.500	.839	.865	.250	.904

Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 1

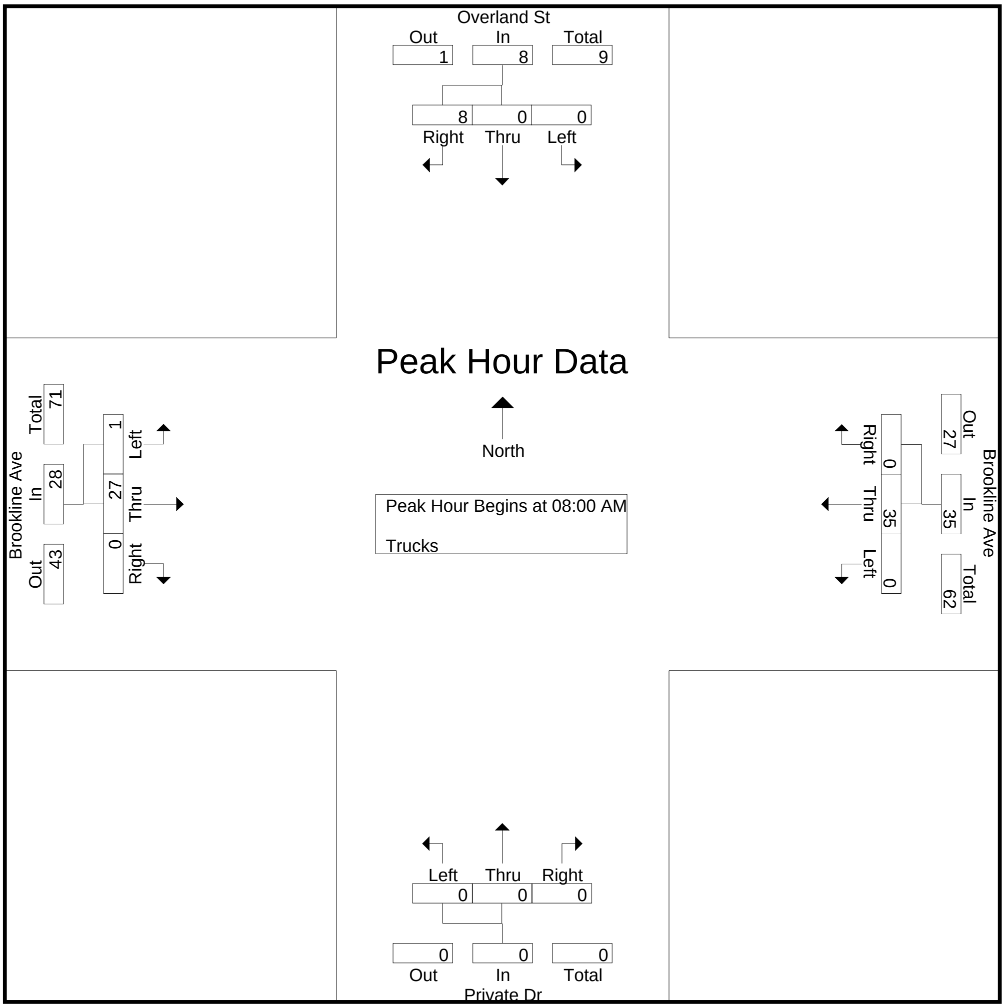
Groups Printed- Trucks

	Overland St From North			Brookline Ave From East			Private Dr From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	2	0	12	0	0	0	0	0	8	0	22
07:15 AM	0	0	2	0	7	0	0	0	0	0	7	0	16
07:30 AM	0	0	1	0	7	0	0	0	0	0	7	0	15
07:45 AM	0	0	2	0	8	0	0	0	0	0	7	0	17
Total	0	0	7	0	34	0	0	0	0	0	29	0	70
08:00 AM	0	0	2	0	7	0	0	0	0	0	8	0	17
08:15 AM	0	0	2	0	5	0	0	0	0	0	6	0	13
08:30 AM	0	0	1	0	14	0	0	0	0	1	7	0	23
08:45 AM	0	0	3	0	9	0	0	0	0	0	6	0	18
Total	0	0	8	0	35	0	0	0	0	1	27	0	71
Grand Total	0	0	15	0	69	0	0	0	0	1	56	0	141
Apprch %	0	0	100	0	100	0	0	0	0	1.8	98.2	0	
Total %	0	0	10.6	0	48.9	0	0	0	0	0.7	39.7	0	

	Overland St From North				Brookline Ave From East				Private Dr From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	2	2	0	7	0	7	0	0	0	0	0	**8**	0	**8**	17
08:15 AM	0	0	2	2	0	5	0	5	0	0	0	0	0	6	0	6	13
08:30 AM	0	0	1	1	0	**14**	0	**14**	0	0	0	0	**1**	7	0	8	**23**
08:45 AM	0	0	**3**	**3**	0	9	0	9	0	0	0	0	0	6	0	6	18
Total Volume	0	0	8	8	0	35	0	35	0	0	0	0	1	27	0	28	71
% App. Total	0	0	100		0	100	0		0	0	0		3.6	96.4	0		
PHF	.000	.000	.667	.667	.000	.625	.000	.625	.000	.000	.000	.000	.250	.844	.000	.875	.772

Accurate Counts
978-664-2565

N/S Street	: Overland Street	File Name	: 94970009
E/W Street	: Brookline Avenue	Site Code	: 94970009
City/State	: Boston, MA	Start Date	: 5/16/2012
Weather	: Drizzle	Page No	: 2



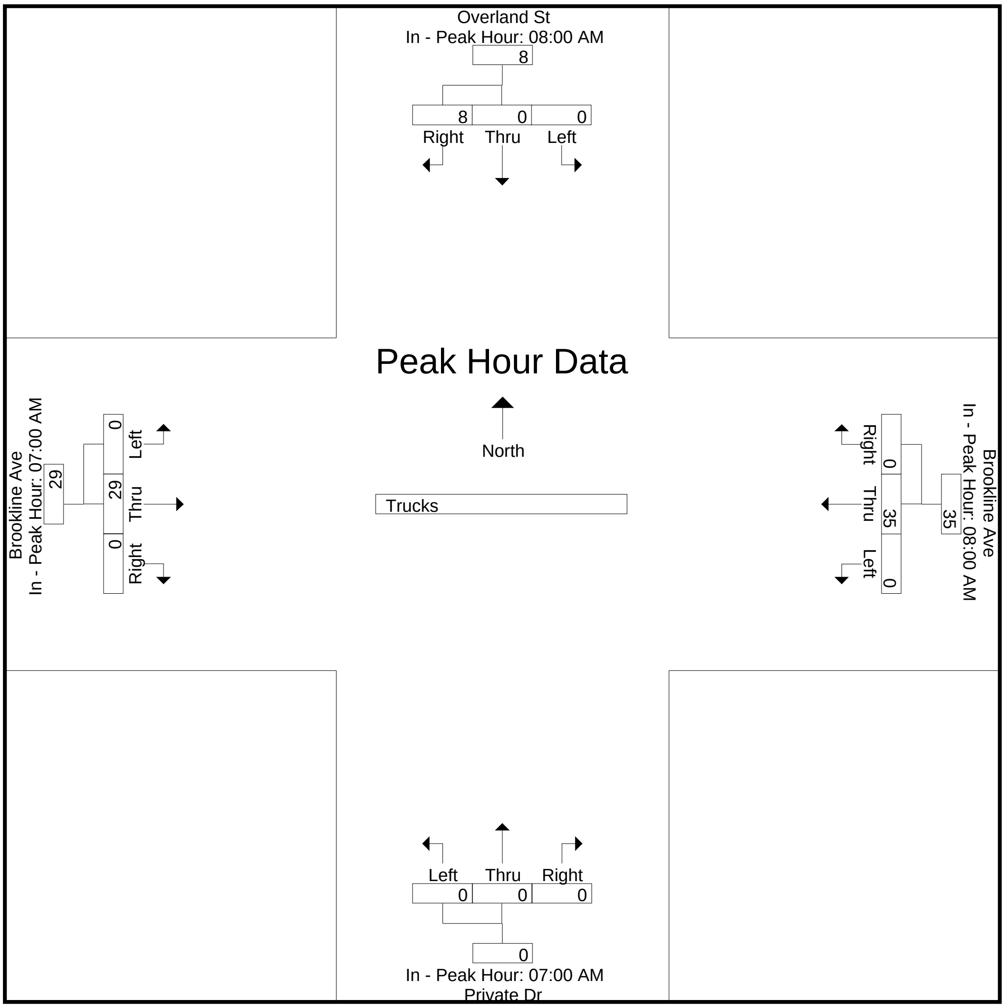
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	2	2	0	7	0	7	0	0	0	0	0	**8**	0	**8**
+15 mins.	0	0	2	2	0	5	0	5	0	0	0	0	0	7	0	7
+30 mins.	0	0	1	1	0	**14**	0	**14**	0	0	0	0	0	7	0	7
+45 mins.	0	0	**3**	**3**	0	9	0	9	0	0	0	0	0	7	0	7
Total Volume	0	0	8	8	0	35	0	35	0	0	0	0	0	29	0	29
% App. Total	0	0	100		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.667	.667	.000	.625	.000	.625	.000	.000	.000	.000	.000	.906	.000	.906

Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

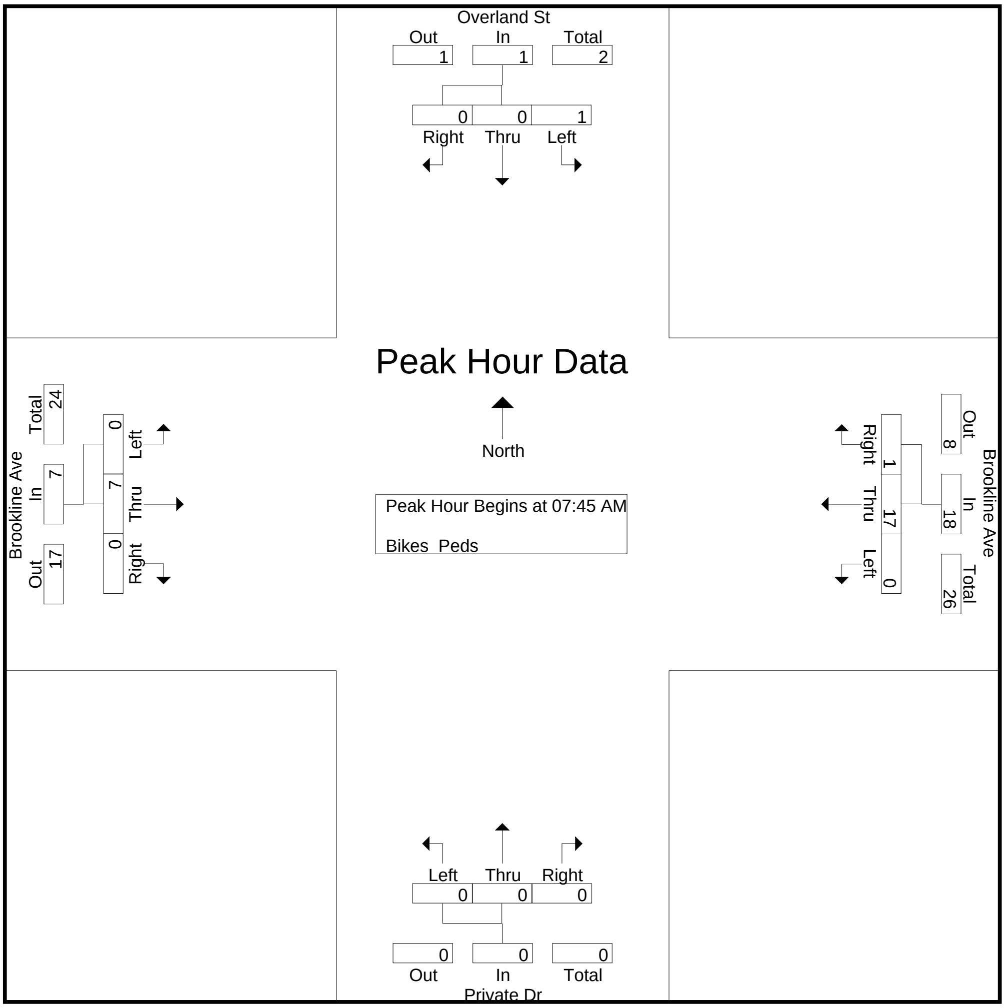
	Overland St From North				Brookline Ave From East				Private Dr From South				Brookline Ave From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	5	0	2	0	3	0	0	0	20	1	0	0	1	29	3	32
07:15 AM	0	0	0	23	0	0	0	1	0	0	0	23	0	1	0	2	49	1	50
07:30 AM	0	0	0	17	0	2	0	0	0	0	0	17	0	0	0	2	36	2	38
07:45 AM	1	0	0	12	0	4	0	3	0	0	0	23	0	3	0	12	50	8	58
Total	1	0	0	57	0	8	0	7	0	0	0	83	1	4	0	17	164	14	178
08:00 AM	0	0	0	42	0	5	0	2	0	0	0	33	0	0	0	1	78	5	83
08:15 AM	0	0	0	26	0	5	1	3	0	0	0	20	0	3	0	3	52	9	61
08:30 AM	0	0	0	33	0	3	0	5	0	0	0	29	0	1	0	6	73	4	77
08:45 AM	0	0	0	19	0	3	0	4	0	0	0	37	0	1	0	1	61	4	65
Total	0	0	0	120	0	16	1	14	0	0	0	119	0	5	0	11	264	22	286
Grand Total	1	0	0	177	0	24	1	21	0	0	0	202	1	9	0	28	428	36	464
Apprch %	100	0	0		0	96	4		0	0	0		10	90	0				
Total %	2.8	0	0		0	66.7	2.8		0	0	0		2.8	25	0		92.2	7.8	

	Overland St From North				Brookline Ave From East				Private Dr From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	**1**	0	0	**1**	0	4	0	4	0	0	0	0	0	**3**	0	**3**	8
08:00 AM	0	0	0	0	0	**5**	0	5	0	0	0	0	0	0	0	0	5
08:15 AM	0	0	0	0	0	5	**1**	**6**	0	0	0	0	0	3	0	3	**9**
08:30 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	1	0	1	4
Total Volume	1	0	0	1	0	17	1	18	0	0	0	0	0	7	0	7	26
% App. Total	100	0	0		0	94.4	5.6		0	0	0		0	100	0		
PHF	.250	.000	.000	.250	.000	.850	.250	.750	.000	.000	.000	.000	.000	.583	.000	.583	.722

Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 2



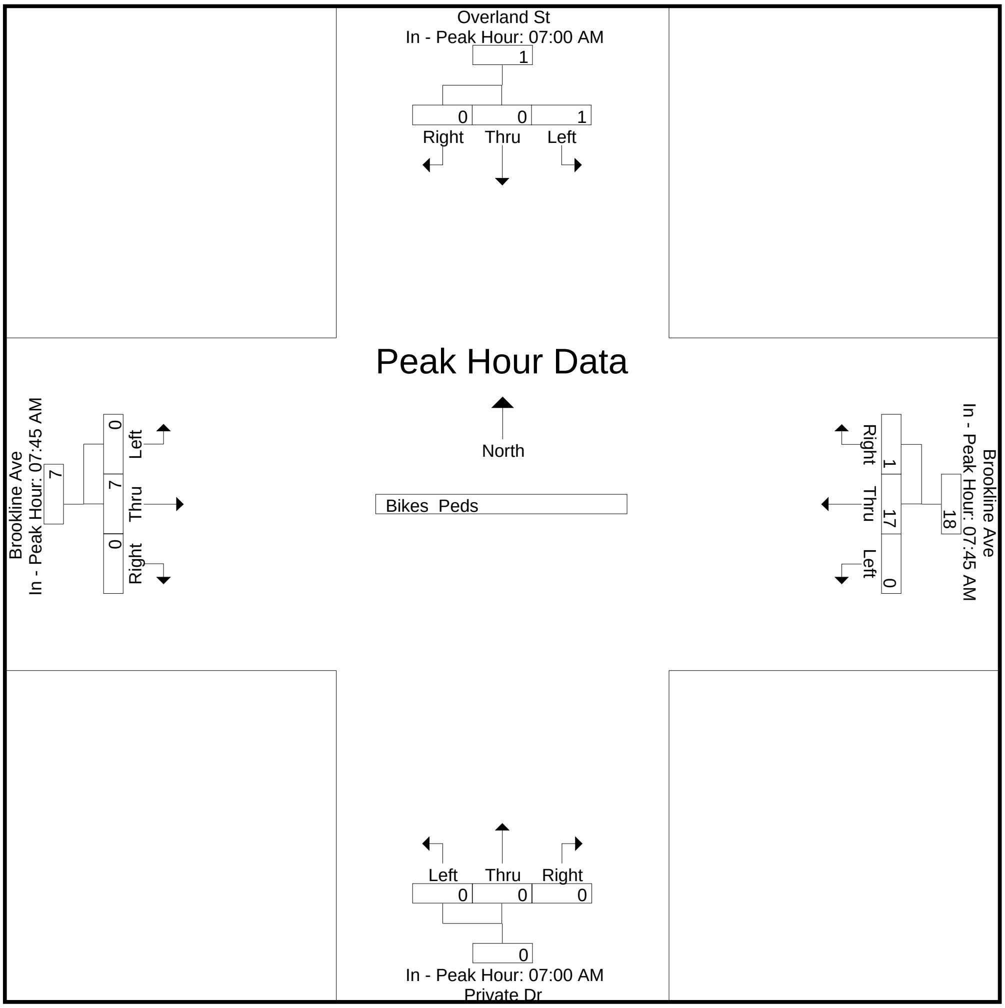
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:45 AM				07:00 AM				07:45 AM			
+0 mins.	0	0	0	0	0	4	0	4	0	0	0	0	0	**3**	0	**3**
+15 mins.	0	0	0	0	0	**5**	0	5	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	5	**1**	**6**	0	0	0	0	0	3	0	3
+45 mins.	**1**	0	0	**1**	0	3	0	3	0	0	0	0	0	1	0	1
Total Volume	1	0	0	1	0	17	1	18	0	0	0	0	0	7	0	7
% App. Total	100	0	0		0	94.4	5.6		0	0	0		0	100	0	
PHF	.250	.000	.000	.250	.000	.850	.250	.750	.000	.000	.000	.000	.000	.583	.000	.583

Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 1

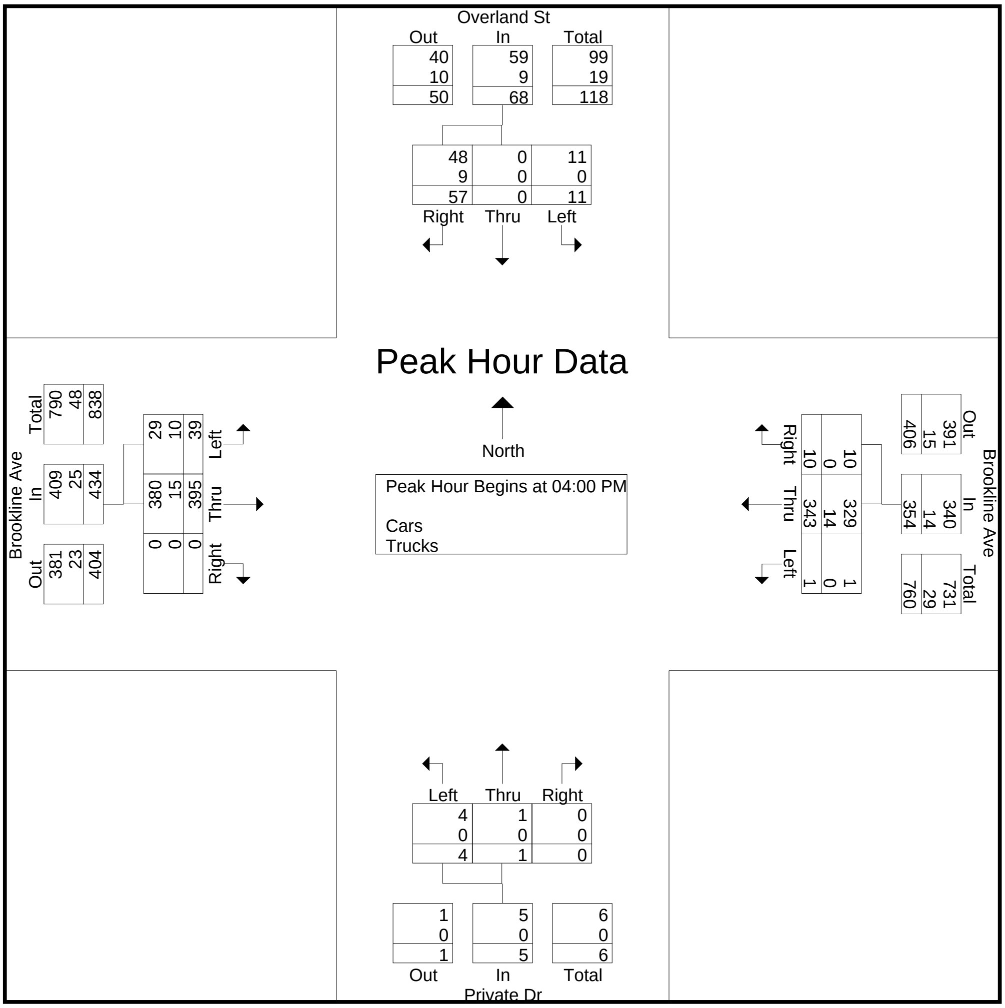
Groups Printed- Cars - Trucks

	Overland St From North			Brookline Ave From East			Private Dr From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	14	1	79	3	0	0	0	10	97	0	204
04:15 PM	3	0	8	0	103	2	0	0	0	9	97	0	222
04:30 PM	3	0	19	0	84	3	3	0	0	7	97	0	216
04:45 PM	5	0	16	0	77	2	1	1	0	13	104	0	219
Total	11	0	57	1	343	10	4	1	0	39	395	0	861
05:00 PM	5	0	14	0	83	5	0	0	0	7	75	0	189
05:15 PM	3	0	10	0	97	5	0	0	0	6	110	0	231
05:30 PM	3	0	12	0	69	2	1	0	0	7	97	0	191
05:45 PM	5	0	9	0	64	3	1	0	0	6	61	0	149
Total	16	0	45	0	313	15	2	0	0	26	343	0	760
Grand Total	27	0	102	1	656	25	6	1	0	65	738	0	1621
Apprch %	20.9	0	79.1	0.1	96.2	3.7	85.7	14.3	0	8.1	91.9	0	
Total %	1.7	0	6.3	0.1	40.5	1.5	0.4	0.1	0	4	45.5	0	
Cars	27	0	84	1	629	25	6	1	0	48	709	0	1530
% Cars	100	0	82.4	100	95.9	100	100	100	0	73.8	96.1	0	94.4
Trucks	0	0	18	0	27	0	0	0	0	17	29	0	91
% Trucks	0	0	17.6	0	4.1	0	0	0	0	26.2	3.9	0	5.6

	Overland St From North				Brookline Ave From East				Private Dr From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	14	14	**1**	79	**3**	83	0	0	0	0	10	97	0	107	204
04:15 PM	3	0	8	11	0	**103**	2	**105**	0	0	0	0	9	97	0	106	**222**
04:30 PM	3	0	**19**	**22**	0	84	3	87	**3**	0	0	**3**	7	97	0	104	216
04:45 PM	**5**	0	16	21	0	77	2	79	1	**1**	0	2	**13**	**104**	0	**117**	219
Total Volume	11	0	57	68	1	343	10	354	4	1	0	5	39	395	0	434	861
% App. Total	16.2	0	83.8		0.3	96.9	2.8		80	20	0		9	91	0		
PHF	.550	.000	.750	.773	.250	.833	.833	.843	.333	.250	.000	.417	.750	.950	.000	.927	.970
Cars	11	0	48	59	1	329	10	340	4	1	0	5	29	380	0	409	813
% Cars	100	0	84.2	86.8	100	95.9	100	96.0	100	100	0	100	74.4	96.2	0	94.2	94.4
Trucks	0	0	9	9	0	14	0	14	0	0	0	0	10	15	0	25	48
% Trucks	0	0	15.8	13.2	0	4.1	0	4.0	0	0	0	0	25.6	3.8	0	5.8	5.6

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 2



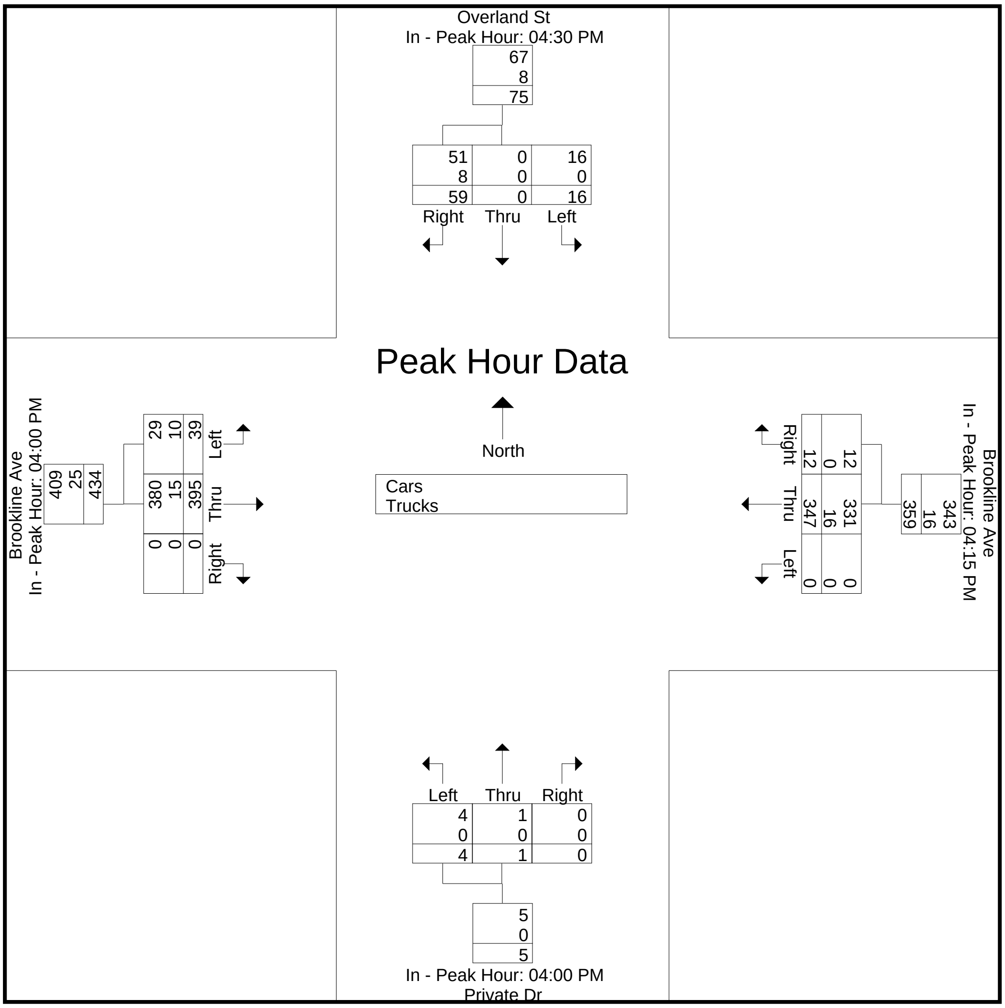
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:15 PM				04:00 PM				04:00 PM			
+0 mins.	3	0	**19**	**22**	0	**103**	2	**105**	0	0	0	0	10	97	0	107
+15 mins.	**5**	0	16	21	0	84	3	87	0	0	0	0	9	97	0	106
+30 mins.	5	0	14	19	0	77	2	79	**3**	0	0	**3**	7	97	0	104
+45 mins.	3	0	10	13	0	83	**5**	88	1	**1**	0	2	**13**	**104**	0	**117**
Total Volume	16	0	59	75	0	347	12	359	4	1	0	5	39	395	0	434
% App. Total	21.3	0	78.7		0	96.7	3.3		80	20	0		9	91	0	
PHF	.800	.000	.776	.852	.000	.842	.600	.855	.333	.250	.000	.417	.750	.950	.000	.927
Cars	16	0	51	67	0	331	12	343	4	1	0	5	29	380	0	409
% Cars	100	0	86.4	89.3	0	95.4	100	95.5	100	100	0	100	74.4	96.2	0	94.2
Trucks	0	0	8	8	0	16	0	16	0	0	0	0	10	15	0	25
% Trucks	0	0	13.6	10.7	0	4.6	0	4.5	0	0	0	0	25.6	3.8	0	5.8

Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

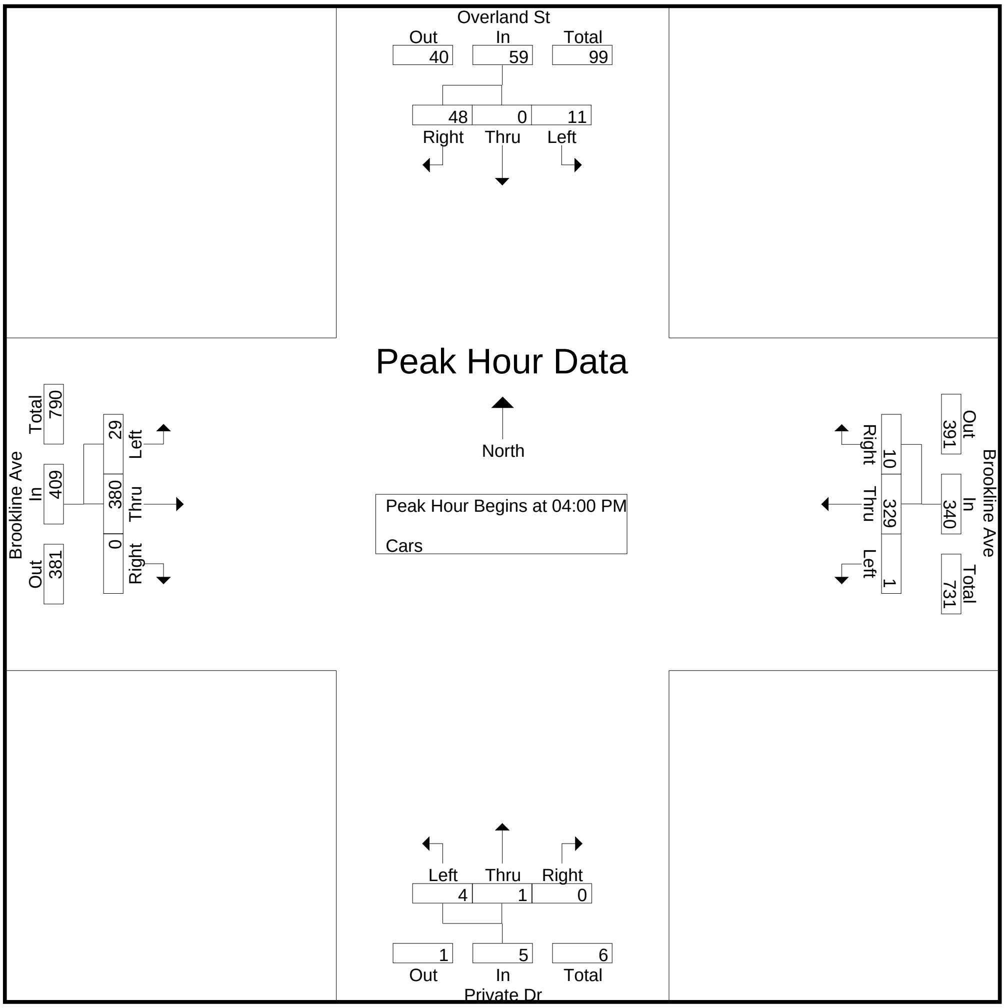
	Overland St From North			Brookline Ave From East			Private Dr From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	11	1	76	3	0	0	0	7	92	0	190
04:15 PM	3	0	6	0	98	2	0	0	0	7	94	0	210
04:30 PM	3	0	17	0	79	3	3	0	0	5	97	0	207
04:45 PM	5	0	14	0	76	2	1	1	0	10	97	0	206
Total	11	0	48	1	329	10	4	1	0	29	380	0	813
05:00 PM	5	0	12	0	78	5	0	0	0	6	71	0	177
05:15 PM	3	0	8	0	93	5	0	0	0	5	105	0	219
05:30 PM	3	0	9	0	66	2	1	0	0	4	95	0	180
05:45 PM	5	0	7	0	63	3	1	0	0	4	58	0	141
Total	16	0	36	0	300	15	2	0	0	19	329	0	717
Grand Total	27	0	84	1	629	25	6	1	0	48	709	0	1530
Apprch %	24.3	0	75.7	0.2	96	3.8	85.7	14.3	0	6.3	93.7	0	
Total %	1.8	0	5.5	0.1	41.1	1.6	0.4	0.1	0	3.1	46.3	0	

	Overland St From North				Brookline Ave From East				Private Dr From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	11	11	**1**	76	**3**	80	0	0	0	0	7	92	0	99	190
04:15 PM	3	0	6	9	0	**98**	2	**100**	0	0	0	0	7	94	0	101	**210**
04:30 PM	3	0	**17**	**20**	0	79	3	82	**3**	0	0	**3**	5	**97**	0	102	207
04:45 PM	**5**	0	14	19	0	76	2	78	1	**1**	0	2	**10**	97	0	**107**	206
Total Volume	11	0	48	59	1	329	10	340	4	1	0	5	29	380	0	409	813
% App. Total	18.6	0	81.4		0.3	96.8	2.9		80	20	0		7.1	92.9	0		
PHF	.550	.000	.706	.738	.250	.839	.833	.850	.333	.250	.000	.417	.725	.979	.000	.956	.968

Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012



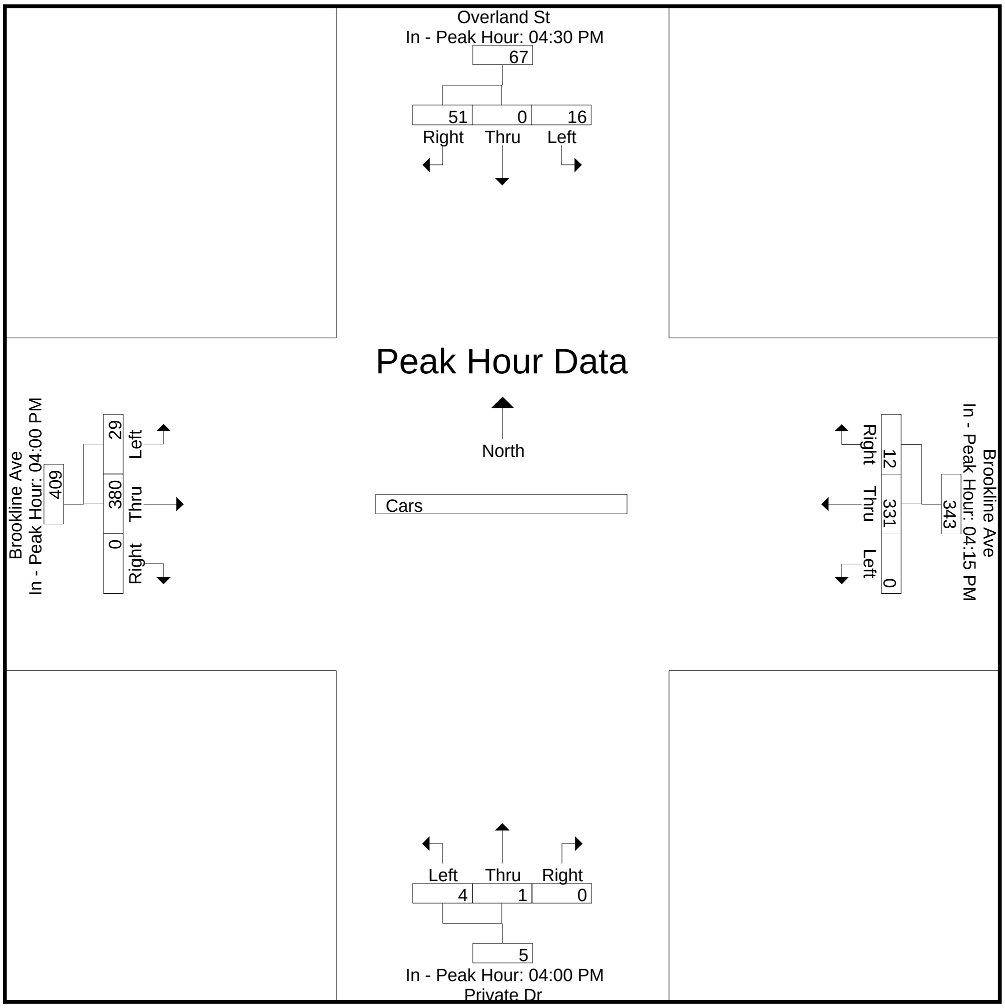
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:15 PM				04:00 PM				04:00 PM			
+0 mins.	3	0	**17**	**20**	0	**98**	2	**100**	0	0	0	0	7	92	0	99
+15 mins.	**5**	0	14	19	0	79	3	82	0	0	0	0	7	94	0	101
+30 mins.	5	0	12	17	0	76	2	78	**3**	0	0	**3**	5	**97**	0	102
+45 mins.	3	0	8	11	0	78	**5**	83	1	**1**	0	2	**10**	97	0	**107**
Total Volume	16	0	51	67	0	331	12	343	4	1	0	5	29	380	0	409
% App. Total	23.9	0	76.1		0	96.5	3.5		80	20	0		7.1	92.9	0	
PHF	.800	.000	.750	.838	.000	.844	.600	.858	.333	.250	.000	.417	.725	.979	.000	.956

Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

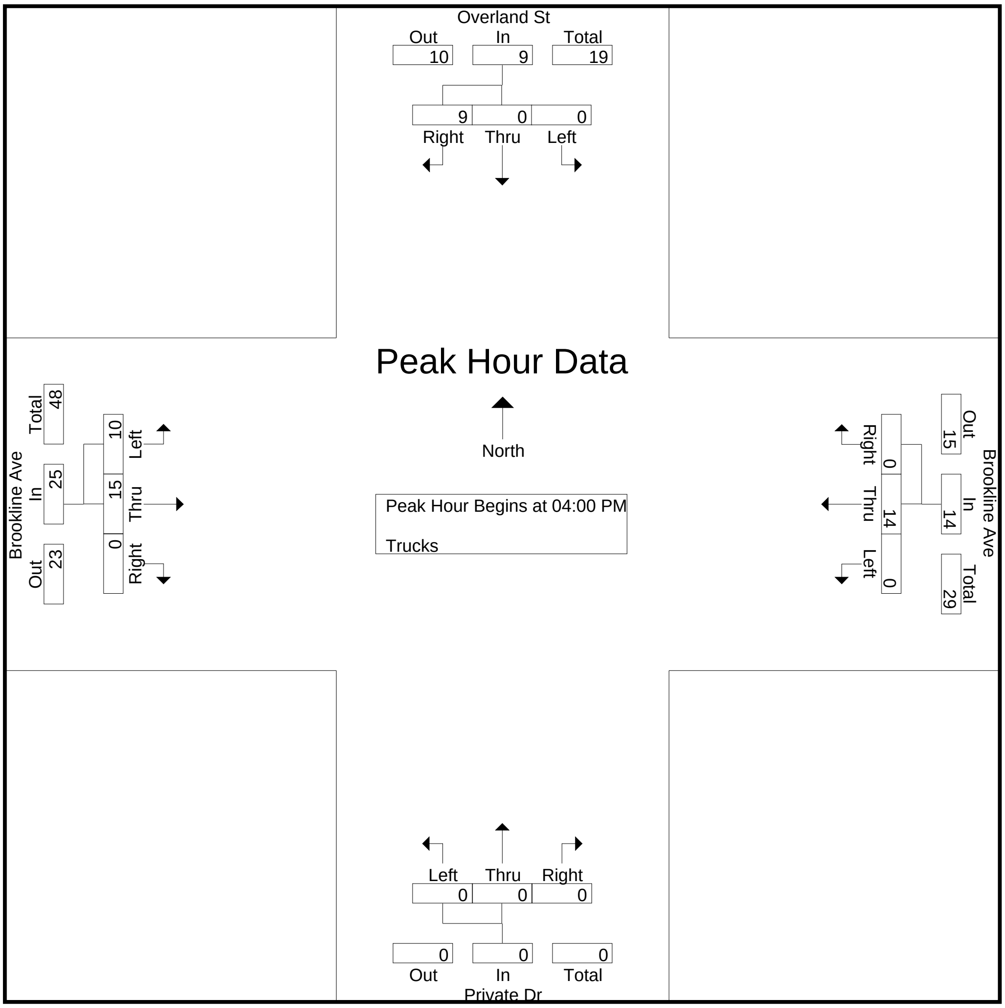
	Overland St From North			Brookline Ave From East			Private Dr From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	3	0	3	0	0	0	0	3	5	0	14
04:15 PM	0	0	2	0	5	0	0	0	0	2	3	0	12
04:30 PM	0	0	2	0	5	0	0	0	0	2	0	0	9
04:45 PM	0	0	2	0	1	0	0	0	0	3	7	0	13
Total	0	0	9	0	14	0	0	0	0	10	15	0	48
05:00 PM	0	0	2	0	5	0	0	0	0	1	4	0	12
05:15 PM	0	0	2	0	4	0	0	0	0	1	5	0	12
05:30 PM	0	0	3	0	3	0	0	0	0	3	2	0	11
05:45 PM	0	0	2	0	1	0	0	0	0	2	3	0	8
Total	0	0	9	0	13	0	0	0	0	7	14	0	43
Grand Total	0	0	18	0	27	0	0	0	0	17	29	0	91
Apprch %	0	0	100	0	100	0	0	0	0	37	63	0	
Total %	0	0	19.8	0	29.7	0	0	0	0	18.7	31.9	0	

	Overland St From North				Brookline Ave From East				Private Dr From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	**3**	**3**	0	3	0	3	0	0	0	0	**3**	5	0	8	**14**
04:15 PM	0	0	2	2	0	**5**	0	**5**	0	0	0	0	2	3	0	5	12
04:30 PM	0	0	2	2	0	5	0	5	0	0	0	0	2	0	0	2	9
04:45 PM	0	0	2	2	0	1	0	1	0	0	0	0	3	**7**	0	**10**	13
Total Volume	0	0	9	9	0	14	0	14	0	0	0	0	10	15	0	25	48
% App. Total	0	0	100		0	100	0		0	0	0		40	60	0		
PHF	.000	.000	.750	.750	.000	.700	.000	.700	.000	.000	.000	.000	.833	.536	.000	.625	.857

Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 2



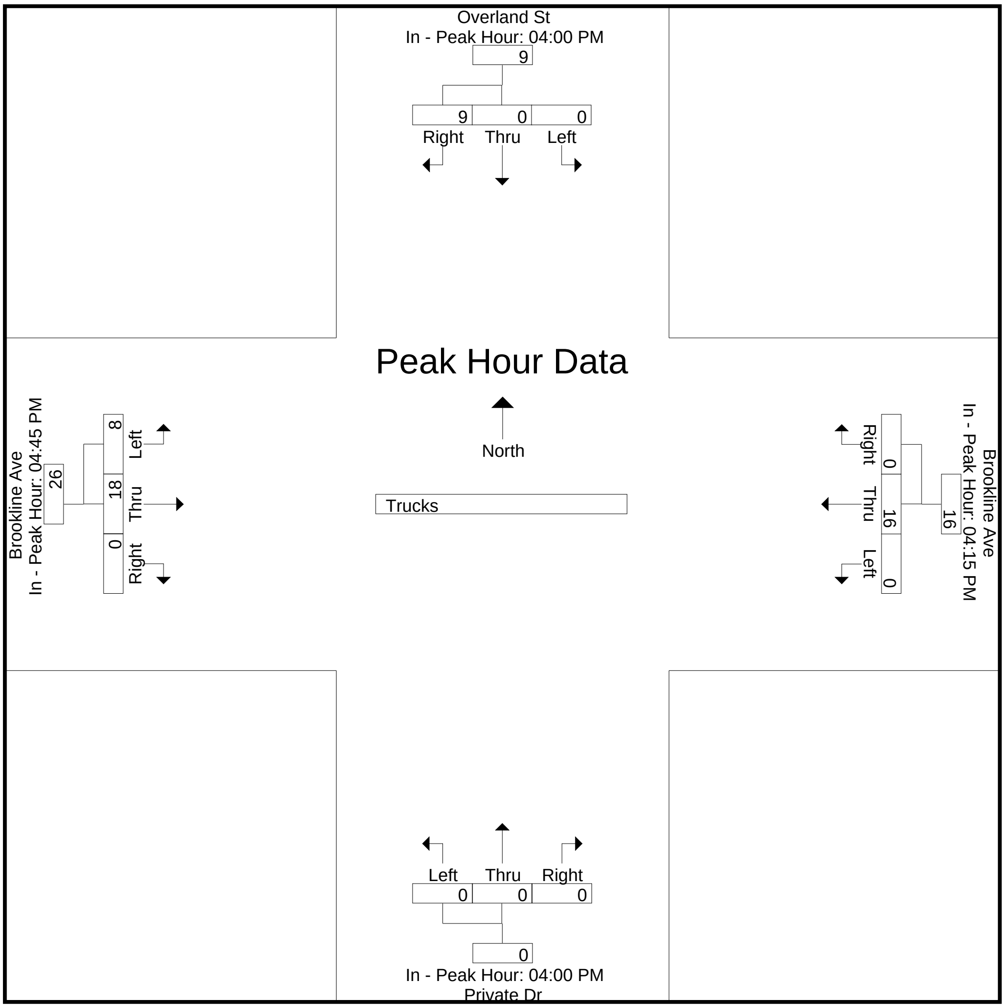
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:15 PM				04:00 PM				04:45 PM			
+0 mins.	0	0	**3**	**3**	0	**5**	0	**5**	0	0	0	0	**3**	**7**	0	**10**
+15 mins.	0	0	2	2	0	5	0	5	0	0	0	0	1	4	0	5
+30 mins.	0	0	2	2	0	1	0	1	0	0	0	0	1	5	0	6
+45 mins.	0	0	2	2	0	5	0	5	0	0	0	0	3	2	0	5
Total Volume	0	0	9	9	0	16	0	16	0	0	0	0	8	18	0	26
% App. Total	0	0	100		0	100	0		0	0	0		30.8	69.2	0	
PHF	.000	.000	.750	.750	.000	.800	.000	.800	.000	.000	.000	.000	.667	.643	.000	.650

Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 1

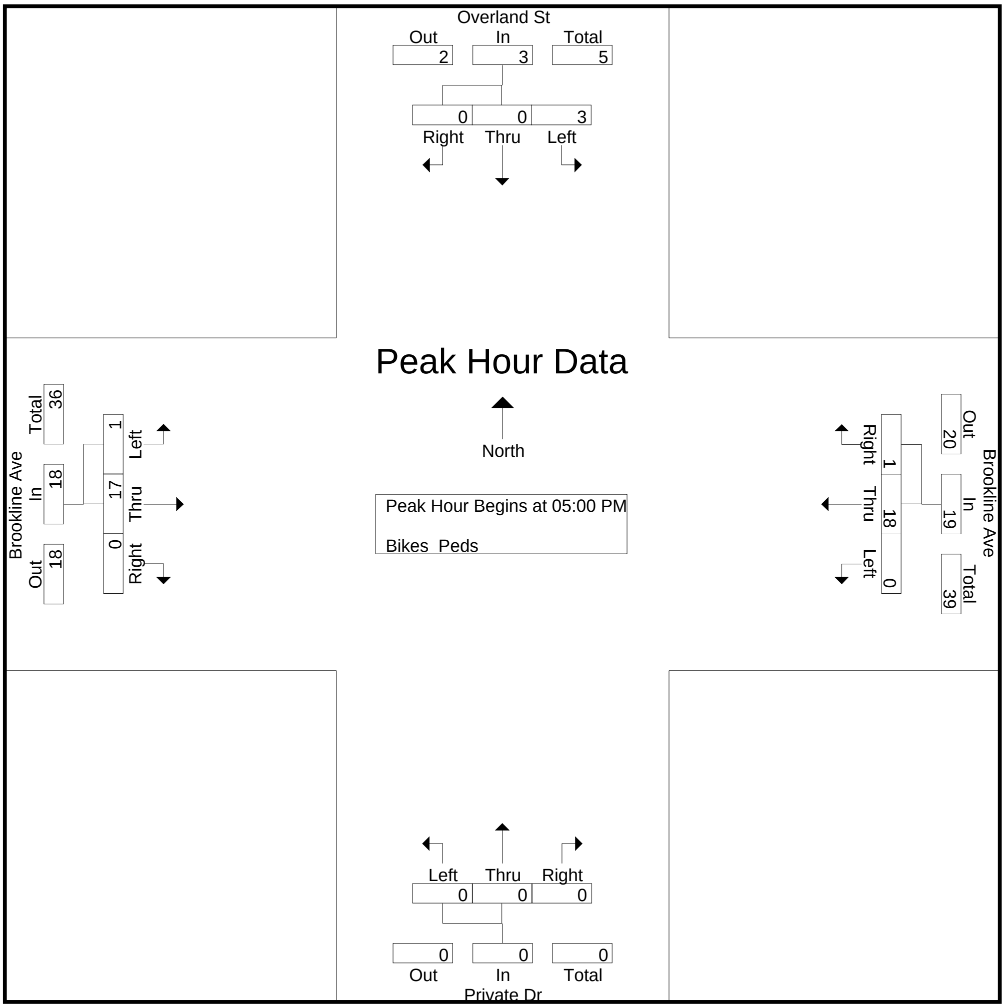
Groups Printed- Bikes Peds

	Overland St From North				Brookline Ave From East				Private Dr From South				Brookline Ave From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	1	0	0	41	0	1	0	4	0	0	0	53	0	1	0	2	100	3	103
04:15 PM	2	0	0	32	0	4	0	2	0	0	0	55	1	1	0	3	92	8	100
04:30 PM	1	0	0	38	0	0	0	4	0	0	0	55	0	4	0	5	102	5	107
04:45 PM	1	0	0	29	0	0	3	9	0	0	0	64	0	3	0	1	103	7	110
Total	5	0	0	140	0	5	3	19	0	0	0	227	1	9	0	11	397	23	420
05:00 PM	2	0	0	40	0	2	0	4	0	0	0	71	0	3	0	3	118	7	125
05:15 PM	0	0	0	50	0	4	1	3	0	0	0	76	0	6	0	2	131	11	142
05:30 PM	1	0	0	69	0	5	0	14	0	0	0	108	1	5	0	4	195	12	207
05:45 PM	0	0	0	38	0	7	0	2	0	0	0	61	0	3	0	2	103	10	113
Total	3	0	0	197	0	18	1	23	0	0	0	316	1	17	0	11	547	40	587
Grand Total	8	0	0	337	0	23	4	42	0	0	0	543	2	26	0	22	944	63	1007
Apprch %	100	0	0		0	85.2	14.8		0	0	0		7.1	92.9	0				
Total %	12.7	0	0		0	36.5	6.3		0	0	0		3.2	41.3	0		93.7	6.3	

	Overland St From North				Brookline Ave From East				Private Dr From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**2**	0	0	**2**	0	2	0	2	0	0	0	0	0	3	0	3	7
05:15 PM	0	0	0	0	0	4	**1**	5	0	0	0	0	0	**6**	0	**6**	11
05:30 PM	1	0	0	1	0	5	0	5	0	0	0	0	**1**	5	0	6	**12**
05:45 PM	0	0	0	0	0	**7**	0	**7**	0	0	0	0	0	3	0	3	10
Total Volume	3	0	0	3	0	18	1	19	0	0	0	0	1	17	0	18	40
% App. Total	100	0	0		0	94.7	5.3		0	0	0		5.6	94.4	0		
PHF	.375	.000	.000	.375	.000	.643	.250	.679	.000	.000	.000	.000	.250	.708	.000	.750	.833

Accurate Counts
978-664-2565

N/S Street : Overland Street	File Name : 94970009
E/W Street : Brookline Avenue	Site Code : 94970009
City/State : Boston, MA	Start Date : 5/16/2012
Weather : Drizzle	Page No : 2



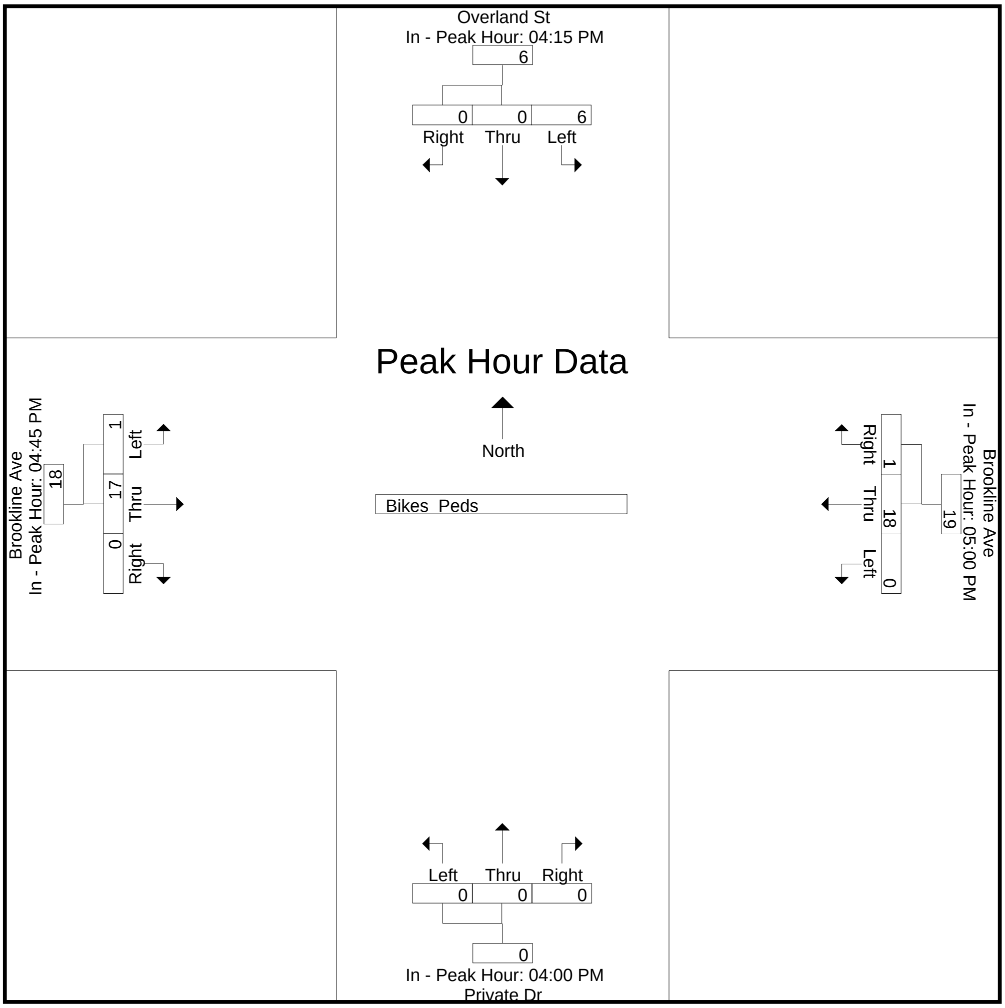
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				05:00 PM				04:00 PM				04:45 PM			
+0 mins.	**2**	0	0	**2**	0	2	0	2	0	0	0	0	0	3	0	3
+15 mins.	1	0	0	1	0	4	**1**	5	0	0	0	0	0	3	0	3
+30 mins.	1	0	0	1	0	5	0	5	0	0	0	0	0	**6**	0	**6**
+45 mins.	2	0	0	2	0	**7**	0	**7**	0	0	0	0	**1**	5	0	6
Total Volume	6	0	0	6	0	18	1	19	0	0	0	0	1	17	0	18
% App. Total	100	0	0		0	94.7	5.3		0	0	0		5.6	94.4	0	
PHF	.750	.000	.000	.750	.000	.643	.250	.679	.000	.000	.000	.000	.250	.708	.000	.750

Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012



Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

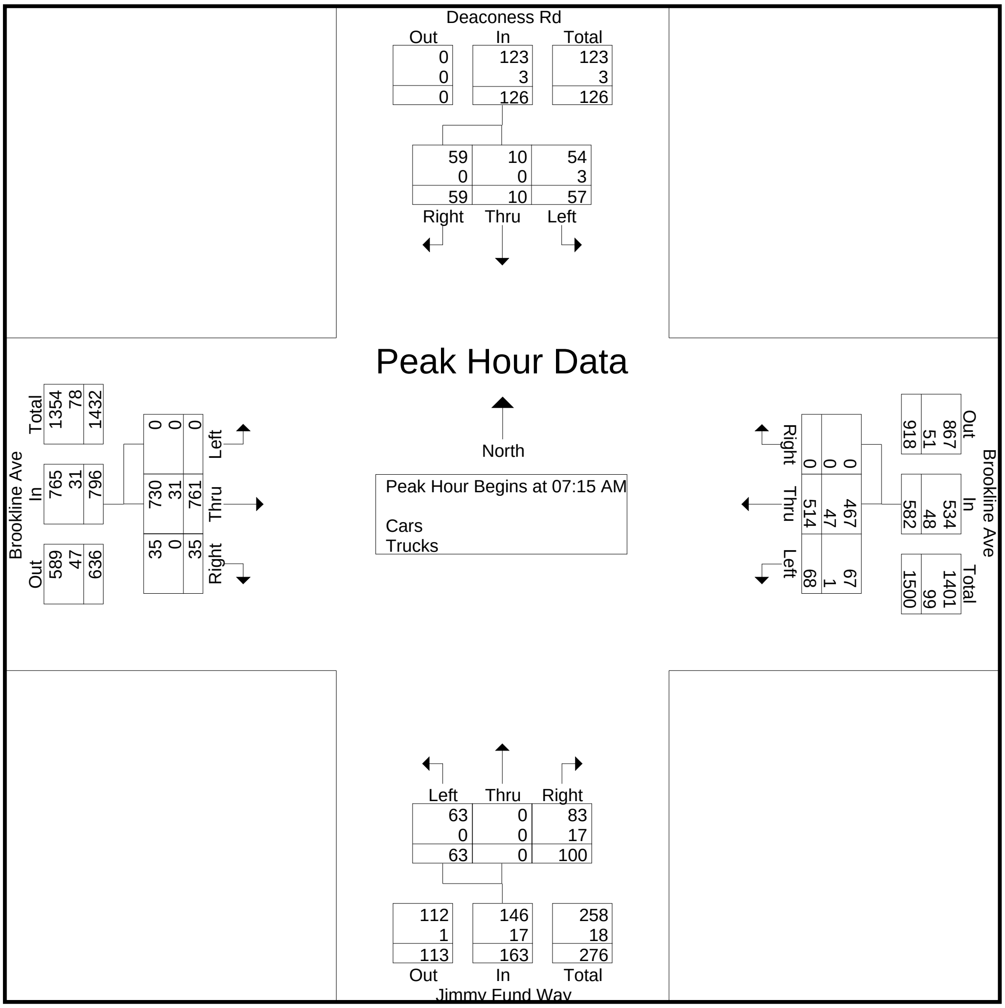
	Deaconess Rd From North			Brookline Ave From East			Jimmy Fund Way From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	10	1	13	18	106	0	13	0	31	0	153	5	350
07:15 AM	18	2	16	14	128	0	10	0	22	0	185	8	403
07:30 AM	17	2	19	17	137	0	21	0	35	0	187	10	445
07:45 AM	11	1	14	20	124	0	16	0	28	0	203	10	427
Total	56	6	62	69	495	0	60	0	116	0	728	33	1625
08:00 AM	11	5	10	17	125	0	16	0	15	0	186	7	392
08:15 AM	4	4	5	9	99	0	7	0	26	0	163	7	324
08:30 AM	13	6	5	6	112	0	13	0	32	0	120	4	311
08:45 AM	15	3	12	9	94	0	13	0	32	0	184	14	376
Total	43	18	32	41	430	0	49	0	105	0	653	32	1403
Grand Total	99	24	94	110	925	0	109	0	221	0	1381	65	3028
Apprch %	45.6	11.1	43.3	10.6	89.4	0	33	0	67	0	95.5	4.5	
Total %	3.3	0.8	3.1	3.6	30.5	0	3.6	0	7.3	0	45.6	2.1	
Cars	95	24	94	109	840	0	108	0	187	0	1329	65	2851
% Cars	96	100	100	99.1	90.8	0	99.1	0	84.6	0	96.2	100	94.2
Trucks	4	0	0	1	85	0	1	0	34	0	52	0	177
% Trucks	4	0	0	0.9	9.2	0	0.9	0	15.4	0	3.8	0	5.8

	Deaconess Rd From North				Brookline Ave From East				Jimmy Fund Way From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**18**	2	16	36	14	128	0	142	10	0	22	32	0	185	8	193	403
07:30 AM	17	2	**19**	**38**	17	**137**	0	**154**	**21**	0	**35**	**56**	0	187	**10**	197	**445**
07:45 AM	11	1	14	26	**20**	124	0	144	16	0	28	44	0	**203**	10	**213**	427
08:00 AM	11	**5**	10	26	17	125	0	142	16	0	15	31	0	186	7	193	392
Total Volume	57	10	59	126	68	514	0	582	63	0	100	163	0	761	35	796	1667
% App. Total	45.2	7.9	46.8		11.7	88.3	0		38.7	0	61.3		0	95.6	4.4		
PHF	.792	.500	.776	.829	.850	.938	.000	.945	.750	.000	.714	.728	.000	.937	.875	.934	.937
Cars	54	10	59	123	67	467	0	534	63	0	83	146	0	730	35	765	1568
% Cars	94.7	100	100	97.6	98.5	90.9	0	91.8	100	0	83.0	89.6	0	95.9	100	96.1	94.1
Trucks	3	0	0	3	1	47	0	48	0	0	17	17	0	31	0	31	99
% Trucks	5.3	0	0	2.4	1.5	9.1	0	8.2	0	0	17.0	10.4	0	4.1	0	3.9	5.9

Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 2



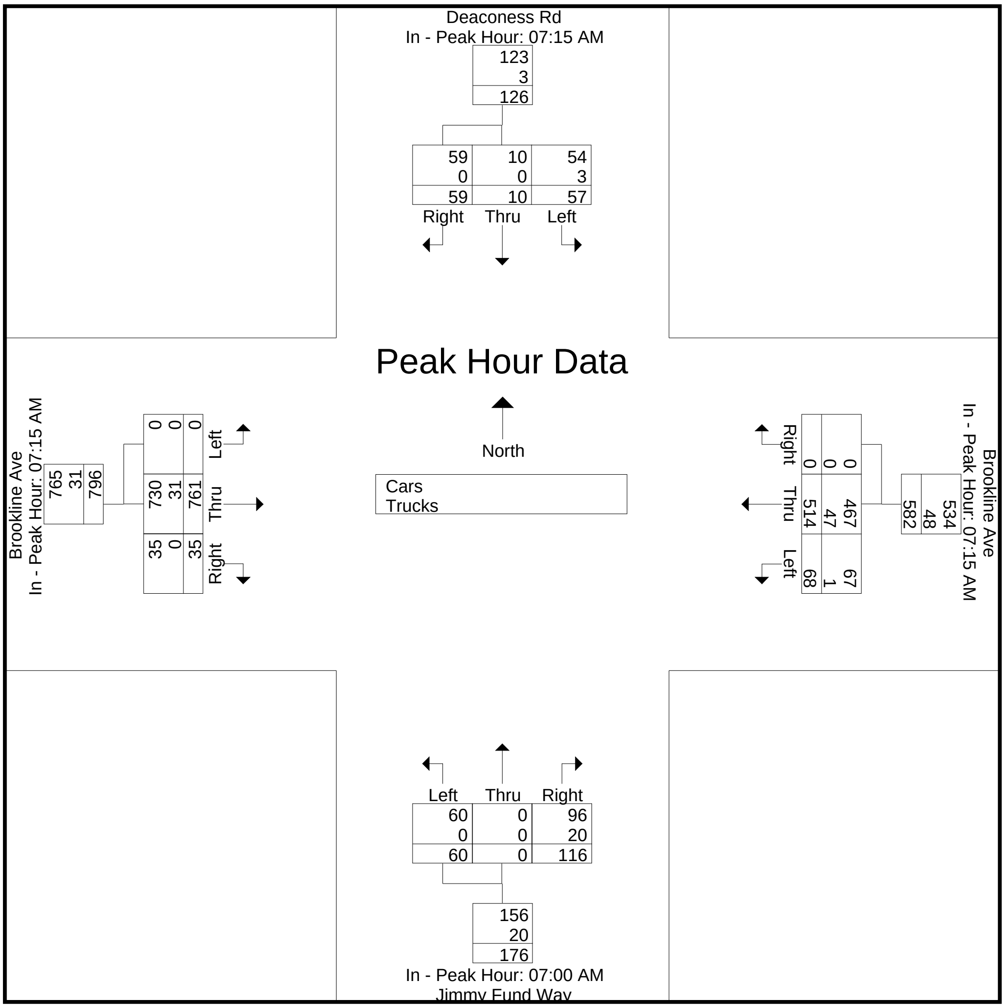
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:00 AM				07:15 AM			
+0 mins.	**18**	2	16	36	14	128	0	142	13	0	31	44	0	185	8	193
+15 mins.	17	2	**19**	**38**	17	**137**	0	**154**	10	0	22	32	0	187	**10**	197
+30 mins.	11	1	14	26	**20**	124	0	144	**21**	0	**35**	**56**	0	**203**	10	**213**
+45 mins.	11	**5**	10	26	17	125	0	142	16	0	28	44	0	186	7	193
Total Volume	57	10	59	126	68	514	0	582	60	0	116	176	0	761	35	796
% App. Total	45.2	7.9	46.8		11.7	88.3	0		34.1	0	65.9		0	95.6	4.4	
PHF	.792	.500	.776	.829	.850	.938	.000	.945	.714	.000	.829	.786	.000	.937	.875	.934
Cars	54	10	59	123	67	467	0	534	60	0	96	156	0	730	35	765
% Cars	94.7	100	100	97.6	98.5	90.9	0	91.8	100	0	82.8	88.6	0	95.9	100	96.1
Trucks	3	0	0	3	1	47	0	48	0	0	20	20	0	31	0	31
% Trucks	5.3	0	0	2.4	1.5	9.1	0	8.2	0	0	17.2	11.4	0	4.1	0	3.9

Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

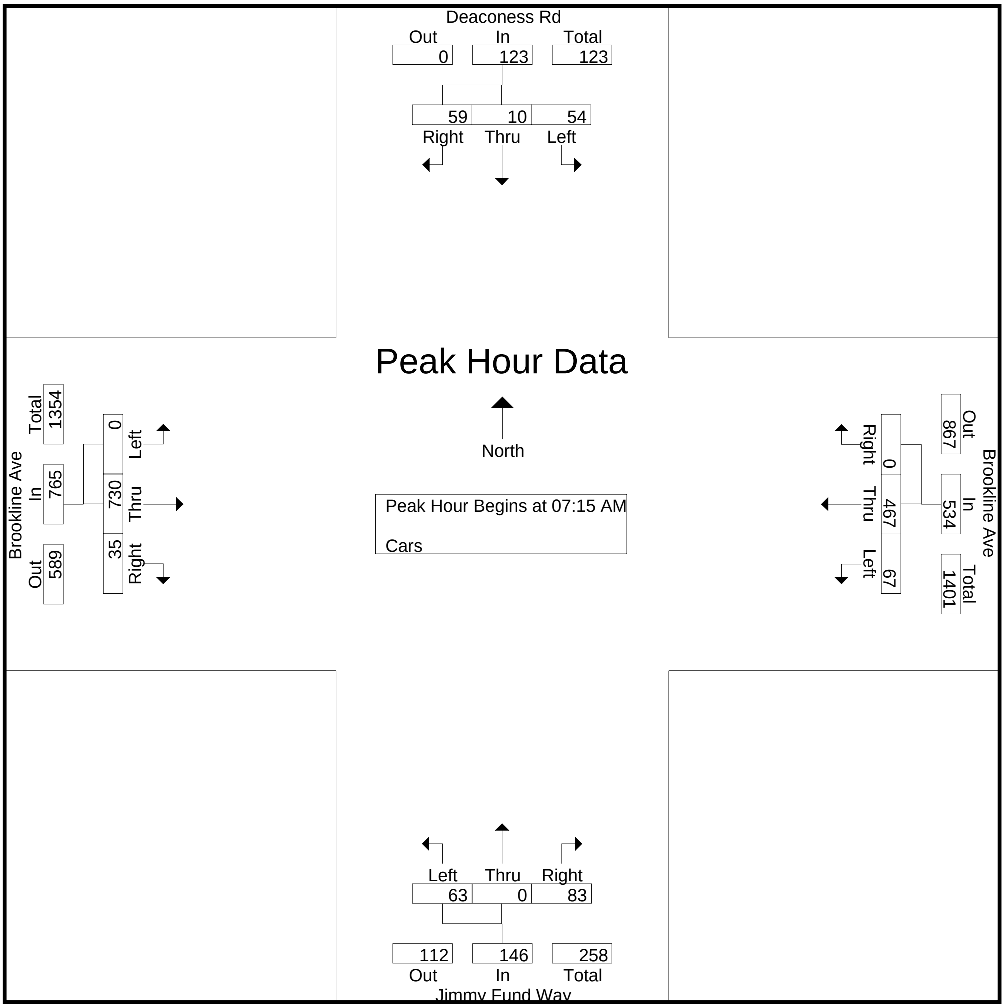
	Deaconess Rd From North			Brookline Ave From East			Jimmy Fund Way From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	10	1	13	18	96	0	13	0	25	0	147	5	328
07:15 AM	17	2	16	14	114	0	10	0	20	0	178	8	379
07:30 AM	16	2	19	16	124	0	21	0	29	0	177	10	414
07:45 AM	10	1	14	20	115	0	16	0	22	0	195	10	403
Total	53	6	62	68	449	0	60	0	96	0	697	33	1524
08:00 AM	11	5	10	17	114	0	16	0	12	0	180	7	372
08:15 AM	4	4	5	9	91	0	7	0	23	0	157	7	307
08:30 AM	12	6	5	6	102	0	12	0	27	0	114	4	288
08:45 AM	15	3	12	9	84	0	13	0	29	0	181	14	360
Total	42	18	32	41	391	0	48	0	91	0	632	32	1327
Grand Total	95	24	94	109	840	0	108	0	187	0	1329	65	2851
Apprch %	44.6	11.3	44.1	11.5	88.5	0	36.6	0	63.4	0	95.3	4.7	
Total %	3.3	0.8	3.3	3.8	29.5	0	3.8	0	6.6	0	46.6	2.3	

	Deaconess Rd From North				Brookline Ave From East				Jimmy Fund Way From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**17**	2	16	35	14	114	0	128	10	0	20	30	0	178	8	186	379
07:30 AM	16	2	**19**	**37**	16	**124**	0	**140**	**21**	0	**29**	**50**	0	177	**10**	187	**414**
07:45 AM	10	1	14	25	**20**	115	0	135	16	0	22	38	0	**195**	10	**205**	403
08:00 AM	11	**5**	10	26	17	114	0	131	16	0	12	28	0	180	7	187	372
Total Volume	54	10	59	123	67	467	0	534	63	0	83	146	0	730	35	765	1568
% App. Total	43.9	8.1	48		12.5	87.5	0		43.2	0	56.8		0	95.4	4.6		
PHF	.794	.500	.776	.831	.838	.942	.000	.954	.750	.000	.716	.730	.000	.936	.875	.933	.947

Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 2



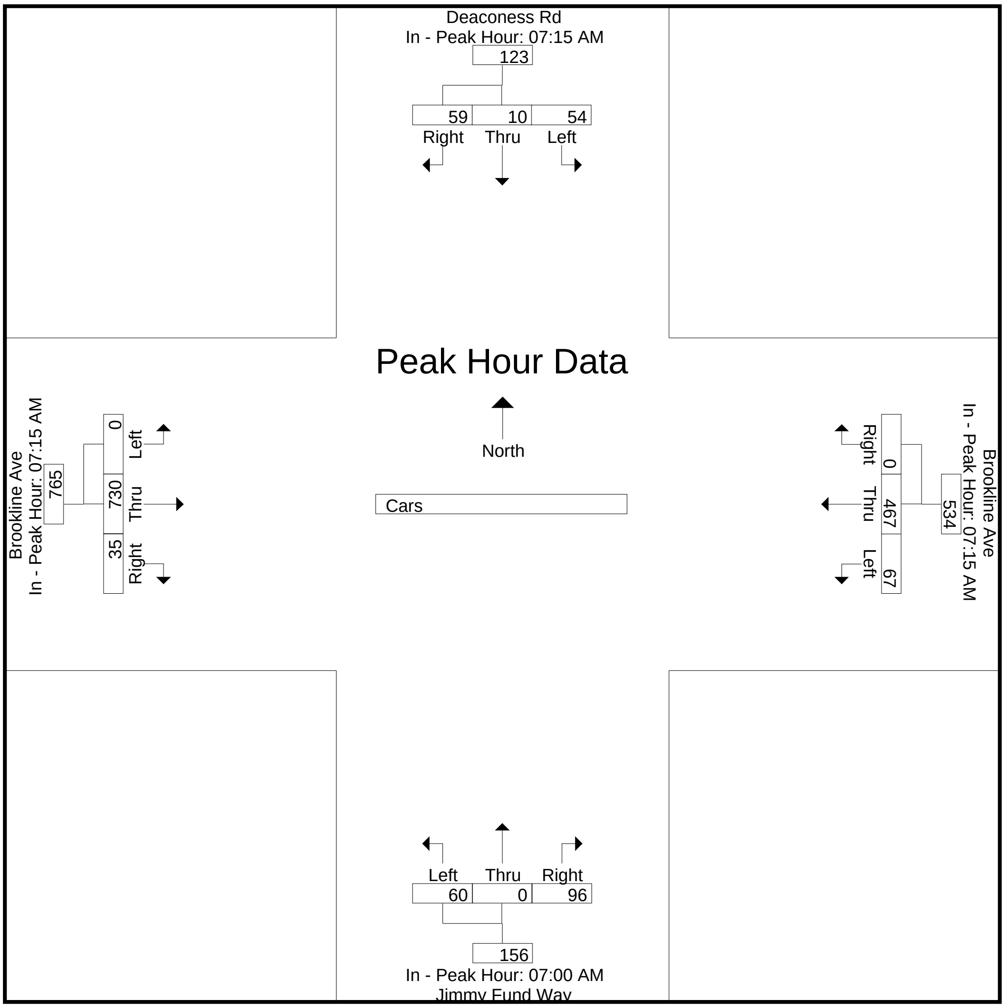
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:00 AM				07:15 AM			
+0 mins.	**17**	2	16	35	14	114	0	128	13	0	25	38	0	178	8	186
+15 mins.	16	2	**19**	**37**	16	**124**	0	**140**	10	0	20	30	0	177	**10**	187
+30 mins.	10	1	14	25	**20**	115	0	135	**21**	0	**29**	**50**	0	**195**	10	**205**
+45 mins.	11	**5**	10	26	17	114	0	131	16	0	22	38	0	180	7	187
Total Volume	54	10	59	123	67	467	0	534	60	0	96	156	0	730	35	765
% App. Total	43.9	8.1	48		12.5	87.5	0		38.5	0	61.5		0	95.4	4.6	
PHF	.794	.500	.776	.831	.838	.942	.000	.954	.714	.000	.828	.780	.000	.936	.875	.933

Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

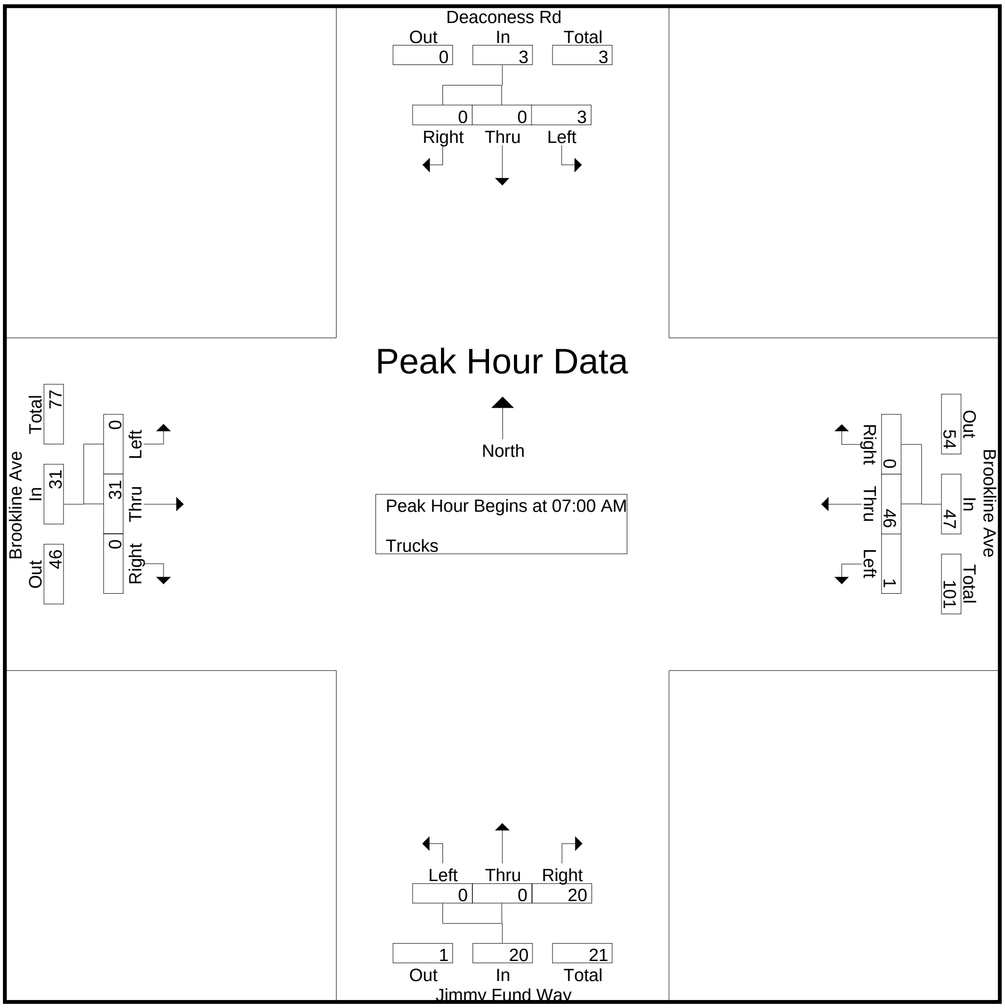
	Deaconess Rd From North			Brookline Ave From East			Jimmy Fund Way From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	0	10	0	0	0	6	0	6	0	22
07:15 AM	1	0	0	0	14	0	0	0	2	0	7	0	24
07:30 AM	1	0	0	1	13	0	0	0	6	0	10	0	31
07:45 AM	1	0	0	0	9	0	0	0	6	0	8	0	24
Total	3	0	0	1	46	0	0	0	20	0	31	0	101
08:00 AM	0	0	0	0	11	0	0	0	3	0	6	0	20
08:15 AM	0	0	0	0	8	0	0	0	3	0	6	0	17
08:30 AM	1	0	0	0	10	0	1	0	5	0	6	0	23
08:45 AM	0	0	0	0	10	0	0	0	3	0	3	0	16
Total	1	0	0	0	39	0	1	0	14	0	21	0	76
Grand Total	4	0	0	1	85	0	1	0	34	0	52	0	177
Apprch %	100	0	0	1.2	98.8	0	2.9	0	97.1	0	100	0	
Total %	2.3	0	0	0.6	48	0	0.6	0	19.2	0	29.4	0	

	Deaconess Rd From North				Brookline Ave From East				Jimmy Fund Way From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	10	0	10	0	0	**6**	**6**	0	6	0	6	22
07:15 AM	**1**	0	0	**1**	0	**14**	0	**14**	0	0	2	2	0	7	0	7	24
07:30 AM	1	0	0	1	**1**	13	0	14	0	0	6	6	0	**10**	0	**10**	**31**
07:45 AM	1	0	0	1	0	9	0	9	0	0	6	6	0	8	0	8	24
Total Volume	3	0	0	3	1	46	0	47	0	0	20	20	0	31	0	31	101
% App. Total	100	0	0		2.1	97.9	0		0	0	100		0	100	0		
PHF	.750	.000	.000	.750	.250	.821	.000	.839	.000	.000	.833	.833	.000	.775	.000	.775	.815

Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 2



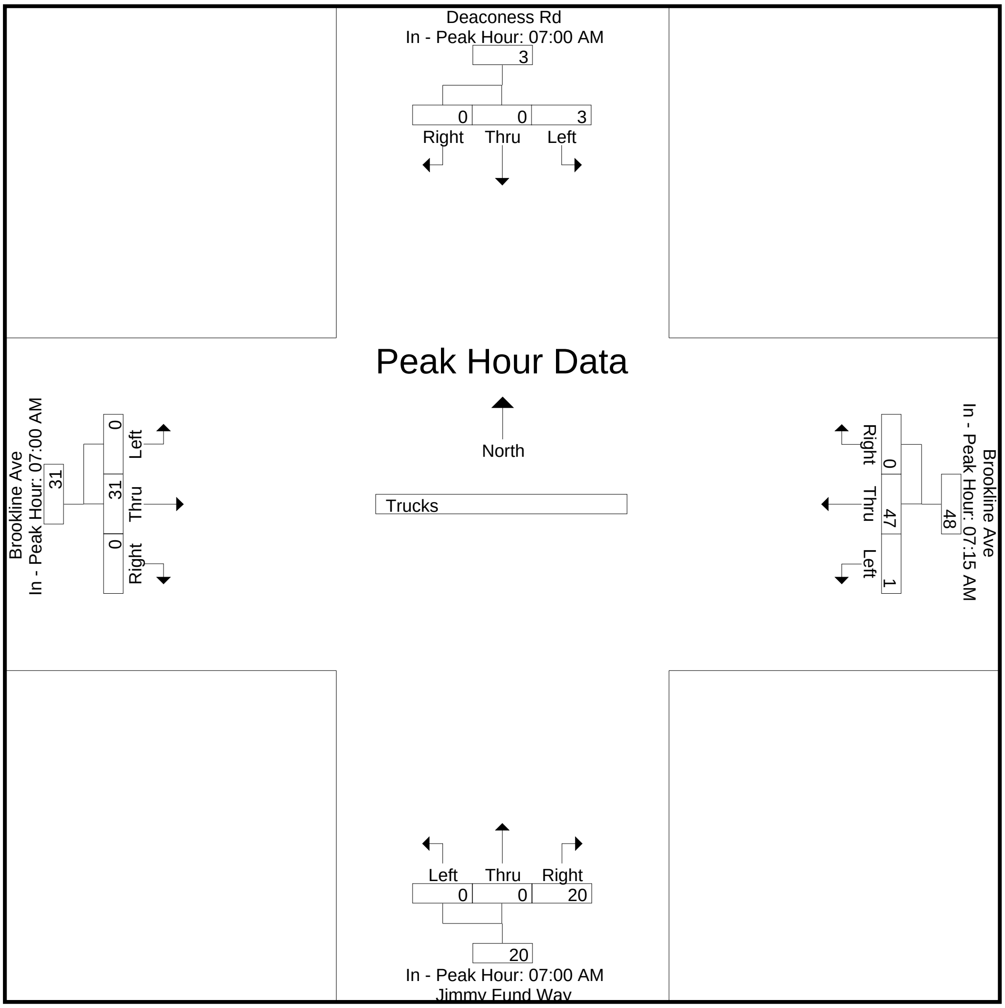
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	**14**	0	**14**	0	0	**6**	**6**	0	6	0	6
+15 mins.	**1**	0	0	**1**	**1**	13	0	14	0	0	2	2	0	7	0	7
+30 mins.	1	0	0	1	0	9	0	9	0	0	6	6	0	**10**	0	**10**
+45 mins.	1	0	0	1	0	11	0	11	0	0	6	6	0	8	0	8
Total Volume	3	0	0	3	1	47	0	48	0	0	20	20	0	31	0	31
% App. Total	100	0	0		2.1	97.9	0		0	0	100		0	100	0	
PHF	.750	.000	.000	.750	.250	.839	.000	.857	.000	.000	.833	.833	.000	.775	.000	.775

Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

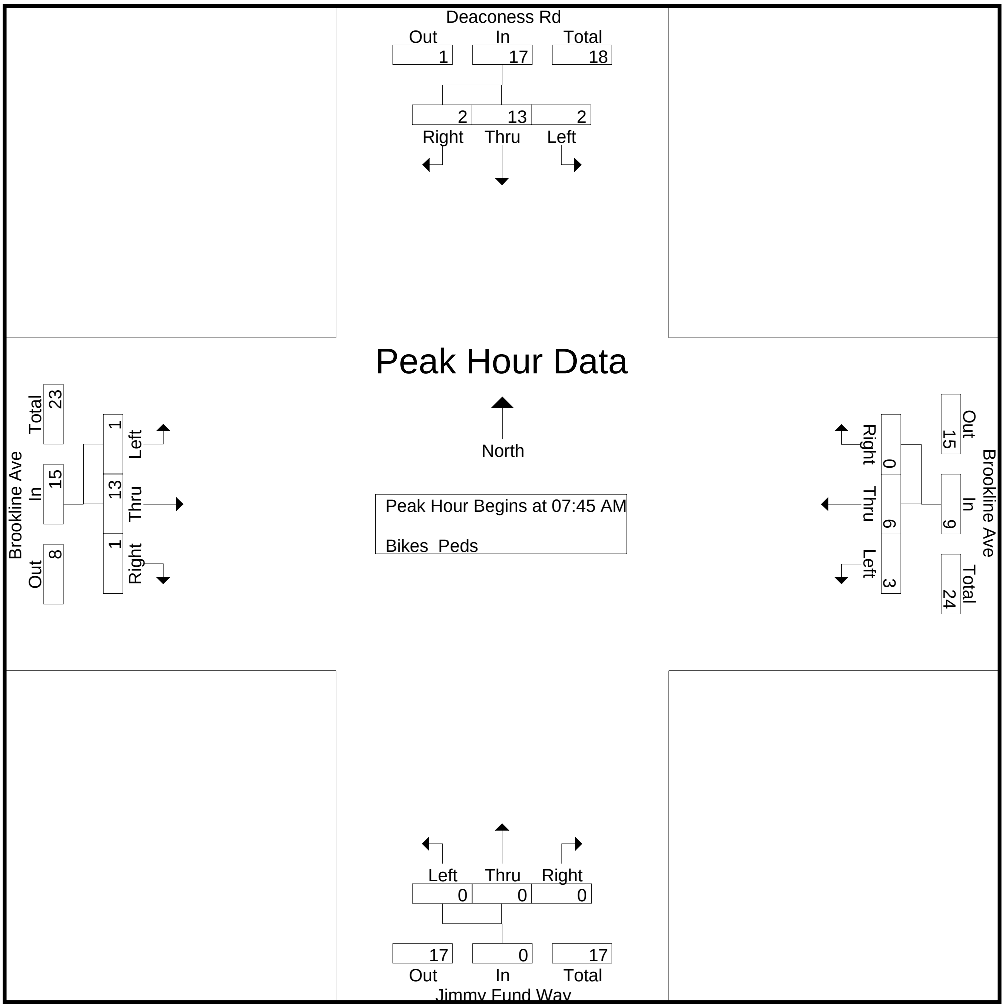
	Deaconess Rd From North				Brookline Ave From East				Jimmy Fund Way From South				Brookline Ave From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	1	0	26	0	3	0	13	0	0	1	28	0	0	2	28	95	7	102
07:15 AM	0	3	0	32	0	2	0	25	0	0	0	55	0	1	0	26	138	6	144
07:30 AM	0	4	0	43	0	1	0	15	0	0	0	45	0	2	0	35	138	7	145
07:45 AM	0	4	1	43	1	3	0	24	0	0	0	54	0	4	0	67	188	13	201
Total	0	12	1	144	1	9	0	77	0	0	1	182	0	7	2	156	559	33	592
08:00 AM	1	1	0	38	1	0	0	33	0	0	0	25	1	1	0	38	134	5	139
08:15 AM	0	6	0	26	1	2	0	18	0	0	0	34	0	4	1	22	100	14	114
08:30 AM	1	2	1	41	0	1	0	23	0	0	0	51	0	4	0	39	154	9	163
08:45 AM	2	1	1	43	1	2	0	28	0	0	0	83	0	4	0	28	182	11	193
Total	4	10	2	148	3	5	0	102	0	0	0	193	1	13	1	127	570	39	609
Grand Total	4	22	3	292	4	14	0	179	0	0	1	375	1	20	3	283	1129	72	1201
Apprch %	13.8	75.9	10.3		22.2	77.8	0		0	0	100		4.2	83.3	12.5				
Total %	5.6	30.6	4.2		5.6	19.4	0		0	0	1.4		1.4	27.8	4.2		94	6	

	Deaconess Rd From North				Brookline Ave From East				Jimmy Fund Way From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	4	**1**	5	**1**	**3**	0	**4**	0	0	0	0	0	**4**	0	4	13
08:00 AM	**1**	1	0	2	1	0	0	1	0	0	0	0	**1**	1	0	2	5
08:15 AM	0	**6**	0	**6**	1	2	0	3	0	0	0	0	0	4	**1**	**5**	**14**
08:30 AM	1	2	1	4	0	1	0	1	0	0	0	0	0	4	0	4	9
Total Volume	2	13	2	17	3	6	0	9	0	0	0	0	1	13	1	15	41
% App. Total	11.8	76.5	11.8		33.3	66.7	0		0	0	0		6.7	86.7	6.7		
PHF	.500	.542	.500	.708	.750	.500	.000	.563	.000	.000	.000	.000	.250	.813	.250	.750	.732

Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 2



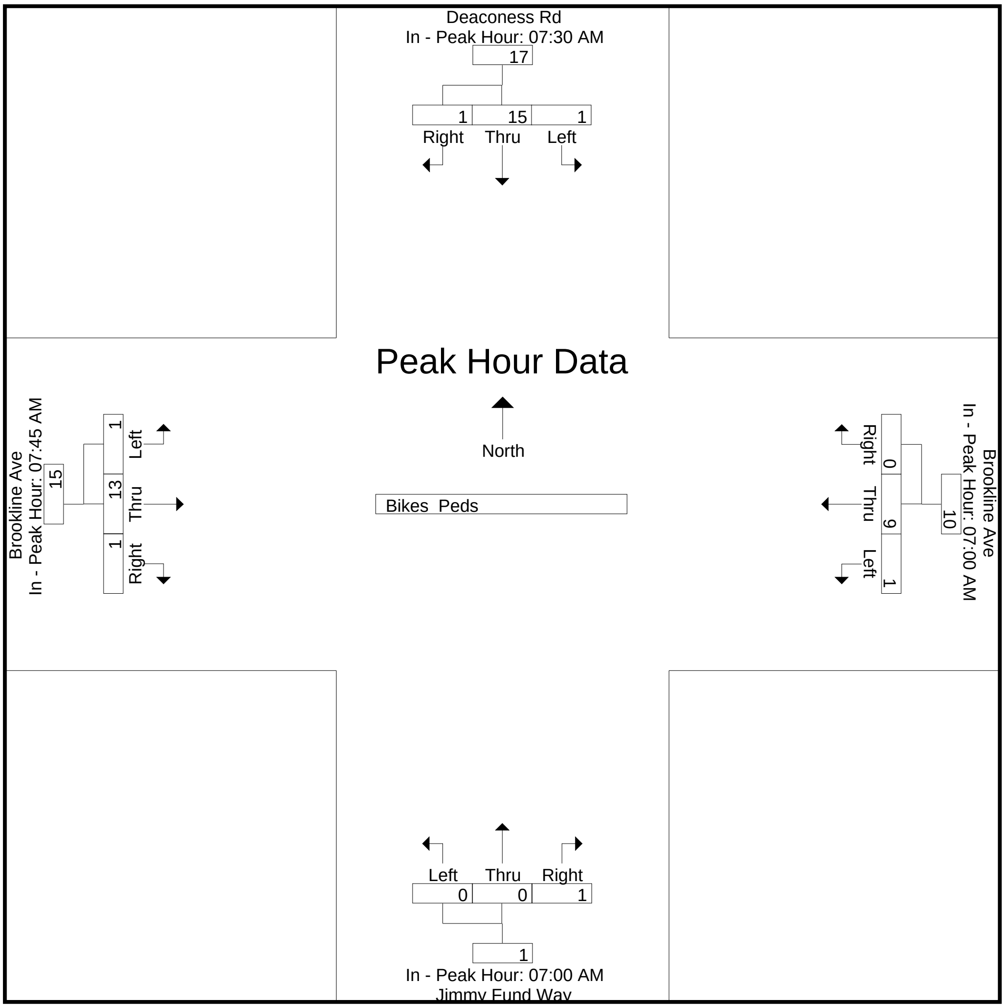
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:00 AM				07:00 AM				07:45 AM			
+0 mins.	0	4	0	4	0	**3**	0	3	0	0	**1**	**1**	0	**4**	0	4
+15 mins.	0	4	**1**	5	0	2	0	2	0	0	0	0	**1**	1	0	2
+30 mins.	**1**	1	0	2	0	1	0	1	0	0	0	0	0	4	**1**	**5**
+45 mins.	0	**6**	0	**6**	**1**	3	0	**4**	0	0	0	0	0	4	0	4
Total Volume	1	15	1	17	1	9	0	10	0	0	1	1	1	13	1	15
% App. Total	5.9	88.2	5.9		10	90	0		0	0	100		6.7	86.7	6.7	
PHF	.250	.625	.250	.708	.250	.750	.000	.625	.000	.000	.250	.250	.250	.813	.250	.750

Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

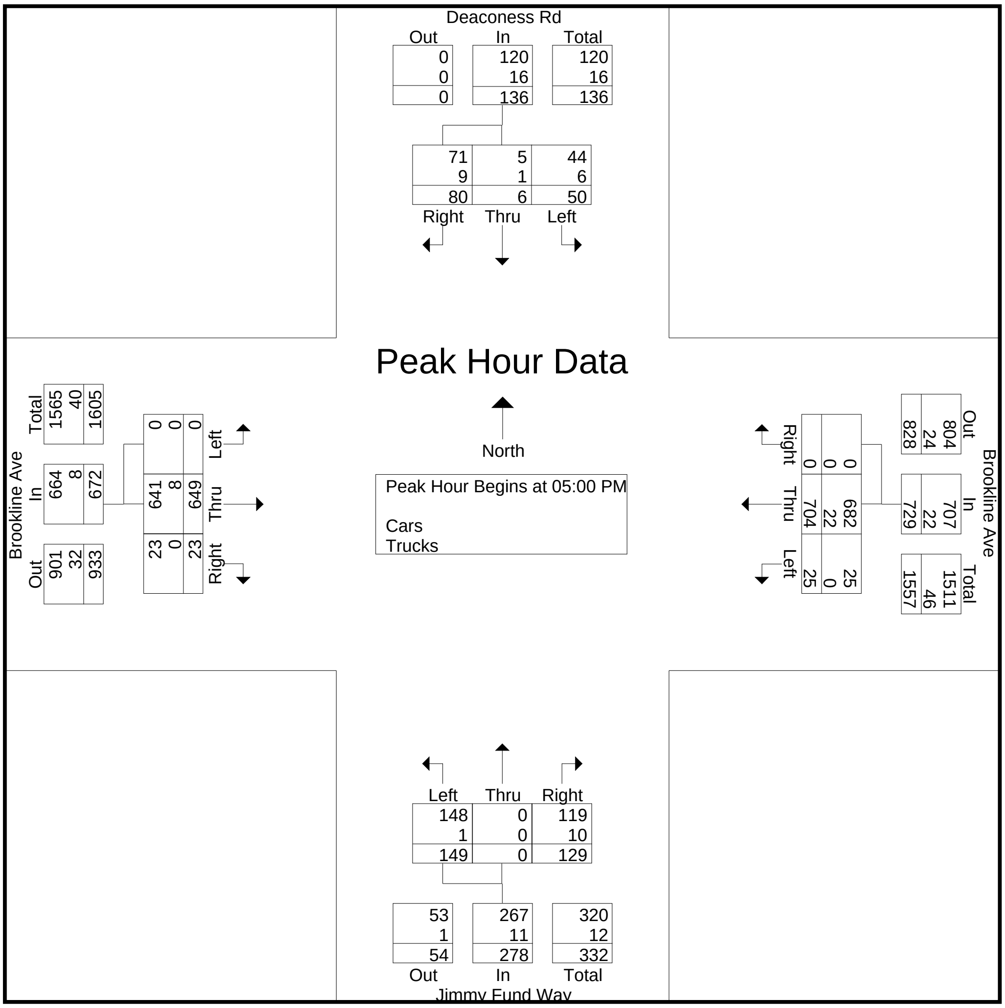
	Deaconess Rd From North			Brookline Ave From East			Jimmy Fund Way From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	17	2	14	4	177	0	26	0	47	0	147	6	440
04:15 PM	20	7	19	11	141	0	41	0	30	0	165	10	444
04:30 PM	19	1	15	6	180	0	25	0	30	0	135	10	421
04:45 PM	17	2	24	5	187	0	34	0	39	0	153	7	468
Total	73	12	72	26	685	0	126	0	146	0	600	33	1773
05:00 PM	9	1	22	7	135	0	48	0	47	0	131	3	403
05:15 PM	13	1	24	8	195	0	36	0	30	0	166	10	483
05:30 PM	16	2	17	4	178	0	37	0	27	0	158	7	446
05:45 PM	12	2	17	6	196	0	28	0	25	0	194	3	483
Total	50	6	80	25	704	0	149	0	129	0	649	23	1815
Grand Total	123	18	152	51	1389	0	275	0	275	0	1249	56	3588
Apprch %	42	6.1	51.9	3.5	96.5	0	50	0	50	0	95.7	4.3	
Total %	3.4	0.5	4.2	1.4	38.7	0	7.7	0	7.7	0	34.8	1.6	
Cars	108	17	134	51	1341	0	274	0	255	0	1232	56	3468
% Cars	87.8	94.4	88.2	100	96.5	0	99.6	0	92.7	0	98.6	100	96.7
Trucks	15	1	18	0	48	0	1	0	20	0	17	0	120
% Trucks	12.2	5.6	11.8	0	3.5	0	0.4	0	7.3	0	1.4	0	3.3

	Deaconess Rd From North				Brookline Ave From East				Jimmy Fund Way From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	9	1	22	32	7	135	0	142	**48**	0	**47**	**95**	0	131	3	134	403
05:15 PM	13	1	**24**	**38**	**8**	195	0	**203**	36	0	30	66	0	166	**10**	176	**483**
05:30 PM	**16**	**2**	17	35	4	178	0	182	37	0	27	64	0	158	7	165	446
05:45 PM	12	2	17	31	6	**196**	0	202	28	0	25	53	0	**194**	3	**197**	483
Total Volume	50	6	80	136	25	704	0	729	149	0	129	278	0	649	23	672	1815
% App. Total	36.8	4.4	58.8		3.4	96.6	0		53.6	0	46.4		0	96.6	3.4		
PHF	.781	.750	.833	.895	.781	.898	.000	.898	.776	.000	.686	.732	.000	.836	.575	.853	.939
Cars	44	5	71	120	25	682	0	707	148	0	119	267	0	641	23	664	1758
% Cars	88.0	83.3	88.8	88.2	100	96.9	0	97.0	99.3	0	92.2	96.0	0	98.8	100	98.8	96.9
Trucks	6	1	9	16	0	22	0	22	1	0	10	11	0	8	0	8	57
% Trucks	12.0	16.7	11.3	11.8	0	3.1	0	3.0	0.7	0	7.8	4.0	0	1.2	0	1.2	3.1

Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 2



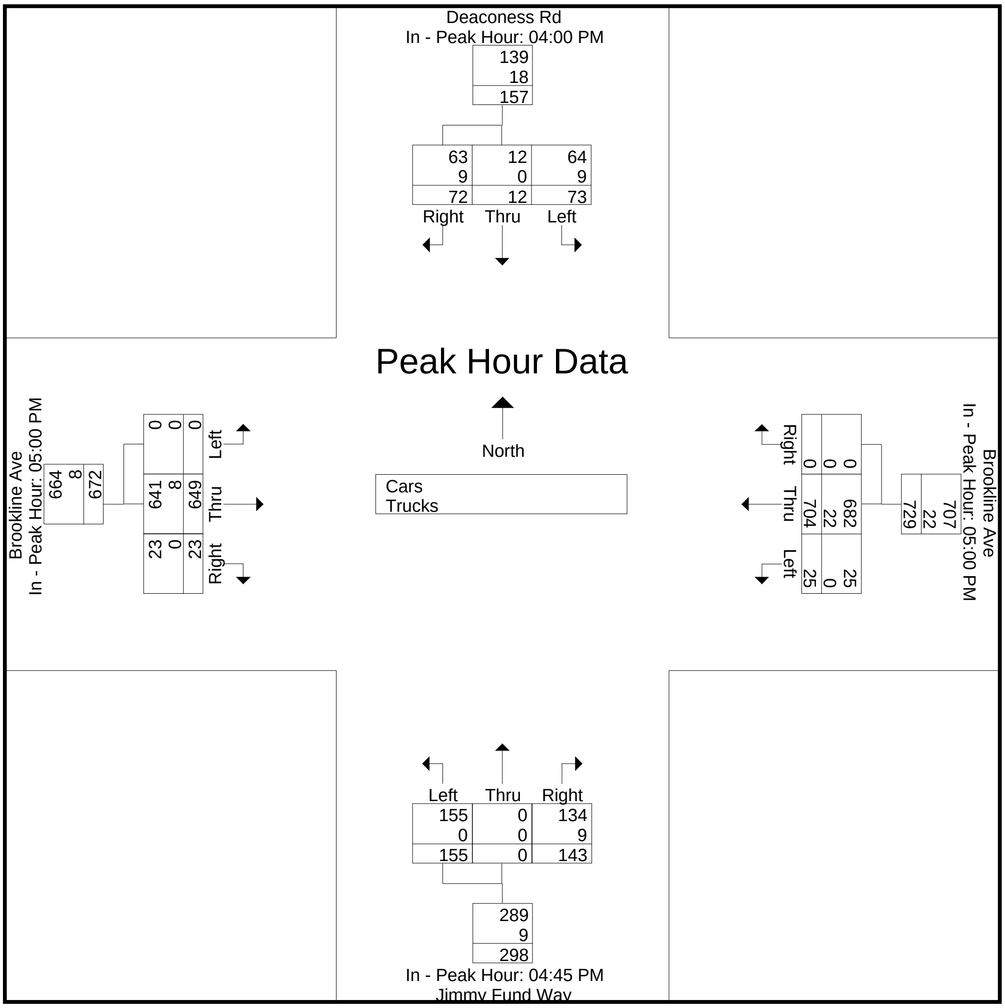
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:45 PM				05:00 PM			
+0 mins.	17	2	14	33	7	135	0	142	34	0	39	73	0	131	3	134
+15 mins.	**20**	**7**	19	**46**	**8**	195	0	**203**	**48**	0	**47**	**95**	0	166	**10**	176
+30 mins.	19	1	15	35	4	178	0	182	36	0	30	66	0	158	7	165
+45 mins.	17	2	**24**	43	6	**196**	0	202	37	0	27	64	0	**194**	3	**197**
Total Volume	73	12	72	157	25	704	0	729	155	0	143	298	0	649	23	672
% App. Total	46.5	7.6	45.9		3.4	96.6	0		52	0	48		0	96.6	3.4	
PHF	.913	.429	.750	.853	.781	.898	.000	.898	.807	.000	.761	.784	.000	.836	.575	.853
Cars	64	12	63	139	25	682	0	707	155	0	134	289	0	641	23	664
% Cars	87.7	100	87.5	88.5	100	96.9	0	97	100	0	93.7	97	0	98.8	100	98.8
Trucks	9	0	9	18	0	22	0	22	0	0	9	9	0	8	0	8
% Trucks	12.3	0	12.5	11.5	0	3.1	0	3	0	0	6.3	3	0	1.2	0	1.2

Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

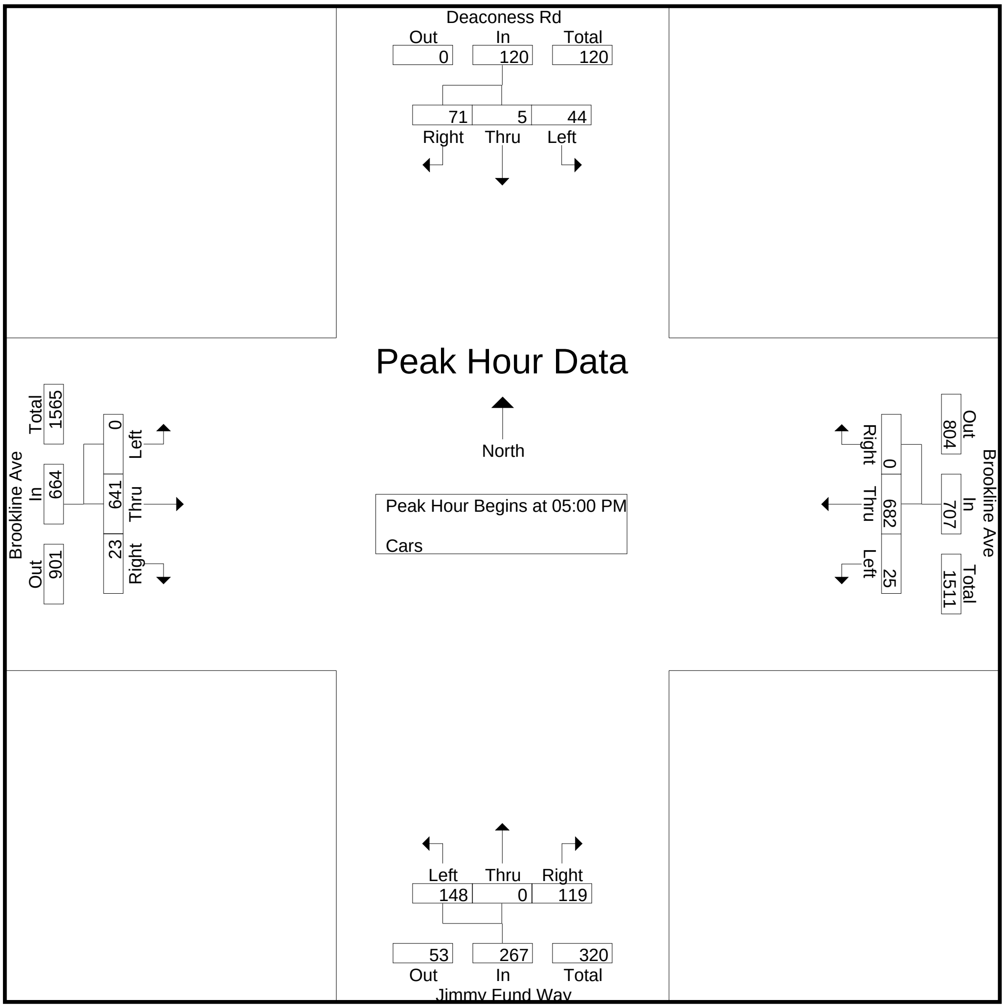
	Deaconess Rd From North			Brookline Ave From East			Jimmy Fund Way From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	15	2	11	4	172	0	26	0	44	0	145	6	425
04:15 PM	17	7	17	11	135	0	41	0	28	0	163	10	429
04:30 PM	17	1	13	6	173	0	25	0	28	0	133	10	406
04:45 PM	15	2	22	5	179	0	34	0	36	0	150	7	450
Total	64	12	63	26	659	0	126	0	136	0	591	33	1710
05:00 PM	7	1	20	7	130	0	48	0	45	0	128	3	389
05:15 PM	12	0	22	8	191	0	36	0	28	0	165	10	472
05:30 PM	14	2	14	4	171	0	37	0	25	0	156	7	430
05:45 PM	11	2	15	6	190	0	27	0	21	0	192	3	467
Total	44	5	71	25	682	0	148	0	119	0	641	23	1758
Grand Total	108	17	134	51	1341	0	274	0	255	0	1232	56	3468
Apprch %	41.7	6.6	51.7	3.7	96.3	0	51.8	0	48.2	0	95.7	4.3	
Total %	3.1	0.5	3.9	1.5	38.7	0	7.9	0	7.4	0	35.5	1.6	

	Deaconess Rd From North				Brookline Ave From East				Jimmy Fund Way From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	7	1	20	28	7	130	0	137	**48**	0	**45**	**93**	0	128	3	131	389
05:15 PM	12	0	**22**	**34**	**8**	**191**	0	**199**	36	0	28	64	0	165	**10**	175	**472**
05:30 PM	**14**	**2**	14	30	4	171	0	175	37	0	25	62	0	156	7	163	430
05:45 PM	11	2	15	28	6	190	0	196	27	0	21	48	0	**192**	3	**195**	467
Total Volume	44	5	71	120	25	682	0	707	148	0	119	267	0	641	23	664	1758
% App. Total	36.7	4.2	59.2		3.5	96.5	0		55.4	0	44.6		0	96.5	3.5		
PHF	.786	.625	.807	.882	.781	.893	.000	.888	.771	.000	.661	.718	.000	.835	.575	.851	.931

Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012



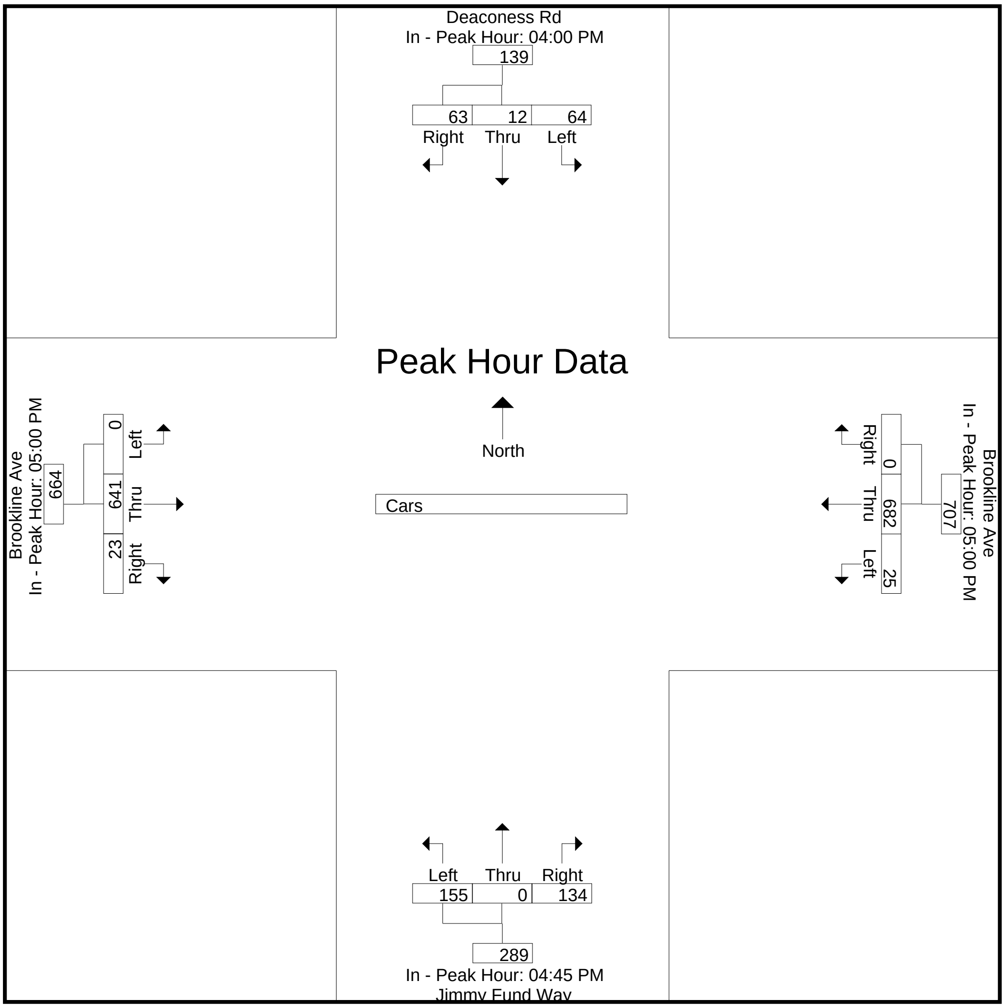
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:45 PM				05:00 PM			
+0 mins.	15	2	11	28	7	130	0	137	34	0	36	70	0	128	3	131
+15 mins.	**17**	**7**	17	**41**	**8**	**191**	0	**199**	**48**	0	**45**	**93**	0	165	**10**	175
+30 mins.	17	1	13	31	4	171	0	175	36	0	28	64	0	156	7	163
+45 mins.	15	2	**22**	39	6	190	0	196	37	0	25	62	0	**192**	3	**195**
Total Volume	64	12	63	139	25	682	0	707	155	0	134	289	0	641	23	664
% App. Total	46	8.6	45.3		3.5	96.5	0		53.6	0	46.4		0	96.5	3.5	
PHF	.941	.429	.716	.848	.781	.893	.000	.888	.807	.000	.744	.777	.000	.835	.575	.851

Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 1

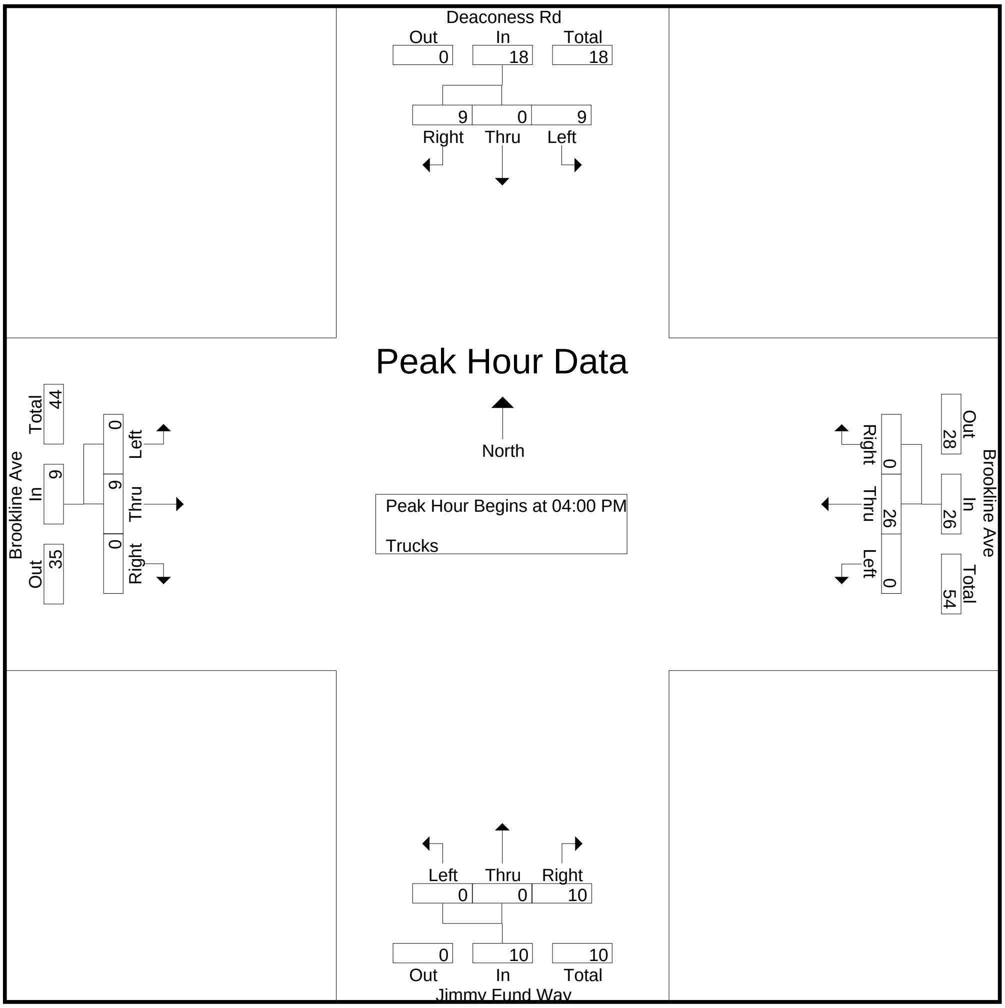
Groups Printed- Trucks

	Deaconess Rd From North			Brookline Ave From East			Jimmy Fund Way From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	2	0	3	0	5	0	0	0	3	0	2	0	15
04:15 PM	3	0	2	0	6	0	0	0	2	0	2	0	15
04:30 PM	2	0	2	0	7	0	0	0	2	0	2	0	15
04:45 PM	2	0	2	0	8	0	0	0	3	0	3	0	18
Total	9	0	9	0	26	0	0	0	10	0	9	0	63
05:00 PM	2	0	2	0	5	0	0	0	2	0	3	0	14
05:15 PM	1	1	2	0	4	0	0	0	2	0	1	0	11
05:30 PM	2	0	3	0	7	0	0	0	2	0	2	0	16
05:45 PM	1	0	2	0	6	0	1	0	4	0	2	0	16
Total	6	1	9	0	22	0	1	0	10	0	8	0	57
Grand Total	15	1	18	0	48	0	1	0	20	0	17	0	120
Apprch %	44.1	2.9	52.9	0	100	0	4.8	0	95.2	0	100	0	
Total %	12.5	0.8	15	0	40	0	0.8	0	16.7	0	14.2	0	

	Deaconess Rd From North				Brookline Ave From East				Jimmy Fund Way From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	2	0	**3**	**5**	0	5	0	5	0	0	**3**	**3**	0	2	0	2	15
04:15 PM	**3**	0	2	5	0	6	0	6	0	0	2	2	0	2	0	2	15
04:30 PM	2	0	2	4	0	7	0	7	0	0	2	2	0	2	0	2	15
04:45 PM	2	0	2	4	0	**8**	0	**8**	0	0	3	3	0	**3**	0	**3**	**18**
Total Volume	9	0	9	18	0	26	0	26	0	0	10	10	0	9	0	9	63
% App. Total	50	0	50		0	100	0		0	0	100		0	100	0		
PHF	.750	.000	.750	.900	.000	.813	.000	.813	.000	.000	.833	.833	.000	.750	.000	.750	.875

Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund	File Name : 94970012
E/W Street : Brookline Avenue	Site Code : 94970012
City/State : Boston, MA	Start Date : 5/16/2012
Weather : Drizzle	Page No : 2



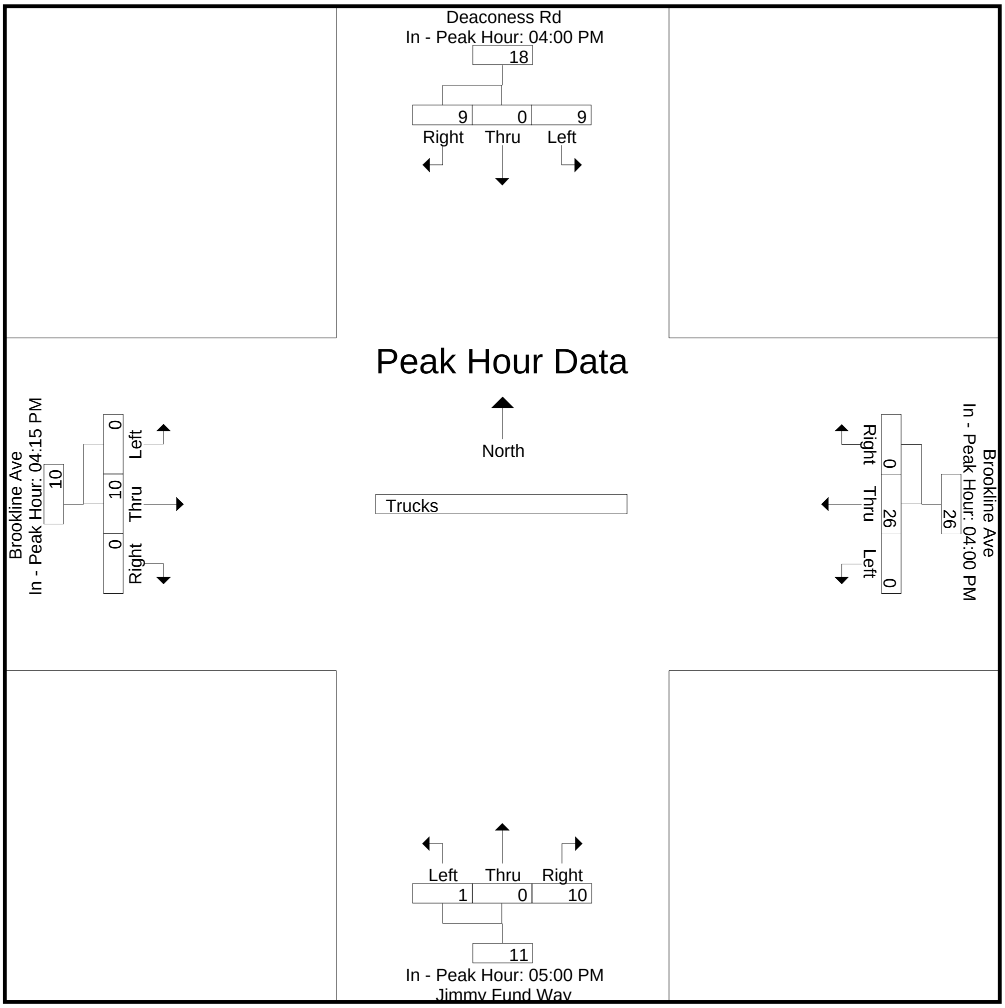
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				05:00 PM				04:15 PM			
+0 mins.	2	0	**3**	**5**	0	5	0	5	0	0	2	2	0	2	0	2
+15 mins.	**3**	0	2	5	0	6	0	6	0	0	2	2	0	2	0	2
+30 mins.	2	0	2	4	0	7	0	7	0	0	2	2	0	**3**	0	**3**
+45 mins.	2	0	2	4	0	**8**	0	**8**	**1**	0	**4**	**5**	0	3	0	3
Total Volume	9	0	9	18	0	26	0	26	1	0	10	11	0	10	0	10
% App. Total	50	0	50		0	100	0		9.1	0	90.9		0	100	0	
PHF	.750	.000	.750	.900	.000	.813	.000	.813	.250	.000	.625	.550	.000	.833	.000	.833

Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

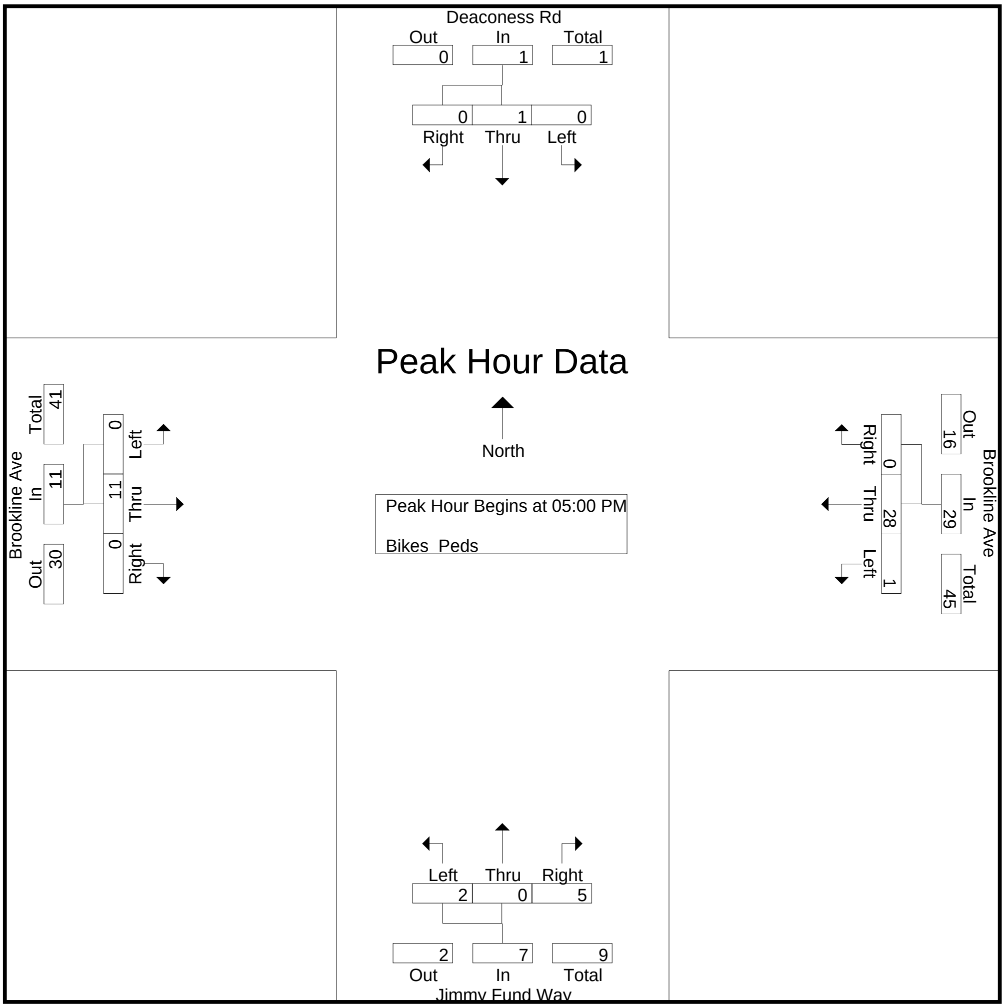
	Deaconess Rd From North				Brookline Ave From East				Jimmy Fund Way From South				Brookline Ave From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	1	1	0	25	0	1	0	26	1	0	1	47	0	2	0	26	124	7	131
04:15 PM	0	0	0	28	0	3	0	37	1	0	1	54	0	0	0	24	143	5	148
04:30 PM	1	0	0	32	0	4	0	47	0	0	0	56	0	2	0	31	166	7	173
04:45 PM	1	0	0	31	0	1	0	23	0	0	0	76	0	2	0	23	153	4	157
Total	3	1	0	116	0	9	0	133	2	0	2	233	0	6	0	104	586	23	609
05:00 PM	0	0	0	38	0	7	0	46	0	0	2	87	0	0	0	47	218	9	227
05:15 PM	0	0	0	45	1	3	0	33	0	0	0	62	0	3	0	40	180	7	187
05:30 PM	0	1	0	26	0	14	0	40	2	0	1	48	0	2	0	27	141	20	161
05:45 PM	0	0	0	31	0	4	0	20	0	0	2	54	0	6	0	31	136	12	148
Total	0	1	0	140	1	28	0	139	2	0	5	251	0	11	0	145	675	48	723
Grand Total	3	2	0	256	1	37	0	272	4	0	7	484	0	17	0	249	1261	71	1332
Apprch %	60	40	0		2.6	97.4	0		36.4	0	63.6		0	100	0				
Total %	4.2	2.8	0		1.4	52.1	0		5.6	0	9.9		0	23.9	0		94.7	5.3	

	Deaconess Rd From North				Brookline Ave From East				Jimmy Fund Way From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	7	0	7	0	0	**2**	2	0	0	0	0	9
05:15 PM	0	0	0	0	**1**	3	0	4	0	0	0	0	0	3	0	3	7
05:30 PM	0	**1**	0	**1**	0	**14**	0	**14**	**2**	0	1	**3**	0	2	0	2	**20**
05:45 PM	0	0	0	0	0	4	0	4	0	0	2	2	0	**6**	0	**6**	12
Total Volume	0	1	0	1	1	28	0	29	2	0	5	7	0	11	0	11	48
% App. Total	0	100	0		3.4	96.6	0		28.6	0	71.4		0	100	0		
PHF	.000	.250	.000	.250	.250	.500	.000	.518	.250	.000	.625	.583	.000	.458	.000	.458	.600

Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 2



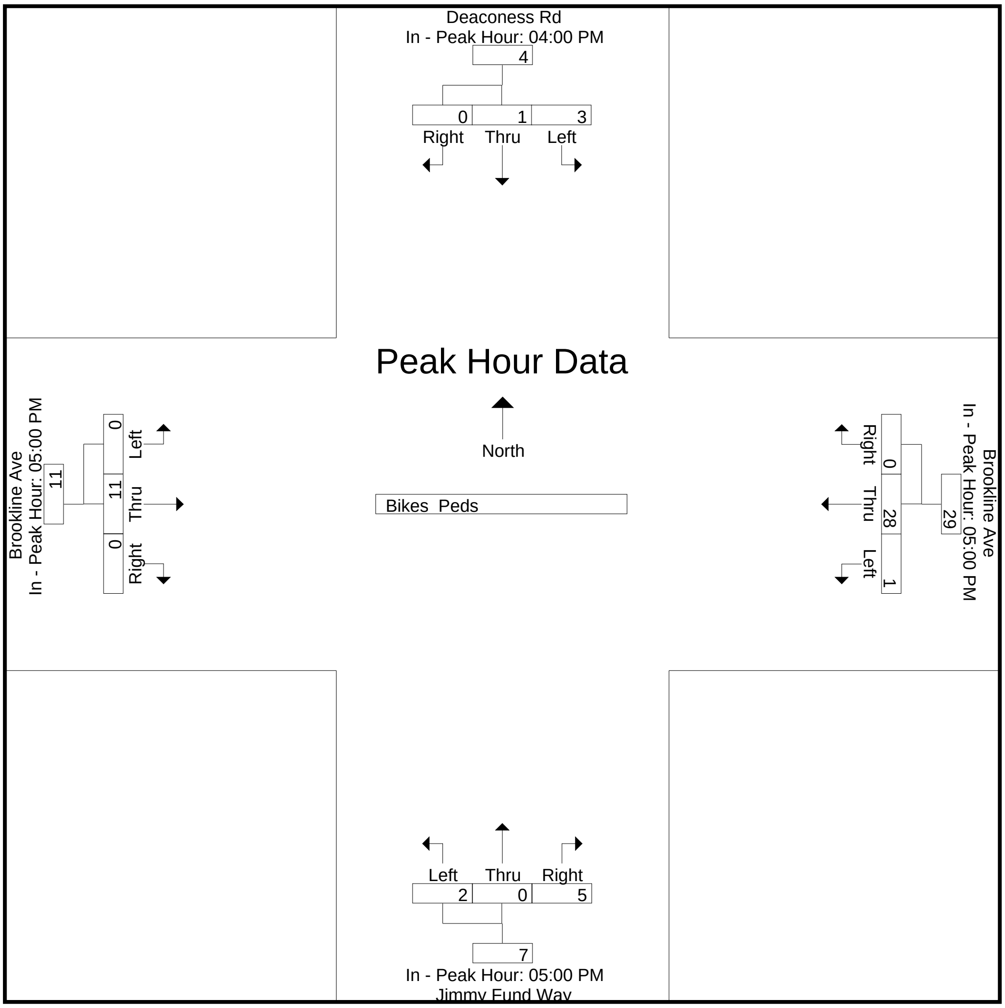
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	**1**	**1**	0	**2**	0	7	0	7	0	0	**2**	2	0	0	0	0
+15 mins.	0	0	0	0	**1**	3	0	4	0	0	0	0	0	3	0	3
+30 mins.	1	0	0	1	0	**14**	0	**14**	**2**	0	1	**3**	0	2	0	2
+45 mins.	1	0	0	1	0	4	0	4	0	0	2	2	0	**6**	0	**6**
Total Volume	3	1	0	4	1	28	0	29	2	0	5	7	0	11	0	11
% App. Total	75	25	0		3.4	96.6	0		28.6	0	71.4		0	100	0	
PHF	.750	.250	.000	.500	.250	.500	.000	.518	.250	.000	.625	.583	.000	.458	.000	.458

Accurate Counts
978-664-2565

N/S Street : Deaconess / Jimmy Fund
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970012
Site Code : 94970012
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 1

Groups Printed- Cars - Trucks

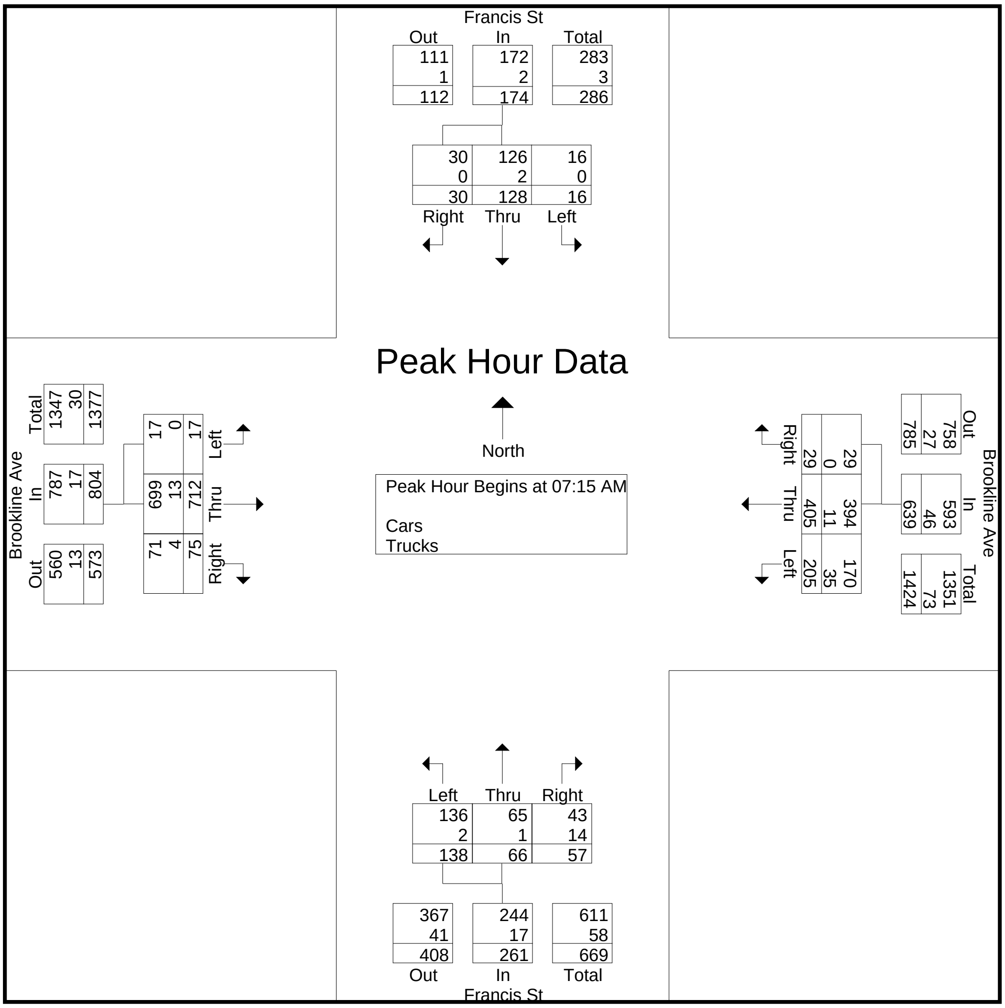
	Francis St From North			Brookline Ave From East			Francis St From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	2	20	6	50	89	3	27	13	7	3	153	23	396
07:15 AM	4	29	9	53	101	11	25	16	21	3	159	19	450
07:30 AM	2	28	8	50	109	7	35	14	10	3	176	14	456
07:45 AM	4	41	5	49	113	5	38	20	19	7	198	22	521
Total	12	118	28	202	412	26	125	63	57	16	686	78	1823
08:00 AM	6	30	8	53	82	6	40	16	7	4	179	20	451
08:15 AM	14	27	6	46	64	10	26	16	13	3	155	20	400
08:30 AM	9	38	7	40	79	11	35	23	12	9	105	13	381
08:45 AM	12	38	6	39	70	12	32	19	16	8	155	25	432
Total	41	133	27	178	295	39	133	74	48	24	594	78	1664
Grand Total	53	251	55	380	707	65	258	137	105	40	1280	156	3487
Apprch %	14.8	69.9	15.3	33	61.4	5.6	51.6	27.4	21	2.7	86.7	10.6	
Total %	1.5	7.2	1.6	10.9	20.3	1.9	7.4	3.9	3	1.1	36.7	4.5	
Cars	53	249	55	314	682	65	254	136	87	39	1255	152	3341
% Cars	100	99.2	100	82.6	96.5	100	98.4	99.3	82.9	97.5	98	97.4	95.8
Trucks	0	2	0	66	25	0	4	1	18	1	25	4	146
% Trucks	0	0.8	0	17.4	3.5	0	1.6	0.7	17.1	2.5	2	2.6	4.2

	Francis St From North				Brookline Ave From East				Francis St From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	4	29	**9**	42	**53**	101	**11**	165	25	16	**21**	62	3	159	19	181	450
07:30 AM	2	28	8	38	50	109	7	166	35	14	10	59	3	176	14	193	456
07:45 AM	4	**41**	5	**50**	49	**113**	5	**167**	38	**20**	19	**77**	**7**	**198**	**22**	**227**	**521**
08:00 AM	**6**	30	8	44	53	82	6	141	**40**	16	7	63	4	179	20	203	451
Total Volume	16	128	30	174	205	405	29	639	138	66	57	261	17	712	75	804	1878
% App. Total	9.2	73.6	17.2		32.1	63.4	4.5		52.9	25.3	21.8		2.1	88.6	9.3		
PHF	.667	.780	.833	.870	.967	.896	.659	.957	.863	.825	.679	.847	.607	.899	.852	.885	.901
Cars	16	126	30	172	170	394	29	593	136	65	43	244	17	699	71	787	1796
% Cars	100	98.4	100	98.9	82.9	97.3	100	92.8	98.6	98.5	75.4	93.5	100	98.2	94.7	97.9	95.6
Trucks	0	2	0	2	35	11	0	46	2	1	14	17	0	13	4	17	82
% Trucks	0	1.6	0	1.1	17.1	2.7	0	7.2	1.4	1.5	24.6	6.5	0	1.8	5.3	2.1	4.4

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 2



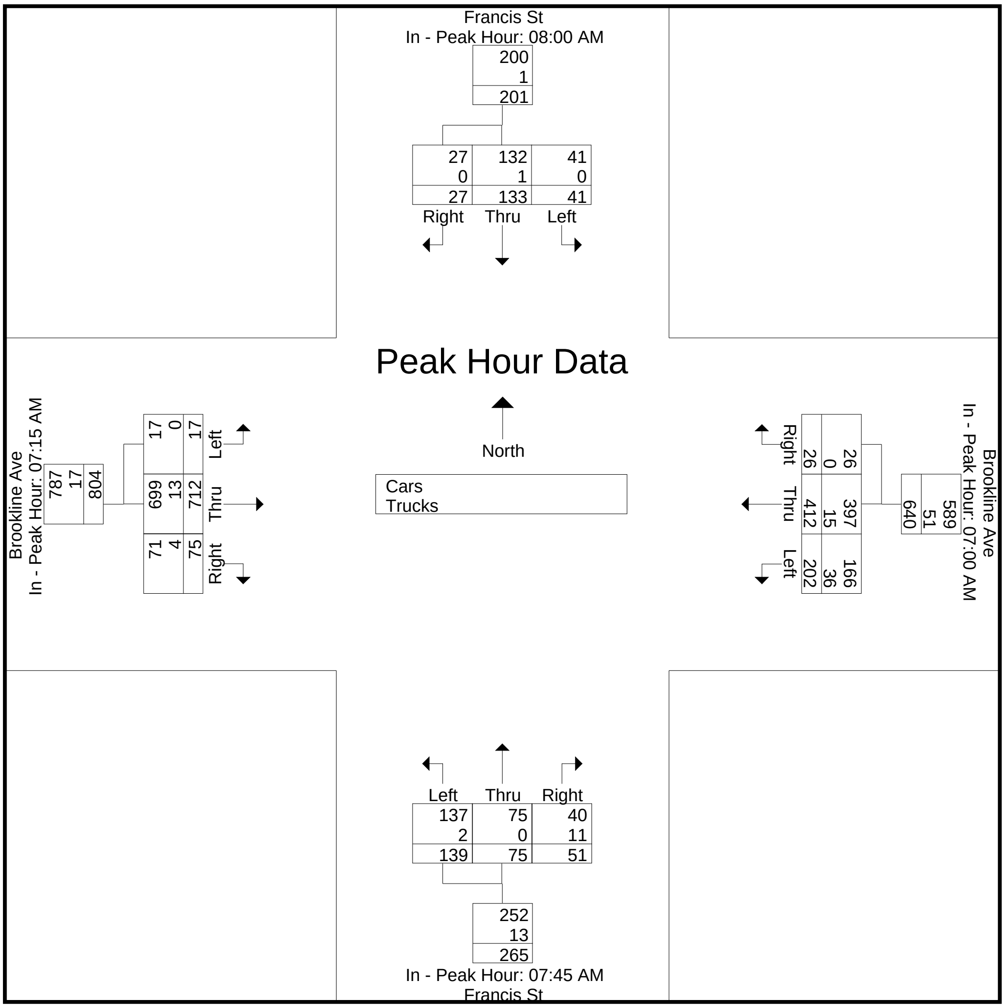
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:00 AM				07:45 AM				07:15 AM			
+0 mins.	6	30	**8**	44	50	89	3	142	38	20	**19**	**77**	3	159	19	181
+15 mins.	**14**	27	6	47	**53**	101	**11**	165	**40**	16	7	63	3	176	14	193
+30 mins.	9	**38**	7	54	50	109	7	166	26	16	13	55	**7**	**198**	**22**	**227**
+45 mins.	12	38	6	**56**	49	**113**	5	**167**	35	**23**	12	70	4	179	20	203
Total Volume	41	133	27	201	202	412	26	640	139	75	51	265	17	712	75	804
% App. Total	20.4	66.2	13.4		31.6	64.4	4.1		52.5	28.3	19.2		2.1	88.6	9.3	
PHF	.732	.875	.844	.897	.953	.912	.591	.958	.869	.815	.671	.860	.607	.899	.852	.885
Cars	41	132	27	200	166	397	26	589	137	75	40	252	17	699	71	787
% Cars	100	99.2	100	99.5	82.2	96.4	100	92	98.6	100	78.4	95.1	100	98.2	94.7	97.9
Trucks	0	1	0	1	36	15	0	51	2	0	11	13	0	13	4	17
% Trucks	0	0.8	0	0.5	17.8	3.6	0	8	1.4	0	21.6	4.9	0	1.8	5.3	2.1

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 1

Groups Printed- Cars

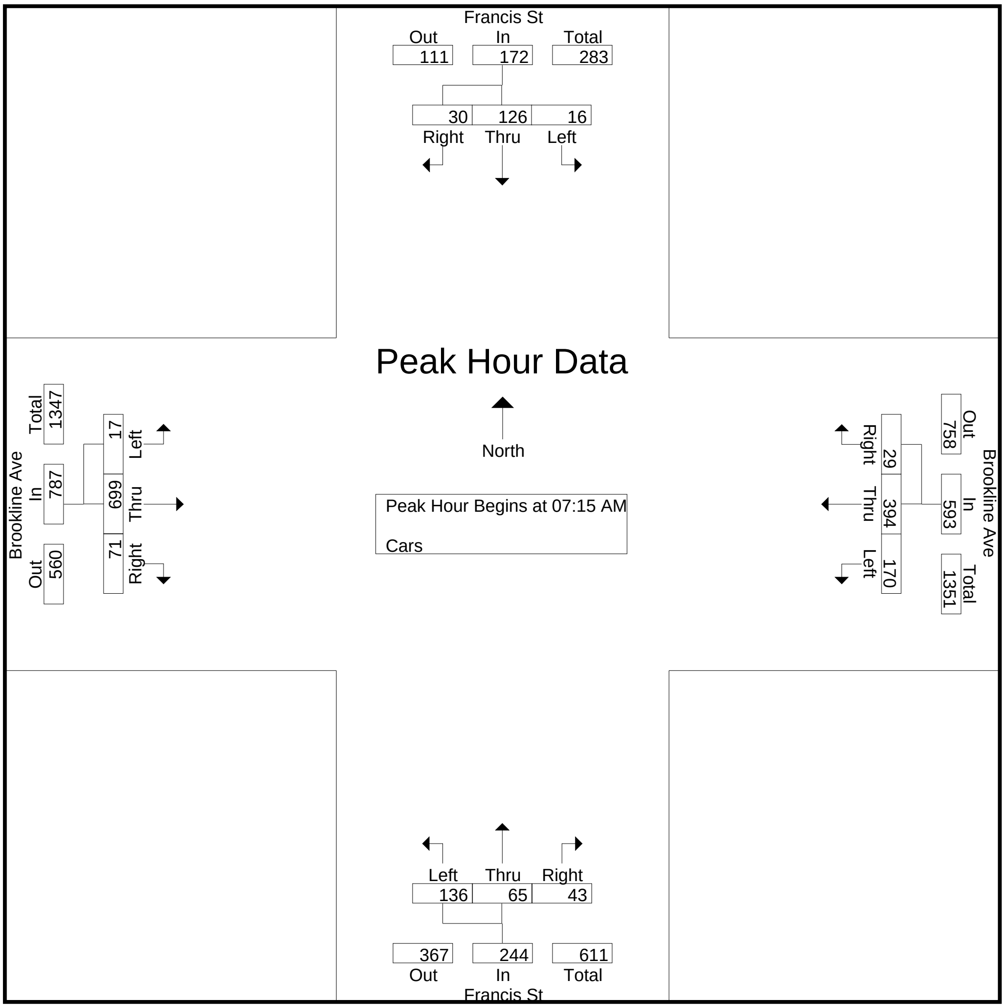
	Francis St From North			Brookline Ave From East			Francis St From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	2	20	6	41	83	3	26	13	6	3	150	23	376
07:15 AM	4	28	9	44	98	11	24	15	18	3	154	17	425
07:30 AM	2	28	8	40	105	7	35	14	8	3	173	12	435
07:45 AM	4	41	5	41	111	5	38	20	13	7	196	22	503
Total	12	117	28	166	397	26	123	62	45	16	673	74	1739
08:00 AM	6	29	8	45	80	6	39	16	4	4	176	20	433
08:15 AM	14	27	6	38	63	10	26	16	12	3	152	20	387
08:30 AM	9	38	7	32	76	11	34	23	11	8	103	13	365
08:45 AM	12	38	6	33	66	12	32	19	15	8	151	25	417
Total	41	132	27	148	285	39	131	74	42	23	582	78	1602
Grand Total	53	249	55	314	682	65	254	136	87	39	1255	152	3341
Apprch %	14.8	69.7	15.4	29.6	64.3	6.1	53.2	28.5	18.2	2.7	86.8	10.5	
Total %	1.6	7.5	1.6	9.4	20.4	1.9	7.6	4.1	2.6	1.2	37.6	4.5	

	Francis St From North				Brookline Ave From East				Francis St From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	4	28	**9**	41	44	98	**11**	153	24	15	**18**	57	3	154	17	174	425
07:30 AM	2	28	8	38	40	105	7	152	35	14	8	57	3	173	12	188	435
07:45 AM	4	**41**	5	**50**	41	**111**	5	**157**	38	**20**	13	**71**	**7**	**196**	**22**	**225**	**503**
08:00 AM	**6**	29	8	43	**45**	80	6	131	**39**	16	4	59	4	176	20	200	433
Total Volume	16	126	30	172	170	394	29	593	136	65	43	244	17	699	71	787	1796
% App. Total	9.3	73.3	17.4		28.7	66.4	4.9		55.7	26.6	17.6		2.2	88.8	9		
PHF	.667	.768	.833	.860	.944	.887	.659	.944	.872	.813	.597	.859	.607	.892	.807	.874	.893

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 2



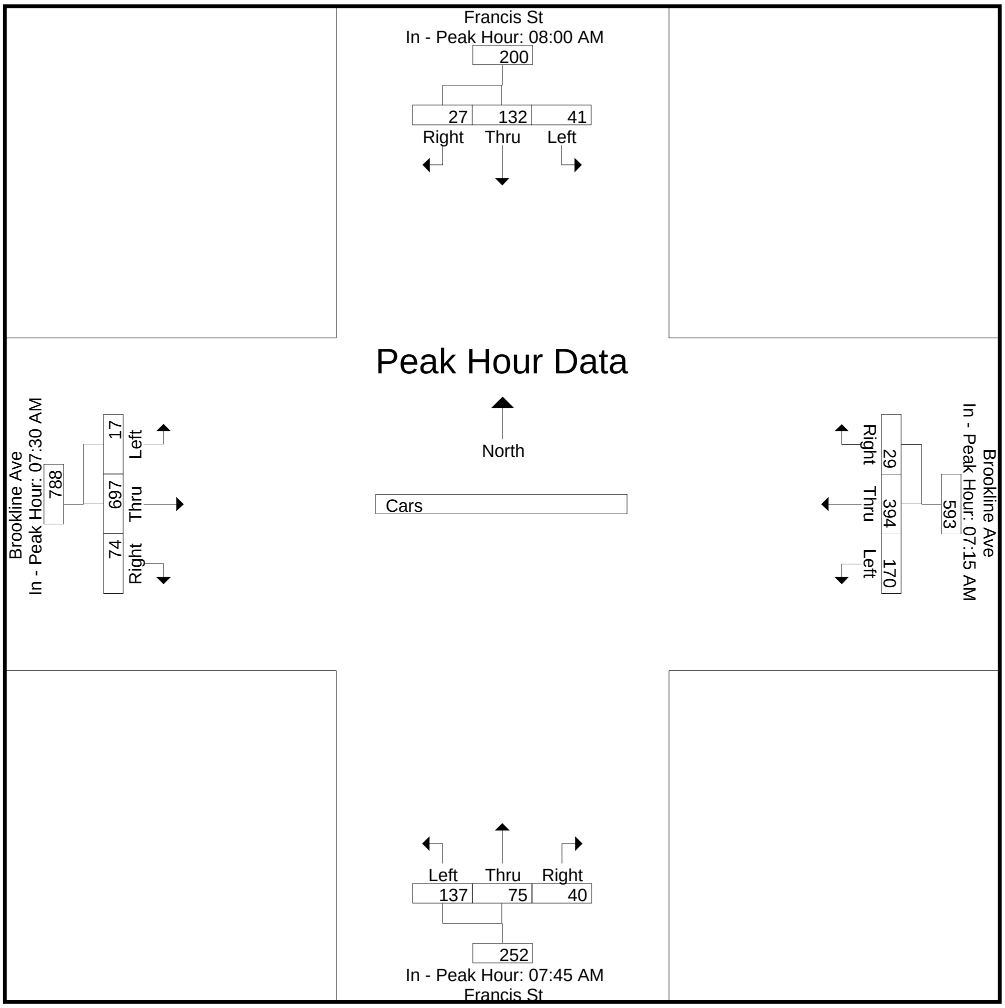
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:15 AM				07:45 AM				07:30 AM			
+0 mins.	6	29	**8**	43	44	98	**11**	153	38	20	**13**	**71**	3	173	12	188
+15 mins.	**14**	27	6	47	40	105	7	152	**39**	16	4	59	**7**	**196**	**22**	**225**
+30 mins.	9	**38**	7	54	41	**111**	5	**157**	26	16	12	54	4	176	20	200
+45 mins.	12	38	6	**56**	**45**	80	6	131	34	**23**	11	68	3	152	20	175
Total Volume	41	132	27	200	170	394	29	593	137	75	40	252	17	697	74	788
% App. Total	20.5	66	13.5		28.7	66.4	4.9		54.4	29.8	15.9		2.2	88.5	9.4	
PHF	.732	.868	.844	.893	.944	.887	.659	.944	.878	.815	.769	.887	.607	.889	.841	.876

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 1

Groups Printed- Trucks

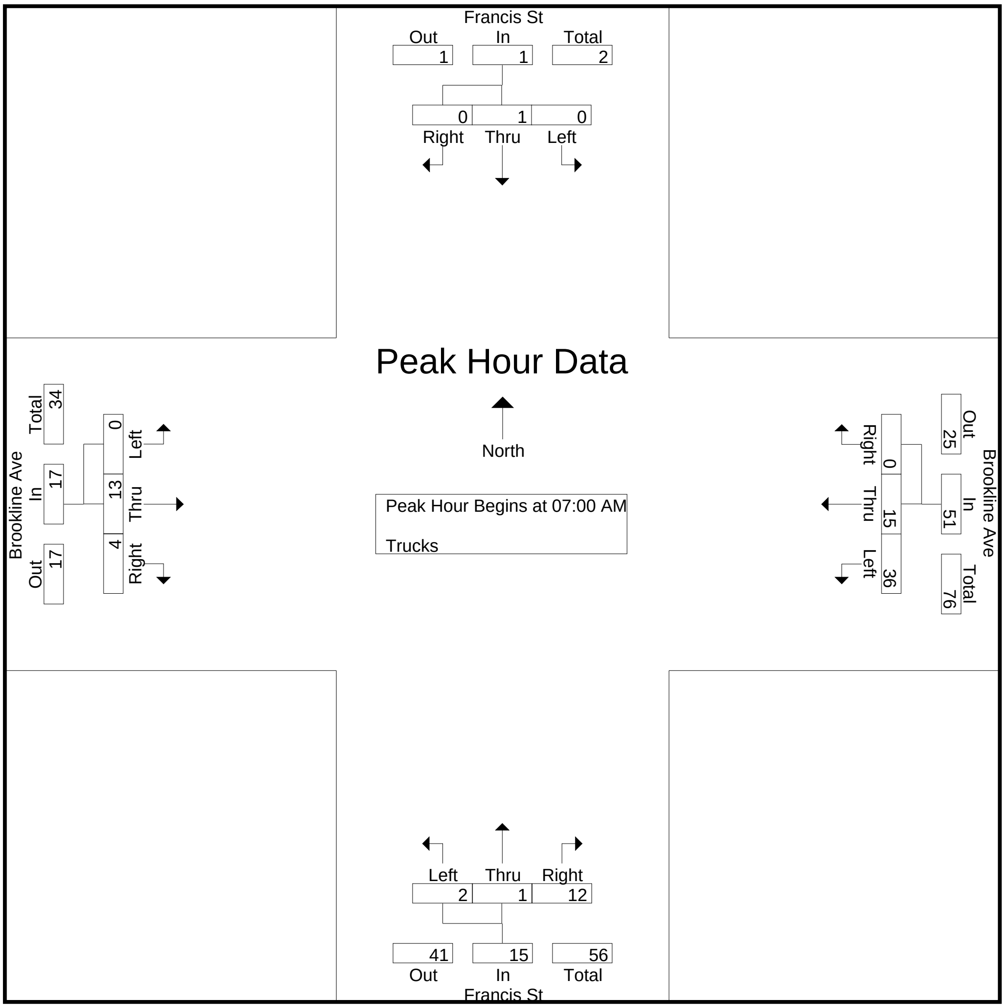
	Francis St From North			Brookline Ave From East			Francis St From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	9	6	0	1	0	1	0	3	0	20
07:15 AM	0	1	0	9	3	0	1	1	3	0	5	2	25
07:30 AM	0	0	0	10	4	0	0	0	2	0	3	2	21
07:45 AM	0	0	0	8	2	0	0	0	6	0	2	0	18
Total	0	1	0	36	15	0	2	1	12	0	13	4	84
08:00 AM	0	1	0	8	2	0	1	0	3	0	3	0	18
08:15 AM	0	0	0	8	1	0	0	0	1	0	3	0	13
08:30 AM	0	0	0	8	3	0	1	0	1	1	2	0	16
08:45 AM	0	0	0	6	4	0	0	0	1	0	4	0	15
Total	0	1	0	30	10	0	2	0	6	1	12	0	62
Grand Total	0	2	0	66	25	0	4	1	18	1	25	4	146
Apprch %	0	100	0	72.5	27.5	0	17.4	4.3	78.3	3.3	83.3	13.3	
Total %	0	1.4	0	45.2	17.1	0	2.7	0.7	12.3	0.7	17.1	2.7	

	Francis St From North				Brookline Ave From East				Francis St From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	9	**6**	0	**15**	**1**	0	1	2	0	3	0	3	20
07:15 AM	0	**1**	0	**1**	9	3	0	12	1	**1**	3	5	0	**5**	**2**	**7**	**25**
07:30 AM	0	0	0	0	**10**	4	0	14	0	0	2	2	0	3	2	5	21
07:45 AM	0	0	0	0	8	2	0	10	0	0	**6**	**6**	0	2	0	2	18
Total Volume	0	1	0	1	36	15	0	51	2	1	12	15	0	13	4	17	84
% App. Total	0	100	0		70.6	29.4	0		13.3	6.7	80		0	76.5	23.5		
PHF	.000	.250	.000	.250	.900	.625	.000	.850	.500	.250	.500	.625	.000	.650	.500	.607	.840

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 2

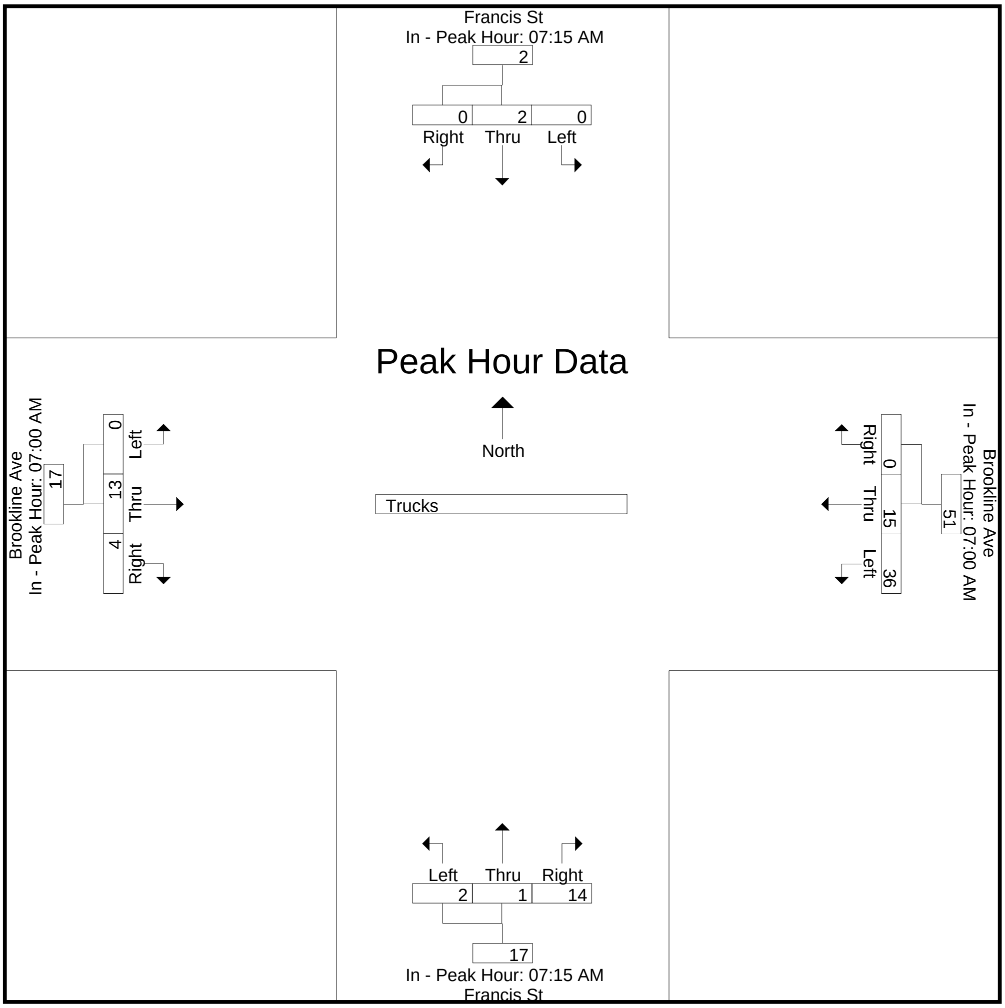


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:15 AM				07:00 AM			
+0 mins.	0	**1**	0	**1**	9	**6**	0	**15**	**1**	**1**	3	5	0	3	0	3
+15 mins.	0	0	0	0	9	3	0	12	0	0	2	2	0	**5**	**2**	**7**
+30 mins.	0	0	0	0	**10**	4	0	14	0	0	**6**	**6**	0	3	2	5
+45 mins.	0	1	0	1	8	2	0	10	1	0	3	4	0	2	0	2
Total Volume	0	2	0	2	36	15	0	51	2	1	14	17	0	13	4	17
% App. Total	0	100	0		70.6	29.4	0		11.8	5.9	82.4		0	76.5	23.5	
PHF	.000	.500	.000	.500	.900	.625	.000	.850	.500	.250	.583	.708	.000	.650	.500	.607

Accurate Counts
978-664-2565

N/S Street	: Francis Street	File Name	: 94970013
E/W Street	: Brookline Avenue	Site Code	: 94970013
City/State	: Boston, MA	Start Date	: 5/13/2012
Weather	: Drizzle	Page No	: 3



Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 1

Groups Printed- Bikes Peds

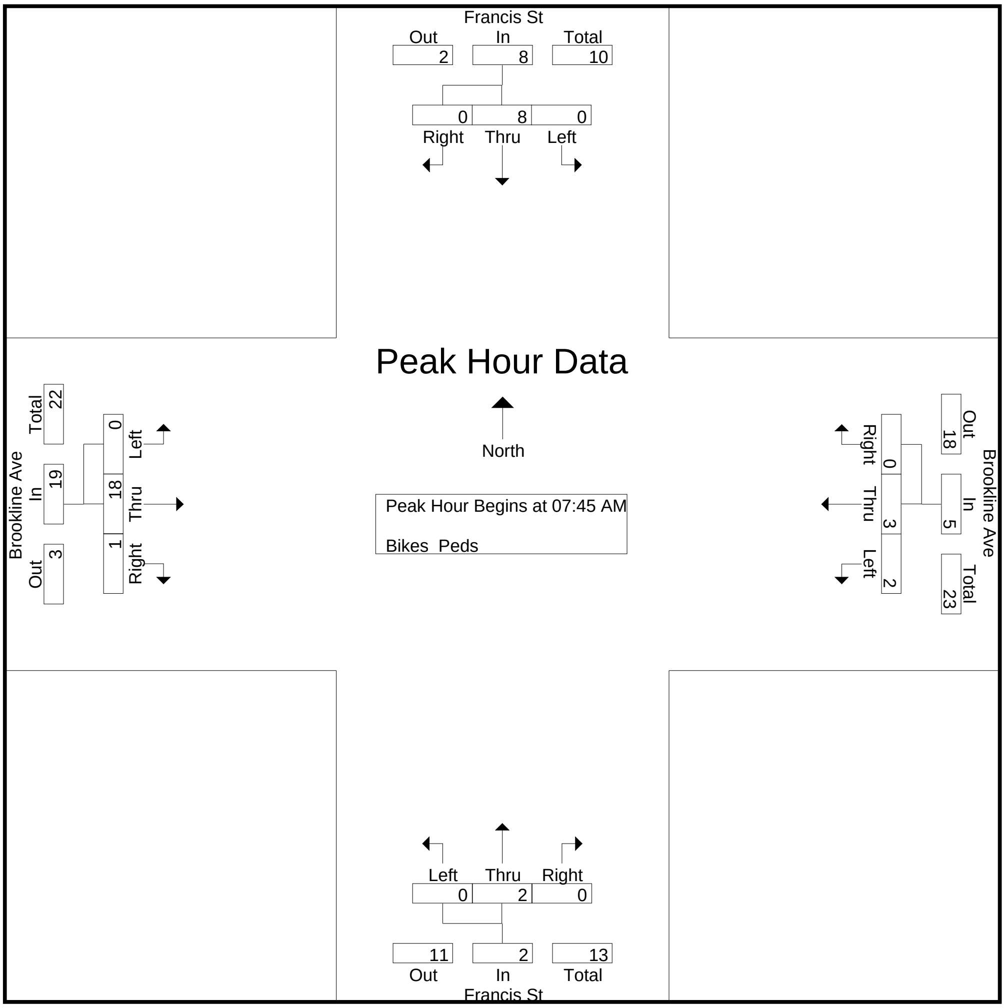
	Francis St From North				Brookline Ave From East				Francis St From South				Brookline Ave From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	1	0	0	5	1	1	0	18	0	0	0	2	0	3	0	15	40	6	46
07:15 AM	0	1	0	8	1	0	0	20	0	1	0	5	0	0	0	8	41	3	44
07:30 AM	0	2	0	11	0	0	0	19	0	1	0	16	0	4	0	7	53	7	60
07:45 AM	0	5	0	10	0	1	0	25	0	1	0	11	0	5	0	27	73	12	85
Total	1	8	0	34	2	2	0	82	0	3	0	34	0	12	0	57	207	28	235
08:00 AM	0	1	0	4	0	0	0	18	0	1	0	8	0	3	0	12	42	5	47
08:15 AM	0	1	0	15	1	1	0	18	0	0	0	6	0	5	1	7	46	9	55
08:30 AM	0	1	0	11	1	1	0	21	0	0	0	13	0	5	0	18	63	8	71
08:45 AM	0	4	0	13	0	1	0	11	0	2	0	23	0	3	0	10	57	10	67
Total	0	7	0	43	2	3	0	68	0	3	0	50	0	16	1	47	208	32	240
Grand Total	1	15	0	77	4	5	0	150	0	6	0	84	0	28	1	104	415	60	475
Apprch %	6.2	93.8	0		44.4	55.6	0		0	100	0		0	96.6	3.4				
Total %	1.7	25	0		6.7	8.3	0		0	10	0		0	46.7	1.7		87.4	12.6	

	Francis St From North				Brookline Ave From East				Francis St From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	**5**	0	**5**	0	**1**	0	1	0	**1**	0	**1**	0	**5**	0	5	**12**
08:00 AM	0	1	0	1	0	0	0	0	0	1	0	1	0	3	0	3	5
08:15 AM	0	1	0	1	**1**	1	0	**2**	0	0	0	0	0	5	**1**	**6**	9
08:30 AM	0	1	0	1	1	1	0	2	0	0	0	0	0	5	0	5	8
Total Volume	0	8	0	8	2	3	0	5	0	2	0	2	0	18	1	19	34
% App. Total	0	100	0		40	60	0		0	100	0		0	94.7	5.3		
PHF	.000	.400	.000	.400	.500	.750	.000	.625	.000	.500	.000	.500	.000	.900	.250	.792	.708

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 2



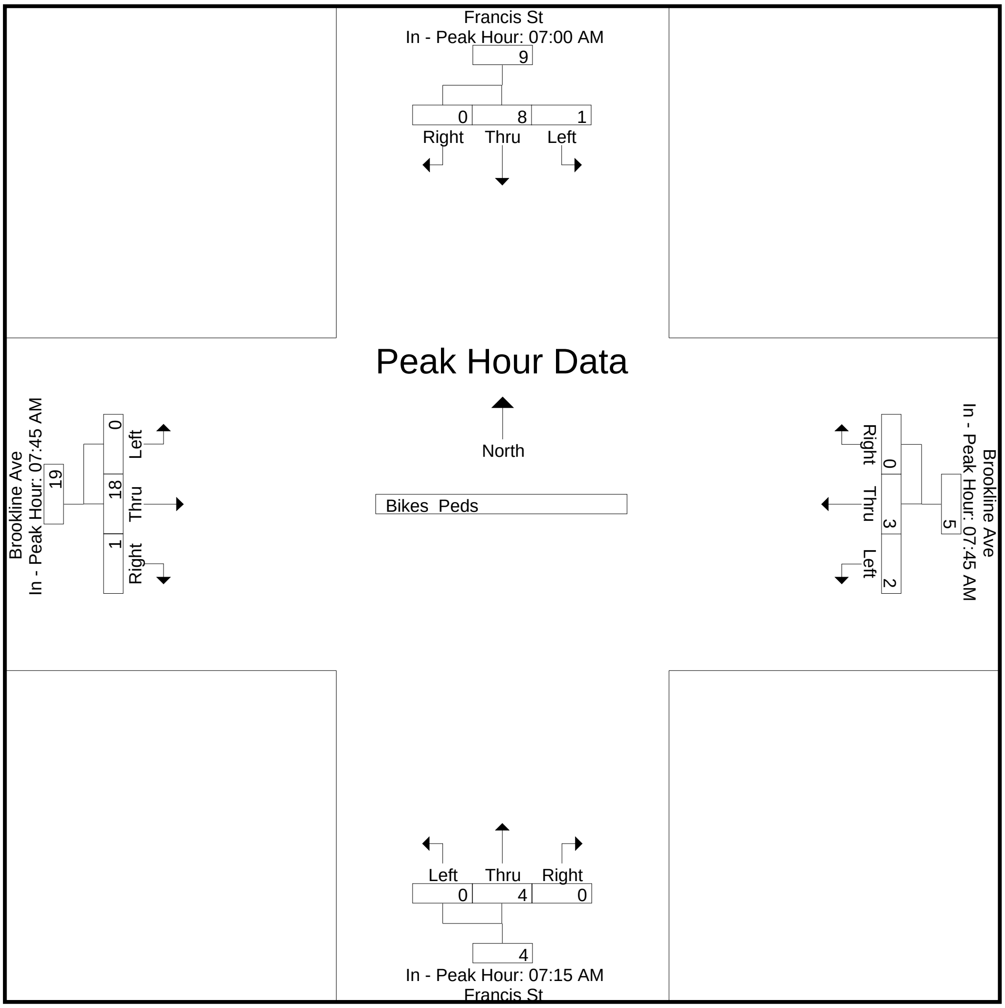
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:45 AM				07:15 AM				07:45 AM			
+0 mins.	**1**	0	0	1	0	**1**	0	1	0	**1**	0	**1**	0	**5**	0	5
+15 mins.	0	1	0	1	0	0	0	0	0	1	0	1	0	3	0	3
+30 mins.	0	2	0	2	**1**	1	0	**2**	0	1	0	1	0	5	**1**	**6**
+45 mins.	0	**5**	0	**5**	1	1	0	2	0	1	0	1	0	5	0	5
Total Volume	1	8	0	9	2	3	0	5	0	4	0	4	0	18	1	19
% App. Total	11.1	88.9	0		40	60	0		0	100	0		0	94.7	5.3	
PHF	.250	.400	.000	.450	.500	.750	.000	.625	.000	1.000	.000	1.000	.000	.900	.250	.792

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 1

Groups Printed- Cars - Trucks

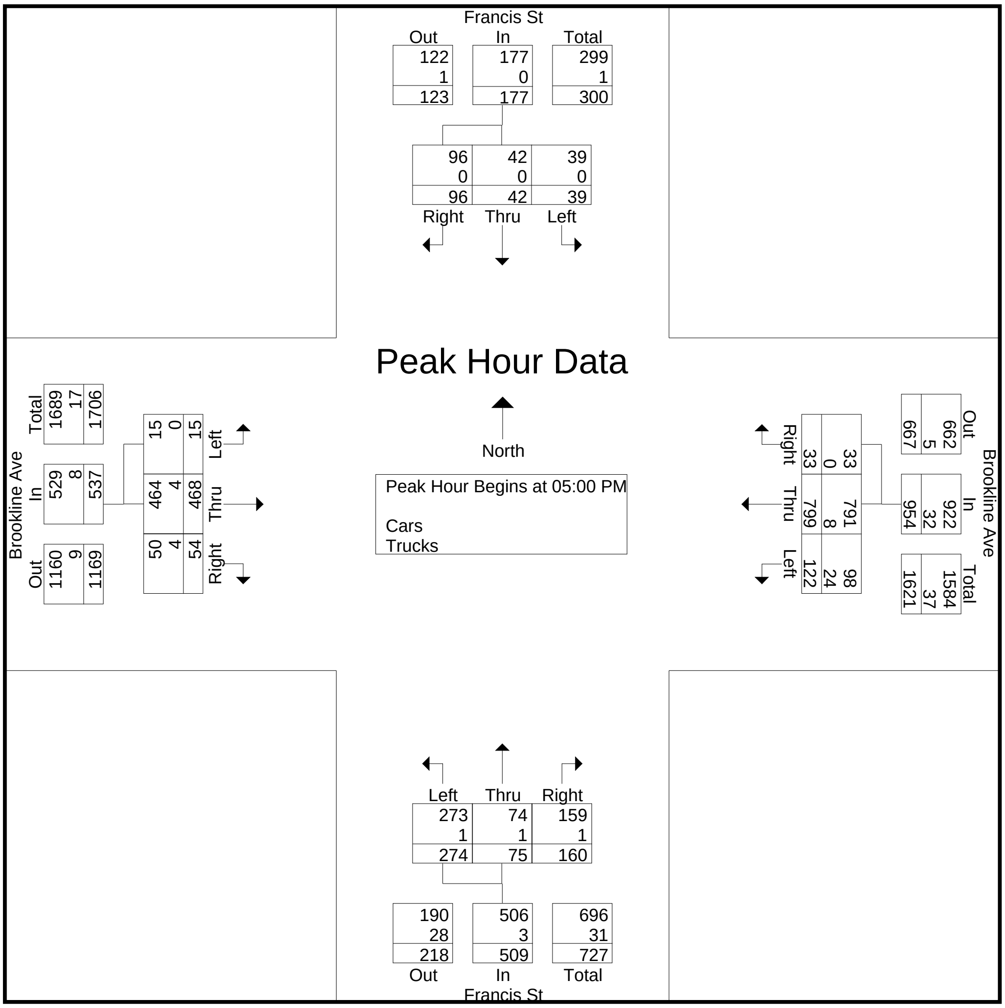
	Francis St From North			Brookline Ave From East			Francis St From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	4	14	21	40	180	6	59	26	43	7	104	22	526
04:15 PM	8	5	26	30	165	6	59	21	46	6	120	20	512
04:30 PM	3	12	21	41	172	5	58	22	43	5	92	16	490
04:45 PM	6	11	24	36	192	6	61	10	39	4	101	17	507
Total	21	42	92	147	709	23	237	79	171	22	417	75	2035
05:00 PM	8	12	25	32	189	5	76	26	41	0	107	18	539
05:15 PM	9	6	25	28	209	9	69	18	44	2	111	11	541
05:30 PM	9	13	26	33	203	7	64	20	31	5	122	8	541
05:45 PM	13	11	20	29	198	12	65	11	44	8	128	17	556
Total	39	42	96	122	799	33	274	75	160	15	468	54	2177
Grand Total	60	84	188	269	1508	56	511	154	331	37	885	129	4212
Apprch %	18.1	25.3	56.6	14.7	82.3	3.1	51.3	15.5	33.2	3.5	84.2	12.3	
Total %	1.4	2	4.5	6.4	35.8	1.3	12.1	3.7	7.9	0.9	21	3.1	
Cars	60	84	188	219	1491	56	509	153	330	37	872	123	4122
% Cars	100	100	100	81.4	98.9	100	99.6	99.4	99.7	100	98.5	95.3	97.9
Trucks	0	0	0	50	17	0	2	1	1	0	13	6	90
% Trucks	0	0	0	18.6	1.1	0	0.4	0.6	0.3	0	1.5	4.7	2.1

	Francis St From North				Brookline Ave From East				Francis St From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	8	12	25	45	32	189	5	226	**76**	**26**	41	**143**	0	107	**18**	125	539
05:15 PM	9	6	25	40	28	**209**	9	**246**	69	18	**44**	131	2	111	11	124	541
05:30 PM	9	**13**	**26**	**48**	**33**	203	7	243	64	20	31	115	5	122	8	135	541
05:45 PM	**13**	11	20	44	29	198	**12**	239	65	11	44	120	**8**	**128**	17	**153**	**556**
Total Volume	39	42	96	177	122	799	33	954	274	75	160	509	15	468	54	537	2177
% App. Total	22	23.7	54.2		12.8	83.8	3.5		53.8	14.7	31.4		2.8	87.2	10.1		
PHF	.750	.808	.923	.922	.924	.956	.688	.970	.901	.721	.909	.890	.469	.914	.750	.877	.979
Cars	39	42	96	177	98	791	33	922	273	74	159	506	15	464	50	529	2134
% Cars	100	100	100	100	80.3	99.0	100	96.6	99.6	98.7	99.4	99.4	100	99.1	92.6	98.5	98.0
Trucks	0	0	0	0	24	8	0	32	1	1	1	3	0	4	4	8	43
% Trucks	0	0	0	0	19.7	1.0	0	3.4	0.4	1.3	0.6	0.6	0	0.9	7.4	1.5	2.0

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 2



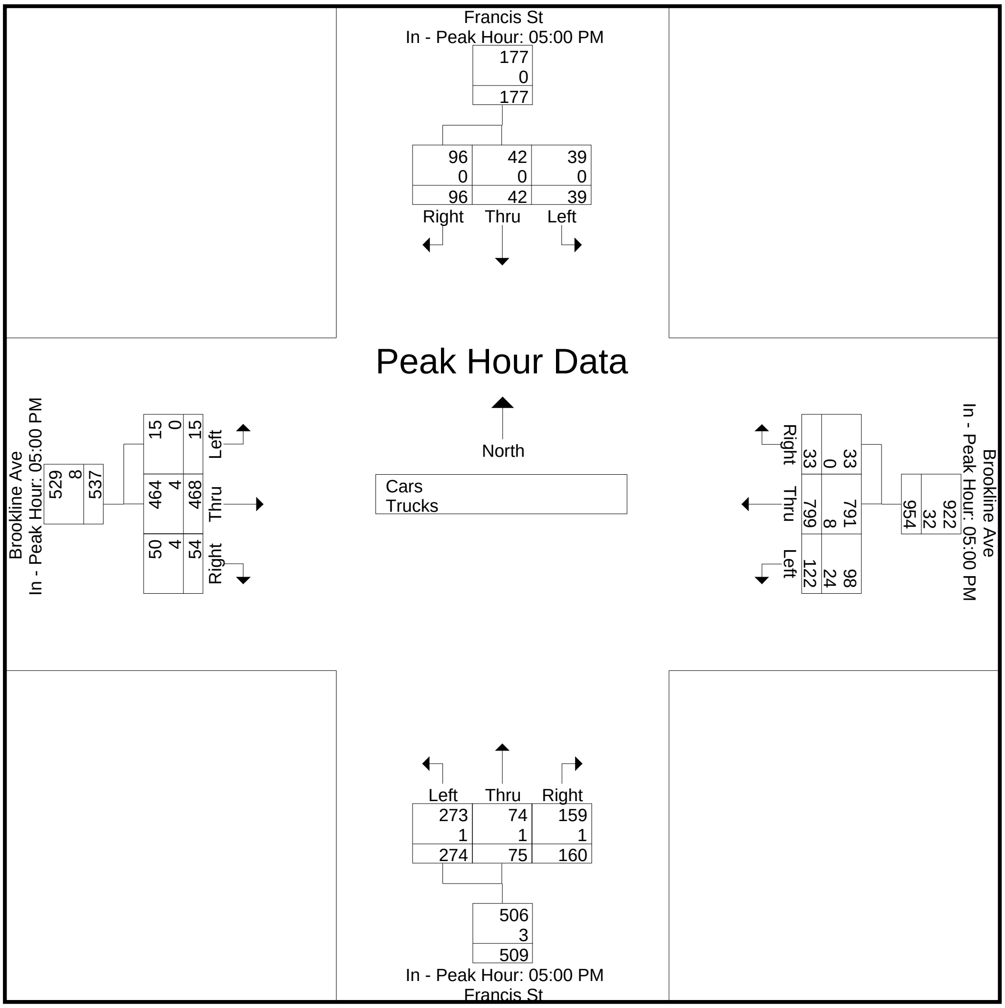
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	8	12	25	45	32	189	5	226	**76**	**26**	41	**143**	0	107	**18**	125
+15 mins.	9	6	25	40	28	**209**	9	**246**	69	18	**44**	131	2	111	11	124
+30 mins.	9	**13**	**26**	**48**	**33**	203	7	243	64	20	31	115	5	122	8	135
+45 mins.	**13**	11	20	44	29	198	**12**	239	65	11	44	120	**8**	**128**	17	**153**
Total Volume	39	42	96	177	122	799	33	954	274	75	160	509	15	468	54	537
% App. Total	22	23.7	54.2		12.8	83.8	3.5		53.8	14.7	31.4		2.8	87.2	10.1	
PHF	.750	.808	.923	.922	.924	.956	.688	.970	.901	.721	.909	.890	.469	.914	.750	.877
Cars	39	42	96	177	98	791	33	922	273	74	159	506	15	464	50	529
% Cars	100	100	100	100	80.3	99	100	96.6	99.6	98.7	99.4	99.4	100	99.1	92.6	98.5
Trucks	0	0	0	0	24	8	0	32	1	1	1	3	0	4	4	8
% Trucks	0	0	0	0	19.7	1	0	3.4	0.4	1.3	0.6	0.6	0	0.9	7.4	1.5

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 1

Groups Printed- Cars

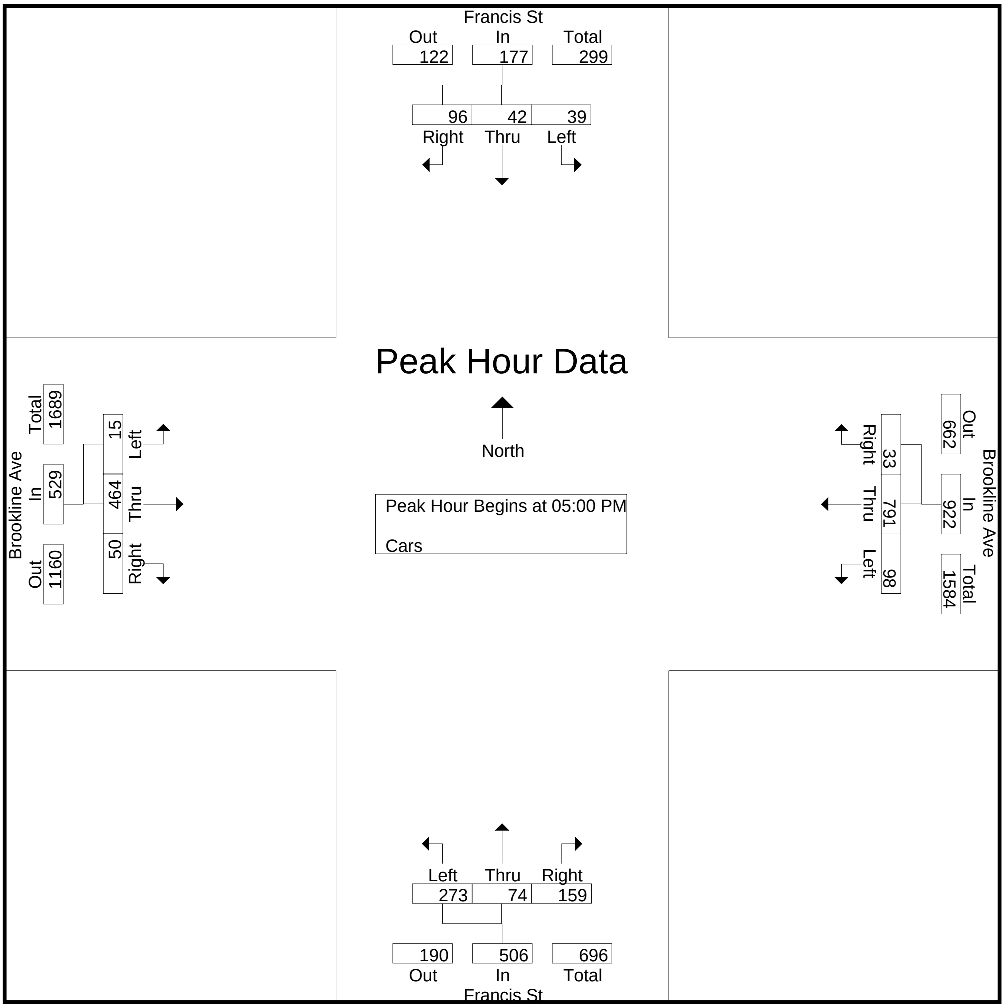
	Francis St From North			Brookline Ave From East			Francis St From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	4	14	21	34	177	6	59	26	43	7	102	22	515
04:15 PM	8	5	26	23	164	6	59	21	46	6	118	20	502
04:30 PM	3	12	21	35	169	5	57	22	43	5	90	16	478
04:45 PM	6	11	24	29	190	6	61	10	39	4	98	15	493
Total	21	42	92	121	700	23	236	79	171	22	408	73	1988
05:00 PM	8	12	25	27	188	5	75	26	41	0	106	16	529
05:15 PM	9	6	25	23	207	9	69	18	44	2	110	11	533
05:30 PM	9	13	26	25	200	7	64	19	30	5	121	6	525
05:45 PM	13	11	20	23	196	12	65	11	44	8	127	17	547
Total	39	42	96	98	791	33	273	74	159	15	464	50	2134
Grand Total	60	84	188	219	1491	56	509	153	330	37	872	123	4122
Apprch %	18.1	25.3	56.6	12.4	84.4	3.2	51.3	15.4	33.3	3.6	84.5	11.9	
Total %	1.5	2	4.6	5.3	36.2	1.4	12.3	3.7	8	0.9	21.2	3	

	Francis St From North				Brookline Ave From East				Francis St From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	8	12	25	45	**27**	188	5	220	**75**	**26**	41	**142**	0	106	16	122	529
05:15 PM	9	6	25	40	23	**207**	9	**239**	69	18	**44**	131	2	110	11	123	533
05:30 PM	9	**13**	**26**	**48**	25	200	7	232	64	19	30	113	5	121	6	132	525
05:45 PM	**13**	11	20	44	23	196	**12**	231	65	11	44	120	**8**	**127**	**17**	**152**	**547**
Total Volume	39	42	96	177	98	791	33	922	273	74	159	506	15	464	50	529	2134
% App. Total	22	23.7	54.2		10.6	85.8	3.6		54	14.6	31.4		2.8	87.7	9.5		
PHF	.750	.808	.923	.922	.907	.955	.688	.964	.910	.712	.903	.891	.469	.913	.735	.870	.975

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 2



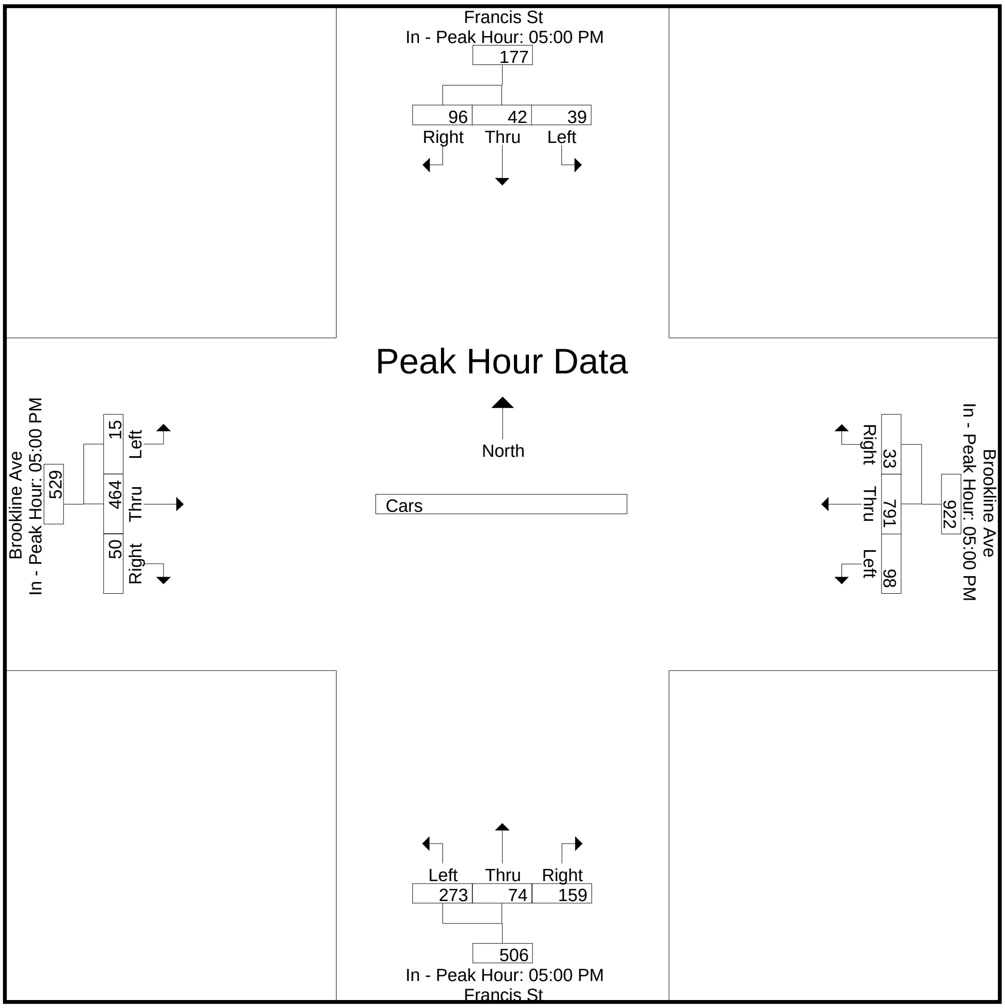
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	8	12	25	45	**27**	188	5	220	**75**	**26**	41	**142**	0	106	16	122
+15 mins.	9	6	25	40	23	**207**	9	**239**	69	18	**44**	131	2	110	11	123
+30 mins.	9	**13**	**26**	**48**	25	200	7	232	64	19	30	113	5	121	6	132
+45 mins.	**13**	11	20	44	23	196	**12**	231	65	11	44	120	**8**	**127**	**17**	**152**
Total Volume	39	42	96	177	98	791	33	922	273	74	159	506	15	464	50	529
% App. Total	22	23.7	54.2		10.6	85.8	3.6		54	14.6	31.4		2.8	87.7	9.5	
PHF	.750	.808	.923	.922	.907	.955	.688	.964	.910	.712	.903	.891	.469	.913	.735	.870

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 1

Groups Printed- Trucks

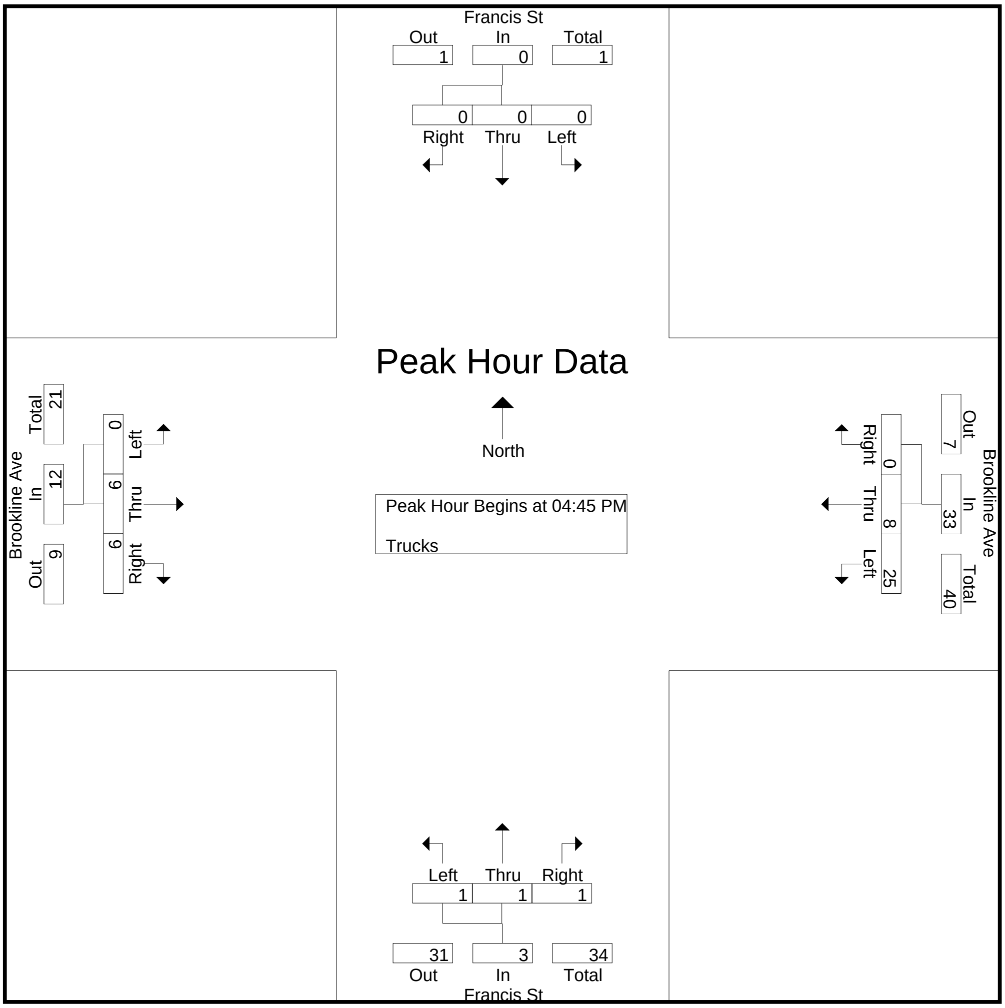
	Francis St From North			Brookline Ave From East			Francis St From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	6	3	0	0	0	0	0	2	0	11
04:15 PM	0	0	0	7	1	0	0	0	0	0	2	0	10
04:30 PM	0	0	0	6	3	0	1	0	0	0	2	0	12
04:45 PM	0	0	0	7	2	0	0	0	0	0	3	2	14
Total	0	0	0	26	9	0	1	0	0	0	9	2	47
05:00 PM	0	0	0	5	1	0	1	0	0	0	1	2	10
05:15 PM	0	0	0	5	2	0	0	0	0	0	1	0	8
05:30 PM	0	0	0	8	3	0	0	1	1	0	1	2	16
05:45 PM	0	0	0	6	2	0	0	0	0	0	1	0	9
Total	0	0	0	24	8	0	1	1	1	0	4	4	43
Grand Total	0	0	0	50	17	0	2	1	1	0	13	6	90
Apprch %	0	0	0	74.6	25.4	0	50	25	25	0	68.4	31.6	
Total %	0	0	0	55.6	18.9	0	2.2	1.1	1.1	0	14.4	6.7	

	Francis St From North				Brookline Ave From East				Francis St From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	7	2	0	9	0	0	0	0	0	**3**	**2**	**5**	14
05:00 PM	0	0	0	0	5	1	0	6	**1**	0	0	1	0	1	2	3	10
05:15 PM	0	0	0	0	5	2	0	7	0	0	0	0	0	1	0	1	8
05:30 PM	0	0	0	0	**8**	**3**	0	**11**	0	**1**	**1**	**2**	0	1	2	3	**16**
Total Volume	0	0	0	0	25	8	0	33	1	1	1	3	0	6	6	12	48
% App. Total	0	0	0		75.8	24.2	0		33.3	33.3	33.3		0	50	50		
PHF	.000	.000	.000	.000	.781	.667	.000	.750	.250	.250	.250	.375	.000	.500	.750	.600	.750

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 2

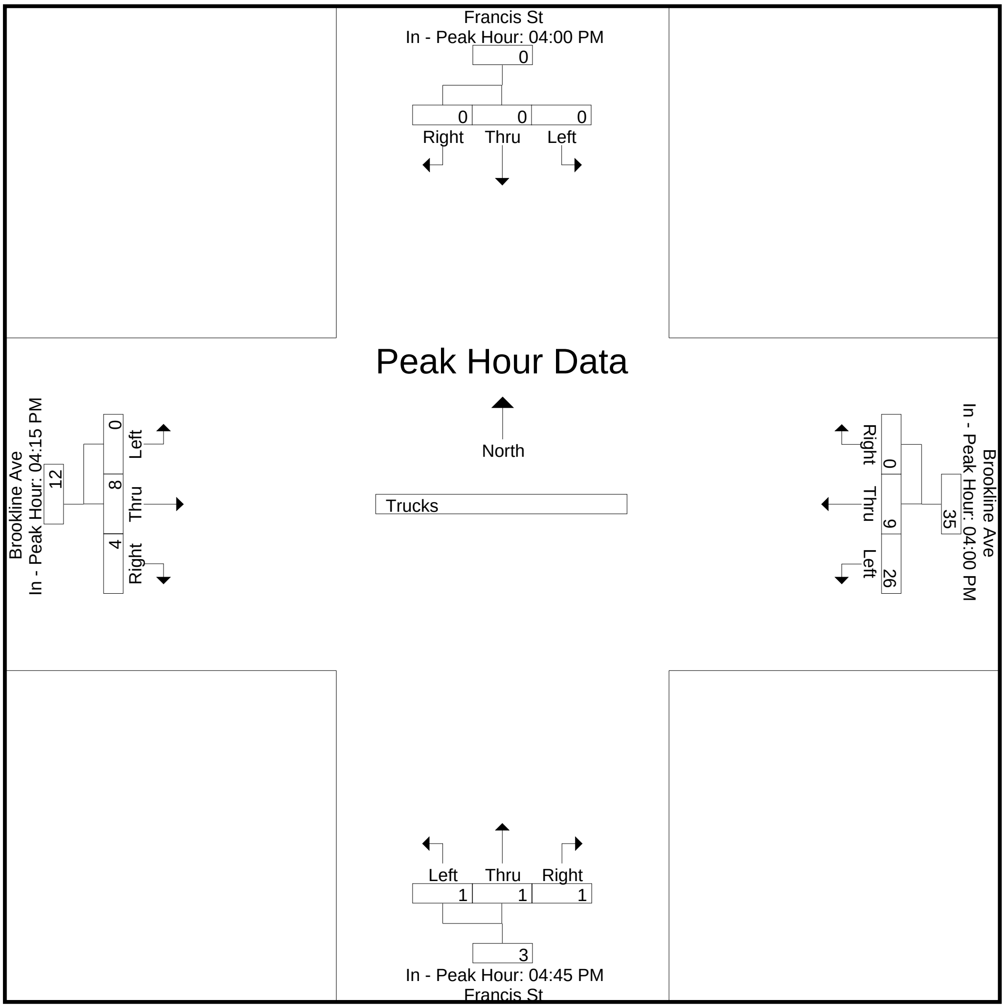


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:45 PM				04:15 PM			
+0 mins.	0	0	0	0	6	**3**	0	**9**	0	0	0	0	0	2	0	2
+15 mins.	0	0	0	0	**7**	1	0	8	**1**	0	0	1	0	2	0	2
+30 mins.	0	0	0	0	6	3	0	9	0	0	0	0	0	**3**	**2**	**5**
+45 mins.	0	0	0	0	7	2	0	9	0	**1**	**1**	**2**	0	1	2	3
Total Volume	0	0	0	0	26	9	0	35	1	1	1	3	0	8	4	12
% App. Total	0	0	0		74.3	25.7	0		33.3	33.3	33.3		0	66.7	33.3	
PHF	.000	.000	.000	.000	.929	.750	.000	.972	.250	.250	.250	.375	.000	.667	.500	.600

Accurate Counts
978-664-2565

N/S Street	: Francis Street	File Name	: 94970013
E/W Street	: Brookline Avenue	Site Code	: 94970013
City/State	: Boston, MA	Start Date	: 5/13/2012
Weather	: Drizzle	Page No	: 3



Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012
Page No : 1

Groups Printed- Bikes Peds

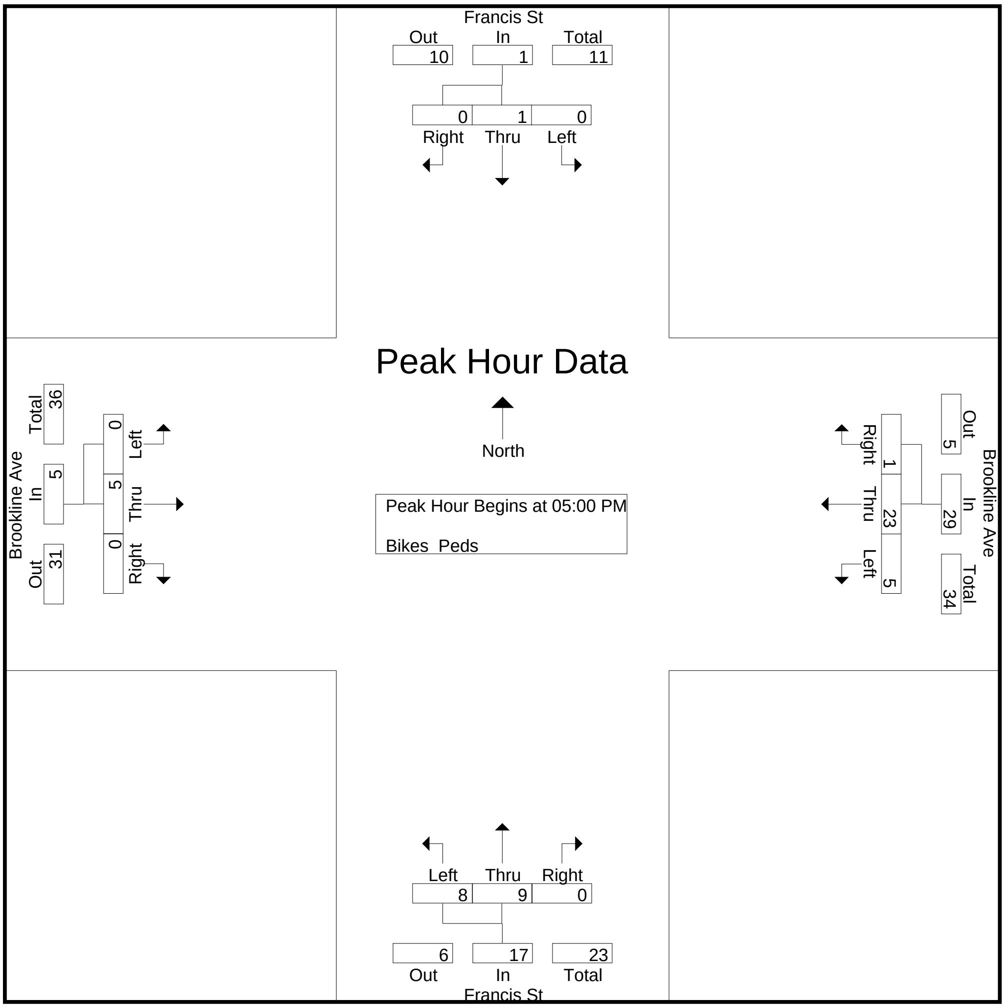
	Francis St From North				Brookline Ave From East				Francis St From South				Brookline Ave From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	23	0	2	0	21	0	1	0	22	0	2	0	18	84	5	89
04:15 PM	0	0	0	11	3	1	0	8	1	1	0	12	0	0	0	16	47	6	53
04:30 PM	0	0	0	14	0	2	1	17	0	2	0	16	0	0	0	15	62	5	67
04:45 PM	1	1	0	4	0	1	0	13	1	2	0	13	0	1	0	7	37	7	44
Total	1	1	0	52	3	6	1	59	2	6	0	63	0	3	0	56	230	23	253
05:00 PM	0	0	0	12	0	7	0	31	2	6	0	15	0	0	0	15	73	15	88
05:15 PM	0	1	0	7	1	2	0	17	1	2	0	14	0	1	0	20	58	8	66
05:30 PM	0	0	0	8	2	10	1	10	3	1	0	14	0	0	0	8	40	17	57
05:45 PM	0	0	0	7	2	4	0	17	2	0	0	22	0	4	0	10	56	12	68
Total	0	1	0	34	5	23	1	75	8	9	0	65	0	5	0	53	227	52	279
Grand Total	1	2	0	86	8	29	2	134	10	15	0	128	0	8	0	109	457	75	532
Apprch %	33.3	66.7	0		20.5	74.4	5.1		40	60	0		0	100	0				
Total %	1.3	2.7	0		10.7	38.7	2.7		13.3	20	0		0	10.7	0		85.9	14.1	

	Francis St From North				Brookline Ave From East				Francis St From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	7	0	7	2	**6**	0	**8**	0	0	0	0	15
05:15 PM	0	**1**	0	**1**	1	2	0	3	1	2	0	3	0	1	0	1	8
05:30 PM	0	0	0	0	**2**	**10**	**1**	**13**	**3**	1	0	4	0	0	0	0	**17**
05:45 PM	0	0	0	0	2	4	0	6	2	0	0	2	0	**4**	0	**4**	12
Total Volume	0	1	0	1	5	23	1	29	8	9	0	17	0	5	0	5	52
% App. Total	0	100	0		17.2	79.3	3.4		47.1	52.9	0		0	100	0		
PHF	.000	.250	.000	.250	.625	.575	.250	.558	.667	.375	.000	.531	.000	.313	.000	.313	.765

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012



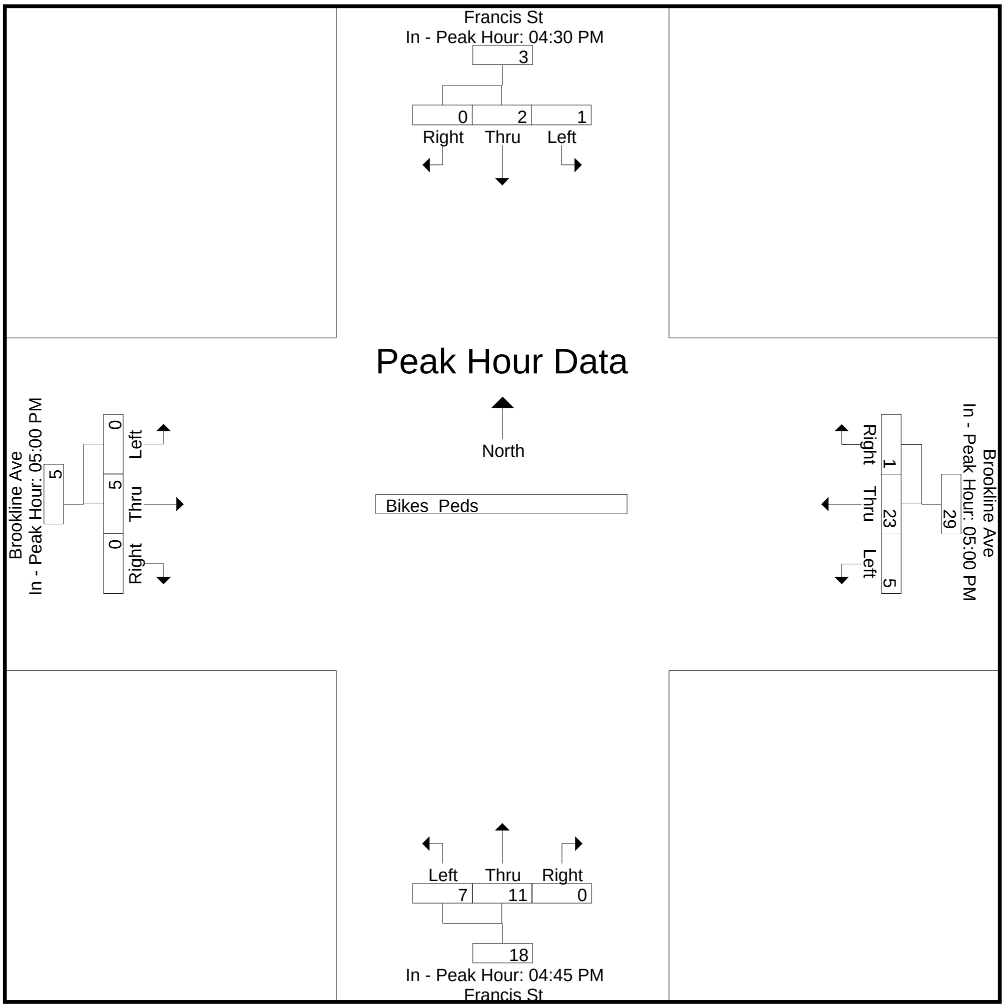
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				05:00 PM				04:45 PM				05:00 PM			
+0 mins.	0	0	0	0	0	7	0	7	1	2	0	3	0	0	0	0
+15 mins.	**1**	**1**	0	**2**	1	2	0	3	2	**6**	0	**8**	0	1	0	1
+30 mins.	0	0	0	0	**2**	**10**	**1**	**13**	1	2	0	3	0	0	0	0
+45 mins.	0	1	0	1	2	4	0	6	**3**	1	0	4	0	**4**	0	**4**
Total Volume	1	2	0	3	5	23	1	29	7	11	0	18	0	5	0	5
% App. Total	33.3	66.7	0		17.2	79.3	3.4		38.9	61.1	0		0	100	0	
PHF	.250	.500	.000	.375	.625	.575	.250	.558	.583	.458	.000	.563	.000	.313	.000	.313

Accurate Counts
978-664-2565

N/S Street : Francis Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970013
Site Code : 94970013
Start Date : 5/13/2012



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Pilgrim Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

	Longwood Ave From North			Pilgrim Rd From East			Longwood Ave From South			Pilgrim Rd From West			
Start Time	Left	Thru	Right	Left	Thru	Rght	Left	Thru	Rght	Left	Thru	Right	Int. Total
07:00 AM	37	79	12	1	1	3	18	38	18	0	0	0	207
07:15 AM	35	89	6	1	0	2	19	52	16	0	0	0	220
07:30 AM	29	62	10	2	1	3	14	70	20	0	0	1	212
07:45 AM	35	86	16	1	1	3	18	39	22	0	0	1	222
Total	136	316	44	5	3	11	69	199	76	0	0	2	861
08:00 AM	36	74	9	2	0	2	15	39	17	0	0	1	195
08:15 AM	38	79	11	1	1	1	17	31	17	0	0	1	197
08:30 AM	49	86	5	2	1	2	14	37	16	0	0	0	212
08:45 AM	45	96	17	2	0	1	16	42	13	0	0	0	232
Total	168	335	42	7	2	6	62	149	63	0	0	2	836
Grand Total	304	651	86	12	5	17	131	348	139	0	0	4	1697
Apprch %	29.2	62.5	8.3	35.3	14.7	50	21.2	56.3	22.5	0	0	100	
Total %	17.9	38.4	5.1	0.7	0.3	1	7.7	20.5	8.2	0	0	0.2	
Cars	304	643	86	12	5	17	126	341	139	0	0	0	1673
% Cars	100	98.8	100	100	100	100	96.2	98	100	0	0	0	98.6
Trucks	0	8	0	0	0	0	5	7	0	0	0	4	24
% Trucks	0	1.2	0	0	0	0	3.8	2	0	0	0	100	1.4

	Longwood Ave From North				Pilgrim Rd From East				Longwood Ave From South				Pilgrim Rd From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	**37**	79	12	128	1	**1**	**3**	5	18	38	18	74	0	0	0	0	207
07:15 AM	35	**89**	6	130	1	0	2	3	**19**	52	16	87	0	0	0	0	220
07:30 AM	29	62	10	101	**2**	1	3	**6**	14	**70**	20	**104**	0	0	**1**	**1**	212
07:45 AM	35	86	**16**	**137**	1	1	3	5	18	39	**22**	79	0	0	1	1	**222**
Total Volume	136	316	44	496	5	3	11	19	69	199	76	344	0	0	2	2	861
% App. Total	27.4	63.7	8.9		26.3	15.8	57.9		20.1	57.8	22.1		0	0	100		
PHF	.919	.888	.688	.905	.625	.750	.917	.792	.908	.711	.864	.827	.000	.000	.500	.500	.970
Cars	136	312	44	492	5	3	11	19	66	195	76	337	0	0	0	0	848
% Cars	100	98.7	100	99.2	100	100	100	100	95.7	98.0	100	98.0	0	0	0	0	98.5
Trucks	0	4	0	4	0	0	0	0	3	4	0	7	0	0	2	2	13
% Trucks	0	1.3	0	0.8	0	0	0	0	4.3	2.0	0	2.0	0	0	100	100	1.5

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012
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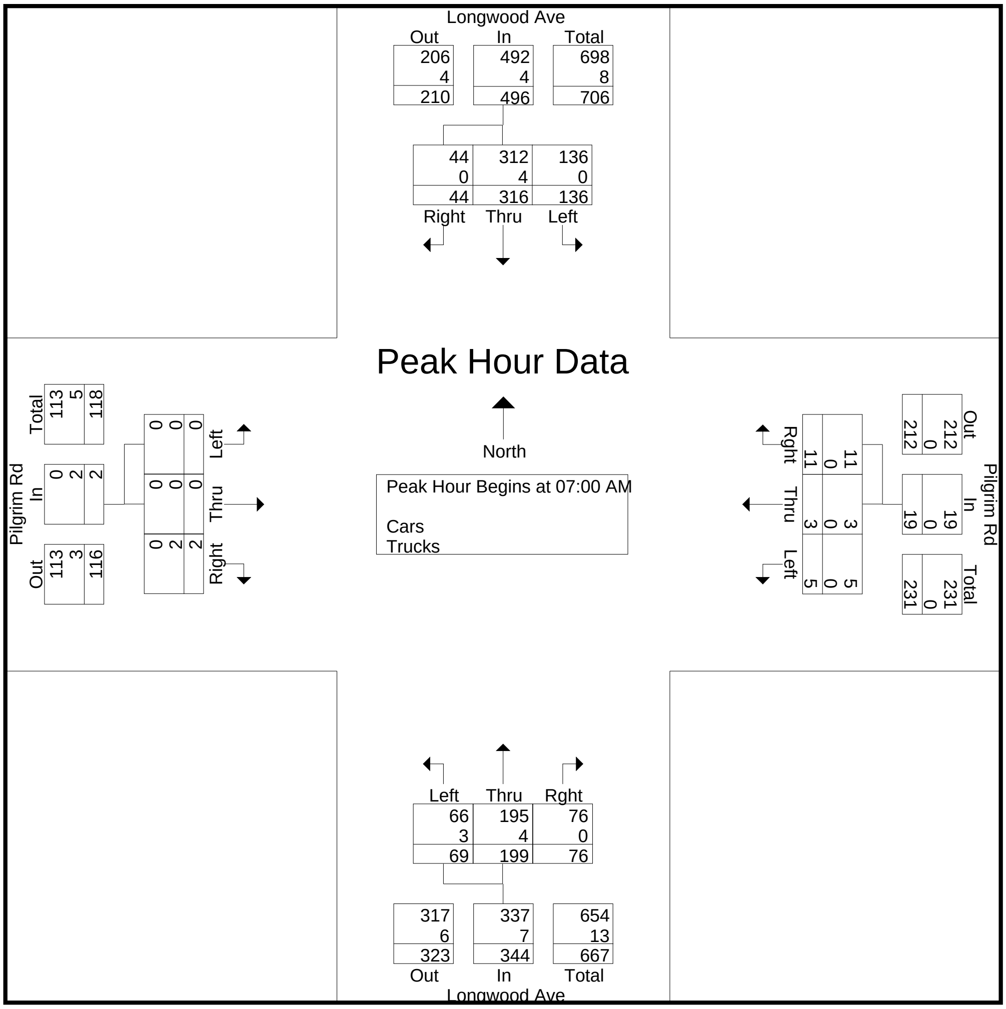
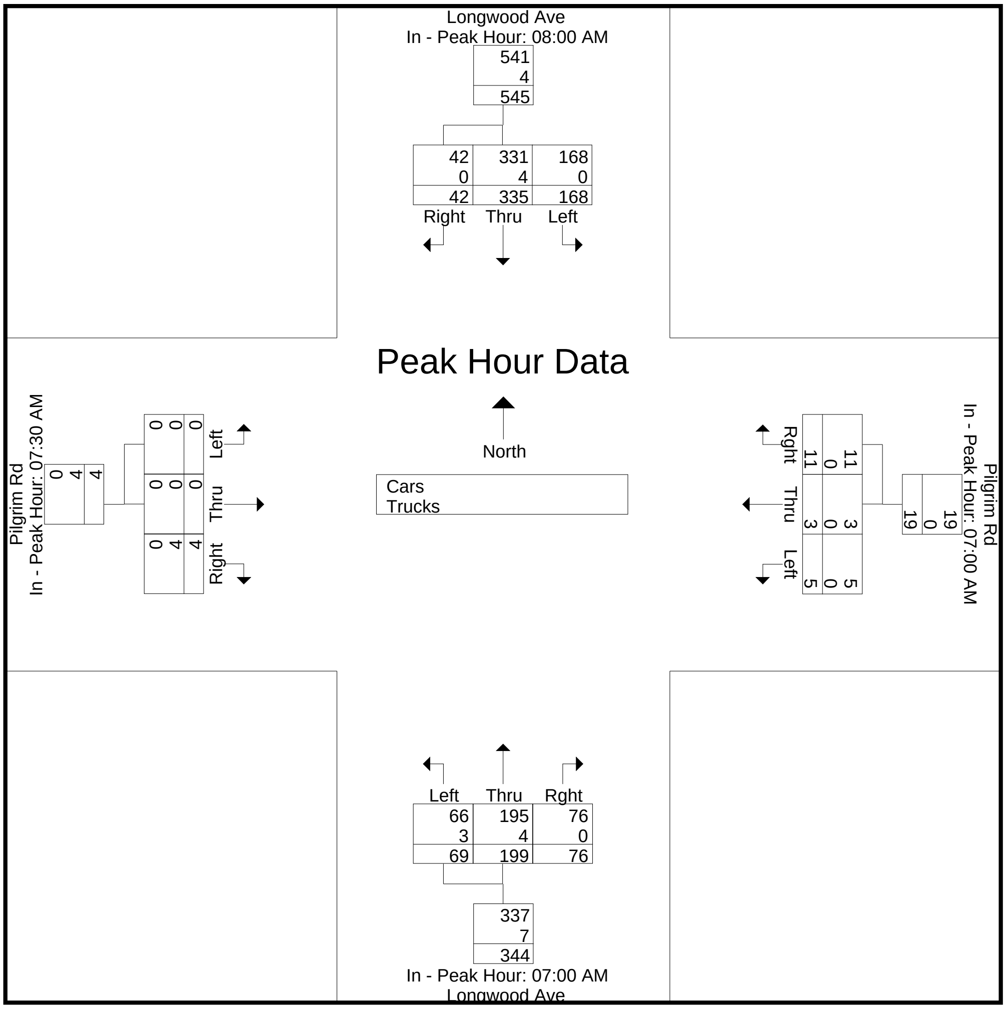


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:00 AM				07:00 AM				07:30 AM			
+0 mins.	36	74	9	119	1	**1**	**3**	5	18	38	18	74	0	0	**1**	**1**
+15 mins.	38	79	11	128	1	0	2	3	**19**	52	16	87	0	0	1	1
+30 mins.	**49**	86	5	140	**2**	1	3	**6**	14	**70**	20	**104**	0	0	1	1
+45 mins.	45	**96**	**17**	**158**	1	1	3	5	18	39	**22**	79	0	0	1	1
Total Volume	168	335	42	545	5	3	11	19	69	199	76	344	0	0	4	4
% App. Total	30.8	61.5	7.7		26.3	15.8	57.9		20.1	57.8	22.1		0	0	100	
PHF	.857	.872	.618	.862	.625	.750	.917	.792	.908	.711	.864	.827	.000	.000	1.000	1.000
Cars	168	331	42	541	5	3	11	19	66	195	76	337	0	0	0	0
% Cars	100	98.8	100	99.3	100	100	100	100	95.7	98	100	98	0	0	0	0
Trucks	0	4	0	4	0	0	0	0	3	4	0	7	0	0	4	4
% Trucks	0	1.2	0	0.7	0	0	0	0	4.3	2	0	2	0	0	100	100

Accurate Counts
978-664-2565

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Pilgrim Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012
Page No : 1

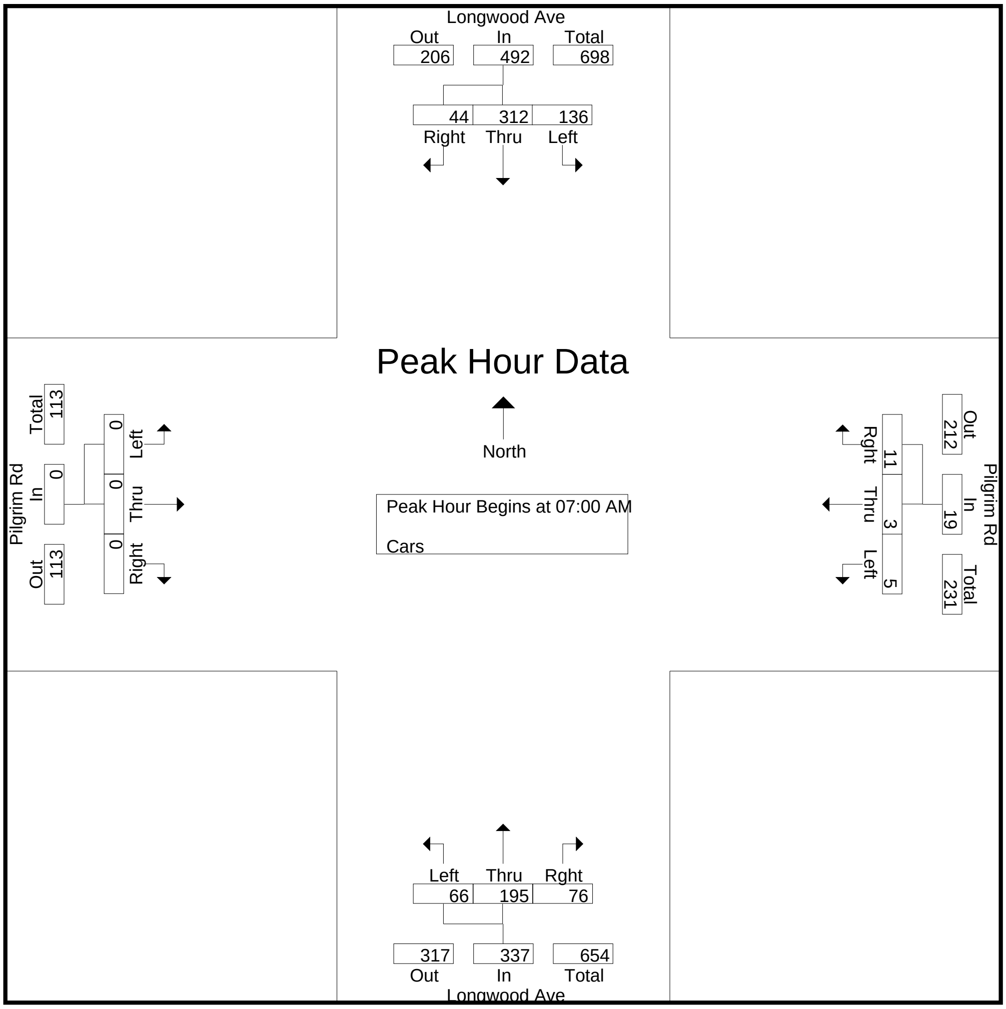
Groups Printed- Cars

	Longwood Ave From North			Pilgrim Rd From East			Longwood Ave From South			Pilgrim Rd From West			
Start Time	Left	Thru	Right	Left	Thru	Rght	Left	Thru	Rght	Left	Thru	Right	Int. Total
07:00 AM	37	76	12	1	1	3	18	38	18	0	0	0	204
07:15 AM	35	89	6	1	0	2	18	50	16	0	0	0	217
07:30 AM	29	61	10	2	1	3	13	69	20	0	0	0	208
07:45 AM	35	86	16	1	1	3	17	38	22	0	0	0	219
Total	136	312	44	5	3	11	66	195	76	0	0	0	848
08:00 AM	36	73	9	2	0	2	14	39	17	0	0	0	192
08:15 AM	38	79	11	1	1	1	17	31	17	0	0	0	196
08:30 AM	49	85	5	2	1	2	14	35	16	0	0	0	209
08:45 AM	45	94	17	2	0	1	15	41	13	0	0	0	228
Total	168	331	42	7	2	6	60	146	63	0	0	0	825
Grand Total	304	643	86	12	5	17	126	341	139	0	0	0	1673
Apprch %	29.4	62.2	8.3	35.3	14.7	50	20.8	56.3	22.9	0	0	0	
Total %	18.2	38.4	5.1	0.7	0.3	1	7.5	20.4	8.3	0	0	0	

	Longwood Ave From North				Pilgrim Rd From East				Longwood Ave From South				Pilgrim Rd From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	**37**	76	12	125	1	**1**	**3**	5	**18**	38	18	74	0	0	0	0	204
07:15 AM	35	**89**	6	130	1	0	2	3	18	50	16	84	0	0	0	0	217
07:30 AM	29	61	10	100	**2**	1	3	**6**	13	**69**	20	**102**	0	0	0	0	208
07:45 AM	35	86	**16**	**137**	1	1	3	5	17	38	**22**	77	0	0	0	0	**219**
Total Volume	136	312	44	492	5	3	11	19	66	195	76	337	0	0	0	0	848
% App. Total	27.6	63.4	8.9		26.3	15.8	57.9		19.6	57.9	22.6		0	0	0		
PHF	.919	.876	.688	.898	.625	.750	.917	.792	.917	.707	.864	.826	.000	.000	.000	.000	.968

Accurate Counts
978-664-2565

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012
Page No : 2

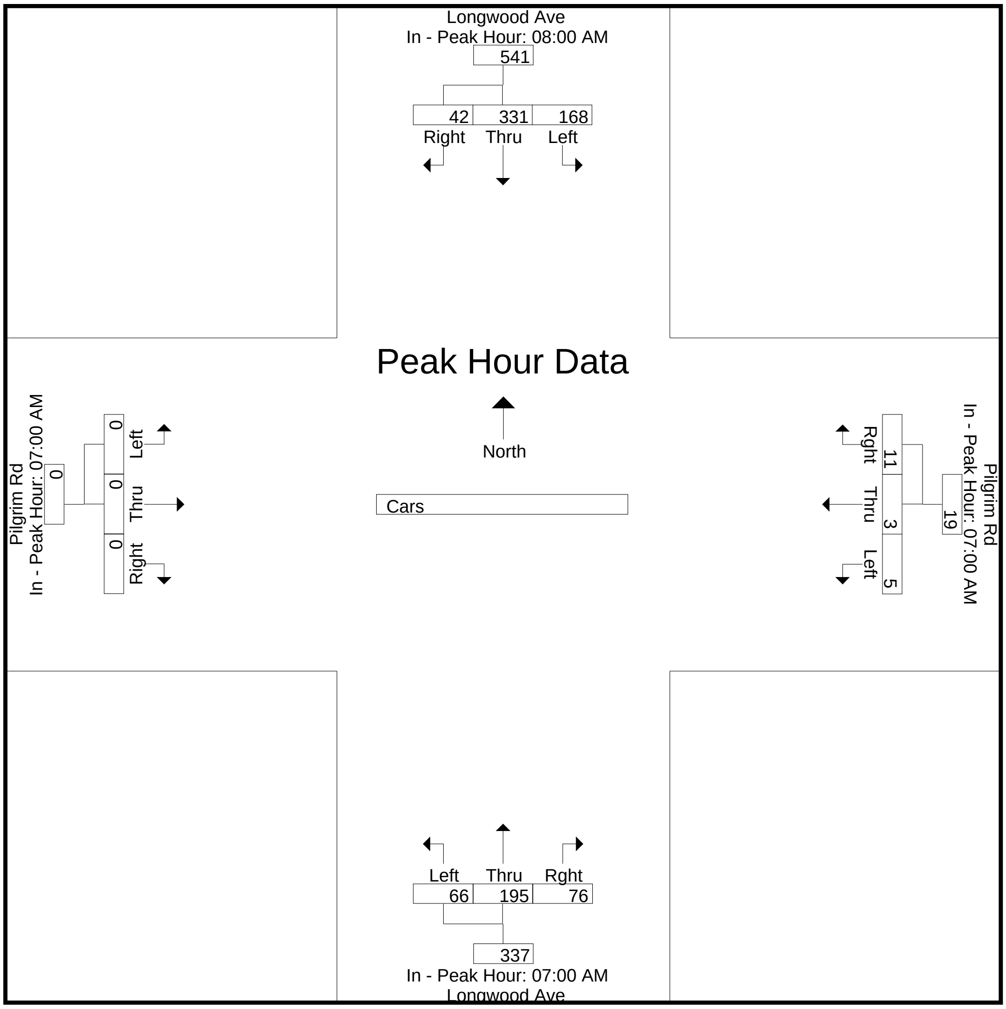


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	36	73	9	118	1	**1**	**3**	5	**18**	38	18	74	0	0	0	0
+15 mins.	38	79	11	128	1	0	2	3	18	50	16	84	0	0	0	0
+30 mins.	**49**	85	5	139	**2**	1	3	**6**	13	**69**	20	**102**	0	0	0	0
+45 mins.	45	**94**	**17**	**156**	1	1	3	5	17	38	**22**	77	0	0	0	0
Total Volume	168	331	42	541	5	3	11	19	66	195	76	337	0	0	0	0
% App. Total	31.1	61.2	7.8		26.3	15.8	57.9		19.6	57.9	22.6		0	0	0	
PHF	.857	.880	.618	.867	.625	.750	.917	.792	.917	.707	.864	.826	.000	.000	.000	.000

Accurate Counts
978-664-2565

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Pilgrim Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012
Page No : 1

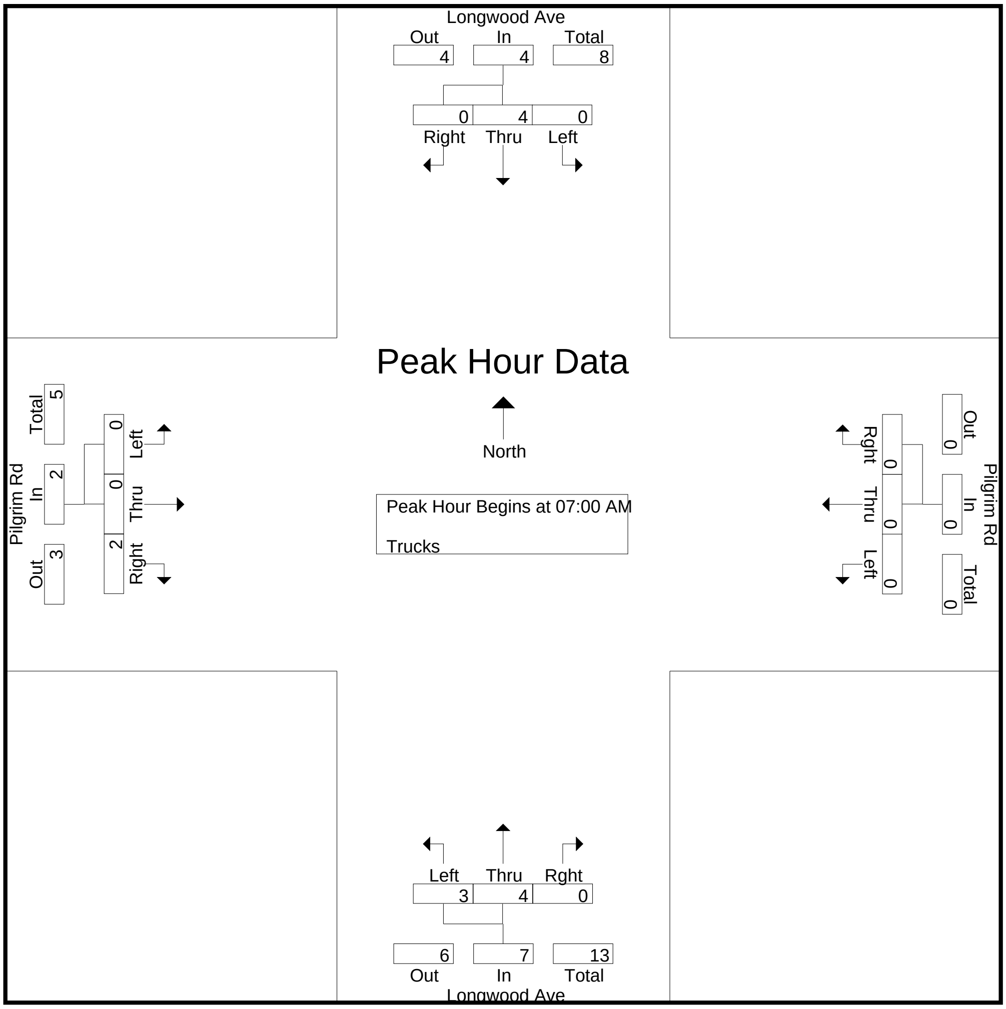
Groups Printed- Trucks

	Longwood Ave From North			Pilgrim Rd From East			Longwood Ave From South			Pilgrim Rd From West			
Start Time	Left	Thru	Right	Left	Thru	Rght	Left	Thru	Rght	Left	Thru	Right	Int. Total
07:00 AM	0	3	0	0	0	0	0	0	0	0	0	0	3
07:15 AM	0	0	0	0	0	0	1	2	0	0	0	0	3
07:30 AM	0	1	0	0	0	0	1	1	0	0	0	1	4
07:45 AM	0	0	0	0	0	0	1	1	0	0	0	1	3
Total	0	4	0	0	0	0	3	4	0	0	0	2	13
08:00 AM	0	1	0	0	0	0	1	0	0	0	0	1	3
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	1
08:30 AM	0	1	0	0	0	0	0	2	0	0	0	0	3
08:45 AM	0	2	0	0	0	0	1	1	0	0	0	0	4
Total	0	4	0	0	0	0	2	3	0	0	0	2	11
Grand Total	0	8	0	0	0	0	5	7	0	0	0	4	24
Apprch %	0	100	0	0	0	0	41.7	58.3	0	0	0	100	
Total %	0	33.3	0	0	0	0	20.8	29.2	0	0	0	16.7	

	Longwood Ave From North				Pilgrim Rd From East				Longwood Ave From South				Pilgrim Rd From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	**3**	0	**3**	0	0	0	0	0	0	0	0	0	0	0	0	3
07:15 AM	0	0	0	0	0	0	0	0	**1**	**2**	0	**3**	0	0	0	0	3
07:30 AM	0	1	0	1	0	0	0	0	1	1	0	2	0	0	**1**	**1**	**4**
07:45 AM	0	0	0	0	0	0	0	0	1	1	0	2	0	0	1	1	3
Total Volume	0	4	0	4	0	0	0	0	3	4	0	7	0	0	2	2	13
% App. Total	0	100	0		0	0	0		42.9	57.1	0		0	0	100		
PHF	.000	.333	.000	.333	.000	.000	.000	.000	.750	.500	.000	.583	.000	.000	.500	.500	.813

Accurate Counts
978-664-2565

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012
Page No : 2

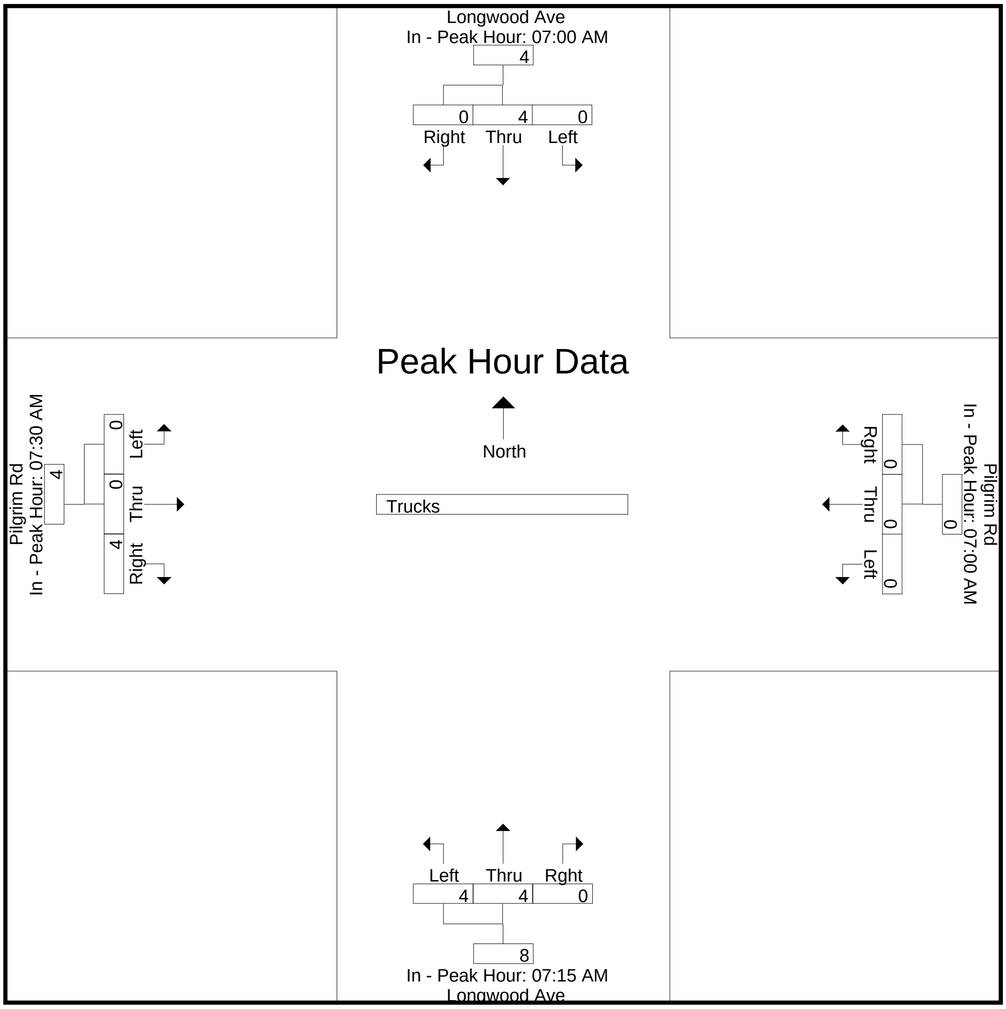


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:15 AM				07:30 AM			
+0 mins.	0	**3**	0	**3**	0	0	0	0	**1**	**2**	0	**3**	0	0	**1**	**1**
+15 mins.	0	0	0	0	0	0	0	0	1	1	0	2	0	0	1	1
+30 mins.	0	1	0	1	0	0	0	0	1	1	0	2	0	0	1	1
+45 mins.	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1
Total Volume	0	4	0	4	0	0	0	0	4	4	0	8	0	0	4	4
% App. Total	0	100	0		0	0	0		50	50	0		0	0	100	
PHF	.000	.333	.000	.333	.000	.000	.000	.000	1.000	.500	.000	.667	.000	.000	1.000	1.000

Accurate Counts
978-664-2565

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012



Accurate Counts
978-664-2565

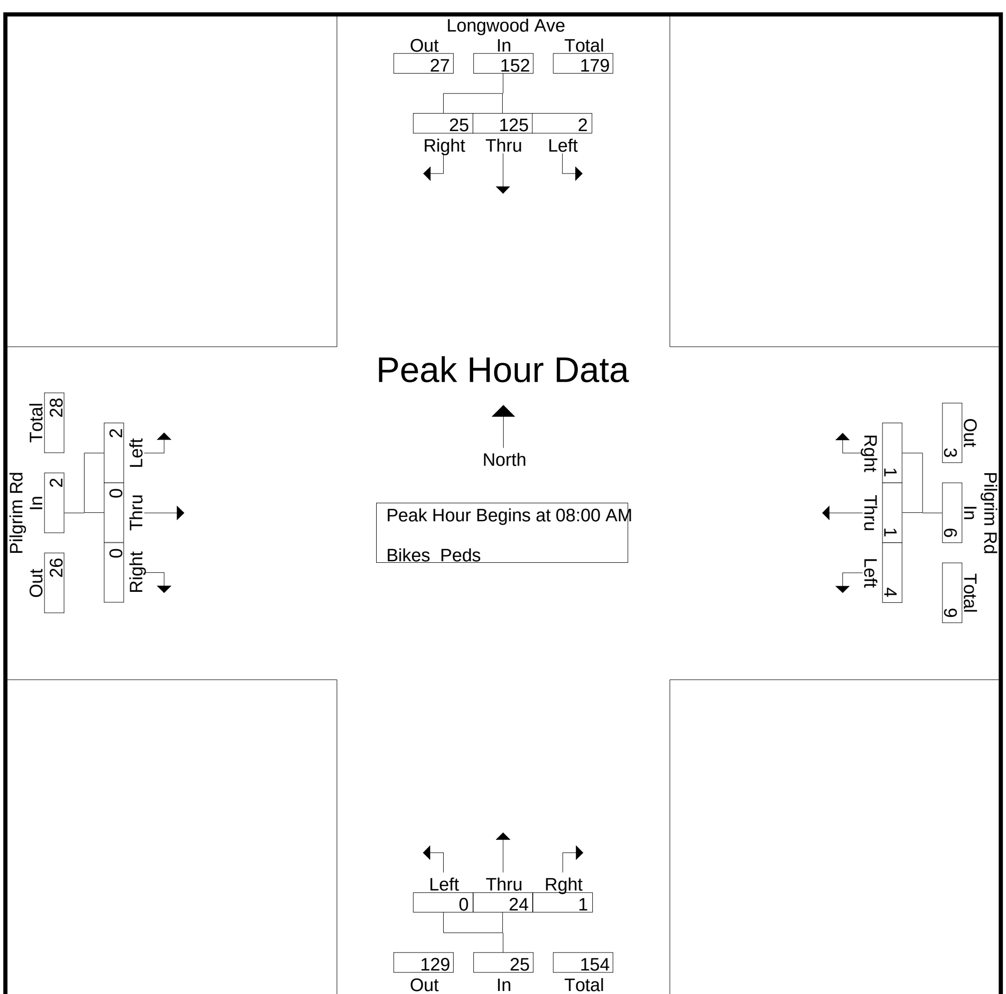
N/S Street : Longwood Avenue
E/W Street: Pilgrim Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012
Page No : 1

Groups Printed- Bikes Peds

	Longwood Ave From North				Pilgrim Rd From East				Longwood Ave From South				Pilgrim Rd From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Rght	Peds	Left	Thru	Rght	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	14	2	36	0	0	3	68	0	4	0	5	0	0	0	3	112	23	135
07:15 AM	0	17	5	35	0	0	0	96	0	5	0	3	0	0	0	0	134	27	161
07:30 AM	0	14	1	45	0	0	0	146	0	3	0	0	0	0	0	1	192	18	210
07:45 AM	0	28	1	55	1	0	0	173	0	2	1	1	0	0	0	1	230	33	263
Total	0	73	9	171	1	0	3	483	0	14	1	9	0	0	0	5	668	101	769
08:00 AM	2	26	3	47	1	0	1	186	0	8	0	3	2	0	0	0	236	43	279
08:15 AM	0	36	9	30	1	1	0	220	0	8	1	3	0	0	0	1	254	56	310
08:30 AM	0	22	6	46	1	0	0	201	0	5	0	1	0	0	0	0	248	34	282
08:45 AM	0	41	7	43	1	0	0	291	0	3	0	2	0	0	0	0	336	52	388
Total	2	125	25	166	4	1	1	898	0	24	1	9	2	0	0	1	1074	185	1259
Grand Total	2	198	34	337	5	1	4	1381	0	38	2	18	2	0	0	6	1742	286	2028
Apprch %	0.9	84.6	14.5		50	10	40		0	95	5		100	0	0				
Total %	0.7	69.2	11.9		1.7	0.3	1.4		0	13.3	0.7		0.7	0	0		85.9	14.1	

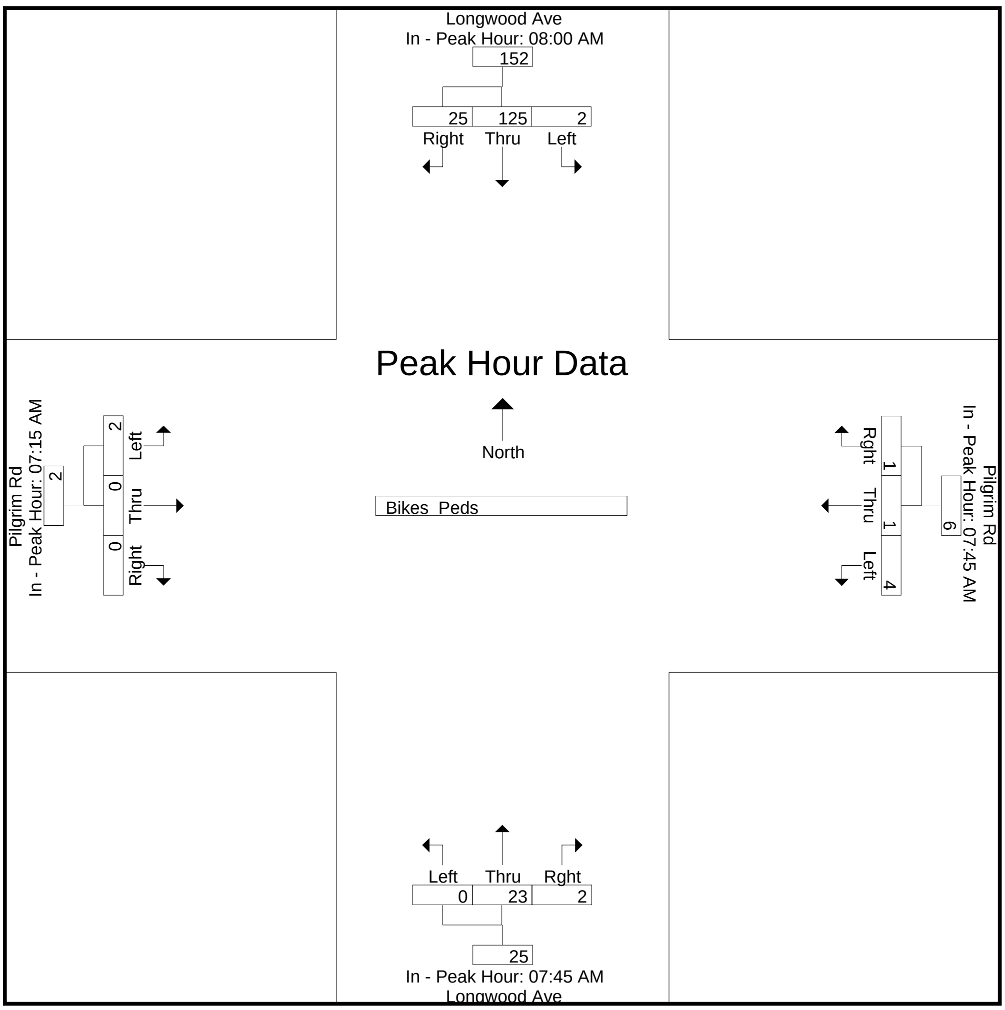
	Longwood Ave From North				Pilgrim Rd From East				Longwood Ave From South				Pilgrim Rd From West				
Start Time	Left	Thru	Right	App. Total				App. Total				App. Total				App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	**2**	26	3	31	**1**	0	**1**	**2**	0	**8**	0	8	**2**	0	0	**2**	43
08:15 AM	0	36	**9**	45	1	**1**	0	2	0	8	**1**	**9**	0	0	0	0	**56**
08:30 AM	0	22	6	28	1	0	0	1	0	5	0	5	0	0	0	0	34
08:45 AM	0	**41**	7	**48**	1	0	0	1	0	3	0	3	0	0	0	0	52
Total Volume	2	125	25	152	4	1	1	6	0	24	1	25	2	0	0	2	185
% App. Total	1.3	82.2	16.4		66.7	16.7	16.7		0	96	4		100	0	0		
PHF	.250	.762	.694	.792	1.00	.250	.250	.750	.000	.750	.250	.694	.250	.000	.000	.250	.826



Accurate Counts
978-664-2565

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012
Page No : 2

	Longwood Ave From North				Pilgrim Rd From East				Longwood Ave From South				Pilgrim Rd From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	08:00 AM				07:45 AM				07:45 AM				07:15 AM				
+0 mins.	**2**	26	3	31	**1**	0	0	1	0	2	**1**	3	0	0	0	0	
+15 mins.	0	36	**9**	45	1	0	**1**	**2**	0	**8**	0	8	0	0	0	0	
+30 mins.	0	22	6	28	1	**1**	0	2	0	8	1	**9**	0	0	0	0	
+45 mins.	0	**41**	7	**48**	1	0	0	1	0	5	0	5	**2**	0	0	**2**	
Total Volume	2	125	25	152	4	1	1	6	0	23	2	25	2	0	0	2	
% App. Total	1.3	82.2	16.4		66.7	16.7	16.7		0	92	8		100	0	0		
PHF	.250	.762	.694	.792	1.000	.250	.250	.750	.000	.719	.500	.694	.250	.000	.000	.250	



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Pilgrim Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012
Page No : 1

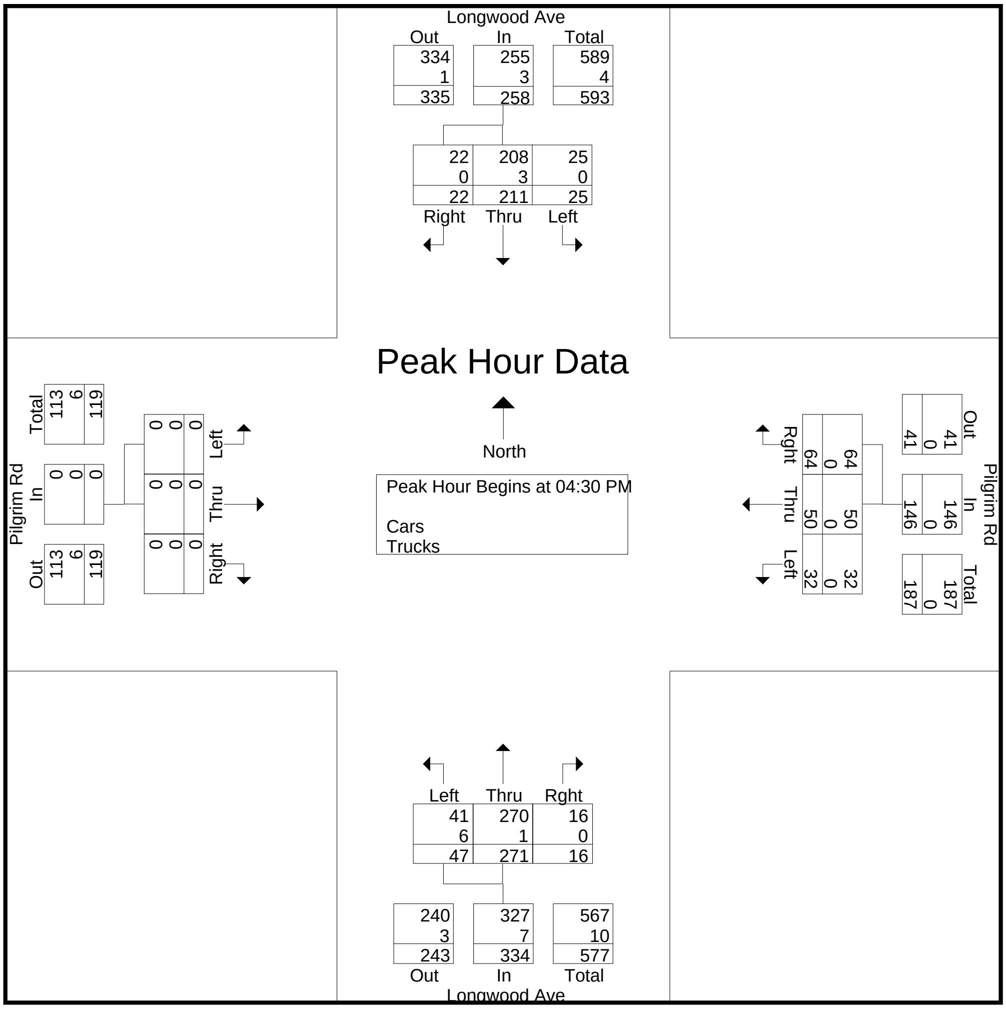
Groups Printed- Cars - Trucks

	Longwood Ave From North			Pilgrim Rd From East			Longwood Ave From South			Pilgrim Rd From West			
Start Time	Left	Thru	Right	Left	Thru	Rght	Left	Thru	Rght	Left	Thru	Right	Int. Total
04:00 PM	2	62	7	3	6	7	14	55	3	0	0	2	161
04:15 PM	6	54	5	4	8	12	16	68	5	0	0	0	178
04:30 PM	6	54	6	9	8	19	10	69	5	0	0	0	186
04:45 PM	7	62	7	7	6	13	15	65	3	0	0	0	185
Total	21	232	25	23	28	51	55	257	16	0	0	2	710
05:00 PM	3	49	6	7	17	18	8	61	2	0	0	0	171
05:15 PM	9	46	3	9	19	14	14	76	6	0	0	0	196
05:30 PM	5	55	7	6	13	9	20	61	6	0	0	0	182
05:45 PM	6	59	12	7	19	7	11	32	8	0	0	0	161
Total	23	209	28	29	68	48	53	230	22	0	0	0	710
Grand Total	44	441	53	52	96	99	108	487	38	0	0	2	1420
Apprch %	8.2	82	9.9	21.1	38.9	40.1	17.1	76.9	6	0	0	100	
Total %	3.1	31.1	3.7	3.7	6.8	7	7.6	34.3	2.7	0	0	0.1	
Cars	44	437	53	52	96	99	94	486	38	0	0	2	1401
% Cars	100	99.1	100	100	100	100	87	99.8	100	0	0	100	98.7
Trucks	0	4	0	0	0	0	14	1	0	0	0	0	19
% Trucks	0	0.9	0	0	0	0	13	0.2	0	0	0	0	1.3

	Longwood Ave From North				Pilgrim Rd From East				Longwood Ave From South				Pilgrim Rd From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	6	54	6	66	**9**	8	**19**	36	10	69	5	84	0	0	0	0	186
04:45 PM	7	**62**	**7**	**76**	7	6	13	26	**15**	65	3	83	0	0	0	0	185
05:00 PM	3	49	6	58	7	17	18	**42**	8	61	2	71	0	0	0	0	171
05:15 PM	**9**	46	3	58	9	**19**	14	42	14	**76**	**6**	**96**	0	0	0	0	**196**
Total Volume	25	211	22	258	32	50	64	146	47	271	16	334	0	0	0	0	738
% App. Total	9.7	81.8	8.5		21.9	34.2	43.8		14.1	81.1	4.8		0	0	0		
PHF	.694	.851	.786	.849	.889	.658	.842	.869	.783	.891	.667	.870	.000	.000	.000	.000	.941
Cars	25	208	22	255	32	50	64	146	41	270	16	327	0	0	0	0	728
% Cars	100	98.6	100	98.8	100	100	100	100	87.2	99.6	100	97.9	0	0	0	0	98.6
Trucks	0	3	0	3	0	0	0	0	6	1	0	7	0	0	0	0	10
% Trucks	0	1.4	0	1.2	0	0	0	0	12.8	0.4	0	2.1	0	0	0	0	1.4

Accurate Counts
978-664-2565

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012
Page No : 2

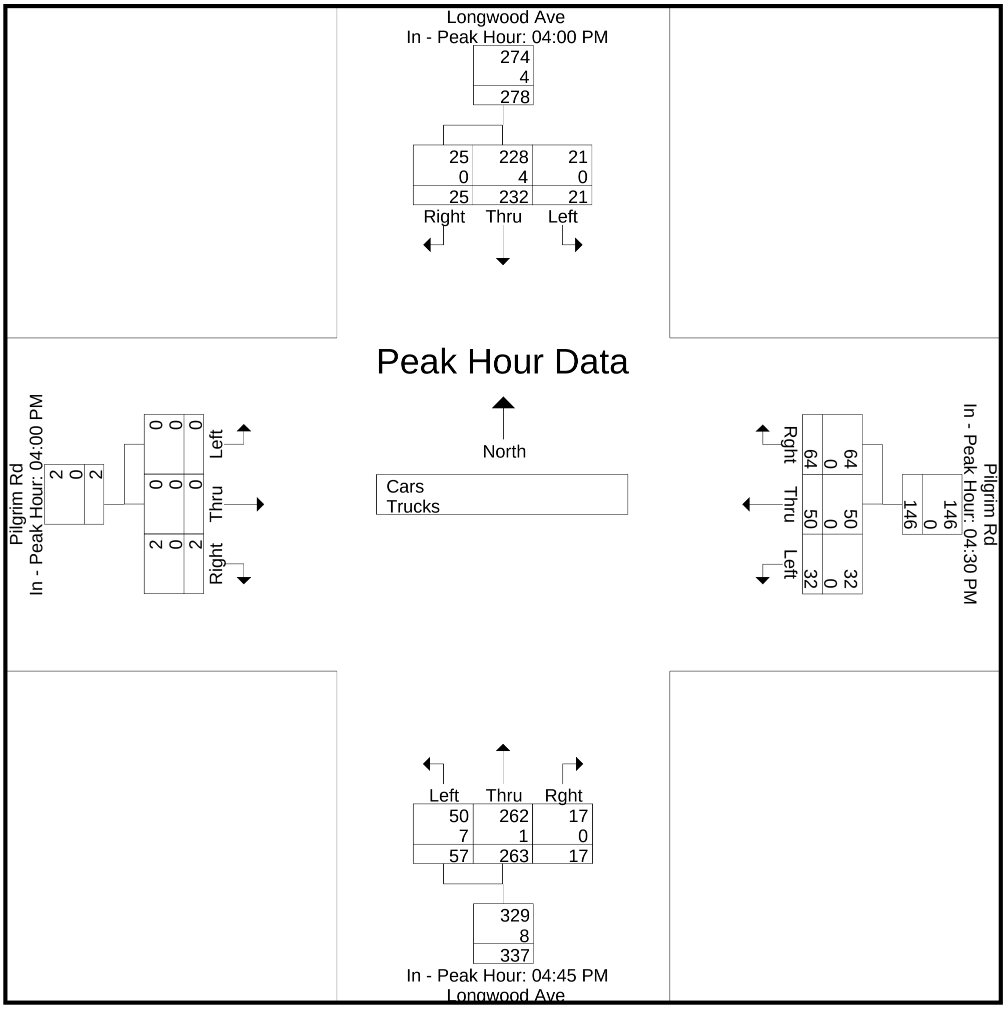


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:45 PM				04:00 PM			
+0 mins.	2	**62**	**7**	71	**9**	8	**19**	36	15	65	3	83	0	0	**2**	**2**
+15 mins.	6	54	5	65	7	6	13	26	8	61	2	71	0	0	0	0
+30 mins.	6	54	6	66	7	17	18	**42**	14	**76**	**6**	**96**	0	0	0	0
+45 mins.	**7**	62	7	**76**	9	**19**	14	42	**20**	61	6	87	0	0	0	0
Total Volume	21	232	25	278	32	50	64	146	57	263	17	337	0	0	2	2
% App. Total	7.6	83.5	9		21.9	34.2	43.8		16.9	78	5		0	0	100	
PHF	.750	.935	.893	.914	.889	.658	.842	.869	.713	.865	.708	.878	.000	.000	.250	.250
Cars	21	228	25	274	32	50	64	146	50	262	17	329	0	0	2	2
% Cars	100	98.3	100	98.6	100	100	100	100	87.7	99.6	100	97.6	0	0	100	100
Trucks	0	4	0	4	0	0	0	0	7	1	0	8	0	0	0	0
% Trucks	0	1.7	0	1.4	0	0	0	0	12.3	0.4	0	2.4	0	0	0	0

Accurate Counts
978-664-2565

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Pilgrim Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012
Page No : 1

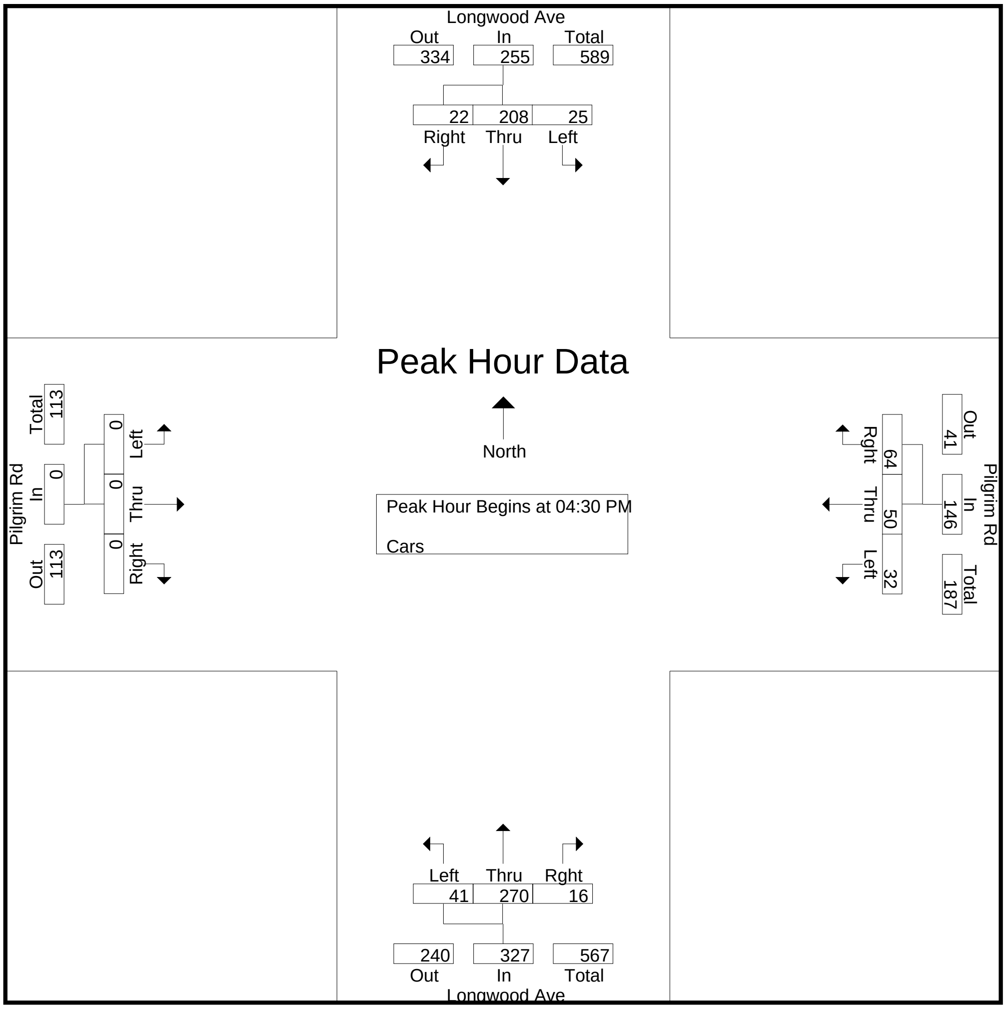
Groups Printed- Cars

	Longwood Ave From North			Pilgrim Rd From East			Longwood Ave From South			Pilgrim Rd From West			
Start Time	Left	Thru	Right	Left	Thru	Rght	Left	Thru	Rght	Left	Thru	Right	Int. Total
04:00 PM	2	61	7	3	6	7	13	55	3	0	0	2	159
04:15 PM	6	54	5	4	8	12	12	68	5	0	0	0	174
04:30 PM	6	52	6	9	8	19	9	69	5	0	0	0	183
04:45 PM	7	61	7	7	6	13	13	65	3	0	0	0	182
Total	21	228	25	23	28	51	47	257	16	0	0	2	698
05:00 PM	3	49	6	7	17	18	6	61	2	0	0	0	169
05:15 PM	9	46	3	9	19	14	13	75	6	0	0	0	194
05:30 PM	5	55	7	6	13	9	18	61	6	0	0	0	180
05:45 PM	6	59	12	7	19	7	10	32	8	0	0	0	160
Total	23	209	28	29	68	48	47	229	22	0	0	0	703
Grand Total	44	437	53	52	96	99	94	486	38	0	0	2	1401
Apprch %	8.2	81.8	9.9	21.1	38.9	40.1	15.2	78.6	6.1	0	0	100	
Total %	3.1	31.2	3.8	3.7	6.9	7.1	6.7	34.7	2.7	0	0	0.1	

	Longwood Ave From North				Pilgrim Rd From East				Longwood Ave From South				Pilgrim Rd From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	6	52	6	64	**9**	8	**19**	36	9	69	5	83	0	0	0	0	183
04:45 PM	7	**61**	**7**	**75**	7	6	13	26	**13**	65	3	81	0	0	0	0	182
05:00 PM	3	49	6	58	7	17	18	**42**	6	61	2	69	0	0	0	0	169
05:15 PM	**9**	46	3	58	9	**19**	14	42	13	**75**	**6**	**94**	0	0	0	0	**194**
Total Volume	25	208	22	255	32	50	64	146	41	270	16	327	0	0	0	0	728
% App. Total	9.8	81.6	8.6		21.9	34.2	43.8		12.5	82.6	4.9		0	0	0		
PHF	.694	.852	.786	.850	.889	.658	.842	.869	.788	.900	.667	.870	.000	.000	.000	.000	.938

Accurate Counts
978-664-2565

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012
Page No : 2

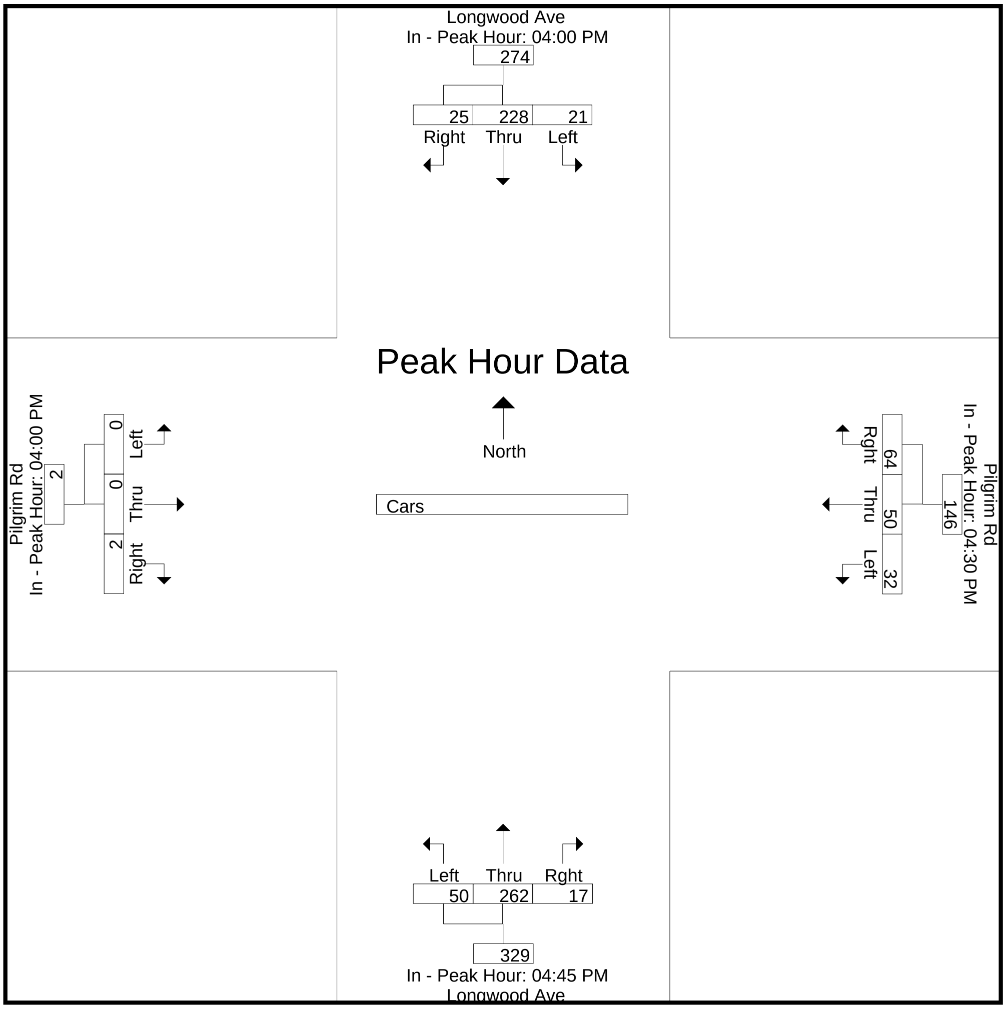


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:45 PM				04:00 PM			
+0 mins.	2	**61**	**7**	70	**9**	8	**19**	36	13	65	3	81	0	0	**2**	**2**
+15 mins.	6	54	5	65	7	6	13	26	6	61	2	69	0	0	0	0
+30 mins.	6	52	6	64	7	17	18	**42**	13	**75**	**6**	**94**	0	0	0	0
+45 mins.	**7**	61	7	**75**	9	**19**	14	42	**18**	61	6	85	0	0	0	0
Total Volume	21	228	25	274	32	50	64	146	50	262	17	329	0	0	2	2
% App. Total	7.7	83.2	9.1		21.9	34.2	43.8		15.2	79.6	5.2		0	0	100	
PHF	.750	.934	.893	.913	.889	.658	.842	.869	.694	.873	.708	.875	.000	.000	.250	.250

Accurate Counts
978-664-2565

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Pilgrim Road
City/State : Boston, MA
Weather : Drizzle

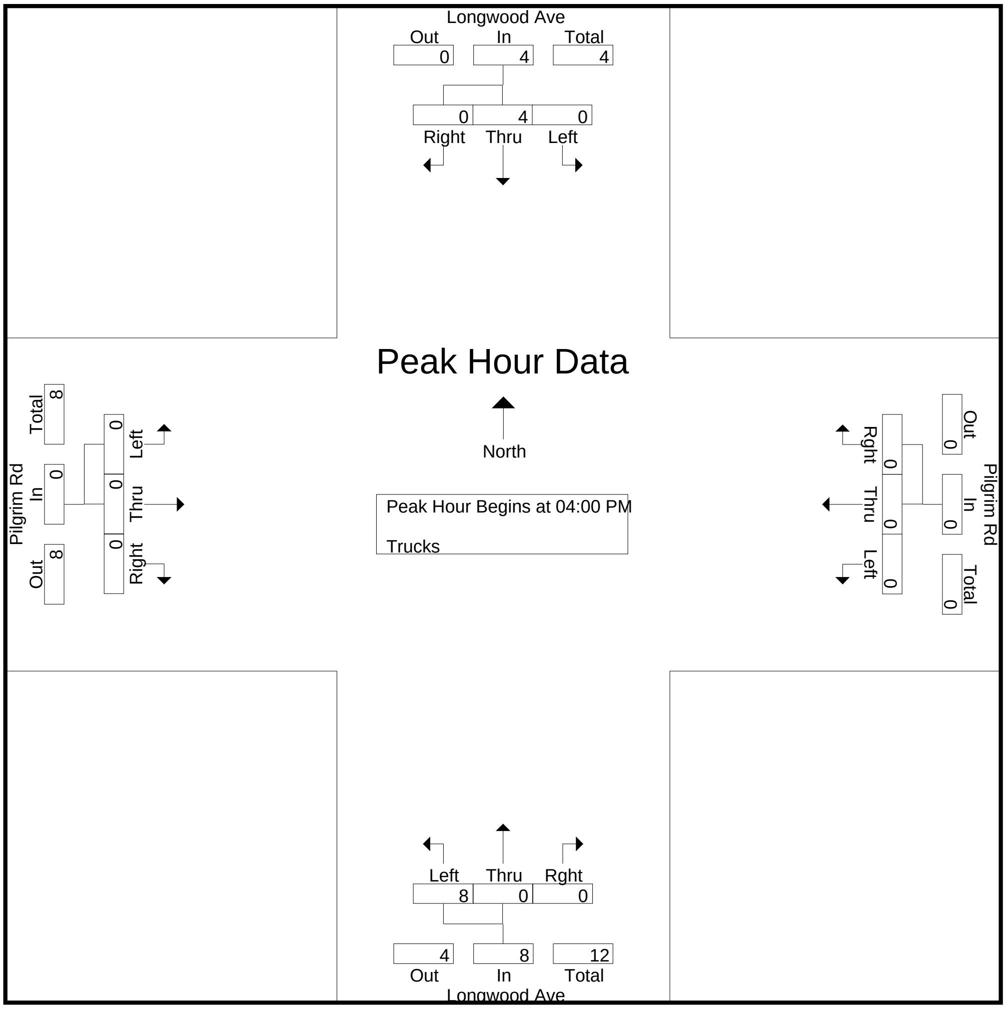
File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012
Page No : 1

Groups Printed- Trucks

	Longwood Ave From North			Pilgrim Rd From East			Longwood Ave From South			Pilgrim Rd From West			
Start Time	Left	Thru	Right	Left	Thru	Rght	Left	Thru	Rght	Left	Thru	Right	Int. Total
04:00 PM	0	1	0	0	0	0	1	0	0	0	0	0	2
04:15 PM	0	0	0	0	0	0	4	0	0	0	0	0	4
04:30 PM	0	2	0	0	0	0	1	0	0	0	0	0	3
04:45 PM	0	1	0	0	0	0	2	0	0	0	0	0	3
Total	0	4	0	0	0	0	8	0	0	0	0	0	12
05:00 PM	0	0	0	0	0	0	2	0	0	0	0	0	2
05:15 PM	0	0	0	0	0	0	1	1	0	0	0	0	2
05:30 PM	0	0	0	0	0	0	2	0	0	0	0	0	2
05:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	6	1	0	0	0	0	7
Grand Total	0	4	0	0	0	0	14	1	0	0	0	0	19
Apprch %	0	100	0	0	0	0	93.3	6.7	0	0	0	0	
Total %	0	21.1	0	0	0	0	73.7	5.3	0	0	0	0	

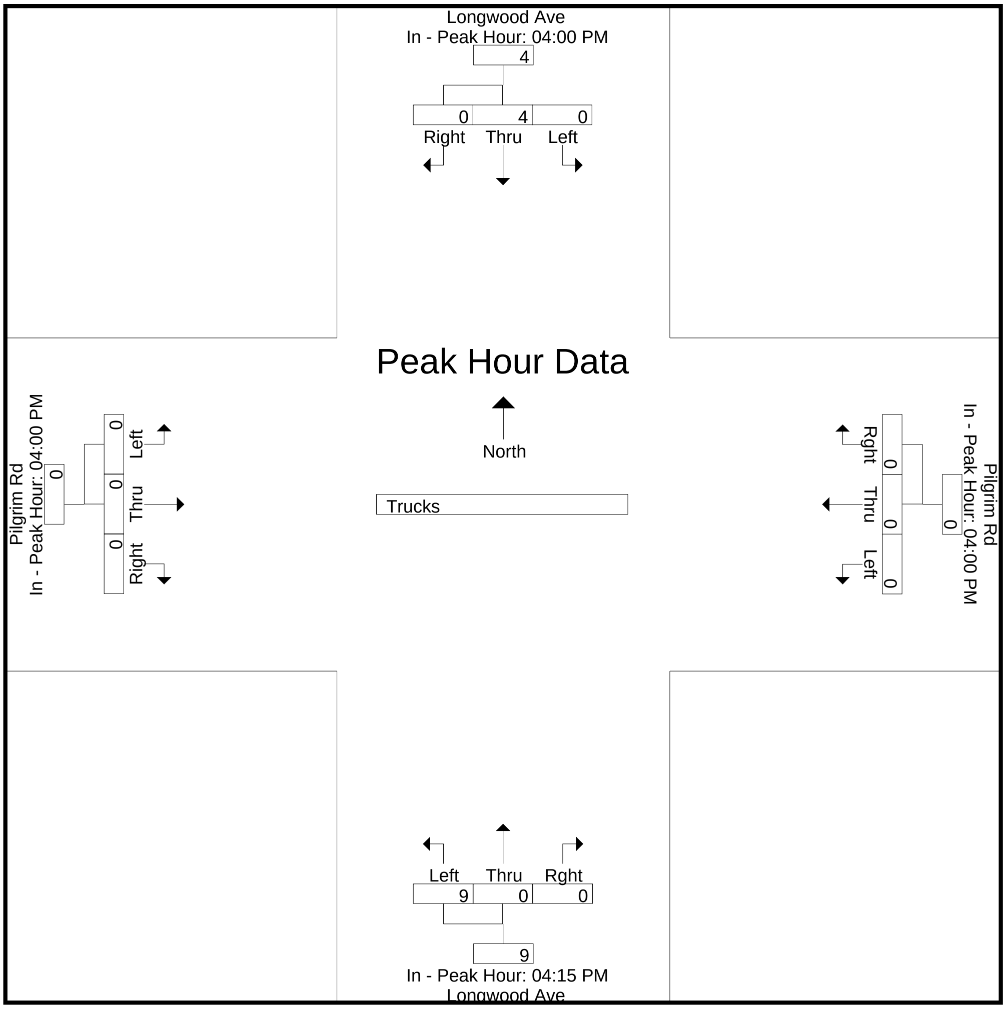
	Longwood Ave From North				Pilgrim Rd From East				Longwood Ave From South				Pilgrim Rd From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0	0	2
04:15 PM	0	0	0	0	0	0	0	0	**4**	0	0	**4**	0	0	0	0	**4**
04:30 PM	0	**2**	0	**2**	0	0	0	0	1	0	0	1	0	0	0	0	3
04:45 PM	0	1	0	1	0	0	0	0	2	0	0	2	0	0	0	0	3
Total Volume	0	4	0	4	0	0	0	0	8	0	0	8	0	0	0	0	12
% App. Total	0	100	0		0	0	0		100	0	0		0	0	0		
PHF	.000	.500	.000	.500	.000	.000	.000	.000	.500	.000	.000	.500	.000	.000	.000	.000	.750

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:15 PM				04:00 PM			
+0 mins.	0	1	0	1	0	0	0	0	**4**	0	0	**4**	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
+30 mins.	0	**2**	0	**2**	0	0	0	0	2	0	0	2	0	0	0	0
+45 mins.	0	1	0	1	0	0	0	0	2	0	0	2	0	0	0	0
Total Volume	0	4	0	4	0	0	0	0	9	0	0	9	0	0	0	0
% App. Total	0	100	0		0	0	0		100	0	0		0	0	0	
PHF	.000	.500	.000	.500	.000	.000	.000	.000	.563	.000	.000	.563	.000	.000	.000	.000



Longwood Ave
In - Peak Hour: 04:00 PM
4
0
4
0
Right
Thru
Left
Peak Hour Data
North
Trucks
Pilgrim Rd
In - Peak Hour: 04:00 PM
0
0
Left
0
Thru
0
Right
Rght
0
Thru
0
Left
0
0
Pilgrim Rd
In - Peak Hour: 04:00 PM
Left
Thru
Rght
9
0
0
9
In - Peak Hour: 04:15 PM
Longwood Ave

Accurate Counts
978-664-2565

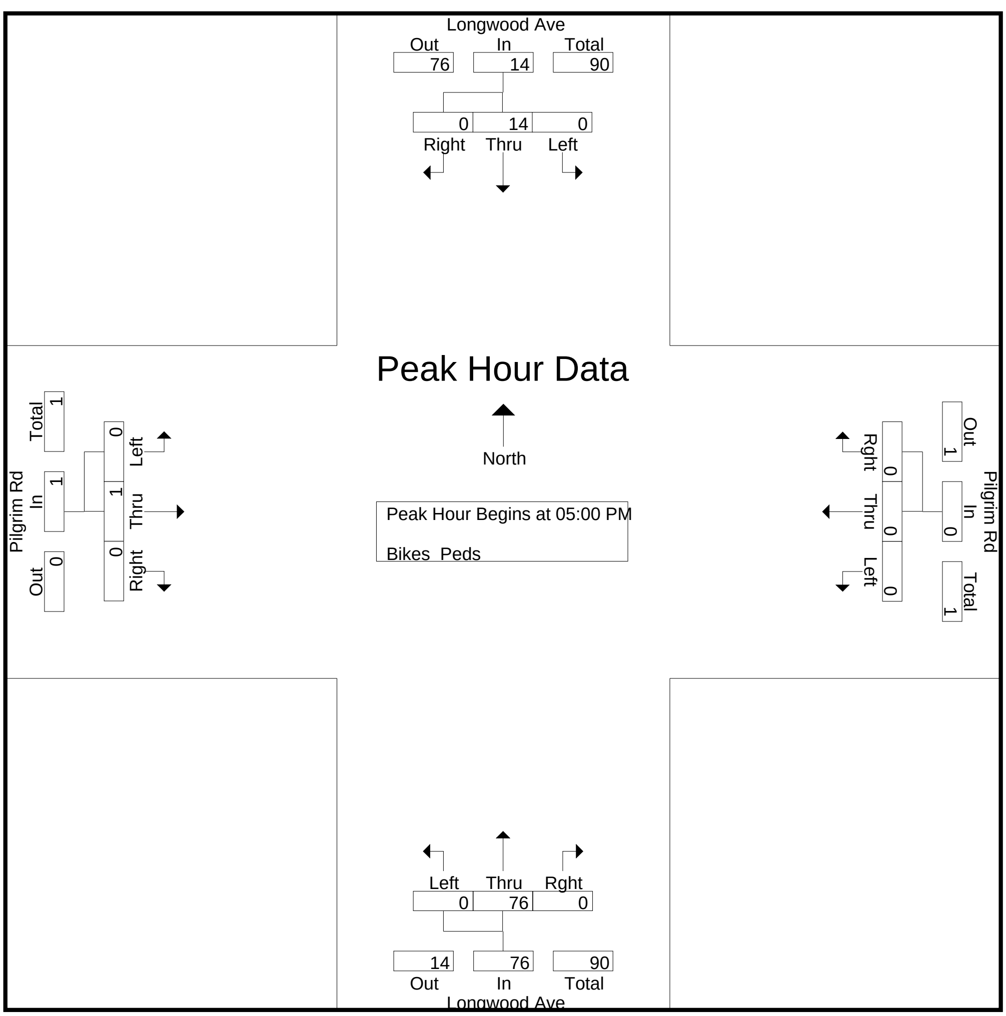
N/S Street : Longwood Avenue
E/W Street: Pilgrim Road
City/State : Boston, MA
Weather : Drizzle

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012
Page No : 1

Groups Printed- Bikes Peds

	Longwood Ave From North				Pilgrim Rd From East				Longwood Ave From South				Pilgrim Rd From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Rght	Peds	Left	Thru	Rght	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	1	0	50	1	0	0	178	0	5	0	3	0	0	0	0	231	7	238
04:15 PM	1	4	2	34	0	0	0	134	0	8	0	3	0	0	0	0	171	15	186
04:30 PM	0	2	0	46	0	0	0	162	1	15	0	4	0	0	0	5	217	18	235
04:45 PM	0	3	0	31	0	0	0	217	0	15	0	3	0	0	2	0	251	20	271
Total	1	10	2	161	1	0	0	691	1	43	0	13	0	0	2	5	870	60	930
05:00 PM	0	3	0	61	0	0	0	277	0	24	0	6	0	1	0	0	344	28	372
05:15 PM	0	5	0	55	0	0	0	254	0	13	0	5	0	0	0	2	316	18	334
05:30 PM	0	5	0	49	0	0	0	237	0	18	0	5	0	0	0	0	291	23	314
05:45 PM	0	1	0	35	0	0	0	200	0	21	0	5	0	0	0	0	240	22	262
Total	0	14	0	200	0	0	0	968	0	76	0	21	0	1	0	2	1191	91	1282
Grand Total	1	24	2	361	1	0	0	1659	1	119	0	34	0	1	2	7	2061	151	2212
Apprch %	3.7	88.9	7.4		100	0	0		0.8	99.2	0		0	33.3	66.7				
Total %	0.7	15.9	1.3		0.7	0	0		0.7	78.8	0		0	0.7	1.3		93.2	6.8	

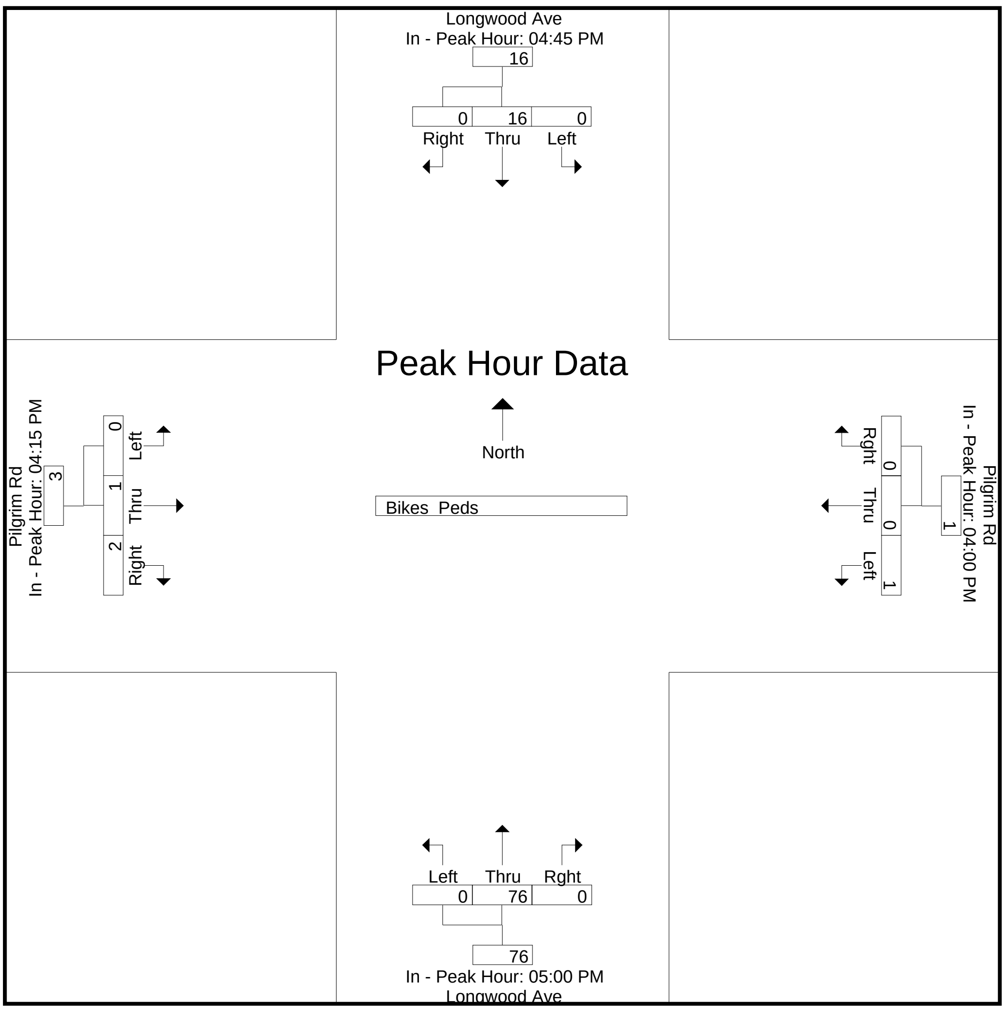
	Longwood Ave From North				Pilgrim Rd From East				Longwood Ave From South				Pilgrim Rd From West				
Start Time	Left	Thru	Right	App. Total				App. Total				App. Total				App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	3	0	3	0	0	0	0	0	**24**	0	**24**	0	**1**	0	**1**	**28**
05:15 PM	0	**5**	0	**5**	0	0	0	0	0	13	0	13	0	0	0	0	18
05:30 PM	0	5	0	5	0	0	0	0	0	18	0	18	0	0	0	0	23
05:45 PM	0	1	0	1	0	0	0	0	0	21	0	21	0	0	0	0	22
Total Volume	0	14	0	14	0	0	0	0	0	76	0	76	0	1	0	1	91
% App. Total	0	100	0		0	0	0		0	100	0		0	100	0		
PHF	.000	.700	.000	.700	.000	.000	.000	.000	.000	.792	.000	.792	.000	.250	.000	.250	.813



Accurate Counts
978-664-2565

File Name : 94970015
Site Code : 94970015
Start Date : 5/17/2012

	Longwood Ave From North				Pilgrim Rd From East				Longwood Ave From South				Pilgrim Rd From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:45 PM				04:00 PM				05:00 PM				04:15 PM				
+0 mins.	0	3	0	3	**1**	0	0	**1**	0	**24**	0	**24**	0	0	0	0	
+15 mins.	0	3	0	3	0	0	0	0	0	13	0	13	0	0	0	0	
+30 mins.	0	**5**	0	**5**	0	0	0	0	0	18	0	18	0	0	**2**	**2**	
+45 mins.	0	5	0	5	0	0	0	0	0	21	0	21	0	**1**	0	1	
Total Volume	0	16	0	16	1	0	0	1	0	76	0	76	0	1	2	3	
% App. Total	0	100	0		100	0	0		0	100	0		0	33.3	66.7		
PHF	.000	.800	.000	.800	.250	.000	.000	.250	.000	.792	.000	.792	.000	.250	.250	.375	



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

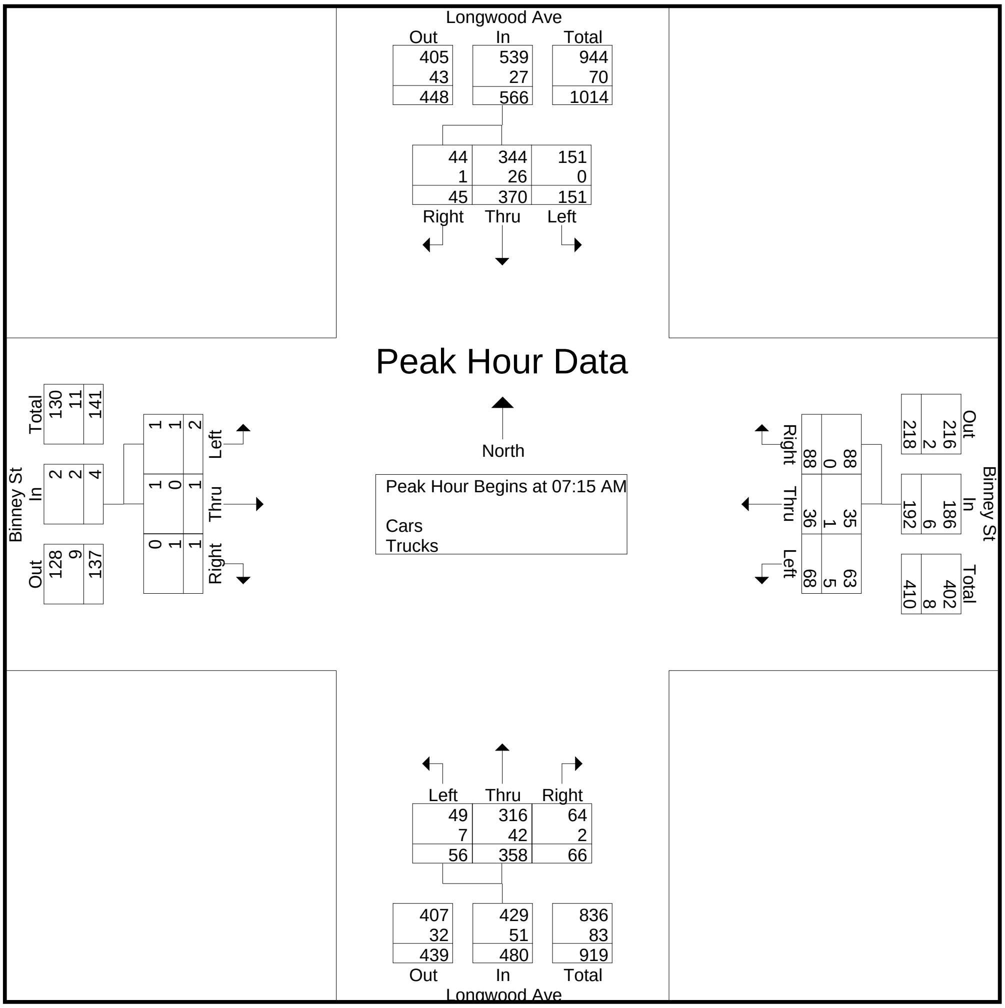
	Longwood Ave From North			Binney St From East			Longwood Ave From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	30	90	9	13	4	26	7	68	15	0	0	0	262
07:15 AM	21	107	15	18	6	24	20	89	13	0	1	0	314
07:30 AM	37	103	7	23	14	24	14	123	15	0	0	1	361
07:45 AM	44	73	11	18	7	19	11	82	21	2	0	0	288
Total	132	373	42	72	31	93	52	362	64	2	1	1	1225
08:00 AM	49	87	12	9	9	21	11	64	17	0	0	0	279
08:15 AM	33	94	12	10	12	24	12	68	19	0	1	0	285
08:30 AM	37	100	6	10	8	20	9	69	24	0	0	0	283
08:45 AM	59	98	9	10	4	24	13	60	16	0	0	2	295
Total	178	379	39	39	33	89	45	261	76	0	1	2	1142
Grand Total	310	752	81	111	64	182	97	623	140	2	2	3	2367
Apprch %	27.1	65.8	7.1	31.1	17.9	51	11.3	72.4	16.3	28.6	28.6	42.9	
Total %	13.1	31.8	3.4	4.7	2.7	7.7	4.1	26.3	5.9	0.1	0.1	0.1	
Cars	309	697	77	102	63	182	83	543	138	1	1	1	2197
% Cars	99.7	92.7	95.1	91.9	98.4	100	85.6	87.2	98.6	50	50	33.3	92.8
Trucks	1	55	4	9	1	0	14	80	2	1	1	2	170
% Trucks	0.3	7.3	4.9	8.1	1.6	0	14.4	12.8	1.4	50	50	66.7	7.2

	Longwood Ave From North				Binney St From East				Longwood Ave From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	21	**107**	**15**	143	18	6	**24**	48	**20**	89	13	122	0	**1**	0	1	314
07:30 AM	37	103	7	147	**23**	**14**	24	**61**	14	**123**	15	**152**	0	0	**1**	1	**361**
07:45 AM	44	73	11	128	18	7	19	44	11	82	**21**	114	**2**	0	0	**2**	288
08:00 AM	**49**	87	12	**148**	9	9	21	39	11	64	17	92	0	0	0	0	279
Total Volume	151	370	45	566	68	36	88	192	56	358	66	480	2	1	1	4	1242
% App. Total	26.7	65.4	8		35.4	18.8	45.8		11.7	74.6	13.8		50	25	25		
PHF	.770	.864	.750	.956	.739	.643	.917	.787	.700	.728	.786	.789	.250	.250	.250	.500	.860
Cars	151	344	44	539	63	35	88	186	49	316	64	429	1	1	0	2	1156
% Cars	100	93.0	97.8	95.2	92.6	97.2	100	96.9	87.5	88.3	97.0	89.4	50.0	100	0	50.0	93.1
Trucks	0	26	1	27	5	1	0	6	7	42	2	51	1	0	1	2	86
% Trucks	0	7.0	2.2	4.8	7.4	2.8	0	3.1	12.5	11.7	3.0	10.6	50.0	0	100	50.0	6.9

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 2

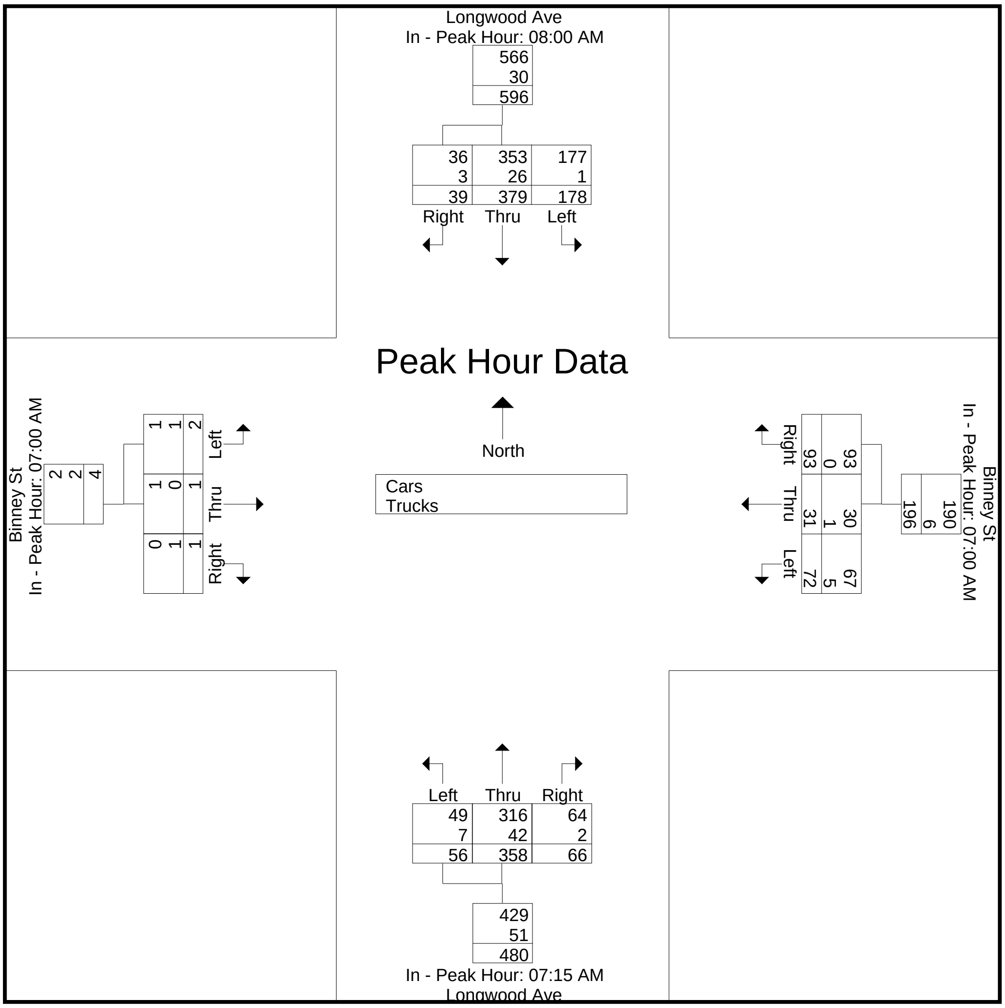


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:00 AM				07:15 AM				07:00 AM			
+0 mins.	49	87	**12**	148	13	4	**26**	43	**20**	89	13	122	0	0	0	0
+15 mins.	33	94	12	139	18	6	24	48	14	**123**	15	**152**	0	**1**	0	1
+30 mins.	37	**100**	6	143	**23**	**14**	24	**61**	11	82	**21**	114	0	0	**1**	1
+45 mins.	**59**	98	9	**166**	18	7	19	44	11	64	17	92	**2**	0	0	**2**
Total Volume	178	379	39	596	72	31	93	196	56	358	66	480	2	1	1	4
% App. Total	29.9	63.6	6.5		36.7	15.8	47.4		11.7	74.6	13.8		50	25	25	
PHF	.754	.948	.813	.898	.783	.554	.894	.803	.700	.728	.786	.789	.250	.250	.250	.500
Cars	177	353	36	566	67	30	93	190	49	316	64	429	1	1	0	2
% Cars	99.4	93.1	92.3	95	93.1	96.8	100	96.9	87.5	88.3	97	89.4	50	100	0	50
Trucks	1	26	3	30	5	1	0	6	7	42	2	51	1	0	1	2
% Trucks	0.6	6.9	7.7	5	6.9	3.2	0	3.1	12.5	11.7	3	10.6	50	0	100	50

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue	File Name : 94970020
E/W Street : Binney Street	Site Code : 94970020
City/State : Boston, MA	Start Date : 5/16/2012
Weather : Drizzle	Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

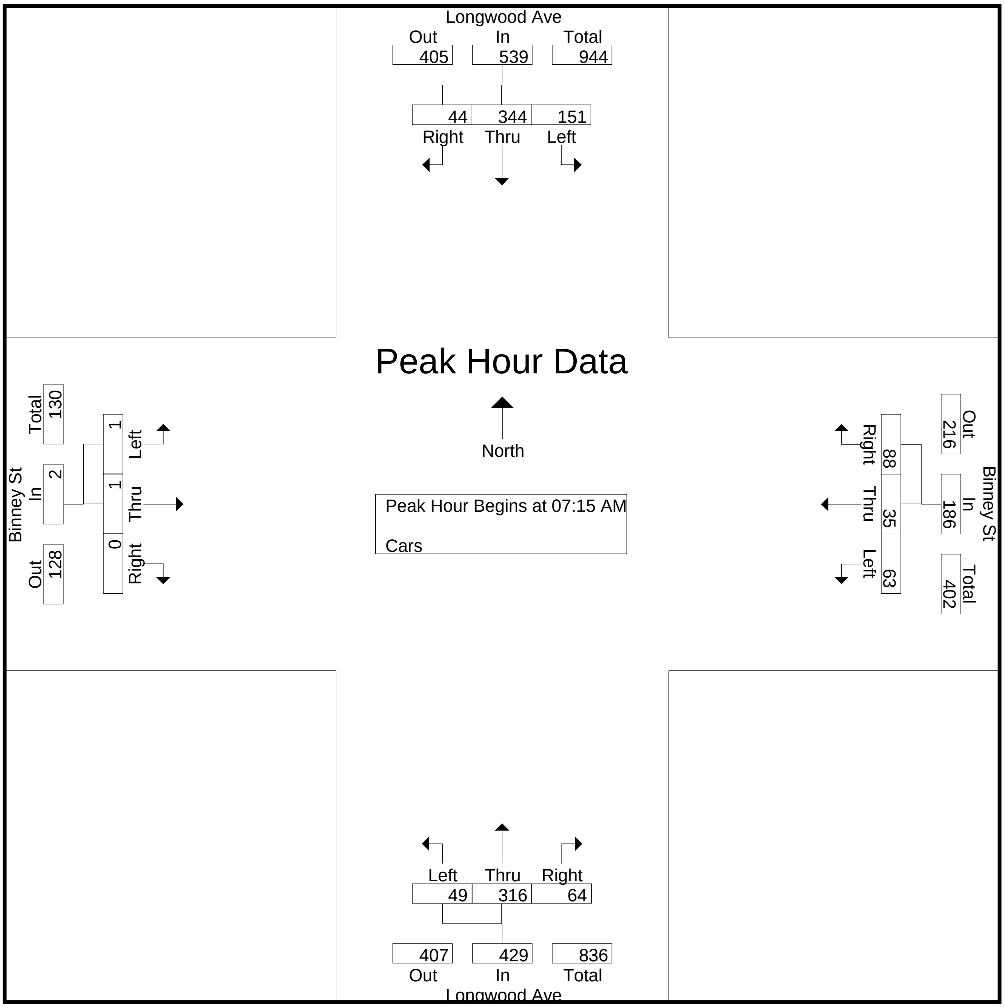
	Longwood Ave From North			Binney St From East			Longwood Ave From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	30	81	9	11	4	26	4	58	15	0	0	0	238
07:15 AM	21	100	15	17	6	24	15	78	13	0	1	0	290
07:30 AM	37	95	7	22	13	24	13	114	15	0	0	0	340
07:45 AM	44	68	10	17	7	19	10	72	19	1	0	0	267
Total	132	344	41	67	30	93	42	322	62	1	1	0	1135
08:00 AM	49	81	12	7	9	21	11	52	17	0	0	0	259
08:15 AM	33	89	10	9	12	24	11	57	19	0	0	0	264
08:30 AM	37	92	6	9	8	20	8	58	24	0	0	0	262
08:45 AM	58	91	8	10	4	24	11	54	16	0	0	1	277
Total	177	353	36	35	33	89	41	221	76	0	0	1	1062
Grand Total	309	697	77	102	63	182	83	543	138	1	1	1	2197
Apprch %	28.5	64.4	7.1	29.4	18.2	52.4	10.9	71.1	18.1	33.3	33.3	33.3	
Total %	14.1	31.7	3.5	4.6	2.9	8.3	3.8	24.7	6.3	0	0	0	

	Longwood Ave From North				Binney St From East				Longwood Ave From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	21	**100**	**15**	136	17	6	**24**	47	**15**	78	13	106	0	**1**	0	**1**	290
07:30 AM	37	95	7	139	**22**	**13**	24	**59**	13	**114**	15	**142**	0	0	0	0	**340**
07:45 AM	44	68	10	122	17	7	19	43	10	72	**19**	101	**1**	0	0	1	267
08:00 AM	**49**	81	12	**142**	7	9	21	37	11	52	17	80	0	0	0	0	259
Total Volume	151	344	44	539	63	35	88	186	49	316	64	429	1	1	0	2	1156
% App. Total	28	63.8	8.2		33.9	18.8	47.3		11.4	73.7	14.9		50	50	0		
PHF	.770	.860	.733	.949	.716	.673	.917	.788	.817	.693	.842	.755	.250	.250	.000	.500	.850

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 2



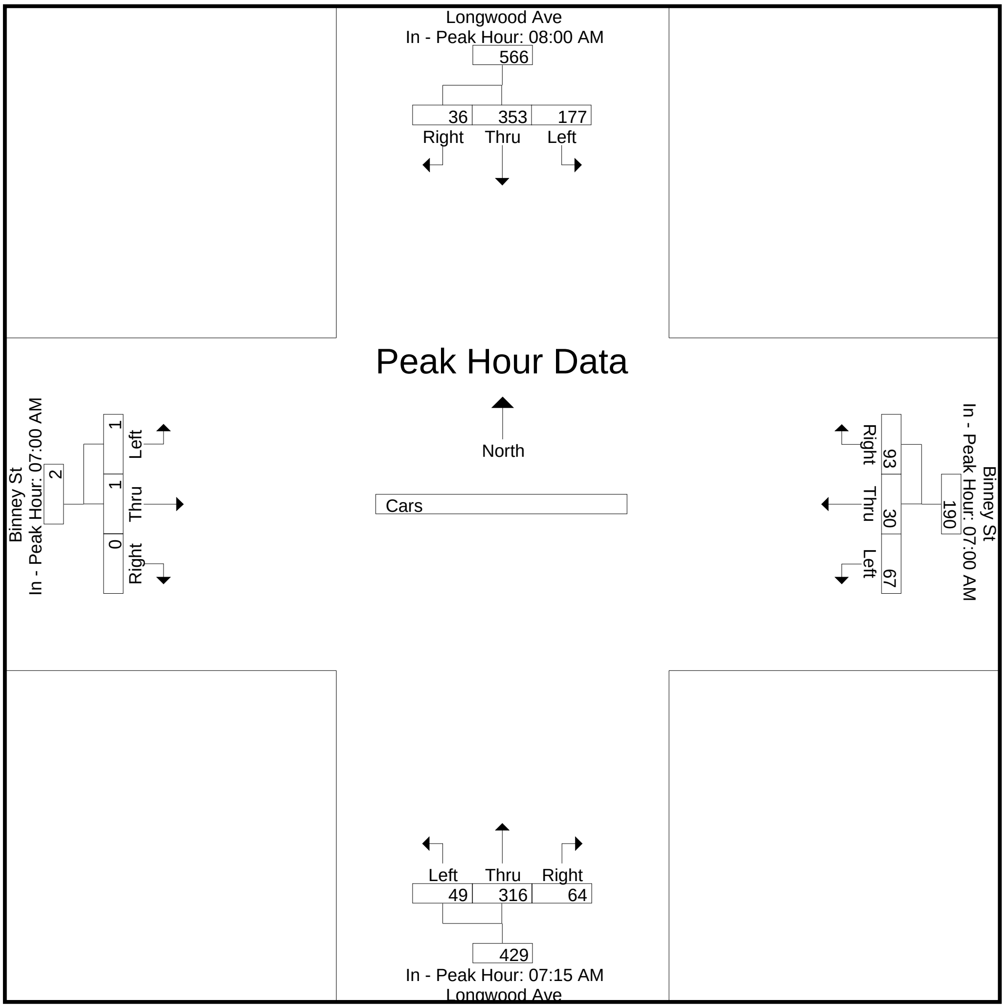
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:00 AM				07:15 AM				07:00 AM			
+0 mins.	49	81	**12**	142	11	4	**26**	41	**15**	78	13	106	0	0	0	0
+15 mins.	33	89	10	132	17	6	24	47	13	**114**	15	**142**	0	**1**	0	**1**
+30 mins.	37	**92**	6	135	**22**	**13**	24	**59**	10	72	**19**	101	0	0	0	0
+45 mins.	**58**	91	8	**157**	17	7	19	43	11	52	17	80	**1**	0	0	1
Total Volume	177	353	36	566	67	30	93	190	49	316	64	429	1	1	0	2
% App. Total	31.3	62.4	6.4		35.3	15.8	48.9		11.4	73.7	14.9		50	50	0	
PHF	.763	.959	.750	.901	.761	.577	.894	.805	.817	.693	.842	.755	.250	.250	.000	.500

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

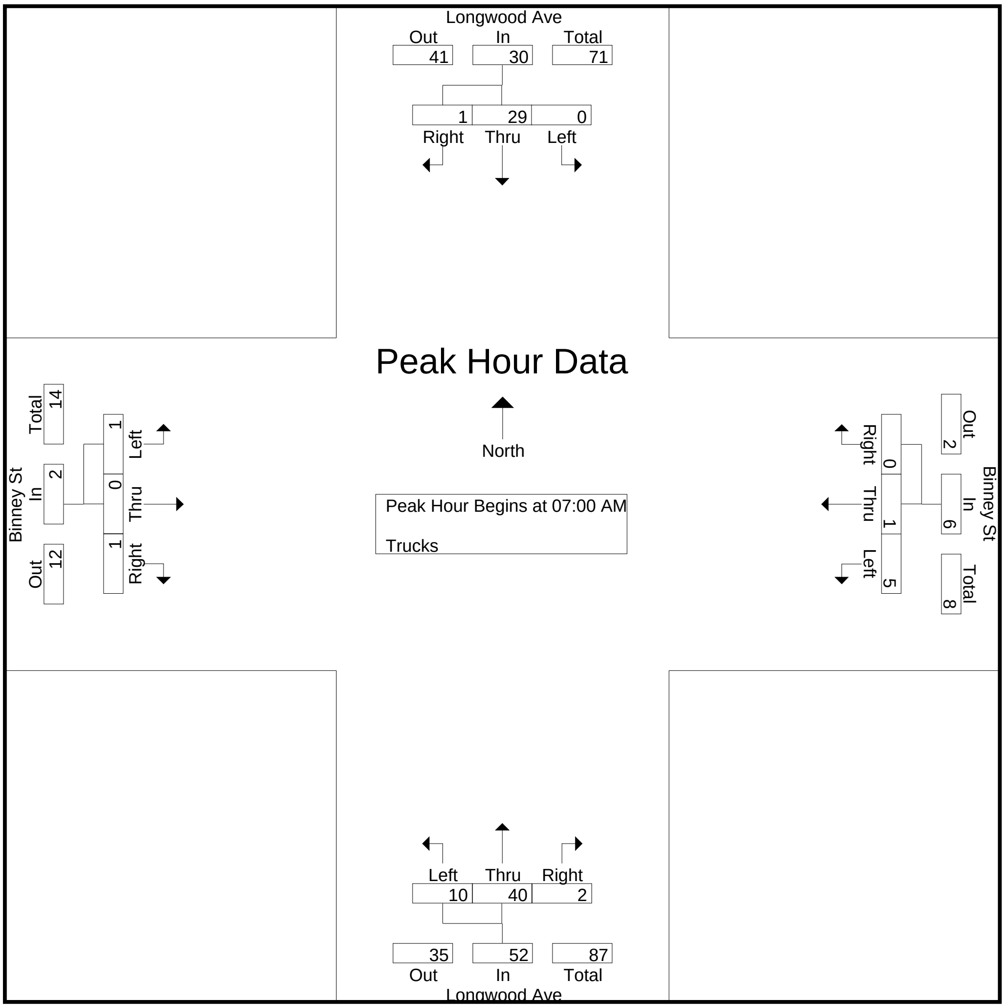
	Longwood Ave From North			Binney St From East			Longwood Ave From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	9	0	2	0	0	3	10	0	0	0	0	24
07:15 AM	0	7	0	1	0	0	5	11	0	0	0	0	24
07:30 AM	0	8	0	1	1	0	1	9	0	0	0	1	21
07:45 AM	0	5	1	1	0	0	1	10	2	1	0	0	21
Total	0	29	1	5	1	0	10	40	2	1	0	1	90
08:00 AM	0	6	0	2	0	0	0	12	0	0	0	0	20
08:15 AM	0	5	2	1	0	0	1	11	0	0	1	0	21
08:30 AM	0	8	0	1	0	0	1	11	0	0	0	0	21
08:45 AM	1	7	1	0	0	0	2	6	0	0	0	1	18
Total	1	26	3	4	0	0	4	40	0	0	1	1	80
Grand Total	1	55	4	9	1	0	14	80	2	1	1	2	170
Apprch %	1.7	91.7	6.7	90	10	0	14.6	83.3	2.1	25	25	50	
Total %	0.6	32.4	2.4	5.3	0.6	0	8.2	47.1	1.2	0.6	0.6	1.2	

	Longwood Ave From North				Binney St From East				Longwood Ave From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	**9**	0	**9**	**2**	0	0	**2**	3	10	0	13	0	0	0	0	**24**
07:15 AM	0	7	0	7	1	0	0	1	**5**	**11**	0	**16**	0	0	0	0	24
07:30 AM	0	8	0	8	1	**1**	0	2	1	9	0	10	0	0	**1**	**1**	21
07:45 AM	0	5	**1**	6	1	0	0	1	1	10	**2**	13	**1**	0	0	1	21
Total Volume	0	29	1	30	5	1	0	6	10	40	2	52	1	0	1	2	90
% App. Total	0	96.7	3.3		83.3	16.7	0		19.2	76.9	3.8		50	0	50		
PHF	.000	.806	.250	.833	.625	.250	.000	.750	.500	.909	.250	.813	.250	.000	.250	.500	.938

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 2



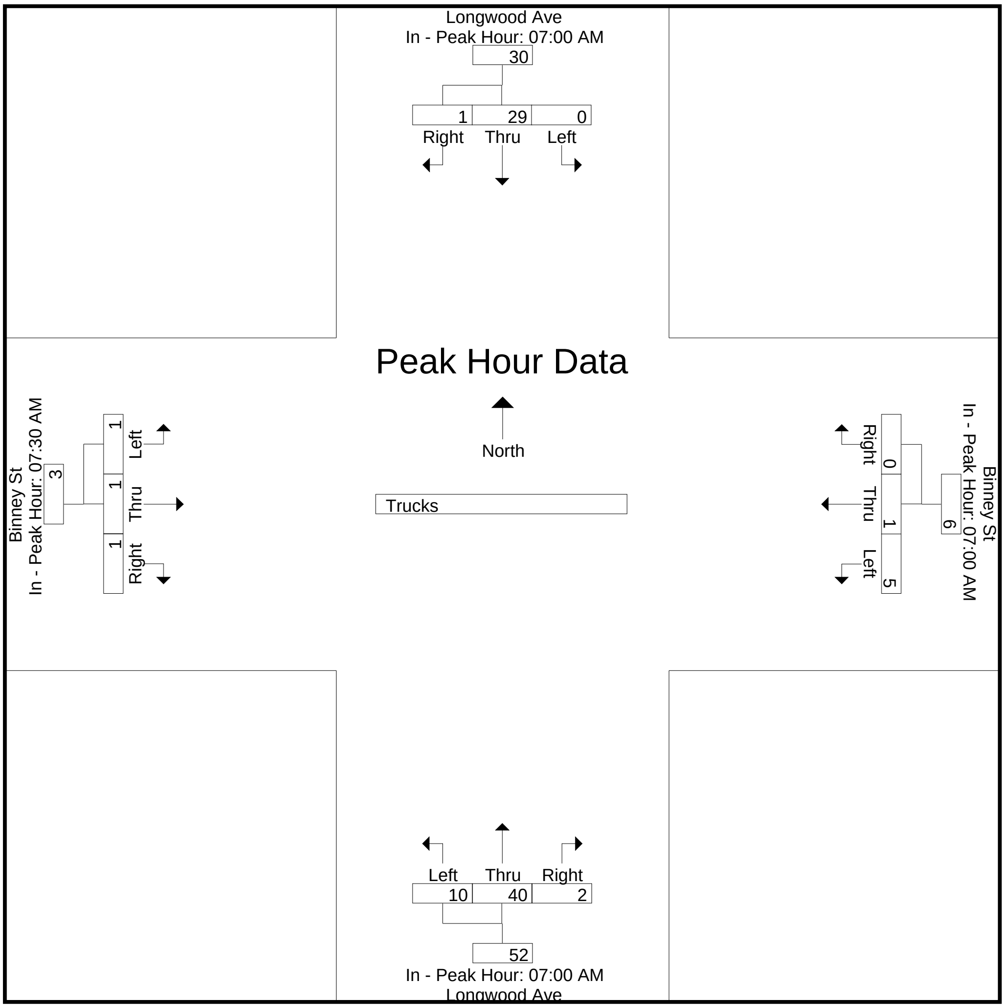
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:30 AM			
+0 mins.	0	**9**	0	**9**	**2**	0	0	**2**	3	10	0	13	0	0	**1**	**1**
+15 mins.	0	7	0	7	1	0	0	1	**5**	**11**	0	**16**	**1**	0	0	1
+30 mins.	0	8	0	8	1	**1**	0	2	1	9	0	10	0	0	0	0
+45 mins.	0	5	**1**	6	1	0	0	1	1	10	**2**	13	0	**1**	0	1
Total Volume	0	29	1	30	5	1	0	6	10	40	2	52	1	1	1	3
% App. Total	0	96.7	3.3		83.3	16.7	0		19.2	76.9	3.8		33.3	33.3	33.3	
PHF	.000	.806	.250	.833	.625	.250	.000	.750	.500	.909	.250	.813	.250	.250	.250	.750

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

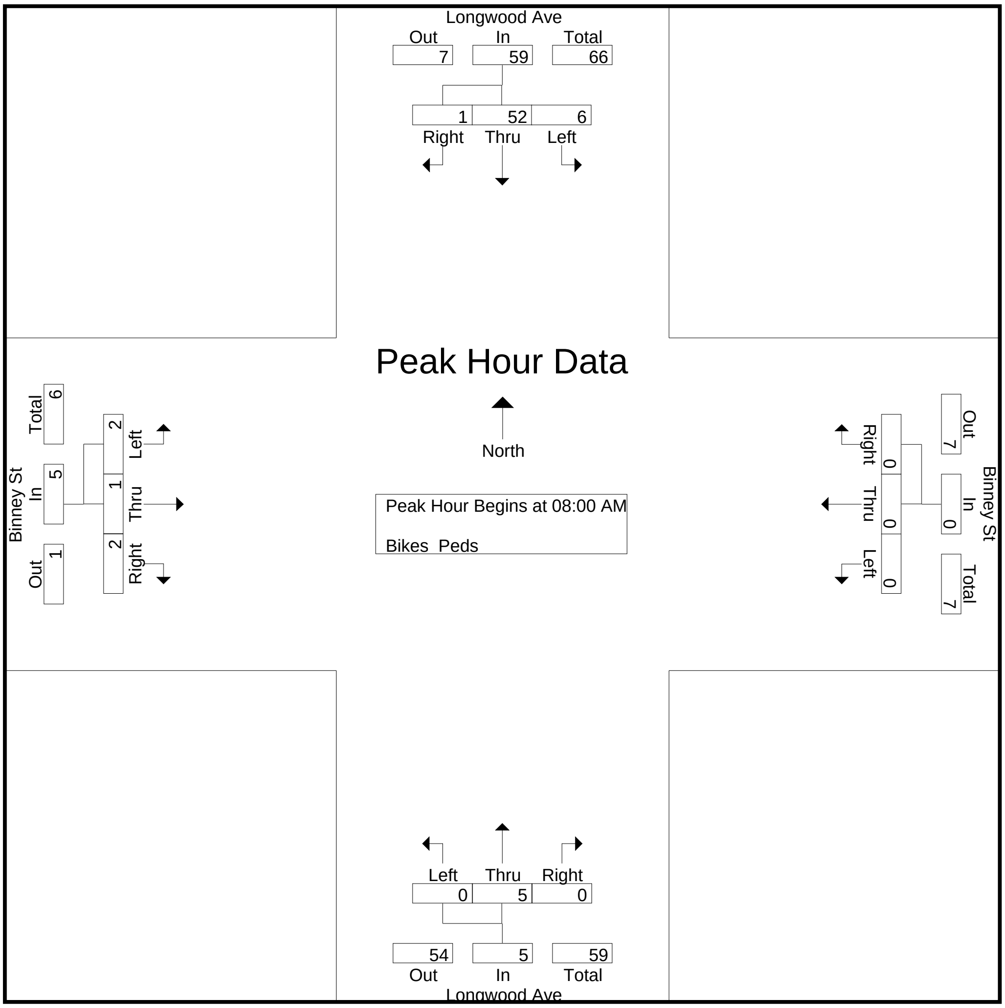
	Longwood Ave From North				Binney St From East				Longwood Ave From South				Binney St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	1	1	35	0	0	0	36	1	3	0	50	0	2	1	100	221	9	230
07:15 AM	2	3	0	24	0	0	0	63	1	2	0	50	0	0	0	105	242	8	250
07:30 AM	2	4	0	33	1	0	0	61	0	1	0	40	0	0	0	101	235	8	243
07:45 AM	1	8	0	73	0	0	0	96	1	3	0	69	0	0	0	129	367	13	380
Total	5	16	1	165	1	0	0	256	3	9	0	209	0	2	1	435	1065	38	1103
08:00 AM	1	10	0	34	0	0	0	67	0	0	0	59	1	0	1	125	285	13	298
08:15 AM	4	11	1	41	0	0	0	109	0	1	0	56	0	0	1	167	373	18	391
08:30 AM	0	13	0	50	0	0	0	99	0	2	0	64	1	1	0	155	368	17	385
08:45 AM	1	18	0	42	0	0	0	132	0	2	0	59	0	0	0	166	399	21	420
Total	6	52	1	167	0	0	0	407	0	5	0	238	2	1	2	613	1425	69	1494
Grand Total	11	68	2	332	1	0	0	663	3	14	0	447	2	3	3	1048	2490	107	2597
Apprch %	13.6	84	2.5		100	0	0		17.6	82.4	0		25	37.5	37.5				
Total %	10.3	63.6	1.9		0.9	0	0		2.8	13.1	0		1.9	2.8	2.8		95.9	4.1	

	Longwood Ave From North				Binney St From East				Longwood Ave From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	1	10	0	11	0	0	0	0	0	0	0	0	**1**	0	**1**	**2**	13
08:15 AM	**4**	11	**1**	16	0	0	0	0	0	1	0	1	0	0	1	1	18
08:30 AM	0	13	0	13	0	0	0	0	0	**2**	0	**2**	1	**1**	0	2	17
08:45 AM	1	**18**	0	**19**	0	0	0	0	0	2	0	2	0	0	0	0	**21**
Total Volume	6	52	1	59	0	0	0	0	0	5	0	5	2	1	2	5	69
% App. Total	10.2	88.1	1.7		0	0	0		0	100	0		40	20	40		
PHF	.375	.722	.250	.776	.000	.000	.000	.000	.000	.625	.000	.625	.500	.250	.500	.625	.821

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 2

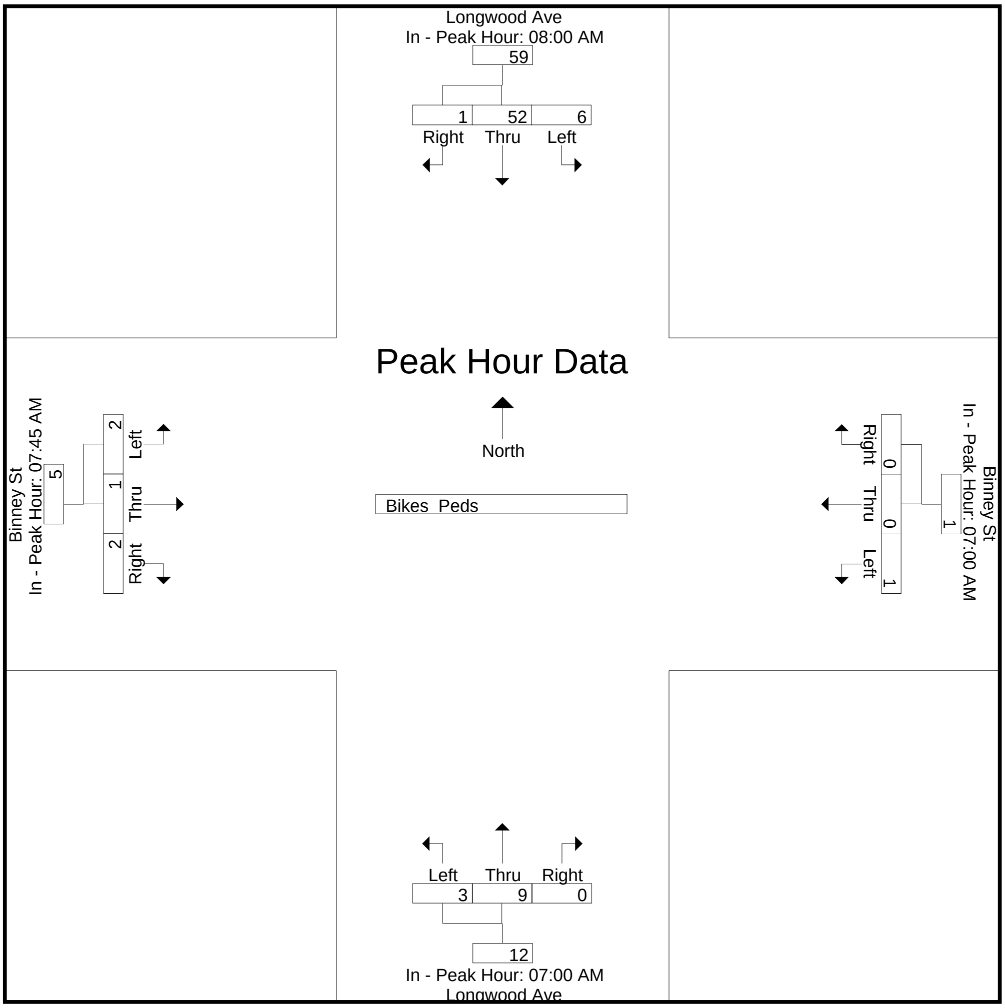


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:00 AM				07:00 AM				07:45 AM			
+0 mins.	1	10	0	11	0	0	0	0	**1**	**3**	0	**4**	0	0	0	0
+15 mins.	**4**	11	**1**	16	0	0	0	0	1	2	0	3	**1**	0	**1**	**2**
+30 mins.	0	13	0	13	**1**	0	0	**1**	0	1	0	1	0	0	1	1
+45 mins.	1	**18**	0	**19**	0	0	0	0	1	3	0	4	1	**1**	0	2
Total Volume	6	52	1	59	1	0	0	1	3	9	0	12	2	1	2	5
% App. Total	10.2	88.1	1.7		100	0	0		25	75	0		40	20	40	
PHF	.375	.722	.250	.776	.250	.000	.000	.250	.750	.750	.000	.750	.500	.250	.500	.625

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue	File Name : 94970020
E/W Street : Binney Street	Site Code : 94970020
City/State : Boston, MA	Start Date : 5/16/2012
Weather : Drizzle	Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

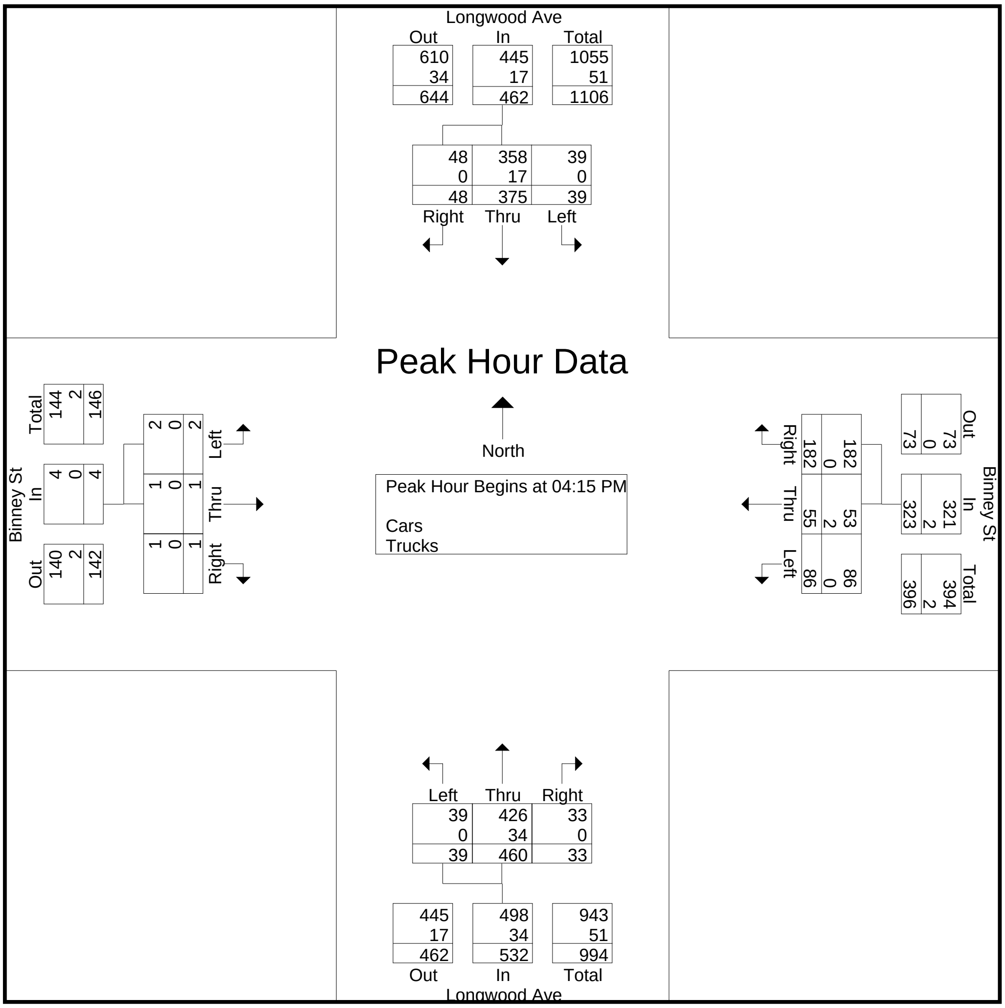
	Longwood Ave From North			Binney St From East			Longwood Ave From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	15	87	19	17	8	56	9	85	8	1	0	1	306
04:15 PM	13	99	13	13	11	38	14	135	6	0	0	0	342
04:30 PM	11	93	13	19	12	51	5	116	11	2	0	1	334
04:45 PM	10	91	10	22	14	40	7	120	9	0	1	0	324
Total	49	370	55	71	45	185	35	456	34	3	1	2	1306
05:00 PM	5	92	12	32	18	53	13	89	7	0	0	0	321
05:15 PM	6	89	11	11	20	39	8	134	6	1	0	0	325
05:30 PM	5	96	16	8	15	40	15	117	3	0	0	1	316
05:45 PM	10	95	12	15	15	34	10	109	4	2	0	2	308
Total	26	372	51	66	68	166	46	449	20	3	0	3	1270
Grand Total	75	742	106	137	113	351	81	905	54	6	1	5	2576
Apprch %	8.1	80.4	11.5	22.8	18.8	58.4	7.8	87	5.2	50	8.3	41.7	
Total %	2.9	28.8	4.1	5.3	4.4	13.6	3.1	35.1	2.1	0.2	0	0.2	
Cars	75	703	106	137	111	351	81	833	54	6	1	5	2463
% Cars	100	94.7	100	100	98.2	100	100	92	100	100	100	100	95.6
Trucks	0	39	0	0	2	0	0	72	0	0	0	0	113
% Trucks	0	5.3	0	0	1.8	0	0	8	0	0	0	0	4.4

	Longwood Ave From North				Binney St From East				Longwood Ave From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	**13**	**99**	**13**	**125**	13	11	38	62	**14**	**135**	6	**155**	0	0	0	0	**342**
04:30 PM	11	93	13	117	19	12	51	82	5	116	**11**	132	**2**	0	**1**	**3**	334
04:45 PM	10	91	10	111	22	14	40	76	7	120	9	136	0	**1**	0	1	324
05:00 PM	5	92	12	109	**32**	**18**	**53**	**103**	13	89	7	109	0	0	0	0	321
Total Volume	39	375	48	462	86	55	182	323	39	460	33	532	2	1	1	4	1321
% App. Total	8.4	81.2	10.4		26.6	17	56.3		7.3	86.5	6.2		50	25	25		
PHF	.750	.947	.923	.924	.672	.764	.858	.784	.696	.852	.750	.858	.250	.250	.250	.333	.966
Cars	39	358	48	445	86	53	182	321	39	426	33	498	2	1	1	4	1268
% Cars	100	95.5	100	96.3	100	96.4	100	99.4	100	92.6	100	93.6	100	100	100	100	96.0
Trucks	0	17	0	17	0	2	0	2	0	34	0	34	0	0	0	0	53
% Trucks	0	4.5	0	3.7	0	3.6	0	0.6	0	7.4	0	6.4	0	0	0	0	4.0

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 2



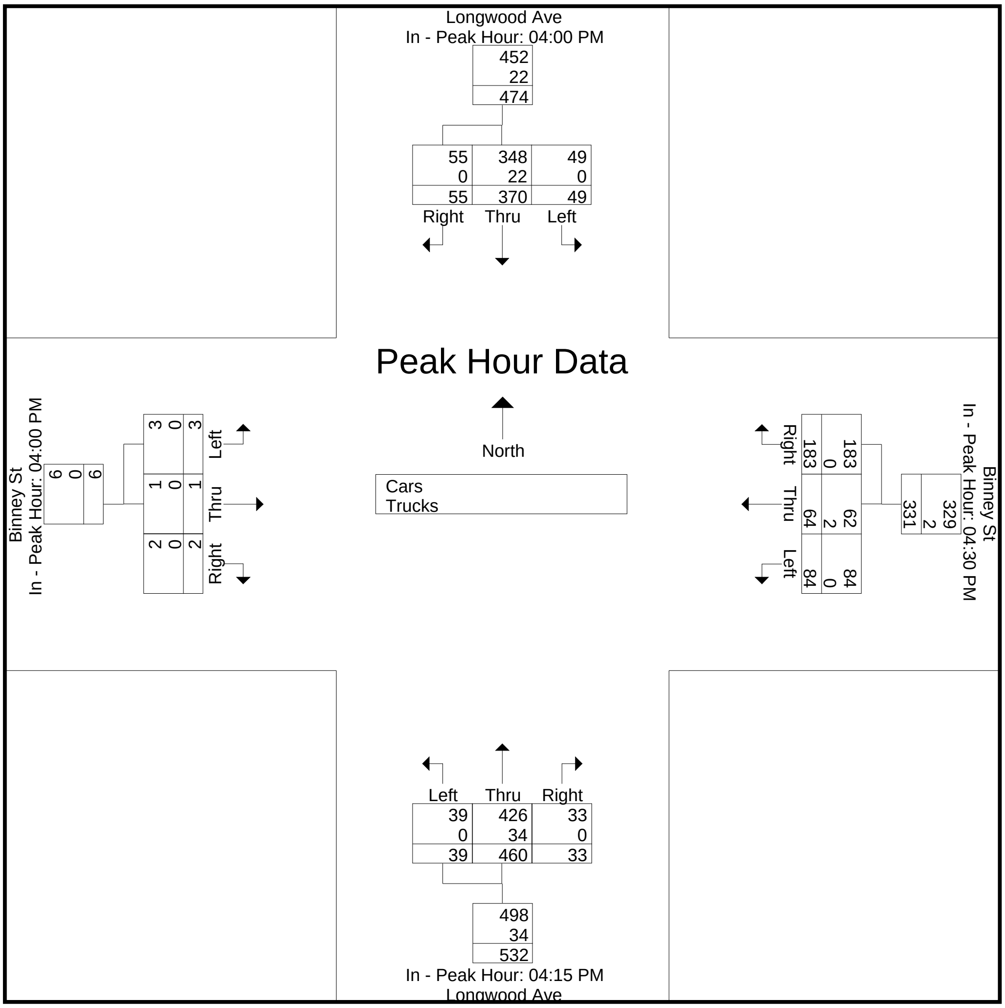
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:15 PM				04:00 PM			
+0 mins.	**15**	87	**19**	121	19	12	51	82	**14**	**135**	6	**155**	1	0	**1**	2
+15 mins.	13	**99**	13	**125**	22	14	40	76	5	116	**11**	132	0	0	0	0
+30 mins.	11	93	13	117	**32**	18	**53**	**103**	7	120	9	136	**2**	0	1	**3**
+45 mins.	10	91	10	111	11	**20**	39	70	13	89	7	109	0	**1**	0	1
Total Volume	49	370	55	474	84	64	183	331	39	460	33	532	3	1	2	6
% App. Total	10.3	78.1	11.6		25.4	19.3	55.3		7.3	86.5	6.2		50	16.7	33.3	
PHF	.817	.934	.724	.948	.656	.800	.863	.803	.696	.852	.750	.858	.375	.250	.500	.500
Cars	49	348	55	452	84	62	183	329	39	426	33	498	3	1	2	6
% Cars	100	94.1	100	95.4	100	96.9	100	99.4	100	92.6	100	93.6	100	100	100	100
Trucks	0	22	0	22	0	2	0	2	0	34	0	34	0	0	0	0
% Trucks	0	5.9	0	4.6	0	3.1	0	0.6	0	7.4	0	6.4	0	0	0	0

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

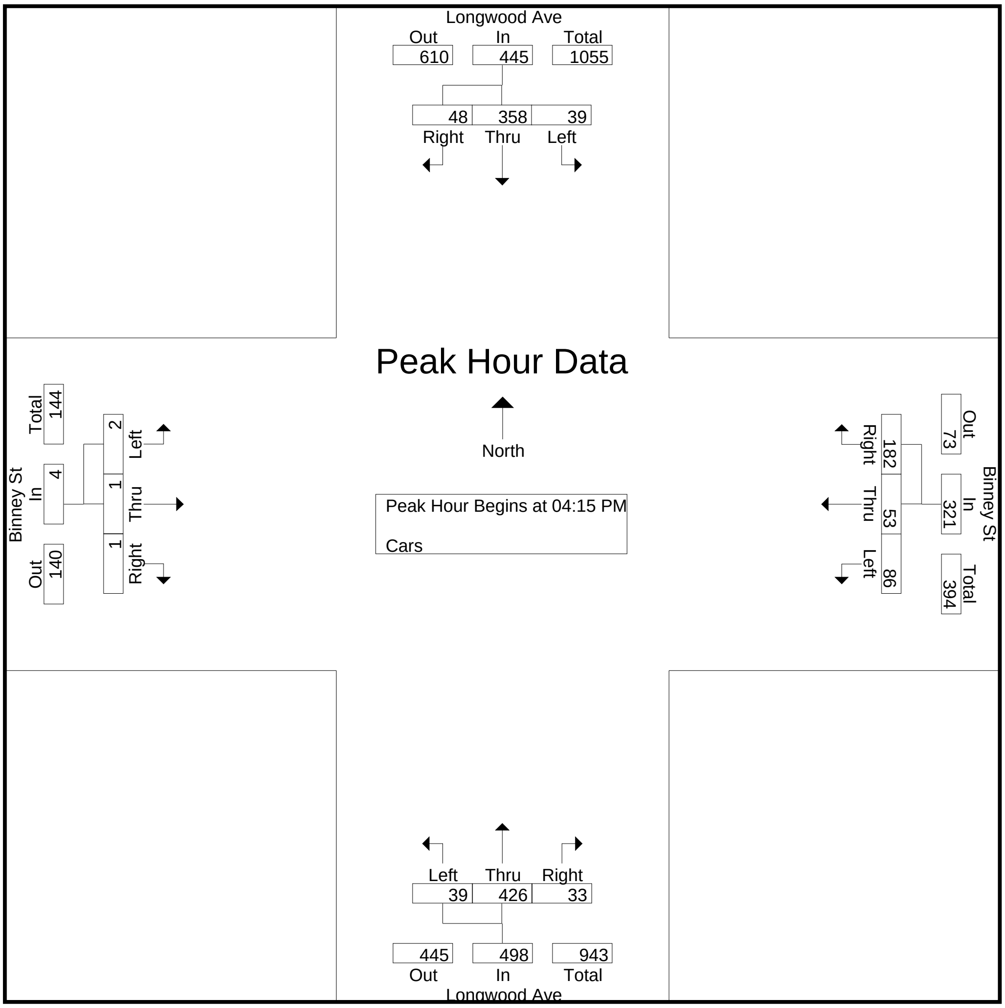
	Longwood Ave From North			**Binney St From East**			**Longwood Ave From South**			**Binney St From West**			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	15	80	19	17	8	56	9	77	8	1	0	1	291
04:15 PM	13	95	13	13	11	38	14	124	6	0	0	0	327
04:30 PM	11	86	13	19	11	51	5	111	11	2	0	1	321
04:45 PM	10	87	10	22	14	40	7	108	9	0	1	0	308
Total	49	348	55	71	44	185	35	420	34	3	1	2	1247
05:00 PM	5	90	12	32	17	53	13	83	7	0	0	0	312
05:15 PM	6	83	11	11	20	39	8	123	6	1	0	0	308
05:30 PM	5	91	16	8	15	40	15	107	3	0	0	1	301
05:45 PM	10	91	12	15	15	34	10	100	4	2	0	2	295
Total	26	355	51	66	67	166	46	413	20	3	0	3	1216
Grand Total	75	703	106	137	111	351	81	833	54	6	1	5	2463
Apprch %	8.5	79.5	12	22.9	18.5	58.6	8.4	86.1	5.6	50	8.3	41.7	
Total %	3	28.5	4.3	5.6	4.5	14.3	3.3	33.8	2.2	0.2	0	0.2	

	Longwood Ave From North				**Binney St From East**				**Longwood Ave From South**				**Binney St From West**				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	**13**	**95**	**13**	**121**	13	11	38	62	**14**	**124**	6	**144**	0	0	0	0	**327**
04:30 PM	11	86	13	110	19	11	51	81	5	111	**11**	127	**2**	0	**1**	**3**	321
04:45 PM	10	87	10	107	22	14	40	76	7	108	9	124	0	**1**	0	1	308
05:00 PM	5	90	12	107	**32**	**17**	**53**	**102**	13	83	7	103	0	0	0	0	312
Total Volume	39	358	48	445	86	53	182	321	39	426	33	498	2	1	1	4	1268
% App. Total	8.8	80.4	10.8		26.8	16.5	56.7		7.8	85.5	6.6		50	25	25		
PHF	.750	.942	.923	.919	.672	.779	.858	.787	.696	.859	.750	.865	.250	.250	.250	.333	.969

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012



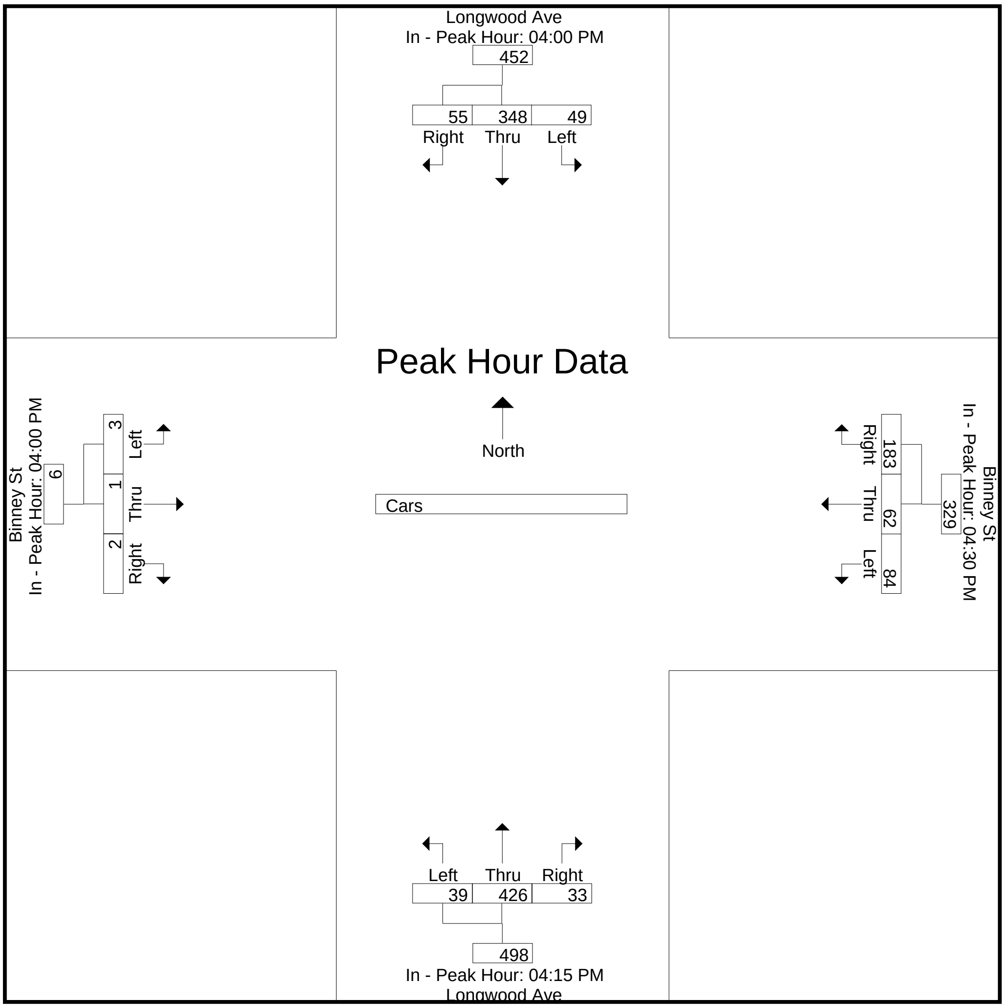
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:15 PM				04:00 PM			
+0 mins.	**15**	80	**19**	114	19	11	51	81	**14**	**124**	6	**144**	1	0	**1**	2
+15 mins.	13	**95**	13	**121**	22	14	40	76	5	111	**11**	127	0	0	0	0
+30 mins.	11	86	13	110	**32**	17	**53**	**102**	7	108	9	124	**2**	0	1	**3**
+45 mins.	10	87	10	107	11	**20**	39	70	13	83	7	103	0	**1**	0	1
Total Volume	49	348	55	452	84	62	183	329	39	426	33	498	3	1	2	6
% App. Total	10.8	77	12.2		25.5	18.8	55.6		7.8	85.5	6.6		50	16.7	33.3	
PHF	.817	.916	.724	.934	.656	.775	.863	.806	.696	.859	.750	.865	.375	.250	.500	.500

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

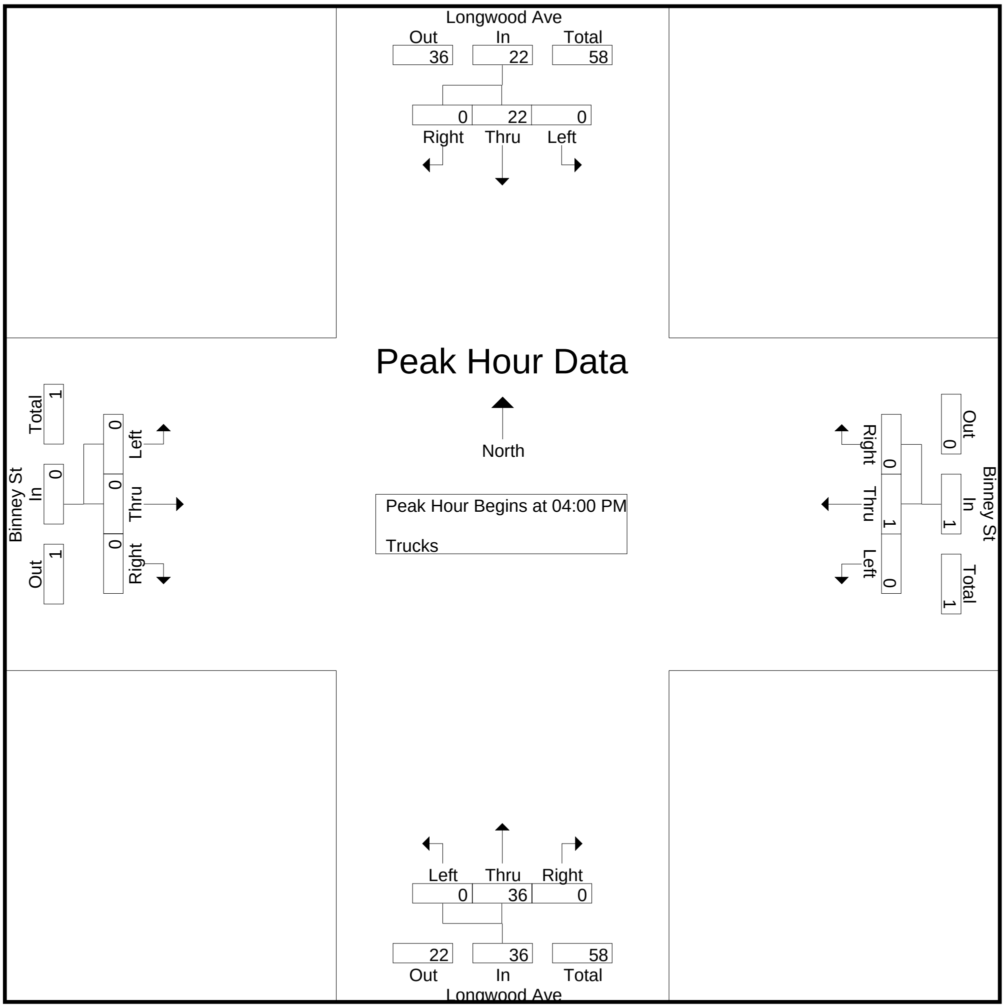
	Longwood Ave From North			Binney St From East			Longwood Ave From South			Binney St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	7	0	0	0	0	0	8	0	0	0	0	15
04:15 PM	0	4	0	0	0	0	0	11	0	0	0	0	15
04:30 PM	0	7	0	0	1	0	0	5	0	0	0	0	13
04:45 PM	0	4	0	0	0	0	0	12	0	0	0	0	16
Total	0	22	0	0	1	0	0	36	0	0	0	0	59
05:00 PM	0	2	0	0	1	0	0	6	0	0	0	0	9
05:15 PM	0	6	0	0	0	0	0	11	0	0	0	0	17
05:30 PM	0	5	0	0	0	0	0	10	0	0	0	0	15
05:45 PM	0	4	0	0	0	0	0	9	0	0	0	0	13
Total	0	17	0	0	1	0	0	36	0	0	0	0	54
Grand Total	0	39	0	0	2	0	0	72	0	0	0	0	113
Apprch %	0	100	0	0	100	0	0	100	0	0	0	0	
Total %	0	34.5	0	0	1.8	0	0	63.7	0	0	0	0	

	Longwood Ave From North				Binney St From East				Longwood Ave From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	**7**	0	**7**	0	0	0	0	0	8	0	8	0	0	0	0	15
04:15 PM	0	4	0	4	0	0	0	0	0	11	0	11	0	0	0	0	15
04:30 PM	0	7	0	7	0	**1**	0	**1**	0	5	0	5	0	0	0	0	13
04:45 PM	0	4	0	4	0	0	0	0	0	**12**	0	**12**	0	0	0	0	**16**
Total Volume	0	22	0	22	0	1	0	1	0	36	0	36	0	0	0	0	59
% App. Total	0	100	0		0	100	0		0	100	0		0	0	0		
PHF	.000	.786	.000	.786	.000	.250	.000	.250	.000	.750	.000	.750	.000	.000	.000	.000	.922

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 2



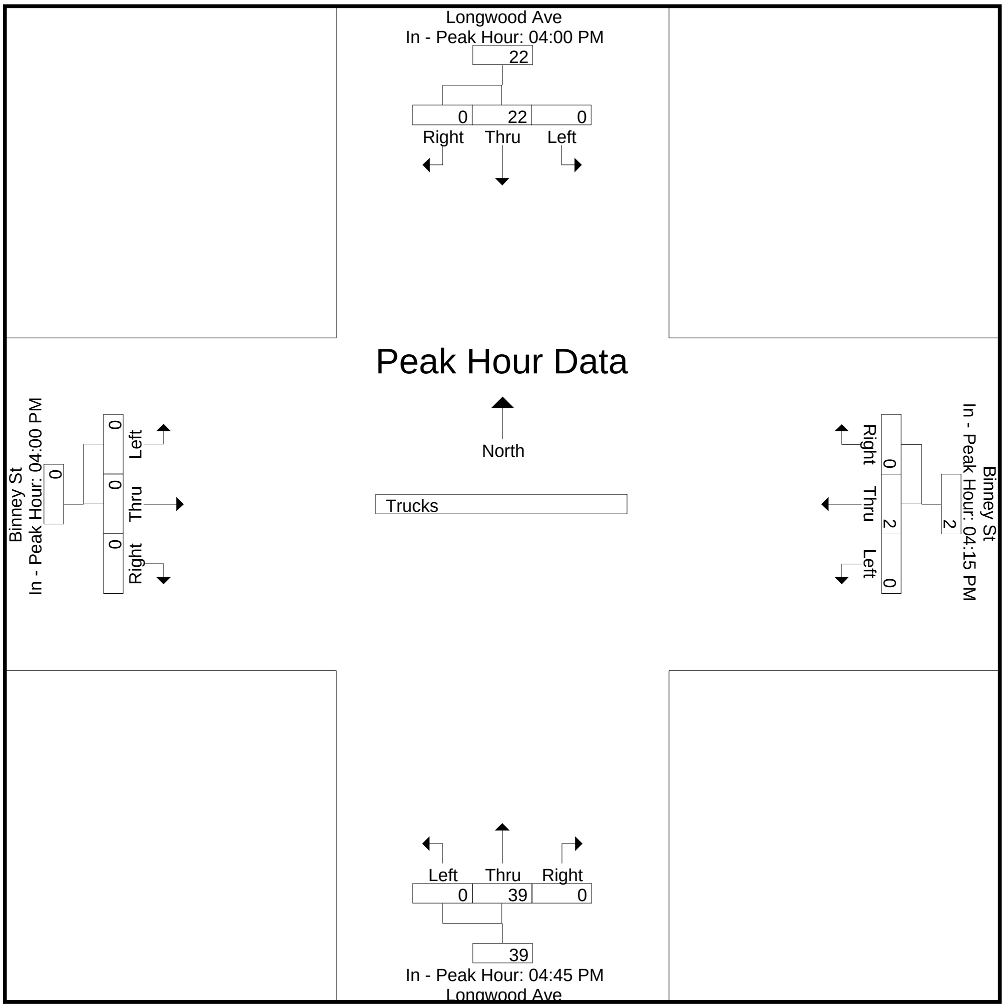
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:15 PM				04:45 PM				04:00 PM			
+0 mins.	0	**7**	0	**7**	0	0	0	0	0	**12**	0	**12**	0	0	0	0
+15 mins.	0	4	0	4	0	**1**	0	**1**	0	6	0	6	0	0	0	0
+30 mins.	0	7	0	7	0	0	0	0	0	11	0	11	0	0	0	0
+45 mins.	0	4	0	4	0	1	0	1	0	10	0	10	0	0	0	0
Total Volume	0	22	0	22	0	2	0	2	0	39	0	39	0	0	0	0
% App. Total	0	100	0		0	100	0		0	100	0		0	0	0	
PHF	.000	.786	.000	.786	.000	.500	.000	.500	.000	.813	.000	.813	.000	.000	.000	.000

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

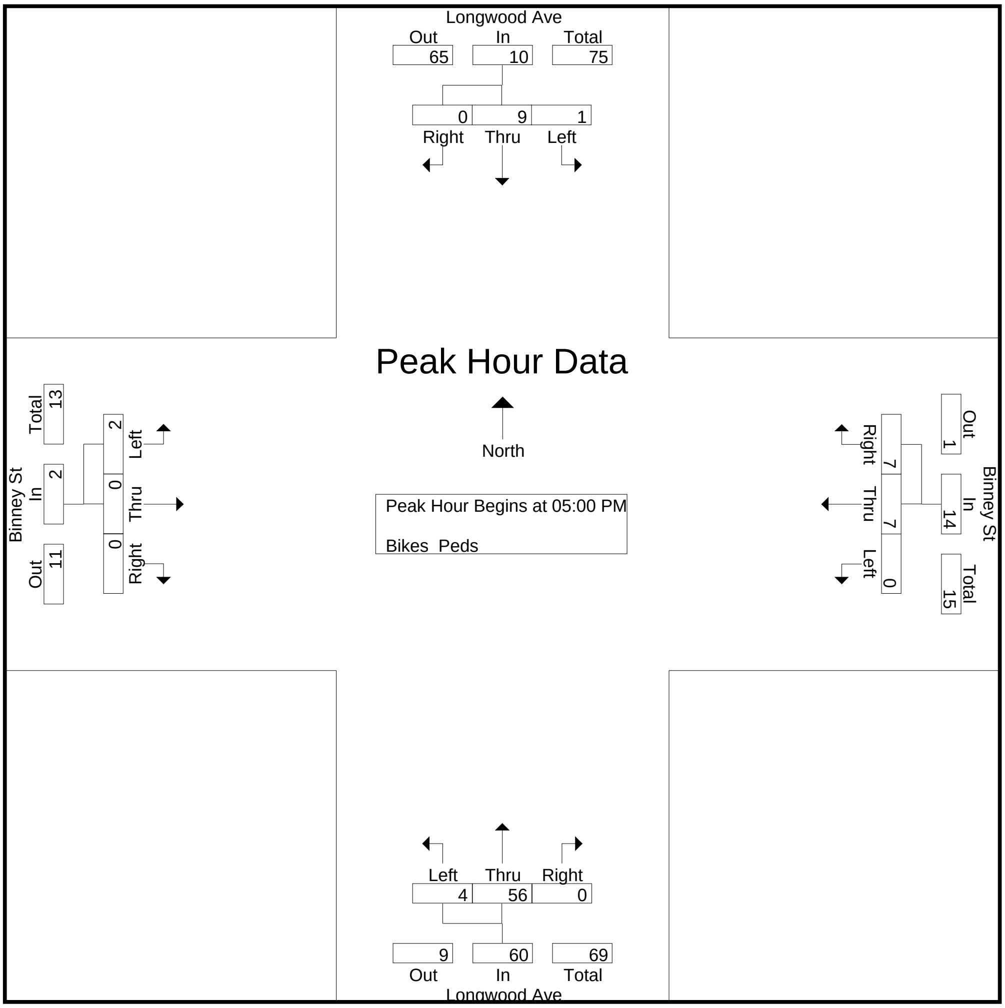
	Longwood Ave From North				Binney St From East				Longwood Ave From South				Binney St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	4	0	48	0	0	1	96	0	5	0	58	0	2	0	107	309	12	321
04:15 PM	0	2	0	33	0	0	0	84	0	6	0	41	0	0	0	129	287	8	295
04:30 PM	0	2	0	38	0	1	2	92	1	4	0	43	0	0	1	135	308	11	319
04:45 PM	0	4	0	38	1	0	1	116	0	12	0	53	0	0	1	132	339	19	358
Total	0	12	0	157	1	1	4	388	1	27	0	195	0	2	2	503	1243	50	1293
05:00 PM	0	1	0	48	0	2	2	121	1	12	0	63	0	0	0	137	369	18	387
05:15 PM	1	2	0	51	0	1	1	135	1	20	0	66	1	0	0	166	418	27	445
05:30 PM	0	2	0	44	0	1	1	148	0	9	0	45	0	0	0	134	371	13	384
05:45 PM	0	4	0	58	0	3	3	116	2	15	0	37	1	0	0	117	328	28	356
Total	1	9	0	201	0	7	7	520	4	56	0	211	2	0	0	554	1486	86	1572
Grand Total	1	21	0	358	1	8	11	908	5	83	0	406	2	2	2	1057	2729	136	2865
Apprch %	4.5	95.5	0		5	40	55		5.7	94.3	0		33.3	33.3	33.3				
Total %	0.7	15.4	0		0.7	5.9	8.1		3.7	61	0		1.5	1.5	1.5		95.3	4.7	

	Longwood Ave From North				Binney St From East				Longwood Ave From South				Binney St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	1	0	1	0	2	2	4	1	12	0	13	0	0	0	0	18
05:15 PM	**1**	2	0	3	0	1	1	2	1	**20**	0	**21**	**1**	0	0	**1**	27
05:30 PM	0	2	0	2	0	1	1	2	0	9	0	9	0	0	0	0	13
05:45 PM	0	**4**	0	**4**	0	**3**	**3**	**6**	**2**	15	0	17	1	0	0	1	**28**
Total Volume	1	9	0	10	0	7	7	14	4	56	0	60	2	0	0	2	86
% App. Total	10	90	0		0	50	50		6.7	93.3	0		100	0	0		
PHF	.250	.563	.000	.625	.000	.583	.583	.583	.500	.700	.000	.714	.500	.000	.000	.500	.768

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 2



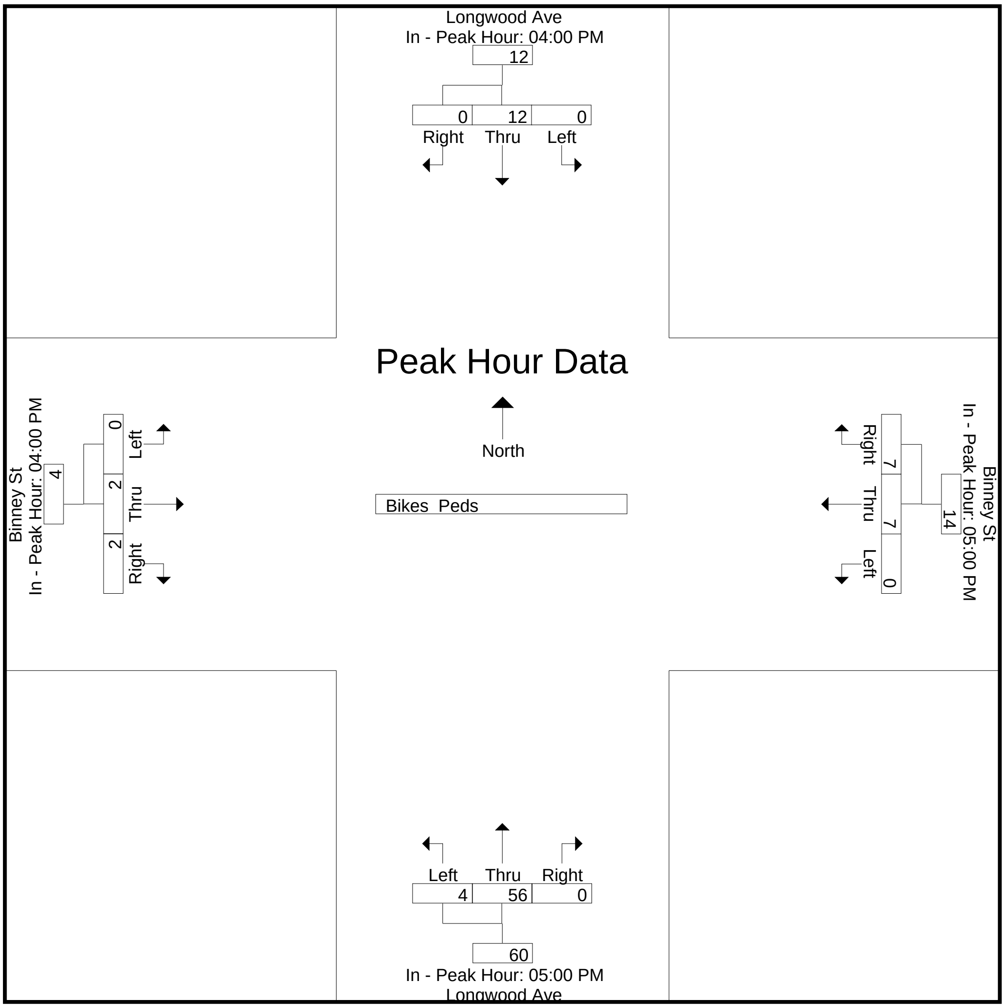
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				05:00 PM				04:00 PM			
+0 mins.	0	**4**	0	**4**	0	2	2	4	1	12	0	13	0	**2**	0	**2**
+15 mins.	0	2	0	2	0	1	1	2	1	**20**	0	**21**	0	0	0	0
+30 mins.	0	2	0	2	0	1	1	2	0	9	0	9	0	0	**1**	1
+45 mins.	0	4	0	4	0	**3**	**3**	**6**	**2**	15	0	17	0	0	1	1
Total Volume	0	12	0	12	0	7	7	14	4	56	0	60	0	2	2	4
% App. Total	0	100	0		0	50	50		6.7	93.3	0		0	50	50	
PHF	.000	.750	.000	.750	.000	.583	.583	.583	.500	.700	.000	.714	.000	.250	.500	.500

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Binney Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970020
Site Code : 94970020
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

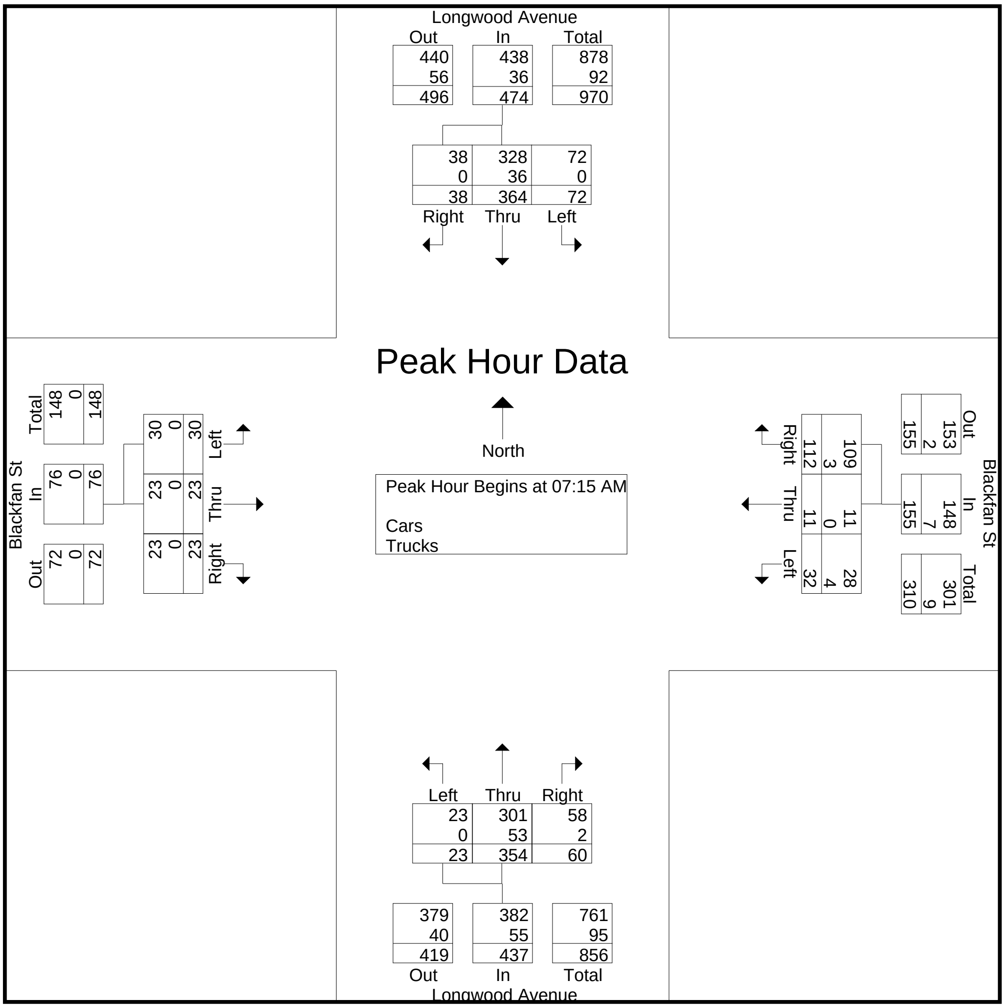
	Longwood Avenue From North			Blackfan St From East			Longwood Avenue From South			Blackfan St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	19	55	11	5	1	6	15	65	20	11	4	11	223
07:15 AM	14	92	10	7	2	22	5	78	13	8	5	7	263
07:30 AM	20	101	10	6	4	29	2	96	14	9	6	4	301
07:45 AM	21	102	9	14	1	41	6	98	13	4	4	5	318
Total	74	350	40	32	8	98	28	337	60	32	19	27	1105
08:00 AM	17	69	9	5	4	20	10	82	20	9	8	7	260
08:15 AM	20	68	17	4	2	15	9	72	16	11	10	6	250
08:30 AM	23	81	10	8	1	18	6	73	21	8	8	4	261
08:45 AM	22	73	14	10	2	16	10	86	15	4	14	7	273
Total	82	291	50	27	9	69	35	313	72	32	40	24	1044
Grand Total	156	641	90	59	17	167	63	650	132	64	59	51	2149
Apprch %	17.6	72.3	10.1	24.3	7	68.7	7.5	76.9	15.6	36.8	33.9	29.3	
Total %	7.3	29.8	4.2	2.7	0.8	7.8	2.9	30.2	6.1	3	2.7	2.4	
Cars	156	576	90	54	17	162	63	551	129	64	59	51	1972
% Cars	100	89.9	100	91.5	100	97	100	84.8	97.7	100	100	100	91.8
Trucks	0	65	0	5	0	5	0	99	3	0	0	0	177
% Trucks	0	10.1	0	8.5	0	3	0	15.2	2.3	0	0	0	8.2

	Longwood Avenue From North				Blackfan St From East				Longwood Avenue From South				Blackfan St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	14	92	**10**	116	7	2	22	31	5	78	13	96	8	5	**7**	20	263
07:30 AM	20	101	10	131	6	**4**	29	39	2	96	14	112	**9**	6	4	19	301
07:45 AM	**21**	**102**	9	**132**	**14**	1	**41**	**56**	6	**98**	13	**117**	4	4	5	13	**318**
08:00 AM	17	69	9	95	5	4	20	29	**10**	82	**20**	112	9	**8**	7	**24**	260
Total Volume	72	364	38	474	32	11	112	155	23	354	60	437	30	23	23	76	1142
% App. Total	15.2	76.8	8		20.6	7.1	72.3		5.3	81	13.7		39.5	30.3	30.3		
PHF	.857	.892	.950	.898	.571	.688	.683	.692	.575	.903	.750	.934	.833	.719	.821	.792	.898
Cars	72	328	38	438	28	11	109	148	23	301	58	382	30	23	23	76	1044
% Cars	100	90.1	100	92.4	87.5	100	97.3	95.5	100	85.0	96.7	87.4	100	100	100	100	91.4
Trucks	0	36	0	36	4	0	3	7	0	53	2	55	0	0	0	0	98
% Trucks	0	9.9	0	7.6	12.5	0	2.7	4.5	0	15.0	3.3	12.6	0	0	0	0	8.6

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 2



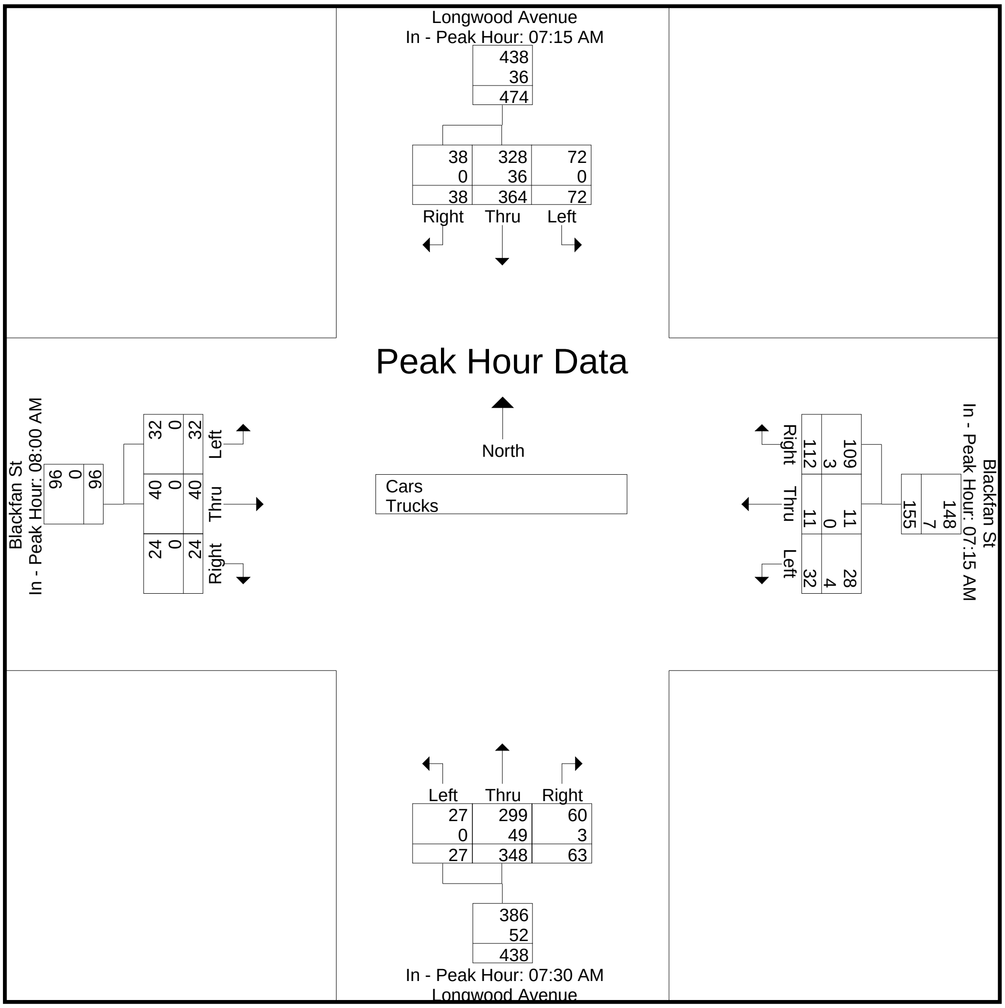
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:30 AM				08:00 AM			
+0 mins.	14	92	**10**	116	7	2	22	31	2	96	14	112	9	8	**7**	24
+15 mins.	20	101	10	131	6	**4**	29	39	6	**98**	13	**117**	**11**	10	6	**27**
+30 mins.	**21**	**102**	9	**132**	**14**	1	**41**	**56**	**10**	82	**20**	112	8	8	4	20
+45 mins.	17	69	9	95	5	4	20	29	9	72	16	97	4	**14**	7	25
Total Volume	72	364	38	474	32	11	112	155	27	348	63	438	32	40	24	96
% App. Total	15.2	76.8	8		20.6	7.1	72.3		6.2	79.5	14.4		33.3	41.7	25	
PHF	.857	.892	.950	.898	.571	.688	.683	.692	.675	.888	.788	.936	.727	.714	.857	.889
Cars	72	328	38	438	28	11	109	148	27	299	60	386	32	40	24	96
% Cars	100	90.1	100	92.4	87.5	100	97.3	95.5	100	85.9	95.2	88.1	100	100	100	100
Trucks	0	36	0	36	4	0	3	7	0	49	3	52	0	0	0	0
% Trucks	0	9.9	0	7.6	12.5	0	2.7	4.5	0	14.1	4.8	11.9	0	0	0	0

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

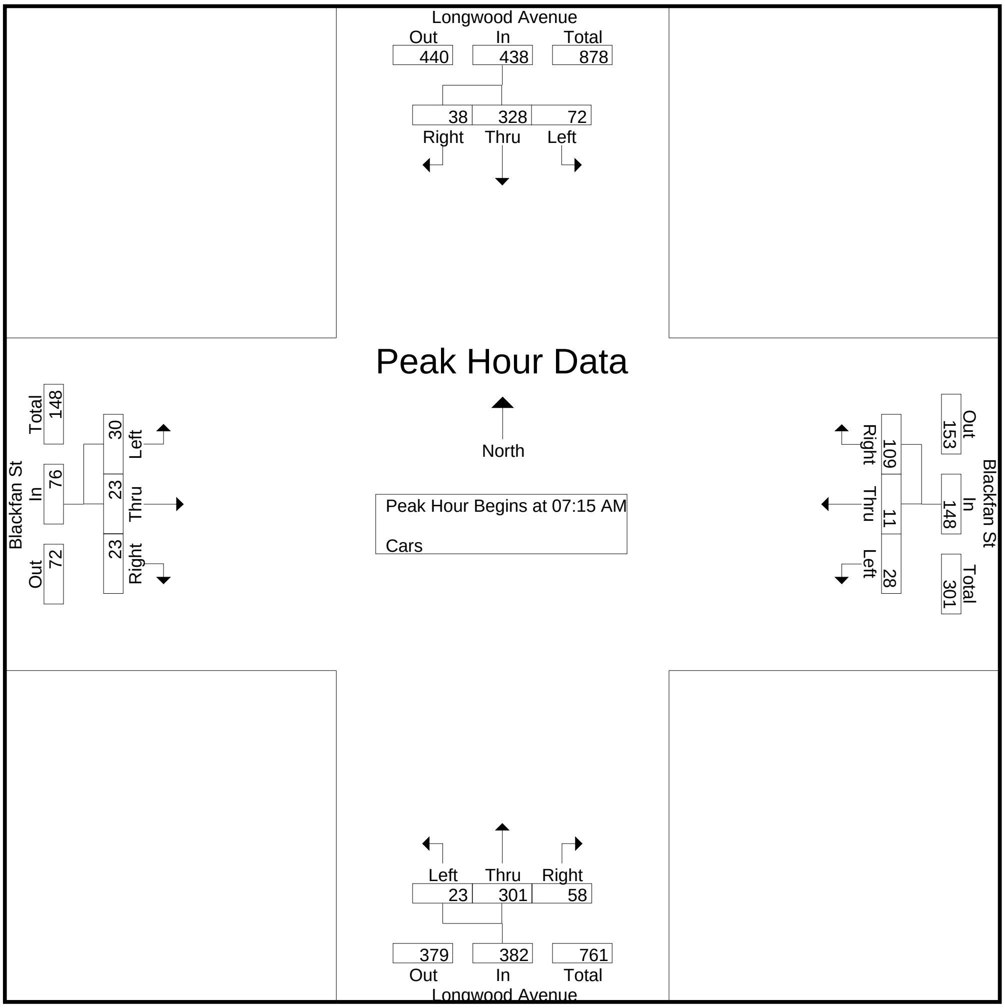
	Longwood Avenue From North			Blackfan St From East			Longwood Avenue From South			Blackfan St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	19	48	11	5	1	5	15	52	20	11	4	11	202
07:15 AM	14	80	10	4	2	21	5	66	13	8	5	7	235
07:30 AM	20	92	10	6	4	28	2	81	13	9	6	4	275
07:45 AM	21	94	9	14	1	41	6	87	12	4	4	5	298
Total	74	314	40	29	8	95	28	286	58	32	19	27	1010
08:00 AM	17	62	9	4	4	19	10	67	20	9	8	7	236
08:15 AM	20	61	17	3	2	15	9	64	15	11	10	6	233
08:30 AM	23	73	10	8	1	17	6	61	21	8	8	4	240
08:45 AM	22	66	14	10	2	16	10	73	15	4	14	7	253
Total	82	262	50	25	9	67	35	265	71	32	40	24	962
Grand Total	156	576	90	54	17	162	63	551	129	64	59	51	1972
Apprch %	19	70.1	10.9	23.2	7.3	69.5	8.5	74.2	17.4	36.8	33.9	29.3	
Total %	7.9	29.2	4.6	2.7	0.9	8.2	3.2	27.9	6.5	3.2	3	2.6	

	Longwood Avenue From North				Blackfan St From East				Longwood Avenue From South				Blackfan St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	14	80	**10**	104	4	2	21	27	5	66	13	84	8	5	**7**	20	235
07:30 AM	20	92	10	122	6	**4**	28	38	2	81	13	96	**9**	6	4	19	275
07:45 AM	**21**	**94**	9	**124**	**14**	1	**41**	**56**	6	**87**	12	**105**	4	4	5	13	**298**
08:00 AM	17	62	9	88	4	4	19	27	**10**	67	**20**	97	9	**8**	7	**24**	236
Total Volume	72	328	38	438	28	11	109	148	23	301	58	382	30	23	23	76	1044
% App. Total	16.4	74.9	8.7		18.9	7.4	73.6		6	78.8	15.2		39.5	30.3	30.3		
PHF	.857	.872	.950	.883	.500	.688	.665	.661	.575	.865	.725	.910	.833	.719	.821	.792	.876

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 2



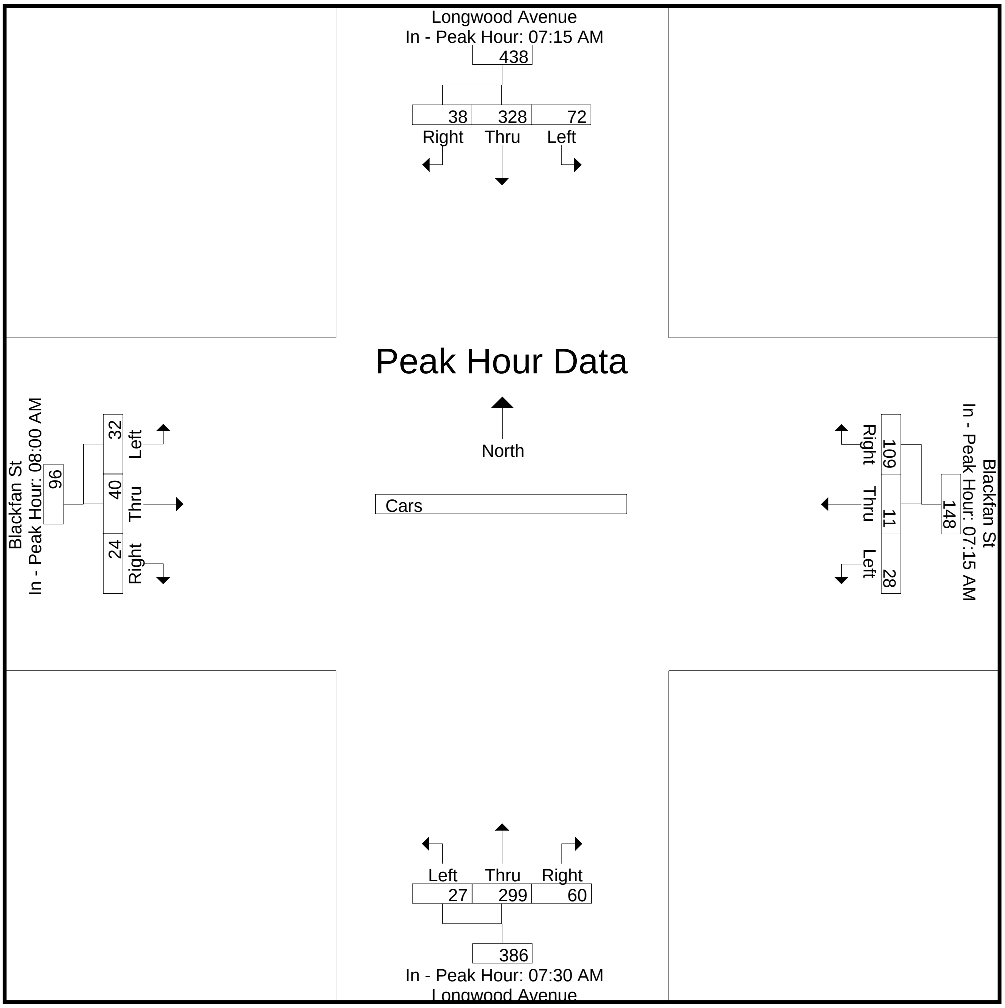
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:30 AM				08:00 AM			
+0 mins.	14	80	**10**	104	4	2	21	27	2	81	13	96	9	8	**7**	24
+15 mins.	20	92	10	122	6	**4**	28	38	6	**87**	12	**105**	**11**	10	6	**27**
+30 mins.	**21**	**94**	9	**124**	**14**	1	**41**	**56**	**10**	67	**20**	97	8	8	4	20
+45 mins.	17	62	9	88	4	4	19	27	9	64	15	88	4	**14**	7	25
Total Volume	72	328	38	438	28	11	109	148	27	299	60	386	32	40	24	96
% App. Total	16.4	74.9	8.7		18.9	7.4	73.6		7	77.5	15.5		33.3	41.7	25	
PHF	.857	.872	.950	.883	.500	.688	.665	.661	.675	.859	.750	.919	.727	.714	.857	.889

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

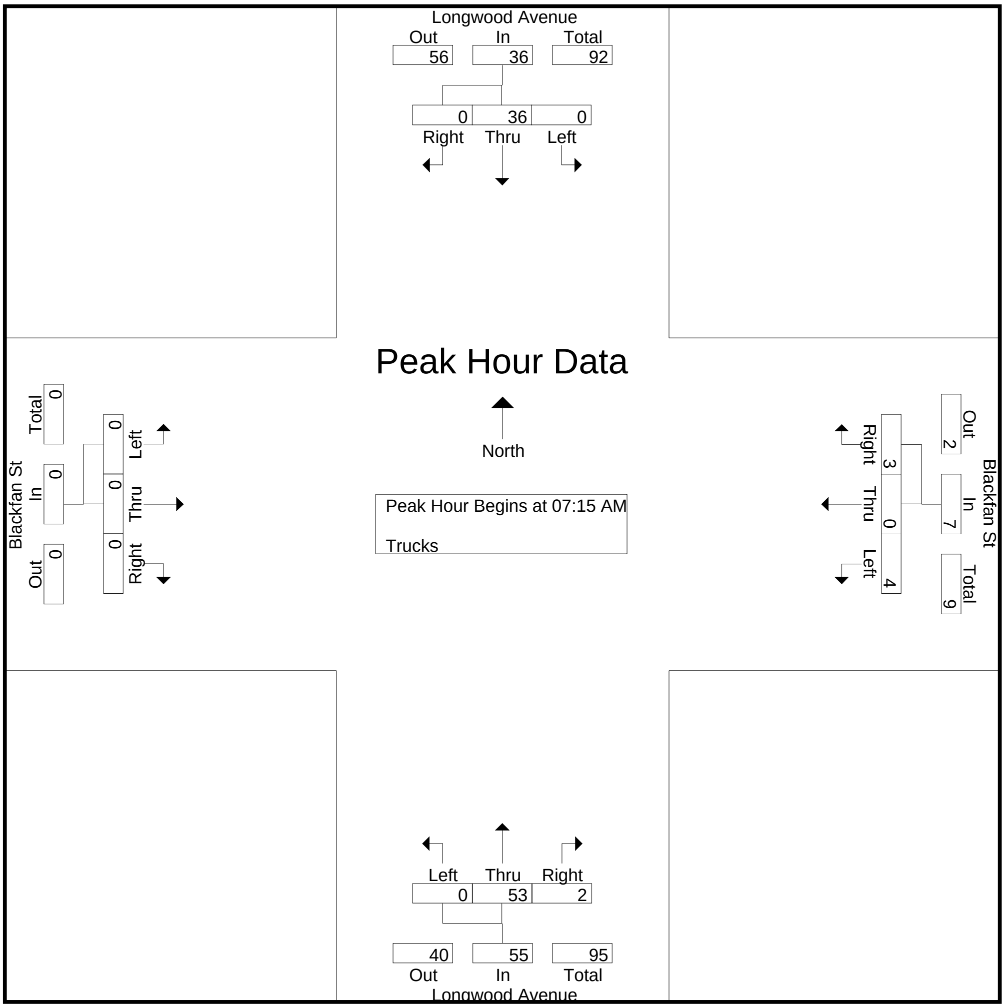
	Longwood Avenue From North			Blackfan St From East			Longwood Avenue From South			Blackfan St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	7	0	0	0	1	0	13	0	0	0	0	21
07:15 AM	0	12	0	3	0	1	0	12	0	0	0	0	28
07:30 AM	0	9	0	0	0	1	0	15	1	0	0	0	26
07:45 AM	0	8	0	0	0	0	0	11	1	0	0	0	20
Total	0	36	0	3	0	3	0	51	2	0	0	0	95
08:00 AM	0	7	0	1	0	1	0	15	0	0	0	0	24
08:15 AM	0	7	0	1	0	0	0	8	1	0	0	0	17
08:30 AM	0	8	0	0	0	1	0	12	0	0	0	0	21
08:45 AM	0	7	0	0	0	0	0	13	0	0	0	0	20
Total	0	29	0	2	0	2	0	48	1	0	0	0	82
Grand Total	0	65	0	5	0	5	0	99	3	0	0	0	177
Apprch %	0	100	0	50	0	50	0	97.1	2.9	0	0	0	
Total %	0	36.7	0	2.8	0	2.8	0	55.9	1.7	0	0	0	

	Longwood Avenue From North				Blackfan St From East				Longwood Avenue From South				Blackfan St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	**12**	0	**12**	**3**	0	**1**	**4**	0	12	0	12	0	0	0	0	**28**
07:30 AM	0	9	0	9	0	0	1	1	0	**15**	**1**	**16**	0	0	0	0	26
07:45 AM	0	8	0	8	0	0	0	0	0	11	1	12	0	0	0	0	20
08:00 AM	0	7	0	7	1	0	1	2	0	15	0	15	0	0	0	0	24
Total Volume	0	36	0	36	4	0	3	7	0	53	2	55	0	0	0	0	98
% App. Total	0	100	0		57.1	0	42.9		0	96.4	3.6		0	0	0		
PHF	.000	.750	.000	.750	.333	.000	.750	.438	.000	.883	.500	.859	.000	.000	.000	.000	.875

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 2



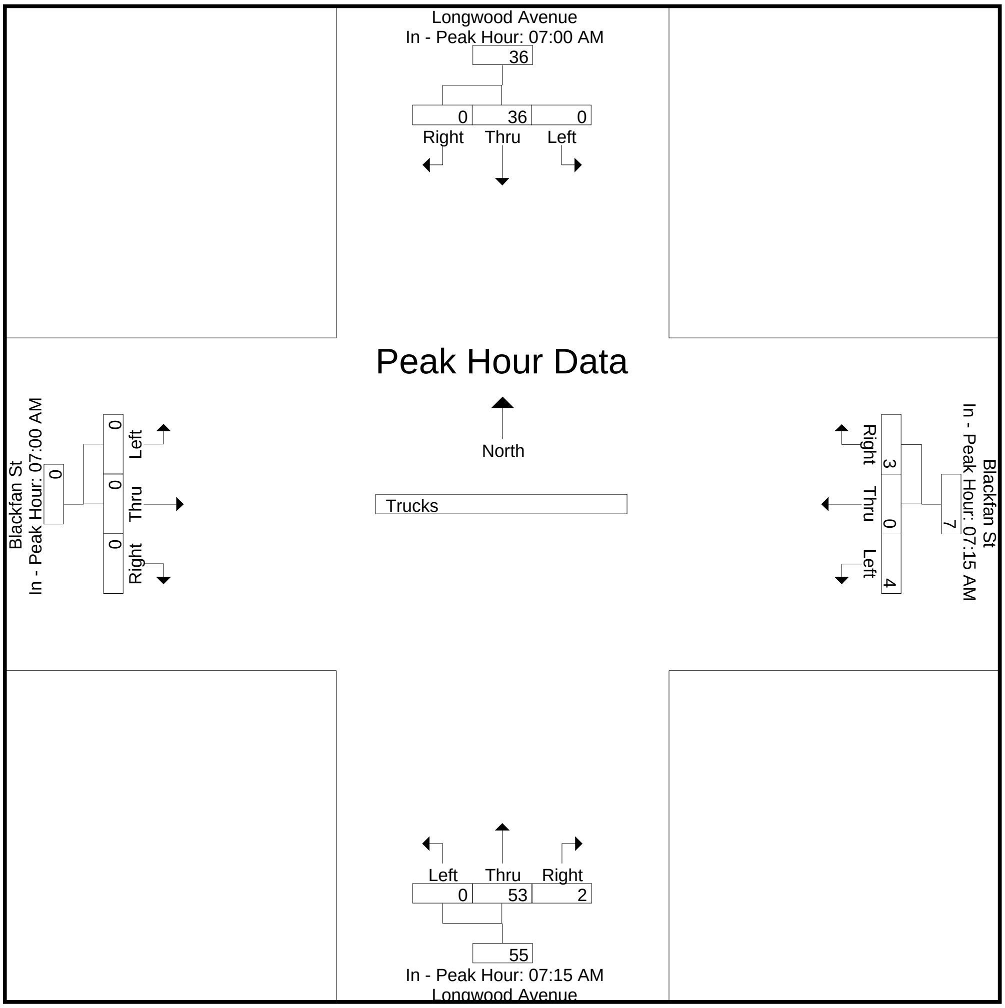
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				07:15 AM				07:00 AM			
+0 mins.	0	7	0	7	**3**	0	**1**	**4**	0	12	0	12	0	0	0	0
+15 mins.	0	**12**	0	**12**	0	0	1	1	0	**15**	**1**	**16**	0	0	0	0
+30 mins.	0	9	0	9	0	0	0	0	0	11	1	12	0	0	0	0
+45 mins.	0	8	0	8	1	0	1	2	0	15	0	15	0	0	0	0
Total Volume	0	36	0	36	4	0	3	7	0	53	2	55	0	0	0	0
% App. Total	0	100	0		57.1	0	42.9		0	96.4	3.6		0	0	0	
PHF	.000	.750	.000	.750	.333	.000	.750	.438	.000	.883	.500	.859	.000	.000	.000	.000

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012

Groups Printed- Bikes

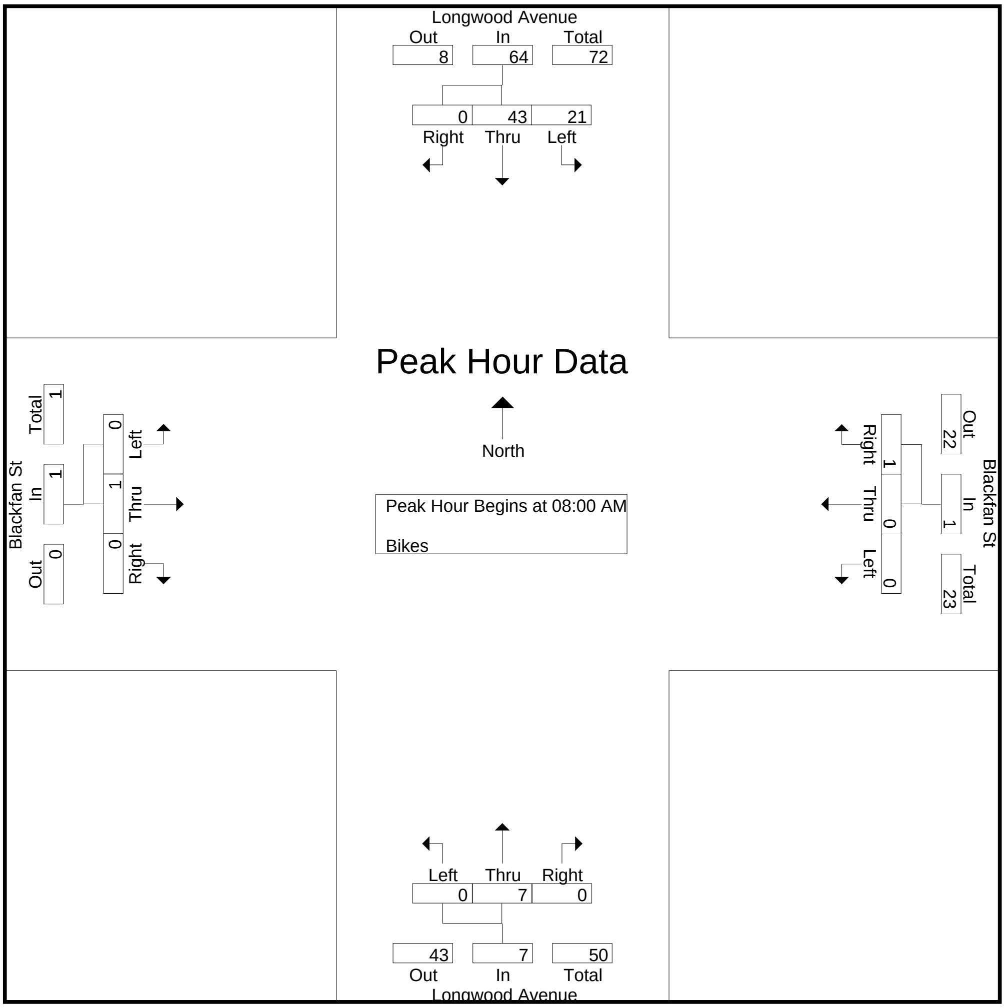
	Longwood Avenue From North			Blackfan St From East			Longwood Avenue From South			Blackfan St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	3	1	0	0	0	0	0	0	0	0	0	0	4
07:15 AM	2	0	0	0	0	1	0	2	0	0	0	0	5
07:30 AM	3	1	0	0	0	3	0	2	0	0	0	0	9
07:45 AM	1	7	0	0	0	0	0	2	0	0	0	0	10
Total	9	9	0	0	0	4	0	6	0	0	0	0	28
08:00 AM	4	7	0	0	0	1	0	1	0	0	0	0	13
08:15 AM	6	8	0	0	0	0	0	0	0	0	0	0	14
08:30 AM	7	7	0	0	0	0	0	2	0	0	0	0	16
08:45 AM	4	21	0	0	0	0	0	4	0	0	1	0	30
Total	21	43	0	0	0	1	0	7	0	0	1	0	73
Grand Total	30	52	0	0	0	5	0	13	0	0	1	0	101
Apprch %	36.6	63.4	0	0	0	100	0	100	0	0	100	0	
Total %	29.7	51.5	0	0	0	5	0	12.9	0	0	1	0	

	Longwood Avenue From North				Blackfan St From East				Longwood Avenue From South				Blackfan St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	4	7	0	11	0	0	**1**	**1**	0	1	0	1	0	0	0	0	13
08:15 AM	6	8	0	14	0	0	0	0	0	0	0	0	0	0	0	0	14
08:30 AM	**7**	7	0	14	0	0	0	0	0	2	0	2	0	0	0	0	16
08:45 AM	4	**21**	0	**25**	0	0	0	0	0	**4**	0	**4**	0	**1**	0	**1**	**30**
Total Volume	21	43	0	64	0	0	1	1	0	7	0	7	0	1	0	1	73
% App. Total	32.8	67.2	0		0	0	100		0	100	0		0	100	0		
PHF	.750	.512	.000	.640	.000	.000	.250	.250	.000	.438	.000	.438	.000	.250	.000	.250	.608

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 2



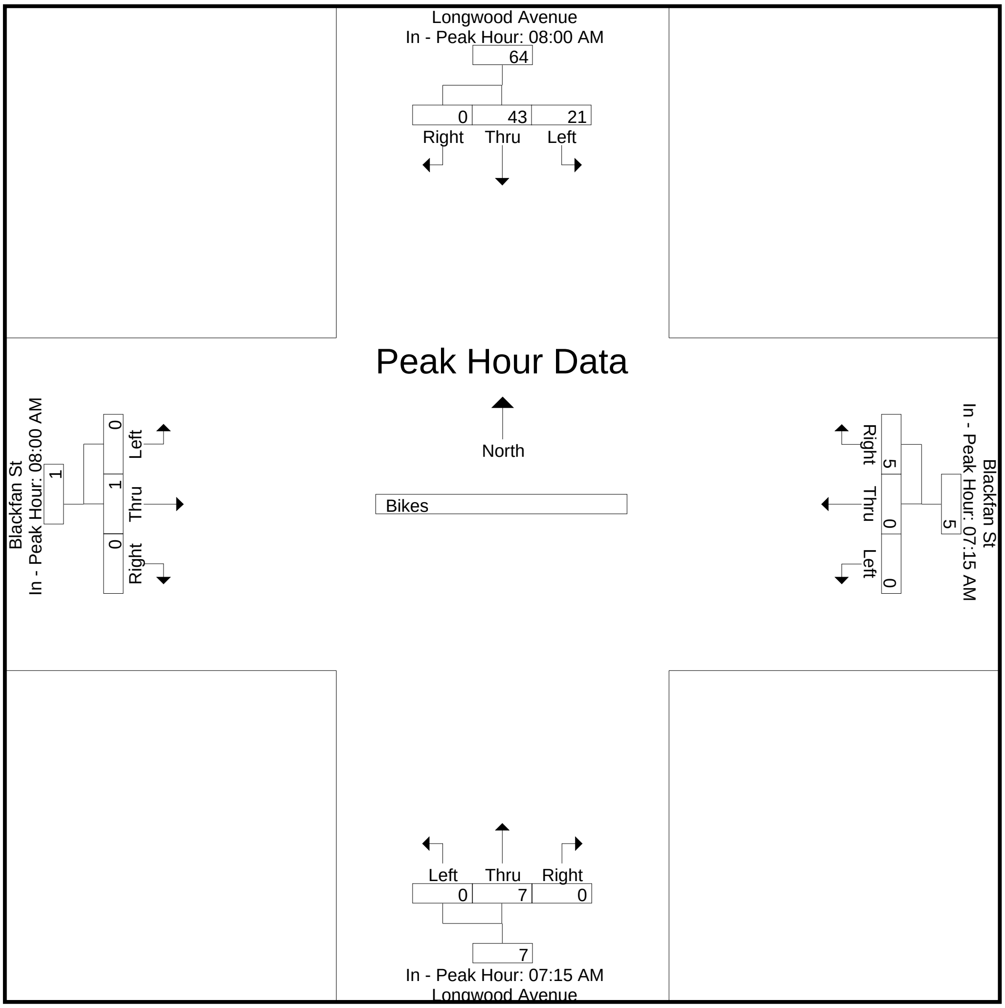
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:15 AM				07:15 AM				08:00 AM			
+0 mins.	4	7	0	11	0	0	1	1	0	**2**	0	**2**	0	0	0	0
+15 mins.	6	8	0	14	0	0	**3**	**3**	0	2	0	2	0	0	0	0
+30 mins.	**7**	7	0	14	0	0	0	0	0	2	0	2	0	0	0	0
+45 mins.	4	**21**	0	**25**	0	0	1	1	0	1	0	1	0	**1**	0	**1**
Total Volume	21	43	0	64	0	0	5	5	0	7	0	7	0	1	0	1
% App. Total	32.8	67.2	0		0	0	100		0	100	0		0	100	0	
PHF	.750	.512	.000	.640	.000	.000	.417	.417	.000	.875	.000	.875	.000	.250	.000	.250

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 1

Groups Printed- Peds

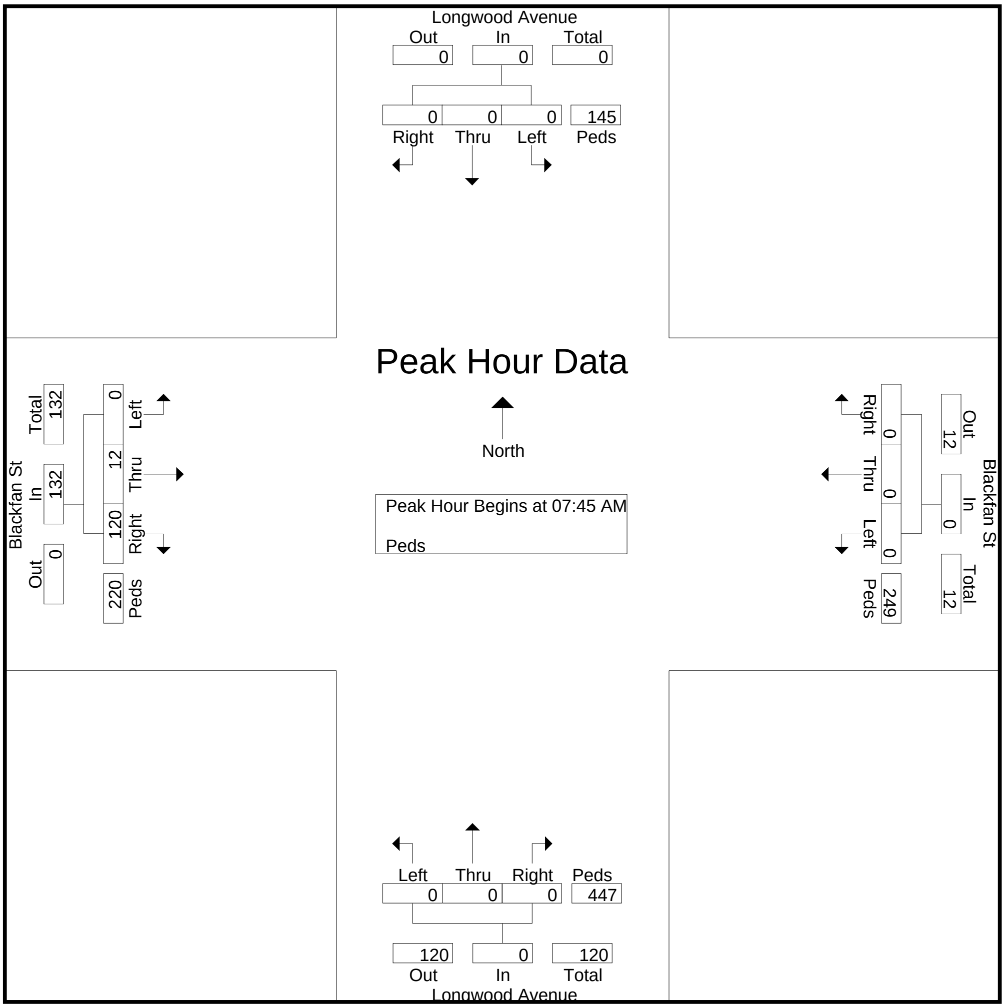
	Longwood Avenue From North				Blackfan St From East				Longwood Avenue From South				Blackfan St From West				
Start Time				Peds				Peds				Peds		NW / SE	NE / SW	Peds	Int. Total
07:00 AM	0	0	0	26	0	0	0	34	0	0	0	91	0	1	8	26	186
07:15 AM	0	0	0	29	0	0	0	47	0	0	0	80	0	2	13	45	216
07:30 AM	0	0	0	23	0	0	0	50	0	0	0	94	0	2	34	40	243
07:45 AM	0	0	0	38	0	0	0	34	0	0	0	130	0	4	57	44	307
Total	0	0	0	116	0	0	0	165	0	0	0	395	0	9	112	155	952
08:00 AM	0	0	0	31	0	0	0	70	0	0	0	118	0	0	17	59	295
08:15 AM	0	0	0	45	0	0	0	77	0	0	0	104	0	5	24	47	302
08:30 AM	0	0	0	31	0	0	0	68	0	0	0	95	0	3	22	70	289
08:45 AM	0	0	0	33	0	0	0	81	0	0	0	95	0	2	24	48	283
Total	0	0	0	140	0	0	0	296	0	0	0	412	0	10	87	224	1169
Grand Total	0	0	0	256	0	0	0	461	0	0	0	807	0	19	199	379	2121
Apprch %	0	0	0	100	0	0	0	100	0	0	0	100	0	3.2	33.3	63.5	
Total %	0	0	0	12.1	0	0	0	21.7	0	0	0	38	0	0.9	9.4	17.9	

	Longwood Avenue From North					Blackfan St From East					Longwood Avenue From South					Blackfan St From West					
Start Time				Peds	App. Total				Peds	App. Total				Peds	App. Total		NW / SE	NE / SW	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	0	0	0	38	38	0	0	0	34	34	0	0	0	**130**	**130**	0	4	**57**	44	**105**	**307**
08:00 AM	0	0	0	31	31	0	0	0	70	70	0	0	0	118	118	0	0	17	59	76	295
08:15 AM	0	0	0	**45**	**45**	0	0	0	**77**	**77**	0	0	0	104	104	0	**5**	24	47	76	302
08:30 AM	0	0	0	31	31	0	0	0	68	68	0	0	0	95	95	0	3	22	**70**	95	289
Total Volume	0	0	0	145	145	0	0	0	249	249	0	0	0	447	447	0	12	120	220	352	1193
% App. Total																					
PHF	.000	.000	.000	.806	.806	.000	.000	.000	.808	.808	.000	.000	.000	.860	.860	.000	.600	.526	.786	.838	.971

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012



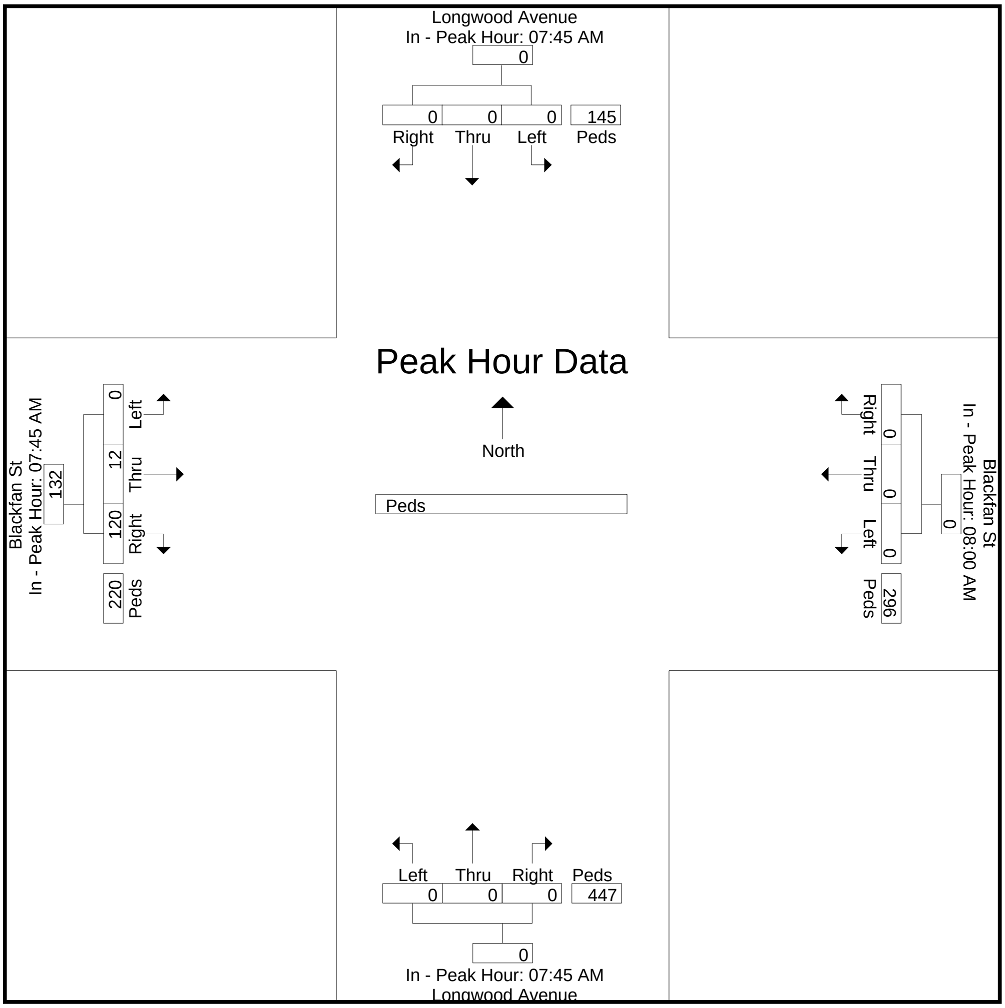
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM					08:00 AM					07:45 AM					07:45 AM				
+0 mins.	0	0	0	38	38	0	0	0	70	70	0	0	0	**130**	**130**	0	4	**57**	44	**105**
+15 mins.	0	0	0	31	31	0	0	0	77	77	0	0	0	118	118	0	0	17	59	76
+30 mins.	0	0	0	**45**	**45**	0	0	0	68	68	0	0	0	104	104	0	**5**	24	47	76
+45 mins.	0	0	0	31	31	0	0	0	**81**	**81**	0	0	0	95	95	0	3	22	**70**	95
Total Volume	0	0	0	145	145	0	0	0	296	296	0	0	0	447	447	0	12	120	220	352
% App. Total																				
PHF	.000	.000	.000	.806	.806	.000	.000	.000	.914	.914	.000	.000	.000	.860	.860	.000	.600	.526	.786	.838

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

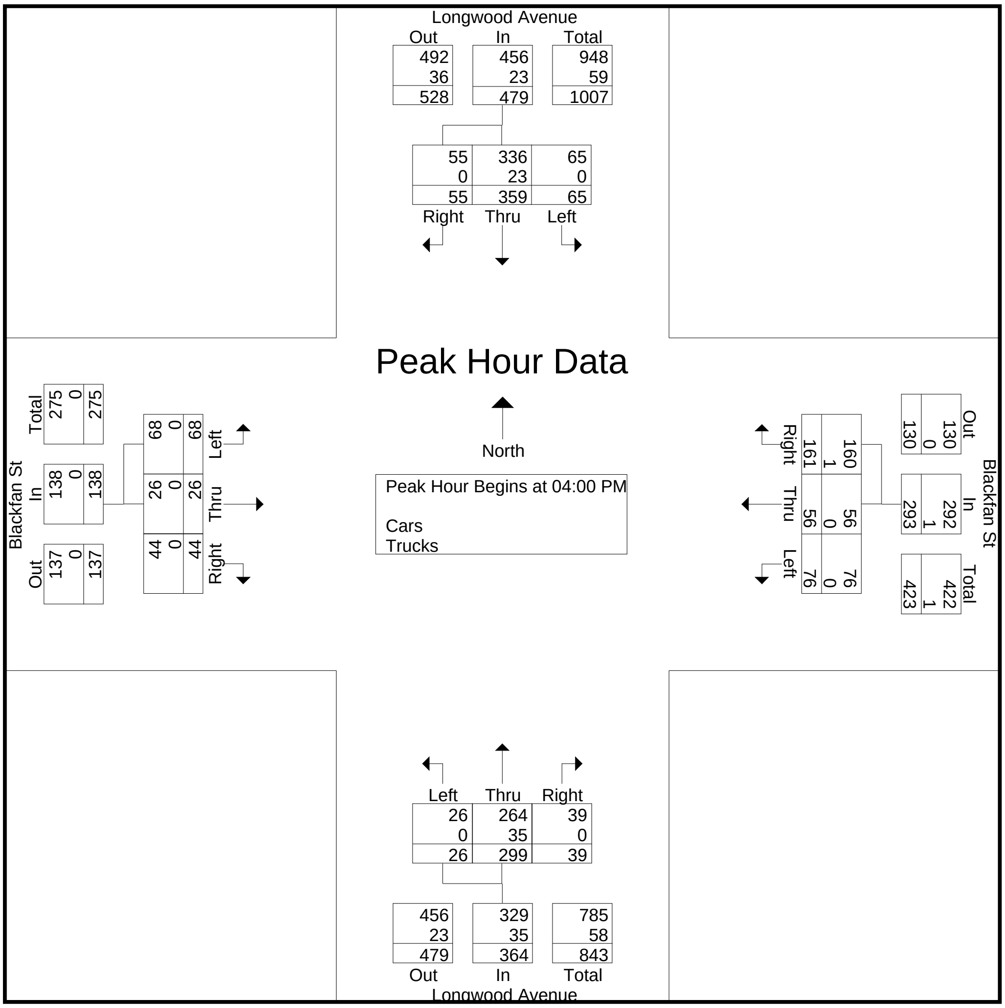
	Longwood Avenue From North			Blackfan St From East			Longwood Avenue From South			Blackfan St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	17	82	13	24	17	34	5	81	11	13	12	14	323
04:15 PM	10	93	13	19	15	34	10	80	12	28	4	8	326
04:30 PM	22	92	16	15	15	53	8	88	7	16	7	16	355
04:45 PM	16	92	13	18	9	40	3	50	9	11	3	6	270
Total	65	359	55	76	56	161	26	299	39	68	26	44	1274
05:00 PM	10	95	13	12	12	38	6	73	9	14	6	12	300
05:15 PM	10	95	9	19	16	51	6	87	13	17	6	9	338
05:30 PM	15	88	11	14	17	35	9	65	3	19	6	16	298
05:45 PM	8	81	5	12	5	32	5	78	9	6	4	14	259
Total	43	359	38	57	50	156	26	303	34	56	22	51	1195
Grand Total	108	718	93	133	106	317	52	602	73	124	48	95	2469
Apprch %	11.8	78.1	10.1	23.9	19.1	57	7.2	82.8	10	46.4	18	35.6	
Total %	4.4	29.1	3.8	5.4	4.3	12.8	2.1	24.4	3	5	1.9	3.8	
Cars	108	676	93	133	106	316	52	529	73	124	48	95	2353
% Cars	100	94.2	100	100	100	99.7	100	87.9	100	100	100	100	95.3
Trucks	0	42	0	0	0	1	0	73	0	0	0	0	116
% Trucks	0	5.8	0	0	0	0.3	0	12.1	0	0	0	0	4.7

	Longwood Avenue From North				Blackfan St From East				Longwood Avenue From South				Blackfan St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	17	82	13	112	**24**	**17**	34	75	5	81	11	97	13	**12**	14	39	323
04:15 PM	10	**93**	13	116	19	15	34	68	**10**	80	**12**	102	**28**	4	8	**40**	326
04:30 PM	**22**	92	**16**	**130**	15	15	**53**	**83**	8	**88**	7	**103**	16	7	**16**	39	**355**
04:45 PM	16	92	13	121	18	9	40	67	3	50	9	62	11	3	6	20	270
Total Volume	65	359	55	479	76	56	161	293	26	299	39	364	68	26	44	138	1274
% App. Total	13.6	74.9	11.5		25.9	19.1	54.9		7.1	82.1	10.7		49.3	18.8	31.9		
PHF	.739	.965	.859	.921	.792	.824	.759	.883	.650	.849	.813	.883	.607	.542	.688	.863	.897
Cars	65	336	55	456	76	56	160	292	26	264	39	329	68	26	44	138	1215
% Cars	100	93.6	100	95.2	100	100	99.4	99.7	100	88.3	100	90.4	100	100	100	100	95.4
Trucks	0	23	0	23	0	0	1	1	0	35	0	35	0	0	0	0	59
% Trucks	0	6.4	0	4.8	0	0	0.6	0.3	0	11.7	0	9.6	0	0	0	0	4.6

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012



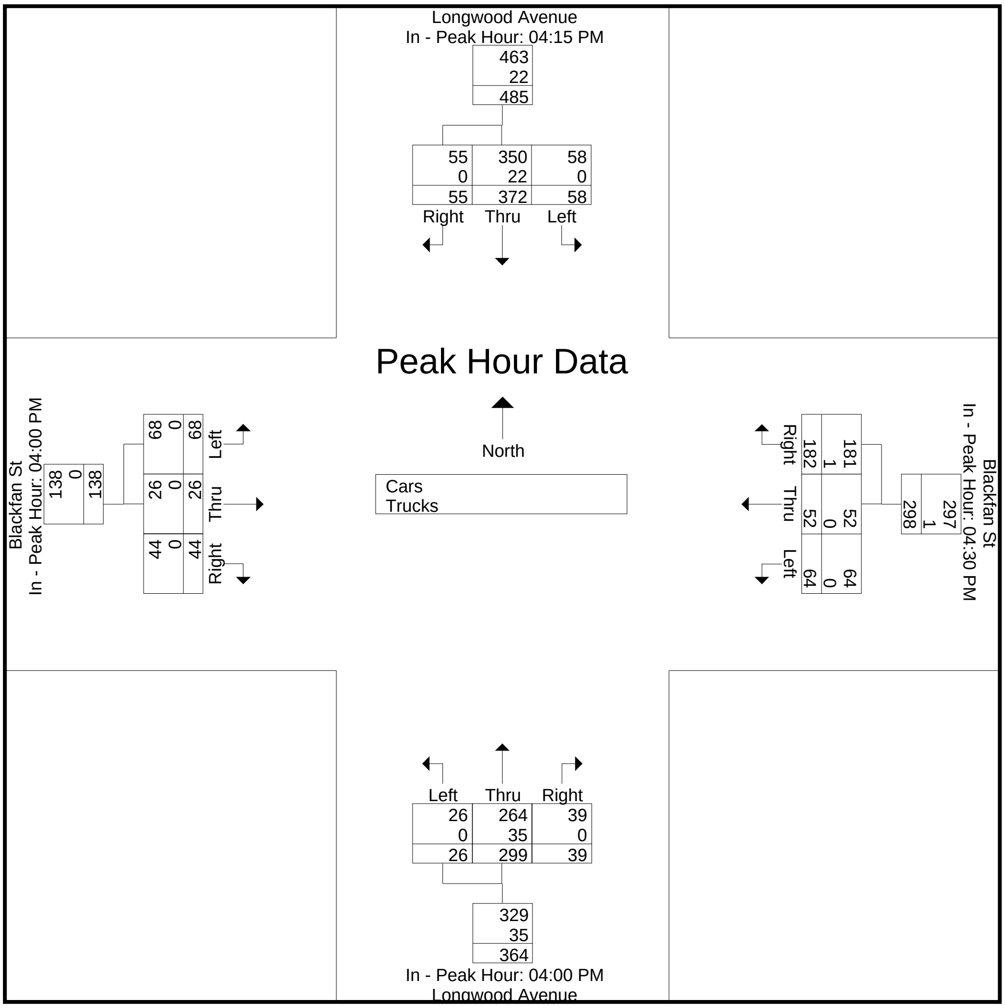
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:30 PM				04:00 PM				04:00 PM			
+0 mins.	10	93	13	116	15	15	**53**	83	5	81	11	97	13	**12**	14	39
+15 mins.	**22**	92	**16**	**130**	18	9	40	67	**10**	80	**12**	102	**28**	4	8	**40**
+30 mins.	16	92	13	121	12	12	38	62	8	**88**	7	**103**	16	7	**16**	39
+45 mins.	10	**95**	13	118	**19**	**16**	51	**86**	3	50	9	62	11	3	6	20
Total Volume	58	372	55	485	64	52	182	298	26	299	39	364	68	26	44	138
% App. Total	12	76.7	11.3		21.5	17.4	61.1		7.1	82.1	10.7		49.3	18.8	31.9	
PHF	.659	.979	.859	.933	.842	.813	.858	.866	.650	.849	.813	.883	.607	.542	.688	.863
Cars	58	350	55	463	64	52	181	297	26	264	39	329	68	26	44	138
% Cars	100	94.1	100	95.5	100	100	99.5	99.7	100	88.3	100	90.4	100	100	100	100
Trucks	0	22	0	22	0	0	1	1	0	35	0	35	0	0	0	0
% Trucks	0	5.9	0	4.5	0	0	0.5	0.3	0	11.7	0	9.6	0	0	0	0

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

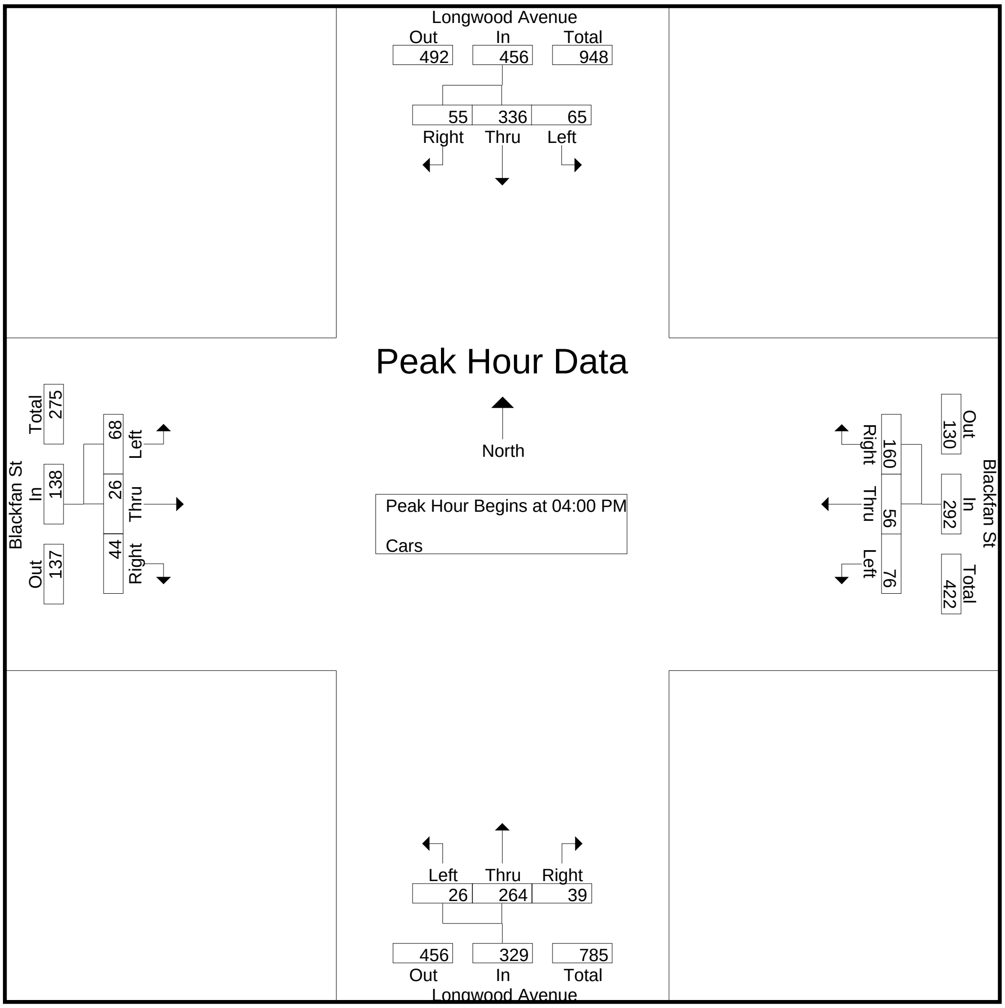
	Longwood Avenue From North			Blackfan St From East			Longwood Avenue From South			Blackfan St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	17	76	13	24	17	34	5	72	11	13	12	14	308
04:15 PM	10	89	13	19	15	34	10	71	12	28	4	8	313
04:30 PM	22	84	16	15	15	53	8	80	7	16	7	16	339
04:45 PM	16	87	13	18	9	39	3	41	9	11	3	6	255
Total	65	336	55	76	56	160	26	264	39	68	26	44	1215
05:00 PM	10	90	13	12	12	38	6	62	9	14	6	12	284
05:15 PM	10	89	9	19	16	51	6	76	13	17	6	9	321
05:30 PM	15	83	11	14	17	35	9	60	3	19	6	16	288
05:45 PM	8	78	5	12	5	32	5	67	9	6	4	14	245
Total	43	340	38	57	50	156	26	265	34	56	22	51	1138
Grand Total	108	676	93	133	106	316	52	529	73	124	48	95	2353
Apprch %	12.3	77.1	10.6	24	19.1	56.9	8	80.9	11.2	46.4	18	35.6	
Total %	4.6	28.7	4	5.7	4.5	13.4	2.2	22.5	3.1	5.3	2	4	

	Longwood Avenue From North				Blackfan St From East				Longwood Avenue From South				Blackfan St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	17	76	13	106	**24**	**17**	34	75	5	72	11	88	13	**12**	14	39	308
04:15 PM	10	**89**	13	112	19	15	34	68	**10**	71	**12**	93	**28**	4	8	**40**	313
04:30 PM	**22**	84	**16**	**122**	15	15	**53**	**83**	8	**80**	7	**95**	16	7	**16**	39	**339**
04:45 PM	16	87	13	116	18	9	39	66	3	41	9	53	11	3	6	20	255
Total Volume	65	336	55	456	76	56	160	292	26	264	39	329	68	26	44	138	1215
% App. Total	14.3	73.7	12.1		26	19.2	54.8		7.9	80.2	11.9		49.3	18.8	31.9		
PHF	.739	.944	.859	.934	.792	.824	.755	.880	.650	.825	.813	.866	.607	.542	.688	.863	.896

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 2



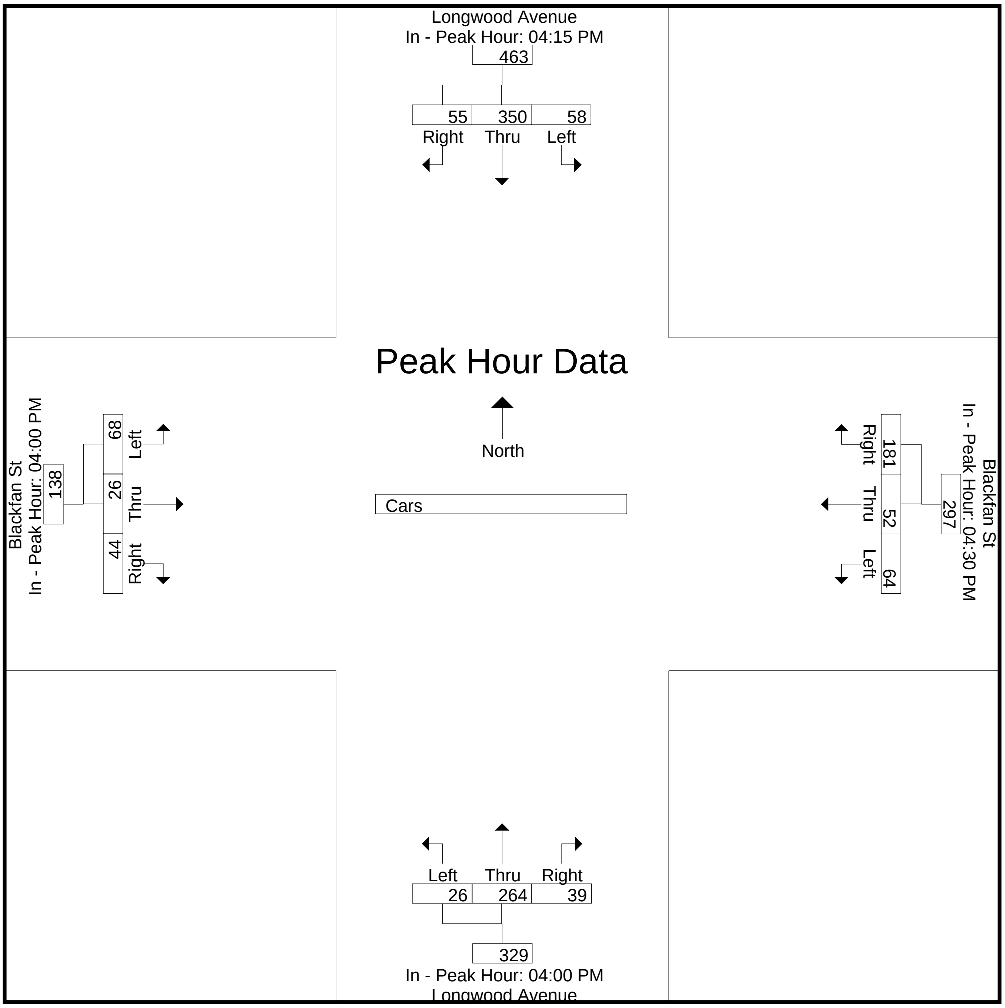
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:30 PM				04:00 PM				04:00 PM			
+0 mins.	10	89	13	112	15	15	**53**	83	5	72	11	88	13	**12**	14	39
+15 mins.	**22**	84	**16**	**122**	18	9	39	66	**10**	71	**12**	93	**28**	4	8	**40**
+30 mins.	16	87	13	116	12	12	38	62	8	**80**	7	**95**	16	7	**16**	39
+45 mins.	10	**90**	13	113	**19**	**16**	51	**86**	3	41	9	53	11	3	6	20
Total Volume	58	350	55	463	64	52	181	297	26	264	39	329	68	26	44	138
% App. Total	12.5	75.6	11.9		21.5	17.5	60.9		7.9	80.2	11.9		49.3	18.8	31.9	
PHF	.659	.972	.859	.949	.842	.813	.854	.863	.650	.825	.813	.866	.607	.542	.688	.863

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

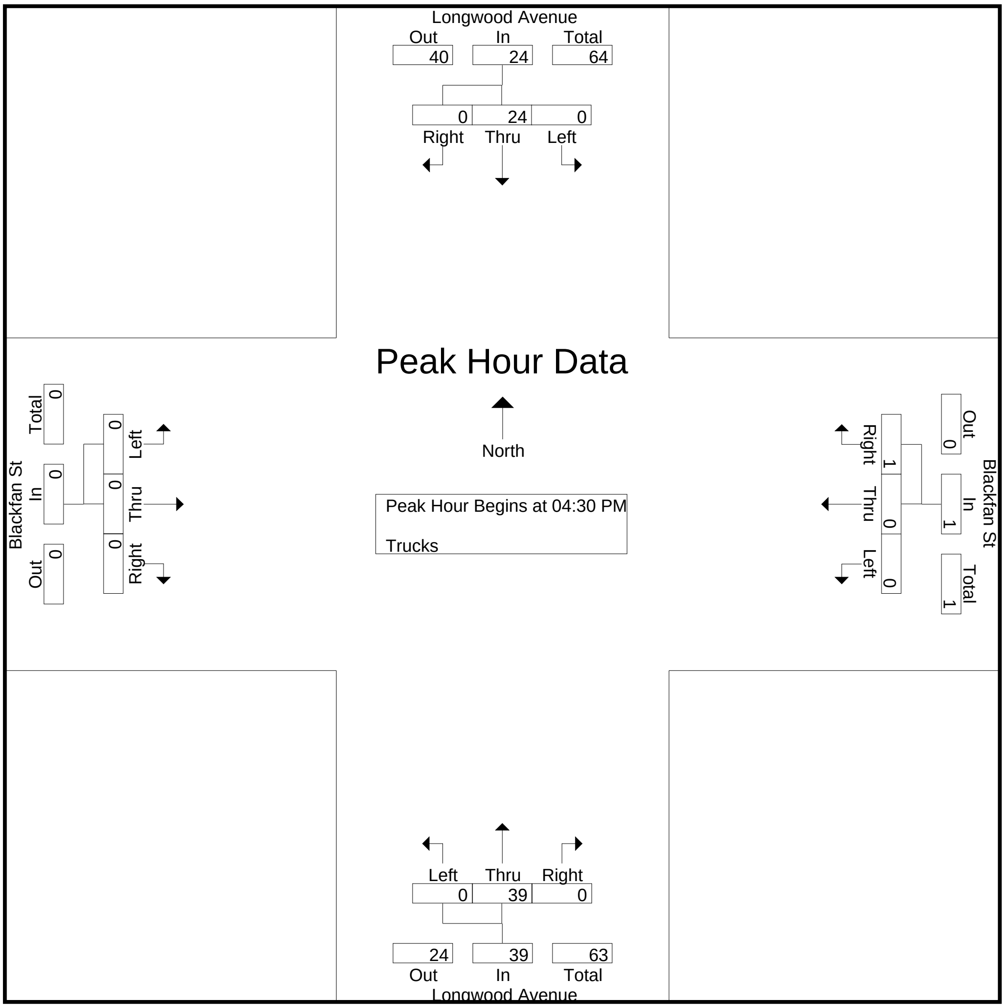
	Longwood Avenue From North			Blackfan St From East			Longwood Avenue From South			Blackfan St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	6	0	0	0	0	0	9	0	0	0	0	15
04:15 PM	0	4	0	0	0	0	0	9	0	0	0	0	13
04:30 PM	0	8	0	0	0	0	0	8	0	0	0	0	16
04:45 PM	0	5	0	0	0	1	0	9	0	0	0	0	15
Total	0	23	0	0	0	1	0	35	0	0	0	0	59
05:00 PM	0	5	0	0	0	0	0	11	0	0	0	0	16
05:15 PM	0	6	0	0	0	0	0	11	0	0	0	0	17
05:30 PM	0	5	0	0	0	0	0	5	0	0	0	0	10
05:45 PM	0	3	0	0	0	0	0	11	0	0	0	0	14
Total	0	19	0	0	0	0	0	38	0	0	0	0	57
Grand Total	0	42	0	0	0	1	0	73	0	0	0	0	116
Apprch %	0	100	0	0	0	100	0	100	0	0	0	0	
Total %	0	36.2	0	0	0	0.9	0	62.9	0	0	0	0	

	Longwood Avenue From North				Blackfan St From East				Longwood Avenue From South				Blackfan St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	**8**	0	**8**	0	0	0	0	0	8	0	8	0	0	0	0	16
04:45 PM	0	5	0	5	0	0	**1**	**1**	0	9	0	9	0	0	0	0	15
05:00 PM	0	5	0	5	0	0	0	0	0	**11**	0	**11**	0	0	0	0	16
05:15 PM	0	6	0	6	0	0	0	0	0	11	0	11	0	0	0	0	**17**
Total Volume	0	24	0	24	0	0	1	1	0	39	0	39	0	0	0	0	64
% App. Total	0	100	0		0	0	100		0	100	0		0	0	0		
PHF	.000	.750	.000	.750	.000	.000	.250	.250	.000	.886	.000	.886	.000	.000	.000	.000	.941

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 2



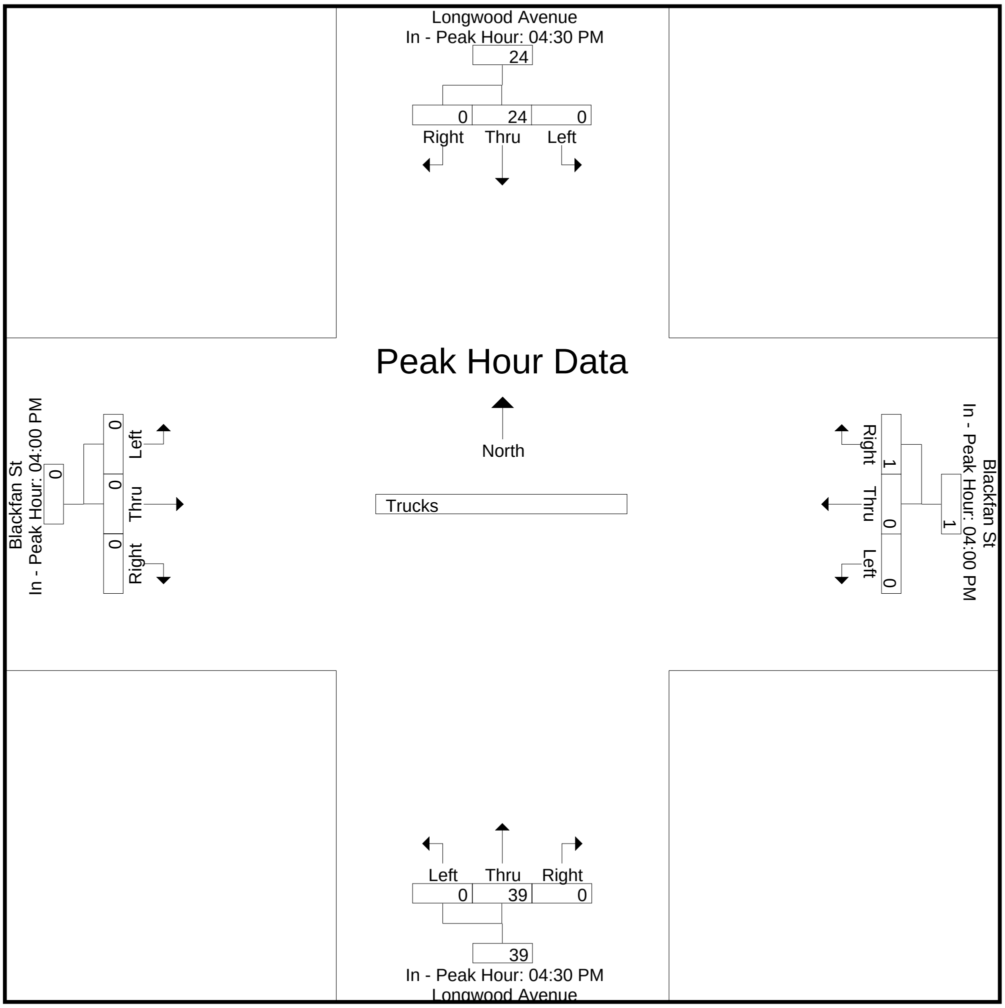
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:00 PM				04:30 PM				04:00 PM			
+0 mins.	0	**8**	0	**8**	0	0	0	0	0	8	0	8	0	0	0	0
+15 mins.	0	5	0	5	0	0	0	0	0	9	0	9	0	0	0	0
+30 mins.	0	5	0	5	0	0	0	0	0	**11**	0	**11**	0	0	0	0
+45 mins.	0	6	0	6	0	0	**1**	**1**	0	11	0	11	0	0	0	0
Total Volume	0	24	0	24	0	0	1	1	0	39	0	39	0	0	0	0
% App. Total	0	100	0		0	0	100		0	100	0		0	0	0	
PHF	.000	.750	.000	.750	.000	.000	.250	.250	.000	.886	.000	.886	.000	.000	.000	.000

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes

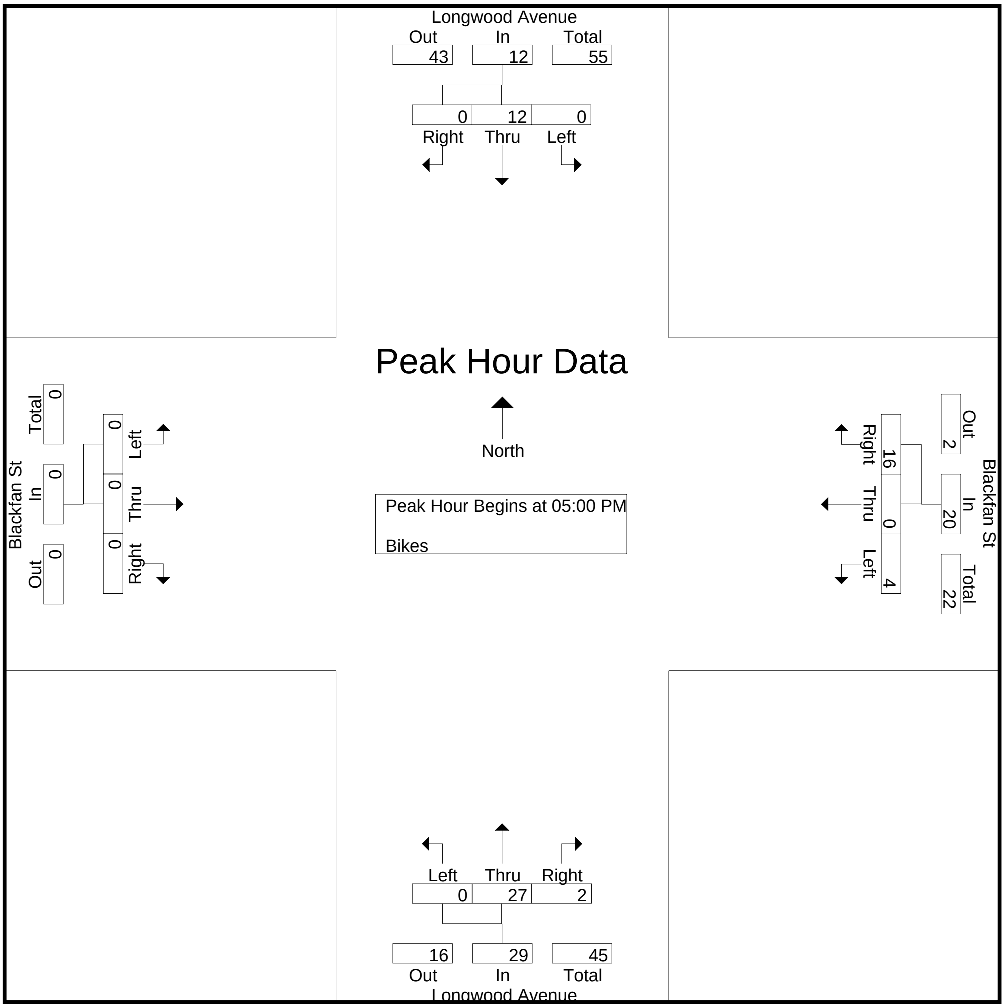
	Longwood Avenue From North			Blackfan St From East			Longwood Avenue From South			Blackfan St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	1	2	0	0	0	1	0	4	0	0	0	0	8
04:15 PM	0	3	0	0	0	1	0	3	1	0	1	0	9
04:30 PM	0	4	0	2	0	0	0	5	1	0	1	0	13
04:45 PM	0	5	0	0	0	1	0	6	0	0	0	0	12
Total	1	14	0	2	0	3	0	18	2	0	2	0	42
05:00 PM	0	2	0	2	0	2	0	8	0	0	0	0	14
05:15 PM	0	3	0	0	0	6	0	7	0	0	0	0	16
05:30 PM	0	4	0	2	0	4	0	4	0	0	0	0	14
05:45 PM	0	3	0	0	0	4	0	8	2	0	0	0	17
Total	0	12	0	4	0	16	0	27	2	0	0	0	61
Grand Total	1	26	0	6	0	19	0	45	4	0	2	0	103
Apprch %	3.7	96.3	0	24	0	76	0	91.8	8.2	0	100	0	
Total %	1	25.2	0	5.8	0	18.4	0	43.7	3.9	0	1.9	0	

	Longwood Avenue From North				Blackfan St From East				Longwood Avenue From South				Blackfan St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	2	0	2	**2**	0	2	4	0	**8**	0	8	0	0	0	0	14
05:15 PM	0	3	0	3	0	0	**6**	**6**	0	7	0	7	0	0	0	0	16
05:30 PM	0	**4**	0	**4**	2	0	4	6	0	4	0	4	0	0	0	0	14
05:45 PM	0	3	0	3	0	0	4	4	0	8	**2**	**10**	0	0	0	0	**17**
Total Volume	0	12	0	12	4	0	16	20	0	27	2	29	0	0	0	0	61
% App. Total	0	100	0		20	0	80		0	93.1	6.9		0	0	0		
PHF	.000	.750	.000	.750	.500	.000	.667	.833	.000	.844	.250	.725	.000	.000	.000	.000	.897

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				05:00 PM				04:00 PM			
+0 mins.	**1**	2	0	3	**2**	0	2	4	0	**8**	0	8	0	0	0	0
+15 mins.	0	3	0	3	0	0	**6**	**6**	0	7	0	7	0	**1**	0	**1**
+30 mins.	0	4	0	4	2	0	4	6	0	4	0	4	0	1	0	1
+45 mins.	0	**5**	0	**5**	0	0	4	4	0	8	**2**	**10**	0	0	0	0
Total Volume	1	14	0	15	4	0	16	20	0	27	2	29	0	2	0	2
% App. Total	6.7	93.3	0		20	0	80		0	93.1	6.9		0	100	0	
PHF	.250	.700	.000	.750	.500	.000	.667	.833	.000	.844	.250	.725	.000	.500	.000	.500

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
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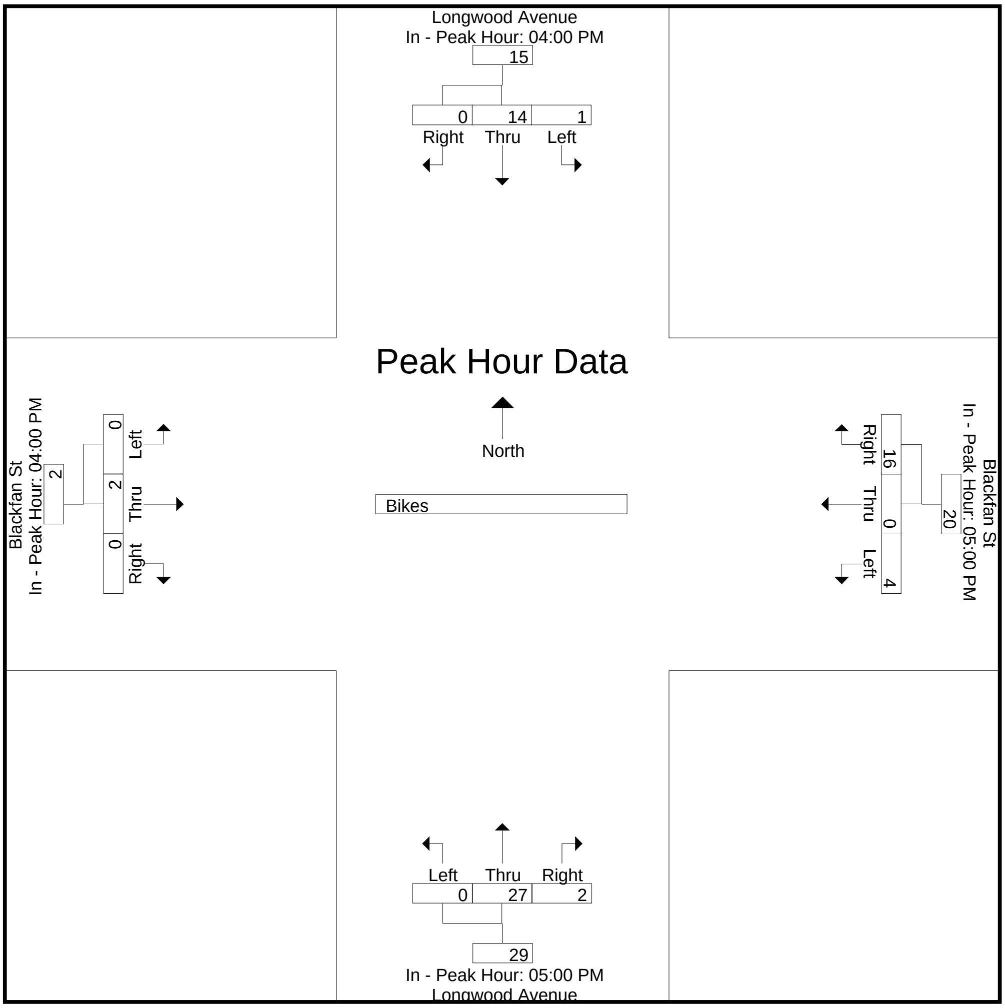


Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 1

Groups Printed- Peds

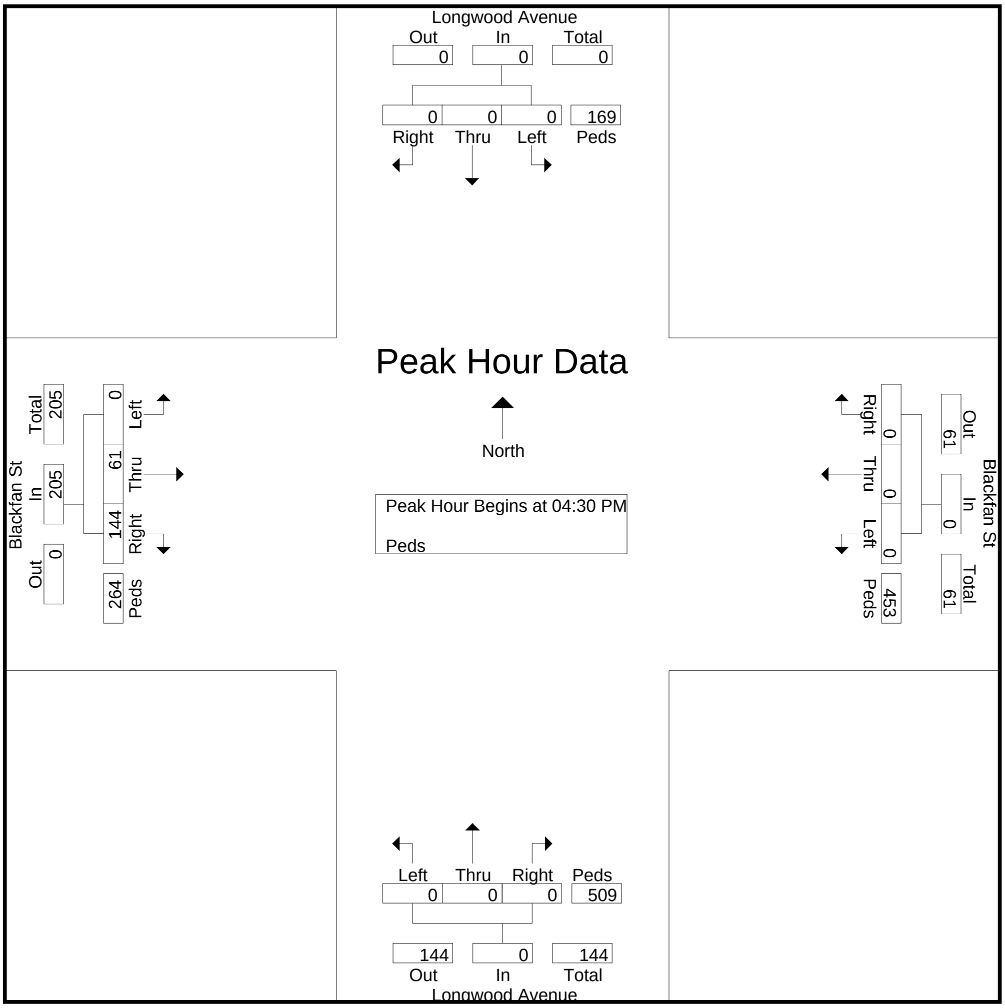
	Longwood Avenue From North				Blackfan St From East				Longwood Avenue From South				Blackfan St From West				
Start Time				Peds				Peds				Peds		NW / SE	NE / SW	Peds	Int. Total
04:00 PM	0	0	0	44	0	0	0	107	0	0	0	131	0	14	34	67	397
04:15 PM	0	0	0	29	0	0	0	94	0	0	0	119	0	11	29	49	331
04:30 PM	0	0	0	49	0	0	0	139	0	0	0	146	0	9	36	43	422
04:45 PM	0	0	0	42	0	0	0	121	0	0	0	137	0	16	47	58	421
Total	0	0	0	164	0	0	0	461	0	0	0	533	0	50	146	217	1571
05:00 PM	0	0	0	50	0	0	0	87	0	0	0	132	0	27	22	89	407
05:15 PM	0	0	0	28	0	0	0	106	0	0	0	94	0	9	39	74	350
05:30 PM	0	0	0	56	0	0	0	92	0	0	0	108	0	15	26	80	377
05:45 PM	0	0	0	34	0	0	0	111	0	0	0	97	0	11	34	79	366
Total	0	0	0	168	0	0	0	396	0	0	0	431	0	62	121	322	1500
Grand Total	0	0	0	332	0	0	0	857	0	0	0	964	0	112	267	539	3071
Apprch %	0	0	0	100	0	0	0	100	0	0	0	100	0	12.2	29.1	58.7	
Total %	0	0	0	10.8	0	0	0	27.9	0	0	0	31.4	0	3.6	8.7	17.6	

	Longwood Avenue From North					Blackfan St From East					Longwood Avenue From South					Blackfan St From West					
Start Time				Peds	App. Total				Peds	App. Total				Peds	App. Total		NW / SE	NE / SW	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	49	49	0	0	0	**139**	**139**	0	0	0	**146**	**146**	0	9	36	43	88	**422**
04:45 PM	0	0	0	42	42	0	0	0	121	121	0	0	0	137	137	0	16	**47**	58	121	421
05:00 PM	0	0	0	**50**	**50**	0	0	0	87	87	0	0	0	132	132	0	**27**	22	**89**	**138**	407
05:15 PM	0	0	0	28	28	0	0	0	106	106	0	0	0	94	94	0	9	39	74	122	350
Total Volume	0	0	0	169	169	0	0	0	453	453	0	0	0	509	509	0	61	144	264	469	1600
% App. Total																					
PHF	.000	.000	.000	.845	.845	.000	.000	.000	.815	.815	.000	.000	.000	.872	.872	.000	.565	.766	.742	.850	.948

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012



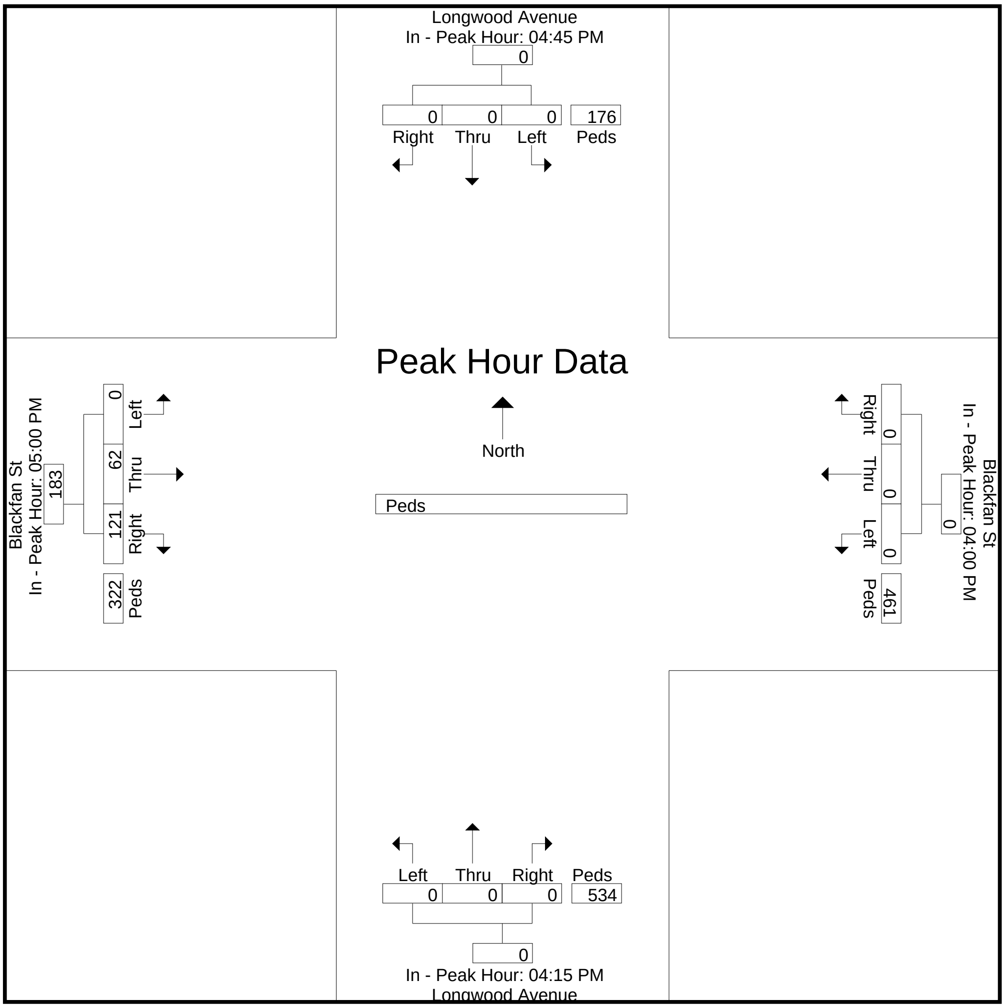
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM					04:00 PM					04:15 PM					05:00 PM				
+0 mins.	0	0	0	42	42	0	0	0	107	107	0	0	0	119	119	0	**27**	22	**89**	**138**
+15 mins.	0	0	0	50	50	0	0	0	94	94	0	0	0	**146**	**146**	0	9	**39**	74	122
+30 mins.	0	0	0	28	28	0	0	0	**139**	**139**	0	0	0	137	137	0	15	26	80	121
+45 mins.	0	0	0	**56**	**56**	0	0	0	121	121	0	0	0	132	132	0	11	34	79	124
Total Volume	0	0	0	176	176	0	0	0	461	461	0	0	0	534	534	0	62	121	322	505
% App. Total																				
PHF	.000	.000	.000	.786	.786	.000	.000	.000	.829	.829	.000	.000	.000	.914	.914	.000	.574	.776	.904	.915

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street : Blackfan Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970021
Site Code : 94970021
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avanue	File Name : 94970022
E/W Street : Avenue Louis Pasteur	Site Code : 94970022
City/State : Boston, MA	Start Date : 5/16/2012
Weather : Drizzle	Page No : 1

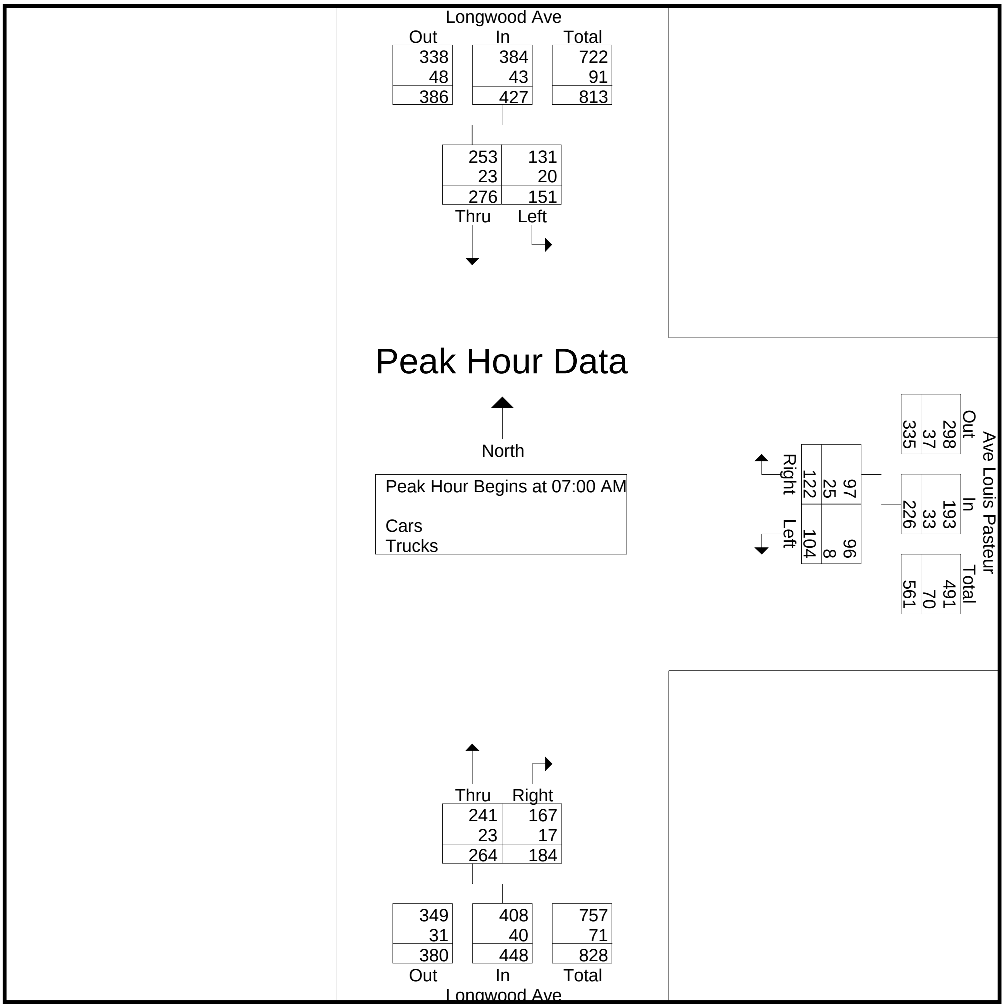
Groups Printed- Cars - Trucks

	Longwood Ave From North		Ave Louis Pasteur From East		Longwood Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	35	59	23	26	66	67	276
07:15 AM	48	67	29	38	57	57	296
07:30 AM	52	94	34	39	63	39	321
07:45 AM	16	56	18	19	78	21	208
Total	151	276	104	122	264	184	1101
08:00 AM	18	58	11	22	61	21	191
08:15 AM	18	90	21	29	76	26	260
08:30 AM	19	67	11	24	75	13	209
08:45 AM	25	65	20	20	76	23	229
Total	80	280	63	95	288	83	889
Grand Total	231	556	167	217	552	267	1990
Apprch %	29.4	70.6	43.5	56.5	67.4	32.6	
Total %	11.6	27.9	8.4	10.9	27.7	13.4	
Cars	184	519	147	163	517	247	1777
% Cars	79.7	93.3	88	75.1	93.7	92.5	89.3
Trucks	47	37	20	54	35	20	213
% Trucks	20.3	6.7	12	24.9	6.3	7.5	10.7

	Longwood Ave From North			Ave Louis Pasteur From East			Longwood Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	35	59	94	23	26	49	66	**67**	**133**	276
07:15 AM	48	67	115	29	38	67	57	57	114	296
07:30 AM	**52**	**94**	**146**	**34**	**39**	**73**	63	39	102	**321**
07:45 AM	16	56	72	18	19	37	**78**	21	99	208
Total Volume	151	276	427	104	122	226	264	184	448	1101
% App. Total	35.4	64.6		46	54		58.9	41.1		
PHF	.726	.734	.731	.765	.782	.774	.846	.687	.842	.857
Cars	131	253	384	96	97	193	241	167	408	985
% Cars	86.8	91.7	89.9	92.3	79.5	85.4	91.3	90.8	91.1	89.5
Trucks	20	23	43	8	25	33	23	17	40	116
% Trucks	13.2	8.3	10.1	7.7	20.5	14.6	8.7	9.2	8.9	10.5

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012
Page No : 2



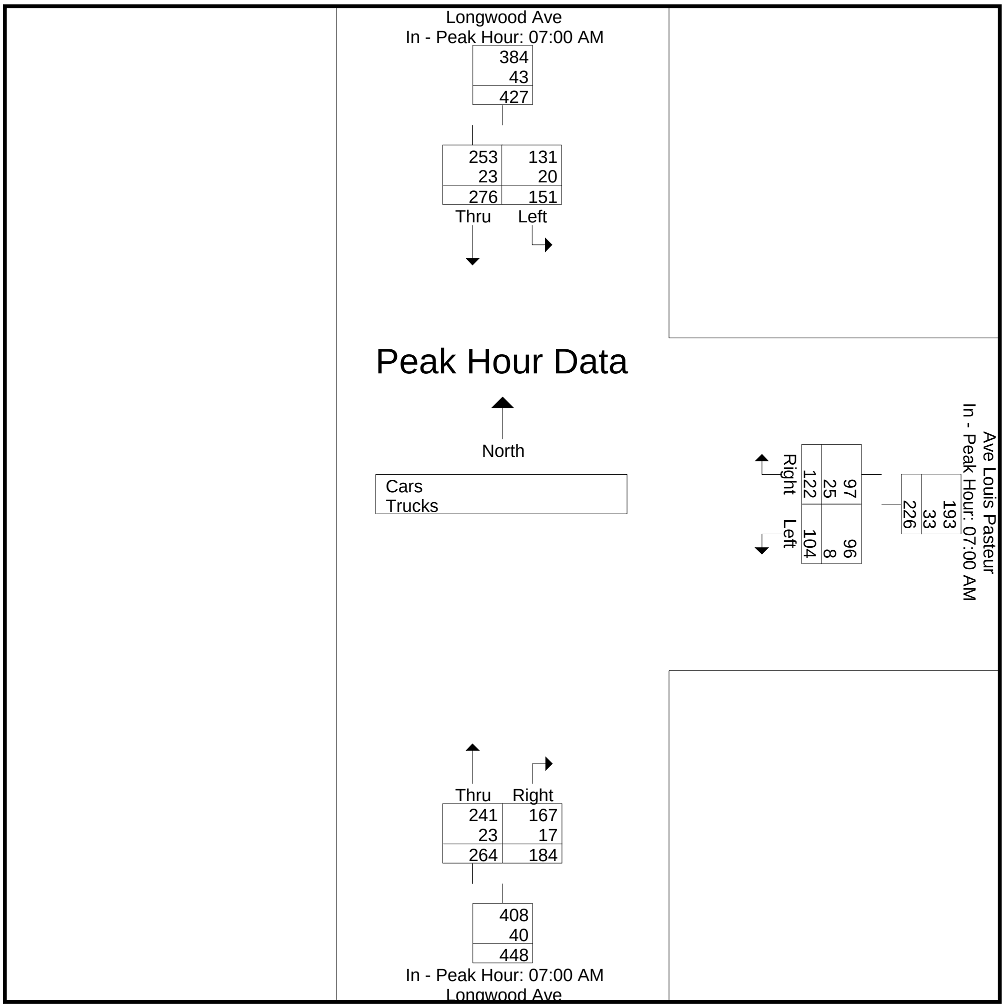
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	35	59	94	23	26	49	66	**67**	**133**
+15 mins.	48	67	115	29	38	67	57	57	114
+30 mins.	**52**	**94**	**146**	**34**	**39**	**73**	63	39	102
+45 mins.	16	56	72	18	19	37	**78**	21	99
Total Volume	151	276	427	104	122	226	264	184	448
% App. Total	35.4	64.6		46	54		58.9	41.1	
PHF	.726	.734	.731	.765	.782	.774	.846	.687	.842
Cars	131	253	384	96	97	193	241	167	408
% Cars	86.8	91.7	89.9	92.3	79.5	85.4	91.3	90.8	91.1
Trucks	20	23	43	8	25	33	23	17	40
% Trucks	13.2	8.3	10.1	7.7	20.5	14.6	8.7	9.2	8.9

Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012

Groups Printed- Cars

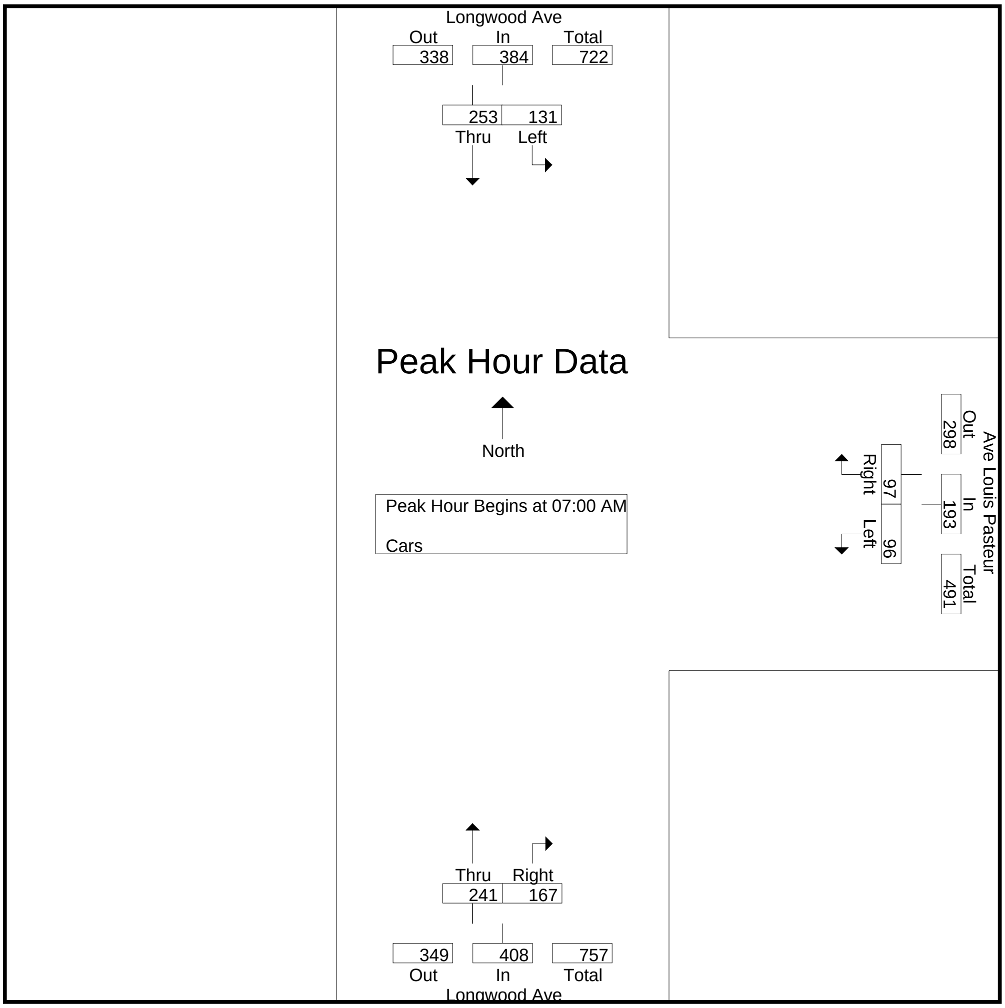
	Longwood Ave From North		Ave Louis Pasteur From East		Longwood Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	29	52	21	18	59	62	241
07:15 AM	44	60	27	32	50	49	262
07:30 AM	46	89	32	33	58	37	295
07:45 AM	12	52	16	14	74	19	187
Total	131	253	96	97	241	167	985
08:00 AM	11	53	9	18	58	20	169
08:15 AM	11	88	16	19	74	26	234
08:30 AM	14	64	9	14	73	12	186
08:45 AM	17	61	17	15	71	22	203
Total	53	266	51	66	276	80	792
Grand Total	184	519	147	163	517	247	1777
Apprch %	26.2	73.8	47.4	52.6	67.7	32.3	
Total %	10.4	29.2	8.3	9.2	29.1	13.9	

	Longwood Ave From North			Ave Louis Pasteur From East			Longwood Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	29	52	81	21	18	39	59	**62**	**121**	241
07:15 AM	44	60	104	27	32	59	50	49	99	262
07:30 AM	**46**	**89**	**135**	**32**	**33**	**65**	58	37	95	**295**
07:45 AM	12	52	64	16	14	30	**74**	19	93	187
Total Volume	131	253	384	96	97	193	241	167	408	985
% App. Total	34.1	65.9		49.7	50.3		59.1	40.9		
PHF	.712	.711	.711	.750	.735	.742	.814	.673	.843	.835

Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	29	52	81	21	18	39	59	**62**	**121**
+15 mins.	44	60	104	27	32	59	50	49	99
+30 mins.	**46**	**89**	**135**	**32**	**33**	**65**	58	37	95
+45 mins.	12	52	64	16	14	30	**74**	19	93
Total Volume	131	253	384	96	97	193	241	167	408
% App. Total	34.1	65.9		49.7	50.3		59.1	40.9	
PHF	.712	.711	.711	.750	.735	.742	.814	.673	.843

Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012
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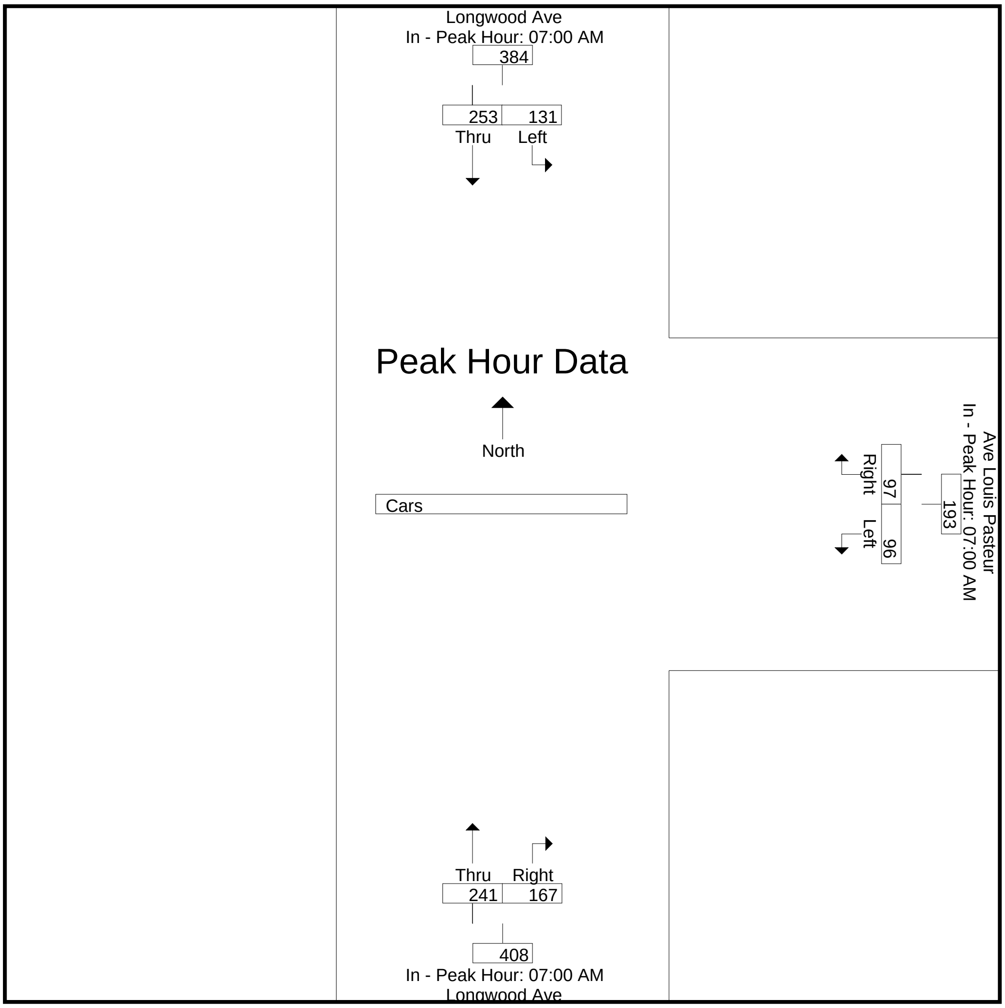

Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

	Longwood Ave From North		Ave Louis Pasteur From East		Longwood Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	6	7	2	8	7	5	35
07:15 AM	4	7	2	6	7	8	34
07:30 AM	6	5	2	6	5	2	26
07:45 AM	4	4	2	5	4	2	21
Total	20	23	8	25	23	17	116
08:00 AM	7	5	2	4	3	1	22
08:15 AM	7	2	5	10	2	0	26
08:30 AM	5	3	2	10	2	1	23
08:45 AM	8	4	3	5	5	1	26
Total	27	14	12	29	12	3	97
Grand Total	47	37	20	54	35	20	213
Apprch %	56	44	27	73	63.6	36.4	
Total %	22.1	17.4	9.4	25.4	16.4	9.4	

	Longwood Ave From North			Ave Louis Pasteur From East			Longwood Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	**6**	**7**	**13**	**2**	**8**	**10**	**7**	5	12	**35**
07:15 AM	4	7	11	2	6	8	7	**8**	**15**	34
07:30 AM	6	5	11	2	6	8	5	2	7	26
07:45 AM	4	4	8	2	5	7	4	2	6	21
Total Volume	20	23	43	8	25	33	23	17	40	116
% App. Total	46.5	53.5		24.2	75.8		57.5	42.5		
PHF	.833	.821	.827	1.00	.781	.825	.821	.531	.667	.829

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012
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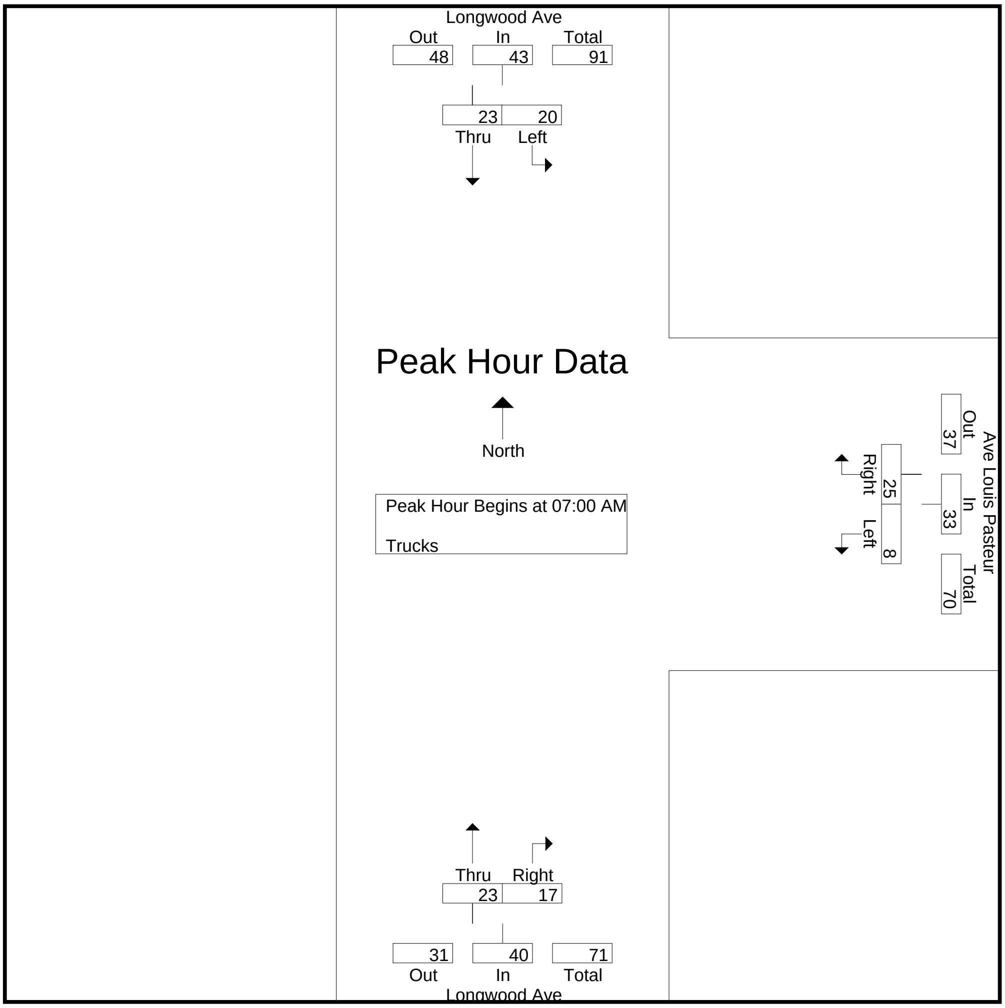

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM			08:00 AM			07:00 AM		
+0 mins.	**6**	**7**	**13**	2	4	6	**7**	5	12
+15 mins.	4	7	11	**5**	**10**	**15**	7	**8**	**15**
+30 mins.	6	5	11	2	10	12	5	2	7
+45 mins.	4	4	8	3	5	8	4	2	6
Total Volume	20	23	43	12	29	41	23	17	40
% App. Total	46.5	53.5		29.3	70.7		57.5	42.5	
PHF	.833	.821	.827	.600	.725	.683	.821	.531	.667

Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012
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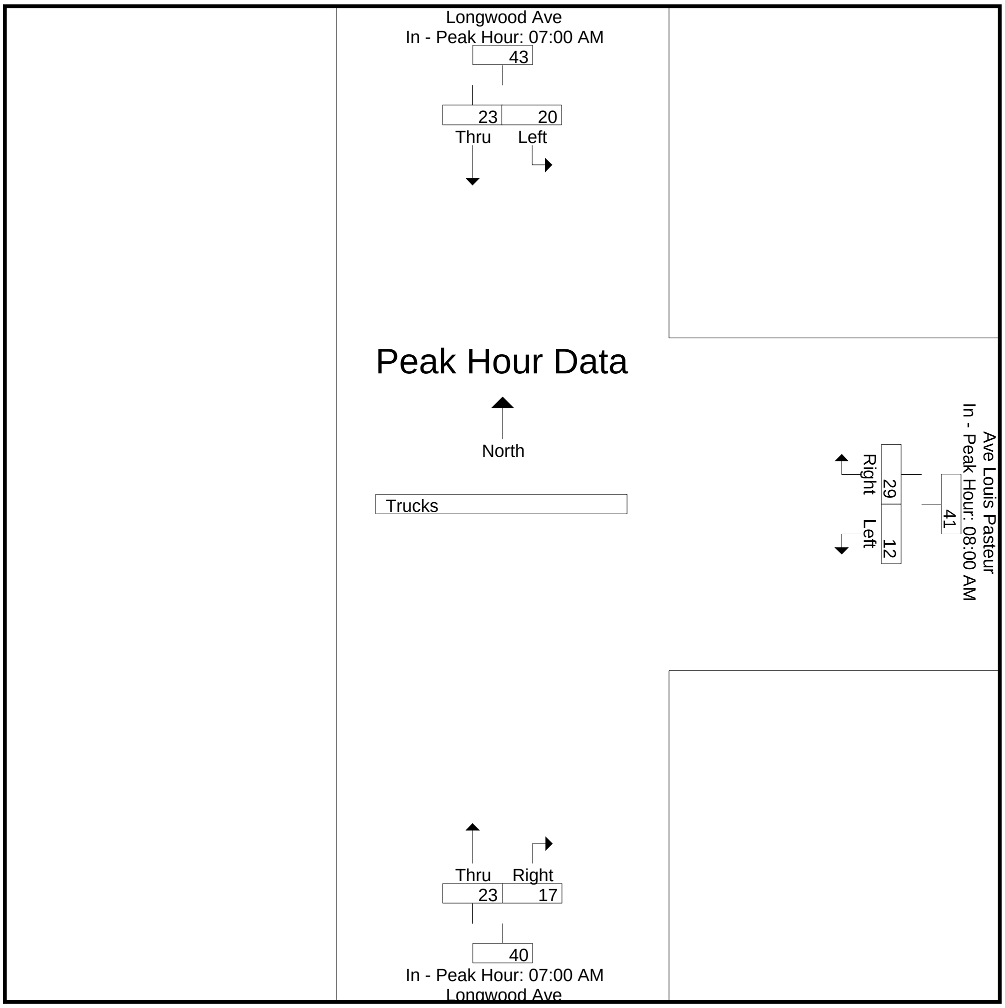

Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012
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Groups Printed- Bikes Peds

	Longwood Ave From North			Ave Louis Pasteur From East			Longwood Ave From South					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	1	26	0	0	45	4	1	37	108	6	114
07:15 AM	0	0	35	0	0	52	1	1	46	133	2	135
07:30 AM	0	9	34	0	0	53	1	0	45	132	10	142
07:45 AM	0	8	62	0	0	79	0	1	54	195	9	204
Total	0	18	157	0	0	229	6	3	182	568	27	595
08:00 AM	0	4	63	3	0	95	1	0	64	222	8	230
08:15 AM	1	11	84	0	0	94	1	1	89	267	14	281
08:30 AM	2	10	58	0	0	63	4	0	41	162	16	178
08:45 AM	0	6	127	1	0	61	1	0	95	283	8	291
Total	3	31	332	4	0	313	7	1	289	934	46	980
Grand Total	3	49	489	4	0	542	13	4	471	1502	73	1575
Apprch %	5.8	94.2		100	0		76.5	23.5				
Total %	4.1	67.1		5.5	0		17.8	5.5		95.4	4.6	

	Longwood Ave From North			Ave Louis Pasteur From East			Longwood Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	8	8	0	0	0	0	**1**	1	9
08:00 AM	0	4	4	**3**	0	**3**	1	0	1	8
08:15 AM	1	**11**	**12**	0	0	0	1	1	2	14
08:30 AM	**2**	10	12	0	0	0	**4**	0	**4**	**16**
Total Volume	3	33	36	3	0	3	6	2	8	47
% App. Total	8.3	91.7		100	0		75	25		
PHF	.375	.750	.750	.250	.000	.250	.375	.500	.500	.734

Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012
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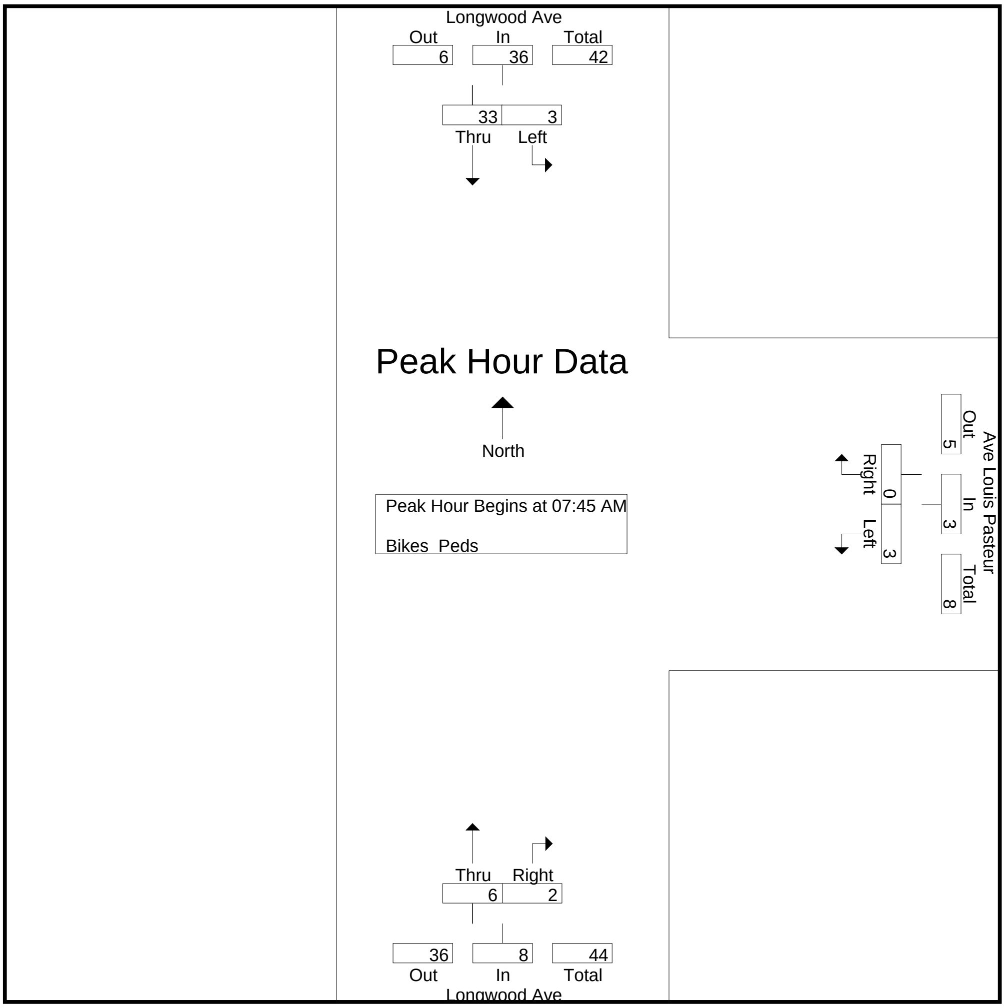

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			08:00 AM			07:00 AM		
+0 mins.	0	8	8	**3**	0	**3**	**4**	**1**	**5**
+15 mins.	0	4	4	0	0	0	1	1	2
+30 mins.	1	**11**	**12**	0	0	0	1	0	1
+45 mins.	**2**	10	12	1	0	1	0	1	1
Total Volume	3	33	36	4	0	4	6	3	9
% App. Total	8.3	91.7		100	0		66.7	33.3	
PHF	.375	.750	.750	.333	.000	.333	.375	.750	.450

Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012
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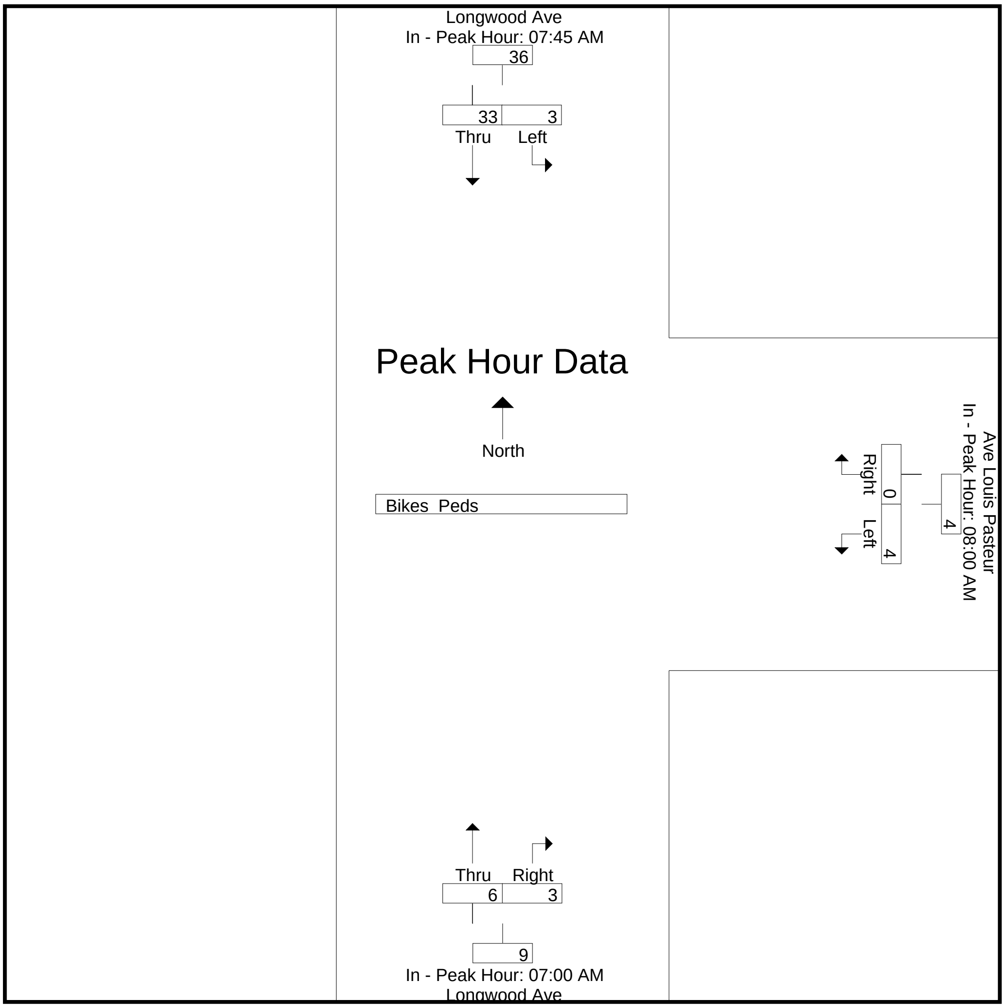


Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

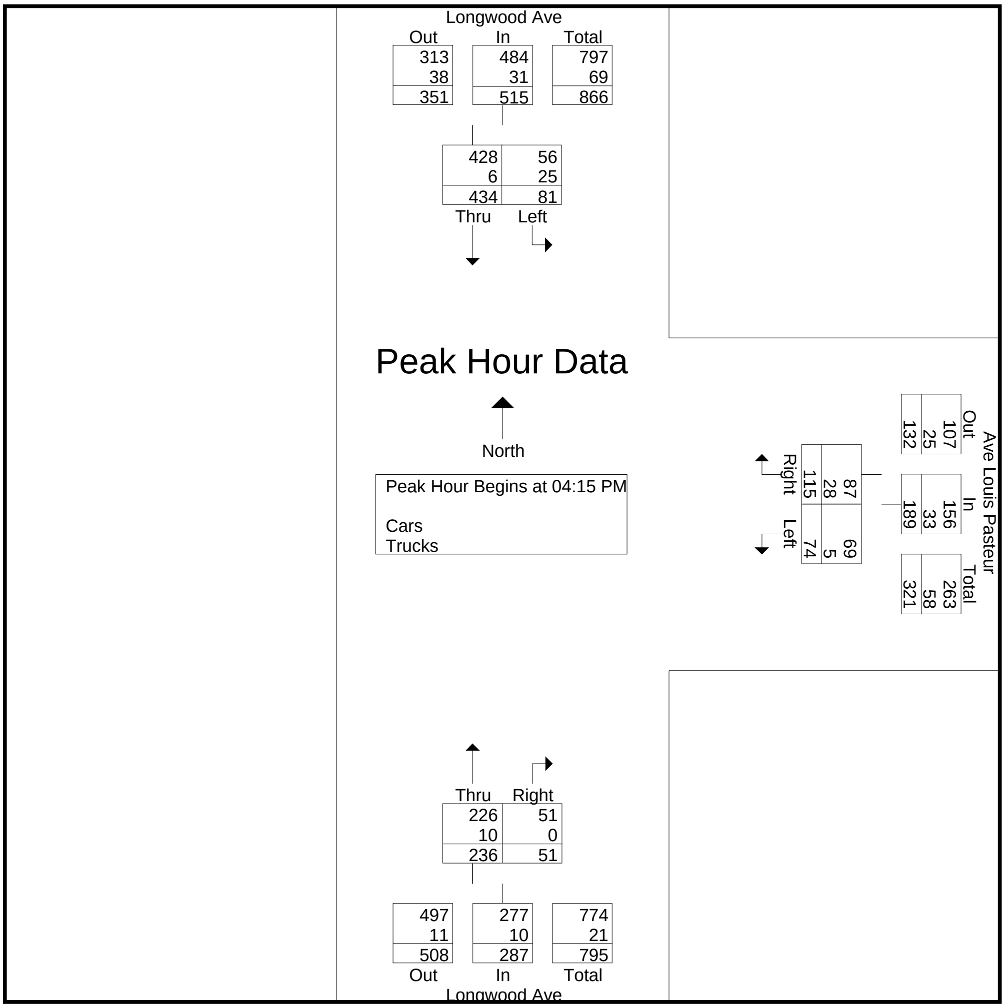
	Longwood Ave From North		Ave Louis Pasteur From East		Longwood Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	14	106	20	29	56	14	239
04:15 PM	19	100	17	30	62	18	246
04:30 PM	18	118	23	28	70	18	275
04:45 PM	20	100	17	30	44	8	219
Total	71	424	77	117	232	58	979
05:00 PM	24	116	17	27	60	7	251
05:15 PM	16	78	16	25	45	8	188
05:30 PM	25	106	19	30	41	10	231
05:45 PM	14	100	18	33	60	10	235
Total	79	400	70	115	206	35	905
Grand Total	150	824	147	232	438	93	1884
Apprch %	15.4	84.6	38.8	61.2	82.5	17.5	
Total %	8	43.7	7.8	12.3	23.2	4.9	
Cars	106	815	134	178	420	92	1745
% Cars	70.7	98.9	91.2	76.7	95.9	98.9	92.6
Trucks	44	9	13	54	18	1	139
% Trucks	29.3	1.1	8.8	23.3	4.1	1.1	7.4

	Longwood Ave From North			Ave Louis Pasteur From East			Longwood Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	19	100	119	17	**30**	47	62	**18**	80	246
04:30 PM	18	**118**	136	**23**	28	**51**	**70**	18	**88**	**275**
04:45 PM	20	100	120	17	30	47	44	8	52	219
05:00 PM	**24**	116	**140**	17	27	44	60	7	67	251
Total Volume	81	434	515	74	115	189	236	51	287	991
% App. Total	15.7	84.3		39.2	60.8		82.2	17.8		
PHF	.844	.919	.920	.804	.958	.926	.843	.708	.815	.901
Cars	56	428	484	69	87	156	226	51	277	917
% Cars	69.1	98.6	94.0	93.2	75.7	82.5	95.8	100	96.5	92.5
Trucks	25	6	31	5	28	33	10	0	10	74
% Trucks	30.9	1.4	6.0	6.8	24.3	17.5	4.2	0	3.5	7.5

Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:00 PM			04:00 PM		
+0 mins.	19	100	119	20	29	49	56	14	70
+15 mins.	18	**118**	136	17	**30**	47	62	**18**	80
+30 mins.	20	100	120	**23**	28	**51**	**70**	18	**88**
+45 mins.	**24**	116	**140**	17	30	47	44	8	52
Total Volume	81	434	515	77	117	194	232	58	290
% App. Total	15.7	84.3		39.7	60.3		80	20	
PHF	.844	.919	.920	.837	.975	.951	.829	.806	.824
Cars	56	428	484	70	90	160	224	58	282
% Cars	69.1	98.6	94	90.9	76.9	82.5	96.6	100	97.2
Trucks	25	6	31	7	27	34	8	0	8
% Trucks	30.9	1.4	6	9.1	23.1	17.5	3.4	0	2.8

Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012
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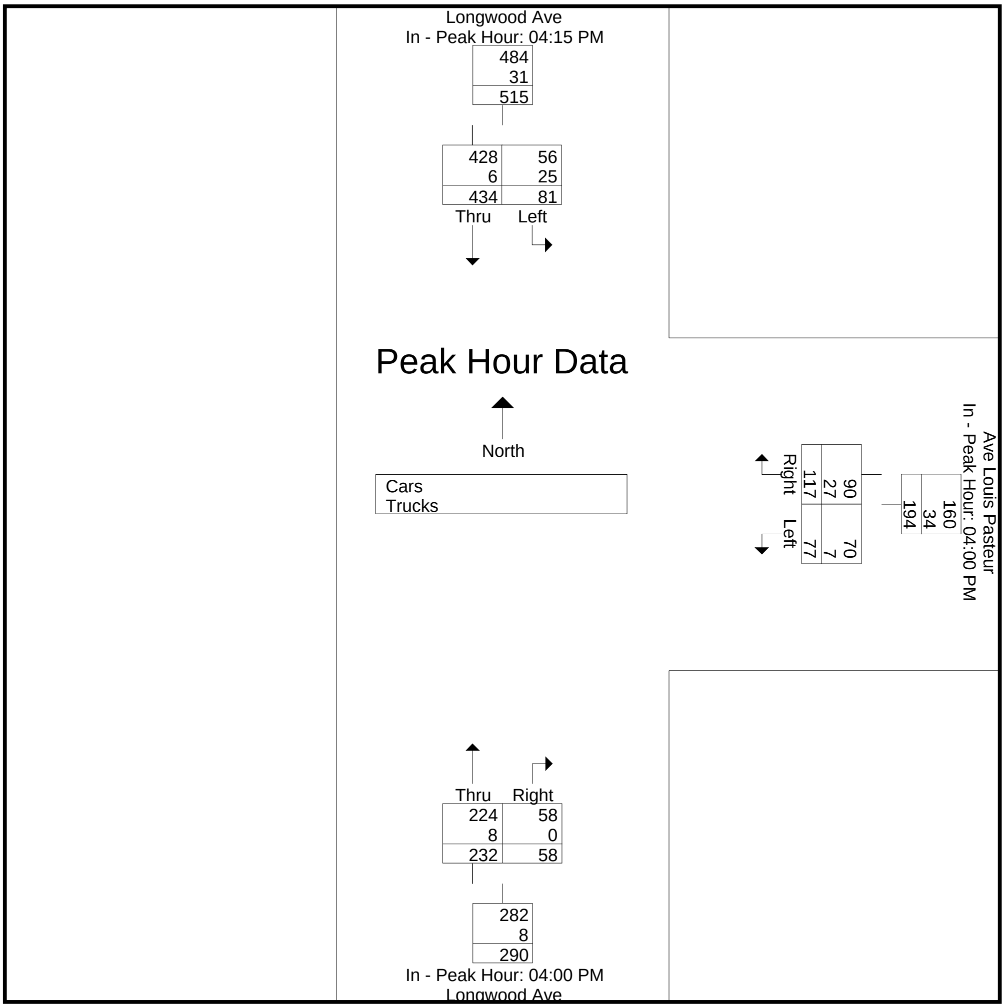

Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars

	Longwood Ave From North		Ave Louis Pasteur From East		Longwood Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	9	105	17	23	55	14	223
04:15 PM	13	100	15	26	59	18	231
04:30 PM	12	114	22	18	69	18	253
04:45 PM	15	98	16	23	41	8	201
Total	49	417	70	90	224	58	908
05:00 PM	16	116	16	20	57	7	232
05:15 PM	13	77	14	17	44	8	173
05:30 PM	19	105	18	24	39	10	215
05:45 PM	9	100	16	27	56	9	217
Total	57	398	64	88	196	34	837
Grand Total	106	815	134	178	420	92	1745
Apprch %	11.5	88.5	42.9	57.1	82	18	
Total %	6.1	46.7	7.7	10.2	24.1	5.3	

	Longwood Ave From North			Ave Louis Pasteur From East			Longwood Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	13	100	113	15	**26**	**41**	59	**18**	77	231
04:30 PM	12	114	126	**22**	18	40	**69**	18	**87**	**253**
04:45 PM	15	98	113	16	23	39	41	8	49	201
05:00 PM	**16**	**116**	**132**	16	20	36	57	7	64	232
Total Volume	56	428	484	69	87	156	226	51	277	917
% App. Total	11.6	88.4		44.2	55.8		81.6	18.4		
PHF	.875	.922	.917	.784	.837	.951	.819	.708	.796	.906

Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012
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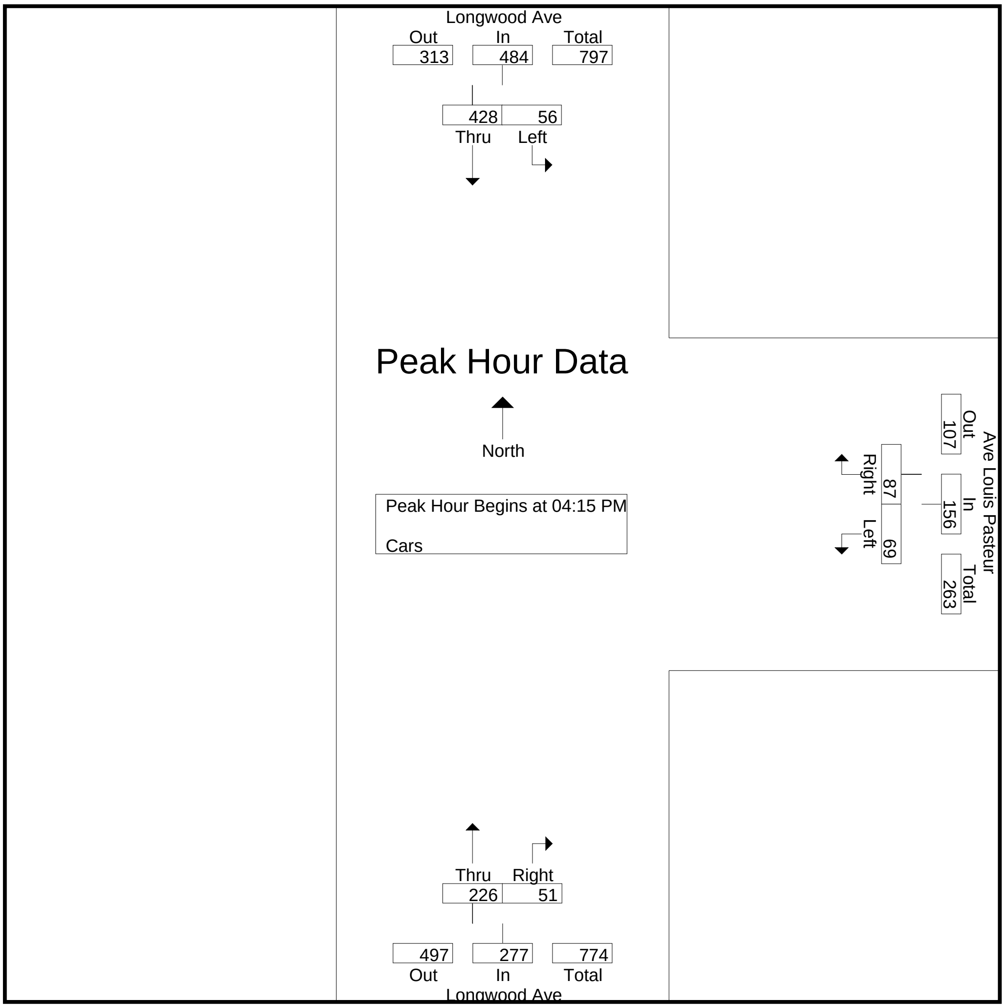


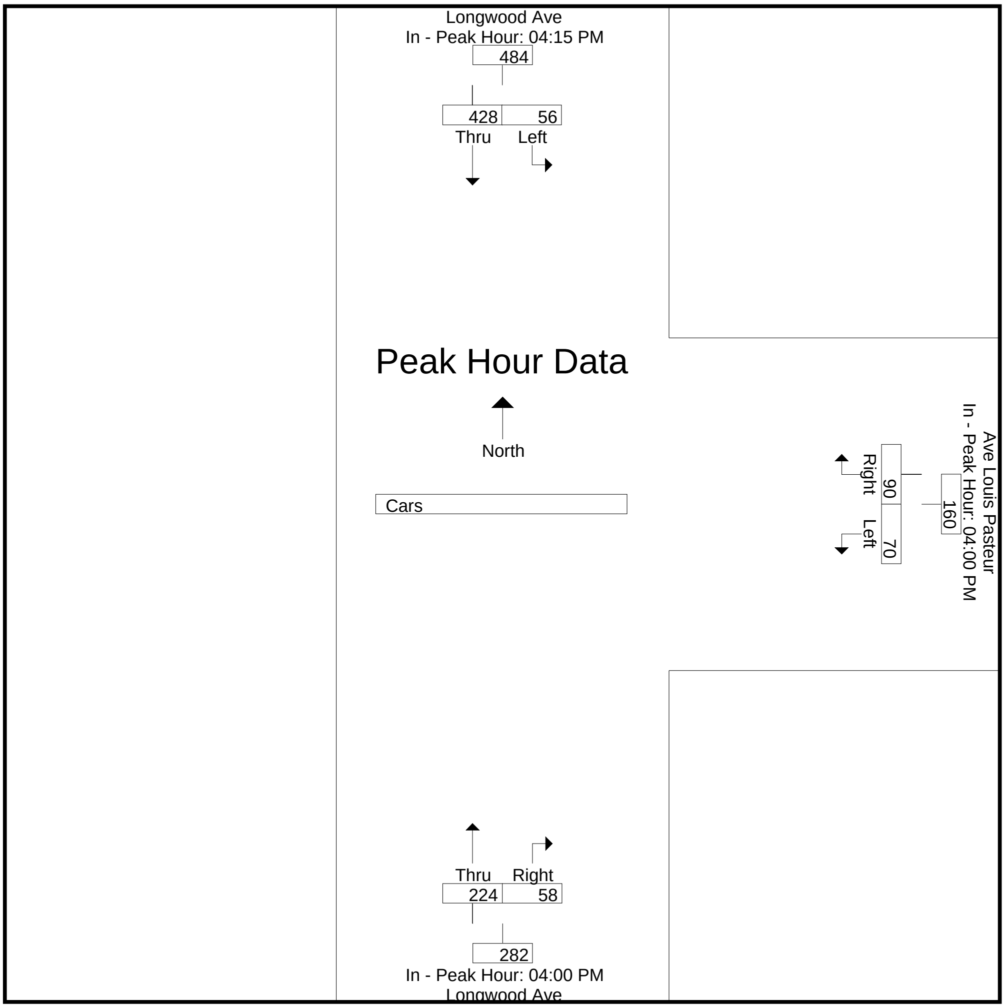
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:00 PM			04:00 PM		
+0 mins.	13	100	113	17	23	40	55	14	69
+15 mins.	12	114	126	15	**26**	**41**	59	**18**	77
+30 mins.	15	98	113	**22**	18	40	**69**	18	**87**
+45 mins.	**16**	**116**	**132**	16	23	39	41	8	49
Total Volume	56	428	484	70	90	160	224	58	282
% App. Total	11.6	88.4		43.8	56.2		79.4	20.6	
PHF	.875	.922	.917	.795	.865	.976	.812	.806	.810

Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012
Page No : 1

Groups Printed- Trucks

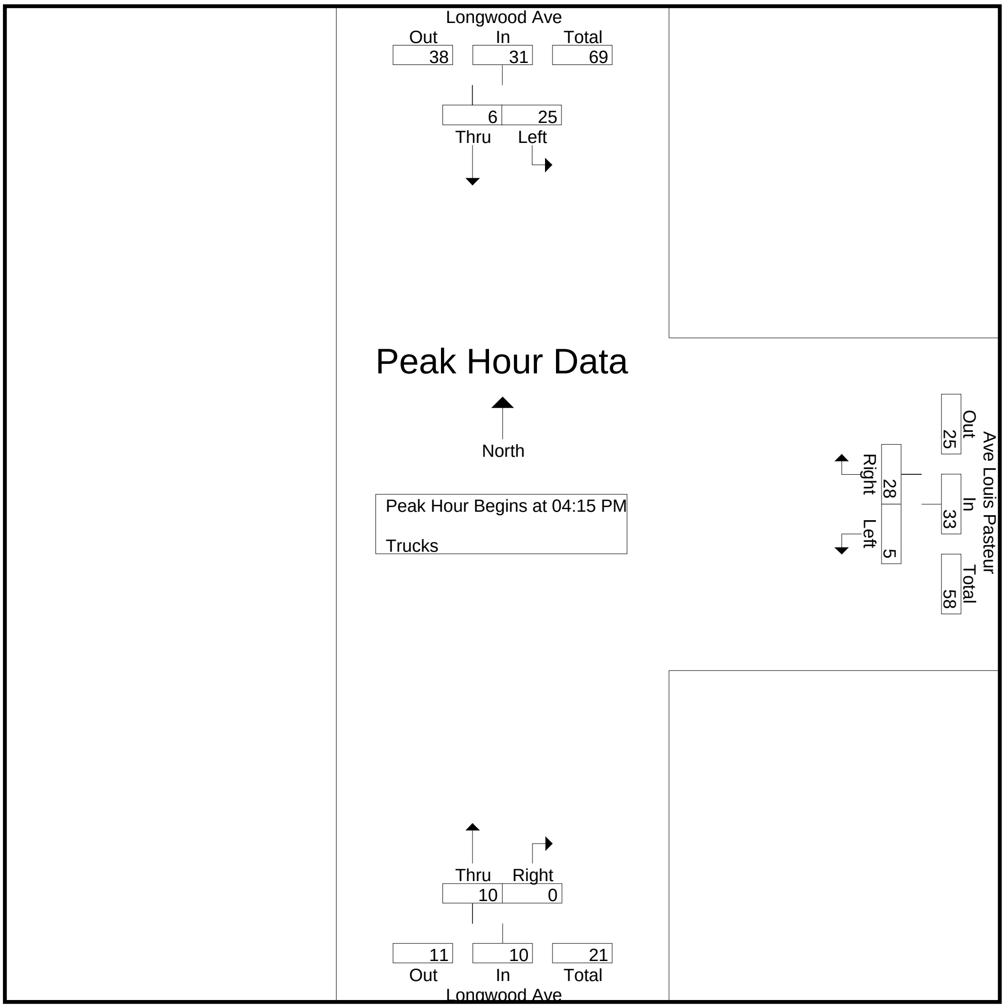
	Longwood Ave From North		Ave Louis Pasteur From East		Longwood Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	5	1	3	6	1	0	16
04:15 PM	6	0	2	4	3	0	15
04:30 PM	6	4	1	10	1	0	22
04:45 PM	5	2	1	7	3	0	18
Total	22	7	7	27	8	0	71
05:00 PM	8	0	1	7	3	0	19
05:15 PM	3	1	2	8	1	0	15
05:30 PM	6	1	1	6	2	0	16
05:45 PM	5	0	2	6	4	1	18
Total	22	2	6	27	10	1	68
Grand Total	44	9	13	54	18	1	139
Apprch %	83	17	19.4	80.6	94.7	5.3	
Total %	31.7	6.5	9.4	38.8	12.9	0.7	

	Longwood Ave From North			Ave Louis Pasteur From East			Longwood Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	6	0	6	**2**	4	6	**3**	0	**3**	15
04:30 PM	6	**4**	**10**	1	**10**	**11**	1	0	1	**22**
04:45 PM	5	2	7	1	7	8	3	0	3	18
05:00 PM	**8**	0	8	1	7	8	3	0	3	19
Total Volume	25	6	31	5	28	33	10	0	10	74
% App. Total	80.6	19.4		15.2	84.8		100	0		
PHF	.781	.375	.775	.625	.700	.750	.833	.000	.833	.841

Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012



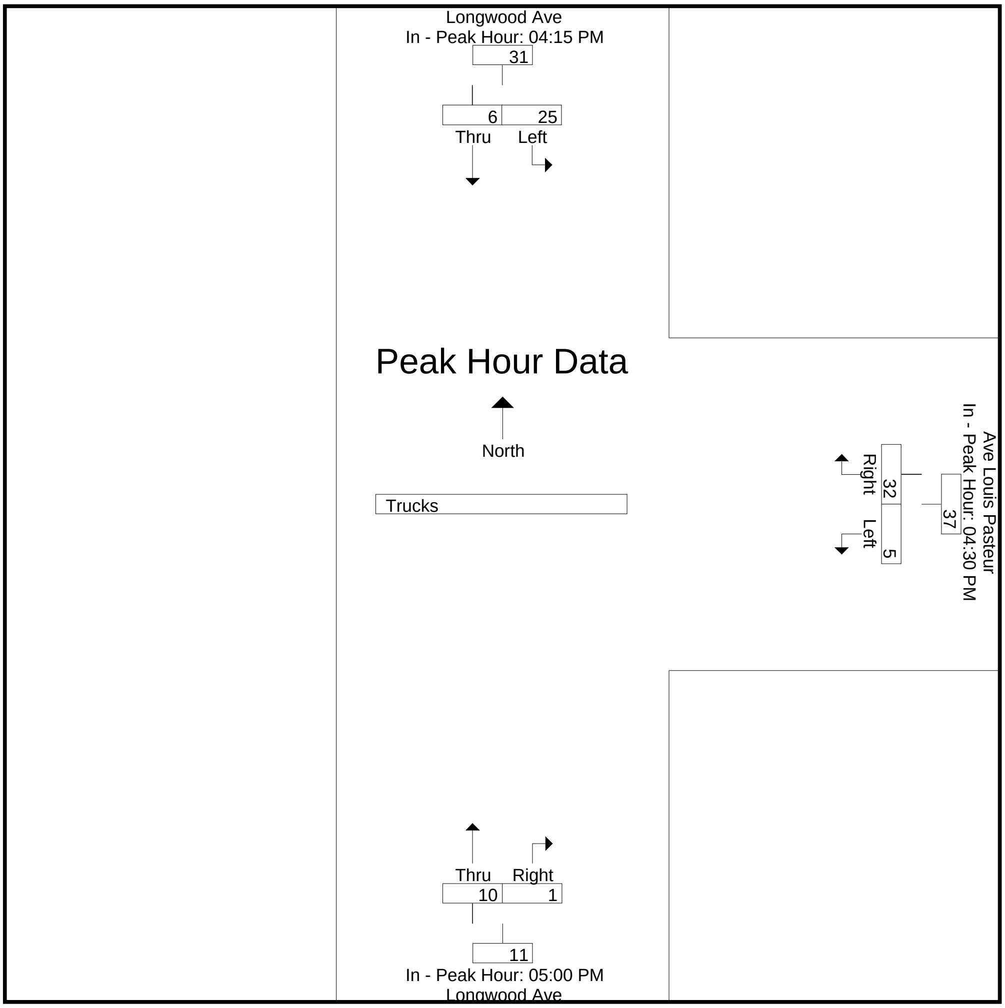
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:30 PM			05:00 PM		
+0 mins.	6	0	6	1	**10**	**11**	3	0	3
+15 mins.	6	**4**	**10**	1	7	8	1	0	1
+30 mins.	5	2	7	1	7	8	2	0	2
+45 mins.	**8**	0	8	**2**	8	10	**4**	**1**	**5**
Total Volume	25	6	31	5	32	37	10	1	11
% App. Total	80.6	19.4		13.5	86.5		90.9	9.1	
PHF	.781	.375	.775	.625	.800	.841	.625	.250	.550

Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012
Page No : 1

Groups Printed- Bikes Peds

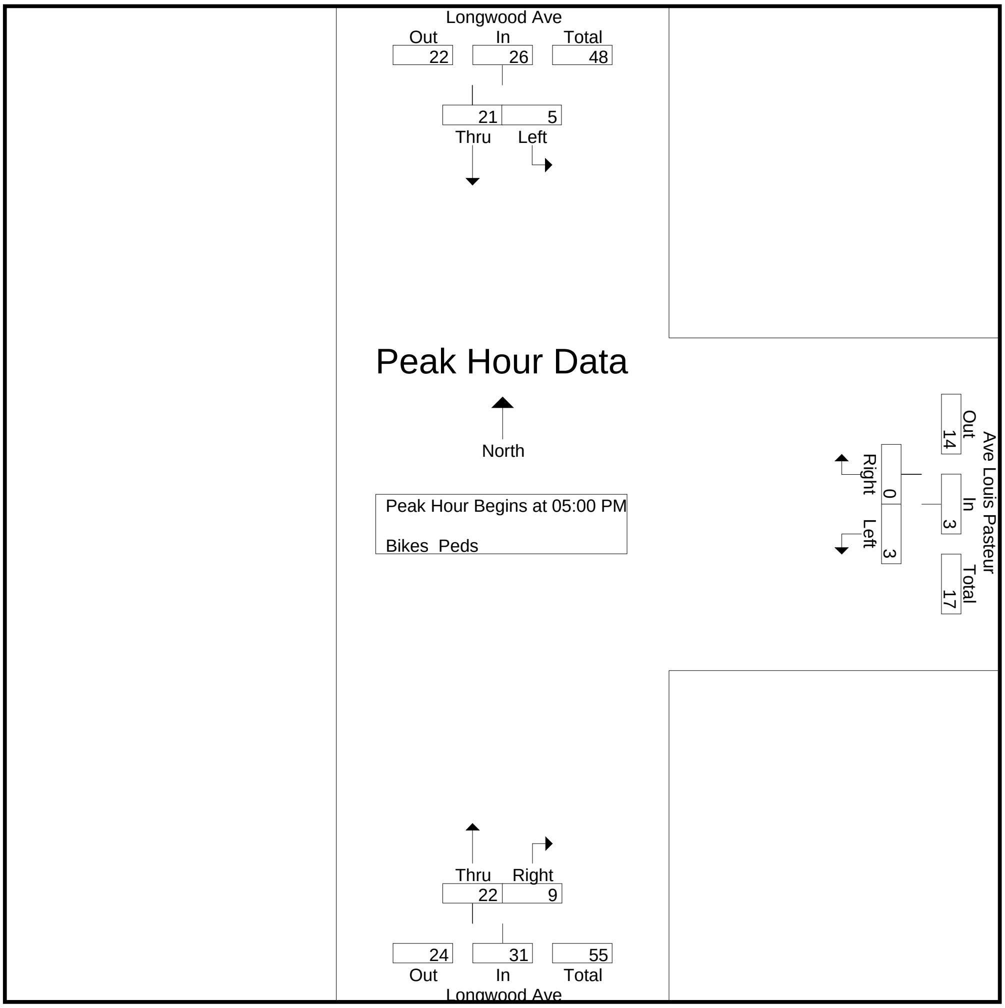
	Longwood Ave From North			Ave Louis Pasteur From East			Longwood Ave From South					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	1	51	1	1	78	3	0	55	184	6	190
04:15 PM	2	3	45	1	0	89	3	0	80	214	9	223
04:30 PM	1	4	41	1	0	65	4	0	83	189	10	199
04:45 PM	1	4	48	0	0	95	5	1	109	252	11	263
Total	4	12	185	3	1	327	15	1	327	839	36	875
05:00 PM	3	6	61	1	0	120	3	2	68	249	15	264
05:15 PM	0	2	67	1	0	97	7	3	67	231	13	244
05:30 PM	2	9	64	0	0	77	5	2	60	201	18	219
05:45 PM	0	4	64	1	0	64	7	2	55	183	14	197
Total	5	21	256	3	0	358	22	9	250	864	60	924
Grand Total	9	33	441	6	1	685	37	10	577	1703	96	1799
Apprch %	21.4	78.6		85.7	14.3		78.7	21.3				
Total %	9.4	34.4		6.2	1		38.5	10.4		94.7	5.3	

	Longwood Ave From North			Ave Louis Pasteur From East			Longwood Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	**3**	6	9	**1**	0	**1**	3	2	5	15
05:15 PM	0	2	2	1	0	1	**7**	**3**	**10**	13
05:30 PM	2	**9**	**11**	0	0	0	5	2	7	**18**
05:45 PM	0	4	4	1	0	1	7	2	9	14
Total Volume	5	21	26	3	0	3	22	9	31	60
% App. Total	19.2	80.8		100	0		71	29		
PHF	.417	.583	.591	.750	.000	.750	.786	.750	.775	.833

Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012



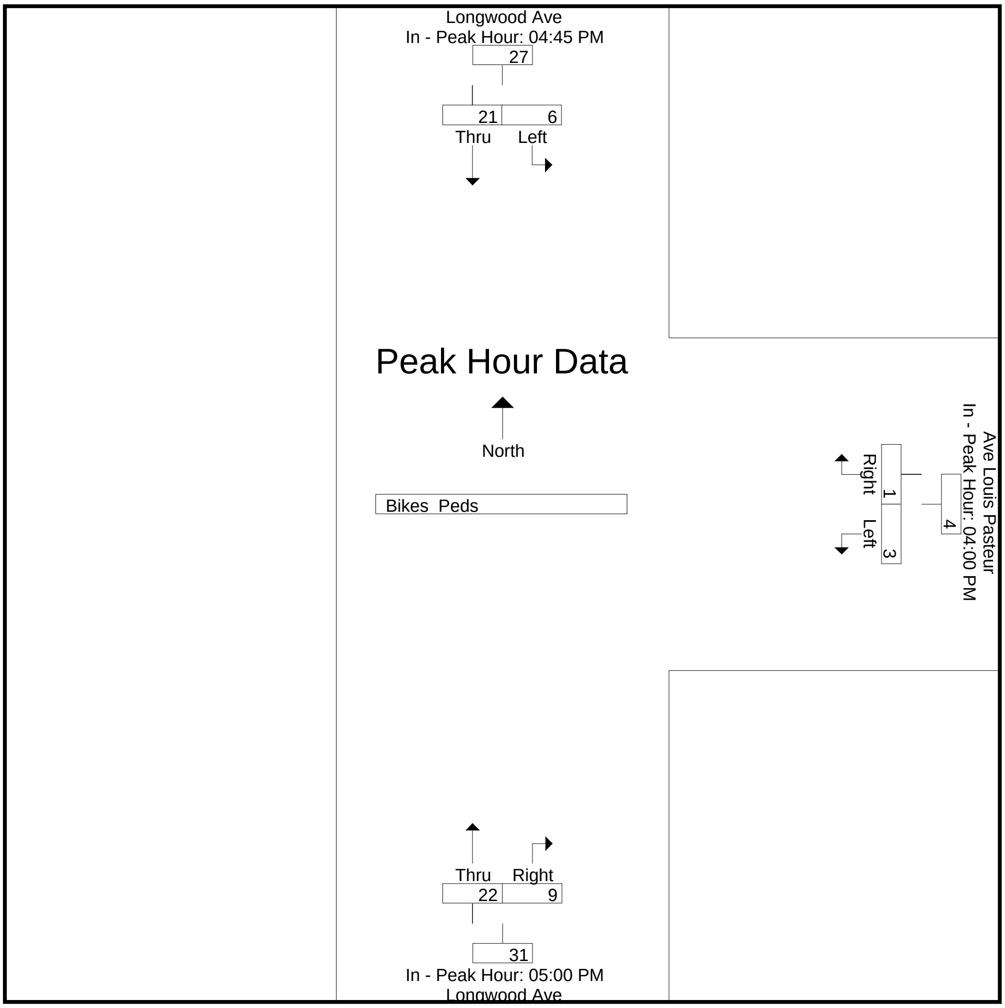
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:00 PM			05:00 PM		
+0 mins.	1	4	5	**1**	**1**	**2**	3	2	5
+15 mins.	**3**	6	9	1	0	1	**7**	**3**	**10**
+30 mins.	0	2	2	1	0	1	5	2	7
+45 mins.	2	**9**	**11**	0	0	0	7	2	9
Total Volume	6	21	27	3	1	4	22	9	31
% App. Total	22.2	77.8		75	25		71	29	
PHF	.500	.583	.614	.750	.250	.500	.786	.750	.775

Accurate Counts
978-664-2565

N/S Street : Longwood Avanue
E/W Street : Avenue Louis Pasteur
City/State : Boston, MA
Weather : Drizzle

File Name : 94970022
Site Code : 94970022
Start Date : 5/16/2012
Page No : 3



Synchro (LOS) Analysis

CCB Existing 2012

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	320	795	770	90	65	190	100	255	75
Lane Group Flow (vph)	348	956	906	106	88	298	0	404	85
Turn Type	pm+pt			Perm	Perm		Perm		pt+ov
Protected Phases	1	3	3			4		4	1 4
Permitted Phases	3			3	4		4		
Detector Phases	1	3	3	3	4	4	4	4	1 4
Minimum Initial (s)	8.0	15.0	15.0	15.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	28.0	34.0	34.0	34.0	21.0	21.0	21.0	21.0	
Total Split (s)	28.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	64.0
Total Split (%)	28.0%	36.0%	36.0%	36.0%	36.0%	36.0%	36.0%	36.0%	64.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lead/Lag		Lead	Lead	Lead	Lag	Lag	Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Min	Min	Min	C-Max	C-Max	C-Max	C-Max	
v/c Ratio	0.86	0.94	0.86	0.20	0.66	0.50		1.25	0.10
Control Delay	45.8	50.2	41.7	6.0	55.1	30.2		165.5	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	45.8	50.2	41.7	6.0	55.1	30.2		165.5	6.7
Queue Length 50th (ft)	162	314	290	0	48	148		~323	15
Queue Length 95th (ft)	#311	#457	#368	32	85	178		#491	34
Internal Link Dist (ft)		340	414			412		311	
Turn Bay Length (ft)	225				50				100
Base Capacity (vph)	429	1018	1050	524	134	600		324	873
Starvation Cap Reductn	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.81	0.94	0.86	0.20	0.66	0.50		1.25	0.10

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 4:NBSB, Start of Green

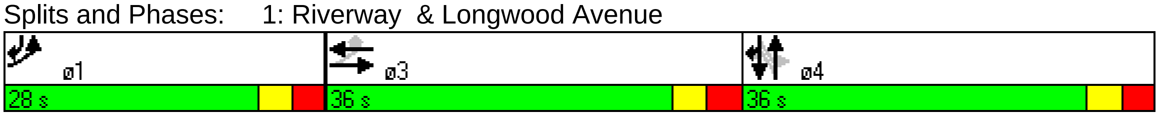
Natural Cycle: 115

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Riverway & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	10	11	10	10	16	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	0.99			1.00	0.85	1.00	0.98			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00			0.99	1.00
Satd. Flow (prot)	1516	2989			3110	1343	1486	1857			1670	1439
Flt Permitted	0.13	1.00			1.00	1.00	0.27	1.00			0.60	1.00
Satd. Flow (perm)	207	2989			3110	1343	419	1857			1012	1439
Volume (vph)	320	795	85	0	770	90	65	190	30	100	255	75
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.74	0.74	0.74	0.88	0.88	0.88
Adj. Flow (vph)	348	864	92	0	906	106	88	257	41	114	290	85
RTOR Reduction (vph)	0	8	0	0	0	70	0	5	0	0	0	10
Lane Group Flow (vph)	348	948	0	0	906	36	88	293	0	0	404	75
Confl. Bikes (#/hr)									4			87
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Turn Type	pm+pt					Perm	Perm			Perm		pt+ov
Protected Phases	1	3			3			4			4	1 4
Permitted Phases	3					3	4			4		
Actuated Green, G (s)	52.0	31.8			31.8	31.8	30.0	30.0			30.0	56.2
Effective Green, g (s)	56.0	33.8			33.8	33.8	32.0	32.0			32.0	58.2
Actuated g/C Ratio	0.56	0.34			0.34	0.34	0.32	0.32			0.32	0.58
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)	407	1010			1051	454	134	594			324	837
v/s Ratio Prot	c0.19	c0.32			0.29			0.16				0.05
v/s Ratio Perm	0.29					0.03	0.21				c0.40	
v/c Ratio	0.86	0.94			0.86	0.08	0.66	0.49			1.25	0.09
Uniform Delay, d1	25.0	32.1			30.9	22.5	29.3	27.4			34.0	9.2
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	15.4	15.3			7.2	0.0	22.4	2.9			134.3	0.0
Delay (s)	40.4	47.4			38.1	22.5	51.7	30.3			168.3	9.2
Level of Service	D	D			D	C	D	C			F	A
Approach Delay (s)		45.5			36.5			35.2			140.7	
Approach LOS		D			D			D			F	

Intersection Summary			
HCM Average Control Delay	56.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	NBL	NBT	SBL	SBT
Lane Configurations					
Volume (vph)	5	65	210	135	335
Lane Group Flow (vph)	33	79	354	152	421
Sign Control	Stop		Free		Free

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	10	5	10	65	210	80	135	335	40
Peak Hour Factor	0.25	0.25	0.25	0.75	0.75	0.75	0.82	0.82	0.82	0.89	0.89	0.89
Hourly flow rate (vph)	0	0	0	13	7	13	79	256	98	152	376	45
Pedestrians		184			608			601			783	
Lane Width (ft)		0.0			13.0			10.5			10.5	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			55			44			57	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								343			492	
pX, platoon unblocked	0.87	0.87		0.87	0.87	0.87				0.87		
vC, conflicting volume	2101	2006	1184	2352	1980	1696	605			962		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2261	2153	1184	2549	2123	1797	605			956		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	0	22	22	92			47		
cM capacity (veh/h)	0	8	131	1	9	17	973			285		

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	33	79	354	152	421
Volume Left	13	79	0	152	0
Volume Right	13	0	98	0	45
cSH	3	973	1700	285	1700
Volume to Capacity	11.59	0.08	0.21	0.53	0.25
Queue Length 95th (ft)	Err	7	0	73	0
Control Delay (s)	Err	9.0	0.0	31.2	0.0
Lane LOS	F	A		D	
Approach Delay (s)	Err	1.7		8.3	
Approach LOS	F				

Intersection Summary			
Average Delay	325.9		
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT	ø2
Lane Configurations									
Volume (vph)	185	355	210	345	5	775	335	550	
Lane Group Flow (vph)	199	387	236	422	0	907	390	717	
Turn Type	Perm		D.P+P		Perm		Perm		
Protected Phases		1	4	1 4		3		3	2
Permitted Phases	1		1		3		3		
Detector Phases	1	1	4	1 4	3	3	3	3	
Minimum Initial (s)	10.0	10.0	6.0		10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	22.0	22.0	11.0		22.0	22.0	22.0	22.0	30.0
Total Split (s)	35.0	35.0	15.0	50.0	40.0	40.0	40.0	40.0	30.0
Total Split (%)	29.2%	29.2%	12.5%	41.7%	33.3%	33.3%	33.3%	33.3%	25%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0	2.0	1.0
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	Max		Max	Max	Max	Max	None
v/c Ratio	3.69	0.49	0.80	0.36		1.52	0.61	0.67	
Control Delay	1267.6	40.3	44.8	21.0		274.3	21.3	38.2	
Queue Delay	0.0	0.0	0.0	0.6		0.0	0.0	0.0	
Total Delay	1267.6	40.3	44.8	21.6		274.3	21.3	38.2	
Queue Length 50th (ft)	~277	134	156	143		~1051	127	261	
Queue Length 95th (ft)	#396	184	m#251	133		#1222	220	335	
Internal Link Dist (ft)		395		231		322		416	
Turn Bay Length (ft)	125								
Base Capacity (vph)	54	794	295	1161		595	641	1073	
Starvation Cap Reductn	0	0	0	387		0	0	0	
Spillback Cap Reductn	0	0	0	0		0	0	0	
Storage Cap Reductn	0	0	0	0		0	0	0	
Reduced v/c Ratio	3.69	0.49	0.80	0.55		1.52	0.61	0.67	

Intersection Summary

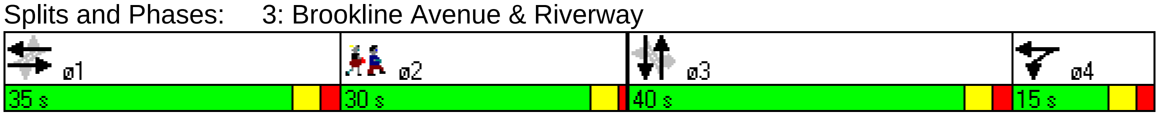
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 8 (7%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Brookline Avenue & Riverway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	10	10	11	10	12	12	12	11	11	10
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	0.99			1.00	0.85		0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1540	3072		1472	3012			1709	1454		3035	
Flt Permitted	0.13	1.00		0.39	1.00			1.00	1.00		1.00	
Satd. Flow (perm)	215	3072		610	3012			1702	1454		3035	
Volume (vph)	185	355	5	210	345	30	5	775	335	0	550	95
Peak-hour factor, PHF	0.93	0.93	0.93	0.89	0.89	0.89	0.86	0.86	0.86	0.90	0.90	0.90
Adj. Flow (vph)	199	382	5	236	388	34	6	901	390	0	611	106
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	132	0	11	0
Lane Group Flow (vph)	199	387	0	236	416	0	0	907	258	0	706	0
Confl. Bikes (#/hr)			26									1
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	0%	0%	0%	1%	1%	1%
Turn Type	Perm			D.P+P			Perm		Perm	Perm		
Protected Phases		1		4	1 4			3			3	
Permitted Phases	1			1			3		3	3		
Actuated Green, G (s)	29.2	29.2		39.2	44.2			41.0	41.0		41.0	
Effective Green, g (s)	30.2	30.2		41.2	45.2			42.0	42.0		42.0	
Actuated g/C Ratio	0.25	0.25		0.34	0.38			0.35	0.35		0.35	
Clearance Time (s)	5.0	5.0		5.0				5.0	5.0		5.0	
Vehicle Extension (s)	2.0	2.0		2.0				2.0	2.0		2.0	
Lane Grp Cap (vph)	54	773		288	1135			596	509		1062	
v/s Ratio Prot		0.13		c0.07	0.14						0.23	
v/s Ratio Perm	c0.93			0.21				c0.53	0.18			
v/c Ratio	3.69	0.50		0.82	0.37			1.52	0.51		0.66	
Uniform Delay, d1	44.9	38.4		33.4	27.1			39.0	30.8		33.0	
Progression Factor	1.00	1.00		0.82	0.77			1.00	1.00		1.00	
Incremental Delay, d2	1252.5	2.3		21.1	0.9			243.3	3.6		3.3	
Delay (s)	1297.4	40.8		48.5	21.7			282.3	34.4		36.3	
Level of Service	F	D		D	C			F	C		D	
Approach Delay (s)		467.5			31.4			207.8			36.3	
Approach LOS		F			C			F			D	

Intersection Summary			
HCM Average Control Delay	181.1	HCM Level of Service	F
HCM Volume to Capacity ratio	2.21		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	36.8
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	ø2
Lane Configurations										
Volume (vph)	15	640	145	205	405	140	65	15	130	
Lane Group Flow (vph)	0	736	163	214	453	165	111	0	200	
Turn Type	Perm		Perm	D.P+P		Perm		Perm		
Protected Phases		1		4	1 4		3		3	2
Permitted Phases	1		1	1		3		3		
Detector Phases	1	1	1	4	1 4	3	3	3	3	
Minimum Initial (s)	13.0	13.0	13.0	6.0		8.0	8.0	8.0	8.0	4.0
Minimum Split (s)	18.0	18.0	18.0	11.0		18.0	18.0	18.0	18.0	29.0
Total Split (s)	42.0	42.0	42.0	19.0	61.0	30.0	30.0	30.0	30.0	29.0
Total Split (%)	35.0%	35.0%	35.0%	15.8%	50.8%	25.0%	25.0%	25.0%	25.0%	24%
Yellow Time (s)	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lead	Lead	Lag		Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	Max		None	None	None	None	None
v/c Ratio		1.02	0.40	0.73	0.31	0.72	0.22		0.32	
Control Delay		64.5	22.8	41.8	21.6	57.7	29.0		33.4	
Queue Delay		0.0	0.6	0.0	0.0	0.0	0.0		0.0	
Total Delay		64.5	23.4	41.8	21.7	57.7	29.0		33.4	
Queue Length 50th (ft)		~320	64	91	87	96	43		94	
Queue Length 95th (ft)		#437	104	#212	131	#269	108		200	
Internal Link Dist (ft)		231			359		328		220	
Turn Bay Length (ft)			150			150				
Base Capacity (vph)		724	407	293	1485	229	515		629	
Starvation Cap Reductn		0	69	0	0	0	0		0	
Spillback Cap Reductn		0	0	0	21	0	0		0	
Storage Cap Reductn		0	0	0	0	0	0		0	
Reduced v/c Ratio		1.02	0.48	0.73	0.31	0.72	0.22		0.32	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 5 (4%), Referenced to phase 1:EBWB, Start of Green

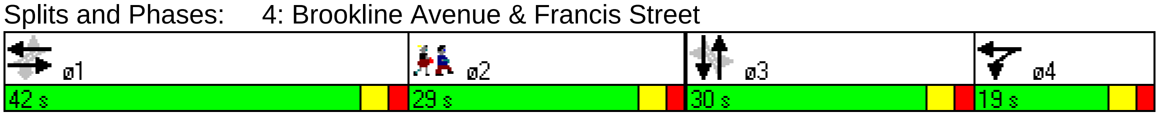
Natural Cycle: 110

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Brookline Avenue & Francis Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	14	10	10	12	14	11	11	11	16	16	16
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes		1.00	0.96	1.00	1.00		1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt		1.00	0.85	1.00	0.99		1.00	0.95			0.98	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		3394	1283	1417	3001		1468	1465			1861	
Flt Permitted		0.67	1.00	0.17	1.00		0.54	1.00			0.97	
Satd. Flow (perm)		2269	1283	249	3001		841	1465			1822	
Volume (vph)	15	640	145	205	405	30	140	65	30	15	130	30
Peak-hour factor, PHF	0.89	0.89	0.89	0.96	0.96	0.96	0.85	0.85	0.85	0.87	0.87	0.87
Adj. Flow (vph)	17	719	163	214	422	31	165	76	35	17	149	34
RTOR Reduction (vph)	0	0	0	0	5	0	0	12	0	0	5	0
Lane Group Flow (vph)	0	736	163	214	448	0	165	99	0	0	195	0
Confl. Bikes (#/hr)			12			1			4			9
Heavy Vehicles (%)	2%	2%	2%	7%	7%	7%	7%	7%	7%	1%	1%	1%
Turn Type	Perm		Perm	D.P+P			Perm			Perm		
Protected Phases		1		4	1 4			3			3	
Permitted Phases	1		1	1			3			3		
Actuated Green, G (s)		34.0	34.0	50.2	55.2		40.2	40.2			40.2	
Effective Green, g (s)		35.0	35.0	52.2	56.2		41.2	41.2			41.2	
Actuated g/C Ratio		0.29	0.29	0.44	0.47		0.34	0.34			0.34	
Clearance Time (s)		5.0	5.0	5.0			5.0	5.0			5.0	
Vehicle Extension (s)		2.0	2.0	2.0			2.0	2.0			2.0	
Lane Grp Cap (vph)		662	374	276	1405		289	503			626	
v/s Ratio Prot				c0.11	0.15			0.07				
v/s Ratio Perm		c0.32	0.13	0.23			c0.20				0.11	
v/c Ratio		1.11	0.44	0.78	0.32		0.57	0.20			0.31	
Uniform Delay, d1		42.5	34.5	25.1	19.9		32.2	27.8			29.0	
Progression Factor		0.66	0.61	1.45	1.17		1.00	1.00			1.00	
Incremental Delay, d2		68.2	3.3	16.0	0.5		1.7	0.1			0.1	
Delay (s)		96.1	24.5	52.3	23.8		33.9	27.8			29.1	
Level of Service		F	C	D	C		C	C			C	
Approach Delay (s)		83.1			33.0			31.4			29.1	
Approach LOS		F			C			C			C	

Intersection Summary			
HCM Average Control Delay	54.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.6
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

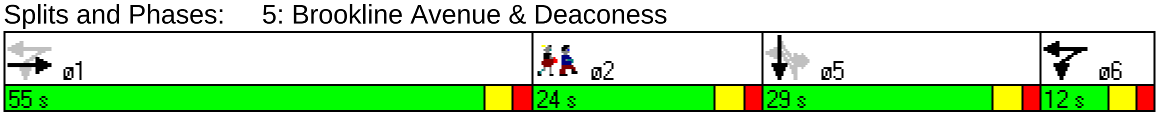
c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL	NBR	SBL	SBT	ø2
Lane Configurations								
Volume (vph)	665	70	515	65	65	55	10	
Lane Group Flow (vph)	1556	0	622	89	89	66	84	
Turn Type		D.P+P		D.Pm	custom	Perm		
Protected Phases	1	6	6				5	2
Permitted Phases		1	1	5	5	5		
Detector Phases	1	6	6	5	5	5	5	
Minimum Initial (s)	10.0	6.0	6.0	8.0	8.0	8.0	8.0	5.0
Minimum Split (s)	29.0	11.0	11.0	13.0	13.0	13.0	13.0	24.0
Total Split (s)	55.0	12.0	12.0	29.0	29.0	29.0	29.0	24.0
Total Split (%)	45.8%	10.0%	10.0%	24.2%	24.2%	24.2%	24.2%	20%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	Max	Max	None	None	None	None	None
v/c Ratio	1.26		0.59	0.67	0.37	0.34	0.33	
Control Delay	148.2		11.3	72.8	13.0	49.9	16.2	
Queue Delay	105.9		0.0	0.0	0.0	0.0	0.0	
Total Delay	254.1		11.3	72.8	13.0	49.9	16.2	
Queue Length 50th (ft)	~808		40	67	0	47	8	
Queue Length 95th (ft)	189		m57	91	25	78	44	
Internal Link Dist (ft)	359		347				176	
Turn Bay Length (ft)				150		100		
Base Capacity (vph)	1231		1052	207	327	307	355	
Starvation Cap Reductn	194		0	0	0	0	0	
Spillback Cap Reductn	0		0	0	0	0	0	
Storage Cap Reductn	0		0	0	0	0	0	
Reduced v/c Ratio	1.50		0.59	0.43	0.27	0.21	0.24	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 14 (12%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Brookline Avenue & Deaconess



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	11	11	13	10	10	10	13	12	12
Total Lost time (s)		4.0			4.0		4.0		4.0	4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00		1.00	1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00		1.00	1.00	0.97	
Flpb, ped/bikes		1.00			1.00		1.00		1.00	1.00	1.00	
Frt		0.99			1.00		1.00		0.85	1.00	0.87	
Flt Protected		1.00			0.99		0.95		1.00	0.95	1.00	
Satd. Flow (prot)		2890			2891		1378		1233	1473	1421	
Flt Permitted		1.00			0.54		0.65		1.00	0.95	1.00	
Satd. Flow (perm)		2890			1559		949		1233	1473	1421	
Volume (vph)	0	665	35	70	515	0	65	0	65	55	10	60
Peak-hour factor, PHF	0.45	0.45	0.45	0.94	0.94	0.94	0.73	0.73	0.73	0.83	0.83	0.83
Adj. Flow (vph)	0	1478	78	74	548	0	89	0	89	66	12	72
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	77	0	62	0
Lane Group Flow (vph)	0	1553	0	0	622	0	89	0	12	66	22	0
Confl. Bikes (#/hr)			8			6						12
Heavy Vehicles (%)	4%	4%	4%	8%	8%	8%	10%	10%	10%	2%	2%	2%
Parking (#/hr)			2							1		
Turn Type				D.P+P			D.Pm		custom	Perm		
Protected Phases		1		6	6						5	
Permitted Phases				1	1		5		5	5		
Actuated Green, G (s)		50.0			66.1		14.9		14.9	14.9	14.9	
Effective Green, g (s)		51.0			68.1		15.9		15.9	15.9	15.9	
Actuated g/C Ratio		0.42			0.57		0.13		0.13	0.13	0.13	
Clearance Time (s)		5.0			5.0		5.0		5.0	5.0	5.0	
Vehicle Extension (s)		2.0			2.0		2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)		1228			1075		126		163	195	188	
v/s Ratio Prot		c0.54			c0.08						0.02	
v/s Ratio Perm					0.25		c0.09		0.01	0.04		
v/c Ratio		1.26			0.58		0.71		0.07	0.34	0.11	
Uniform Delay, d1		34.5			16.7		49.8		45.6	47.3	45.8	
Progression Factor		0.63			0.63		1.00		1.00	1.00	1.00	
Incremental Delay, d2		125.1			1.9		13.7		0.1	0.4	0.1	
Delay (s)		146.8			12.4		63.5		45.7	47.7	45.9	
Level of Service		F			B		E		D	D	D	
Approach Delay (s)		146.8			12.4			54.6			46.7	
Approach LOS		F			B			D			D	

Intersection Summary			
HCM Average Control Delay	100.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	36.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	ø2
Lane Configurations										
Volume (vph)	25	580	160	495	75	195	165	95	230	
Lane Group Flow (vph)	26	711	165	649	101	264	223	107	280	
Turn Type	Perm		D.P+P		Perm		pt+ov	Perm		
Protected Phases		1	4	1 4		3	3 4		3	2
Permitted Phases	1		1		3			3		
Detector Phases	1	1	4	1 4	3	3	3 4	3	3	
Minimum Initial (s)	10.0	10.0	6.0		8.0	8.0		8.0	8.0	7.0
Minimum Split (s)	15.0	15.0	11.0		13.0	13.0		13.0	13.0	25.0
Total Split (s)	51.0	51.0	15.0	66.0	29.0	29.0	44.0	29.0	29.0	25.0
Total Split (%)	42.5%	42.5%	12.5%	55.0%	24.2%	24.2%	36.7%	24.2%	24.2%	21%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lead/Lag	Lead	Lead	Lag		Lead	Lead		Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	C-Max	C-Max	None		None	None		None	None	Ped
v/c Ratio	0.50	0.60	0.56	0.42	1.13	0.80	0.50	1.20	0.97	
Control Delay	13.5	5.0	23.6	19.0	170.9	54.5	32.4	201.6	92.5	
Queue Delay	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	13.5	6.2	23.6	19.0	170.9	54.5	32.4	201.6	92.5	
Queue Length 50th (ft)	3	50	67	157	~93	206	159	~101	217	
Queue Length 95th (ft)	m3	m40	110	204	m#153	209	153	#215	#385	
Internal Link Dist (ft)		347		735		335			263	
Turn Bay Length (ft)	70		350		150			170		
Base Capacity (vph)	52	1187	297	1542	89	329	448	89	290	
Starvation Cap Reductn	0	263	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.50	0.77	0.56	0.42	1.13	0.80	0.50	1.20	0.97	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 30 (25%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Brookline Avenue & Longwood Avenue

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	11	10	10	10	10	10	10	10
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	*0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1501	3029		1501	2984		1501	1580	1343	1342	1394	
Flt Permitted	0.09	1.00		0.26	1.00		0.27	1.00	1.00	0.30	1.00	
Satd. Flow (perm)	134	3029		408	2984		427	1580	1343	427	1394	
Volume (vph)	25	580	95	160	495	135	75	195	165	95	230	20
Peak-hour factor, PHF	0.95	0.95	0.95	0.97	0.97	0.97	0.74	0.74	0.74	0.89	0.89	0.89
Adj. Flow (vph)	26	611	100	165	510	139	101	264	223	107	258	22
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	26	711	0	165	649	0	101	264	223	107	280	0
Confl. Bikes (#/hr)			39			28			4			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	13%	13%	13%
Turn Type	Perm			D.P+P			Perm		pt+ov	Perm		
Protected Phases		1		4	1 4			3	3 4		3	
Permitted Phases	1			1			3			3		
Actuated Green, G (s)	46.0	46.0		56.0	61.0		24.0	24.0	39.0	24.0	24.0	
Effective Green, g (s)	47.0	47.0		58.0	62.0		25.0	25.0	40.0	25.0	25.0	
Actuated g/C Ratio	0.39	0.39		0.48	0.52		0.21	0.21	0.33	0.21	0.21	
Clearance Time (s)	5.0	5.0		5.0			5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	2.0		2.0			2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	52	1186		297	1542		89	329	448	89	290	
v/s Ratio Prot		c0.23		0.05	0.22			0.17	c0.17		0.20	
v/s Ratio Perm	0.19			0.22			0.24			c0.25		
v/c Ratio	0.50	0.60		0.56	0.42		1.13	0.80	0.50	1.20	0.97	
Uniform Delay, d1	27.6	29.0		19.3	17.9		47.5	45.2	32.0	47.5	47.1	
Progression Factor	0.20	0.16		1.00	1.00		0.81	0.80	0.88	1.00	1.00	
Incremental Delay, d2	3.1	0.2		1.3	0.1		132.4	11.6	0.3	159.6	42.9	
Delay (s)	8.7	4.9		20.6	18.0		170.8	47.9	28.5	207.1	89.9	
Level of Service	A	A		C	B		F	D	C	F	F	
Approach Delay (s)		5.1			18.5			61.6			122.3	
Approach LOS		A			B			E			F	

Intersection Summary			
HCM Average Control Delay	40.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	33.0
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Configurations					
Volume (vph)	40	30	255	130	205
Lane Group Flow (vph)	81	212	462	141	294
Sign Control	Stop	Stop	Free		Free

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	30	40	5	85	30	80	10	255	160	130	205	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	43	5	92	33	87	11	277	174	141	223	71
Pedestrians		225			324			225			328	
Lane Width (ft)		13.0			12.0			14.0			13.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		20			27			22			30	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											408	
pX, platoon unblocked												
vC, conflicting volume	1583	1563	708	1467	1511	1016	518			775		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1583	1563	708	1467	1511	1016	518			775		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	12	98	0	39	41	99			77		
cM capacity (veh/h)	6	49	271	9	53	148	835			614		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	82	212	462	141	293
Volume Left	33	92	11	141	0
Volume Right	5	87	174	0	71
cSH	13	19	835	614	1700
Volume to Capacity	6.14	11.28	0.01	0.23	0.17
Queue Length 95th (ft)	Err	Err	1	22	0
Control Delay (s)	Err	Err	0.4	12.6	0.0
Lane LOS	F	F	A	B	
Approach Delay (s)	Err	Err	0.4	4.1	
Approach LOS	F	F			

Intersection Summary			
Average Delay	2467.2		
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBL
Lane Configurations			
Volume (vph)	315	20	35
Lane Group Flow (vph)	383	49	104
Sign Control	Free	Free	Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	315	30	25	20	35	65
Peak Hour Factor	0.90	0.90	0.91	0.91	0.96	0.96
Hourly flow rate (vph)	350	33	27	22	36	68
Pedestrians	27			197	170	
Lane Width (ft)	12.0			12.0	13.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	2			16	15	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			553		641	734
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			553		641	734
tC, single (s)			4.2		6.6	6.4
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			97		89	76
cM capacity (veh/h)			828		335	283

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	383	49	104
Volume Left	0	27	36
Volume Right	33	0	68
cSH	1700	828	299
Volume to Capacity	0.23	0.03	0.35
Queue Length 95th (ft)	0	3	38
Control Delay (s)	0.0	5.4	23.3
Lane LOS		A	C
Approach Delay (s)	0.0	5.4	23.3
Approach LOS			C

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Volume (vph)	175	55	10	0
Lane Group Flow (vph)	437	179	46	90
Sign Control	Stop	Stop	Stop	Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	165	175	5	5	55	65	10	10	5	30	0	35
Peak Hour Factor	0.77	0.86	0.25	0.25	0.88	0.67	0.50	0.50	0.79	0.65	0.25	0.79
Hourly flow rate (vph)	214	203	20	20	62	97	20	20	6	46	0	44

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	438	180	46	90
Volume Left (vph)	214	20	20	46
Volume Right (vph)	20	97	6	44
Hadj (s)	0.12	-0.15	0.05	-0.17
Departure Headway (s)	4.6	4.6	5.6	5.3
Degree Utilization, x	0.56	0.23	0.07	0.13
Capacity (veh/h)	753	733	561	607
Control Delay (s)	13.3	9.0	9.0	9.0
Approach Delay (s)	13.3	9.0	9.0	9.0
Approach LOS	B	A	A	A

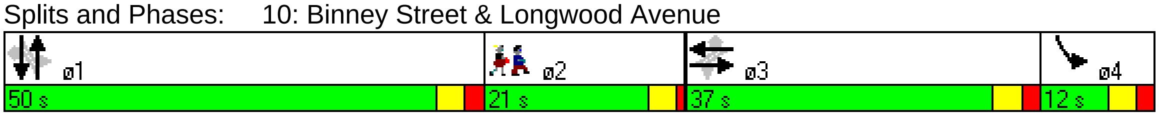
Intersection Summary			
Delay	11.5		
HCM Level of Service	B		
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	ø2
Lane Configurations											
Volume (vph)	85	50	70	35	90	55	310	130	295	45	
Lane Group Flow (vph)	0	276	0	120	102	0	435	149	339	52	
Turn Type	Perm		Perm		Perm	Perm		pm+pt		Perm	
Protected Phases		3		3			1	4	1		2
Permitted Phases	3		3		3	1		1		1	
Detector Phases	3	3	3	3	3	1	1	4	1	1	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0	10.0	4.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	15.0	15.0	12.0	15.0	15.0	21.0
Total Split (s)	37.0	37.0	37.0	37.0	37.0	50.0	50.0	12.0	50.0	50.0	21.0
Total Split (%)	30.8%	30.8%	30.8%	30.8%	30.8%	41.7%	41.7%	10.0%	41.7%	41.7%	18%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lead/Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	None
v/c Ratio		0.80		0.47	0.24		0.44	0.30	0.46	0.09	
Control Delay		51.7		39.2	6.1		21.0	14.6	27.2	10.5	
Queue Delay		0.0		0.0	0.0		0.5	0.0	0.8	0.0	
Total Delay		51.7		39.2	6.1		21.5	14.6	28.0	10.5	
Queue Length 50th (ft)		182		78	0		94	51	169	4	
Queue Length 95th (ft)		211		111	33		m134	m88	m204	m12	
Internal Link Dist (ft)		370		168			243		335		
Turn Bay Length (ft)								75			
Base Capacity (vph)		381		287	455		1000	501	732	601	
Starvation Cap Reductn		0		0	0		228	0	169	0	
Spillback Cap Reductn		0		0	0		0	0	4	0	
Storage Cap Reductn		0		0	0		0	0	0	0	
Reduced v/c Ratio		0.72		0.42	0.22		0.56	0.30	0.60	0.09	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 89 (74%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Binney Street & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	11	11	10	10	11	11	10	11	10
Total Lost time (s)		4.0			4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor		1.00			1.00	1.00		0.95		1.00	1.00	1.00
Frpb, ped/bikes		1.00			1.00	1.00		1.00		1.00	1.00	0.96
Flpb, ped/bikes		1.00			1.00	1.00		1.00		1.00	1.00	1.00
Frt		0.94			1.00	0.85		0.99		1.00	1.00	0.85
Flt Protected		0.98			0.97	1.00		0.99		0.95	1.00	1.00
Satd. Flow (prot)		1412			1454	1233		2618		1404	1531	1207
Flt Permitted		0.81			0.62	1.00		0.84		0.45	1.00	1.00
Satd. Flow (perm)		1161			924	1233		2217		672	1531	1207
Volume (vph)	85	50	95	70	35	90	55	310	35	130	295	45
Peak-hour factor, PHF	0.83	0.83	0.83	0.88	0.88	0.88	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	102	60	114	80	40	102	60	337	38	149	339	52
RTOR Reduction (vph)	0	21	0	0	0	73	0	5	0	0	0	27
Lane Group Flow (vph)	0	255	0	0	120	29	0	430	0	149	339	25
Confl. Bikes (#/hr)									6			25
Heavy Vehicles (%)	16%	16%	16%	10%	10%	10%	15%	15%	15%	8%	8%	8%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0
Turn Type	Perm			Perm		Perm	Perm			pm+pt		Perm
Protected Phases		3			3			1		4	1	
Permitted Phases	3			3		3	1			1		1
Actuated Green, G (s)		32.6			32.6	32.6		56.3		72.4	56.3	56.3
Effective Green, g (s)		33.6			33.6	33.6		57.3		74.4	57.3	57.3
Actuated g/C Ratio		0.28			0.28	0.28		0.48		0.62	0.48	0.48
Clearance Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)		2.0			2.0	2.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		325			259	345		1059		521	731	576
v/s Ratio Prot										c0.04	c0.22	
v/s Ratio Perm		c0.22			0.13	0.02		0.19		0.14		0.02
v/c Ratio		0.78			0.46	0.08		0.41		0.29	0.46	0.04
Uniform Delay, d1		39.9			35.7	31.8		20.3		9.8	21.0	16.7
Progression Factor		1.00			1.00	1.00		0.89		1.29	1.08	1.62
Incremental Delay, d2		10.9			0.5	0.0		1.0		0.1	1.4	0.1
Delay (s)		50.8			36.2	31.9		19.0		12.8	24.2	27.2
Level of Service		D			D	C		B		B	C	C
Approach Delay (s)		50.8			34.2			19.0			21.3	
Approach LOS		D			C			B			C	

Intersection Summary			
HCM Average Control Delay	28.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	ø2
Lane Configurations										
Volume (vph)	30	25	30	10	110	25	275	70	365	
Lane Group Flow (vph)	0	102	0	57	159	27	361	78	450	
Turn Type	Perm		Perm		Perm	Perm		Perm		
Protected Phases		3		3			1		1	2
Permitted Phases	3		3		3	1		1		
Detector Phases	3	3	3	3	3	1	1	1	1	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	20.0
Total Split (s)	40.0	40.0	40.0	40.0	40.0	60.0	60.0	60.0	60.0	20.0
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%	50.0%	50.0%	50.0%	50.0%	17%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lead/Lag						Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	None
v/c Ratio		0.43		0.31	0.79	0.09	0.45	0.20	0.49	
Control Delay		48.2		45.2	72.5	13.8	15.9	13.4	14.3	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.1	
Total Delay		48.2		45.2	72.5	13.8	15.9	13.4	14.5	
Queue Length 50th (ft)		72		39	120	9	152	24	138	
Queue Length 95th (ft)		100		54	131	29	286	m41	m179	
Internal Link Dist (ft)		298		1163			436		243	
Turn Bay Length (ft)						90				
Base Capacity (vph)		404		317	347	289	807	400	917	
Starvation Cap Reductn		0		0	0	0	0	0	62	
Spillback Cap Reductn		0		0	0	0	0	0	0	
Storage Cap Reductn		0		0	0	0	0	0	0	
Reduced v/c Ratio		0.25		0.18	0.46	0.09	0.45	0.20	0.53	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

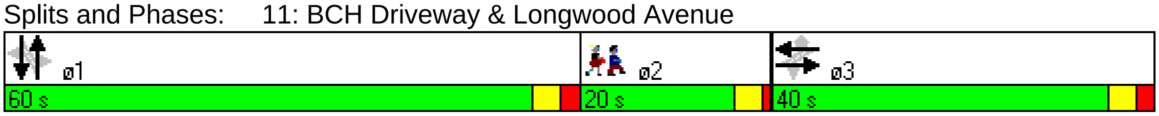
Offset: 85 (71%), Referenced to phase 1:NBSB, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: BCH Driveway & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Lane Width	13	13	13	10	10	10	10	10	10	12	12	12
Total Lost time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.96			1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected		0.98			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1486			1311	1156	1201	1224		1346	1392	
Flt Permitted		0.88			0.75	1.00	0.44	1.00		0.50	1.00	
Satd. Flow (perm)		1327			1025	1156	552	1224		707	1392	
Volume (vph)	30	25	25	30	10	110	25	275	60	70	365	40
Peak-hour factor, PHF	0.79	0.79	0.79	0.69	0.69	0.69	0.93	0.93	0.93	0.90	0.90	0.90
Adj. Flow (vph)	38	32	32	43	14	159	27	296	65	78	406	44
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	102	0	0	57	159	27	361	0	78	450	0
Confl. Bikes (#/hr)									7			15
Heavy Vehicles (%)	0%	0%	0%	5%	5%	5%	13%	13%	13%	8%	8%	8%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		3			3			1			1	
Permitted Phases	3			3		3	1			1		
Actuated Green, G (s)		19.9			19.9	19.9	76.5	76.5		76.5	76.5	
Effective Green, g (s)		20.9			20.9	20.9	77.5	77.5		77.5	77.5	
Actuated g/C Ratio		0.17			0.17	0.17	0.65	0.65		0.65	0.65	
Clearance Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		231			179	201	357	791		457	899	
v/s Ratio Prot								0.29			c0.32	
v/s Ratio Perm		0.08			0.06	c0.14	0.05			0.11		
v/c Ratio		0.44			0.32	0.79	0.08	0.46		0.17	0.50	
Uniform Delay, d1		44.3			43.3	47.5	7.9	10.7		8.5	11.1	
Progression Factor		1.00			1.00	1.00	1.00	1.00		0.96	0.87	
Incremental Delay, d2		0.5			0.4	17.7	0.4	1.9		0.7	1.7	
Delay (s)		44.8			43.7	65.1	8.3	12.6		8.8	11.4	
Level of Service		D			D	E	A	B		A	B	
Approach Delay (s)		44.8			59.5			12.3			11.0	
Approach LOS		D			E			B			B	

Intersection Summary			
HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.6
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBT	SBT
Lane Configurations		
Volume (vph)	230	275
Lane Group Flow (vph)	402	446
Sign Control	Free	Free

Intersection Summary
Control Type: Unsignalized

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	230	140	135	275	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	250	152	147	299	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	750			704		
pX, platoon unblocked						
vC, conflicting volume			402		769	326
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			402		769	326
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			87		100	100
cM capacity (veh/h)			1153		295	670

Direction, Lane #	NB 1	SB 1	SB 2
Volume Total	402	246	199
Volume Left	0	147	0
Volume Right	152	0	0
cSH	1700	1153	1700
Volume to Capacity	0.24	0.13	0.12
Queue Length 95th (ft)	0	11	0
Control Delay (s)	0.0	5.6	0.0
Lane LOS		A	
Approach Delay (s)	0.0	3.1	
Approach LOS			

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	SBT
Lane Configurations				
Volume (vph)	90	125	230	410
Lane Group Flow (vph)	125	174	264	586
Sign Control	Stop		Free	Free

Intersection Summary
Control Type: Unsignalized

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	90	125	230	0	0	410
Peak Hour Factor	0.72	0.72	0.87	0.87	0.70	0.70
Hourly flow rate (vph)	125	174	264	0	0	586
Pedestrians			279			473
Lane Width (ft)			12.0			11.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			23			36
Right turn flare (veh)		4				
Median type	None					
Median storage veh)						
Upstream signal (ft)			938			516
pX, platoon unblocked						
vC, conflicting volume	836	737			264	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	836	737			264	
tC, single (s)	7.1	7.2			4.3	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.3	
p0 queue free %	42	19			100	
cM capacity (veh/h)	217	214			1240	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	299	264	293	293
Volume Left	125	0	0	0
Volume Right	174	0	0	0
cSH	368	1700	1700	1700
Volume to Capacity	0.81	0.16	0.17	0.17
Queue Length 95th (ft)	177	0	0	0
Control Delay (s)	57.4	0.0	0.0	0.0
Lane LOS	F			
Approach Delay (s)	57.4	0.0	0.0	
Approach LOS	F			

Intersection Summary			
Average Delay	14.9		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations					
Volume (vph)	55	155	435	140	60
Lane Group Flow (vph)	96	272	613	197	111
Sign Control		Free	Free		Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	55	155	435	140	60	20
Peak Hour Factor	0.57	0.57	0.71	0.71	0.72	0.72
Hourly flow rate (vph)	96	272	613	197	83	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	810				1078	613
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	810				1078	613
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	88				61	94
cM capacity (veh/h)	774				214	496

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	96	272	613	197	111
Volume Left	96	0	0	0	83
Volume Right	0	0	0	197	28
cSH	774	1700	1700	1700	249
Volume to Capacity	0.12	0.16	0.36	0.12	0.45
Queue Length 95th (ft)	11	0	0	0	54
Control Delay (s)	10.3	0.0	0.0	0.0	30.5
Lane LOS	B				D
Approach Delay (s)	2.7		0.0		30.5
Approach LOS					D

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	75	605	100	465	30	295	135	125
Lane Group Flow (vph)	101	762	118	803	0	507	171	221
Turn Type	Prot		Prot		Perm		Perm	
Protected Phases	1	6	5	2		8		4
Permitted Phases					8		4	
Detector Phases	1	6	5	2	8	8	4	4
Minimum Initial (s)	4.0	10.0	4.0	10.0	4.0	4.0	4.0	4.0
Minimum Split (s)	15.0	19.0	15.0	19.0	15.0	15.0	15.0	15.0
Total Split (s)	19.0	48.0	19.0	48.0	33.0	33.0	33.0	33.0
Total Split (%)	19.0%	48.0%	19.0%	48.0%	33.0%	33.0%	33.0%	33.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	None	C-Max	Max	Max	Max	Max
v/c Ratio	0.57	0.58	0.64	0.65		1.18	1.80	0.56
Control Delay	53.7	22.6	57.1	23.7		136.0	424.5	36.7
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	53.7	22.6	57.1	23.7		136.0	424.5	36.7
Queue Length 50th (ft)	61	187	71	207		~390	~165	119
Queue Length 95th (ft)	104	227	128	284		#355	#253	167
Internal Link Dist (ft)		1220		578		409		130
Turn Bay Length (ft)	115		85					
Base Capacity (vph)	214	1316	211	1237		430	95	393
Starvation Cap Reductn	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0
Reduced v/c Ratio	0.47	0.58	0.56	0.65		1.18	1.80	0.56

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 40 (40%), Referenced to phase 2:WBT and 6:EBT, Start of Green

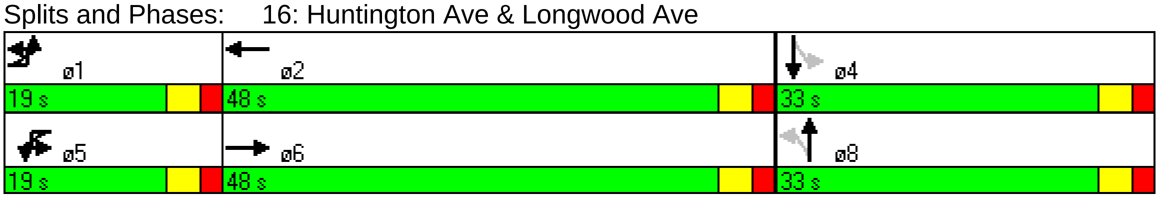
Natural Cycle: 90

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 16: Huntington Ave & Longwood Ave



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	11	10	10	11	11	16	16	16	10
Total Lost time (s)		4.0	4.0			4.0	4.0			4.0		4.0
Lane Util. Factor		1.00	0.95			1.00	0.95			1.00		1.00
Frpb, ped/bikes		1.00	0.98			1.00	0.92			0.99		1.00
Flpb, ped/bikes		1.00	1.00			1.00	1.00			0.99		1.00
Frt		1.00	0.99			1.00	0.95			1.00		1.00
Flt Protected		0.95	1.00			0.95	1.00			1.00		0.95
Satd. Flow (prot)		1428	2863			1409	2527			1551		1391
Flt Permitted		0.95	1.00			0.95	1.00			0.95		0.22
Satd. Flow (perm)		1428	2863			1409	2527			1484		327
Volume (vph)	10	75	605	35	5	100	465	250	30	295	10	135
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.89	0.89	0.89	0.89	0.66	0.66	0.66	0.79
Adj. Flow (vph)	12	89	720	42	6	112	522	281	45	447	15	171
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	101	762	0	0	118	803	0	0	507	0	171
Confl. Peds. (#/hr)		70		89		89		70	57		374	374
Confl. Bikes (#/hr)				10				5			7	
Heavy Vehicles (%)	0%	7%	7%	7%	0%	8%	8%	8%	9%	9%	9%	9%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	0	0	0	0
Parking (#/hr)									1	1	1	
Turn Type	Prot	Prot			Prot	Prot			Perm			Perm
Protected Phases	1	1	6		5	5	2			8		
Permitted Phases									8			4
Actuated Green, G (s)		10.1	44.9			12.1	46.9			28.0		28.0
Effective Green, g (s)		11.1	45.9			13.1	47.9			29.0		29.0
Actuated g/C Ratio		0.11	0.46			0.13	0.48			0.29		0.29
Clearance Time (s)		5.0	5.0			5.0	5.0			5.0		5.0
Vehicle Extension (s)		3.0	3.0			3.0	3.0			3.0		3.0
Lane Grp Cap (vph)		159	1314			185	1210			430		95
v/s Ratio Prot		0.07	0.27			c0.08	c0.32					
v/s Ratio Perm										0.34		c0.52
v/c Ratio		0.64	0.58			0.64	0.66			1.18		1.80
Uniform Delay, d1		42.5	19.9			41.2	19.9			35.5		35.5
Progression Factor		1.00	1.00			1.00	1.00			1.00		1.00
Incremental Delay, d2		8.0	1.9			7.0	2.9			102.3		398.5
Delay (s)		50.6	21.8			48.2	22.8			137.8		434.0
Level of Service		D	C			D	C			F		F
Approach Delay (s)			25.2				26.0			137.8		
Approach LOS			C				C			F		

Intersection Summary			
HCM Average Control Delay	73.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Lane Width	10	10
Total Lost time (s)	4.0	
Lane Util. Factor	1.00	
Frpb, ped/bikes	0.97	
Flpb, ped/bikes	1.00	
Frt	0.96	
Flt Protected	1.00	
Satd. Flow (prot)	1354	
Flt Permitted	1.00	
Satd. Flow (perm)	1354	
Volume (vph)	125	50
Peak-hour factor, PHF	0.79	0.79
Adj. Flow (vph)	158	63
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	221	0
Confl. Peds. (#/hr)		57
Confl. Bikes (#/hr)		4
Heavy Vehicles (%)	9%	9%
Bus Blockages (#/hr)	0	0
Parking (#/hr)		
Turn Type		
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	28.0	
Effective Green, g (s)	29.0	
Actuated g/C Ratio	0.29	
Clearance Time (s)	5.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	393	
v/s Ratio Prot	0.16	
v/s Ratio Perm		
v/c Ratio	0.56	
Uniform Delay, d1	30.1	
Progression Factor	1.00	
Incremental Delay, d2	5.7	
Delay (s)	35.8	
Level of Service	D	
Approach Delay (s)	209.5	
Approach LOS	F	

Intersection Summary

Lane Group	EBT	WBT	NBL
Lane Configurations			
Volume (vph)	909	921	3
Lane Group Flow (vph)	1017	1129	32
Sign Control	Free	Free	Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	909	57	16	921	3	16
Peak Hour Factor	0.95	0.95	0.83	0.83	0.59	0.59
Hourly flow rate (vph)	957	60	19	1110	5	27
Pedestrians					16	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					1	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	494					
pX, platoon unblocked			0.73		0.73	0.73
vC, conflicting volume			1033		1411	524
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			667		1189	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		96	97
cM capacity (veh/h)			662		128	781

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	638	379	241	444	444	32
Volume Left	0	0	19	0	0	5
Volume Right	0	60	0	0	0	27
cSH	1700	1700	662	1700	1700	432
Volume to Capacity	0.38	0.22	0.03	0.26	0.26	0.07
Queue Length 95th (ft)	0	0	2	0	0	6
Control Delay (s)	0.0	0.0	1.2	0.0	0.0	14.0
Lane LOS			A			B
Approach Delay (s)	0.0		0.3			14.0
Approach LOS						B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group
Lane Configurations
Volume (vph)
Lane Group Flow (vph)
Sign Control

Intersection Summary
Control Type: Unsignalized

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	0	0	0	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085

Direction, Lane #	WB 1	NE 1
Volume Total	0	0
Volume Left	0	0
Volume Right	0	0
cSH	1700	1700
Volume to Capacity	0.00	0.00
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		A
Approach Delay (s)	0.0	0.0
Approach LOS		A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT
Lane Configurations		
Volume (vph)	425	310
Lane Group Flow (vph)	816	455
Sign Control	Free	Free

Intersection Summary
Control Type: Unsignalized

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	425	195	50	310
Peak Hour Factor	0.25	0.25	0.76	0.76	0.79	0.79
Hourly flow rate (vph)	0	0	559	257	63	392
Pedestrians	421					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			210			1244
pX, platoon unblocked	0.72	0.72			0.72	
vC, conflicting volume	1431	1108			1237	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1597	1150			1328	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	100	100			82	
cM capacity (veh/h)	59	141			354	

Direction, Lane #	NB 1	SB 1	SB 2
Volume Total	816	194	262
Volume Left	0	63	0
Volume Right	257	0	0
cSH	1700	354	1700
Volume to Capacity	0.48	0.18	0.15
Queue Length 95th (ft)	0	16	0
Control Delay (s)	0.0	7.9	0.0
Lane LOS		A	
Approach Delay (s)	0.0	3.4	
Approach LOS			

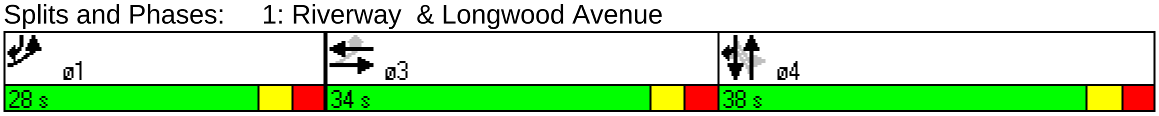
Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	235	520	1095	140	95	275	55	185	180
Lane Group Flow (vph)	245	568	1165	149	107	337	0	261	196
Turn Type	pm+pt			Perm	Perm		Perm		pt+ov
Protected Phases	1	3	3			4		4	1 4
Permitted Phases	3			3	4		4		
Detector Phases	1	3	3	3	4	4	4	4	1 4
Minimum Initial (s)	8.0	15.0	15.0	15.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	28.0	34.0	34.0	34.0	21.0	21.0	21.0	21.0	
Total Split (s)	28.0	34.0	34.0	34.0	38.0	38.0	38.0	38.0	66.0
Total Split (%)	28.0%	34.0%	34.0%	34.0%	38.0%	38.0%	38.0%	38.0%	66.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lead/Lag		Lead	Lead	Lead	Lag	Lag	Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Min	Min	Min	C-Max	C-Max	C-Max	C-Max	
v/c Ratio	0.63	0.57	1.13	0.28	0.42	0.52		0.62	0.23
Control Delay	25.7	31.4	105.5	7.2	31.6	29.5		35.5	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	25.7	31.4	105.5	7.2	31.6	29.5		35.5	9.5
Queue Length 50th (ft)	90	162	~487	5	52	168		138	49
Queue Length 95th (ft)	171	221	#618	50	103	251		227	83
Internal Link Dist (ft)		340	414			412		311	
Turn Bay Length (ft)	225				50				100
Base Capacity (vph)	429	989	1029	528	256	650		419	903
Starvation Cap Reductn	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.57	0.57	1.13	0.28	0.42	0.52		0.62	0.22

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 4:NBSB, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Riverway & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	10	11	10	10	16	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	0.99			1.00	0.85	1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00			0.99	1.00
Satd. Flow (prot)	1516	3008			3141	1328	1516	1902			1691	1454
Flt Permitted	0.12	1.00			1.00	1.00	0.47	1.00			0.72	1.00
Satd. Flow (perm)	195	3008			3141	1328	752	1902			1231	1454
Volume (vph)	235	520	25	0	1095	140	95	275	25	55	185	180
Peak-hour factor, PHF	0.96	0.96	0.96	0.94	0.94	0.94	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	245	542	26	0	1165	149	107	309	28	60	201	196
RTOR Reduction (vph)	0	3	0	0	0	93	0	3	0	0	0	2
Lane Group Flow (vph)	245	565	0	0	1165	56	107	334	0	0	261	194
Confl. Bikes (#/hr)			4			1			91			20
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt					Perm	Perm			Perm		pt+ov
Protected Phases	1	3			3			4			4	1 4
Permitted Phases	3					3	4			4		
Actuated Green, G (s)	50.0	30.8			30.8	30.8	32.0	32.0			32.0	57.2
Effective Green, g (s)	54.0	32.8			32.8	32.8	34.0	34.0			34.0	59.2
Actuated g/C Ratio	0.54	0.33			0.33	0.33	0.34	0.34			0.34	0.59
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)	385	987			1030	436	256	647			419	861
v/s Ratio Prot	c0.13	0.19			c0.37			0.18				0.13
v/s Ratio Perm	0.21					0.04	0.14				c0.21	
v/c Ratio	0.64	0.57			1.13	0.13	0.42	0.52			0.62	0.23
Uniform Delay, d1	21.5	27.8			33.6	23.6	25.4	26.4			27.6	9.6
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	2.5	0.5			71.4	0.0	5.0	2.9			6.8	0.0
Delay (s)	24.0	28.3			105.0	23.6	30.3	29.3			34.5	9.7
Level of Service	C	C			F	C	C	C			C	A
Approach Delay (s)		27.0			95.8			29.6			23.8	
Approach LOS		C			F			C			C	

Intersection Summary			
HCM Average Control Delay	56.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	NBL	NBT	SBL	SBT
Lane Configurations					
Volume (vph)	55	55	270	25	210
Lane Group Flow (vph)	177	62	324	29	276
Sign Control	Stop		Free		Free

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	35	55	55	55	270	15	25	210	25
Peak Hour Factor	0.25	0.25	0.25	0.82	0.82	0.82	0.88	0.88	0.88	0.85	0.85	0.85
Hourly flow rate (vph)	0	0	0	43	67	67	62	307	17	29	247	29
Pedestrians		315			426			62			98	
Lane Width (ft)		0.0			13.0			10.5			10.5	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			38			5			7	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								343			492	
pX, platoon unblocked	0.92	0.92	0.96	0.92	0.92	0.90	0.96			0.90		
vC, conflicting volume	1266	1510	639	1234	1517	839	591			750		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1222	1489	623	1188	1495	821	574			721		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	100	100	26	0	65	93			94		
cM capacity (veh/h)	0	62	448	58	62	193	958			491		

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	177	62	324	29	276
Volume Left	43	62	0	29	0
Volume Right	67	0	17	0	29
cSH	81	958	1700	491	1700
Volume to Capacity	2.18	0.07	0.19	0.06	0.16
Queue Length 95th (ft)	402	5	0	5	0
Control Delay (s)	651.9	9.0	0.0	12.8	0.0
Lane LOS	F	A		B	
Approach Delay (s)	651.9	1.5		1.2	
Approach LOS	F				

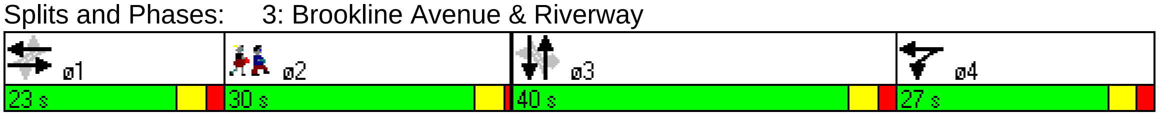
Intersection Summary			
Average Delay	133.7		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT	ø2
Lane Configurations									
Volume (vph)	100	255	460	700	5	565	215	1010	
Lane Group Flow (vph)	106	287	495	769	0	600	226	1121	
Turn Type	Perm		D.P+P		Perm		Perm		
Protected Phases		1	4	1 4		3		3	2
Permitted Phases	1		1		3		3		
Detector Phases	1	1	4	1 4	3	3	3	3	
Minimum Initial (s)	10.0	10.0	6.0		10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	22.0	22.0	11.0		22.0	22.0	22.0	22.0	30.0
Total Split (s)	23.0	23.0	27.0	50.0	40.0	40.0	40.0	40.0	30.0
Total Split (%)	19.2%	19.2%	22.5%	41.7%	33.3%	33.3%	33.3%	33.3%	25%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0	2.0	1.0
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	Max		Max	Max	Max	Max	None
v/c Ratio	2.00	0.61	1.26	0.65		1.60	0.37	1.03	
Control Delay	537.6	53.1	155.3	18.7		312.5	10.2	74.0	
Queue Delay	0.0	0.0	4.3	1.9		0.0	0.0	0.0	
Total Delay	537.6	53.1	159.6	20.5		312.5	10.2	74.0	
Queue Length 50th (ft)	~128	110	~377	125		~709	27	~554	
Queue Length 95th (ft)	#246	158	m#564	m228		#933	94	#692	
Internal Link Dist (ft)		395		231		322		416	
Turn Bay Length (ft)	125								
Base Capacity (vph)	53	474	392	1189		374	618	1092	
Starvation Cap Reductn	0	0	3	259		0	0	0	
Spillback Cap Reductn	0	0	0	0		0	0	0	
Storage Cap Reductn	0	0	0	0		0	0	0	
Reduced v/c Ratio	2.00	0.61	1.27	0.83		1.60	0.37	1.03	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 15 (13%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Brookline Avenue & Riverway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	10	10	11	10	12	12	12	11	11	10
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.99		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1510	2991		1501	3097			1709	1434		3114	
Flt Permitted	0.22	1.00		0.41	1.00			0.83	1.00		1.00	
Satd. Flow (perm)	349	2991		644	3097			1416	1434		3114	
Volume (vph)	100	255	15	460	700	15	5	565	215	0	1010	55
Peak-hour factor, PHF	0.94	0.94	0.94	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	106	271	16	495	753	16	5	595	226	0	1063	58
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	116	0	3	0
Lane Group Flow (vph)	106	287	0	495	768	0	0	600	110	0	1118	0
Confl. Bikes (#/hr)			7			43			2			5
Heavy Vehicles (%)	4%	4%	4%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			D.P+P			Perm		Perm	Perm		
Protected Phases		1		4	1 4			3			3	
Permitted Phases	1			1			3		3	3		
Actuated Green, G (s)	17.2	17.2		39.2	44.2			41.0	41.0		41.0	
Effective Green, g (s)	18.2	18.2		41.2	45.2			42.0	42.0		42.0	
Actuated g/C Ratio	0.15	0.15		0.34	0.38			0.35	0.35		0.35	
Clearance Time (s)	5.0	5.0		5.0				5.0	5.0		5.0	
Vehicle Extension (s)	2.0	2.0		2.0				2.0	2.0		2.0	
Lane Grp Cap (vph)	53	454		385	1167			496	502		1090	
v/s Ratio Prot		0.10		c0.25	0.25						0.36	
v/s Ratio Perm	c0.30			0.19				c0.42	0.08			
v/c Ratio	2.00	0.63		1.29	0.66			1.21	0.22		1.03	
Uniform Delay, d1	50.9	47.8		36.2	31.0			39.0	27.5		39.0	
Progression Factor	1.00	1.00		0.60	0.54			1.00	1.00		1.00	
Incremental Delay, d2	509.9	6.6		142.6	2.2			112.0	1.0		33.9	
Delay (s)	560.8	54.3		164.4	19.0			151.0	28.5		72.9	
Level of Service	F	D		F	B			F	C		E	
Approach Delay (s)		190.9			75.9			117.5			72.9	
Approach LOS		F			E			F			E	

Intersection Summary			
HCM Average Control Delay	97.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	36.8
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	ø2
Lane Configurations										
Volume (vph)	10	410	85	130	795	270	75	30	40	
Lane Group Flow (vph)	0	447	90	135	854	310	230	0	187	
Turn Type	Perm		Perm	D.P+P		Perm		Perm		
Protected Phases		1		4	1 4		3		3	2
Permitted Phases	1		1	1		3		3		
Detector Phases	1	1	1	4	1 4	3	3	3	3	
Minimum Initial (s)	13.0	13.0	13.0	6.0		8.0	8.0	8.0	8.0	4.0
Minimum Split (s)	18.0	18.0	18.0	11.0		18.0	18.0	18.0	18.0	29.0
Total Split (s)	40.0	40.0	40.0	16.0	56.0	35.0	35.0	35.0	35.0	29.0
Total Split (%)	33.3%	33.3%	33.3%	13.3%	46.7%	29.2%	29.2%	29.2%	29.2%	24%
Yellow Time (s)	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lead	Lead	Lag		Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	Max		None	None	None	None	None
v/c Ratio		0.61	0.23	0.42	0.63	0.91	0.36		0.28	
Control Delay		21.8	18.7	11.8	13.3	67.4	22.9		21.4	
Queue Delay		0.0	0.0	0.0	0.4	0.9	0.0		0.0	
Total Delay		21.8	18.7	11.8	13.7	68.3	22.9		21.4	
Queue Length 50th (ft)		76	28	44	195	184	69		53	
Queue Length 95th (ft)		107	m53	m43	136	#482	182		152	
Internal Link Dist (ft)		231			359		328		220	
Turn Bay Length (ft)			150			150				
Base Capacity (vph)		730	390	318	1347	341	631		667	
Starvation Cap Reductn		2	0	0	156	0	0		0	
Spillback Cap Reductn		0	0	0	84	3	0		7	
Storage Cap Reductn		0	0	0	0	0	0		0	
Reduced v/c Ratio		0.61	0.23	0.42	0.72	0.92	0.36		0.28	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 3 (3%), Referenced to phase 1:EBWB, Start of Green

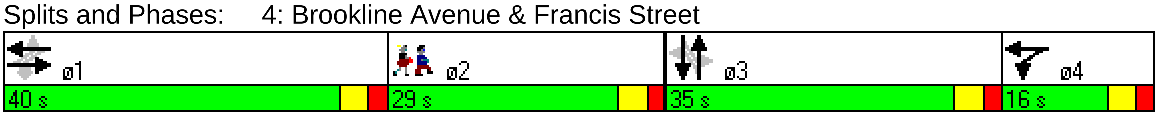
Natural Cycle: 100

Control Type: Actuated-Coordinated

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Brookline Avenue & Francis Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	14	10	10	12	14	11	11	11	16	16	16
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes		1.00	0.98	1.00	1.00		1.00	0.99			0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.91			0.92	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)		3393	1300	1458	3106		1555	1466			1755	
Flt Permitted		0.71	1.00	0.36	1.00		0.59	1.00			0.92	
Satd. Flow (perm)		2412	1300	549	3106		971	1466			1627	
Volume (vph)	10	410	85	130	795	25	270	75	125	30	40	100
Peak-hour factor, PHF	0.94	0.94	0.94	0.96	0.96	0.96	0.87	0.87	0.87	0.91	0.91	0.91
Adj. Flow (vph)	11	436	90	135	828	26	310	86	144	33	44	110
RTOR Reduction (vph)	0	0	0	0	2	0	0	41	0	0	35	0
Lane Group Flow (vph)	0	447	90	135	852	0	310	189	0	0	152	0
Confl. Bikes (#/hr)			2			20			11			2
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	1%	1%	1%	0%	0%	0%
Turn Type	Perm		Perm	D.P+P			Perm			Perm		
Protected Phases		1		4	1 4			3			3	
Permitted Phases	1		1	1			3			3		
Actuated Green, G (s)		32.0	32.0	43.0	48.0		47.4	47.4			47.4	
Effective Green, g (s)		33.0	33.0	45.0	49.0		48.4	48.4			48.4	
Actuated g/C Ratio		0.28	0.28	0.38	0.41		0.40	0.40			0.40	
Clearance Time (s)		5.0	5.0	5.0			5.0	5.0			5.0	
Vehicle Extension (s)		2.0	2.0	2.0			2.0	2.0			2.0	
Lane Grp Cap (vph)		663	358	297	1268		392	591			656	
v/s Ratio Prot				0.05	c0.27			0.13				
v/s Ratio Perm		0.19	0.07	0.13			c0.32				0.09	
v/c Ratio		0.67	0.25	0.45	0.67		0.79	0.32			0.23	
Uniform Delay, d1		38.7	33.9	26.2	28.9		31.4	24.5			23.6	
Progression Factor		0.50	0.54	0.39	0.43		1.00	1.00			1.00	
Incremental Delay, d2		4.9	1.5	3.9	2.2		9.8	0.1			0.1	
Delay (s)		24.4	19.9	14.2	14.7		41.1	24.6			23.6	
Level of Service		C	B	B	B		D	C			C	
Approach Delay (s)		23.6			14.6			34.1			23.6	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM Average Control Delay	22.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.6
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL	NBR	SBL	SBT	ø2
Lane Configurations								
Volume (vph)	550	25	700	155	120	55	10	
Lane Group Flow (vph)	639	0	815	199	154	64	111	
Turn Type		D.P+P		D.Pm	custom	Perm		
Protected Phases	1	6	6				5	2
Permitted Phases		1	1	5	5	5		
Detector Phases	1	6	6	5	5	5	5	
Minimum Initial (s)	10.0	6.0	6.0	8.0	8.0	8.0	8.0	5.0
Minimum Split (s)	29.0	11.0	11.0	13.0	13.0	13.0	13.0	26.0
Total Split (s)	40.0	13.0	13.0	43.0	43.0	43.0	43.0	24.0
Total Split (%)	33.3%	10.8%	10.8%	35.8%	35.8%	35.8%	35.8%	20%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	Max	Max	None	None	None	None	None
v/c Ratio	0.71		0.60	0.85	0.37	0.21	0.30	
Control Delay	48.4		11.0	72.9	7.3	35.9	9.8	
Queue Delay	0.1		0.0	0.0	0.0	0.0	0.0	
Total Delay	48.4		11.0	72.9	7.3	35.9	9.8	
Queue Length 50th (ft)	188		81	148	0	40	7	
Queue Length 95th (ft)	230		m145	176	29	67	43	
Internal Link Dist (ft)	359		347				176	
Turn Bay Length (ft)				150		100		
Base Capacity (vph)	896		1354	333	532	436	492	
Starvation Cap Reductn	10		7	0	0	0	0	
Spillback Cap Reductn	0		0	0	0	0	0	
Storage Cap Reductn	0		0	0	0	0	0	
Reduced v/c Ratio	0.72		0.61	0.60	0.29	0.15	0.23	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

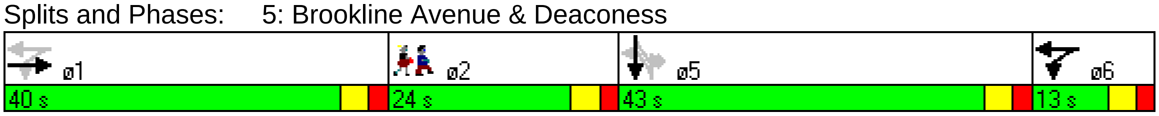
Offset: 113 (94%), Referenced to phase 1:EBWB, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Brookline Avenue & Deaconess



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	11	11	13	10	10	10	13	12	12
Total Lost time (s)		4.0			4.0		4.0		4.0	4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00		1.00	1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00		1.00	1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00		1.00	1.00	1.00	
Frt		0.99			1.00		1.00		0.85	1.00	0.87	
Flt Protected		1.00			1.00		0.95		1.00	0.95	1.00	
Satd. Flow (prot)		2979			3044		1472		1317	1341	1307	
Flt Permitted		1.00			0.93		0.63		1.00	0.95	1.00	
Satd. Flow (perm)		2979			2832		981		1317	1341	1307	
Volume (vph)	0	550	25	25	700	0	155	0	120	55	10	85
Peak-hour factor, PHF	0.90	0.90	0.90	0.89	0.89	0.89	0.78	0.78	0.78	0.86	0.86	0.86
Adj. Flow (vph)	0	611	28	28	787	0	199	0	154	64	12	99
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	119	0	76	0
Lane Group Flow (vph)	0	636	0	0	815	0	199	0	35	64	35	0
Confl. Bikes (#/hr)			7			25						1
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	3%	3%	3%	12%	12%	12%
Parking (#/hr)			2							1		
Turn Type				D.P+P			D.Pm		custom	Perm		
Protected Phases		1		6	6						5	
Permitted Phases				1	1		5		5	5		
Actuated Green, G (s)		35.0			54.6		26.4		26.4	26.4	26.4	
Effective Green, g (s)		36.0			56.6		27.4		27.4	27.4	27.4	
Actuated g/C Ratio		0.30			0.47		0.23		0.23	0.23	0.23	
Clearance Time (s)		5.0			5.0		5.0		5.0	5.0	5.0	
Vehicle Extension (s)		2.0			2.0		2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)		894			1372		224		301	306	298	
v/s Ratio Prot		c0.21			c0.10						0.03	
v/s Ratio Perm					0.18		c0.20		0.03	0.05		
v/c Ratio		0.71			0.59		0.89		0.12	0.21	0.12	
Uniform Delay, d1		37.4			23.3		44.8		36.7	37.5	36.7	
Progression Factor		1.17			0.41		1.00		1.00	1.00	1.00	
Incremental Delay, d2		4.2			1.4		31.0		0.1	0.1	0.1	
Delay (s)		48.1			10.9		75.8		36.8	37.6	36.8	
Level of Service		D			B		E		D	D	D	
Approach Delay (s)		48.1			10.9			58.8			37.1	
Approach LOS		D			B			E			D	

Intersection Summary			
HCM Average Control Delay	33.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	36.0
Intersection Capacity Utilization	64.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	ø2
Lane Configurations										
Volume (vph)	50	495	160	570	205	225	235	60	160	
Lane Group Flow (vph)	57	642	188	747	216	237	247	67	208	
Turn Type	Perm		D.P+P		Perm		pt+ov	Perm		
Protected Phases		1	4	1 4		3	3 4		3	2
Permitted Phases	1		1		3			3		
Detector Phases	1	1	4	1 4	3	3	3 4	3	3	
Minimum Initial (s)	10.0	10.0	6.0		8.0	8.0		8.0	8.0	7.0
Minimum Split (s)	15.0	15.0	11.0		13.0	13.0		13.0	13.0	26.0
Total Split (s)	45.0	45.0	15.0	60.0	35.0	35.0	50.0	35.0	35.0	25.0
Total Split (%)	37.5%	37.5%	12.5%	50.0%	29.2%	29.2%	41.7%	29.2%	29.2%	21%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lead/Lag	Lead	Lead	Lag		Lead	Lead		Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	C-Max	C-Max	None		None	None		None	None	Ped
v/c Ratio	1.12	0.64	0.69	0.54	1.17	0.61	0.50	0.39	0.52	
Control Delay	174.4	12.8	35.0	24.6	169.1	62.9	40.5	44.6	43.7	
Queue Delay	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	174.4	13.3	35.0	24.6	169.1	62.9	40.5	44.6	43.7	
Queue Length 50th (ft)	~52	56	87	211	~204	189	124	43	139	
Queue Length 95th (ft)	m#101	75	131	250	m#359	m273	m279	89	216	
Internal Link Dist (ft)		347		735		335			263	
Turn Bay Length (ft)	70		350		150			170		
Base Capacity (vph)	51	1010	273	1385	184	389	491	173	399	
Starvation Cap Reductn	0	94	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.12	0.70	0.69	0.54	1.17	0.61	0.50	0.39	0.52	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 1:EBWB, Start of Green

Natural Cycle: 90

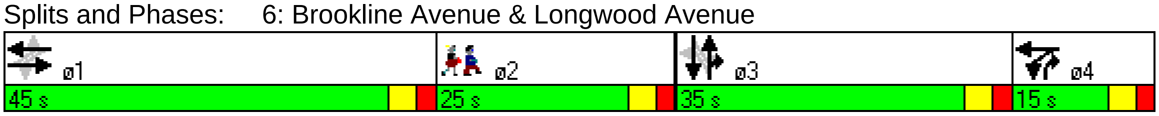
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Brookline Avenue & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	11	10	10	10	10	10	10	10
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	*0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1458	2956		1458	2966		1430	1506	1280	1501	1544	
Flt Permitted	0.10	1.00		0.27	1.00		0.47	1.00	1.00	0.42	1.00	
Satd. Flow (perm)	150	2956		408	2966		712	1506	1280	670	1544	
Volume (vph)	50	495	70	160	570	65	205	225	235	60	160	25
Peak-hour factor, PHF	0.88	0.88	0.88	0.85	0.85	0.85	0.95	0.95	0.95	0.89	0.89	0.89
Adj. Flow (vph)	57	562	80	188	671	76	216	237	247	67	180	28
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	57	642	0	188	747	0	216	237	247	67	208	0
Confl. Bikes (#/hr)			14			7			50			10
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	6%	6%	6%	1%	1%	1%
Turn Type	Perm			D.P+P			Perm		pt+ov	Perm		
Protected Phases		1		4	1 4			3	3 4		3	
Permitted Phases	1			1			3			3		
Actuated Green, G (s)	40.0	40.0		50.0	55.0		30.0	30.0	45.0	30.0	30.0	
Effective Green, g (s)	41.0	41.0		52.0	56.0		31.0	31.0	46.0	31.0	31.0	
Actuated g/C Ratio	0.34	0.34		0.43	0.47		0.26	0.26	0.38	0.26	0.26	
Clearance Time (s)	5.0	5.0		5.0			5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	2.0		2.0			2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	51	1010		273	1384		184	389	491	173	399	
v/s Ratio Prot		0.22		c0.06	0.25			0.16	0.19		0.13	
v/s Ratio Perm	c0.38			0.24			c0.30			0.10		
v/c Ratio	1.12	0.64		0.69	0.54		1.17	0.61	0.50	0.39	0.52	
Uniform Delay, d1	39.5	33.2		23.3	22.8		44.5	39.2	28.3	36.7	38.1	
Progression Factor	0.38	0.31		1.00	1.00		1.39	1.42	1.28	1.00	1.00	
Incremental Delay, d2	148.1	2.4		5.7	0.2		117.7	1.7	0.3	0.5	0.6	
Delay (s)	163.1	12.7		29.0	23.0		179.4	57.1	36.5	37.2	38.7	
Level of Service	F	B		C	C		F	E	D	D	D	
Approach Delay (s)		25.0			24.2			87.6			38.3	
Approach LOS		C			C			F			D	

Intersection Summary			
HCM Average Control Delay	42.9	HCM Level of Service	D
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	37.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Configurations					
Volume (vph)	50	20	190	55	245
Lane Group Flow (vph)	106	291	311	62	326
Sign Control	Stop	Stop	Free		Free

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	35	50	15	110	20	140	5	190	95	55	245	45
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.93	0.93	0.93	0.89	0.89	0.89
Hourly flow rate (vph)	37	53	16	118	22	151	5	204	102	62	275	51
Pedestrians		315			349			285			379	
Lane Width (ft)		13.0			12.0			14.0			13.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		28			29			28			34	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											408	
pX, platoon unblocked	0.98	0.98	0.98	0.98	0.98		0.98					
vC, conflicting volume	1546	1405	901	1342	1380	983	641			655		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1559	1415	898	1350	1389	983	632			655		
tC, single (s)	7.2	6.6	6.3	7.1	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	0	10	90	0	66	0	99			90		
cM capacity (veh/h)	0	59	166	8	64	141	671			641		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	106	290	312	62	326
Volume Left	37	118	5	62	0
Volume Right	16	151	102	0	51
cSH	0	18	671	641	1700
Volume to Capacity	Err	15.93	0.01	0.10	0.19
Queue Length 95th (ft)	Err	Err	1	8	0
Control Delay (s)	Err	Err	0.3	11.2	0.0
Lane LOS	F	F	A	B	
Approach Delay (s)	Err	Err	0.3	1.8	
Approach LOS	F	F			

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBL
Lane Configurations			
Volume (vph)	155	100	35
Lane Group Flow (vph)	197	139	67
Sign Control	Free	Free	Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	155	30	25	100	35	30
Peak Hour Factor	0.94	0.94	0.90	0.90	0.96	0.96
Hourly flow rate (vph)	165	32	28	111	36	31
Pedestrians	48			278	238	
Lane Width (ft)	12.0			12.0	13.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	4			23	21	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			435		634	697
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			435		634	697
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		89	88
cM capacity (veh/h)			887		324	266

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	197	139	68
Volume Left	0	28	36
Volume Right	32	0	31
cSH	1700	887	294
Volume to Capacity	0.12	0.03	0.23
Queue Length 95th (ft)	0	2	22
Control Delay (s)	0.0	2.1	20.8
Lane LOS		A	C
Approach Delay (s)	0.0	2.1	20.8
Approach LOS			C

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Volume (vph)	90	70	25	5
Lane Group Flow (vph)	297	184	128	117
Sign Control	Stop	Stop	Stop	Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	95	90	5	0	70	75	5	25	45	30	5	50
Peak Hour Factor	0.56	0.79	0.38	0.25	0.84	0.74	0.25	0.95	0.55	0.85	0.25	0.81
Hourly flow rate (vph)	170	114	13	0	83	101	20	26	82	35	20	62

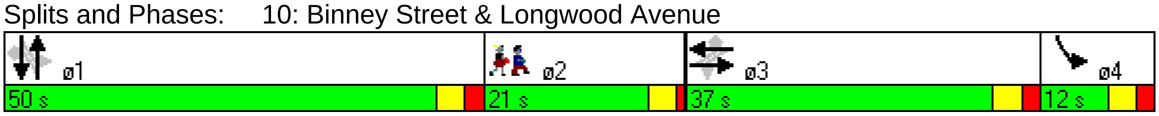
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	297	185	128	117
Volume Left (vph)	170	0	20	35
Volume Right (vph)	13	101	82	62
Hadj (s)	0.10	-0.33	-0.35	-0.26
Departure Headway (s)	4.9	4.6	4.9	5.0
Degree Utilization, x	0.40	0.24	0.17	0.16
Capacity (veh/h)	701	729	650	642
Control Delay (s)	11.1	9.0	8.9	9.0
Approach Delay (s)	11.1	9.0	8.9	9.0
Approach LOS	B	A	A	A

Intersection Summary			
Delay	9.8		
HCM Level of Service	A		
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	ø2
Lane Configurations											
Volume (vph)	55	25	75	65	170	45	445	10	320	50	
Lane Group Flow (vph)	0	204	0	163	198	0	537	12	376	59	
Turn Type	Perm		Perm		Perm	Perm		pm+pt		Perm	
Protected Phases		3		3			1	4	1		2
Permitted Phases	3		3		3	1		1		1	
Detector Phases	3	3	3	3	3	1	1	4	1	1	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0	10.0	4.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	15.0	15.0	12.0	15.0	15.0	21.0
Total Split (s)	37.0	37.0	37.0	37.0	37.0	50.0	50.0	12.0	50.0	50.0	21.0
Total Split (%)	30.8%	30.8%	30.8%	30.8%	30.8%	41.7%	41.7%	10.0%	41.7%	41.7%	18%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lead/Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	None
v/c Ratio		0.82		0.75	0.48		0.41	0.02	0.43	0.08	
Control Delay		59.5		65.2	8.7		24.3	2.2	10.3	3.4	
Queue Delay		1.2		0.8	0.0		0.6	0.0	0.9	0.0	
Total Delay		60.7		66.0	8.7		24.9	2.2	11.3	3.4	
Queue Length 50th (ft)		122		121	0		136	1	127	7	
Queue Length 95th (ft)		160		165	48		243	m1	252	m17	
Internal Link Dist (ft)		370		168			243		335		
Turn Bay Length (ft)								75			
Base Capacity (vph)		343		314	509		1298	513	869	719	
Starvation Cap Reductn		0		0	0		397	0	259	0	
Spillback Cap Reductn		38		34	0		0	0	115	0	
Storage Cap Reductn		0		0	0		0	0	0	0	
Reduced v/c Ratio		0.67		0.58	0.39		0.60	0.02	0.62	0.08	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 40 (33%), Referenced to phase 1:NBSB, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Binney Street & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	11	11	10	10	11	11	10	11	10
Total Lost time (s)		4.0			4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor		1.00			1.00	1.00		0.95		1.00	1.00	1.00
Frpb, ped/bikes		1.00			1.00	0.98		1.00		1.00	1.00	0.97
Flpb, ped/bikes		1.00			1.00	1.00		1.00		1.00	1.00	1.00
Frt		0.93			1.00	0.85		1.00		1.00	1.00	0.85
Flt Protected		0.98			0.97	1.00		1.00		0.95	1.00	1.00
Satd. Flow (prot)		1337			1578	1308		2825		1430	1559	1247
Flt Permitted		0.68			0.61	1.00		0.88		0.41	1.00	1.00
Satd. Flow (perm)		920			987	1308		2505		621	1559	1247
Volume (vph)	55	25	85	75	65	170	45	445	10	10	320	50
Peak-hour factor, PHF	0.81	0.81	0.81	0.86	0.86	0.86	0.93	0.93	0.93	0.85	0.85	0.85
Adj. Flow (vph)	68	31	105	87	76	198	48	478	11	12	376	59
RTOR Reduction (vph)	0	36	0	0	0	160	0	1	0	0	0	26
Lane Group Flow (vph)	0	168	0	0	163	38	0	536	0	12	376	33
Confl. Bikes (#/hr)						4			53			9
Heavy Vehicles (%)	21%	21%	21%	2%	2%	2%	8%	8%	8%	6%	6%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0
Turn Type	Perm			Perm		Perm	Perm			pm+pt		Perm
Protected Phases		3			3			1		4	1	
Permitted Phases	3			3		3	1			1		1
Actuated Green, G (s)		22.1			22.1	22.1		65.9		82.9	65.9	65.9
Effective Green, g (s)		23.1			23.1	23.1		66.9		84.9	66.9	66.9
Actuated g/C Ratio		0.19			0.19	0.19		0.56		0.71	0.56	0.56
Clearance Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)		2.0			2.0	2.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		177			190	252		1397		561	869	695
v/s Ratio Prot										c0.00	c0.24	
v/s Ratio Perm		c0.18			0.17	0.03		0.21		0.01		0.03
v/c Ratio		0.95			0.86	0.15		0.38		0.02	0.43	0.05
Uniform Delay, d1		47.9			46.9	40.3		14.9		5.3	15.5	12.1
Progression Factor		1.00			1.00	1.00		1.37		0.33	0.51	0.71
Incremental Delay, d2		53.0			28.8	0.1		0.7		0.0	1.2	0.1
Delay (s)		100.9			75.7	40.4		21.2		1.8	9.2	8.7
Level of Service		F			E	D		C		A	A	A
Approach Delay (s)		100.9			56.3			21.2			8.9	
Approach LOS		F			E			C			A	

Intersection Summary			
HCM Average Control Delay	36.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	ø2
Lane Configurations										
Volume (vph)	60	20	65	55	165	25	245	50	370	
Lane Group Flow (vph)	0	164	0	146	201	32	354	52	432	
Turn Type	Perm		Perm		Perm	Perm		Perm		
Protected Phases		3		3			1		1	2
Permitted Phases	3		3		3	1		1		
Detector Phases	3	3	3	3	3	1	1	1	1	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	20.0
Total Split (s)	43.0	43.0	43.0	43.0	43.0	57.0	57.0	57.0	57.0	20.0
Total Split (%)	35.8%	35.8%	35.8%	35.8%	35.8%	47.5%	47.5%	47.5%	47.5%	17%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lead/Lag						Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	C-Max	C-Max	C-Max	C-Max	None
v/c Ratio		0.28		0.27	0.34	0.16	0.64	0.19	0.68	
Control Delay		19.6		19.6	20.7	23.0	32.5	23.9	37.0	
Queue Delay		0.0		0.0	0.1	0.0	0.0	0.0	40.7	
Total Delay		19.6		19.6	20.8	23.0	32.5	23.9	77.7	
Queue Length 50th (ft)		73		64	92	15	209	27	308	
Queue Length 95th (ft)		98		99	133	33	262	m50	m426	
Internal Link Dist (ft)		298		1163			436		243	
Turn Bay Length (ft)						90				
Base Capacity (vph)		589		537	591	197	555	271	631	
Starvation Cap Reductn		0		0	0	0	0	0	224	
Spillback Cap Reductn		30		0	30	0	0	0	0	
Storage Cap Reductn		0		0	0	0	0	0	0	
Reduced v/c Ratio		0.29		0.27	0.36	0.16	0.64	0.19	1.06	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

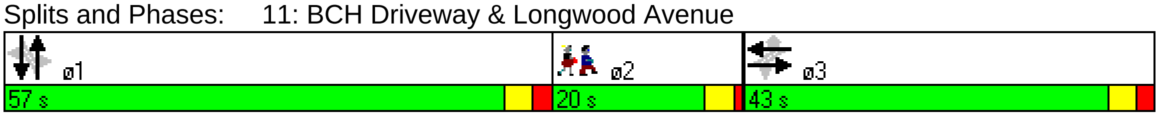
Offset: 37 (31%), Referenced to phase 1:NBSB, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: BCH Driveway & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Lane Width	13	13	13	10	10	10	10	10	10	12	12	12
Total Lost time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.95			1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected		0.98			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1469			1377	1202	1222	1256		1384	1428	
Flt Permitted		0.80			0.78	1.00	0.35	1.00		0.42	1.00	
Satd. Flow (perm)		1210			1101	1202	445	1256		613	1428	
Volume (vph)	60	20	45	65	55	165	25	245	35	50	370	45
Peak-hour factor, PHF	0.76	0.76	0.76	0.82	0.82	0.82	0.79	0.79	0.79	0.96	0.96	0.96
Adj. Flow (vph)	79	26	59	79	67	201	32	310	44	52	385	47
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	164	0	0	146	201	32	354	0	52	432	0
Confl. Bikes (#/hr)									25			14
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	11%	11%	11%	5%	5%	5%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		3			3			1			1	
Permitted Phases	3			3		3	1			1		
Actuated Green, G (s)		58.0			58.0	58.0	52.0	52.0		52.0	52.0	
Effective Green, g (s)		59.0			59.0	59.0	53.0	53.0		53.0	53.0	
Actuated g/C Ratio		0.49			0.49	0.49	0.44	0.44		0.44	0.44	
Clearance Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		595			541	591	197	555		271	631	
v/s Ratio Prot								0.28			c0.30	
v/s Ratio Perm		0.14			0.13	c0.17	0.07			0.08		
v/c Ratio		0.28			0.27	0.34	0.16	0.64		0.19	0.68	
Uniform Delay, d1		17.9			17.9	18.6	20.1	26.0		20.4	26.8	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.06	1.16	
Incremental Delay, d2		1.1			1.2	1.6	1.8	5.5		1.3	5.0	
Delay (s)		19.1			19.1	20.2	21.9	31.6		22.9	36.0	
Level of Service		B			B	C	C	C		C	D	
Approach Delay (s)		19.1			19.7			30.8			34.6	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	27.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBT	SBT
Lane Configurations		
Volume (vph)	180	400
Lane Group Flow (vph)	259	558
Sign Control	Stop	Stop

Intersection Summary
Control Type: Unsignalized

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	180	35	85	400	0	0
Peak Hour Factor	0.83	0.83	0.87	0.87	0.92	0.92
Hourly flow rate (vph)	217	42	98	460	0	0

Direction, Lane #	NB 1	SB 1	SB 2
Volume Total (vph)	259	251	307
Volume Left (vph)	0	98	0
Volume Right (vph)	42	0	0
Hadj (s)	-0.03	0.28	0.08
Departure Headway (s)	4.5	4.9	4.8
Degree Utilization, x	0.32	0.35	0.40
Capacity (veh/h)	796	716	749
Control Delay (s)	9.5	9.3	9.7
Approach Delay (s)	9.5	9.6	
Approach LOS	A	A	

Intersection Summary			
Delay	9.6		
HCM Level of Service	A		
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	SBT
Lane Configurations				
Volume (vph)	70	110	180	485
Lane Group Flow (vph)	76	120	217	557
Sign Control	Stop		Free	Free

Intersection Summary
Control Type: Unsignalized

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	70	110	180	0	0	485
Peak Hour Factor	0.92	0.92	0.83	0.83	0.87	0.87
Hourly flow rate (vph)	76	120	217	0	0	557
Pedestrians			389			629
Lane Width (ft)			12.0			11.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			32			48
Right turn flare (veh)		4				
Median type	None					
Median storage veh)						
Upstream signal (ft)						516
pX, platoon unblocked						
vC, conflicting volume	885	846			217	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	885	846			217	
tC, single (s)	7.2	7.3			4.2	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.2	
p0 queue free %	56	16			100	
cM capacity (veh/h)	173	143			1328	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	196	217	279	279
Volume Left	76	0	0	0
Volume Right	120	0	0	0
cSH	234	1700	1700	1700
Volume to Capacity	0.84	0.13	0.16	0.16
Queue Length 95th (ft)	163	0	0	0
Control Delay (s)	75.7	0.0	0.0	0.0
Lane LOS	F			
Approach Delay (s)	75.7	0.0	0.0	
Approach LOS	F			

Intersection Summary			
Average Delay	15.3		
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations					
Volume (vph)	25	135	205	40	115
Lane Group Flow (vph)	32	175	241	47	169
Sign Control		Free	Free		Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	25	135	205	40	115	30
Peak Hour Factor	0.77	0.77	0.85	0.85	0.86	0.86
Hourly flow rate (vph)	32	175	241	47	134	35
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	288				481	241
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	288				481	241
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	97				75	96
cM capacity (veh/h)	1213				533	803

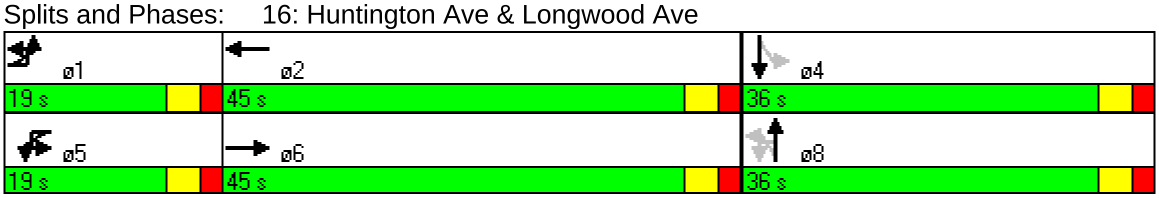
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	32	175	241	47	169
Volume Left	32	0	0	0	134
Volume Right	0	0	0	47	35
cSH	1213	1700	1700	1700	572
Volume to Capacity	0.03	0.10	0.14	0.03	0.29
Queue Length 95th (ft)	2	0	0	0	31
Control Delay (s)	8.0	0.0	0.0	0.0	13.9
Lane LOS	A				B
Approach Delay (s)	1.3		0.0		13.9
Approach LOS					B

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBU	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	20	560	135	590	5	20	110	195	230
Lane Group Flow (vph)	44	670	147	768	0	0	165	0	591
Turn Type	Prot		Prot		Perm	Perm		Perm	
Protected Phases	1	6	5	2			8		4
Permitted Phases					8	8		4	
Detector Phases	1	6	5	2	8	8	8	4	4
Minimum Initial (s)	4.0	10.0	4.0	10.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	15.0	19.0	15.0	19.0	15.0	15.0	15.0	15.0	15.0
Total Split (s)	19.0	45.0	19.0	45.0	36.0	36.0	36.0	36.0	36.0
Total Split (%)	19.0%	45.0%	19.0%	45.0%	36.0%	36.0%	36.0%	36.0%	36.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	Max	Max	Max	Max	Max
v/c Ratio	0.32	0.55	0.72	0.55			0.37		0.95
Control Delay	47.8	24.2	60.9	20.0			29.3		61.2
Queue Delay	0.0	0.0	0.0	0.0			0.0		0.0
Total Delay	47.8	24.2	60.9	20.0			29.3		61.2
Queue Length 50th (ft)	27	168	90	184			81		193
Queue Length 95th (ft)	59	226	#171	263			130		#290
Internal Link Dist (ft)		1220		578			409		130
Turn Bay Length (ft)	115		85						
Base Capacity (vph)	222	1217	223	1403			444		619
Starvation Cap Reductn	0	0	0	0			0		0
Spillback Cap Reductn	0	0	0	0			0		0
Storage Cap Reductn	0	0	0	0			0		0
Reduced v/c Ratio	0.20	0.55	0.66	0.55			0.37		0.95

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 53 (53%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 16: Huntington Ave & Longwood Ave



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	11	10	10	11	11	12	16	16	16
Total Lost time (s)		4.0	4.0			4.0	4.0				4.0	
Lane Util. Factor		1.00	0.95			1.00	0.95				1.00	
Frpb, ped/bikes		1.00	0.98			1.00	0.92				0.99	
Flpb, ped/bikes		1.00	1.00			1.00	1.00				1.00	
Frt		1.00	0.99			1.00	0.97				1.00	
Flt Protected		0.95	1.00			0.95	1.00				0.99	
Satd. Flow (prot)		1479	2882			1487	2746				1621	
Flt Permitted		0.95	1.00			0.95	1.00				0.85	
Satd. Flow (perm)		1479	2882			1487	2746				1388	
Volume (vph)	20	20	560	50	5	135	590	140	5	20	110	5
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.95	0.95	0.95	0.95	0.85	0.85	0.85	0.85
Adj. Flow (vph)	22	22	615	55	5	142	621	147	6	24	129	6
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	44	670	0	0	147	768	0	0	0	165	0
Confl. Peds. (#/hr)		131		154		154		131		30		284
Confl. Bikes (#/hr)				12				13				2
Heavy Vehicles (%)	0%	5%	5%	5%	0%	2%	2%	2%	0%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	0	0	0	0
Parking (#/hr)										1	1	1
Turn Type	Prot	Prot			Prot	Prot			Perm	Perm		
Protected Phases	1	1	6		5	5	2				8	
Permitted Phases									8	8		
Actuated Green, G (s)		5.9	41.2			12.8	48.1				31.0	
Effective Green, g (s)		6.9	42.2			13.8	49.1				32.0	
Actuated g/C Ratio		0.07	0.42			0.14	0.49				0.32	
Clearance Time (s)		5.0	5.0			5.0	5.0				5.0	
Vehicle Extension (s)		3.0	3.0			3.0	3.0				3.0	
Lane Grp Cap (vph)		102	1216			205	1348				444	
v/s Ratio Prot		0.03	0.23			c0.10	c0.28					
v/s Ratio Perm											0.12	
v/c Ratio		0.43	0.55			0.72	0.57				0.37	
Uniform Delay, d1		44.7	21.8			41.2	18.0				26.2	
Progression Factor		1.00	1.00			1.00	1.00				1.00	
Incremental Delay, d2		2.9	1.8			11.3	1.8				2.4	
Delay (s)		47.6	23.6			52.6	19.7				28.6	
Level of Service		D	C			D	B				C	
Approach Delay (s)			25.0				25.0				28.6	
Approach LOS			C				C				C	

Intersection Summary			
HCM Average Control Delay	33.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR
Lane Configurations			
Ideal Flow (vphpl)	1900	1900	1900
Lane Width	10	10	10
Total Lost time (s)		4.0	
Lane Util. Factor		0.95	
Frpb, ped/bikes		0.99	
Flpb, ped/bikes		0.92	
Frt		0.97	
Flt Protected		0.98	
Satd. Flow (prot)		2573	
Flt Permitted		0.74	
Satd. Flow (perm)		1935	
Volume (vph)	195	230	90
Peak-hour factor, PHF	0.87	0.87	0.87
Adj. Flow (vph)	224	264	103
RTOR Reduction (vph)	0	0	0
Lane Group Flow (vph)	0	591	0
Confl. Peds. (#/hr)	284		30
Confl. Bikes (#/hr)			5
Heavy Vehicles (%)	2%	2%	2%
Bus Blockages (#/hr)	0	0	0
Parking (#/hr)			
Turn Type	Perm		
Protected Phases		4	
Permitted Phases	4		
Actuated Green, G (s)		31.0	
Effective Green, g (s)		32.0	
Actuated g/C Ratio		0.32	
Clearance Time (s)		5.0	
Vehicle Extension (s)		3.0	
Lane Grp Cap (vph)		619	
v/s Ratio Prot			
v/s Ratio Perm		c0.31	
v/c Ratio		0.95	
Uniform Delay, d1		33.3	
Progression Factor		1.00	
Incremental Delay, d2		26.6	
Delay (s)		59.9	
Level of Service		E	
Approach Delay (s)		59.9	
Approach LOS		E	

Intersection Summary

Lane Group	EBT	WBT	NBL
Lane Configurations			
Volume (vph)	909	921	3
Lane Group Flow (vph)	1017	1129	32
Sign Control	Free	Free	Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	909	57	16	921	3	16
Peak Hour Factor	0.95	0.95	0.83	0.83	0.59	0.59
Hourly flow rate (vph)	957	60	19	1110	5	27
Pedestrians					16	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					1	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	494					
pX, platoon unblocked			0.88		0.88	0.88
vC, conflicting volume			1033		1411	524
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			895		1327	314
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		96	95
cM capacity (veh/h)			657		125	594

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	638	379	241	444	444	32
Volume Left	0	0	19	0	0	5
Volume Right	0	60	0	0	0	27
cSH	1700	1700	657	1700	1700	373
Volume to Capacity	0.38	0.22	0.03	0.26	0.26	0.09
Queue Length 95th (ft)	0	0	2	0	0	7
Control Delay (s)	0.0	0.0	1.2	0.0	0.0	15.6
Lane LOS			A			C
Approach Delay (s)	0.0		0.3			15.6
Approach LOS						C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group
Lane Configurations
Volume (vph)
Lane Group Flow (vph)
Sign Control

Intersection Summary
Control Type: Unsignalized

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	0	0	0	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085

Direction, Lane #	WB 1	NE 1
Volume Total	0	0
Volume Left	0	0
Volume Right	0	0
cSH	1700	1700
Volume to Capacity	0.00	0.00
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		A
Approach Delay (s)	0.0	0.0
Approach LOS		A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT
Lane Configurations		
Volume (vph)	235	515
Lane Group Flow (vph)	310	614
Sign Control	Free	Free

Intersection Summary
Control Type: Unsignalized

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	235	35	50	515
Peak Hour Factor	0.25	0.25	0.87	0.87	0.92	0.92
Hourly flow rate (vph)	0	0	270	40	54	560
Pedestrians	454					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			210			
pX, platoon unblocked	0.95	0.95			0.95	
vC, conflicting volume	1133	744			764	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1140	731			752	
tC, single (s)	6.8	7.3			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.5			2.2	
p0 queue free %	100	100			93	
cM capacity (veh/h)	175	310			811	

Direction, Lane #	NB 1	SB 1	SB 2
Volume Total	310	241	373
Volume Left	0	54	0
Volume Right	40	0	0
cSH	1700	811	1700
Volume to Capacity	0.18	0.07	0.22
Queue Length 95th (ft)	0	5	0
Control Delay (s)	0.0	2.8	0.0
Lane LOS		A	
Approach Delay (s)	0.0	1.1	
Approach LOS			

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		

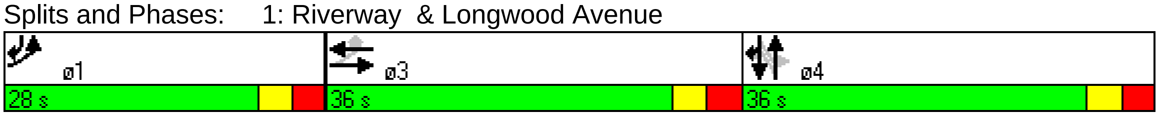
CCB No-Build 2022

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	342	863	847	95	75	215	107	308	78
Lane Group Flow (vph)	372	1023	1002	112	101	352	0	472	89
Turn Type	pm+pt			Perm	Perm		Perm		pt+ov
Protected Phases	1	3	3			4		4	1 4
Permitted Phases	3			3	4		4		
Detector Phases	1	3	3	3	4	4	4	4	1 4
Minimum Initial (s)	8.0	15.0	15.0	15.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	28.0	34.0	34.0	34.0	21.0	21.0	21.0	21.0	
Total Split (s)	28.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	64.0
Total Split (%)	28.0%	36.0%	36.0%	36.0%	36.0%	36.0%	36.0%	36.0%	64.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lead/Lag		Lead	Lead	Lead	Lag	Lag	Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Min	Min	Min	C-Max	C-Max	C-Max	C-Max	
v/c Ratio	0.91	1.02	2.30	0.21	1.11	0.59		1.72	0.10
Control Delay	52.3	67.6	613.4	5.9	163.4	32.4		363.5	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	52.3	67.6	613.4	5.9	163.4	32.4		363.5	7.4
Queue Length 50th (ft)	181	~377	~556	0	~74	181		~447	18
Queue Length 95th (ft)	#348	#507	#637	33	#137	211		#623	38
Internal Link Dist (ft)		340	414			412		311	
Turn Bay Length (ft)	225				50				100
Base Capacity (vph)	429	1004	436	521	91	598		275	869
Starvation Cap Reductn	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.87	1.02	2.30	0.21	1.11	0.59		1.72	0.10

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 4:NBSB, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Riverway & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	10	11	10	10	16	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	0.99			1.00	0.85	1.00	0.97			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00			0.99	1.00
Satd. Flow (prot)	1516	2995			3109	1343	1486	1846			1671	1439
Flt Permitted	0.12	1.00			0.89	1.00	0.18	1.00			0.51	1.00
Satd. Flow (perm)	192	2995			2769	1343	285	1846			859	1439
Volume (vph)	342	863	78	5	847	95	75	215	45	107	308	78
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.74	0.74	0.74	0.88	0.88	0.88
Adj. Flow (vph)	372	938	85	6	996	112	101	291	61	122	350	89
RTOR Reduction (vph)	0	7	0	0	0	75	0	7	0	0	0	6
Lane Group Flow (vph)	372	1016	0	0	1002	37	101	345	0	0	472	83
Confl. Bikes (#/hr)									4			87
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Turn Type	pm+pt					Perm	Perm			Perm		pt+ov
Protected Phases	1	3			3			4			4	1 4
Permitted Phases	3					3	4			4		
Actuated Green, G (s)	52.0	31.3			31.3	31.3	30.0	30.0			30.0	56.7
Effective Green, g (s)	56.0	33.3			33.3	33.3	32.0	32.0			32.0	58.7
Actuated g/C Ratio	0.56	0.33			0.33	0.33	0.32	0.32			0.32	0.59
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)	408	997			922	447	91	591			275	845
v/s Ratio Prot	c0.21	0.34						0.19				0.06
v/s Ratio Perm	0.30				c0.36	0.03	0.35				c0.55	
v/c Ratio	0.91	1.02			1.09	0.08	1.11	0.58			1.72	0.10
Uniform Delay, d1	27.4	33.4			33.4	22.9	34.0	28.4			34.0	9.0
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	23.9	33.5			56.1	0.0	127.1	4.2			337.3	0.0
Delay (s)	51.2	66.8			89.4	22.9	161.1	32.6			371.3	9.1
Level of Service	D	E			F	C	F	C			F	A
Approach Delay (s)		62.7			82.7			61.3			313.9	
Approach LOS		E			F			E			F	

Intersection Summary			
HCM Average Control Delay	108.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	109.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	ø3
Lane Configurations									
Volume (vph)	5	34	29	11	165	235	169	387	
Lane Group Flow (vph)	0	79	39	46	201	527	190	480	
Turn Type	Perm		Perm		Perm		Perm		
Protected Phases		4		4		1		1	3
Permitted Phases	4		4		1		1		
Detector Phases	4	4	4	4	1	1	1	1	
Minimum Initial (s)	8.0	8.0	8.0	8.0	6.0	6.0	6.0	6.0	4.0
Minimum Split (s)	13.0	13.0	13.0	13.0	11.0	11.0	11.0	11.0	20.0
Total Split (s)	25.0	25.0	25.0	25.0	75.0	75.0	75.0	75.0	20.0
Total Split (%)	20.8%	20.8%	20.8%	20.8%	62.5%	62.5%	62.5%	62.5%	17%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lead/Lag	Lag	Lag	Lag	Lag					Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					Yes
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	Ped
v/c Ratio		0.36	0.66	0.41	0.49	0.67	0.64	0.46	
Control Delay		33.3	95.6	32.7	8.8	8.9	27.4	13.0	
Queue Delay		0.0	0.0	0.0	0.5	2.1	0.0	1.1	
Total Delay		33.4	95.6	32.7	9.4	11.0	27.4	14.1	
Queue Length 50th (ft)		33	29	11	31	66	85	174	
Queue Length 95th (ft)		78	54	34	m43	m88	#236	287	
Internal Link Dist (ft)		21		145		263		412	
Turn Bay Length (ft)					70		90		
Base Capacity (vph)		289	82	144	408	785	298	1050	
Starvation Cap Reductn		0	0	0	44	136	0	338	
Spillback Cap Reductn		4	0	0	0	0	0	248	
Storage Cap Reductn		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.28	0.48	0.32	0.55	0.81	0.64	0.67	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 98 (82%), Referenced to phase 1:NBSB, Start of Green

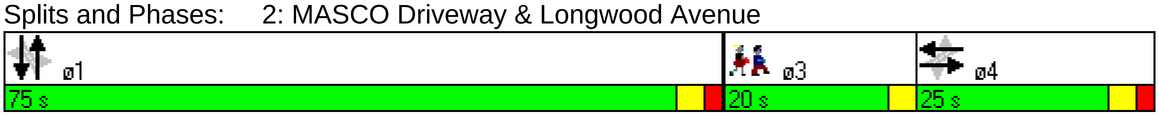
Natural Cycle: 90

Control Type: Actuated-Coordinated

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: MASCO Driveway & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	13	13	10	11	11	10	11	11
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.97		1.00	0.39		1.00	0.78		1.00	0.98	
Flpb, ped/bikes		0.97		0.35	1.00		1.00	1.00		0.80	1.00	
Frt		0.94		1.00	0.90		1.00	0.93		1.00	0.99	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1501		581	623		1485	1179		1197	1583	
Flt Permitted		0.98		0.59	1.00		0.42	1.00		0.39	1.00	
Satd. Flow (perm)		1481		363	623		657	1179		491	1583	
Volume (vph)	5	34	34	29	11	23	165	235	197	169	387	40
Peak-hour factor, PHF	0.92	0.92	0.92	0.75	0.75	0.75	0.82	0.82	0.82	0.89	0.89	0.89
Adj. Flow (vph)	5	37	37	39	15	31	201	287	240	190	435	45
RTOR Reduction (vph)	0	28	0	0	28	0	0	21	0	0	3	0
Lane Group Flow (vph)	0	51	0	39	18	0	201	506	0	190	477	0
Confl. Peds. (#/hr)	182		9	601		783	2		608	601		184
Confl. Bikes (#/hr)									18			85
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			1			1	
Permitted Phases	4			4			1			1		
Actuated Green, G (s)		12.5		12.5	12.5		77.5	77.5		77.5	77.5	
Effective Green, g (s)		13.5		13.5	13.5		78.5	78.5		78.5	78.5	
Actuated g/C Ratio		0.11		0.11	0.11		0.65	0.65		0.65	0.65	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		167		41	70		430	771		321	1036	
v/s Ratio Prot					0.03			c0.43			0.30	
v/s Ratio Perm		0.03		c0.11			0.31			0.39		
v/c Ratio		0.30		0.95	0.26		0.47	0.66		0.59	0.46	
Uniform Delay, d1		48.9		52.9	48.7		10.3	12.6		11.7	10.3	
Progression Factor		1.00		1.00	1.00		0.52	0.51		1.00	1.00	
Incremental Delay, d2		0.4		120.3	0.7		1.6	1.9		7.8	1.5	
Delay (s)		49.3		173.2	49.4		6.9	8.3		19.5	11.7	
Level of Service		D		F	D		A	A		B	B	
Approach Delay (s)		49.3			106.2			7.9			13.9	
Approach LOS		D			F			A			B	

Intersection Summary			
HCM Average Control Delay	18.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	28.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT	ø2
Lane Configurations									
Volume (vph)	224	486	256	433	5	847	491	582	
Lane Group Flow (vph)	241	528	288	523	0	991	571	759	
Turn Type	Perm		D.P+P		Perm		Perm		
Protected Phases		1	4	1 4		3		3	2
Permitted Phases	1		1		3		3		
Detector Phases	1	1	4	1 4	3	3	3	3	
Minimum Initial (s)	10.0	10.0	6.0		10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	22.0	22.0	11.0		22.0	22.0	22.0	22.0	30.0
Total Split (s)	35.0	35.0	15.0	50.0	40.0	40.0	40.0	40.0	30.0
Total Split (%)	29.2%	29.2%	12.5%	41.7%	33.3%	33.3%	33.3%	33.3%	25%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0	2.0	1.0
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	Max		Max	Max	Max	Max	None
v/c Ratio	4.46	0.66	1.17	0.45		1.67	0.83	0.71	
Control Delay	1612.8	44.6	137.0	22.1		334.7	32.1	39.5	
Queue Delay	0.0	0.0	0.0	0.8		0.0	0.0	0.0	
Total Delay	1612.8	44.6	137.0	22.9		334.7	32.1	39.5	
Queue Length 50th (ft)	~311	193	~189	154		~1186	248	281	
Queue Length 95th (ft)	#478	256	m#323	215		#1357	#427	361	
Internal Link Dist (ft)		395		231		322		416	
Turn Bay Length (ft)	125								
Base Capacity (vph)	54	794	246	1162		595	686	1073	
Starvation Cap Reductn	0	0	0	343		0	0	0	
Spillback Cap Reductn	0	0	0	0		0	0	0	
Storage Cap Reductn	0	0	0	0		0	0	0	
Reduced v/c Ratio	4.46	0.66	1.17	0.64		1.67	0.83	0.71	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 8 (7%), Referenced to phase 1:EBWB, Start of Green

Natural Cycle: 125

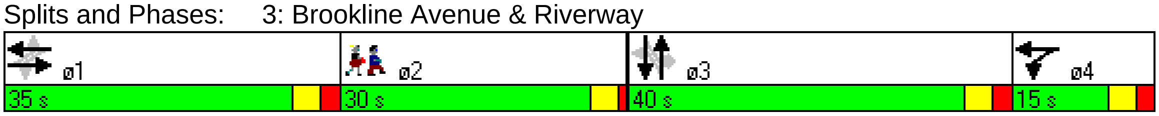
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Brookline Avenue & Riverway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	10	10	11	10	12	12	12	11	11	10
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	0.99			1.00	0.85		0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1540	3074		1472	3018			1709	1454		3035	
Flt Permitted	0.13	1.00		0.27	1.00			1.00	1.00		1.00	
Satd. Flow (perm)	215	3074		417	3018			1702	1454		3035	
Volume (vph)	224	486	5	256	433	32	5	847	491	0	582	101
Peak-hour factor, PHF	0.93	0.93	0.93	0.89	0.89	0.89	0.86	0.86	0.86	0.90	0.90	0.90
Adj. Flow (vph)	241	523	5	288	487	36	6	985	571	0	647	112
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	177	0	11	0
Lane Group Flow (vph)	241	528	0	288	519	0	0	991	394	0	748	0
Confl. Bikes (#/hr)			26									1
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	0%	0%	0%	1%	1%	1%
Turn Type	Perm			D.P+P			Perm		Perm	Perm		
Protected Phases		1		4	1 4			3			3	
Permitted Phases	1			1			3		3	3		
Actuated Green, G (s)	29.2	29.2		39.2	44.2			41.0	41.0		41.0	
Effective Green, g (s)	30.2	30.2		41.2	45.2			42.0	42.0		42.0	
Actuated g/C Ratio	0.25	0.25		0.34	0.38			0.35	0.35		0.35	
Clearance Time (s)	5.0	5.0		5.0				5.0	5.0		5.0	
Vehicle Extension (s)	2.0	2.0		2.0				2.0	2.0		2.0	
Lane Grp Cap (vph)	54	774		240	1137			596	509		1062	
v/s Ratio Prot		0.17		c0.11	0.17						0.25	
v/s Ratio Perm	c1.12			0.30				c0.58	0.27			
v/c Ratio	4.46	0.68		1.20	0.46			1.66	0.77		0.70	
Uniform Delay, d1	44.9	40.6		36.0	28.1			39.0	34.8		33.6	
Progression Factor	1.00	1.00		0.82	0.76			1.00	1.00		1.00	
Incremental Delay, d2	1600.2	4.8		121.6	1.3			305.6	11.0		3.9	
Delay (s)	1645.1	45.4		150.9	22.7			344.6	45.7		37.6	
Level of Service	F	D		F	C			F	D		D	
Approach Delay (s)		546.7			68.2			235.4			37.6	
Approach LOS		F			E			F			D	

Intersection Summary			
HCM Average Control Delay	223.5	HCM Level of Service	F
HCM Volume to Capacity ratio	2.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	36.8
Intersection Capacity Utilization	94.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	ø2
Lane Configurations										
Volume (vph)	16	717	152	215	438	147	68	16	137	
Lane Group Flow (vph)	0	824	171	224	489	173	118	0	212	
Turn Type	Perm		Perm	D.P+P		Perm		Perm		
Protected Phases		1		4	1 4		3		3	2
Permitted Phases	1		1	1		3		3		
Detector Phases	1	1	1	4	1 4	3	3	3	3	
Minimum Initial (s)	13.0	13.0	13.0	6.0		8.0	8.0	8.0	8.0	4.0
Minimum Split (s)	18.0	18.0	18.0	11.0		18.0	18.0	18.0	18.0	29.0
Total Split (s)	42.0	42.0	42.0	19.0	61.0	30.0	30.0	30.0	30.0	29.0
Total Split (%)	35.0%	35.0%	35.0%	15.8%	50.8%	25.0%	25.0%	25.0%	25.0%	24%
Yellow Time (s)	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lead	Lead	Lag		Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	Max		None	None	None	None	None
v/c Ratio		1.15	0.42	0.91	0.34	0.75	0.22		0.32	
Control Delay		103.5	20.1	67.9	22.8	59.3	28.5		32.5	
Queue Delay		27.9	0.8	0.0	0.0	0.0	0.0		0.1	
Total Delay		131.4	20.9	67.9	22.8	59.3	28.6		32.6	
Queue Length 50th (ft)		~399	65	125	113	98	44		94	
Queue Length 95th (ft)		#511	m90	m#236	134	#289	115		212	
Internal Link Dist (ft)		231			359		328		220	
Turn Bay Length (ft)			150			150				
Base Capacity (vph)		717	407	245	1430	230	540		661	
Starvation Cap Reductn		0	78	0	0	0	0		0	
Spillback Cap Reductn		38	0	0	35	0	39		47	
Storage Cap Reductn		0	0	0	0	0	0		0	
Reduced v/c Ratio		1.21	0.52	0.91	0.35	0.75	0.24		0.35	

Intersection Summary

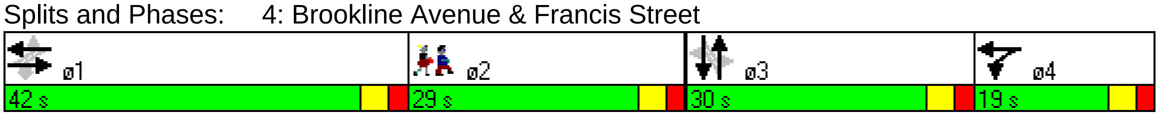
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 5 (4%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Brookline Avenue & Francis Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	14	10	10	12	14	11	11	11	16	16	16
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes		1.00	0.96	1.00	1.00		1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt		1.00	0.85	1.00	0.99		1.00	0.95			0.98	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		3394	1283	1417	3001		1468	1463			1860	
Flt Permitted		0.66	1.00	0.12	1.00		0.54	1.00			0.97	
Satd. Flow (perm)		2247	1283	175	3001		836	1463			1820	
Volume (vph)	16	717	152	215	438	32	147	68	32	16	137	32
Peak-hour factor, PHF	0.89	0.89	0.89	0.96	0.96	0.96	0.85	0.85	0.85	0.87	0.87	0.87
Adj. Flow (vph)	18	806	171	224	456	33	173	80	38	18	157	37
RTOR Reduction (vph)	0	0	0	0	4	0	0	11	0	0	5	0
Lane Group Flow (vph)	0	824	171	224	485	0	173	107	0	0	207	0
Confl. Bikes (#/hr)			12			1			4			9
Heavy Vehicles (%)	2%	2%	2%	7%	7%	7%	7%	7%	7%	1%	1%	1%
Turn Type	Perm		Perm	D.P+P			Perm			Perm		
Protected Phases		1		4	1 4			3			3	
Permitted Phases	1		1	1			3			3		
Actuated Green, G (s)		34.0	34.0	48.0	53.0		42.4	42.4			42.4	
Effective Green, g (s)		35.0	35.0	50.0	54.0		43.4	43.4			43.4	
Actuated g/C Ratio		0.29	0.29	0.42	0.45		0.36	0.36			0.36	
Clearance Time (s)		5.0	5.0	5.0			5.0	5.0			5.0	
Vehicle Extension (s)		2.0	2.0	2.0			2.0	2.0			2.0	
Lane Grp Cap (vph)		655	374	228	1350		302	529			658	
v/s Ratio Prot				c0.12	0.16			0.07				
v/s Ratio Perm		c0.37	0.13	0.29			c0.21				0.11	
v/c Ratio		1.26	0.46	0.98	0.36		0.57	0.20			0.31	
Uniform Delay, d1		42.5	34.7	33.4	21.6		30.8	26.4			27.6	
Progression Factor		0.59	0.55	1.44	1.14		1.00	1.00			1.00	
Incremental Delay, d2		124.1	2.6	45.3	0.5		1.6	0.1			0.1	
Delay (s)		149.2	21.6	93.2	25.2		32.5	26.4			27.7	
Level of Service		F	C	F	C		C	C			C	
Approach Delay (s)		127.3			46.5			30.0			27.7	
Approach LOS		F			D			C			C	

Intersection Summary			
HCM Average Control Delay	78.9	HCM Level of Service	E
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.6
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL	NBR	SBL	SBT	ø2
Lane Configurations								
Volume (vph)	943	74	646	68	74	38	11	
Lane Group Flow (vph)	2178	0	766	93	101	46	111	
Turn Type		D.P+P		D.Pm	custom	Perm		
Protected Phases	1	6	6				5	2
Permitted Phases		1	1	5	5	5		
Detector Phases	1	6	6	5	5	5	5	
Minimum Initial (s)	10.0	6.0	6.0	8.0	8.0	8.0	8.0	5.0
Minimum Split (s)	29.0	11.0	11.0	13.0	13.0	13.0	13.0	24.0
Total Split (s)	55.0	12.0	12.0	29.0	29.0	29.0	29.0	24.0
Total Split (%)	45.8%	10.0%	10.0%	24.2%	24.2%	24.2%	24.2%	20%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	Max	Max	None	None	None	None	None
v/c Ratio	1.77		0.76	0.72	0.38	0.22	0.39	
Control Delay	370.4		15.6	76.8	12.3	45.2	14.5	
Queue Delay	101.8		0.0	0.0	0.0	0.0	0.0	
Total Delay	472.2		15.6	76.8	12.3	45.2	14.5	
Queue Length 50th (ft)	~1346		51	70	0	32	9	
Queue Length 95th (ft)	481		m#102	95	25	59	48	
Internal Link Dist (ft)	359		347				176	
Turn Bay Length (ft)				150		100		
Base Capacity (vph)	1233		1014	189	337	307	374	
Starvation Cap Reductn	140		0	0	0	0	0	
Spillback Cap Reductn	5		0	0	0	0	0	
Storage Cap Reductn	0		0	0	0	0	0	
Reduced v/c Ratio	1.99		0.76	0.49	0.30	0.15	0.30	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 14 (12%), Referenced to phase 1:EBWB, Start of Green

Natural Cycle: 150

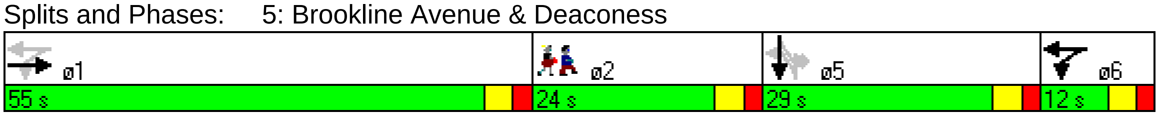
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Brookline Avenue & Deaconess



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	11	11	13	10	10	10	13	12	12
Total Lost time (s)		4.0			4.0		4.0		4.0	4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00		1.00	1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00		1.00	1.00	0.97	
Flpb, ped/bikes		1.00			1.00		1.00		1.00	1.00	1.00	
Frt		0.99			1.00		1.00		0.85	1.00	0.87	
Flt Protected		1.00			0.99		0.95		1.00	0.95	1.00	
Satd. Flow (prot)		2896			2893		1378		1233	1473	1415	
Flt Permitted		1.00			0.52		0.57		1.00	0.95	1.00	
Satd. Flow (perm)		2896			1526		834		1233	1473	1415	
Volume (vph)	0	943	37	74	646	0	68	0	74	38	11	81
Peak-hour factor, PHF	0.45	0.45	0.45	0.94	0.94	0.94	0.73	0.73	0.73	0.83	0.83	0.83
Adj. Flow (vph)	0	2096	82	79	687	0	93	0	101	46	13	98
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	87	0	84	0
Lane Group Flow (vph)	0	2176	0	0	766	0	93	0	14	46	27	0
Confl. Bikes (#/hr)			8			6						12
Heavy Vehicles (%)	4%	4%	4%	8%	8%	8%	10%	10%	10%	2%	2%	2%
Parking (#/hr)			2							1		
Turn Type				D.P+P			D.Pm		custom	Perm		
Protected Phases		1		6	6						5	
Permitted Phases				1	1		5		5	5		
Actuated Green, G (s)		50.0			64.9		16.1		16.1	16.1	16.1	
Effective Green, g (s)		51.0			66.9		17.1		17.1	17.1	17.1	
Actuated g/C Ratio		0.42			0.56		0.14		0.14	0.14	0.14	
Clearance Time (s)		5.0			5.0		5.0		5.0	5.0	5.0	
Vehicle Extension (s)		2.0			2.0		2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)		1231			1032		119		176	210	202	
v/s Ratio Prot		c0.75			c0.10						0.02	
v/s Ratio Perm					0.32		c0.11		0.01	0.03		
v/c Ratio		1.77			0.74		0.78		0.08	0.22	0.13	
Uniform Delay, d1		34.5			20.0		49.6		44.6	45.5	45.0	
Progression Factor		0.70			0.64		1.00		1.00	1.00	1.00	
Incremental Delay, d2		348.4			2.7		25.7		0.1	0.2	0.1	
Delay (s)		372.4			15.5		75.4		44.7	45.7	45.1	
Level of Service		F			B		E		D	D	D	
Approach Delay (s)		372.4			15.5			59.4			45.3	
Approach LOS		F			B			E			D	

Intersection Summary			
HCM Average Control Delay	255.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	36.0
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	ø2
Lane Configurations										
Volume (vph)	55	783	180	606	76	273	180	129	269	
Lane Group Flow (vph)	58	872	186	906	103	369	243	145	350	
Turn Type	Perm		D.P+P		Perm		pt+ov	Perm		
Protected Phases		1	4	1 4		3	3 4		3	2
Permitted Phases	1		1		3			3		
Detector Phases	1	1	4	1 4	3	3	3 4	3	3	
Minimum Initial (s)	10.0	10.0	6.0		8.0	8.0		8.0	8.0	7.0
Minimum Split (s)	15.0	15.0	11.0		13.0	13.0		13.0	13.0	25.0
Total Split (s)	51.0	51.0	15.0	66.0	29.0	29.0	44.0	29.0	29.0	25.0
Total Split (%)	42.5%	42.5%	12.5%	55.0%	24.2%	24.2%	36.7%	24.2%	24.2%	21%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lead/Lag	Lead	Lead	Lag		Lead	Lead		Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	C-Max	C-Max	None		None	None		None	None	Ped
v/c Ratio	1.12	0.72	0.75	0.60	1.94	1.12	0.54	3.09	1.22	
Control Delay	94.5	4.3	36.6	22.4	503.0	117.6	27.6	1004.0	157.4	
Queue Delay	0.0	7.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	94.5	11.6	36.6	22.4	503.0	117.6	27.6	1004.0	157.4	
Queue Length 50th (ft)	~52	56	77	249	~94	~335	136	~179	~335	
Queue Length 95th (ft)	m5	m23	#154	315	m#151	#370	142	m#290	#502	
Internal Link Dist (ft)		347		735		335			263	
Turn Bay Length (ft)	70		350		150			170		
Base Capacity (vph)	52	1206	249	1512	53	329	448	47	288	
Starvation Cap Reductn	0	290	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.12	0.95	0.75	0.60	1.94	1.12	0.54	3.09	1.22	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 30 (25%), Referenced to phase 1:EBWB, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Brookline Avenue & Longwood Avenue

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	11	10	10	10	10	10	10	10
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	*0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.95		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1501	3078		1501	2928		1501	1580	1343	1342	1380	
Flt Permitted	0.09	1.00		0.18	1.00		0.16	1.00	1.00	0.16	1.00	
Satd. Flow (perm)	134	3078		285	2928		253	1580	1343	226	1380	
Volume (vph)	55	783	46	180	606	273	76	273	180	129	269	43
Peak-hour factor, PHF	0.95	0.95	0.95	0.97	0.97	0.97	0.74	0.74	0.74	0.89	0.89	0.89
Adj. Flow (vph)	58	824	48	186	625	281	103	369	243	145	302	48
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	58	872	0	186	906	0	103	369	243	145	350	0
Confl. Bikes (#/hr)			39			28			4			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	13%	13%	13%
Turn Type	Perm			D.P+P			Perm		pt+ov	Perm		
Protected Phases		1		4	1 4			3	3 4		3	
Permitted Phases	1			1			3			3		
Actuated Green, G (s)	46.0	46.0		56.0	61.0		24.0	24.0	39.0	24.0	24.0	
Effective Green, g (s)	47.0	47.0		58.0	62.0		25.0	25.0	40.0	25.0	25.0	
Actuated g/C Ratio	0.39	0.39		0.48	0.52		0.21	0.21	0.33	0.21	0.21	
Clearance Time (s)	5.0	5.0		5.0			5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	2.0		2.0			2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	52	1206		249	1513		53	329	448	47	288	
v/s Ratio Prot		0.28		c0.07	0.31			0.23	0.18		0.25	
v/s Ratio Perm	c0.43			0.29			0.41			c0.64		
v/c Ratio	1.12	0.72		0.75	0.60		1.94	1.12	0.54	3.09	1.22	
Uniform Delay, d1	36.5	31.0		21.2	20.3		47.5	47.5	32.6	47.5	47.5	
Progression Factor	0.19	0.13		1.00	1.00		0.72	0.72	0.71	0.82	0.81	
Incremental Delay, d2	73.3	0.3		10.2	0.4		478.6	83.5	0.6	986.8	122.1	
Delay (s)	80.1	4.3		31.3	20.7		512.6	117.8	23.6	1025.6	160.6	
Level of Service	F	A		C	C		F	F	C	F	F	
Approach Delay (s)		9.0			22.5			142.7			414.0	
Approach LOS		A			C			F			F	

Intersection Summary			
HCM Average Control Delay	105.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	37.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Configurations					
Volume (vph)	51	49	268	137	215
Lane Group Flow (vph)	95	241	486	149	308
Sign Control	Stop	Stop	Free		Free

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	32	51	5	89	49	84	11	268	168	137	215	68
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	35	55	5	97	53	91	12	291	183	149	234	74
Pedestrians		225			324			225			328	
Lane Width (ft)		13.0			12.0			14.0			13.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		20			27			22			30	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											408	
pX, platoon unblocked												
vC, conflicting volume	1646	1615	721	1520	1561	1035	533			798		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1646	1615	721	1520	1561	1035	533			798		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	98	0	0	37	99			75		
cM capacity (veh/h)	0	45	266	0	48	145	825			602		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	96	241	486	149	308
Volume Left	35	97	12	149	0
Volume Right	5	91	183	0	74
cSH	0	0	825	602	1700
Volume to Capacity	Err	Err	0.01	0.25	0.18
Queue Length 95th (ft)	Err	Err	1	24	0
Control Delay (s)	Err	Err	0.4	12.9	0.0
Lane LOS	F	F	A	B	
Approach Delay (s)	Err	Err	0.4	4.2	
Approach LOS	F	F			

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBL
Lane Configurations			
Volume (vph)	331	85	26
Lane Group Flow (vph)	414	134	49
Sign Control	Free	Free	Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	331	41	37	85	26	21
Peak Hour Factor	0.90	0.90	0.91	0.91	0.96	0.96
Hourly flow rate (vph)	368	46	41	93	27	22
Pedestrians	27			197	170	
Lane Width (ft)	12.0			12.0	13.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	2			16	15	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			583		762	758
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			583		762	758
tC, single (s)			4.2		6.6	6.4
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			95		90	92
cM capacity (veh/h)			807		279	274

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	413	134	49
Volume Left	0	41	27
Volume Right	46	0	22
cSH	1700	807	276
Volume to Capacity	0.24	0.05	0.18
Queue Length 95th (ft)	0	4	16
Control Delay (s)	0.0	3.3	20.8
Lane LOS		A	C
Approach Delay (s)	0.0	3.3	20.8
Approach LOS			C

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Volume (vph)	193	75	11	0
Lane Group Flow (vph)	469	206	50	96
Sign Control	Stop	Stop	Stop	Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	173	193	5	5	75	68	11	11	5	32	0	37
Peak Hour Factor	0.77	0.86	0.25	0.25	0.88	0.67	0.50	0.50	0.79	0.65	0.25	0.79
Hourly flow rate (vph)	225	224	20	20	85	101	22	22	6	49	0	47

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	469	207	50	96
Volume Left (vph)	225	20	22	49
Volume Right (vph)	20	101	6	47
Hadj (s)	0.12	-0.12	0.06	-0.17
Departure Headway (s)	4.7	4.8	5.7	5.4
Degree Utilization, x	0.61	0.27	0.08	0.14
Capacity (veh/h)	741	715	537	582
Control Delay (s)	14.8	9.6	9.2	9.3
Approach Delay (s)	14.8	9.6	9.2	9.3
Approach LOS	B	A	A	A

Intersection Summary			
Delay	12.5		
HCM Level of Service	B		
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	ø2
Lane Configurations											
Volume (vph)	94	53	73	42	93	63	396	127	299	54	
Lane Group Flow (vph)	0	302	0	131	106	0	526	146	344	62	
Turn Type	Perm		Perm		Perm	Perm		pm+pt		Perm	
Protected Phases		3		3			1	4	1		2
Permitted Phases	3		3		3	1		1		1	
Detector Phases	3	3	3	3	3	1	1	4	1	1	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0	10.0	4.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	15.0	15.0	12.0	15.0	15.0	21.0
Total Split (s)	37.0	37.0	37.0	37.0	37.0	50.0	50.0	12.0	50.0	50.0	21.0
Total Split (%)	30.8%	30.8%	30.8%	30.8%	30.8%	41.7%	41.7%	10.0%	41.7%	41.7%	18%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lead/Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	None
v/c Ratio		0.75		0.41	0.21		0.60	0.36	0.53	0.11	
Control Delay		41.4		31.5	4.8		28.1	20.7	29.8	9.6	
Queue Delay		0.0		0.0	0.0		0.9	0.0	0.7	0.0	
Total Delay		41.4		31.5	4.8		29.0	20.7	30.5	9.6	
Queue Length 50th (ft)		184		75	0		123	57	161	3	
Queue Length 95th (ft)		223		111	31		172	m68	m167	m4	
Internal Link Dist (ft)		370		168			243		335		
Turn Bay Length (ft)								75			
Base Capacity (vph)		413		327	511		872	403	648	544	
Starvation Cap Reductn		0		0	0		137	0	103	0	
Spillback Cap Reductn		0		0	0		0	0	11	0	
Storage Cap Reductn		0		0	0		0	0	0	0	
Reduced v/c Ratio		0.73		0.40	0.21		0.72	0.36	0.63	0.11	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

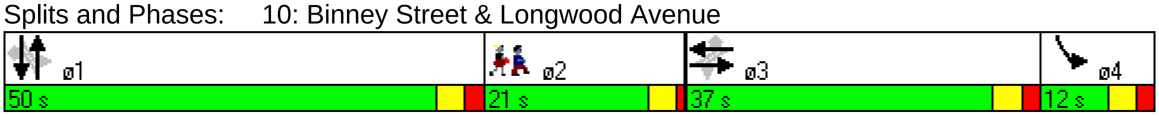
Offset: 89 (74%), Referenced to phase 1:NBSB, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Binney Street & Longwood Avenue



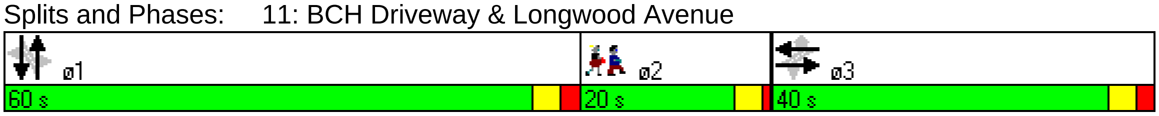
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	11	11	10	10	11	11	10	11	10
Total Lost time (s)		4.0			4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor		1.00			1.00	1.00		0.95		1.00	1.00	1.00
Frpb, ped/bikes		1.00			1.00	1.00		1.00		1.00	1.00	0.96
Flpb, ped/bikes		1.00			1.00	1.00		1.00		1.00	1.00	1.00
Frt		0.94			1.00	0.85		0.99		1.00	1.00	0.85
Flt Protected		0.98			0.97	1.00		0.99		0.95	1.00	1.00
Satd. Flow (prot)		1412			1457	1233		2634		1404	1531	1204
Flt Permitted		0.82			0.65	1.00		0.80		0.38	1.00	1.00
Satd. Flow (perm)		1179			973	1233		2119		561	1531	1204
Volume (vph)	94	53	104	73	42	93	63	396	26	127	299	54
Peak-hour factor, PHF	0.83	0.83	0.83	0.88	0.88	0.88	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	113	64	125	83	48	106	68	430	28	146	344	62
RTOR Reduction (vph)	0	19	0	0	0	69	0	3	0	0	0	36
Lane Group Flow (vph)	0	283	0	0	131	37	0	523	0	146	344	26
Confl. Bikes (#/hr)									6			25
Heavy Vehicles (%)	16%	16%	16%	10%	10%	10%	15%	15%	15%	8%	8%	8%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0
Turn Type	Perm			Perm		Perm	Perm			pm+pt		Perm
Protected Phases		3			3			1		4	1	
Permitted Phases	3			3		3	1			1		1
Actuated Green, G (s)		41.1			41.1	41.1		49.8		63.9	49.8	49.8
Effective Green, g (s)		42.1			42.1	42.1		50.8		65.9	50.8	50.8
Actuated g/C Ratio		0.35			0.35	0.35		0.42		0.55	0.42	0.42
Clearance Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)		2.0			2.0	2.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		414			341	433		897		414	648	510
v/s Ratio Prot										c0.04	0.22	
v/s Ratio Perm		c0.24			0.13	0.03		c0.25		0.15		0.02
v/c Ratio		0.68			0.38	0.09		0.58		0.35	0.53	0.05
Uniform Delay, d1		33.3			29.2	26.1		26.5		14.0	25.7	20.4
Progression Factor		1.00			1.00	1.00		0.90		1.34	1.04	1.58
Incremental Delay, d2		3.7			0.3	0.0		2.2		0.1	0.8	0.1
Delay (s)		37.0			29.5	26.1		26.2		18.8	27.6	32.4
Level of Service		D			C	C		C		B	C	C
Approach Delay (s)		37.0			28.0			26.2			25.8	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	28.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	ø2
Lane Configurations										
Volume (vph)	32	26	32	11	113	26	325	80	394	
Lane Group Flow (vph)	0	107	0	62	164	28	417	89	485	
Turn Type	Perm		Perm		Perm	Perm		Perm		
Protected Phases		3		3			1		1	2
Permitted Phases	3		3		3	1		1		
Detector Phases	3	3	3	3	3	1	1	1	1	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	20.0
Total Split (s)	40.0	40.0	40.0	40.0	40.0	60.0	60.0	60.0	60.0	20.0
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%	50.0%	50.0%	50.0%	50.0%	17%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lead/Lag						Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	None
v/c Ratio		0.45		0.33	0.79	0.11	0.52	0.25	0.53	
Control Delay		48.2		45.3	72.1	14.5	17.9	14.1	15.1	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.1	
Total Delay		48.2		45.3	72.1	14.5	17.9	14.1	15.2	
Queue Length 50th (ft)		75		42	123	9	190	28	157	
Queue Length 95th (ft)		103		58	134	30	355	m49	204	
Internal Link Dist (ft)		298		1163			436		243	
Turn Bay Length (ft)						90				
Base Capacity (vph)		401		315	347	261	804	350	911	
Starvation Cap Reductn		0		0	0	0	0	0	42	
Spillback Cap Reductn		0		0	0	0	0	0	0	
Storage Cap Reductn		0		0	0	0	0	0	0	
Reduced v/c Ratio		0.27		0.20	0.47	0.11	0.52	0.25	0.56	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 85 (71%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: BCH Driveway & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Lane Width	13	13	13	10	10	10	10	10	10	12	12	12
Total Lost time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.96			1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected		0.98			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1487			1311	1156	1201	1228		1346	1392	
Flt Permitted		0.87			0.74	1.00	0.41	1.00		0.46	1.00	
Satd. Flow (perm)		1318			1012	1156	520	1228		649	1392	
Volume (vph)	32	26	26	32	11	113	26	325	63	80	394	42
Peak-hour factor, PHF	0.79	0.79	0.79	0.69	0.69	0.69	0.93	0.93	0.93	0.90	0.90	0.90
Adj. Flow (vph)	41	33	33	46	16	164	28	349	68	89	438	47
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	107	0	0	62	164	28	417	0	89	485	0
Confl. Bikes (#/hr)									7			15
Heavy Vehicles (%)	0%	0%	0%	5%	5%	5%	13%	13%	13%	8%	8%	8%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		3			3			1			1	
Permitted Phases	3			3		3	1			1		
Actuated Green, G (s)		20.4			20.4	20.4	76.0	76.0		76.0	76.0	
Effective Green, g (s)		21.4			21.4	21.4	77.0	77.0		77.0	77.0	
Actuated g/C Ratio		0.18			0.18	0.18	0.64	0.64		0.64	0.64	
Clearance Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		235			180	206	334	788		416	893	
v/s Ratio Prot								0.34			c0.35	
v/s Ratio Perm		0.08			0.06	c0.14	0.05			0.14		
v/c Ratio		0.46			0.34	0.80	0.08	0.53		0.21	0.54	
Uniform Delay, d1		44.1			43.2	47.2	8.1	11.7		8.9	11.8	
Progression Factor		1.00			1.00	1.00	1.00	1.00		0.91	0.85	
Incremental Delay, d2		0.5			0.4	17.7	0.5	2.5		1.0	2.0	
Delay (s)		44.6			43.6	64.9	8.6	14.2		9.1	12.1	
Level of Service		D			D	E	A	B		A	B	
Approach Delay (s)		44.6			59.1			13.9			11.6	
Approach LOS		D			E			B			B	

Intersection Summary			
HCM Average Control Delay	22.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.6
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBT	SBT
Lane Configurations		
Volume (vph)	279	296
Lane Group Flow (vph)	470	480
Sign Control	Free	Free

Intersection Summary
Control Type: Unsignalized

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	279	154	145	296	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	303	167	158	322	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	750			704		
pX, platoon unblocked						
vC, conflicting volume			471		863	387
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			471		863	387
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			86		100	100
cM capacity (veh/h)			1087		251	611

Direction, Lane #	NB 1	SB 1	SB 2
Volume Total	471	265	214
Volume Left	0	158	0
Volume Right	167	0	0
cSH	1700	1087	1700
Volume to Capacity	0.28	0.14	0.13
Queue Length 95th (ft)	0	13	0
Control Delay (s)	0.0	5.8	0.0
Lane LOS		A	
Approach Delay (s)	0.0	3.2	
Approach LOS			

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	SBT
Lane Configurations				
Volume (vph)	94	130	279	441
Lane Group Flow (vph)	131	181	321	630
Sign Control	Stop		Free	Free

Intersection Summary
Control Type: Unsignalized

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	94	130	279	0	0	441
Peak Hour Factor	0.72	0.72	0.87	0.87	0.70	0.70
Hourly flow rate (vph)	131	181	321	0	0	630
Pedestrians			279			473
Lane Width (ft)			12.0			11.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			23			36
Right turn flare (veh)		4				
Median type	None					
Median storage veh)						
Upstream signal (ft)			938			516
pX, platoon unblocked						
vC, conflicting volume	915	794			321	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	915	794			321	
tC, single (s)	7.1	7.2			4.3	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.3	
p0 queue free %	32	8			100	
cM capacity (veh/h)	193	196			1180	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	311	321	315	315
Volume Left	131	0	0	0
Volume Right	181	0	0	0
cSH	337	1700	1700	1700
Volume to Capacity	0.92	0.19	0.19	0.19
Queue Length 95th (ft)	232	0	0	0
Control Delay (s)	78.6	0.0	0.0	0.0
Lane LOS	F			
Approach Delay (s)	78.6	0.0	0.0	
Approach LOS	F			

Intersection Summary			
Average Delay	19.4		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations					
Volume (vph)	68	163	451	160	62
Lane Group Flow (vph)	119	286	635	225	112
Sign Control		Free	Free		Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	68	163	451	160	62	19
Peak Hour Factor	0.57	0.57	0.71	0.71	0.72	0.72
Hourly flow rate (vph)	119	286	635	225	86	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	861				1160	635
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	861				1160	635
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	84				53	95
cM capacity (veh/h)	740				183	482

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	119	286	635	225	112
Volume Left	119	0	0	0	86
Volume Right	0	0	0	225	26
cSH	740	1700	1700	1700	214
Volume to Capacity	0.16	0.17	0.37	0.13	0.53
Queue Length 95th (ft)	14	0	0	0	68
Control Delay (s)	10.8	0.0	0.0	0.0	39.0
Lane LOS	B				E
Approach Delay (s)	3.2		0.0		39.0
Approach LOS					E

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	80	636	105	489	32	329	145	134
Lane Group Flow (vph)	108	801	124	871	0	563	184	237
Turn Type	Prot		Prot		Perm		Perm	
Protected Phases	1	6	5	2		8		4
Permitted Phases					8		4	
Detector Phases	1	6	5	2	8	8	4	4
Minimum Initial (s)	4.0	10.0	4.0	10.0	4.0	4.0	4.0	4.0
Minimum Split (s)	15.0	19.0	15.0	19.0	15.0	15.0	15.0	15.0
Total Split (s)	19.0	48.0	19.0	48.0	33.0	33.0	33.0	33.0
Total Split (%)	19.0%	48.0%	19.0%	48.0%	33.0%	33.0%	33.0%	33.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	None	C-Max	Max	Max	Max	Max
v/c Ratio	0.60	0.61	0.66	0.71		1.35	2.33	0.60
Control Delay	55.1	23.4	58.2	25.7		202.5	656.9	38.2
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	55.1	23.4	58.2	25.7		202.5	656.9	38.2
Queue Length 50th (ft)	65	203	75	237		~472	~193	130
Queue Length 95th (ft)	111	242	134	322		#423	#282	179
Internal Link Dist (ft)		1220		578		409		130
Turn Bay Length (ft)	115		85					
Base Capacity (vph)	214	1309	211	1223		418	79	393
Starvation Cap Reductn	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0
Reduced v/c Ratio	0.50	0.61	0.59	0.71		1.35	2.33	0.60

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 40 (40%), Referenced to phase 2:WBT and 6:EBT, Start of Green

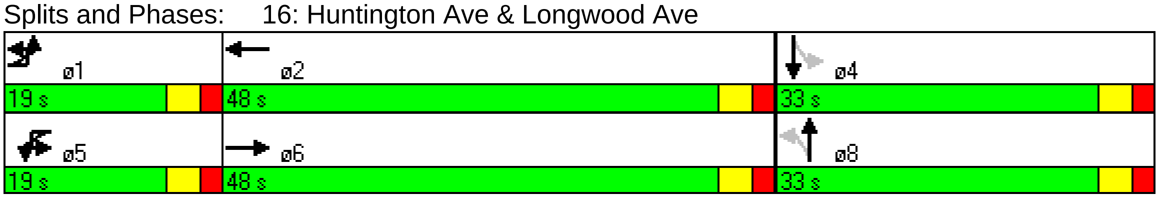
Natural Cycle: 90

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 16: Huntington Ave & Longwood Ave



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	11	10	10	11	11	16	16	16	10
Total Lost time (s)		4.0	4.0			4.0	4.0			4.0		4.0
Lane Util. Factor		1.00	0.95			1.00	0.95			1.00		1.00
Frpb, ped/bikes		1.00	0.98			1.00	0.91			0.99		1.00
Flpb, ped/bikes		1.00	1.00			1.00	1.00			0.99		1.00
Frt		1.00	0.99			1.00	0.94			1.00		1.00
Flt Protected		0.95	1.00			0.95	1.00			1.00		0.95
Satd. Flow (prot)		1428	2863			1409	2506			1552		1391
Flt Permitted		0.95	1.00			0.95	1.00			0.93		0.19
Satd. Flow (perm)		1428	2863			1409	2506			1443		273
Volume (vph)	11	80	636	37	5	105	489	287	32	329	11	145
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.89	0.89	0.89	0.89	0.66	0.66	0.66	0.79
Adj. Flow (vph)	13	95	757	44	6	118	549	322	48	498	17	184
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	108	801	0	0	124	871	0	0	563	0	184
Confl. Peds. (#/hr)		70		89		89		70	57		374	374
Confl. Bikes (#/hr)				10				5			7	
Heavy Vehicles (%)	0%	7%	7%	7%	0%	8%	8%	8%	9%	9%	9%	9%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	0	0	0	0
Parking (#/hr)									1	1	1	
Turn Type	Prot	Prot			Prot	Prot			Perm			Perm
Protected Phases	1	1	6		5	5	2			8		
Permitted Phases									8			4
Actuated Green, G (s)		10.2	44.7			12.3	46.8			28.0		28.0
Effective Green, g (s)		11.2	45.7			13.3	47.8			29.0		29.0
Actuated g/C Ratio		0.11	0.46			0.13	0.48			0.29		0.29
Clearance Time (s)		5.0	5.0			5.0	5.0			5.0		5.0
Vehicle Extension (s)		3.0	3.0			3.0	3.0			3.0		3.0
Lane Grp Cap (vph)		160	1308			187	1198			418		79
v/s Ratio Prot		0.08	0.28			c0.09	c0.35					
v/s Ratio Perm										0.39		c0.67
v/c Ratio		0.68	0.61			0.66	0.73			1.35		2.33
Uniform Delay, d1		42.7	20.5			41.2	20.9			35.5		35.5
Progression Factor		1.00	1.00			1.00	1.00			1.00		1.00
Incremental Delay, d2		10.7	2.1			8.5	3.9			171.3		635.7
Delay (s)		53.4	22.6			49.8	24.8			206.8		671.2
Level of Service		D	C			D	C			F		F
Approach Delay (s)			26.3				27.9			206.8		
Approach LOS			C				C			F		

Intersection Summary			
HCM Average Control Delay	104.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Lane Width	10	10
Total Lost time (s)	4.0	
Lane Util. Factor	1.00	
Frpb, ped/bikes	0.97	
Flpb, ped/bikes	1.00	
Frt	0.96	
Flt Protected	1.00	
Satd. Flow (prot)	1355	
Flt Permitted	1.00	
Satd. Flow (perm)	1355	
Volume (vph)	134	53
Peak-hour factor, PHF	0.79	0.79
Adj. Flow (vph)	170	67
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	237	0
Confl. Peds. (#/hr)		57
Confl. Bikes (#/hr)		4
Heavy Vehicles (%)	9%	9%
Bus Blockages (#/hr)	0	0
Parking (#/hr)		
Turn Type		
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	28.0	
Effective Green, g (s)	29.0	
Actuated g/C Ratio	0.29	
Clearance Time (s)	5.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	393	
v/s Ratio Prot	0.17	
v/s Ratio Perm		
v/c Ratio	0.60	
Uniform Delay, d1	30.5	
Progression Factor	1.00	
Incremental Delay, d2	6.7	
Delay (s)	37.3	
Level of Service	D	
Approach Delay (s)	314.3	
Approach LOS	F	

Intersection Summary

Lane Group	EBT	WBT	NBL
Lane Configurations			
Volume (vph)	909	921	3
Lane Group Flow (vph)	1017	1129	32
Sign Control	Free	Free	Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	909	57	16	921	3	16
Peak Hour Factor	0.95	0.95	0.83	0.83	0.59	0.59
Hourly flow rate (vph)	957	60	19	1110	5	27
Pedestrians					16	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					1	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	494					
pX, platoon unblocked			0.72		0.72	0.72
vC, conflicting volume			1033		1411	524
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			659		1183	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		96	97
cM capacity (veh/h)			663		128	776

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	638	379	241	444	444	32
Volume Left	0	0	19	0	0	5
Volume Right	0	60	0	0	0	27
cSH	1700	1700	663	1700	1700	431
Volume to Capacity	0.38	0.22	0.03	0.26	0.26	0.07
Queue Length 95th (ft)	0	0	2	0	0	6
Control Delay (s)	0.0	0.0	1.2	0.0	0.0	14.0
Lane LOS			A			B
Approach Delay (s)	0.0		0.3			14.0
Approach LOS						B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group
Lane Configurations
Volume (vph)
Lane Group Flow (vph)
Sign Control

Intersection Summary
Control Type: Unsignalized

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	0	0	0	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085

Direction, Lane #	WB 1	NE 1
Volume Total	0	0
Volume Left	0	0
Volume Right	0	0
cSH	1700	1700
Volume to Capacity	0.00	0.00
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		A
Approach Delay (s)	0.0	0.0
Approach LOS		A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT
Lane Configurations		
Volume (vph)	491	332
Lane Group Flow (vph)	916	487
Sign Control	Free	Free

Intersection Summary
Control Type: Unsignalized

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	491	205	53	332
Peak Hour Factor	0.25	0.25	0.76	0.76	0.79	0.79
Hourly flow rate (vph)	0	0	646	270	67	420
Pedestrians	421					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			210			1244
pX, platoon unblocked	0.72	0.72			0.72	
vC, conflicting volume	1546	1202			1337	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1757	1280			1467	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	100	100			78	
cM capacity (veh/h)	44	115			312	

Direction, Lane #	NB 1	SB 1	SB 2
Volume Total	916	207	280
Volume Left	0	67	0
Volume Right	270	0	0
cSH	1700	312	1700
Volume to Capacity	0.54	0.22	0.16
Queue Length 95th (ft)	0	20	0
Control Delay (s)	0.0	9.5	0.0
Lane LOS		A	
Approach Delay (s)	0.0	4.0	
Approach LOS			

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	259	565	1239	148	119	328	58	212	189
Lane Group Flow (vph)	270	596	1318	157	134	458	0	293	205
Turn Type	pm+pt			Perm	Perm		Perm		pt+ov
Protected Phases	1	3	3			4		4	1 4
Permitted Phases	3			3	4		4		
Detector Phases	1	3	3	3	4	4	4	4	1 4
Minimum Initial (s)	8.0	15.0	15.0	15.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	28.0	34.0	34.0	34.0	21.0	21.0	21.0	21.0	
Total Split (s)	28.0	34.0	34.0	34.0	38.0	38.0	38.0	38.0	66.0
Total Split (%)	28.0%	34.0%	34.0%	34.0%	38.0%	38.0%	38.0%	38.0%	66.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lead/Lag		Lead	Lead	Lead	Lag	Lag	Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Min	Min	Min	C-Max	C-Max	C-Max	C-Max	
v/c Ratio	0.69	0.60	1.29	0.30	0.58	0.72		0.97	0.24
Control Delay	29.3	32.3	167.5	9.0	38.7	35.4		78.7	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.7		6.6	0.0
Total Delay	29.3	32.3	167.5	9.0	38.7	36.1		85.2	9.7
Queue Length 50th (ft)	106	173	~594	13	70	246		182	52
Queue Length 95th (ft)	195	234	#727	62	136	356		#353	87
Internal Link Dist (ft)		340	414			412		311	
Turn Bay Length (ft)	225				50				100
Base Capacity (vph)	429	987	1024	519	233	640		303	902
Starvation Cap Reductn	0	0	0	0	0	40		0	0
Spillback Cap Reductn	0	0	0	0	0	0		9	0
Storage Cap Reductn	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.63	0.60	1.29	0.30	0.58	0.76		1.00	0.23

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 4:NBSB, Start of Green

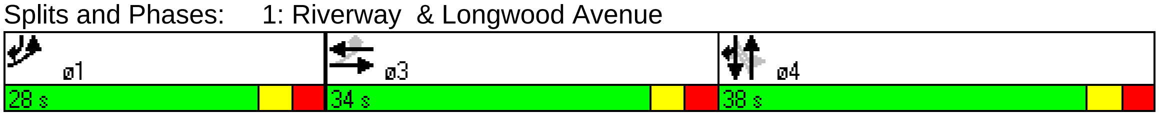
Natural Cycle: 135

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Riverway & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	10	11	10	10	16	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00			1.00	0.85	1.00	0.97			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00			0.99	1.00
Satd. Flow (prot)	1516	3026			3141	1328	1516	1855			1692	1454
Flt Permitted	0.12	1.00			1.00	1.00	0.43	1.00			0.52	1.00
Satd. Flow (perm)	196	3026			3141	1328	686	1855			891	1454
Volume (vph)	259	565	7	0	1239	148	119	328	79	58	212	189
Peak-hour factor, PHF	0.96	0.96	0.96	0.94	0.94	0.94	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	270	589	7	0	1318	157	134	369	89	63	230	205
RTOR Reduction (vph)	0	1	0	0	0	86	0	9	0	0	0	1
Lane Group Flow (vph)	270	595	0	0	1318	71	134	449	0	0	293	204
Confl. Bikes (#/hr)			4			1			91			20
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt					Perm	Perm			Perm		pt+ov
Protected Phases	1	3			3			4			4	1 4
Permitted Phases	3					3	4			4		
Actuated Green, G (s)	50.0	30.6			30.6	30.6	32.0	32.0			32.0	57.4
Effective Green, g (s)	54.0	32.6			32.6	32.6	34.0	34.0			34.0	59.4
Actuated g/C Ratio	0.54	0.33			0.33	0.33	0.34	0.34			0.34	0.59
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)	388	986			1024	433	233	631			303	864
v/s Ratio Prot	c0.15	0.20			c0.42			0.24				0.14
v/s Ratio Perm	0.23					0.05	0.20				c0.33	
v/c Ratio	0.70	0.60			1.29	0.16	0.58	0.71			0.97	0.24
Uniform Delay, d1	37.6	28.3			33.7	24.0	27.1	28.7			32.4	9.6
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	4.3	0.7			136.6	0.1	9.9	6.7			44.0	0.1
Delay (s)	41.9	29.0			170.3	24.1	37.0	35.5			76.4	9.6
Level of Service	D	C			F	C	D	D			E	A
Approach Delay (s)		33.0			154.8			35.8			48.9	
Approach LOS		C			F			D			D	

Intersection Summary			
HCM Average Control Delay	88.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.8%	ICU Level of Service	G
Analysis Period (min)	15		

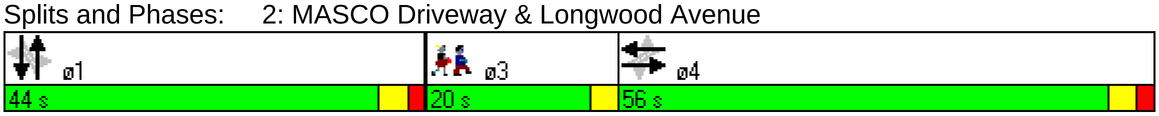
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	ø3
Lane Configurations									
Volume (vph)	10	10	129	87	94	316	33	306	
Lane Group Flow (vph)	0	500	157	249	107	410	39	380	
Turn Type	Perm		Perm		Perm		Perm		
Protected Phases		4		4		1		1	3
Permitted Phases	4		4		1		1		
Detector Phases	4	4	4	4	1	1	1	1	
Minimum Initial (s)	8.0	8.0	8.0	8.0	6.0	6.0	6.0	6.0	4.0
Minimum Split (s)	13.0	13.0	13.0	13.0	11.0	11.0	11.0	11.0	20.0
Total Split (s)	56.0	56.0	56.0	56.0	44.0	44.0	44.0	44.0	20.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	36.7%	36.7%	36.7%	36.7%	17%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lead/Lag	Lag	Lag	Lag	Lag					Lead
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	None	None	None
v/c Ratio		0.81	0.89	0.52	0.60	0.57	0.25	0.50	
Control Delay		26.5	82.8	26.7	31.0	21.6	30.6	27.6	
Queue Delay		1.2	1.6	0.0	0.0	0.6	0.0	2.4	
Total Delay		27.7	84.4	26.7	31.0	22.2	30.6	30.0	
Queue Length 50th (ft)		169	116	114	43	162	17	196	
Queue Length 95th (ft)		0	149	133	m#113	m227	55	344	
Internal Link Dist (ft)		21		145		263		412	
Turn Bay Length (ft)					70		90		
Base Capacity (vph)		787	265	688	178	714	158	765	
Starvation Cap Reductn		0	0	0	0	84	0	155	
Spillback Cap Reductn		120	30	20	0	6	0	259	
Storage Cap Reductn		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.75	0.67	0.37	0.60	0.65	0.25	0.75	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 68 (57%), Referenced to phase 2: and 6:, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: MASCO Driveway & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	13	13	10	11	11	10	11	11
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00		1.00	0.89		1.00	0.94		1.00	0.98	
Flpb, ped/bikes		1.00		0.97	1.00		0.83	1.00		0.78	1.00	
Frt		0.89		1.00	0.91		1.00	0.98		1.00	0.99	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1510		1622	1441		1230	1500		1183	1607	
Flt Permitted		0.91		0.22	1.00		0.42	1.00		0.39	1.00	
Satd. Flow (perm)		1374		369	1441		541	1500		486	1607	
Volume (vph)	10	10	105	129	87	117	94	316	45	33	306	17
Peak-hour factor, PHF	0.25	0.25	0.25	0.82	0.82	0.82	0.88	0.88	0.88	0.85	0.85	0.85
Adj. Flow (vph)	40	40	420	157	106	143	107	359	51	39	360	20
RTOR Reduction (vph)	0	198	0	0	51	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	302	0	157	198	0	107	407	0	39	379	0
Confl. Peds. (#/hr)				62		98	315		426	426		315
Confl. Bikes (#/hr)									2			76
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			1			1	
Permitted Phases	4			4			1			1		
Actuated Green, G (s)		33.5		33.5	33.5		56.5	56.5		56.5	56.5	
Effective Green, g (s)		34.5		34.5	34.5		57.5	57.5		57.5	57.5	
Actuated g/C Ratio		0.29		0.29	0.29		0.48	0.48		0.48	0.48	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		395		106	414		259	719		233	770	
v/s Ratio Prot					0.14			c0.27			0.24	
v/s Ratio Perm		0.22		c0.43			0.20			0.08		
v/c Ratio		0.76		1.48	0.48		0.41	0.57		0.17	0.49	
Uniform Delay, d1		39.0		42.8	35.3		20.3	22.3		17.7	21.3	
Progression Factor		1.00		1.00	1.00		0.74	0.75		1.00	1.00	
Incremental Delay, d2		7.7		260.0	0.3		0.2	0.3		0.1	0.2	
Delay (s)		46.8		302.8	35.6		15.2	17.0		17.8	21.5	
Level of Service		D		F	D		B	B		B	C	
Approach Delay (s)		46.8			138.9			16.6			21.1	
Approach LOS		D			F			B			C	

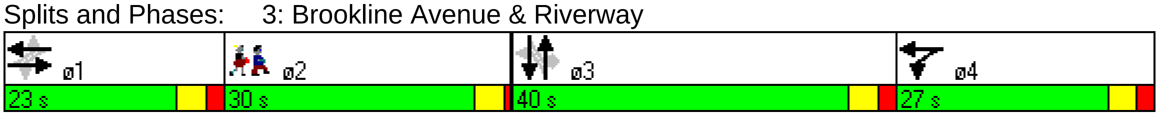
Intersection Summary			
HCM Average Control Delay	52.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	28.0
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT	ø2
Lane Configurations									
Volume (vph)	130	353	626	885	5	606	262	1071	
Lane Group Flow (vph)	138	393	673	969	0	643	276	1190	
Turn Type	Perm		D.P+P		Perm		Perm		
Protected Phases		1	4	1 4		3		3	2
Permitted Phases	1		1		3		3		
Detector Phases	1	1	4	1 4	3	3	3	3	
Minimum Initial (s)	10.0	10.0	6.0		10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	22.0	22.0	11.0		22.0	22.0	22.0	22.0	30.0
Total Split (s)	23.0	23.0	27.0	50.0	40.0	40.0	40.0	40.0	30.0
Total Split (%)	19.2%	19.2%	22.5%	41.7%	33.3%	33.3%	33.3%	33.3%	25%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0	2.0	1.0
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	Max		Max	Max	Max	Max	None
v/c Ratio	2.60	0.83	1.90	0.81		1.72	0.44	1.09	
Control Delay	794.8	64.6	434.2	29.5		361.5	12.1	93.2	
Queue Delay	0.0	0.0	2.4	19.0		0.0	0.0	0.0	
Total Delay	794.8	64.6	436.6	48.5		361.5	12.1	93.2	
Queue Length 50th (ft)	~180	156	~734	314		~778	42	~614	
Queue Length 95th (ft)	#312	#235	m#929	m370		#1005	122	#753	
Internal Link Dist (ft)		395		231		322		416	
Turn Bay Length (ft)	125								
Base Capacity (vph)	53	475	355	1189		374	634	1092	
Starvation Cap Reductn	0	0	1	238		0	0	0	
Spillback Cap Reductn	0	0	0	0		0	0	0	
Storage Cap Reductn	0	0	0	0		0	0	0	
Reduced v/c Ratio	2.60	0.83	1.90	1.02		1.72	0.44	1.09	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 15 (13%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Brookline Avenue & Riverway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	10	10	11	10	12	12	12	11	11	10
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.99		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1510	2997		1501	3099			1709	1434		3113	
Flt Permitted	0.22	1.00		0.26	1.00			0.74	1.00		1.00	
Satd. Flow (perm)	349	2997		406	3099			1274	1434		3113	
Volume (vph)	130	353	16	626	885	16	5	606	262	0	1071	60
Peak-hour factor, PHF	0.94	0.94	0.94	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	138	376	17	673	952	17	5	638	276	0	1127	63
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	131	0	3	0
Lane Group Flow (vph)	138	393	0	673	968	0	0	643	145	0	1187	0
Confl. Bikes (#/hr)			7			43			2			5
Heavy Vehicles (%)	4%	4%	4%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			D.P+P			Perm		Perm	Perm		
Protected Phases		1		4	1 4			3			3	
Permitted Phases	1			1			3		3	3		
Actuated Green, G (s)	17.2	17.2		39.2	44.2			41.0	41.0		41.0	
Effective Green, g (s)	18.2	18.2		41.2	45.2			42.0	42.0		42.0	
Actuated g/C Ratio	0.15	0.15		0.34	0.38			0.35	0.35		0.35	
Clearance Time (s)	5.0	5.0		5.0				5.0	5.0		5.0	
Vehicle Extension (s)	2.0	2.0		2.0				2.0	2.0		2.0	
Lane Grp Cap (vph)	53	455		349	1167			446	502		1090	
v/s Ratio Prot		0.13		c0.37	0.31						0.38	
v/s Ratio Perm	c0.40			0.29				c0.50	0.10			
v/c Ratio	2.60	0.86		1.93	0.83			1.44	0.29		1.09	
Uniform Delay, d1	50.9	49.7		34.7	33.9			39.0	28.2		39.0	
Progression Factor	1.00	1.00		0.95	0.73			1.00	1.00		1.00	
Incremental Delay, d2	773.2	19.1		425.9	5.4			211.2	1.4		54.7	
Delay (s)	824.1	68.8		458.9	30.3			250.2	29.6		93.7	
Level of Service	F	E		F	C			F	C		F	
Approach Delay (s)		265.1			205.9			183.9			93.7	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	177.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	36.8
Intersection Capacity Utilization	99.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	ø2
Lane Configurations										
Volume (vph)	11	443	89	137	903	284	79	32	42	
Lane Group Flow (vph)	0	483	95	143	968	326	242	0	196	
Turn Type	Perm		Perm	D.P+P		Perm		Perm		
Protected Phases		1		4	1 4		3		3	2
Permitted Phases	1		1	1		3		3		
Detector Phases	1	1	1	4	1 4	3	3	3	3	
Minimum Initial (s)	13.0	13.0	13.0	6.0		8.0	8.0	8.0	8.0	4.0
Minimum Split (s)	18.0	18.0	18.0	11.0		18.0	18.0	18.0	18.0	29.0
Total Split (s)	40.0	40.0	40.0	16.0	56.0	35.0	35.0	35.0	35.0	29.0
Total Split (%)	33.3%	33.3%	33.3%	13.3%	46.7%	29.2%	29.2%	29.2%	29.2%	24%
Yellow Time (s)	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lead	Lead	Lag		Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	Max		None	None	None	None	None
v/c Ratio		0.67	0.24	0.47	0.72	0.98	0.38		0.31	
Control Delay		21.9	18.5	9.1	10.7	82.0	23.7		22.3	
Queue Delay		0.6	0.0	0.0	2.0	47.0	0.0		0.2	
Total Delay		22.5	18.5	9.1	12.6	129.0	23.7		22.5	
Queue Length 50th (ft)		73	26	26	124	202	75		58	
Queue Length 95th (ft)		m113	m48	m30	m127	#513	194		164	
Internal Link Dist (ft)		231			359		328		220	
Turn Bay Length (ft)			150			150				
Base Capacity (vph)		721	390	306	1349	333	630		638	
Starvation Cap Reductn		11	0	0	231	0	0		0	
Spillback Cap Reductn		52	0	0	220	43	1		84	
Storage Cap Reductn		0	0	0	0	0	0		0	
Reduced v/c Ratio		0.72	0.24	0.47	0.87	1.12	0.38		0.35	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 3 (3%), Referenced to phase 1:EBWB, Start of Green

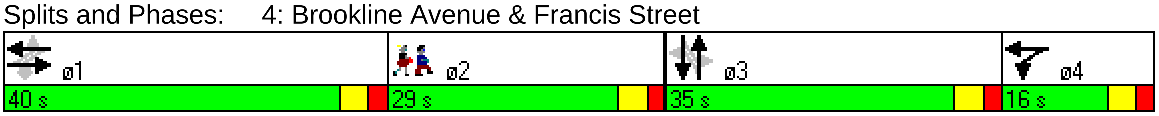
Natural Cycle: 110

Control Type: Actuated-Coordinated

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Brookline Avenue & Francis Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	14	10	10	12	14	11	11	11	16	16	16
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes		1.00	0.98	1.00	1.00		1.00	0.99			0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.91			0.92	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)		3393	1300	1458	3108		1555	1467			1755	
Flt Permitted		0.70	1.00	0.33	1.00		0.58	1.00			0.91	
Satd. Flow (perm)		2383	1300	503	3108		956	1467			1620	
Volume (vph)	11	443	89	137	903	26	284	79	131	32	42	105
Peak-hour factor, PHF	0.94	0.94	0.94	0.96	0.96	0.96	0.87	0.87	0.87	0.91	0.91	0.91
Adj. Flow (vph)	12	471	95	143	941	27	326	91	151	35	46	115
RTOR Reduction (vph)	0	0	0	0	2	0	0	40	0	0	34	0
Lane Group Flow (vph)	0	483	95	143	966	0	326	202	0	0	162	0
Confl. Bikes (#/hr)			2			20			11			2
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	1%	1%	1%	0%	0%	0%
Turn Type	Perm		Perm	D.P+P			Perm			Perm		
Protected Phases		1		4	1 4			3			3	
Permitted Phases	1		1	1			3			3		
Actuated Green, G (s)		32.0	32.0	43.0	48.0		47.4	47.4			47.4	
Effective Green, g (s)		33.0	33.0	45.0	49.0		48.4	48.4			48.4	
Actuated g/C Ratio		0.28	0.28	0.38	0.41		0.40	0.40			0.40	
Clearance Time (s)		5.0	5.0	5.0			5.0	5.0			5.0	
Vehicle Extension (s)		2.0	2.0	2.0			2.0	2.0			2.0	
Lane Grp Cap (vph)		655	358	284	1269		386	592			653	
v/s Ratio Prot				0.05	c0.31			0.14				
v/s Ratio Perm		0.20	0.07	0.14			c0.34				0.10	
v/c Ratio		0.74	0.27	0.50	0.76		0.84	0.34			0.25	
Uniform Delay, d1		39.6	34.0	26.5	30.5		32.4	24.8			23.7	
Progression Factor		0.49	0.54	0.31	0.33		1.00	1.00			1.00	
Incremental Delay, d2		5.5	1.3	2.7	1.9		14.9	0.1			0.1	
Delay (s)		24.8	19.6	11.0	11.9		47.3	24.9			23.8	
Level of Service		C	B	B	B		D	C			C	
Approach Delay (s)		24.0			11.7			37.7			23.8	
Approach LOS		C			B			D			C	

Intersection Summary			
HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.6
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

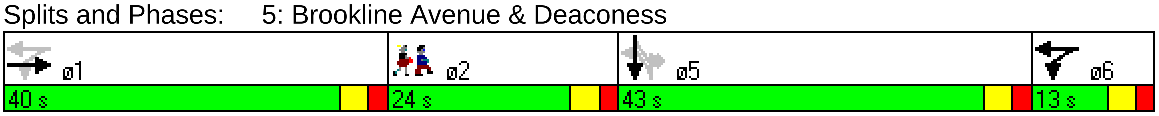
c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL	NBR	SBT	ø2
Lane Configurations							
Volume (vph)	716	26	938	163	126	11	
Lane Group Flow (vph)	825	0	1083	209	162	208	
Turn Type		D.P+P		D.Pm	custom		
Protected Phases	1	6	6			5	2
Permitted Phases		1	1	5	5		
Detector Phases	1	6	6	5	5	5	
Minimum Initial (s)	10.0	6.0	6.0	8.0	8.0	8.0	5.0
Minimum Split (s)	29.0	11.0	11.0	13.0	13.0	13.0	26.0
Total Split (s)	40.0	13.0	13.0	43.0	43.0	43.0	24.0
Total Split (%)	33.3%	10.8%	10.8%	35.8%	35.8%	35.8%	20%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	Max	Max	None	None	None	None
v/c Ratio	0.92		0.98	0.92	0.33	0.41	
Control Delay	62.2		26.1	84.3	6.4	7.7	
Queue Delay	0.6		0.0	0.0	0.0	0.0	
Total Delay	62.8		26.1	84.3	6.4	7.7	
Queue Length 50th (ft)	268		~218	150	0	7	
Queue Length 95th (ft)	#437		m#414	#206	29	54	
Internal Link Dist (ft)	359		347			176	
Turn Bay Length (ft)				150			
Base Capacity (vph)	897		1107	263	537	553	
Starvation Cap Reductn	8		0	0	0	0	
Spillback Cap Reductn	0		0	0	0	0	
Storage Cap Reductn	0		0	0	0	0	
Reduced v/c Ratio	0.93		0.98	0.79	0.30	0.38	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 113 (94%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Brookline Avenue & Deaconess



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	11	11	13	10	10	10	13	12	12
Total Lost time (s)		4.0			4.0		4.0		4.0		4.0	
Lane Util. Factor		0.95			0.95		1.00		1.00		1.00	
Frpb, ped/bikes		1.00			1.00		1.00		1.00		0.99	
Flpb, ped/bikes		1.00			1.00		1.00		1.00		1.00	
Frt		0.99			1.00		1.00		0.85		0.86	
Flt Protected		1.00			1.00		0.95		1.00		1.00	
Satd. Flow (prot)		2984			3045		1472		1317		1296	
Flt Permitted		1.00			0.84		0.49		1.00		1.00	
Satd. Flow (perm)		2984			2574		762		1317		1296	
Volume (vph)	0	716	26	26	938	0	163	0	126	0	11	168
Peak-hour factor, PHF	0.90	0.90	0.90	0.89	0.89	0.89	0.78	0.78	0.78	0.86	0.86	0.86
Adj. Flow (vph)	0	796	29	29	1054	0	209	0	162	0	13	195
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	117	0	140	0
Lane Group Flow (vph)	0	823	0	0	1083	0	209	0	45	0	68	0
Confl. Bikes (#/hr)			7			25						1
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	3%	3%	3%	12%	12%	12%
Parking (#/hr)			2							1		
Turn Type				D.P+P			D.Pm		custom	Perm		
Protected Phases		1		6	6						5	
Permitted Phases				1	1		5		5	5		
Actuated Green, G (s)		35.0			48.4		32.6		32.6		32.6	
Effective Green, g (s)		36.0			50.4		33.6		33.6		33.6	
Actuated g/C Ratio		0.30			0.42		0.28		0.28		0.28	
Clearance Time (s)		5.0			5.0		5.0		5.0		5.0	
Vehicle Extension (s)		2.0			2.0		2.0		2.0		2.0	
Lane Grp Cap (vph)		895			1138		213		369		363	
v/s Ratio Prot		0.28			c0.11						0.05	
v/s Ratio Perm					c0.29		c0.27		0.03			
v/c Ratio		0.92			0.95		0.98		0.12		0.19	
Uniform Delay, d1		40.6			33.6		42.9		32.2		32.8	
Progression Factor		1.17			0.55		1.00		1.00		1.00	
Incremental Delay, d2		14.7			2.5		55.9		0.1		0.1	
Delay (s)		62.2			21.0		98.8		32.3		32.9	
Level of Service		E			C		F		C		C	
Approach Delay (s)		62.2			21.0			69.7			32.9	
Approach LOS		E			C			E			C	

Intersection Summary			
HCM Average Control Delay	42.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	36.0
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	ø2
Lane Configurations										
Volume (vph)	83	577	175	803	181	250	253	206	264	
Lane Group Flow (vph)	94	690	206	1089	191	263	266	231	373	
Turn Type	Perm		D.P+P		Perm		pt+ov	Perm		
Protected Phases		1	4	1 4		3	3 4		3	2
Permitted Phases	1		1		3			3		
Detector Phases	1	1	4	1 4	3	3	3 4	3	3	
Minimum Initial (s)	10.0	10.0	6.0		8.0	8.0		8.0	8.0	7.0
Minimum Split (s)	15.0	15.0	11.0		13.0	13.0		13.0	13.0	26.0
Total Split (s)	45.0	45.0	15.0	60.0	35.0	35.0	50.0	35.0	35.0	25.0
Total Split (%)	37.5%	37.5%	12.5%	50.0%	29.2%	29.2%	41.7%	29.2%	29.2%	21%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lead/Lag	Lead	Lead	Lag		Lead	Lead		Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	C-Max	C-Max	None		None	None		None	None	Ped
v/c Ratio	1.84	0.67	0.80	0.79	2.42	0.68	0.54	1.48	0.95	
Control Delay	436.1	7.2	45.5	32.3	694.5	62.1	46.5	270.6	67.2	
Queue Delay	0.0	0.7	7.6	0.0	0.0	2.0	1.0	0.0	38.7	
Total Delay	436.1	7.9	53.0	32.3	694.5	64.0	47.5	270.6	105.9	
Queue Length 50th (ft)	~113	33	97	365	~250	211	179	~251	296	
Queue Length 95th (ft)	m#140	m44	#148	416	m#394	m295	m294	m#352	m#426	
Internal Link Dist (ft)		347		735		335			263	
Turn Bay Length (ft)	70		350		150			170		
Base Capacity (vph)	51	1024	258	1377	79	389	491	156	394	
Starvation Cap Reductn	0	108	0	0	0	0	74	0	51	
Spillback Cap Reductn	0	69	28	0	0	44	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.84	0.75	0.90	0.79	2.42	0.76	0.64	1.48	1.09	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 1:EBWB, Start of Green

Natural Cycle: 110

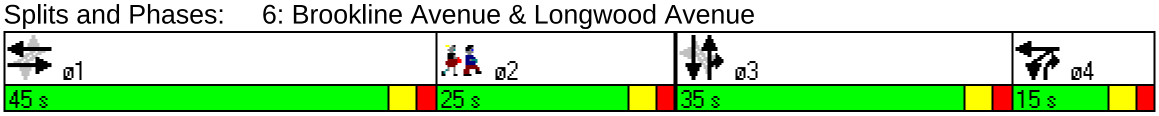
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Brookline Avenue & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	11	10	10	10	10	10	10	10
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	*0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1458	2994		1458	2950		1430	1506	1280	1501	1525	
Flt Permitted	0.10	1.00		0.24	1.00		0.20	1.00	1.00	0.38	1.00	
Satd. Flow (perm)	150	2994		365	2950		308	1506	1280	602	1525	
Volume (vph)	83	577	30	175	803	122	181	250	253	206	264	68
Peak-hour factor, PHF	0.88	0.88	0.88	0.85	0.85	0.85	0.95	0.95	0.95	0.89	0.89	0.89
Adj. Flow (vph)	94	656	34	206	945	144	191	263	266	231	297	76
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	94	690	0	206	1089	0	191	263	266	231	373	0
Confl. Bikes (#/hr)			14			7			50			10
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	6%	6%	6%	1%	1%	1%
Turn Type	Perm			D.P+P			Perm		pt+ov	Perm		
Protected Phases		1		4	1 4			3	3 4		3	
Permitted Phases	1			1			3			3		
Actuated Green, G (s)	40.0	40.0		50.0	55.0		30.0	30.0	45.0	30.0	30.0	
Effective Green, g (s)	41.0	41.0		52.0	56.0		31.0	31.0	46.0	31.0	31.0	
Actuated g/C Ratio	0.34	0.34		0.43	0.47		0.26	0.26	0.38	0.26	0.26	
Clearance Time (s)	5.0	5.0		5.0			5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	2.0		2.0			2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	51	1023		258	1377		80	389	491	156	394	
v/s Ratio Prot		0.23		0.07	c0.37			0.17	0.21		0.24	
v/s Ratio Perm	c0.63			0.27			c0.62			0.38		
v/c Ratio	1.84	0.67		0.80	0.79		2.39	0.68	0.54	1.48	0.95	
Uniform Delay, d1	39.5	33.8		24.3	27.0		44.5	40.0	28.8	44.5	43.7	
Progression Factor	0.20	0.15		1.00	1.00		1.33	1.33	1.45	0.91	0.90	
Incremental Delay, d2	417.5	2.0		14.7	3.0		656.1	3.1	0.6	238.8	24.8	
Delay (s)	425.4	7.1		39.0	30.0		715.3	56.1	42.2	279.4	64.1	
Level of Service	F	A		D	C		F	E	D	F	E	
Approach Delay (s)		57.3			31.5			225.9			146.5	
Approach LOS		E			C			F			F	

Intersection Summary			
HCM Average Control Delay	98.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	37.0
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Configurations					
Volume (vph)	75	29	200	58	258
Lane Group Flow (vph)	136	314	328	65	343
Sign Control	Stop	Stop	Free		Free

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	37	75	16	116	29	147	5	200	100	58	258	47
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.93	0.93	0.93	0.89	0.89	0.89
Hourly flow rate (vph)	39	80	17	125	31	158	5	215	108	65	290	53
Pedestrians		315			349			285			379	
Lane Width (ft)		13.0			12.0			14.0			13.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		28			29			28			34	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											408	
pX, platoon unblocked	0.97	0.97	0.97	0.97	0.97		0.97					
vC, conflicting volume	1594	1444	916	1391	1417	997	658			672		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1612	1458	914	1403	1429	997	647			672		
tC, single (s)	7.2	6.6	6.3	7.1	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	0	0	89	0	47	0	99			90		
cM capacity (veh/h)	0	55	161	0	59	139	658			632		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	136	314	328	65	343
Volume Left	39	125	5	65	0
Volume Right	17	158	108	0	53
cSH	0	0	658	632	1700
Volume to Capacity	Err	Err	0.01	0.10	0.20
Queue Length 95th (ft)	Err	Err	1	9	0
Control Delay (s)	Err	Err	0.3	11.3	0.0
Lane LOS	F	F	A	B	
Approach Delay (s)	Err	Err	0.3	1.8	
Approach LOS	F	F			

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBL
Lane Configurations			
Volume (vph)	185	113	37
Lane Group Flow (vph)	231	155	72
Sign Control	Free	Free	Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	185	32	26	113	37	32
Peak Hour Factor	0.94	0.94	0.90	0.90	0.96	0.96
Hourly flow rate (vph)	197	34	29	126	39	33
Pedestrians	48			278	238	
Lane Width (ft)	12.0			12.0	13.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	4			23	21	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			469		683	730
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			469		683	730
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		87	87
cM capacity (veh/h)			862		302	255

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	231	154	72
Volume Left	0	29	39
Volume Right	34	0	33
cSH	1700	862	278
Volume to Capacity	0.14	0.03	0.26
Queue Length 95th (ft)	0	3	25
Control Delay (s)	0.0	2.0	22.4
Lane LOS		A	C
Approach Delay (s)	0.0	2.0	22.4
Approach LOS			C

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Volume (vph)	117	82	26	5
Lane Group Flow (vph)	340	205	132	116
Sign Control	Stop	Stop	Stop	Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	100	117	5	0	82	79	5	26	47	26	5	53
Peak Hour Factor	0.56	0.79	0.38	0.25	0.84	0.74	0.25	0.95	0.55	0.85	0.25	0.81
Hourly flow rate (vph)	179	148	13	0	98	107	20	27	85	31	20	65

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	340	204	133	116
Volume Left (vph)	179	0	20	31
Volume Right (vph)	13	107	85	65
Hadj (s)	0.10	-0.31	-0.36	-0.29
Departure Headway (s)	4.9	4.7	5.1	5.2
Degree Utilization, x	0.46	0.27	0.19	0.17
Capacity (veh/h)	695	709	625	616
Control Delay (s)	12.1	9.4	9.2	9.2
Approach Delay (s)	12.1	9.4	9.2	9.2
Approach LOS	B	A	A	A

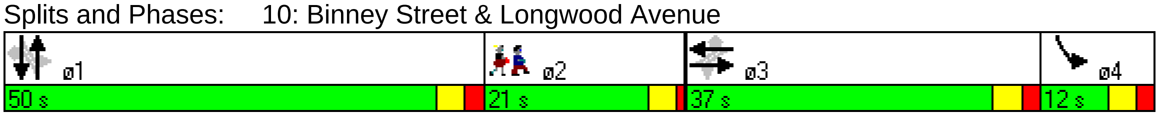
Intersection Summary			
Delay	10.5		
HCM Level of Service	B		
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	ø2
Lane Configurations											
Volume (vph)	70	26	76	69	170	49	450	4	396	58	
Lane Group Flow (vph)	0	240	0	168	198	0	546	5	466	68	
Turn Type	Perm		Perm		Perm	Perm		pm+pt		Perm	
Protected Phases		3		3			1	4	1		2
Permitted Phases	3		3		3	1		1		1	
Detector Phases	3	3	3	3	3	1	1	4	1	1	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0	10.0	4.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	15.0	15.0	12.0	15.0	15.0	21.0
Total Split (s)	37.0	37.0	37.0	37.0	37.0	50.0	50.0	12.0	50.0	50.0	21.0
Total Split (%)	30.8%	30.8%	30.8%	30.8%	30.8%	41.7%	41.7%	10.0%	41.7%	41.7%	18%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lead/Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	None
v/c Ratio		0.81		0.60	0.41		0.52	0.01	0.60	0.10	
Control Delay		53.2		45.7	6.1		32.2	4.0	19.7	5.8	
Queue Delay		2.5		0.6	0.0		0.8	0.0	4.9	0.0	
Total Delay		55.8		46.3	6.1		33.0	4.0	24.5	5.8	
Queue Length 50th (ft)		148		116	0		198	0	302	10	
Queue Length 95th (ft)		172		146	40		257	m1	m394	m19	
Internal Link Dist (ft)		370		168			243		335		
Turn Bay Length (ft)								75			
Base Capacity (vph)		342		333	538		1041	468	776	653	
Starvation Cap Reductn		0		0	0		225	0	238	0	
Spillback Cap Reductn		37		33	0		0	0	184	0	
Storage Cap Reductn		0		0	0		0	0	0	0	
Reduced v/c Ratio		0.79		0.56	0.37		0.67	0.01	0.87	0.10	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 40 (33%), Referenced to phase 1:NBSB, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Binney Street & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	11	11	10	10	11	11	10	11	10
Total Lost time (s)		4.0			4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor		1.00			1.00	1.00		0.95		1.00	1.00	1.00
Frpb, ped/bikes		1.00			1.00	0.98		1.00		1.00	1.00	0.97
Flpb, ped/bikes		1.00			1.00	1.00		1.00		1.00	1.00	1.00
Frt		0.93			1.00	0.85		1.00		1.00	1.00	0.85
Flt Protected		0.98			0.97	1.00		1.00		0.95	1.00	1.00
Satd. Flow (prot)		1336			1579	1309		2826		1430	1559	1246
Flt Permitted		0.73			0.66	1.00		0.82		0.39	1.00	1.00
Satd. Flow (perm)		994			1072	1309		2335		590	1559	1246
Volume (vph)	70	26	99	76	69	170	49	450	8	4	396	58
Peak-hour factor, PHF	0.81	0.81	0.81	0.86	0.86	0.86	0.93	0.93	0.93	0.85	0.85	0.85
Adj. Flow (vph)	86	32	122	88	80	198	53	484	9	5	466	68
RTOR Reduction (vph)	0	32	0	0	0	147	0	1	0	0	0	34
Lane Group Flow (vph)	0	208	0	0	168	51	0	545	0	5	466	34
Confl. Bikes (#/hr)						4			53			9
Heavy Vehicles (%)	21%	21%	21%	2%	2%	2%	8%	8%	8%	6%	6%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0
Turn Type	Perm			Perm		Perm	Perm			pm+pt		Perm
Protected Phases		3			3			1		4	1	
Permitted Phases	3			3		3	1			1		1
Actuated Green, G (s)		30.0			30.0	30.0		58.7		75.0	58.7	58.7
Effective Green, g (s)		31.0			31.0	31.0		59.7		77.0	59.7	59.7
Actuated g/C Ratio		0.26			0.26	0.26		0.50		0.64	0.50	0.50
Clearance Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)		2.0			2.0	2.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		257			277	338		1162		500	776	620
v/s Ratio Prot										c0.00	c0.30	
v/s Ratio Perm		c0.21			0.16	0.04		0.23		0.00		0.03
v/c Ratio		0.81			0.61	0.15		0.47		0.01	0.60	0.05
Uniform Delay, d1		41.7			39.1	34.3		19.8		8.0	21.6	15.6
Progression Factor		1.00			1.00	1.00		1.32		0.36	0.72	1.04
Incremental Delay, d2		16.1			2.6	0.1		1.2		0.0	1.6	0.1
Delay (s)		57.8			41.7	34.4		27.3		2.9	17.1	16.2
Level of Service		E			D	C		C		A	B	B
Approach Delay (s)		57.8			37.8			27.3			16.8	
Approach LOS		E			D			C			B	

Intersection Summary			
HCM Average Control Delay	30.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	ø2
Lane Configurations										
Volume (vph)	63	21	68	58	180	26	271	50	424	
Lane Group Flow (vph)	0	173	0	154	220	33	390	52	491	
Turn Type	Perm		Perm		Perm	Perm		Perm		
Protected Phases		3		3			1		1	2
Permitted Phases	3		3		3	1		1		
Detector Phases	3	3	3	3	3	1	1	1	1	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	20.0
Total Split (s)	43.0	43.0	43.0	43.0	43.0	57.0	57.0	57.0	57.0	20.0
Total Split (%)	35.8%	35.8%	35.8%	35.8%	35.8%	47.5%	47.5%	47.5%	47.5%	17%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lead/Lag						Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	C-Max	C-Max	C-Max	C-Max	None
v/c Ratio		0.30		0.29	0.37	0.20	0.70	0.21	0.78	
Control Delay		19.9		20.0	21.3	24.6	35.4	21.0	39.6	
Queue Delay		0.1		0.0	0.1	0.0	0.0	0.0	80.0	
Total Delay		20.0		20.0	21.4	24.6	35.4	21.0	119.7	
Queue Length 50th (ft)		77		69	103	15	240	30	385	
Queue Length 95th (ft)		104		104	146	35	296	m44	m498	
Internal Link Dist (ft)		298		1163			436		243	
Turn Bay Length (ft)						90				
Base Capacity (vph)		583		530	591	165	555	248	632	
Starvation Cap Reductn		0		0	0	0	0	0	211	
Spillback Cap Reductn		39		0	40	0	0	0	0	
Storage Cap Reductn		0		0	0	0	0	0	0	
Reduced v/c Ratio		0.32		0.29	0.40	0.20	0.70	0.21	1.17	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

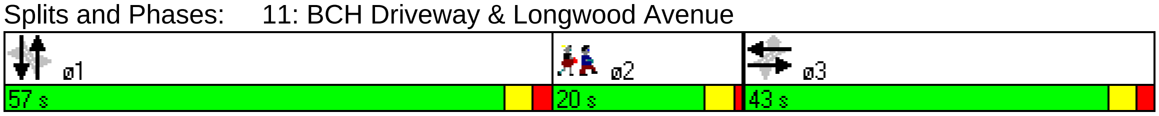
Offset: 37 (31%), Referenced to phase 1:NBSB, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: BCH Driveway & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Lane Width	13	13	13	10	10	10	10	10	10	12	12	12
Total Lost time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.95			1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected		0.98			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1469			1377	1202	1222	1257		1384	1431	
Flt Permitted		0.80			0.77	1.00	0.29	1.00		0.39	1.00	
Satd. Flow (perm)		1203			1092	1202	375	1257		562	1431	
Volume (vph)	63	21	47	68	58	180	26	271	37	50	424	47
Peak-hour factor, PHF	0.76	0.76	0.76	0.82	0.82	0.82	0.79	0.79	0.79	0.96	0.96	0.96
Adj. Flow (vph)	83	28	62	83	71	220	33	343	47	52	442	49
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	173	0	0	154	220	33	390	0	52	491	0
Confl. Bikes (#/hr)									25			14
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	11%	11%	11%	5%	5%	5%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		3			3			1			1	
Permitted Phases	3			3		3	1			1		
Actuated Green, G (s)		58.0			58.0	58.0	52.0	52.0		52.0	52.0	
Effective Green, g (s)		59.0			59.0	59.0	53.0	53.0		53.0	53.0	
Actuated g/C Ratio		0.49			0.49	0.49	0.44	0.44		0.44	0.44	
Clearance Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		591			537	591	166	555		248	632	
v/s Ratio Prot								0.31			c0.34	
v/s Ratio Perm		0.14			0.14	c0.18	0.09			0.09		
v/c Ratio		0.29			0.29	0.37	0.20	0.70		0.21	0.78	
Uniform Delay, d1		18.1			18.0	19.0	20.5	27.1		20.6	28.5	
Progression Factor		1.00			1.00	1.00	1.00	1.00		0.90	1.10	
Incremental Delay, d2		1.3			1.3	1.8	2.7	7.3		1.5	7.1	
Delay (s)		19.4			19.4	20.8	23.2	34.4		20.1	38.5	
Level of Service		B			B	C	C	C		C	D	
Approach Delay (s)		19.4			20.2			33.5			36.7	
Approach LOS		B			C			C			D	

Intersection Summary			
HCM Average Control Delay	29.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBT	SBT
Lane Configurations		
Volume (vph)	198	456
Lane Group Flow (vph)	280	625
Sign Control	Stop	Stop

Intersection Summary
Control Type: Unsignalized

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	198	34	88	456	0	0
Peak Hour Factor	0.83	0.83	0.87	0.87	0.92	0.92
Hourly flow rate (vph)	239	41	101	524	0	0

Direction, Lane #	NB 1	SB 1	SB 2
Volume Total (vph)	280	276	349
Volume Left (vph)	0	101	0
Volume Right (vph)	41	0	0
Hadj (s)	-0.02	0.27	0.09
Departure Headway (s)	4.5	5.0	4.8
Degree Utilization, x	0.35	0.38	0.46
Capacity (veh/h)	787	716	747
Control Delay (s)	9.9	9.8	10.6
Approach Delay (s)	9.9	10.2	
Approach LOS	A	B	

Intersection Summary			
Delay	10.1		
HCM Level of Service	B		
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	SBT
Lane Configurations				
Volume (vph)	76	120	198	544
Lane Group Flow (vph)	83	130	239	625
Sign Control	Stop		Free	Free

Intersection Summary
Control Type: Unsignalized

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	76	120	198	0	0	544
Peak Hour Factor	0.92	0.92	0.83	0.83	0.87	0.87
Hourly flow rate (vph)	83	130	239	0	0	625
Pedestrians			389			629
Lane Width (ft)			12.0			11.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			32			48
Right turn flare (veh)		4				
Median type	None					
Median storage veh)						
Upstream signal (ft)						516
pX, platoon unblocked						
vC, conflicting volume	940	868			239	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	940	868			239	
tC, single (s)	7.2	7.3			4.2	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.2	
p0 queue free %	48	5			100	
cM capacity (veh/h)	159	138			1304	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	213	239	313	313
Volume Left	83	0	0	0
Volume Right	130	0	0	0
cSH	225	1700	1700	1700
Volume to Capacity	0.95	0.14	0.18	0.18
Queue Length 95th (ft)	205	0	0	0
Control Delay (s)	95.8	0.0	0.0	0.0
Lane LOS	F			
Approach Delay (s)	95.8	0.0	0.0	
Approach LOS	F			

Intersection Summary			
Average Delay	19.0		
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations					
Volume (vph)	22	142	215	37	124
Lane Group Flow (vph)	29	184	253	44	188
Sign Control		Free	Free		Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	22	142	215	37	124	38
Peak Hour Factor	0.77	0.77	0.85	0.85	0.86	0.86
Hourly flow rate (vph)	29	184	253	44	144	44
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	296				494	253
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	296				494	253
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	98				73	94
cM capacity (veh/h)	1205				525	791

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	29	184	253	44	188
Volume Left	29	0	0	0	144
Volume Right	0	0	0	44	44
cSH	1205	1700	1700	1700	570
Volume to Capacity	0.02	0.11	0.15	0.03	0.33
Queue Length 95th (ft)	2	0	0	0	36
Control Delay (s)	8.1	0.0	0.0	0.0	14.4
Lane LOS	A				B
Approach Delay (s)	1.1		0.0		14.4
Approach LOS					B

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	36.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBU	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	21	589	142	620	5	21	120	224	261
Lane Group Flow (vph)	46	705	154	810	0	0	178	257	409
Turn Type	Prot		Prot		Perm	Perm		Perm	
Protected Phases	1	6	5	2			8		4
Permitted Phases					8	8		4	
Detector Phases	1	6	5	2	8	8	8	4	4
Minimum Initial (s)	4.0	10.0	4.0	10.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	15.0	19.0	15.0	19.0	15.0	15.0	15.0	15.0	15.0
Total Split (s)	19.0	45.0	19.0	45.0	36.0	36.0	36.0	36.0	36.0
Total Split (%)	19.0%	45.0%	19.0%	45.0%	36.0%	36.0%	36.0%	36.0%	36.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	Max	Max	Max	Max	Max
v/c Ratio	0.33	0.59	0.74	0.58			0.46	1.12	0.87
Control Delay	47.9	25.2	62.7	20.7			31.9	130.4	52.2
Queue Delay	0.0	0.0	0.0	0.0			0.0	0.0	0.0
Total Delay	47.9	25.2	62.7	20.7			31.9	130.4	52.2
Queue Length 50th (ft)	28	181	94	198			90	~190	244
Queue Length 95th (ft)	62	243	#182	283			146	#329	#392
Internal Link Dist (ft)		1220		578			409		130
Turn Bay Length (ft)	115		85						
Base Capacity (vph)	222	1190	223	1399			387	229	472
Starvation Cap Reductn	0	0	0	0			0	0	0
Spillback Cap Reductn	0	0	0	0			0	0	0
Storage Cap Reductn	0	0	0	0			0	0	0
Reduced v/c Ratio	0.21	0.59	0.69	0.58			0.46	1.12	0.87

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 53 (53%), Referenced to phase 2:WBT and 6:EBT, Start of Green

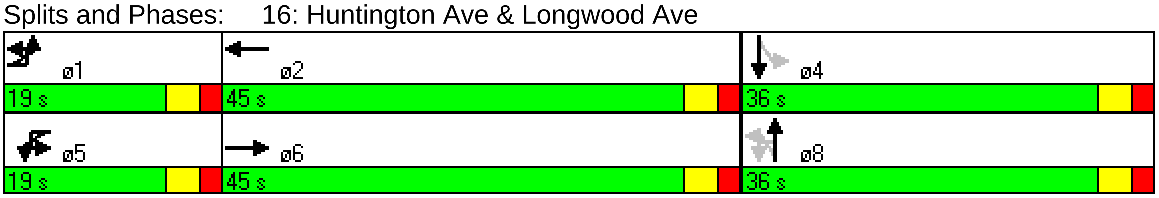
Natural Cycle: 75

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 16: Huntington Ave & Longwood Ave



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	11	10	10	11	11	12	16	16	16
Total Lost time (s)		4.0	4.0			4.0	4.0				4.0	
Lane Util. Factor		1.00	0.95			1.00	0.95				1.00	
Frpb, ped/bikes		1.00	0.96			1.00	0.92				0.99	
Flpb, ped/bikes		1.00	1.00			1.00	1.00				1.00	
Frt		1.00	0.99			1.00	0.97				1.00	
Flt Protected		0.95	1.00			0.95	1.00				0.99	
Satd. Flow (prot)		1479	2833			1487	2742				1624	
Flt Permitted		0.95	1.00			0.95	1.00				0.74	
Satd. Flow (perm)		1479	2833			1487	2742				1208	
Volume (vph)	21	21	589	53	5	142	620	149	5	21	120	5
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.95	0.95	0.95	0.95	0.85	0.85	0.85	0.85
Adj. Flow (vph)	23	23	647	58	5	149	653	157	6	25	141	6
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	46	705	0	0	154	810	0	0	0	178	0
Confl. Peds. (#/hr)		131		154		154		131		30		284
Confl. Bikes (#/hr)				12				13				2
Heavy Vehicles (%)	0%	5%	5%	5%	0%	2%	2%	2%	0%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	0	0	0	0
Parking (#/hr)										1	1	1
Turn Type	Prot	Prot			Prot	Prot			Perm	Perm		
Protected Phases	1	1	6		5	5	2				8	
Permitted Phases									8	8		
Actuated Green, G (s)		6.0	41.0			13.0	48.0				31.0	
Effective Green, g (s)		7.0	42.0			14.0	49.0				32.0	
Actuated g/C Ratio		0.07	0.42			0.14	0.49				0.32	
Clearance Time (s)		5.0	5.0			5.0	5.0				5.0	
Vehicle Extension (s)		3.0	3.0			3.0	3.0				3.0	
Lane Grp Cap (vph)		104	1190			208	1344				387	
v/s Ratio Prot		0.03	0.25			c0.10	c0.30					
v/s Ratio Perm											0.15	
v/c Ratio		0.44	0.59			0.74	0.60				0.46	
Uniform Delay, d1		44.6	22.4			41.3	18.5				27.1	
Progression Factor		1.00	1.00			1.00	1.00				1.00	
Incremental Delay, d2		3.0	2.2			13.2	2.0				3.9	
Delay (s)		47.6	24.6			54.5	20.5				31.0	
Level of Service		D	C			D	C				C	
Approach Delay (s)			26.0				25.9				31.0	
Approach LOS			C				C				C	

Intersection Summary			
HCM Average Control Delay	40.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR
Lane Configurations			
Ideal Flow (vphpl)	1900	1900	1900
Lane Width	10	10	10
Total Lost time (s)	4.0	4.0	
Lane Util. Factor	1.00	1.00	
Frpb, ped/bikes	1.00	0.98	
Flpb, ped/bikes	0.79	1.00	
Frt	1.00	0.96	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1173	1474	
Flt Permitted	0.58	1.00	
Satd. Flow (perm)	717	1474	
Volume (vph)	224	261	95
Peak-hour factor, PHF	0.87	0.87	0.87
Adj. Flow (vph)	257	300	109
RTOR Reduction (vph)	0	0	0
Lane Group Flow (vph)	257	409	0
Confl. Peds. (#/hr)	284		30
Confl. Bikes (#/hr)			5
Heavy Vehicles (%)	2%	2%	2%
Bus Blockages (#/hr)	0	0	0
Parking (#/hr)			
Turn Type	Perm		
Protected Phases		4	
Permitted Phases	4		
Actuated Green, G (s)	31.0	31.0	
Effective Green, g (s)	32.0	32.0	
Actuated g/C Ratio	0.32	0.32	
Clearance Time (s)	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	229	472	
v/s Ratio Prot		0.28	
v/s Ratio Perm	c0.36		
v/c Ratio	1.12	0.87	
Uniform Delay, d1	34.0	32.0	
Progression Factor	1.00	1.00	
Incremental Delay, d2	96.3	18.8	
Delay (s)	130.3	50.8	
Level of Service	F	D	
Approach Delay (s)		81.5	
Approach LOS		F	

Intersection Summary

Lane Group	EBT	WBT	NBL
Lane Configurations			
Volume (vph)	909	921	3
Lane Group Flow (vph)	1017	1129	32
Sign Control	Free	Free	Stop

Intersection Summary

Control Type: Unsignalized

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	909	57	16	921	3	16
Peak Hour Factor	0.95	0.95	0.83	0.83	0.59	0.59
Hourly flow rate (vph)	957	60	19	1110	5	27
Pedestrians					16	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					1	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	494					
pX, platoon unblocked			0.86		0.86	0.86
vC, conflicting volume			1033		1411	524
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			875		1315	284
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		96	96
cM capacity (veh/h)			656		125	610

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	638	379	241	444	444	32
Volume Left	0	0	19	0	0	5
Volume Right	0	60	0	0	0	27
cSH	1700	1700	656	1700	1700	378
Volume to Capacity	0.38	0.22	0.03	0.26	0.26	0.09
Queue Length 95th (ft)	0	0	2	0	0	7
Control Delay (s)	0.0	0.0	1.2	0.0	0.0	15.4
Lane LOS			A			C
Approach Delay (s)	0.0		0.3			15.4
Approach LOS						C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group
Lane Configurations
Volume (vph)
Lane Group Flow (vph)
Sign Control

Intersection Summary
Control Type: Unsignalized

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	0	0	0	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085

Direction, Lane #	WB 1	NE 1
Volume Total	0	0
Volume Left	0	0
Volume Right	0	0
cSH	1700	1700
Volume to Capacity	0.00	0.00
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		A
Approach Delay (s)	0.0	0.0
Approach LOS		A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT
Lane Configurations		
Volume (vph)	253	579
Lane Group Flow (vph)	334	687
Sign Control	Free	Free

Intersection Summary
Control Type: Unsignalized

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	253	37	53	579
Peak Hour Factor	0.25	0.25	0.87	0.87	0.92	0.92
Hourly flow rate (vph)	0	0	291	43	58	629
Pedestrians	454					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			210			
pX, platoon unblocked	0.94	0.94			0.94	
vC, conflicting volume	1196	766			787	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1208	752			774	
tC, single (s)	6.8	7.3			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.5			2.2	
p0 queue free %	100	100			93	
cM capacity (veh/h)	156	297			788	

Direction, Lane #	NB 1	SB 1	SB 2
Volume Total	333	267	420
Volume Left	0	58	0
Volume Right	43	0	0
cSH	1700	788	1700
Volume to Capacity	0.20	0.07	0.25
Queue Length 95th (ft)	0	6	0
Control Delay (s)	0.0	2.8	0.0
Lane LOS		A	
Approach Delay (s)	0.0	1.1	
Approach LOS			

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		

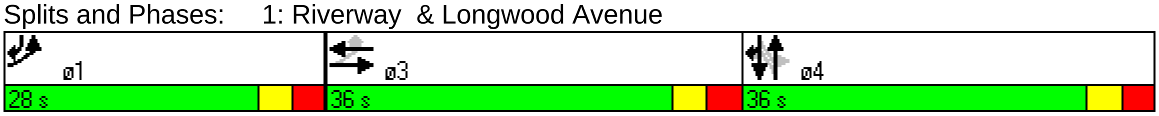
CCB Build 2022

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	342	863	847	95	75	217	107	310	78
Lane Group Flow (vph)	372	1023	1002	112	101	354	0	474	89
Turn Type	pm+pt			Perm	Perm		Perm		pt+ov
Protected Phases	1	3	3			4		4	1 4
Permitted Phases	3			3	4		4		
Detector Phases	1	3	3	3	4	4	4	4	1 4
Minimum Initial (s)	8.0	15.0	15.0	15.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	28.0	34.0	34.0	34.0	21.0	21.0	21.0	21.0	
Total Split (s)	28.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	64.0
Total Split (%)	28.0%	36.0%	36.0%	36.0%	36.0%	36.0%	36.0%	36.0%	64.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lead/Lag		Lead	Lead	Lead	Lag	Lag	Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Min	Min	Min	C-Max	C-Max	C-Max	C-Max	
v/c Ratio	0.91	1.02	2.30	0.21	1.12	0.59		1.74	0.10
Control Delay	52.3	67.6	613.4	5.9	167.7	32.5		372.1	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	52.3	67.6	613.4	5.9	167.7	32.5		372.1	7.4
Queue Length 50th (ft)	181	~377	~556	0	~75	182		~450	18
Queue Length 95th (ft)	#348	#507	#637	33	#137	213		#626	38
Internal Link Dist (ft)		340	414			412		311	
Turn Bay Length (ft)	225				50				100
Base Capacity (vph)	429	1004	436	521	90	598		273	869
Starvation Cap Reductn	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.87	1.02	2.30	0.21	1.12	0.59		1.74	0.10

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 4:NBSB, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Riverway & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	10	11	10	10	16	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	0.99			1.00	0.85	1.00	0.97			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00			0.99	1.00
Satd. Flow (prot)	1516	2995			3109	1343	1486	1846			1672	1439
Flt Permitted	0.12	1.00			0.89	1.00	0.18	1.00			0.50	1.00
Satd. Flow (perm)	192	2995			2769	1343	281	1846			854	1439
Volume (vph)	342	863	78	5	847	95	75	217	45	107	310	78
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.74	0.74	0.74	0.88	0.88	0.88
Adj. Flow (vph)	372	938	85	6	996	112	101	293	61	122	352	89
RTOR Reduction (vph)	0	7	0	0	0	75	0	7	0	0	0	6
Lane Group Flow (vph)	372	1016	0	0	1002	37	101	347	0	0	474	83
Confl. Bikes (#/hr)									4			87
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Turn Type	pm+pt					Perm	Perm			Perm		pt+ov
Protected Phases	1	3			3			4			4	1 4
Permitted Phases	3					3	4			4		
Actuated Green, G (s)	52.0	31.3			31.3	31.3	30.0	30.0			30.0	56.7
Effective Green, g (s)	56.0	33.3			33.3	33.3	32.0	32.0			32.0	58.7
Actuated g/C Ratio	0.56	0.33			0.33	0.33	0.32	0.32			0.32	0.59
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)	408	997			922	447	90	591			273	845
v/s Ratio Prot	c0.21	0.34						0.19				0.06
v/s Ratio Perm	0.30				c0.36	0.03	0.36				c0.56	
v/c Ratio	0.91	1.02			1.09	0.08	1.12	0.59			1.74	0.10
Uniform Delay, d1	27.4	33.4			33.4	22.9	34.0	28.5			34.0	9.0
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	23.9	33.5			56.1	0.0	131.7	4.2			346.2	0.0
Delay (s)	51.2	66.8			89.4	22.9	165.7	32.7			380.2	9.1
Level of Service	D	E			F	C	F	C			F	A
Approach Delay (s)		62.7			82.7			62.2			321.5	
Approach LOS		E			F			E			F	

Intersection Summary			
HCM Average Control Delay	110.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	109.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	ø3
Lane Configurations									
Volume (vph)	5	34	29	11	165	237	169	390	
Lane Group Flow (vph)	0	79	39	46	201	529	190	483	
Turn Type	Perm		Perm		Perm		Perm		
Protected Phases		4		4		1		1	3
Permitted Phases	4		4		1		1		
Detector Phases	4	4	4	4	1	1	1	1	
Minimum Initial (s)	8.0	8.0	8.0	8.0	6.0	6.0	6.0	6.0	4.0
Minimum Split (s)	13.0	13.0	13.0	13.0	11.0	11.0	11.0	11.0	20.0
Total Split (s)	25.0	25.0	25.0	25.0	75.0	75.0	75.0	75.0	20.0
Total Split (%)	20.8%	20.8%	20.8%	20.8%	62.5%	62.5%	62.5%	62.5%	17%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lead/Lag	Lag	Lag	Lag	Lag					Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					Yes
Recall Mode	None	None	None	None	None	None	None	None	Ped
v/c Ratio		0.36	0.66	0.41	0.50	0.67	0.64	0.46	
Control Delay		33.3	95.6	32.7	10.0	10.5	27.5	13.0	
Queue Delay		0.1	0.2	0.0	0.6	1.6	0.0	1.1	
Total Delay		33.4	95.8	32.7	10.6	12.1	27.5	14.1	
Queue Length 50th (ft)		33	29	11	50	114	85	176	
Queue Length 95th (ft)		78	54	34	m35	m70	#236	289	
Internal Link Dist (ft)		21		145		263		412	
Turn Bay Length (ft)					70		90		
Base Capacity (vph)		289	82	144	406	786	297	1050	
Starvation Cap Reductn		0	0	0	47	118	0	337	
Spillback Cap Reductn		11	1	0	0	0	0	299	
Storage Cap Reductn		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.28	0.48	0.32	0.56	0.79	0.64	0.68	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 102 (85%), Referenced to phase 2: and 6:, Start of Green

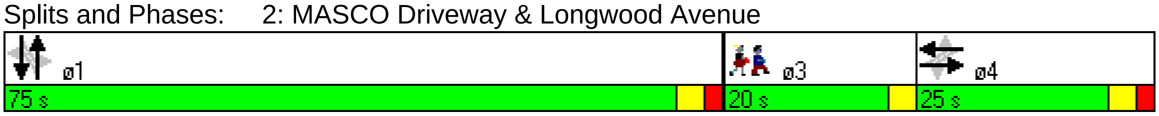
Natural Cycle: 90

Control Type: Actuated-Coordinated

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: MASCO Driveway & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	13	13	10	11	11	10	11	11
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.97		1.00	0.39		1.00	0.78		1.00	0.98	
Flpb, ped/bikes		0.97		0.35	1.00		1.00	1.00		0.80	1.00	
Frt		0.94		1.00	0.90		1.00	0.93		1.00	0.99	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1501		581	623		1485	1181		1198	1584	
Flt Permitted		0.98		0.59	1.00		0.42	1.00		0.39	1.00	
Satd. Flow (perm)		1481		363	623		654	1181		490	1584	
Volume (vph)	5	34	34	29	11	23	165	237	197	169	390	40
Peak-hour factor, PHF	0.92	0.92	0.92	0.75	0.75	0.75	0.82	0.82	0.82	0.89	0.89	0.89
Adj. Flow (vph)	5	37	37	39	15	31	201	289	240	190	438	45
RTOR Reduction (vph)	0	28	0	0	28	0	0	21	0	0	3	0
Lane Group Flow (vph)	0	51	0	39	18	0	201	508	0	190	480	0
Confl. Peds. (#/hr)	182		9	601		783	2		608	601		184
Confl. Bikes (#/hr)									18			85
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			1			1	
Permitted Phases	4			4			1			1		
Actuated Green, G (s)		12.5		12.5	12.5		77.5	77.5		77.5	77.5	
Effective Green, g (s)		13.5		13.5	13.5		78.5	78.5		78.5	78.5	
Actuated g/C Ratio		0.11		0.11	0.11		0.65	0.65		0.65	0.65	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		167		41	70		428	773		321	1036	
v/s Ratio Prot					0.03			c0.43			0.30	
v/s Ratio Perm		0.03		c0.11			0.31			0.39		
v/c Ratio		0.30		0.95	0.26		0.47	0.66		0.59	0.46	
Uniform Delay, d1		48.9		52.9	48.7		10.4	12.6		11.7	10.3	
Progression Factor		1.00		1.00	1.00		0.60	0.63		1.00	1.00	
Incremental Delay, d2		0.4		120.3	0.7		0.1	0.7		1.9	0.1	
Delay (s)		49.3		173.2	49.4		6.3	8.6		13.7	10.4	
Level of Service		D		F	D		A	A		B	B	
Approach Delay (s)		49.3			106.2			8.0			11.3	
Approach LOS		D			F			A			B	

Intersection Summary			
HCM Average Control Delay	16.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	28.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT	ø2
Lane Configurations									
Volume (vph)	224	490	262	435	5	847	499	582	
Lane Group Flow (vph)	241	532	294	525	0	991	580	759	
Turn Type	Perm		D.P+P		Perm		Perm		
Protected Phases		1	4	1 4		3		3	2
Permitted Phases	1		1		3		3		
Detector Phases	1	1	4	1 4	3	3	3	3	
Minimum Initial (s)	10.0	10.0	6.0		10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	22.0	22.0	11.0		22.0	22.0	22.0	22.0	30.0
Total Split (s)	35.0	35.0	15.0	50.0	40.0	40.0	40.0	40.0	30.0
Total Split (%)	29.2%	29.2%	12.5%	41.7%	33.3%	33.3%	33.3%	33.3%	25%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0	2.0	1.0
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	Max		Max	Max	Max	Max	None
v/c Ratio	4.46	0.67	1.20	0.45		1.67	0.84	0.71	
Control Delay	1612.8	44.8	149.5	21.9		334.7	32.9	39.5	
Queue Delay	0.0	0.0	0.0	0.8		0.0	0.0	0.0	
Total Delay	1612.8	44.8	149.5	22.7		334.7	32.9	39.5	
Queue Length 50th (ft)	~311	195	~167	149		~1186	255	281	
Queue Length 95th (ft)	#478	258	m#337	210		#1357	#437	361	
Internal Link Dist (ft)		395		231		322		416	
Turn Bay Length (ft)	125								
Base Capacity (vph)	54	794	244	1162		595	688	1073	
Starvation Cap Reductn	0	0	0	340		0	0	0	
Spillback Cap Reductn	0	0	0	0		0	0	0	
Storage Cap Reductn	0	0	0	0		0	0	0	
Reduced v/c Ratio	4.46	0.67	1.20	0.64		1.67	0.84	0.71	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 8 (7%), Referenced to phase 1:EBWB, Start of Green

Natural Cycle: 125

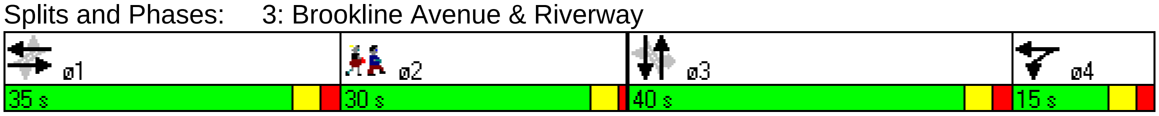
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Brookline Avenue & Riverway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	10	10	11	10	12	12	12	11	11	10
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	0.99			1.00	0.85		0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1540	3074		1472	3018			1709	1454		3035	
Flt Permitted	0.13	1.00		0.27	1.00			1.00	1.00		1.00	
Satd. Flow (perm)	215	3074		412	3018			1702	1454		3035	
Volume (vph)	224	490	5	262	435	32	5	847	499	0	582	101
Peak-hour factor, PHF	0.93	0.93	0.93	0.89	0.89	0.89	0.86	0.86	0.86	0.90	0.90	0.90
Adj. Flow (vph)	241	527	5	294	489	36	6	985	580	0	647	112
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	179	0	11	0
Lane Group Flow (vph)	241	532	0	294	521	0	0	991	401	0	748	0
Confl. Bikes (#/hr)			26									1
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	0%	0%	0%	1%	1%	1%
Turn Type	Perm			D.P+P			Perm		Perm	Perm		
Protected Phases		1		4	1 4			3			3	
Permitted Phases	1			1			3		3	3		
Actuated Green, G (s)	29.2	29.2		39.2	44.2			41.0	41.0		41.0	
Effective Green, g (s)	30.2	30.2		41.2	45.2			42.0	42.0		42.0	
Actuated g/C Ratio	0.25	0.25		0.34	0.38			0.35	0.35		0.35	
Clearance Time (s)	5.0	5.0		5.0				5.0	5.0		5.0	
Vehicle Extension (s)	2.0	2.0		2.0				2.0	2.0		2.0	
Lane Grp Cap (vph)	54	774		239	1137			596	509		1062	
v/s Ratio Prot		0.17		c0.11	0.17						0.25	
v/s Ratio Perm	c1.12			0.31				c0.58	0.28			
v/c Ratio	4.46	0.69		1.23	0.46			1.66	0.79		0.70	
Uniform Delay, d1	44.9	40.6		36.0	28.2			39.0	35.0		33.6	
Progression Factor	1.00	1.00		0.81	0.75			1.00	1.00		1.00	
Incremental Delay, d2	1600.2	4.9		133.2	1.3			305.6	11.7		3.9	
Delay (s)	1645.1	45.6		162.3	22.5			344.6	46.6		37.6	
Level of Service	F	D		F	C			F	D		D	
Approach Delay (s)		544.2			72.7			234.6			37.6	
Approach LOS		F			E			F			D	

Intersection Summary			
HCM Average Control Delay	223.7	HCM Level of Service	F
HCM Volume to Capacity ratio	2.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	36.8
Intersection Capacity Utilization	95.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	ø2
Lane Configurations										
Volume (vph)	16	725	156	215	446	147	68	16	137	
Lane Group Flow (vph)	0	833	175	224	498	173	118	0	212	
Turn Type	Perm		Perm	D.P+P		Perm		Perm		
Protected Phases		1		4	1 4		3		3	2
Permitted Phases	1		1	1		3		3		
Detector Phases	1	1	1	4	1 4	3	3	3	3	
Minimum Initial (s)	13.0	13.0	13.0	6.0		8.0	8.0	8.0	8.0	4.0
Minimum Split (s)	18.0	18.0	18.0	11.0		18.0	18.0	18.0	18.0	29.0
Total Split (s)	42.0	42.0	42.0	19.0	61.0	30.0	30.0	30.0	30.0	29.0
Total Split (%)	35.0%	35.0%	35.0%	15.8%	50.8%	25.0%	25.0%	25.0%	25.0%	24%
Yellow Time (s)	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lead	Lead	Lag		Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	Max		None	None	None	None	None
v/c Ratio		1.16	0.43	0.92	0.35	0.75	0.22		0.32	
Control Delay		108.4	20.3	69.7	22.7	59.3	28.5		32.5	
Queue Delay		28.3	0.8	0.0	0.0	0.0	0.0		0.1	
Total Delay		136.8	21.1	69.7	22.7	59.3	28.6		32.6	
Queue Length 50th (ft)		~407	67	127	114	98	44		94	
Queue Length 95th (ft)		#517	m92	m#236	137	#289	115		212	
Internal Link Dist (ft)		231			359		328		220	
Turn Bay Length (ft)			150			150				
Base Capacity (vph)		717	407	243	1430	230	540		661	
Starvation Cap Reductn		0	77	0	0	0	0		0	
Spillback Cap Reductn		38	0	0	36	0	40		47	
Storage Cap Reductn		0	0	0	0	0	0		0	
Reduced v/c Ratio		1.23	0.53	0.92	0.36	0.75	0.24		0.35	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 5 (4%), Referenced to phase 1:EBWB, Start of Green

Natural Cycle: 140

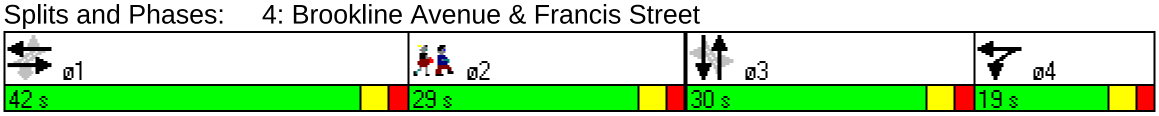
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Brookline Avenue & Francis Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	14	10	10	12	14	11	11	11	16	16	16
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes		1.00	0.96	1.00	1.00		1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt		1.00	0.85	1.00	0.99		1.00	0.95			0.98	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		3394	1283	1417	3002		1468	1463			1860	
Flt Permitted		0.66	1.00	0.11	1.00		0.54	1.00			0.97	
Satd. Flow (perm)		2247	1283	170	3002		836	1463			1820	
Volume (vph)	16	725	156	215	446	32	147	68	32	16	137	32
Peak-hour factor, PHF	0.89	0.89	0.89	0.96	0.96	0.96	0.85	0.85	0.85	0.87	0.87	0.87
Adj. Flow (vph)	18	815	175	224	465	33	173	80	38	18	157	37
RTOR Reduction (vph)	0	0	0	0	4	0	0	11	0	0	5	0
Lane Group Flow (vph)	0	833	175	224	494	0	173	107	0	0	207	0
Confl. Bikes (#/hr)			12			1			4			9
Heavy Vehicles (%)	2%	2%	2%	7%	7%	7%	7%	7%	7%	1%	1%	1%
Turn Type	Perm		Perm	D.P+P			Perm			Perm		
Protected Phases		1		4	1 4			3			3	
Permitted Phases	1		1	1			3			3		
Actuated Green, G (s)		34.0	34.0	48.0	53.0		42.4	42.4			42.4	
Effective Green, g (s)		35.0	35.0	50.0	54.0		43.4	43.4			43.4	
Actuated g/C Ratio		0.29	0.29	0.42	0.45		0.36	0.36			0.36	
Clearance Time (s)		5.0	5.0	5.0			5.0	5.0			5.0	
Vehicle Extension (s)		2.0	2.0	2.0			2.0	2.0			2.0	
Lane Grp Cap (vph)		655	374	227	1351		302	529			658	
v/s Ratio Prot				c0.12	0.16			0.07				
v/s Ratio Perm		c0.37	0.14	0.29			c0.21				0.11	
v/c Ratio		1.27	0.47	0.99	0.37		0.57	0.20			0.31	
Uniform Delay, d1		42.5	34.9	33.9	21.7		30.8	26.4			27.6	
Progression Factor		0.59	0.55	1.44	1.13		1.00	1.00			1.00	
Incremental Delay, d2		129.9	2.6	46.0	0.5		1.6	0.1			0.1	
Delay (s)		155.1	21.8	94.8	25.0		32.5	26.4			27.7	
Level of Service		F	C	F	C		C	C			C	
Approach Delay (s)		131.9			46.7			30.0			27.7	
Approach LOS		F			D			C			C	

Intersection Summary			
HCM Average Control Delay	81.2	HCM Level of Service	F
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.6
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL	NBR	SBL	SBT	ø2
Lane Configurations								
Volume (vph)	952	74	655	68	74	38	11	
Lane Group Flow (vph)	2198	0	776	93	101	46	111	
Turn Type		D.P+P		D.Pm	custom	Perm		
Protected Phases	1	6	6				5	2
Permitted Phases		1	1	5	5	5		
Detector Phases	1	6	6	5	5	5	5	
Minimum Initial (s)	10.0	6.0	6.0	8.0	8.0	8.0	8.0	5.0
Minimum Split (s)	29.0	11.0	11.0	13.0	13.0	13.0	13.0	24.0
Total Split (s)	55.0	12.0	12.0	29.0	29.0	29.0	29.0	24.0
Total Split (%)	45.8%	10.0%	10.0%	24.2%	24.2%	24.2%	24.2%	20%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	Max	Max	None	None	None	None	None
v/c Ratio	1.78		0.77	0.72	0.38	0.22	0.39	
Control Delay	377.5		15.2	76.8	12.3	45.2	14.5	
Queue Delay	101.1		0.0	0.0	0.0	0.0	0.0	
Total Delay	478.6		15.2	76.8	12.3	45.2	14.5	
Queue Length 50th (ft)	~1363		51	70	0	32	9	
Queue Length 95th (ft)	487		m95	95	25	59	48	
Internal Link Dist (ft)	359		347				176	
Turn Bay Length (ft)				150		100		
Base Capacity (vph)	1233		1014	189	337	307	374	
Starvation Cap Reductn	138		0	0	0	0	0	
Spillback Cap Reductn	9		0	0	0	0	0	
Storage Cap Reductn	0		0	0	0	0	0	
Reduced v/c Ratio	2.01		0.77	0.49	0.30	0.15	0.30	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 14 (12%), Referenced to phase 1:EBWB, Start of Green

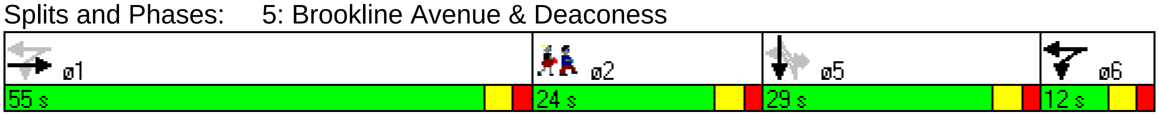
Natural Cycle: 150

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Brookline Avenue & Deaconess



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	11	11	13	10	10	10	13	12	12
Total Lost time (s)		4.0			4.0		4.0		4.0	4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00		1.00	1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00		1.00	1.00	0.97	
Flpb, ped/bikes		1.00			1.00		1.00		1.00	1.00	1.00	
Frt		0.99			1.00		1.00		0.85	1.00	0.87	
Flt Protected		1.00			0.99		0.95		1.00	0.95	1.00	
Satd. Flow (prot)		2897			2893		1378		1233	1473	1415	
Flt Permitted		1.00			0.52		0.57		1.00	0.95	1.00	
Satd. Flow (perm)		2897			1526		834		1233	1473	1415	
Volume (vph)	0	952	37	74	655	0	68	0	74	38	11	81
Peak-hour factor, PHF	0.45	0.45	0.45	0.94	0.94	0.94	0.73	0.73	0.73	0.83	0.83	0.83
Adj. Flow (vph)	0	2116	82	79	697	0	93	0	101	46	13	98
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	87	0	84	0
Lane Group Flow (vph)	0	2196	0	0	776	0	93	0	14	46	27	0
Confl. Bikes (#/hr)			8			6						12
Heavy Vehicles (%)	4%	4%	4%	8%	8%	8%	10%	10%	10%	2%	2%	2%
Parking (#/hr)			2							1		
Turn Type				D.P+P			D.Pm		custom	Perm		
Protected Phases		1		6	6						5	
Permitted Phases				1	1		5		5	5		
Actuated Green, G (s)		50.0			64.9		16.1		16.1	16.1	16.1	
Effective Green, g (s)		51.0			66.9		17.1		17.1	17.1	17.1	
Actuated g/C Ratio		0.42			0.56		0.14		0.14	0.14	0.14	
Clearance Time (s)		5.0			5.0		5.0		5.0	5.0	5.0	
Vehicle Extension (s)		2.0			2.0		2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)		1231			1032		119		176	210	202	
v/s Ratio Prot		c0.76			c0.10						0.02	
v/s Ratio Perm					0.32		c0.11		0.01	0.03		
v/c Ratio		1.78			0.75		0.78		0.08	0.22	0.13	
Uniform Delay, d1		34.5			20.2		49.6		44.6	45.5	45.0	
Progression Factor		0.69			0.62		1.00		1.00	1.00	1.00	
Incremental Delay, d2		355.7			2.5		25.7		0.1	0.2	0.1	
Delay (s)		379.6			15.0		75.4		44.7	45.7	45.1	
Level of Service		F			B		E		D	D	D	
Approach Delay (s)		379.6			15.0			59.4			45.3	
Approach LOS		F			B			E			D	

Intersection Summary			
HCM Average Control Delay	260.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	36.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	ø2
Lane Configurations										
Volume (vph)	55	783	204	606	84	275	199	129	272	
Lane Group Flow (vph)	58	882	210	906	114	372	269	145	354	
Turn Type	Perm		D.P+P		Perm		pt+ov	Perm		
Protected Phases		1	4	1 4		3	3 4		3	2
Permitted Phases	1		1		3			3		
Detector Phases	1	1	4	1 4	3	3	3 4	3	3	
Minimum Initial (s)	10.0	10.0	6.0		8.0	8.0		8.0	8.0	7.0
Minimum Split (s)	15.0	15.0	11.0		13.0	13.0		13.0	13.0	25.0
Total Split (s)	51.0	51.0	15.0	66.0	29.0	29.0	44.0	29.0	29.0	25.0
Total Split (%)	42.5%	42.5%	12.5%	55.0%	24.2%	24.2%	36.7%	24.2%	24.2%	21%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lead/Lag	Lead	Lead	Lag		Lead	Lead		Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	C-Max	C-Max	None		None	None		None	None	Ped
v/c Ratio	1.12	0.73	0.85	0.60	2.15	1.13	0.60	3.09	1.23	
Control Delay	94.5	4.4	49.5	22.4	589.5	120.2	27.9	1004.1	163.5	
Queue Delay	0.0	8.3	0.0	0.0	0.0	0.0	0.7	0.0	0.0	
Total Delay	94.5	12.7	49.5	22.4	589.5	120.2	28.5	1004.1	163.5	
Queue Length 50th (ft)	~52	58	88	249	~104	~327	141	~194	~341	
Queue Length 95th (ft)	m5	m23	#207	315	m#170	#380	152	m#323	#510	
Internal Link Dist (ft)		347		735		335			263	
Turn Bay Length (ft)	70		350		150			170		
Base Capacity (vph)	52	1203	246	1512	53	329	448	47	288	
Starvation Cap Reductn	0	286	0	0	0	0	37	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.12	0.96	0.85	0.60	2.15	1.13	0.65	3.09	1.23	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 30 (25%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Brookline Avenue & Longwood Avenue

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	11	10	10	10	10	10	10	10
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	*0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.95		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1501	3072		1501	2928		1501	1580	1343	1342	1381	
Flt Permitted	0.09	1.00		0.18	1.00		0.16	1.00	1.00	0.16	1.00	
Satd. Flow (perm)	134	3072		278	2928		253	1580	1343	226	1381	
Volume (vph)	55	783	55	204	606	273	84	275	199	129	272	43
Peak-hour factor, PHF	0.95	0.95	0.95	0.97	0.97	0.97	0.74	0.74	0.74	0.89	0.89	0.89
Adj. Flow (vph)	58	824	58	210	625	281	114	372	269	145	306	48
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	58	882	0	210	906	0	114	372	269	145	354	0
Confl. Bikes (#/hr)			39			28			4			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	13%	13%	13%
Turn Type	Perm			D.P+P			Perm		pt+ov	Perm		
Protected Phases		1		4	1 4			3	3 4		3	
Permitted Phases	1			1			3			3		
Actuated Green, G (s)	46.0	46.0		56.0	61.0		24.0	24.0	39.0	24.0	24.0	
Effective Green, g (s)	47.0	47.0		58.0	62.0		25.0	25.0	40.0	25.0	25.0	
Actuated g/C Ratio	0.39	0.39		0.48	0.52		0.21	0.21	0.33	0.21	0.21	
Clearance Time (s)	5.0	5.0		5.0			5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	2.0		2.0			2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	52	1203		246	1513		53	329	448	47	288	
v/s Ratio Prot		0.29		c0.08	0.31			0.24	0.20		0.26	
v/s Ratio Perm	c0.43			0.33			0.45			c0.64		
v/c Ratio	1.12	0.73		0.85	0.60		2.15	1.13	0.60	3.09	1.23	
Uniform Delay, d1	36.5	31.1		21.9	20.3		47.5	47.5	33.3	47.5	47.5	
Progression Factor	0.19	0.13		1.00	1.00		0.73	0.73	0.67	0.85	0.85	
Incremental Delay, d2	73.3	0.4		23.1	0.4		566.8	86.1	1.3	986.7	127.5	
Delay (s)	80.1	4.4		44.9	20.7		601.4	120.7	23.6	1027.0	167.6	
Level of Service	F	A		D	C		F	F	C	F	F	
Approach Delay (s)		9.0			25.3			158.7			417.4	
Approach LOS		A			C			F			F	

Intersection Summary			
HCM Average Control Delay	110.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	37.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Configurations					
Volume (vph)	51	49	268	140	215
Lane Group Flow (vph)	95	241	486	152	308
Sign Control	Stop	Stop	Free		Free

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	32	51	5	89	49	84	11	268	168	140	215	68
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	35	55	5	97	53	91	12	291	183	152	234	74
Pedestrians		225			324			225			328	
Lane Width (ft)		13.0			12.0			14.0			13.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		20			27			22			30	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											408	
pX, platoon unblocked												
vC, conflicting volume	1652	1622	721	1527	1567	1035	533			798		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1652	1622	721	1527	1567	1035	533			798		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	98	0	0	37	99			75		
cM capacity (veh/h)	0	44	266	0	48	145	825			602		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	96	241	486	152	308
Volume Left	35	97	12	152	0
Volume Right	5	91	183	0	74
cSH	0	0	825	602	1700
Volume to Capacity	Err	Err	0.01	0.25	0.18
Queue Length 95th (ft)	Err	Err	1	25	0
Control Delay (s)	Err	Err	0.4	13.0	0.0
Lane LOS	F	F	A	B	
Approach Delay (s)	Err	Err	0.4	4.3	
Approach LOS	F	F			

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBL
Lane Configurations			
Volume (vph)	335	85	26
Lane Group Flow (vph)	418	134	49
Sign Control	Free	Free	Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	335	41	37	85	26	21
Peak Hour Factor	0.90	0.90	0.91	0.91	0.96	0.96
Hourly flow rate (vph)	372	46	41	93	27	22
Pedestrians	27			197	170	
Lane Width (ft)	12.0			12.0	13.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	2			16	15	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			588		767	762
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			588		767	762
tC, single (s)			4.2		6.6	6.4
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			95		90	92
cM capacity (veh/h)			803		277	272

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	418	134	49
Volume Left	0	41	27
Volume Right	46	0	22
cSH	1700	803	275
Volume to Capacity	0.25	0.05	0.18
Queue Length 95th (ft)	0	4	16
Control Delay (s)	0.0	3.3	20.9
Lane LOS		A	C
Approach Delay (s)	0.0	3.3	20.9
Approach LOS			C

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations	✥	✥	✥	✥
Volume (vph)	196	75	11	0
Lane Group Flow (vph)	473	206	50	96
Sign Control	Stop	Stop	Stop	Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	173	196	5	5	75	68	11	11	5	32	0	37
Peak Hour Factor	0.77	0.86	0.25	0.25	0.88	0.67	0.50	0.50	0.79	0.65	0.25	0.79
Hourly flow rate (vph)	225	228	20	20	85	101	22	22	6	49	0	47

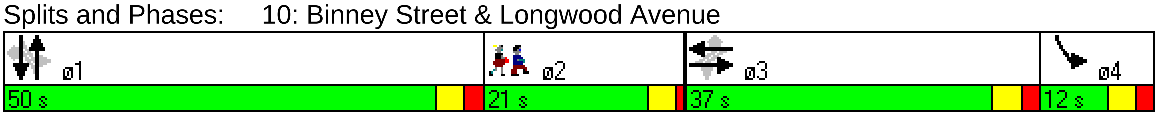
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	473	207	50	96
Volume Left (vph)	225	20	22	49
Volume Right (vph)	20	101	6	47
Hadj (s)	0.12	-0.12	0.06	-0.17
Departure Headway (s)	4.7	4.8	5.7	5.4
Degree Utilization, x	0.62	0.27	0.08	0.14
Capacity (veh/h)	742	714	536	581
Control Delay (s)	14.9	9.6	9.3	9.3
Approach Delay (s)	14.9	9.6	9.3	9.3
Approach LOS	B	A	A	A

Intersection Summary			
Delay	12.6		
HCM Level of Service	B		
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	ø2
Lane Configurations											
Volume (vph)	94	53	73	42	93	63	425	127	334	53	
Lane Group Flow (vph)	0	306	0	131	106	0	558	146	384	61	
Turn Type	Perm		Perm		Perm	Perm		pm+pt		Perm	
Protected Phases		3		3			1	4	1		2
Permitted Phases	3		3		3	1		1		1	
Detector Phases	3	3	3	3	3	1	1	4	1	1	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0	10.0	4.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	15.0	15.0	12.0	15.0	15.0	21.0
Total Split (s)	37.0	37.0	37.0	37.0	37.0	50.0	50.0	12.0	50.0	50.0	21.0
Total Split (%)	30.8%	30.8%	30.8%	30.8%	30.8%	41.7%	41.7%	10.0%	41.7%	41.7%	18%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lead/Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	None
v/c Ratio		0.74		0.41	0.21		0.67	0.38	0.60	0.11	
Control Delay		40.6		30.9	4.8		31.4	21.0	31.0	10.0	
Queue Delay		0.0		0.0	0.0		1.3	0.0	1.1	0.0	
Total Delay		40.6		30.9	4.8		32.7	21.0	32.1	10.0	
Queue Length 50th (ft)		184		75	0		154	59	187	3	
Queue Length 95th (ft)		226		111	31		m231	m67	m187	m4	
Internal Link Dist (ft)		370		168			243		335		
Turn Bay Length (ft)								75			
Base Capacity (vph)		419		329	516		834	387	641	538	
Starvation Cap Reductn		0		0	0		119	0	96	0	
Spillback Cap Reductn		0		0	0		0	0	18	0	
Storage Cap Reductn		0		0	0		0	0	0	0	
Reduced v/c Ratio		0.73		0.40	0.21		0.78	0.38	0.70	0.11	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 89 (74%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Binney Street & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	11	11	10	10	11	11	10	11	10
Total Lost time (s)		4.0			4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor		1.00			1.00	1.00		0.95		1.00	1.00	1.00
Frpb, ped/bikes		1.00			1.00	1.00		1.00		1.00	1.00	0.96
Flpb, ped/bikes		1.00			1.00	1.00		1.00		1.00	1.00	1.00
Frt		0.94			1.00	0.85		0.99		1.00	1.00	0.85
Flt Protected		0.98			0.97	1.00		0.99		0.95	1.00	1.00
Satd. Flow (prot)		1411			1457	1233		2637		1404	1531	1203
Flt Permitted		0.83			0.65	1.00		0.77		0.36	1.00	1.00
Satd. Flow (perm)		1185			972	1233		2054		530	1531	1203
Volume (vph)	94	53	107	73	42	93	63	425	26	127	334	53
Peak-hour factor, PHF	0.83	0.83	0.83	0.88	0.88	0.88	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	113	64	129	83	48	106	68	462	28	146	384	61
RTOR Reduction (vph)	0	19	0	0	0	68	0	3	0	0	0	35
Lane Group Flow (vph)	0	287	0	0	131	38	0	555	0	146	384	26
Confl. Bikes (#/hr)									6			25
Heavy Vehicles (%)	16%	16%	16%	10%	10%	10%	15%	15%	15%	8%	8%	8%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0
Turn Type	Perm			Perm		Perm	Perm			pm+pt		Perm
Protected Phases		3			3			1		4	1	
Permitted Phases	3			3		3	1			1		1
Actuated Green, G (s)		41.8			41.8	41.8		49.3		63.2	49.3	49.3
Effective Green, g (s)		42.8			42.8	42.8		50.3		65.2	50.3	50.3
Actuated g/C Ratio		0.36			0.36	0.36		0.42		0.54	0.42	0.42
Clearance Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)		2.0			2.0	2.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		423			347	440		861		396	642	504
v/s Ratio Prot										c0.05	0.25	
v/s Ratio Perm		c0.24			0.13	0.03		c0.27		0.15		0.02
v/c Ratio		0.68			0.38	0.09		0.64		0.37	0.60	0.05
Uniform Delay, d1		32.7			28.7	25.6		27.7		14.5	27.0	20.7
Progression Factor		1.00			1.00	1.00		0.94		1.35	1.05	1.66
Incremental Delay, d2		3.4			0.3	0.0		2.9		0.0	0.4	0.0
Delay (s)		36.1			28.9	25.6		29.0		19.6	28.7	34.4
Level of Service		D			C	C		C		B	C	C
Approach Delay (s)		36.1			27.5			29.0			27.0	
Approach LOS		D			C			C			C	

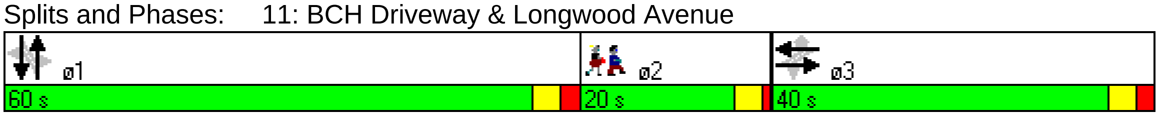
Intersection Summary			
HCM Average Control Delay	29.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	ø2
Lane Configurations										
Volume (vph)	39	45	38	23	134	34	325	107	394	
Lane Group Flow (vph)	49	98	0	88	194	37	426	119	497	
Turn Type	Perm		Perm		Perm	Perm		Perm		
Protected Phases		3		3			1		1	2
Permitted Phases	3		3		3	1		1		
Detector Phases	3	3	3	3	3	1	1	1	1	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	20.0
Total Split (s)	40.0	40.0	40.0	40.0	40.0	60.0	60.0	60.0	60.0	20.0
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%	50.0%	50.0%	50.0%	50.0%	17%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lead/Lag						Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	None
v/c Ratio	0.22	0.32		0.40	0.82	0.15	0.55	0.36	0.57	
Control Delay	38.9	41.3		44.5	70.7	17.3	20.9	16.0	16.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.1	0.0	0.2	
Total Delay	38.9	41.3		44.5	70.7	17.3	21.0	16.0	16.4	
Queue Length 50th (ft)	32	65		60	145	13	211	36	152	
Queue Length 95th (ft)	53	90		73	149	42	397	m59	318	
Internal Link Dist (ft)		298		1163			436		243	
Turn Bay Length (ft)						90				
Base Capacity (vph)	329	444		323	347	243	770	329	871	
Starvation Cap Reductn	0	0		0	0	0	0	0	46	
Spillback Cap Reductn	0	0		0	0	0	29	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	
Reduced v/c Ratio	0.15	0.22		0.27	0.56	0.15	0.57	0.36	0.60	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 85 (71%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: BCH Driveway & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Lane Width	13	13	13	10	10	10	10	10	10	12	12	12
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94			1.00	0.85	1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1502	1482			1319	1156	1201	1224		1346	1387	
Flt Permitted	0.67	1.00			0.78	1.00	0.39	1.00		0.44	1.00	
Satd. Flow (perm)	1065	1482			1060	1156	497	1224		627	1387	
Volume (vph)	39	45	32	38	23	134	34	325	72	107	394	53
Peak-hour factor, PHF	0.79	0.79	0.79	0.69	0.69	0.69	0.93	0.93	0.93	0.90	0.90	0.90
Adj. Flow (vph)	49	57	41	55	33	194	37	349	77	119	438	59
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	49	98	0	0	88	194	37	426	0	119	497	0
Confl. Bikes (#/hr)									7			15
Heavy Vehicles (%)	0%	0%	0%	5%	5%	5%	13%	13%	13%	8%	8%	8%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		3			3			1			1	
Permitted Phases	3			3		3	1			1		
Actuated Green, G (s)	23.5	23.5			23.5	23.5	72.9	72.9		72.9	72.9	
Effective Green, g (s)	24.5	24.5			24.5	24.5	73.9	73.9		73.9	73.9	
Actuated g/C Ratio	0.20	0.20			0.20	0.20	0.62	0.62		0.62	0.62	
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	217	303			216	236	306	754		386	854	
v/s Ratio Prot		0.07						0.35			c0.36	
v/s Ratio Perm	0.05				0.08	c0.17	0.07			0.19		
v/c Ratio	0.23	0.32			0.41	0.82	0.12	0.56		0.31	0.58	
Uniform Delay, d1	39.8	40.7			41.4	45.7	9.6	13.6		10.9	13.8	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		0.79	0.77	
Incremental Delay, d2	0.2	0.2			0.5	19.2	0.8	3.1		1.7	2.4	
Delay (s)	40.0	40.9			41.9	64.9	10.4	16.6		10.3	13.0	
Level of Service	D	D			D	E	B	B		B	B	
Approach Delay (s)		40.6			57.7			16.1			12.5	
Approach LOS		D			E			B			B	

Intersection Summary			
HCM Average Control Delay	24.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.6
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBT	SBT
Lane Configurations		
Volume (vph)	295	308
Lane Group Flow (vph)	488	493
Sign Control	Free	Free

Intersection Summary
Control Type: Unsignalized

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	295	154	145	308	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	321	167	158	335	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	750			704		
pX, platoon unblocked						
vC, conflicting volume			488		887	404
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			488		887	404
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			85		100	100
cM capacity (veh/h)			1071		242	596

Direction, Lane #	NB 1	SB 1	SB 2
Volume Total	488	269	223
Volume Left	0	158	0
Volume Right	167	0	0
cSH	1700	1071	1700
Volume to Capacity	0.29	0.15	0.13
Queue Length 95th (ft)	0	13	0
Control Delay (s)	0.0	5.8	0.0
Lane LOS		A	
Approach Delay (s)	0.0	3.2	
Approach LOS			

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	SBT
Lane Configurations				
Volume (vph)	94	130	306	450
Lane Group Flow (vph)	131	181	352	643
Sign Control	Stop		Free	Free

Intersection Summary
Control Type: Unsignalized

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	94	130	306	0	0	450
Peak Hour Factor	0.72	0.72	0.87	0.87	0.70	0.70
Hourly flow rate (vph)	131	181	352	0	0	643
Pedestrians			279			473
Lane Width (ft)			12.0			11.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			23			36
Right turn flare (veh)		4				
Median type	None					
Median storage veh)						
Upstream signal (ft)			938			516
pX, platoon unblocked						
vC, conflicting volume	952	825			352	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	952	825			352	
tC, single (s)	7.1	7.2			4.3	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.3	
p0 queue free %	28	3			100	
cM capacity (veh/h)	182	186			1148	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	311	352	321	321
Volume Left	131	0	0	0
Volume Right	181	0	0	0
cSH	294	1700	1700	1700
Volume to Capacity	1.06	0.21	0.19	0.19
Queue Length 95th (ft)	298	0	0	0
Control Delay (s)	107.9	0.0	0.0	0.0
Lane LOS	F			
Approach Delay (s)	107.9	0.0	0.0	
Approach LOS	F			

Intersection Summary			
Average Delay	25.7		
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations					
Volume (vph)	68	163	457	171	69
Lane Group Flow (vph)	119	286	644	241	122
Sign Control		Free	Free		Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	68	163	457	171	69	19
Peak Hour Factor	0.57	0.57	0.71	0.71	0.72	0.72
Hourly flow rate (vph)	119	286	644	241	96	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	885				1168	644
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	885				1168	644
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	84				47	94
cM capacity (veh/h)	725				180	477

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	119	286	644	241	122
Volume Left	119	0	0	0	96
Volume Right	0	0	0	241	26
cSH	725	1700	1700	1700	208
Volume to Capacity	0.16	0.17	0.38	0.14	0.59
Queue Length 95th (ft)	15	0	0	0	82
Control Delay (s)	10.9	0.0	0.0	0.0	44.3
Lane LOS	B				E
Approach Delay (s)	3.2		0.0		44.3
Approach LOS					E

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	80	636	105	489	32	340	149	142
Lane Group Flow (vph)	108	801	124	877	0	580	189	247
Turn Type	Prot		Prot		Perm		Perm	
Protected Phases	1	6	5	2		8		4
Permitted Phases					8		4	
Detector Phases	1	6	5	2	8	8	4	4
Minimum Initial (s)	4.0	10.0	4.0	10.0	4.0	4.0	4.0	4.0
Minimum Split (s)	15.0	19.0	15.0	19.0	15.0	15.0	15.0	15.0
Total Split (s)	19.0	48.0	19.0	48.0	33.0	33.0	33.0	33.0
Total Split (%)	19.0%	48.0%	19.0%	48.0%	33.0%	33.0%	33.0%	33.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	None	C-Max	Max	Max	Max	Max
v/c Ratio	0.60	0.61	0.66	0.72		1.41	2.55	0.63
Control Delay	55.1	23.4	58.2	26.0		227.8	757.0	39.1
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	55.1	23.4	58.2	26.0		227.8	757.0	39.1
Queue Length 50th (ft)	65	203	75	240		~499	~203	136
Queue Length 95th (ft)	111	242	134	325		#446	#254	187
Internal Link Dist (ft)		1220		578		409		130
Turn Bay Length (ft)	115		85					
Base Capacity (vph)	214	1309	211	1220		412	74	394
Starvation Cap Reductn	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0
Reduced v/c Ratio	0.50	0.61	0.59	0.72		1.41	2.55	0.63

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 40 (40%), Referenced to phase 2:WBT and 6:EBT, Start of Green

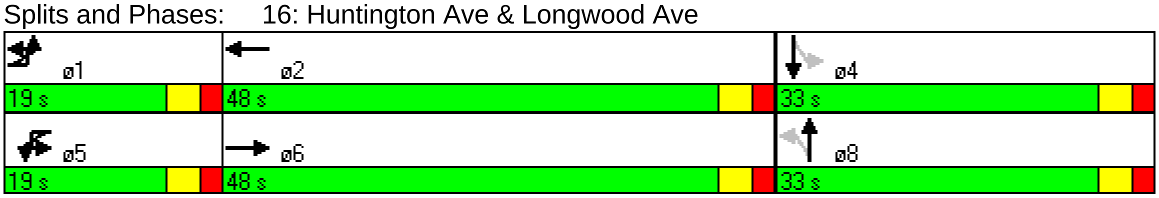
Natural Cycle: 100

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 16: Huntington Ave & Longwood Ave



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	11	10	10	11	11	16	16	16	10
Total Lost time (s)		4.0	4.0			4.0	4.0			4.0		4.0
Lane Util. Factor		1.00	0.95			1.00	0.95			1.00		1.00
Frpb, ped/bikes		1.00	0.98			1.00	0.91			0.99		1.00
Flpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		1.00
Frt		1.00	0.99			1.00	0.94			1.00		1.00
Flt Protected		0.95	1.00			0.95	1.00			1.00		0.95
Satd. Flow (prot)		1428	2863			1409	2501			1553		1391
Flt Permitted		0.95	1.00			0.95	1.00			0.91		0.18
Satd. Flow (perm)		1428	2863			1409	2501			1418		257
Volume (vph)	11	80	636	37	5	105	489	292	32	340	11	149
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.89	0.89	0.89	0.89	0.66	0.66	0.66	0.79
Adj. Flow (vph)	13	95	757	44	6	118	549	328	48	515	17	189
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	108	801	0	0	124	877	0	0	580	0	189
Confl. Peds. (#/hr)		70		89		89		70	57		374	374
Confl. Bikes (#/hr)				10				5			7	
Heavy Vehicles (%)	0%	7%	7%	7%	0%	8%	8%	8%	9%	9%	9%	9%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	0	0	0	0
Parking (#/hr)									1	1	1	
Turn Type	Prot	Prot			Prot	Prot			Perm			Perm
Protected Phases	1	1	6		5	5	2			8		
Permitted Phases									8			4
Actuated Green, G (s)		10.2	44.7			12.3	46.8			28.0		28.0
Effective Green, g (s)		11.2	45.7			13.3	47.8			29.0		29.0
Actuated g/C Ratio		0.11	0.46			0.13	0.48			0.29		0.29
Clearance Time (s)		5.0	5.0			5.0	5.0			5.0		5.0
Vehicle Extension (s)		3.0	3.0			3.0	3.0			3.0		3.0
Lane Grp Cap (vph)		160	1308			187	1195			411		75
v/s Ratio Prot		0.08	0.28			c0.09	c0.35					
v/s Ratio Perm										0.41		c0.74
v/c Ratio		0.68	0.61			0.66	0.73			1.41		2.52
Uniform Delay, d1		42.7	20.5			41.2	21.0			35.5		35.5
Progression Factor		1.00	1.00			1.00	1.00			1.00		1.00
Incremental Delay, d2		10.7	2.1			8.5	4.0			199.0		721.7
Delay (s)		53.4	22.6			49.8	25.0			234.5		757.2
Level of Service		D	C			D	C			F		F
Approach Delay (s)			26.3				28.1			234.5		
Approach LOS			C				C			F		

Intersection Summary			
HCM Average Control Delay	116.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Lane Width	10	10
Total Lost time (s)	4.0	
Lane Util. Factor	1.00	
Frpb, ped/bikes	0.97	
Flpb, ped/bikes	1.00	
Frt	0.96	
Flt Protected	1.00	
Satd. Flow (prot)	1359	
Flt Permitted	1.00	
Satd. Flow (perm)	1359	
Volume (vph)	142	53
Peak-hour factor, PHF	0.79	0.79
Adj. Flow (vph)	180	67
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	247	0
Confl. Peds. (#/hr)		57
Confl. Bikes (#/hr)		4
Heavy Vehicles (%)	9%	9%
Bus Blockages (#/hr)	0	0
Parking (#/hr)		
Turn Type		
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	28.0	
Effective Green, g (s)	29.0	
Actuated g/C Ratio	0.29	
Clearance Time (s)	5.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	394	
v/s Ratio Prot	0.18	
v/s Ratio Perm		
v/c Ratio	0.63	
Uniform Delay, d1	30.8	
Progression Factor	1.00	
Incremental Delay, d2	7.4	
Delay (s)	38.2	
Level of Service	D	
Approach Delay (s)	349.9	
Approach LOS	F	

Intersection Summary

Lane Group	EBT	WBT	NBL
Lane Configurations			
Volume (vph)	909	921	3
Lane Group Flow (vph)	1017	1129	32
Sign Control	Free	Free	Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	909	57	16	921	3	16
Peak Hour Factor	0.95	0.95	0.83	0.83	0.59	0.59
Hourly flow rate (vph)	957	60	19	1110	5	27
Pedestrians					16	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					1	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	494					
pX, platoon unblocked			0.72		0.72	0.72
vC, conflicting volume			1033		1411	524
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			659		1183	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		96	97
cM capacity (veh/h)			663		128	776

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	638	379	241	444	444	32
Volume Left	0	0	19	0	0	5
Volume Right	0	60	0	0	0	27
cSH	1700	1700	663	1700	1700	431
Volume to Capacity	0.38	0.22	0.03	0.26	0.26	0.07
Queue Length 95th (ft)	0	0	2	0	0	6
Control Delay (s)	0.0	0.0	1.2	0.0	0.0	14.0
Lane LOS			A			B
Approach Delay (s)	0.0		0.3			14.0
Approach LOS						B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group
Lane Configurations
Volume (vph)
Lane Group Flow (vph)
Sign Control

Intersection Summary
Control Type: Unsignalized

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	0	0	0	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085

Direction, Lane #	WB 1	NE 1
Volume Total	0	0
Volume Left	0	0
Volume Right	0	0
cSH	1700	1700
Volume to Capacity	0.00	0.00
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		A
Approach Delay (s)	0.0	0.0
Approach LOS		A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT
Lane Configurations		
Volume (vph)	507	343
Lane Group Flow (vph)	937	501
Sign Control	Free	Free

Intersection Summary
Control Type: Unsignalized

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	507	205	53	343
Peak Hour Factor	0.25	0.25	0.76	0.76	0.79	0.79
Hourly flow rate (vph)	0	0	667	270	67	434
Pedestrians	421					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			210			1244
pX, platoon unblocked	0.72	0.72			0.72	
vC, conflicting volume	1574	1223			1358	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1795	1309			1496	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	100	100			78	
cM capacity (veh/h)	41	110			304	

Direction, Lane #	NB 1	SB 1	SB 2
Volume Total	937	212	289
Volume Left	0	67	0
Volume Right	270	0	0
cSH	1700	304	1700
Volume to Capacity	0.55	0.22	0.17
Queue Length 95th (ft)	0	21	0
Control Delay (s)	0.0	9.7	0.0
Lane LOS		A	
Approach Delay (s)	0.0	4.1	
Approach LOS			

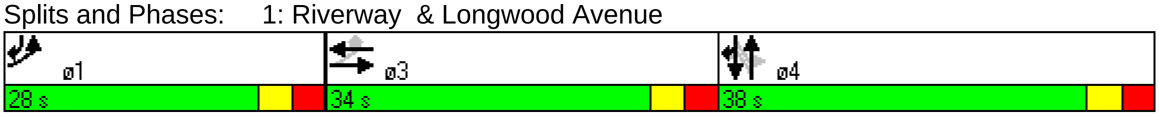
Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	259	565	1239	148	119	330	58	213	189
Lane Group Flow (vph)	270	596	1318	157	134	460	0	295	205
Turn Type	pm+pt			Perm	Perm		Perm		pt+ov
Protected Phases	1	3	3			4		4	1 4
Permitted Phases	3			3	4		4		
Detector Phases	1	3	3	3	4	4	4	4	1 4
Minimum Initial (s)	8.0	15.0	15.0	15.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	28.0	34.0	34.0	34.0	21.0	21.0	21.0	21.0	
Total Split (s)	28.0	34.0	34.0	34.0	38.0	38.0	38.0	38.0	66.0
Total Split (%)	28.0%	34.0%	34.0%	34.0%	38.0%	38.0%	38.0%	38.0%	66.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lead/Lag		Lead	Lead	Lead	Lag	Lag	Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Min	Min	Min	C-Max	C-Max	C-Max	C-Max	
v/c Ratio	0.69	0.60	1.29	0.30	0.58	0.72		0.98	0.24
Control Delay	29.3	32.3	167.5	9.0	38.9	35.5		82.0	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.8		7.4	0.0
Total Delay	29.3	32.3	167.5	9.0	38.9	36.3		89.4	9.7
Queue Length 50th (ft)	106	173	~594	13	70	247		184	52
Queue Length 95th (ft)	195	234	#727	62	136	359		#358	87
Internal Link Dist (ft)		340	414			412		311	
Turn Bay Length (ft)	225				50				100
Base Capacity (vph)	429	987	1024	519	232	640		301	902
Starvation Cap Reductn	0	0	0	0	0	40		0	0
Spillback Cap Reductn	0	0	0	0	0	0		9	0
Storage Cap Reductn	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.63	0.60	1.29	0.30	0.58	0.77		1.01	0.23

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 4:NBSB, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Riverway & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	10	11	10	10	16	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00			1.00	0.85	1.00	0.97			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00			0.99	1.00
Satd. Flow (prot)	1516	3026			3141	1328	1516	1856			1692	1454
Flt Permitted	0.12	1.00			1.00	1.00	0.43	1.00			0.52	1.00
Satd. Flow (perm)	196	3026			3141	1328	682	1856			886	1454
Volume (vph)	259	565	7	0	1239	148	119	330	79	58	213	189
Peak-hour factor, PHF	0.96	0.96	0.96	0.94	0.94	0.94	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	270	589	7	0	1318	157	134	371	89	63	232	205
RTOR Reduction (vph)	0	1	0	0	0	86	0	9	0	0	0	1
Lane Group Flow (vph)	270	595	0	0	1318	71	134	451	0	0	295	204
Confl. Bikes (#/hr)			4			1			91			20
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt					Perm	Perm			Perm		pt+ov
Protected Phases	1	3			3			4			4	1 4
Permitted Phases	3					3	4			4		
Actuated Green, G (s)	50.0	30.6			30.6	30.6	32.0	32.0			32.0	57.4
Effective Green, g (s)	54.0	32.6			32.6	32.6	34.0	34.0			34.0	59.4
Actuated g/C Ratio	0.54	0.33			0.33	0.33	0.34	0.34			0.34	0.59
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)	388	986			1024	433	232	631			301	864
v/s Ratio Prot	c0.15	0.20			c0.42			0.24				0.14
v/s Ratio Perm	0.23					0.05	0.20				c0.33	
v/c Ratio	0.70	0.60			1.29	0.16	0.58	0.72			0.98	0.24
Uniform Delay, d1	37.6	28.3			33.7	24.0	27.1	28.8			32.7	9.6
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	4.3	0.7			136.6	0.1	10.1	6.8			47.1	0.1
Delay (s)	41.9	29.0			170.3	24.1	37.2	35.6			79.7	9.6
Level of Service	D	C			F	C	D	D			E	A
Approach Delay (s)		33.0			154.8			35.9			51.0	
Approach LOS		C			F			D			D	

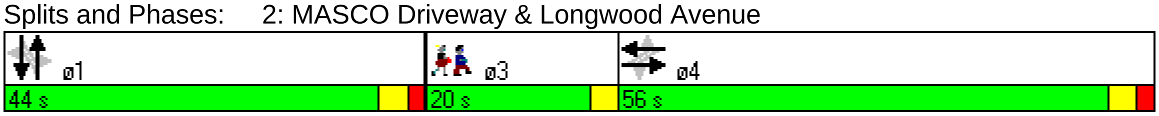
Intersection Summary			
HCM Average Control Delay	88.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	108.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	ø3
Lane Configurations									
Volume (vph)	10	10	129	87	94	318	33	307	
Lane Group Flow (vph)	0	500	157	249	107	412	39	381	
Turn Type	Perm		Perm		Perm		Perm		
Protected Phases		4		4		1		1	3
Permitted Phases	4		4		1		1		
Detector Phases	4	4	4	4	1	1	1	1	
Minimum Initial (s)	8.0	8.0	8.0	8.0	6.0	6.0	6.0	6.0	4.0
Minimum Split (s)	13.0	13.0	13.0	13.0	11.0	11.0	11.0	11.0	20.0
Total Split (s)	56.0	56.0	56.0	56.0	44.0	44.0	44.0	44.0	20.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	36.7%	36.7%	36.7%	36.7%	17%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lead/Lag	Lag	Lag	Lag	Lag					Lead
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	None	None	None
v/c Ratio		0.81	0.89	0.52	0.60	0.58	0.25	0.50	
Control Delay		26.5	82.8	26.7	31.0	21.6	30.7	27.6	
Queue Delay		1.2	1.7	0.0	0.0	0.6	0.0	2.5	
Total Delay		27.7	84.4	26.7	31.0	22.1	30.7	30.2	
Queue Length 50th (ft)		169	116	114	43	162	17	196	
Queue Length 95th (ft)		0	149	133	m#111	m229	55	344	
Internal Link Dist (ft)		21		145		263		412	
Turn Bay Length (ft)					70		90		
Base Capacity (vph)		787	265	688	177	714	157	765	
Starvation Cap Reductn		0	0	0	0	83	0	155	
Spillback Cap Reductn		122	31	21	0	6	0	261	
Storage Cap Reductn		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.75	0.67	0.37	0.60	0.65	0.25	0.76	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 68 (57%), Referenced to phase 2: and 6:, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: MASCO Driveway & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	13	13	10	11	11	10	11	11
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00		1.00	0.89		1.00	0.94		1.00	0.98	
Flpb, ped/bikes		1.00		0.97	1.00		0.83	1.00		0.78	1.00	
Frt		0.89		1.00	0.91		1.00	0.98		1.00	0.99	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1510		1622	1441		1231	1501		1184	1607	
Flt Permitted		0.91		0.22	1.00		0.42	1.00		0.39	1.00	
Satd. Flow (perm)		1374		369	1441		540	1501		485	1607	
Volume (vph)	10	10	105	129	87	117	94	318	45	33	307	17
Peak-hour factor, PHF	0.25	0.25	0.25	0.82	0.82	0.82	0.88	0.88	0.88	0.85	0.85	0.85
Adj. Flow (vph)	40	40	420	157	106	143	107	361	51	39	361	20
RTOR Reduction (vph)	0	198	0	0	51	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	302	0	157	198	0	107	409	0	39	380	0
Confl. Peds. (#/hr)				62		98	315		426	426		315
Confl. Bikes (#/hr)									2			76
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			1			1	
Permitted Phases	4			4			1			1		
Actuated Green, G (s)		33.5		33.5	33.5		56.5	56.5		56.5	56.5	
Effective Green, g (s)		34.5		34.5	34.5		57.5	57.5		57.5	57.5	
Actuated g/C Ratio		0.29		0.29	0.29		0.48	0.48		0.48	0.48	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		395		106	414		259	719		232	770	
v/s Ratio Prot					0.14			c0.27			0.24	
v/s Ratio Perm		0.22		c0.43			0.20			0.08		
v/c Ratio		0.76		1.48	0.48		0.41	0.57		0.17	0.49	
Uniform Delay, d1		39.0		42.8	35.3		20.3	22.4		17.7	21.3	
Progression Factor		1.00		1.00	1.00		0.74	0.75		1.00	1.00	
Incremental Delay, d2		7.7		260.0	0.3		0.2	0.3		0.1	0.2	
Delay (s)		46.8		302.8	35.6		15.1	17.0		17.8	21.5	
Level of Service		D		F	D		B	B		B	C	
Approach Delay (s)		46.8			138.9			16.6			21.2	
Approach LOS		D			F			B			C	

Intersection Summary			
HCM Average Control Delay	52.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	28.0
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT	ø2
Lane Configurations									
Volume (vph)	130	356	633	889	5	606	267	1071	
Lane Group Flow (vph)	138	396	681	973	0	643	281	1190	
Turn Type	Perm		D.P+P		Perm		Perm		
Protected Phases		1	4	1 4		3		3	2
Permitted Phases	1		1		3		3		
Detector Phases	1	1	4	1 4	3	3	3	3	
Minimum Initial (s)	10.0	10.0	6.0		10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	22.0	22.0	11.0		22.0	22.0	22.0	22.0	30.0
Total Split (s)	23.0	23.0	27.0	50.0	40.0	40.0	40.0	40.0	30.0
Total Split (%)	19.2%	19.2%	22.5%	41.7%	33.3%	33.3%	33.3%	33.3%	25%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0	2.0	1.0
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	Max		Max	Max	Max	Max	None
v/c Ratio	2.60	0.83	1.92	0.82		1.72	0.44	1.09	
Control Delay	794.8	65.1	444.2	29.6		361.5	12.1	93.2	
Queue Delay	0.0	0.0	2.4	20.5		0.0	0.0	0.0	
Total Delay	794.8	65.1	446.6	50.1		361.5	12.1	93.2	
Queue Length 50th (ft)	~180	158	~746	315		~778	43	~614	
Queue Length 95th (ft)	#312	#237	m#943	m369		#1005	124	#753	
Internal Link Dist (ft)		395		231		322		416	
Turn Bay Length (ft)	125								
Base Capacity (vph)	53	475	355	1189		374	635	1092	
Starvation Cap Reductn	0	0	1	239		0	0	0	
Spillback Cap Reductn	0	0	0	0		0	0	0	
Storage Cap Reductn	0	0	0	0		0	0	0	
Reduced v/c Ratio	2.60	0.83	1.92	1.02		1.72	0.44	1.09	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 15 (13%), Referenced to phase 1:EBWB, Start of Green

Natural Cycle: 145

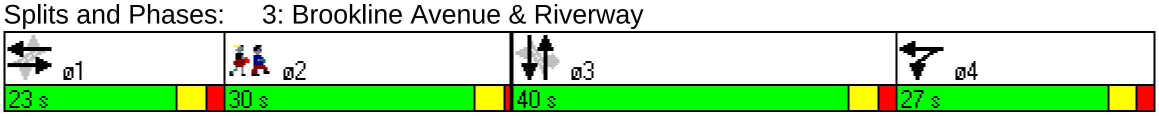
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Brookline Avenue & Riverway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	10	10	11	10	12	12	12	11	11	10
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.99		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1510	2998		1501	3099			1709	1434		3113	
Flt Permitted	0.22	1.00		0.25	1.00			0.74	1.00		1.00	
Satd. Flow (perm)	349	2998		399	3099			1274	1434		3113	
Volume (vph)	130	356	16	633	889	16	5	606	267	0	1071	60
Peak-hour factor, PHF	0.94	0.94	0.94	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	138	379	17	681	956	17	5	638	281	0	1127	63
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	134	0	3	0
Lane Group Flow (vph)	138	396	0	681	972	0	0	643	147	0	1187	0
Confl. Bikes (#/hr)			7			43			2			5
Heavy Vehicles (%)	4%	4%	4%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			D.P+P			Perm		Perm	Perm		
Protected Phases		1		4	1 4			3			3	
Permitted Phases	1			1			3		3	3		
Actuated Green, G (s)	17.2	17.2		39.2	44.2			41.0	41.0		41.0	
Effective Green, g (s)	18.2	18.2		41.2	45.2			42.0	42.0		42.0	
Actuated g/C Ratio	0.15	0.15		0.34	0.38			0.35	0.35		0.35	
Clearance Time (s)	5.0	5.0		5.0				5.0	5.0		5.0	
Vehicle Extension (s)	2.0	2.0		2.0				2.0	2.0		2.0	
Lane Grp Cap (vph)	53	455		348	1167			446	502		1090	
v/s Ratio Prot		0.13		c0.37	0.31						0.38	
v/s Ratio Perm	c0.40			0.30				c0.50	0.10			
v/c Ratio	2.60	0.87		1.96	0.83			1.44	0.29		1.09	
Uniform Delay, d1	50.9	49.7		34.7	34.0			39.0	28.2		39.0	
Progression Factor	1.00	1.00		0.95	0.73			1.00	1.00		1.00	
Incremental Delay, d2	773.2	19.8		438.6	5.5			211.2	1.5		54.7	
Delay (s)	824.1	69.6		471.6	30.3			250.2	29.7		93.7	
Level of Service	F	E		F	C			F	C		F	
Approach Delay (s)		264.5			212.0			183.1			93.7	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	179.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	36.8
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	ø2
Lane Configurations										
Volume (vph)	11	449	92	137	914	284	79	32	42	
Lane Group Flow (vph)	0	490	98	143	979	326	242	0	196	
Turn Type	Perm		Perm	D.P+P		Perm		Perm		
Protected Phases		1		4	1 4		3		3	2
Permitted Phases	1		1	1		3		3		
Detector Phases	1	1	1	4	1 4	3	3	3	3	
Minimum Initial (s)	13.0	13.0	13.0	6.0		8.0	8.0	8.0	8.0	4.0
Minimum Split (s)	18.0	18.0	18.0	11.0		18.0	18.0	18.0	18.0	29.0
Total Split (s)	40.0	40.0	40.0	16.0	56.0	35.0	35.0	35.0	35.0	29.0
Total Split (%)	33.3%	33.3%	33.3%	13.3%	46.7%	29.2%	29.2%	29.2%	29.2%	24%
Yellow Time (s)	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lead	Lead	Lag		Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	Max		None	None	None	None	None
v/c Ratio		0.68	0.25	0.47	0.73	0.98	0.38		0.31	
Control Delay		22.4	18.8	9.0	10.7	82.0	23.7		22.3	
Queue Delay		0.6	0.0	0.0	2.2	50.1	0.0		0.2	
Total Delay		23.0	18.8	9.0	12.8	132.1	23.7		22.5	
Queue Length 50th (ft)		75	28	26	126	202	75		58	
Queue Length 95th (ft)		m115	m49	m30	m123	#513	194		164	
Internal Link Dist (ft)		231			359		328		220	
Turn Bay Length (ft)			150			150				
Base Capacity (vph)		721	390	303	1349	333	630		638	
Starvation Cap Reductn		10	0	0	231	0	0		0	
Spillback Cap Reductn		52	0	0	227	45	1		87	
Storage Cap Reductn		0	0	0	0	0	0		0	
Reduced v/c Ratio		0.73	0.25	0.47	0.88	1.13	0.38		0.36	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 3 (3%), Referenced to phase 1:EBWB, Start of Green

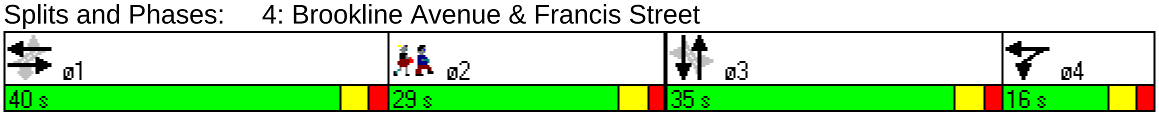
Natural Cycle: 110

Control Type: Actuated-Coordinated

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Brookline Avenue & Francis Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	14	10	10	12	14	11	11	11	16	16	16
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes		1.00	0.98	1.00	1.00		1.00	0.99			0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.91			0.92	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)		3393	1300	1458	3108		1555	1467			1755	
Flt Permitted		0.70	1.00	0.32	1.00		0.58	1.00			0.91	
Satd. Flow (perm)		2383	1300	494	3108		956	1467			1620	
Volume (vph)	11	449	92	137	914	26	284	79	131	32	42	105
Peak-hour factor, PHF	0.94	0.94	0.94	0.96	0.96	0.96	0.87	0.87	0.87	0.91	0.91	0.91
Adj. Flow (vph)	12	478	98	143	952	27	326	91	151	35	46	115
RTOR Reduction (vph)	0	0	0	0	2	0	0	40	0	0	34	0
Lane Group Flow (vph)	0	490	98	143	977	0	326	202	0	0	162	0
Confl. Bikes (#/hr)			2			20			11			2
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	1%	1%	1%	0%	0%	0%
Turn Type	Perm		Perm	D.P+P			Perm			Perm		
Protected Phases		1		4	1 4			3			3	
Permitted Phases	1		1	1			3			3		
Actuated Green, G (s)		32.0	32.0	43.0	48.0		47.4	47.4			47.4	
Effective Green, g (s)		33.0	33.0	45.0	49.0		48.4	48.4			48.4	
Actuated g/C Ratio		0.28	0.28	0.38	0.41		0.40	0.40			0.40	
Clearance Time (s)		5.0	5.0	5.0			5.0	5.0			5.0	
Vehicle Extension (s)		2.0	2.0	2.0			2.0	2.0			2.0	
Lane Grp Cap (vph)		655	358	282	1269		386	592			653	
v/s Ratio Prot				0.05	c0.31			0.14				
v/s Ratio Perm		0.21	0.08	0.14			c0.34				0.10	
v/c Ratio		0.75	0.27	0.51	0.77		0.84	0.34			0.25	
Uniform Delay, d1		39.7	34.1	26.6	30.6		32.4	24.8			23.7	
Progression Factor		0.49	0.54	0.31	0.33		1.00	1.00			1.00	
Incremental Delay, d2		5.7	1.4	2.6	1.9		14.9	0.1			0.1	
Delay (s)		25.4	19.9	10.9	11.9		47.3	24.9			23.8	
Level of Service		C	B	B	B		D	C			C	
Approach Delay (s)		24.5			11.7			37.7			23.8	
Approach LOS		C			B			D			C	

Intersection Summary			
HCM Average Control Delay	21.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.6
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL	NBR	SBT	ø2
Lane Configurations							
Volume (vph)	722	26	949	163	126	11	
Lane Group Flow (vph)	831	0	1095	209	162	208	
Turn Type		D.P+P		D.Pm	custom		
Protected Phases	1	6	6			5	2
Permitted Phases		1	1	5	5		
Detector Phases	1	6	6	5	5	5	
Minimum Initial (s)	10.0	6.0	6.0	8.0	8.0	8.0	5.0
Minimum Split (s)	29.0	11.0	11.0	13.0	13.0	13.0	26.0
Total Split (s)	40.0	13.0	13.0	43.0	43.0	43.0	24.0
Total Split (%)	33.3%	10.8%	10.8%	35.8%	35.8%	35.8%	20%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	Max	Max	None	None	None	None
v/c Ratio	0.93		0.99	0.92	0.33	0.41	
Control Delay	62.8		28.2	84.3	6.4	7.7	
Queue Delay	0.7		0.0	0.0	0.0	0.0	
Total Delay	63.5		28.2	84.3	6.4	7.7	
Queue Length 50th (ft)	269		~230	150	0	7	
Queue Length 95th (ft)	#439		m#420	#206	29	54	
Internal Link Dist (ft)	359		347			176	
Turn Bay Length (ft)				150			
Base Capacity (vph)	897		1105	263	537	553	
Starvation Cap Reductn	8		0	0	0	0	
Spillback Cap Reductn	0		0	0	0	0	
Storage Cap Reductn	0		0	0	0	0	
Reduced v/c Ratio	0.93		0.99	0.79	0.30	0.38	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 113 (94%), Referenced to phase 1:EBWB, Start of Green

Natural Cycle: 120

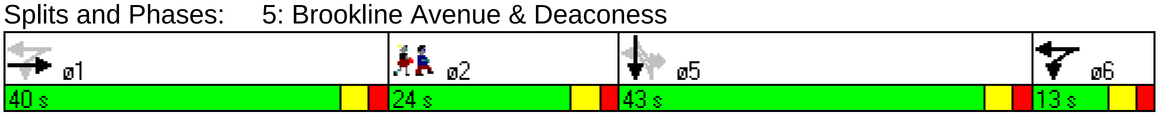
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Brookline Avenue & Deaconess



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	11	11	13	10	10	10	13	12	12
Total Lost time (s)		4.0			4.0		4.0		4.0		4.0	
Lane Util. Factor		0.95			0.95		1.00		1.00		1.00	
Frpb, ped/bikes		1.00			1.00		1.00		1.00		0.99	
Flpb, ped/bikes		1.00			1.00		1.00		1.00		1.00	
Frt		0.99			1.00		1.00		0.85		0.86	
Flt Protected		1.00			1.00		0.95		1.00		1.00	
Satd. Flow (prot)		2984			3045		1472		1317		1296	
Flt Permitted		1.00			0.84		0.49		1.00		1.00	
Satd. Flow (perm)		2984			2565		762		1317		1296	
Volume (vph)	0	722	26	26	949	0	163	0	126	0	11	168
Peak-hour factor, PHF	0.90	0.90	0.90	0.89	0.89	0.89	0.78	0.78	0.78	0.86	0.86	0.86
Adj. Flow (vph)	0	802	29	29	1066	0	209	0	162	0	13	195
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	117	0	140	0
Lane Group Flow (vph)	0	829	0	0	1095	0	209	0	45	0	68	0
Confl. Bikes (#/hr)			7			25						1
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	3%	3%	3%	12%	12%	12%
Parking (#/hr)			2							1		
Turn Type				D.P+P			D.Pm		custom	Perm		
Protected Phases		1		6	6						5	
Permitted Phases				1	1		5		5	5		
Actuated Green, G (s)		35.0			48.4		32.6		32.6		32.6	
Effective Green, g (s)		36.0			50.4		33.6		33.6		33.6	
Actuated g/C Ratio		0.30			0.42		0.28		0.28		0.28	
Clearance Time (s)		5.0			5.0		5.0		5.0		5.0	
Vehicle Extension (s)		2.0			2.0		2.0		2.0		2.0	
Lane Grp Cap (vph)		895			1135		213		369		363	
v/s Ratio Prot		0.28			c0.12						0.05	
v/s Ratio Perm					c0.29		c0.27		0.03			
v/c Ratio		0.93			0.96		0.98		0.12		0.19	
Uniform Delay, d1		40.7			33.9		42.9		32.2		32.8	
Progression Factor		1.16			0.55		1.00		1.00		1.00	
Incremental Delay, d2		15.4			3.2		55.9		0.1		0.1	
Delay (s)		62.8			21.8		98.8		32.3		32.9	
Level of Service		E			C		F		C		C	
Approach Delay (s)		62.8			21.8			69.7			32.9	
Approach LOS		E			C			E			C	

Intersection Summary			
HCM Average Control Delay	43.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	36.0
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	ø2
Lane Configurations										
Volume (vph)	83	577	191	803	193	252	277	206	266	
Lane Group Flow (vph)	94	696	225	1089	203	265	292	231	375	
Turn Type	Perm		D.P+P		Perm		pt+ov	Perm		
Protected Phases		1	4	1 4		3	3 4		3	2
Permitted Phases	1		1		3			3		
Detector Phases	1	1	4	1 4	3	3	3 4	3	3	
Minimum Initial (s)	10.0	10.0	6.0		8.0	8.0		8.0	8.0	7.0
Minimum Split (s)	15.0	15.0	11.0		13.0	13.0		13.0	13.0	26.0
Total Split (s)	45.0	45.0	15.0	60.0	35.0	35.0	50.0	35.0	35.0	25.0
Total Split (%)	37.5%	37.5%	12.5%	50.0%	29.2%	29.2%	41.7%	29.2%	29.2%	21%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lead/Lag	Lead	Lead	Lag		Lead	Lead		Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	C-Max	C-Max	None		None	None		None	None	Ped
v/c Ratio	1.84	0.68	0.88	0.79	2.60	0.68	0.59	1.50	0.95	
Control Delay	435.5	7.2	56.9	32.3	774.1	62.0	48.7	278.7	68.1	
Queue Delay	0.0	0.7	22.8	0.0	0.0	2.1	1.4	0.0	40.2	
Total Delay	435.5	7.9	79.6	32.3	774.1	64.1	50.1	278.7	108.3	
Queue Length 50th (ft)	~113	33	107	365	~272	213	203	~253	298	
Queue Length 95th (ft)	m#138	m43	#184	416	m#420	m298	m321	m#354	m#429	
Internal Link Dist (ft)		347		735		335			263	
Turn Bay Length (ft)	70		350		150			170		
Base Capacity (vph)	51	1021	256	1377	78	389	491	154	394	
Starvation Cap Reductn	0	107	0	0	0	0	75	0	51	
Spillback Cap Reductn	0	79	33	0	0	45	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.84	0.76	1.01	0.79	2.60	0.77	0.70	1.50	1.09	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 1:EBWB, Start of Green

Natural Cycle: 110

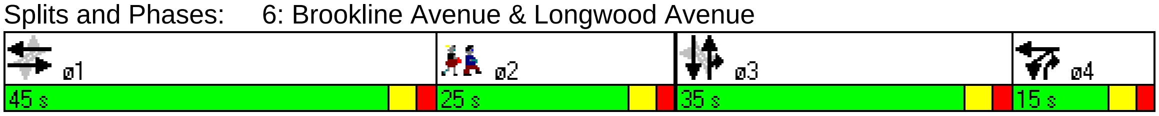
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Brookline Avenue & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	11	10	10	10	10	10	10	10
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	*0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1458	2990		1458	2950		1430	1506	1280	1501	1526	
Flt Permitted	0.10	1.00		0.23	1.00		0.20	1.00	1.00	0.38	1.00	
Satd. Flow (perm)	150	2990		359	2950		303	1506	1280	596	1526	
Volume (vph)	83	577	35	191	803	122	193	252	277	206	266	68
Peak-hour factor, PHF	0.88	0.88	0.88	0.85	0.85	0.85	0.95	0.95	0.95	0.89	0.89	0.89
Adj. Flow (vph)	94	656	40	225	945	144	203	265	292	231	299	76
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	94	696	0	225	1089	0	203	265	292	231	375	0
Confl. Bikes (#/hr)			14			7			50			10
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	6%	6%	6%	1%	1%	1%
Turn Type	Perm			D.P+P			Perm		pt+ov	Perm		
Protected Phases		1		4	1 4			3	3 4		3	
Permitted Phases	1			1			3			3		
Actuated Green, G (s)	40.0	40.0		50.0	55.0		30.0	30.0	45.0	30.0	30.0	
Effective Green, g (s)	41.0	41.0		52.0	56.0		31.0	31.0	46.0	31.0	31.0	
Actuated g/C Ratio	0.34	0.34		0.43	0.47		0.26	0.26	0.38	0.26	0.26	
Clearance Time (s)	5.0	5.0		5.0			5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	2.0		2.0			2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	51	1022		256	1377		78	389	491	154	394	
v/s Ratio Prot		0.23		0.08	c0.37			0.18	0.23		0.25	
v/s Ratio Perm	c0.63			0.30			c0.67			0.39		
v/c Ratio	1.84	0.68		0.88	0.79		2.60	0.68	0.59	1.50	0.95	
Uniform Delay, d1	39.5	33.9		26.3	27.0		44.5	40.1	29.6	44.5	43.8	
Progression Factor	0.20	0.15		1.00	1.00		1.34	1.32	1.46	0.91	0.90	
Incremental Delay, d2	416.9	2.0		26.3	3.0		751.2	3.3	1.1	247.2	26.0	
Delay (s)	424.8	7.1		52.7	30.0		810.6	56.2	44.1	287.8	65.4	
Level of Service	F	A		D	C		F	E	D	F	E	
Approach Delay (s)		56.8			33.9			253.1			150.1	
Approach LOS		E			C			F			F	

Intersection Summary			
HCM Average Control Delay	107.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	37.0
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Configurations					
Volume (vph)	75	29	200	60	258
Lane Group Flow (vph)	136	314	328	67	343
Sign Control	Stop	Stop	Free		Free

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	37	75	16	116	29	147	5	200	100	60	258	47
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.93	0.93	0.93	0.89	0.89	0.89
Hourly flow rate (vph)	39	80	17	125	31	158	5	215	108	67	290	53
Pedestrians		315			349			285			379	
Lane Width (ft)		13.0			12.0			14.0			13.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		28			29			28			34	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											408	
pX, platoon unblocked	0.97	0.97	0.97	0.97	0.97		0.97					
vC, conflicting volume	1598	1448	916	1395	1421	997	658			672		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1616	1462	914	1407	1434	997	648			672		
tC, single (s)	7.2	6.6	6.3	7.1	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	0	0	89	0	47	0	99			89		
cM capacity (veh/h)	0	54	161	0	59	139	659			632		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	136	314	328	67	343
Volume Left	39	125	5	67	0
Volume Right	17	158	108	0	53
cSH	0	0	659	632	1700
Volume to Capacity	Err	Err	0.01	0.11	0.20
Queue Length 95th (ft)	Err	Err	1	9	0
Control Delay (s)	Err	Err	0.3	11.4	0.0
Lane LOS	F	F	A	B	
Approach Delay (s)	Err	Err	0.3	1.9	
Approach LOS	F	F			

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBL
Lane Configurations			
Volume (vph)	187	113	37
Lane Group Flow (vph)	233	155	72
Sign Control	Free	Free	Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	187	32	26	113	37	32
Peak Hour Factor	0.94	0.94	0.90	0.90	0.96	0.96
Hourly flow rate (vph)	199	34	29	126	39	33
Pedestrians	48			278	238	
Lane Width (ft)	12.0			12.0	13.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	4			23	21	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			471		685	732
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			471		685	732
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		87	87
cM capacity (veh/h)			861		301	254

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	233	154	72
Volume Left	0	29	39
Volume Right	34	0	33
cSH	1700	861	277
Volume to Capacity	0.14	0.03	0.26
Queue Length 95th (ft)	0	3	25
Control Delay (s)	0.0	2.0	22.5
Lane LOS		A	C
Approach Delay (s)	0.0	2.0	22.5
Approach LOS			C

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Volume (vph)	119	82	26	5
Lane Group Flow (vph)	343	205	132	116
Sign Control	Stop	Stop	Stop	Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	100	119	5	0	82	79	5	26	47	26	5	53
Peak Hour Factor	0.56	0.79	0.38	0.25	0.84	0.74	0.25	0.95	0.55	0.85	0.25	0.81
Hourly flow rate (vph)	179	151	13	0	98	107	20	27	85	31	20	65

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	342	204	133	116
Volume Left (vph)	179	0	20	31
Volume Right (vph)	13	107	85	65
Hadj (s)	0.10	-0.31	-0.36	-0.29
Departure Headway (s)	4.9	4.7	5.1	5.2
Degree Utilization, x	0.47	0.27	0.19	0.17
Capacity (veh/h)	695	709	623	615
Control Delay (s)	12.1	9.4	9.2	9.2
Approach Delay (s)	12.1	9.4	9.2	9.2
Approach LOS	B	A	A	A

Intersection Summary			
Delay	10.5		
HCM Level of Service	B		
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	ø2
Lane Configurations											
Volume (vph)	70	26	76	69	170	49	488	4	420	58	
Lane Group Flow (vph)	0	244	0	168	198	0	587	5	494	68	
Turn Type	Perm		Perm		Perm	Perm		pm+pt		Perm	
Protected Phases		3		3			1	4	1		2
Permitted Phases	3		3		3	1		1		1	
Detector Phases	3	3	3	3	3	1	1	4	1	1	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0	10.0	4.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	15.0	15.0	12.0	15.0	15.0	21.0
Total Split (s)	37.0	37.0	37.0	37.0	37.0	50.0	50.0	12.0	50.0	50.0	21.0
Total Split (%)	30.8%	30.8%	30.8%	30.8%	30.8%	41.7%	41.7%	10.0%	41.7%	41.7%	18%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lead/Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	None
v/c Ratio		0.81		0.59	0.40		0.58	0.01	0.64	0.10	
Control Delay		52.4		45.1	6.0		33.0	4.2	20.4	5.5	
Queue Delay		2.5		0.6	0.1		0.9	0.0	7.2	0.0	
Total Delay		55.0		45.7	6.1		33.8	4.2	27.7	5.5	
Queue Length 50th (ft)		150		116	0		215	0	332	9	
Queue Length 95th (ft)		173		145	40		276	m1	m412	m17	
Internal Link Dist (ft)		370		168			243		335		
Turn Bay Length (ft)								75			
Base Capacity (vph)		346		333	540		1009	446	772	650	
Starvation Cap Reductn		0		0	0		184	0	230	0	
Spillback Cap Reductn		37		33	21		0	0	180	0	
Storage Cap Reductn		0		0	0		0	0	0	0	
Reduced v/c Ratio		0.79		0.56	0.38		0.71	0.01	0.91	0.10	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

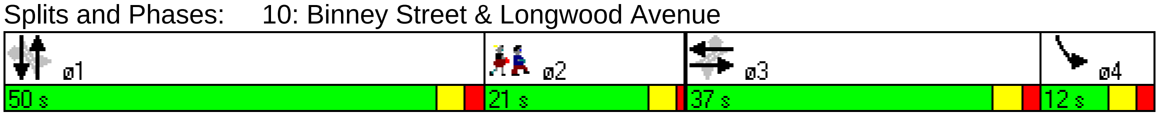
Offset: 40 (33%), Referenced to phase 1:NBSB, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Binney Street & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	11	11	10	10	11	11	10	11	10
Total Lost time (s)		4.0			4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor		1.00			1.00	1.00		0.95		1.00	1.00	1.00
Frpb, ped/bikes		1.00			1.00	0.98		1.00		1.00	1.00	0.97
Flpb, ped/bikes		1.00			1.00	1.00		1.00		1.00	1.00	1.00
Frt		0.93			1.00	0.85		1.00		1.00	1.00	0.85
Flt Protected		0.98			0.97	1.00		1.00		0.95	1.00	1.00
Satd. Flow (prot)		1335			1579	1310		2828		1430	1559	1246
Flt Permitted		0.74			0.66	1.00		0.81		0.37	1.00	1.00
Satd. Flow (perm)		1002			1068	1310		2301		555	1559	1246
Volume (vph)	70	26	102	76	69	170	49	488	8	4	420	58
Peak-hour factor, PHF	0.81	0.81	0.81	0.86	0.86	0.86	0.93	0.93	0.93	0.85	0.85	0.85
Adj. Flow (vph)	86	32	126	88	80	198	53	525	9	5	494	68
RTOR Reduction (vph)	0	32	0	0	0	146	0	1	0	0	0	34
Lane Group Flow (vph)	0	212	0	0	168	52	0	586	0	5	494	34
Confl. Bikes (#/hr)						4			53			9
Heavy Vehicles (%)	21%	21%	21%	2%	2%	2%	8%	8%	8%	6%	6%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0
Turn Type	Perm			Perm		Perm	Perm			pm+pt		Perm
Protected Phases		3			3			1		4	1	
Permitted Phases	3			3		3	1			1		1
Actuated Green, G (s)		30.4			30.4	30.4		58.5		74.6	58.5	58.5
Effective Green, g (s)		31.4			31.4	31.4		59.5		76.6	59.5	59.5
Actuated g/C Ratio		0.26			0.26	0.26		0.50		0.64	0.50	0.50
Clearance Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)		2.0			2.0	2.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		262			279	343		1141		479	773	618
v/s Ratio Prot										c0.00	c0.32	
v/s Ratio Perm		c0.21			0.16	0.04		0.25		0.01		0.03
v/c Ratio		0.81			0.60	0.15		0.51		0.01	0.64	0.05
Uniform Delay, d1		41.5			38.8	34.1		20.5		8.2	22.3	15.7
Progression Factor		1.00			1.00	1.00		1.27		0.38	0.71	0.98
Incremental Delay, d2		15.6			2.5	0.1		1.4		0.0	1.7	0.1
Delay (s)		57.1			41.3	34.1		27.4		3.1	17.6	15.5
Level of Service		E			D	C		C		A	B	B
Approach Delay (s)		57.1			37.4			27.4			17.2	
Approach LOS		E			D			C			B	

Intersection Summary			
HCM Average Control Delay	30.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	ø2
Lane Configurations										
Volume (vph)	73	33	74	75	198	31	280	68	424	
Lane Group Flow (vph)	96	114	0	181	241	39	408	71	498	
Turn Type	Perm		Perm		Perm	Perm		Perm		
Protected Phases		3		3			1		1	2
Permitted Phases	3		3		3	1		1		
Detector Phases	3	3	3	3	3	1	1	1	1	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	20.0
Total Split (s)	43.0	43.0	43.0	43.0	43.0	57.0	57.0	57.0	57.0	20.0
Total Split (%)	35.8%	35.8%	35.8%	35.8%	35.8%	47.5%	47.5%	47.5%	47.5%	17%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lead/Lag						Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	C-Max	C-Max	C-Max	C-Max	None
v/c Ratio	0.22	0.16		0.33	0.41	0.24	0.74	0.30	0.79	
Control Delay	19.1	17.6		20.5	22.0	26.0	37.3	23.8	40.1	
Queue Delay	0.1	0.0		0.0	0.2	0.0	0.0	0.0	89.2	
Total Delay	19.2	17.6		20.5	22.2	26.0	37.3	23.8	129.2	
Queue Length 50th (ft)	41	47		82	115	19	256	41	393	
Queue Length 95th (ft)	64	69		121	161	40	314	m66	m506	
Internal Link Dist (ft)		298		1163			436		243	
Turn Bay Length (ft)						90				
Base Capacity (vph)	435	705		556	591	162	554	237	630	
Starvation Cap Reductn	0	0		0	0	0	0	0	211	
Spillback Cap Reductn	37	0		0	51	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	
Reduced v/c Ratio	0.24	0.16		0.33	0.45	0.24	0.74	0.30	1.19	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

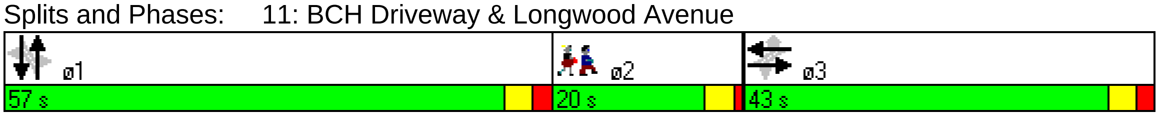
Offset: 37 (31%), Referenced to phase 1:NBSB, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: BCH Driveway & Longwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Lane Width	13	13	13	10	10	10	10	10	10	12	12	12
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.91			1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1502	1433			1380	1202	1222	1254		1384	1427	
Flt Permitted	0.61	1.00			0.81	1.00	0.28	1.00		0.37	1.00	
Satd. Flow (perm)	968	1433			1142	1202	366	1254		537	1427	
Volume (vph)	73	33	54	74	75	198	31	280	43	68	424	54
Peak-hour factor, PHF	0.76	0.76	0.76	0.82	0.82	0.82	0.79	0.79	0.79	0.96	0.96	0.96
Adj. Flow (vph)	96	43	71	90	91	241	39	354	54	71	442	56
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	96	114	0	0	181	241	39	408	0	71	498	0
Confl. Bikes (#/hr)									25			14
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	11%	11%	11%	5%	5%	5%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		3			3			1			1	
Permitted Phases	3			3		3	1			1		
Actuated Green, G (s)	58.0	58.0			58.0	58.0	52.0	52.0		52.0	52.0	
Effective Green, g (s)	59.0	59.0			59.0	59.0	53.0	53.0		53.0	53.0	
Actuated g/C Ratio	0.49	0.49			0.49	0.49	0.44	0.44		0.44	0.44	
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	476	705			561	591	162	554		237	630	
v/s Ratio Prot		0.08						0.33			c0.35	
v/s Ratio Perm	0.10				0.16	c0.20	0.11			0.13		
v/c Ratio	0.20	0.16			0.32	0.41	0.24	0.74		0.30	0.79	
Uniform Delay, d1	17.2	16.8			18.4	19.4	20.9	27.7		21.6	28.7	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		0.94	1.10	
Incremental Delay, d2	1.0	0.5			1.5	2.1	3.5	8.5		2.4	7.4	
Delay (s)	18.2	17.3			19.9	21.5	24.4	36.2		22.7	38.9	
Level of Service	B	B			B	C	C	D		C	D	
Approach Delay (s)		17.7			20.8			35.2			36.9	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM Average Control Delay	29.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBT	SBT
Lane Configurations		
Volume (vph)	209	471
Lane Group Flow (vph)	293	642
Sign Control	Stop	Stop

Intersection Summary
Control Type: Unsignalized

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	209	34	88	471	0	0
Peak Hour Factor	0.83	0.83	0.87	0.87	0.92	0.92
Hourly flow rate (vph)	252	41	101	541	0	0

Direction, Lane #	NB 1	SB 1	SB 2
Volume Total (vph)	293	282	361
Volume Left (vph)	0	101	0
Volume Right (vph)	41	0	0
Hadj (s)	-0.02	0.26	0.09
Departure Headway (s)	4.5	5.0	4.8
Degree Utilization, x	0.37	0.39	0.48
Capacity (veh/h)	784	716	746
Control Delay (s)	10.1	9.9	10.9
Approach Delay (s)	10.1	10.4	
Approach LOS	B	B	

Intersection Summary			
Delay	10.3		
HCM Level of Service	B		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	SBT
Lane Configurations				
Volume (vph)	78	130	215	569
Lane Group Flow (vph)	85	141	259	654
Sign Control	Stop		Free	Free

Intersection Summary
Control Type: Unsignalized

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	78	130	215	0	0	569
Peak Hour Factor	0.92	0.92	0.83	0.83	0.87	0.87
Hourly flow rate (vph)	85	141	259	0	0	654
Pedestrians			389			629
Lane Width (ft)			12.0			11.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			32			48
Right turn flare (veh)		4				
Median type	None					
Median storage veh)						
Upstream signal (ft)						516
pX, platoon unblocked						
vC, conflicting volume	975	888			259	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	975	888			259	
tC, single (s)	7.2	7.3			4.2	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.2	
p0 queue free %	44	0			100	
cM capacity (veh/h)	150	134			1281	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	226	259	327	327
Volume Left	85	0	0	0
Volume Right	141	0	0	0
cSH	199	1700	1700	1700
Volume to Capacity	1.14	0.15	0.19	0.19
Queue Length 95th (ft)	277	0	0	0
Control Delay (s)	155.0	0.0	0.0	0.0
Lane LOS	F			
Approach Delay (s)	155.0	0.0	0.0	
Approach LOS	F			

Intersection Summary			
Average Delay	30.8		
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations					
Volume (vph)	22	142	215	44	133
Lane Group Flow (vph)	29	184	253	52	213
Sign Control		Free	Free		Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	22	142	215	44	133	50
Peak Hour Factor	0.77	0.77	0.85	0.85	0.86	0.86
Hourly flow rate (vph)	29	184	253	52	155	58
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	305				494	253
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	305				494	253
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	98				71	93
cM capacity (veh/h)	1196				525	791

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	29	184	253	52	213
Volume Left	29	0	0	0	155
Volume Right	0	0	0	52	58
cSH	1196	1700	1700	1700	578
Volume to Capacity	0.02	0.11	0.15	0.03	0.37
Queue Length 95th (ft)	2	0	0	0	42
Control Delay (s)	8.1	0.0	0.0	0.0	14.8
Lane LOS	A				B
Approach Delay (s)	1.1		0.0		14.8
Approach LOS					B

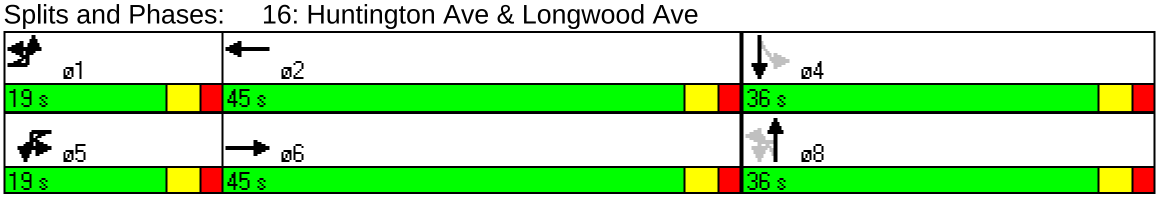
Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBU	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	21	589	142	620	5	21	127	229	271
Lane Group Flow (vph)	46	705	154	814	0	0	186	263	420
Turn Type	Prot		Prot		Perm	Perm		Perm	
Protected Phases	1	6	5	2			8		4
Permitted Phases					8	8		4	
Detector Phases	1	6	5	2	8	8	8	4	4
Minimum Initial (s)	4.0	10.0	4.0	10.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	15.0	19.0	15.0	19.0	15.0	15.0	15.0	15.0	15.0
Total Split (s)	19.0	45.0	19.0	45.0	36.0	36.0	36.0	36.0	36.0
Total Split (%)	19.0%	45.0%	19.0%	45.0%	36.0%	36.0%	36.0%	36.0%	36.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	Max	Max	Max	Max	Max
v/c Ratio	0.33	0.59	0.74	0.58			0.49	1.16	0.89
Control Delay	47.9	25.2	62.7	20.8			32.8	142.8	55.3
Queue Delay	0.0	0.0	0.0	0.0			0.0	0.0	0.0
Total Delay	47.9	25.2	62.7	20.8			32.8	142.8	55.3
Queue Length 50th (ft)	28	181	94	201			95	~200	253
Queue Length 95th (ft)	62	243	#182	285			153	#340	#407
Internal Link Dist (ft)		1220		578			409		130
Turn Bay Length (ft)	115		85						
Base Capacity (vph)	222	1190	223	1395			380	227	472
Starvation Cap Reductn	0	0	0	0			0	0	0
Spillback Cap Reductn	0	0	0	0			0	0	0
Storage Cap Reductn	0	0	0	0			0	0	0
Reduced v/c Ratio	0.21	0.59	0.69	0.58			0.49	1.16	0.89

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 53 (53%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 16: Huntington Ave & Longwood Ave



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	11	10	10	11	11	12	16	16	16
Total Lost time (s)		4.0	4.0			4.0	4.0				4.0	
Lane Util. Factor		1.00	0.95			1.00	0.95				1.00	
Frpb, ped/bikes		1.00	0.96			1.00	0.92				0.99	
Flpb, ped/bikes		1.00	1.00			1.00	1.00				1.00	
Frt		1.00	0.99			1.00	0.97				1.00	
Flt Protected		0.95	1.00			0.95	1.00				0.99	
Satd. Flow (prot)		1479	2833			1487	2735				1630	
Flt Permitted		0.95	1.00			0.95	1.00				0.72	
Satd. Flow (perm)		1479	2833			1487	2735				1185	
Volume (vph)	21	21	589	53	5	142	620	153	5	21	127	5
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.95	0.95	0.95	0.95	0.85	0.85	0.85	0.85
Adj. Flow (vph)	23	23	647	58	5	149	653	161	6	25	149	6
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	46	705	0	0	154	814	0	0	0	186	0
Confl. Peds. (#/hr)		131		154		154		131		30		284
Confl. Bikes (#/hr)				12				13				2
Heavy Vehicles (%)	0%	5%	5%	5%	0%	2%	2%	2%	0%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	0	0	0	0
Parking (#/hr)										1	1	1
Turn Type	Prot	Prot			Prot	Prot			Perm	Perm		
Protected Phases	1	1	6		5	5	2				8	
Permitted Phases									8	8		
Actuated Green, G (s)		6.0	41.0			13.0	48.0				31.0	
Effective Green, g (s)		7.0	42.0			14.0	49.0				32.0	
Actuated g/C Ratio		0.07	0.42			0.14	0.49				0.32	
Clearance Time (s)		5.0	5.0			5.0	5.0				5.0	
Vehicle Extension (s)		3.0	3.0			3.0	3.0				3.0	
Lane Grp Cap (vph)		104	1190			208	1340				379	
v/s Ratio Prot		0.03	0.25			c0.10	c0.30					
v/s Ratio Perm											0.16	
v/c Ratio		0.44	0.59			0.74	0.61				0.49	
Uniform Delay, d1		44.6	22.4			41.3	18.5				27.4	
Progression Factor		1.00	1.00			1.00	1.00				1.00	
Incremental Delay, d2		3.0	2.2			13.2	2.1				4.5	
Delay (s)		47.6	24.6			54.5	20.6				31.9	
Level of Service		D	C			D	C				C	
Approach Delay (s)			26.0				26.0				31.9	
Approach LOS			C				C				C	

Intersection Summary			
HCM Average Control Delay	42.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR
Lane Configurations			
Ideal Flow (vphpl)	1900	1900	1900
Lane Width	10	10	10
Total Lost time (s)	4.0	4.0	
Lane Util. Factor	1.00	1.00	
Frpb, ped/bikes	1.00	0.98	
Flpb, ped/bikes	0.79	1.00	
Frt	1.00	0.96	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1182	1476	
Flt Permitted	0.57	1.00	
Satd. Flow (perm)	708	1476	
Volume (vph)	229	271	95
Peak-hour factor, PHF	0.87	0.87	0.87
Adj. Flow (vph)	263	311	109
RTOR Reduction (vph)	0	0	0
Lane Group Flow (vph)	263	420	0
Confl. Peds. (#/hr)	284		30
Confl. Bikes (#/hr)			5
Heavy Vehicles (%)	2%	2%	2%
Bus Blockages (#/hr)	0	0	0
Parking (#/hr)			
Turn Type	Perm		
Protected Phases		4	
Permitted Phases	4		
Actuated Green, G (s)	31.0	31.0	
Effective Green, g (s)	32.0	32.0	
Actuated g/C Ratio	0.32	0.32	
Clearance Time (s)	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	227	472	
v/s Ratio Prot		0.28	
v/s Ratio Perm	c0.37		
v/c Ratio	1.16	0.89	
Uniform Delay, d1	34.0	32.3	
Progression Factor	1.00	1.00	
Incremental Delay, d2	109.2	21.5	
Delay (s)	143.2	53.8	
Level of Service	F	D	
Approach Delay (s)		88.2	
Approach LOS		F	

Intersection Summary

Lane Group	EBT	WBT	NBL
Lane Configurations			
Volume (vph)	909	921	3
Lane Group Flow (vph)	1017	1129	32
Sign Control	Free	Free	Stop

Intersection Summary
Control Type: Unsignalized

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	909	57	16	921	3	16
Peak Hour Factor	0.95	0.95	0.83	0.83	0.59	0.59
Hourly flow rate (vph)	957	60	19	1110	5	27
Pedestrians					16	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					1	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	494					
pX, platoon unblocked			0.86		0.86	0.86
vC, conflicting volume			1033		1411	524
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			875		1315	284
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		96	96
cM capacity (veh/h)			656		125	610

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	638	379	241	444	444	32
Volume Left	0	0	19	0	0	5
Volume Right	0	60	0	0	0	27
cSH	1700	1700	656	1700	1700	378
Volume to Capacity	0.38	0.22	0.03	0.26	0.26	0.09
Queue Length 95th (ft)	0	0	2	0	0	7
Control Delay (s)	0.0	0.0	1.2	0.0	0.0	15.4
Lane LOS			A			C
Approach Delay (s)	0.0		0.3			15.4
Approach LOS						C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group
Lane Configurations
Volume (vph)
Lane Group Flow (vph)
Sign Control

Intersection Summary
Control Type: Unsignalized

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations				↑	Y	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	0	0	0	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085

Direction, Lane #	WB 1	NE 1
Volume Total	0	0
Volume Left	0	0
Volume Right	0	0
cSH	1700	1700
Volume to Capacity	0.00	0.00
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		A
Approach Delay (s)	0.0	0.0
Approach LOS		A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT
Lane Configurations		
Volume (vph)	264	594
Lane Group Flow (vph)	346	704
Sign Control	Free	Free

Intersection Summary
Control Type: Unsignalized

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	264	37	53	594
Peak Hour Factor	0.25	0.25	0.87	0.87	0.92	0.92
Hourly flow rate (vph)	0	0	303	43	58	646
Pedestrians	454					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			210			
pX, platoon unblocked	0.94	0.94			0.94	
vC, conflicting volume	1217	779			800	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1231	764			786	
tC, single (s)	6.8	7.3			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.5			2.2	
p0 queue free %	100	100			93	
cM capacity (veh/h)	149	290			776	

Direction, Lane #	NB 1	SB 1	SB 2
Volume Total	346	273	430
Volume Left	0	58	0
Volume Right	43	0	0
cSH	1700	776	1700
Volume to Capacity	0.20	0.07	0.25
Queue Length 95th (ft)	0	6	0
Control Delay (s)	0.0	2.8	0.0
Lane LOS		A	
Approach Delay (s)	0.0	1.1	
Approach LOS			

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

819 Beacon Street Existing 2012

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	16	16	16	16
Turning Speed (mph)		9	15		15	9
Link Speed (mph)	25			25	25	
Link Distance (ft)	148			1203	667	
Travel Time (s)	4.0			32.8	18.2	
Volume (vph)	0	530	5	40	310	0
Confl. Peds. (#/hr)		3	3		5	
Peak Hour Factor	0.93	0.93	0.85	0.85	0.87	0.87
Heavy Vehicles (%)	3%	3%	7%	7%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	8	8
Parking (#/hr)			8	8		
Lane Group Flow (vph)	0	570	0	53	356	0
Sign Control	Stop			Stop	Free	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	530	5	40	310	0
Peak Hour Factor	0.93	0.93	0.85	0.85	0.87	0.87
Hourly flow rate (vph)	0	570	6	47	356	0
Pedestrians	5				3	
Lane Width (ft)	11.0				16.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)					667	
pX, platoon unblocked						
vC, conflicting volume	718	8	716	718	5	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	718	8	716	718	5	
tC, single (s)	6.5	6.2	7.2	6.6	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.6	4.1	2.2	
p0 queue free %	100	46	95	83	78	
cM capacity (veh/h)	273	1063	129	270	1591	

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	285	285	53	356
Volume Left	0	0	6	356
Volume Right	285	285	0	0
cSH	1063	1063	241	1591
Volume to Capacity	0.27	0.27	0.22	0.22
Queue Length 95th (ft)	27	27	20	22
Control Delay (s)	9.6	9.6	24.1	7.9
Lane LOS	A	A	C	A
Approach Delay (s)	9.6		24.1	7.9
Approach LOS	A		C	

Intersection Summary			
Average Delay	9.8		
Intersection Capacity Utilization	32.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	12	12	12	12	12	14	12	11	11
Storage Length (ft)	0		100		0		100	0		100	0	
Storage Lanes	0		1		1		1	0		1	0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Right Turn on Red			No				Yes			Yes		
Link Speed (mph)		25				25			25			25
Link Distance (ft)		65				253			719			667
Travel Time (s)		1.8				6.9			19.6			18.2
Volume (vph)	25	745	195	5	195	420	15	45	295	40	50	460
Confl. Bikes (#/hr)			82				8			26		
Peak Hour Factor	0.89	0.89	0.89	0.95	0.95	0.95	0.95	0.93	0.93	0.93	0.90	0.90
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	3%	6%	6%	6%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	8
Parking (#/hr)		8	8			8	8		8	8		
Lane Group Flow (vph)	0	865	219	0	210	442	16	0	365	43	0	567
Turn Type	Perm		Prot	Perm	D.P+P		Perm	D.P+P		Perm	Perm	
Protected Phases		4	4		3	3 4		8	1 8			1
Permitted Phases	4			3 4	4		3 4	1		1 8	1	
Detector Phases	4	4	4	3 4	3	3 4	3 4	8	1 8	1 8	1	1
Minimum Initial (s)	2.0	2.0	2.0		4.0			4.0			10.0	10.0
Minimum Split (s)	19.0	19.0	19.0		9.0			9.0			20.0	20.0
Total Split (s)	35.0	35.0	35.0	50.0	15.0	50.0	50.0	9.0	35.0	35.0	26.0	26.0
Total Split (%)	35.0%	35.0%	35.0%	50.0%	15.0%	50.0%	50.0%	9.0%	35.0%	35.0%	26.0%	26.0%
Yellow Time (s)	3.0	3.0	3.0		3.0			3.0			3.0	3.0
All-Red Time (s)	1.0	1.0	1.0		0.0			0.0			1.0	1.0
Lead/Lag	Lag	Lag	Lag		Lead						Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes						Yes	Yes
Recall Mode	None	None	None		Min			None			C-Min	C-Min
v/c Ratio		0.80	0.66		0.78	0.72	0.03		0.46	0.10		0.85
Control Delay		39.1	41.2		52.4	24.1	6.2		19.4	4.5		51.3
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0	0.0		0.0
Total Delay		39.1	41.2		52.4	24.1	6.2		19.4	4.5		51.3
Queue Length 50th (ft)		178	117		75	88	1		73	1		~206
Queue Length 95th (ft)		223	195		m#173	141	m3		102	17		#315
Internal Link Dist (ft)		1				173			639			587
Turn Bay Length (ft)			100				100			100		
Base Capacity (vph)		1207	371		269	657	550		789	451		665
Starvation Cap Reductn		0	0		0	0	0		0	0		0
Spillback Cap Reductn		0	0		0	0	0		0	0		0
Storage Cap Reductn		0	0		0	0	0		0	0		0
Reduced v/c Ratio		0.72	0.59		0.78	0.67	0.03		0.46	0.10		0.85

Intersection Summary	
Area Type:	CBD

Lane Group	SBR	ø2
Lane Configurations		
Ideal Flow (vphpl)	1900	
Lane Width (ft)	12	
Storage Length (ft)	100	
Storage Lanes	1	
Total Lost Time (s)	4.0	
Leading Detector (ft)	50	
Trailing Detector (ft)	0	
Turning Speed (mph)	9	
Right Turn on Red	Yes	
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Volume (vph)	30	
Confl. Bikes (#/hr)	35	
Peak Hour Factor	0.90	
Heavy Vehicles (%)	3%	
Bus Blockages (#/hr)	8	
Parking (#/hr)	1	
Lane Group Flow (vph)	33	
Turn Type	Perm	
Protected Phases		2
Permitted Phases	1	
Detector Phases	1	
Minimum Initial (s)	10.0	2.0
Minimum Split (s)	20.0	15.0
Total Split (s)	26.0	15.0
Total Split (%)	26.0%	15%
Yellow Time (s)	3.0	2.0
All-Red Time (s)	1.0	0.0
Lead/Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes
Recall Mode	C-Min	None
v/c Ratio	0.10	
Control Delay	15.4	
Queue Delay	0.0	
Total Delay	15.4	
Queue Length 50th (ft)	4	
Queue Length 95th (ft)	29	
Internal Link Dist (ft)		
Turn Bay Length (ft)	100	
Base Capacity (vph)	332	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.10	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 77 (77%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Beacon Street & Park Drive

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	12	12	12	12	12	14	12	11	11
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0		4.0	4.0		4.0
Lane Util. Factor		0.91	1.00		1.00	1.00	1.00		0.95	1.00		0.95
Frpb, ped/bikes		1.00	1.00		1.00	1.00	0.97		1.00	0.97		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00		1.00	1.00		1.00
Frt		1.00	0.85		1.00	1.00	0.85		1.00	0.85		1.00
Flt Protected		1.00	1.00		0.95	1.00	1.00		0.99	1.00		1.00
Satd. Flow (prot)		4253	1196		1577	1428	1181		3021	1147		2986
Flt Permitted		0.91	1.00		0.19	1.00	1.00		0.79	1.00		0.87
Satd. Flow (perm)		3893	1196		310	1428	1181		2416	1147		2605
Volume (vph)	25	745	195	5	195	420	15	45	295	40	50	460
Peak-hour factor, PHF	0.89	0.89	0.89	0.95	0.95	0.95	0.95	0.93	0.93	0.93	0.90	0.90
Adj. Flow (vph)	28	837	219	5	205	442	16	48	317	43	56	511
RTOR Reduction (vph)	0	0	0	0	0	0	7	0	0	27	0	0
Lane Group Flow (vph)	0	865	219	0	210	442	9	0	365	16	0	567
Confl. Bikes (#/hr)			82				8			26		
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	3%	6%	6%	6%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	8
Parking (#/hr)		8	8			8	8		8	8		
Turn Type	Perm		Prot	Perm	D.P+P		Perm	D.P+P		Perm	Perm	
Protected Phases		4	4		3	3 4		8	1 8			1
Permitted Phases	4			3 4	4		3 4	1		1 8	1	
Actuated Green, G (s)		27.9	27.9		39.9	42.9	42.9		33.7	36.7		26.5
Effective Green, g (s)		27.9	27.9		38.9	42.9	42.9		32.7	36.7		26.5
Actuated g/C Ratio		0.28	0.28		0.39	0.43	0.43		0.33	0.37		0.26
Clearance Time (s)		4.0	4.0		3.0							4.0
Vehicle Extension (s)		2.0	2.0		2.0							2.0
Lane Grp Cap (vph)		1086	334		260	613	507		828	421		690
v/s Ratio Prot			0.18		0.09	c0.31			c0.03			
v/s Ratio Perm		0.22			c0.23		0.01		0.12	0.01		c0.22
v/c Ratio		0.80	0.66		0.81	0.72	0.02		0.44	0.04		0.82
Uniform Delay, d1		33.4	31.8		22.6	23.6	16.4		26.5	20.3		34.5
Progression Factor		1.00	1.00		1.81	0.76	0.69		0.65	0.52		1.00
Incremental Delay, d2		3.9	3.5		14.0	3.1	0.0		0.4	0.0		10.6
Delay (s)		37.3	35.3		54.9	21.0	11.4		17.5	10.5		45.2
Level of Service		D	D		D	C	B		B	B		D
Approach Delay (s)		36.9				31.4			16.8			44.2
Approach LOS		D				C			B			D

Intersection Summary			
HCM Average Control Delay	34.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	28.4
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Ideal Flow (vphpl)	1900
Lane Width	12
Total Lost time (s)	4.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.96
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1172
Flt Permitted	1.00
Satd. Flow (perm)	1172
Volume (vph)	30
Peak-hour factor, PHF	0.90
Adj. Flow (vph)	33
RTOR Reduction (vph)	19
Lane Group Flow (vph)	14
Confl. Bikes (#/hr)	35
Heavy Vehicles (%)	3%
Bus Blockages (#/hr)	8
Parking (#/hr)	1
Turn Type	Perm
Protected Phases	
Permitted Phases	1
Actuated Green, G (s)	26.5
Effective Green, g (s)	26.5
Actuated g/C Ratio	0.26
Clearance Time (s)	4.0
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	311
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.04
Uniform Delay, d1	27.3
Progression Factor	1.00
Incremental Delay, d2	0.3
Delay (s)	27.6
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary

Lane Group	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	11	12	12	9	9
Turning Speed (mph)		9	9	15		15	9
Link Speed (mph)	25				25	25	
Link Distance (ft)	253				234	263	
Travel Time (s)	6.9				6.4	7.2	
Volume (vph)	830	10	5	5	630	5	5
Confl. Peds. (#/hr)		65		65			
Confl. Bikes (#/hr)		112					
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.55	0.55
Heavy Vehicles (%)	2%	2%	2%	3%	3%	9%	9%
Parking (#/hr)	8	8			8		
Lane Group Flow (vph)	913	0	0	0	666	18	0
Sign Control	Free				Free	Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations							
Sign Control	Free				Free	Stop	
Grade	0%				0%	0%	
Volume (veh/h)	830	10	5	5	630	5	5
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.55	0.55
Hourly flow rate (vph)	902	11	0	5	656	9	9
Pedestrians						65	
Lane Width (ft)						9.0	
Walking Speed (ft/s)						4.0	
Percent Blockage						4	
Right turn flare (veh)							
Median type						None	
Median storage veh)							
Upstream signal (ft)	253						
pX, platoon unblocked			0.00	0.81		0.81	0.81
vC, conflicting volume			0	978		1311	522
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			0	735		1147	170
tC, single (s)			0.0	4.2		7.0	7.1
tC, 2 stage (s)							
tF (s)			0.0	2.2		3.6	3.4
p0 queue free %			0	99		94	99
cM capacity (veh/h)			0	666		140	638

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	601	312	224	438	18
Volume Left	0	0	5	0	9
Volume Right	0	11	0	0	9
cSH	1700	1700	666	1700	230
Volume to Capacity	0.35	0.18	0.01	0.26	0.08
Queue Length 95th (ft)	0	0	1	0	6
Control Delay (s)	0.0	0.0	0.3	0.0	22.0
Lane LOS			A		C
Approach Delay (s)	0.0		0.1		22.0
Approach LOS					C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	11	12	12	10	10	10	10	10	10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		234			225			229			172	
Travel Time (s)		6.4			6.1			6.2			4.7	
Volume (vph)	5	765	70	20	615	5	15	15	10	0	15	5
Confl. Peds. (#/hr)	55		69	69		55	38		5	5		38
Confl. Bikes (#/hr)			103			11			1			1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.68	0.68	0.68	0.58	0.58	0.58
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		8	8		8	8	4	4	4	4	4	4
Lane Group Flow (vph)	0	903	0	0	688	0	0	59	0	0	35	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	765	70	20	615	5	15	15	10	0	15	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.68	0.68	0.68	0.58	0.58	0.58
Hourly flow rate (vph)	5	823	75	22	661	5	22	22	15	0	26	9
Pedestrians		38			5			69			55	
Lane Width (ft)		12.0			12.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		3			0			5			4	
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		487										
pX, platoon unblocked				0.81			0.81	0.81	0.81	0.81	0.81	
vC, conflicting volume	722			967			1373	1705	523	1215	1740	426
vC1, stage 1 conf vol							940	940		762	762	
vC2, stage 2 conf vol							433	765		453	978	
vCu, unblocked vol	722			720			1223	1634	170	1027	1677	426
tC, single (s)	4.1			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			86	85	98	100	81	98
cM capacity (veh/h)	843			669			155	148	651	187	139	542

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	417	487	352	336	59	34
Volume Left	5	0	22	0	22	0
Volume Right	0	75	0	5	15	9
cSH	843	1700	669	1700	187	171
Volume to Capacity	0.01	0.29	0.03	0.20	0.31	0.20
Queue Length 95th (ft)	0	0	2	0	32	18
Control Delay (s)	0.2	0.0	1.0	0.0	32.9	31.3
Lane LOS	A		A		D	D
Approach Delay (s)	0.1		0.5		32.9	31.3
Approach LOS					D	D

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	9	9
Turning Speed (mph)		9	15		15	9
Link Speed (mph)	25			25	25	
Link Distance (ft)	225			217	275	
Travel Time (s)	6.1			5.9	7.5	
Volume (vph)	770	5	5	635	0	5
Confl. Peds. (#/hr)		69	69			
Confl. Bikes (#/hr)		116				
Peak Hour Factor	0.92	0.92	0.96	0.96	1.00	1.00
Heavy Vehicles (%)	2%	2%	3%	3%	0%	0%
Parking (#/hr)	8	8		8		
Lane Group Flow (vph)	842	0	0	666	5	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	770	5	5	635	0	5
Peak Hour Factor	0.92	0.92	0.96	0.96	1.00	1.00
Hourly flow rate (vph)	837	5	5	661	0	5
Pedestrians					69	
Lane Width (ft)					9.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					4	
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)	712					
pX, platoon unblocked			0.82		0.82	0.82
vC, conflicting volume			911		1250	490
vC1, stage 1 conf vol					909	
vC2, stage 2 conf vol					341	
vCu, unblocked vol			676		1087	163
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			712		214	676

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	558	284	226	441	5
Volume Left	0	0	5	0	0
Volume Right	0	5	0	0	5
cSH	1700	1700	712	1700	676
Volume to Capacity	0.33	0.17	0.01	0.26	0.01
Queue Length 95th (ft)	0	0	1	0	1
Control Delay (s)	0.0	0.0	0.3	0.0	10.4
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.4
Approach LOS					B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	13	13	13	11	11	11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		217			1360			234			1203	
Travel Time (s)		5.9			37.1			6.4			32.8	
Volume (vph)	5	735	35	30	625	25	5	5	5	5	0	5
Confl. Peds. (#/hr)	54		56	56		54	2		16	16		2
Confl. Bikes (#/hr)			101			11						2
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.63	0.63	0.63	0.56	0.56	0.56
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		8	8		8	8				4	4	4
Lane Group Flow (vph)	0	842	0	0	731	0	0	24	0	0	18	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	735	35	30	625	25	5	5	5	5	0	5
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.63	0.63	0.63	0.56	0.56	0.56
Hourly flow rate (vph)	5	799	38	32	672	27	8	8	8	9	0	9
Pedestrians		2			16			56			54	
Lane Width (ft)		11.0			11.0			13.0			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			5			4	
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		929										
pX, platoon unblocked				0.83			0.83	0.83	0.83	0.83	0.83	
vC, conflicting volume	753			893			1296	1702	490	1242	1708	405
vC1, stage 1 conf vol							885	885		804	804	
vC2, stage 2 conf vol							411	817		438	904	
vCu, unblocked vol	753			666			1152	1641	181	1087	1648	405
tC, single (s)	4.1			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			95	95	99	95	100	98
cM capacity (veh/h)	818			719			175	147	652	179	141	575

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	405	438	368	363	24	18
Volume Left	5	0	32	0	8	9
Volume Right	0	38	0	27	8	9
cSH	818	1700	719	1700	213	273
Volume to Capacity	0.01	0.26	0.04	0.21	0.11	0.07
Queue Length 95th (ft)	1	0	4	0	9	5
Control Delay (s)	0.2	0.0	1.4	0.0	24.0	19.1
Lane LOS	A		A		C	C
Approach Delay (s)	0.1		0.7		24.0	19.1
Approach LOS					C	C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		100
Storage Lanes	0		0	2		0	0		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)				50	50						50	50
Trailing Detector (ft)				0	0						0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			No	No		No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		410			185			253			279	
Travel Time (s)		11.2			5.0			6.9			7.6	
Volume (vph)	0	0	0	240	465	0	0	0	0	0	520	340
Confl. Peds. (#/hr)												65
Confl. Bikes (#/hr)												25
Peak Hour Factor	0.95	0.95	0.95	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	0%	0%	0%	3%	3%	3%
Lane Group Flow (vph)	0	0	0	267	517	0	0	0	0	0	547	358
Turn Type				Split								Prot
Protected Phases				1	1						5	5
Permitted Phases												
Detector Phases				1	1						5	5
Minimum Initial (s)				10.0	10.0						13.0	13.0
Minimum Split (s)				20.0	20.0						23.0	23.0
Total Split (s)	0.0	0.0	0.0	33.0	33.0	0.0	0.0	0.0	0.0	0.0	67.0	67.0
Total Split (%)	0.0%	0.0%	0.0%	33.0%	33.0%	0.0%	0.0%	0.0%	0.0%	0.0%	67.0%	67.0%
Yellow Time (s)				3.0	3.0						3.0	3.0
All-Red Time (s)				2.0	2.0						2.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				C-Min	C-Min						None	None
v/c Ratio				0.16	0.21						0.44	0.65
Control Delay				10.0	10.2						15.8	19.9
Queue Delay				0.4	0.3						0.0	0.0
Total Delay				10.3	10.4						15.8	19.9
Queue Length 50th (ft)				44	65						90	113
Queue Length 95th (ft)				0	35						m110	m140
Internal Link Dist (ft)		330			105			173			199	
Turn Bay Length (ft)												100
Base Capacity (vph)				1630	2414						1987	889
Starvation Cap Reductn				903	1215						0	0
Spillback Cap Reductn				0	0						0	0
Storage Cap Reductn				0	0						0	0
Reduced v/c Ratio				0.37	0.43						0.28	0.40

Intersection Summary	
Area Type:	CBD
Cycle Length: 100	
Actuated Cycle Length: 100	

Offset: 69 (69%), Referenced to phase 1:WBTL, Start of Green
Natural Cycle: 45
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Riverway & Park Drive

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.97	0.91						0.95	1.00
Frpb, ped/bikes				1.00	1.00						1.00	1.00
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				3090	4577						3154	1411
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				3090	4577						3154	1411
Volume (vph)	0	0	0	240	465	0	0	0	0	0	520	340
Peak-hour factor, PHF	0.95	0.95	0.95	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	267	517	0	0	0	0	0	547	358
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	267	517	0	0	0	0	0	547	358
Confl. Peds. (#/hr)												65
Confl. Bikes (#/hr)												25
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	0%	0%	0%	3%	3%	3%
Turn Type				Split								Prot
Protected Phases				1	1						5	5
Permitted Phases												
Actuated Green, G (s)				51.7	51.7						38.3	38.3
Effective Green, g (s)				52.7	52.7						39.3	39.3
Actuated g/C Ratio				0.53	0.53						0.39	0.39
Clearance Time (s)				5.0	5.0						5.0	5.0
Vehicle Extension (s)				2.0	2.0						2.0	2.0
Lane Grp Cap (vph)				1628	2412						1240	555
v/s Ratio Prot				0.09	c0.11						0.17	c0.25
v/s Ratio Perm												
v/c Ratio				0.16	0.21						0.44	0.65
Uniform Delay, d1				12.2	12.6						22.3	24.7
Progression Factor				0.70	0.71						0.70	0.68
Incremental Delay, d2				0.2	0.2						0.1	1.1
Delay (s)				8.8	9.1						15.6	18.0
Level of Service				A	A						B	B
Approach Delay (s)		0.0			9.0			0.0			16.6	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)		9	15		15	9
Link Speed (mph)	25			25	25	
Link Distance (ft)	360			253	341	
Travel Time (s)	9.8			6.9	9.3	
Volume (vph)	0	815	760	0	0	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.95	0.95
Heavy Vehicles (%)	1%	1%	3%	3%	0%	0%
Lane Group Flow (vph)	0	867	809	0	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	0	815	760	0	0	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.95	0.95
Hourly flow rate (vph)	0	867	809	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				253		
pX, platoon unblocked						
vC, conflicting volume			0		1617	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		1617	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			50		100	100
cM capacity (veh/h)			1617		58	1091

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3
Volume Total	289	289	289	270	270	270
Volume Left	0	0	0	270	270	270
Volume Right	289	289	289	0	0	0
cSH	1700	1700	1700	1617	1617	1617
Volume to Capacity	0.17	0.17	0.17	0.50	0.50	0.50
Queue Length 95th (ft)	0	0	0	73	73	73
Control Delay (s)	0.0	0.0	0.0	9.4	9.4	9.4
Lane LOS				A	A	A
Approach Delay (s)	0.0			9.4		
Approach LOS						

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)					50	50	50	50				
Trailing Detector (ft)					0	0	0	0				
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			No	No		No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		185			128			405			282	
Travel Time (s)		5.0			3.5			11.0			7.7	
Volume (vph)	0	0	0	0	20	10	685	390	0	0	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.90	0.90	0.90	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	0%	0%	0%
Lane Group Flow (vph)	0	0	0	0	21	11	761	433	0	0	0	0
Turn Type						Perm	Split					
Protected Phases					5		1	1				
Permitted Phases						5						
Detector Phases					5	5	1	1				
Minimum Initial (s)					17.0	17.0	5.0	5.0				
Minimum Split (s)					27.0	27.0	10.0	10.0				
Total Split (s)	0.0	0.0	0.0	0.0	38.0	38.0	62.0	62.0	0.0	0.0	0.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	0.0%	38.0%	38.0%	62.0%	62.0%	0.0%	0.0%	0.0%	0.0%
Yellow Time (s)					3.0	3.0	3.0	3.0				
All-Red Time (s)					2.0	2.0	2.0	2.0				
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode					None	None	C-Min	C-Min				
v/c Ratio					0.06	0.04	0.30	0.17				
Control Delay					30.9	30.5	4.6	4.1				
Queue Delay					0.0	0.0	0.1	0.0				
Total Delay					30.9	30.5	4.6	4.1				
Queue Length 50th (ft)					11	6	85	44				
Queue Length 95th (ft)					30	20	m82	m46				
Internal Link Dist (ft)		105			48			325			202	
Turn Bay Length (ft)												
Base Capacity (vph)					581	494	2515	2593				
Starvation Cap Reductn					0	0	554	0				
Spillback Cap Reductn					0	0	0	0				
Storage Cap Reductn					0	0	0	0				
Reduced v/c Ratio					0.04	0.02	0.39	0.17				

Intersection Summary

Area Type: CBD

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 63 (63%), Referenced to phase 1:NBTL, Start of Green

Natural Cycle: 45

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Park Dr & Park Drive

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0				
Lane Util. Factor					1.00	1.00	0.97	0.95				
Frt					1.00	0.85	1.00	1.00				
Flt Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					1710	1454	3090	3185				
Flt Permitted					1.00	1.00	0.95	1.00				
Satd. Flow (perm)					1710	1454	3090	3185				
Volume (vph)	0	0	0	0	20	10	685	390	0	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.90	0.90	0.90	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	21	11	761	433	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	21	11	761	433	0	0	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	0%	0%	0%
Turn Type						Perm	Split					
Protected Phases					5		1	1				
Permitted Phases						5						
Actuated Green, G (s)					13.2	13.2	76.8	76.8				
Effective Green, g (s)					14.2	14.2	77.8	77.8				
Actuated g/C Ratio					0.14	0.14	0.78	0.78				
Clearance Time (s)					5.0	5.0	5.0	5.0				
Vehicle Extension (s)					2.0	2.0	2.0	2.0				
Lane Grp Cap (vph)					243	206	2404	2478				
v/s Ratio Prot					c0.01		c0.25	0.14				
v/s Ratio Perm						0.01						
v/c Ratio					0.09	0.05	0.32	0.17				
Uniform Delay, d1					37.3	37.1	3.3	2.9				
Progression Factor					1.00	1.00	0.96	1.00				
Incremental Delay, d2					0.1	0.0	0.2	0.1				
Delay (s)					37.3	37.1	3.4	3.0				
Level of Service					D	D	A	A				
Approach Delay (s)		0.0			37.3			3.2			0.0	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	4.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	EBR2	WBT	SBL2	SBL	SBT	SBR	ø2
Lane Configurations									
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)	50			50	50	50	50	50	
Trailing Detector (ft)	0			0	0	0	0	0	
Turning Speed (mph)		9	9		15	15		9	
Right Turn on Red			Yes					No	
Link Speed (mph)	25			25			25		
Link Distance (ft)	975			262			341		
Travel Time (s)	26.6			7.1			9.3		
Volume (vph)	735	50	55	950	675	70	660	170	
Confl. Bikes (#/hr)		9	9					17	
Peak Hour Factor	0.94	0.94	0.94	0.87	0.98	0.98	0.98	0.98	
Heavy Vehicles (%)	6%	6%	6%	4%	2%	2%	2%	2%	
Bus Blockages (#/hr)	25	25	25	0	0	0	0	0	
Lane Group Flow (vph)	894	0	0	1092	463	0	970	173	
Turn Type					Perm	Perm		Prot	
Protected Phases	1			1			5	5	2
Permitted Phases					5	5			
Detector Phases	1			1	5	5	5	5	
Minimum Initial (s)	10.0			10.0	10.0	10.0	10.0	10.0	7.0
Minimum Split (s)	15.0			15.0	15.0	15.0	15.0	15.0	16.0
Total Split (s)	37.0	0.0	0.0	37.0	47.0	47.0	47.0	47.0	16.0
Total Split (%)	37.0%	0.0%	0.0%	37.0%	47.0%	47.0%	47.0%	47.0%	16%
Yellow Time (s)	3.0			3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	2.0			2.0	2.0	2.0	2.0	2.0	0.0
Lead/Lag	Lead			Lead					Lag
Lead-Lag Optimize?	Yes			Yes					Yes
Recall Mode	C-Max			C-Max	Max	Max	Max	Max	None
v/c Ratio	0.50			0.82	0.74		0.75	0.28	
Control Delay	23.4			27.6	31.2		27.0	18.3	
Queue Delay	0.2			19.0	0.4		0.2	0.0	
Total Delay	23.6			46.6	31.7		27.3	18.3	
Queue Length 50th (ft)	128			0	257		270	62	
Queue Length 95th (ft)	220			#523	432		396	134	
Internal Link Dist (ft)	895			182			261		
Turn Bay Length (ft)									
Base Capacity (vph)	1780			1331	623		1292	613	
Starvation Cap Reductn	0			262	0		0	0	
Spillback Cap Reductn	275			0	20		42	0	
Storage Cap Reductn	0			0	0		0	0	
Reduced v/c Ratio	0.59			1.02	0.77		0.78	0.28	

Intersection Summary

Area Type: CBD

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 81 (81%), Referenced to phase 1:EBWB, Start of Green

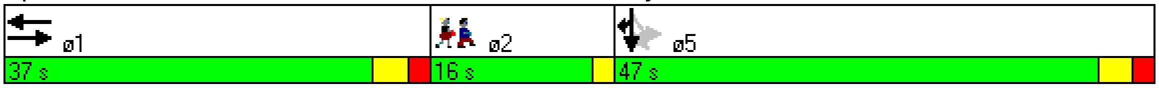
Natural Cycle: 90

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 10: Brookline Avenue & Riverway



Movement	EBT	EBR	EBR2	WBT	SBL2	SBL	SBT	SBR
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	0.91			0.95	0.91		0.91	1.00
Frpb, ped/bikes	1.00			1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00		1.00	1.00
Frt	0.98			1.00	1.00		1.00	0.85
Flt Protected	1.00			1.00	0.95		0.98	1.00
Satd. Flow (prot)	4166			3124	1449		3005	1425
Flt Permitted	1.00			1.00	0.95		0.98	1.00
Satd. Flow (perm)	4166			3124	1449		3005	1425
Volume (vph)	735	50	55	950	675	70	660	170
Peak-hour factor, PHF	0.94	0.94	0.94	0.87	0.98	0.98	0.98	0.98
Adj. Flow (vph)	782	53	59	1092	689	71	673	173
RTOR Reduction (vph)	7	0	0	0	0	0	0	0
Lane Group Flow (vph)	887	0	0	1092	463	0	970	173
Confl. Bikes (#/hr)		9	9					17
Heavy Vehicles (%)	6%	6%	6%	4%	2%	2%	2%	2%
Bus Blockages (#/hr)	25	25	25	0	0	0	0	0
Turn Type					Perm	Perm		Prot
Protected Phases	1			1			5	5
Permitted Phases					5	5		
Actuated Green, G (s)	40.4			40.4	42.0		42.0	42.0
Effective Green, g (s)	41.4			41.4	43.0		43.0	43.0
Actuated g/C Ratio	0.41			0.41	0.43		0.43	0.43
Clearance Time (s)	5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)	2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	1725			1293	623		1292	613
v/s Ratio Prot	0.21			c0.35				0.12
v/s Ratio Perm					0.32		0.32	
v/c Ratio	0.51			0.84	0.74		0.75	0.28
Uniform Delay, d1	21.8			26.4	23.9		24.0	18.5
Progression Factor	1.00			0.80	0.94		0.94	0.91
Incremental Delay, d2	1.1			4.9	7.8		4.0	1.1
Delay (s)	22.9			26.0	30.3		26.6	17.9
Level of Service	C			C	C		C	B
Approach Delay (s)	22.9			26.0			26.7	
Approach LOS	C			C			C	

Intersection Summary			
HCM Average Control Delay	25.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.6
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		150	0		0		0	150	
Storage Lanes		2		1	0		0		2	1	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50			50	50	
Trailing Detector (ft)	0	0	0	0	0	0			0	0	
Turning Speed (mph)		9		9	15		9	9	15	9	9
Right Turn on Red				No				No			Yes
Link Speed (mph)	25		25			25			25		
Link Distance (ft)	262		728			256			807		
Travel Time (s)	7.1		19.9			7.0			22.0		
Volume (vph)	410	1000	260	165	100	525	130	80	590	385	10
Confl. Bikes (#/hr)		6		8			3	6			
Peak Hour Factor	0.95	0.95	0.84	0.84	0.90	0.90	0.90	0.90	0.88	0.88	0.88
Heavy Vehicles (%)	2%	2%	9%	9%	1%	1%	1%	1%	4%	4%	4%
Bus Blockages (#/hr)	0	0	16	16	0	0	0	0	0	0	0
Parking (#/hr)			2	2							
Lane Group Flow (vph)	432	1053	310	196	0	927	0	0	787	332	0
Turn Type		pm+ov		custom	Split					Perm	
Protected Phases	2	1	2	2	3	3			1		
Permitted Phases		2		2						1	
Detector Phases	2	1	2	2	3	3			1	1	
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0			10.0	10.0	
Minimum Split (s)	19.0	19.0	19.0	19.0	21.0	21.0			19.0	19.0	
Total Split (s)	33.0	34.0	33.0	33.0	33.0	33.0	0.0	0.0	34.0	34.0	0.0
Total Split (%)	33.0%	34.0%	33.0%	33.0%	33.0%	33.0%	0.0%	0.0%	34.0%	34.0%	0.0%
Yellow Time (s)	4.0	5.0	4.0	4.0	4.0	4.0			5.0	5.0	
All-Red Time (s)	2.0	1.0	2.0	2.0	2.0	2.0			1.0	1.0	
Lead/Lag	Lag	Lead	Lag	Lag					Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					Yes	Yes	
Recall Mode	Max	C-Max	Max	Max	Max	Max			C-Max	C-Max	
v/c Ratio	0.47	0.72	0.39	0.61		0.58			0.88	0.87	
Control Delay	33.7	17.6	32.8	41.6		32.0			45.7	56.8	
Queue Delay	2.9	0.6	0.0	0.0		0.0			0.0	0.0	
Total Delay	36.6	18.2	32.8	41.6		32.0			45.7	56.8	
Queue Length 50th (ft)	124	294	71	98		146			244	217	
Queue Length 95th (ft)	206	469	108	m164		181			#335	#381	
Internal Link Dist (ft)	182		648			176			727		
Turn Bay Length (ft)				150						150	
Base Capacity (vph)	924	1462	791	322		1607			898	383	
Starvation Cap Reductn	373	134	0	0		0			0	0	
Spillback Cap Reductn	0	0	0	0		0			0	0	
Storage Cap Reductn	0	0	0	0		0			0	0	
Reduced v/c Ratio	0.78	0.79	0.39	0.61		0.58			0.88	0.87	

Intersection Summary	
Area Type:	CBD
Cycle Length: 100	

Actuated Cycle Length: 100
Offset: 73 (73%), Referenced to phase 1:NWL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Brookline Avenue & Park Drive

Movement	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0		4.0			4.0	4.0	
Lane Util. Factor	0.95	0.88	0.95	1.00		0.86			0.97	0.91	
Frpb, ped/bikes	1.00	0.99	1.00	1.00		1.00			1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00			1.00	1.00	
Frt	1.00	0.85	1.00	0.85		0.96			0.98	0.85	
Flt Protected	1.00	1.00	1.00	1.00		0.99			0.96	1.00	
Satd. Flow (prot)	3185	2479	2727	1111		5545			2991	1272	
Flt Permitted	1.00	1.00	1.00	1.00		0.99			0.96	1.00	
Satd. Flow (perm)	3185	2479	2727	1111		5545			2991	1272	
Volume (vph)	410	1000	260	165	100	525	130	80	590	385	10
Peak-hour factor, PHF	0.95	0.95	0.84	0.84	0.90	0.90	0.90	0.90	0.88	0.88	0.88
Adj. Flow (vph)	432	1053	310	196	111	583	144	89	670	438	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	432	1053	310	196	0	927	0	0	787	331	0
Confl. Bikes (#/hr)		6		8			3	6			
Heavy Vehicles (%)	2%	2%	9%	9%	1%	1%	1%	1%	4%	4%	4%
Bus Blockages (#/hr)	0	0	16	16	0	0	0	0	0	0	0
Parking (#/hr)			2	2							
Turn Type		pm+ov		custom	Split					Perm	
Protected Phases	2	1	2	2	3	3			1		
Permitted Phases		2		2						1	
Actuated Green, G (s)	27.0	55.0	27.0	27.0		27.0			28.0	28.0	
Effective Green, g (s)	29.0	59.0	29.0	29.0		29.0			30.0	30.0	
Actuated g/C Ratio	0.29	0.59	0.29	0.29		0.29			0.30	0.30	
Clearance Time (s)	6.0	6.0	6.0	6.0		6.0			6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0			3.0	3.0	
Lane Grp Cap (vph)	924	1562	791	322		1608			897	382	
v/s Ratio Prot	0.14	c0.20	0.11	0.18		c0.17			c0.26		
v/s Ratio Perm		0.22								0.26	
v/c Ratio	0.47	0.67	0.39	0.61		0.58			0.88	0.87	
Uniform Delay, d1	29.2	14.0	28.4	30.6		30.3			33.3	33.1	
Progression Factor	1.10	1.20	1.10	1.08		1.00			1.00	1.00	
Incremental Delay, d2	1.3	1.9	1.3	7.3		1.5			11.8	22.2	
Delay (s)	33.3	18.7	32.5	40.4		31.8			45.1	55.3	
Level of Service	C	B	C	D		C			D	E	
Approach Delay (s)	22.9		35.5			31.8			48.1		
Approach LOS	C		D			C			D		

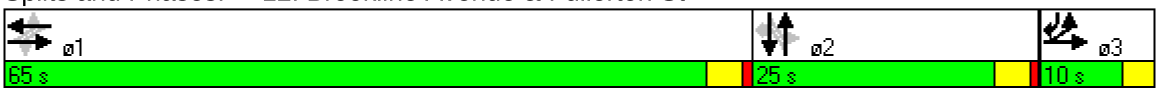
Intersection Summary			
HCM Average Control Delay	33.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	10	10	10	12	12	12	11	11	11
Storage Length (ft)	200		0	50		0	0		0	0		100
Storage Lanes	1		0	1		0	0		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		728			597			287			432	
Travel Time (s)		19.9			16.3			7.8			11.8	
Volume (vph)	135	340	45	45	280	85	55	60	20	20	35	55
Confl. Peds. (#/hr)	120		75	75		120	103		112	112		103
Confl. Bikes (#/hr)			7			15			3			4
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.85	0.85	0.85	0.75	0.75	0.75
Heavy Vehicles (%)	6%	6%	6%	9%	9%	9%	2%	2%	2%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		8	8									
Lane Group Flow (vph)	165	470	0	55	445	0	0	160	0	0	74	73
Turn Type	D.P+P			Perm			Perm			Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2			2		2
Detector Phases	3	1 3		1	1		2	2		2	2	3
Minimum Initial (s)	4.0			8.0	8.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0			23.0	23.0		24.0	24.0		24.0	24.0	10.0
Total Split (s)	10.0	75.0	0.0	65.0	65.0	0.0	25.0	25.0	0.0	25.0	25.0	10.0
Total Split (%)	10.0%	75.0%	0.0%	65.0%	65.0%	0.0%	25.0%	25.0%	0.0%	25.0%	25.0%	10.0%
Yellow Time (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.0			1.0	1.0		1.0	1.0		1.0	1.0	0.0
Lead/Lag				Lead	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?				Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None			C-Max	C-Max		None	None		None	None	None
v/c Ratio	0.35	0.49		0.92	0.58			0.72			0.32	0.20
Control Delay	10.7	13.3		110.6	6.7			54.6			38.7	7.7
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Delay	10.7	13.3		110.6	6.7			54.6			38.7	7.7
Queue Length 50th (ft)	29	95		15	40			92			41	0
Queue Length 95th (ft)	m63	m163		m#84	52			147			66	20
Internal Link Dist (ft)		648			517			207			352	
Turn Bay Length (ft)	200			50								100
Base Capacity (vph)	470	961		60	766			268			278	362
Starvation Cap Reductn	0	0		0	0			0			0	0
Spillback Cap Reductn	0	0		0	0			0			0	0
Storage Cap Reductn	0	0		0	0			0			0	0
Reduced v/c Ratio	0.35	0.49		0.92	0.58			0.60			0.27	0.20

Intersection Summary

Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 89 (89%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Brookline Avenue & Fullerton St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	10	10	12	12	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.92			0.95			1.00	0.88
Flpb, ped/bikes	0.94	1.00		1.00	1.00			0.94			0.93	1.00
Frt	1.00	0.98		1.00	0.96			0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	1.00
Satd. Flow (prot)	1350	1283		1391	1213			1434			1467	1196
Flt Permitted	0.44	1.00		0.06	1.00			0.84			0.86	1.00
Satd. Flow (perm)	621	1283		94	1213			1235			1288	1196
Volume (vph)	135	340	45	45	280	85	55	60	20	20	35	55
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.85	0.85	0.85	0.75	0.75	0.75
Adj. Flow (vph)	165	415	55	55	341	104	65	71	24	27	47	73
RTOR Reduction (vph)	0	4	0	0	11	0	0	7	0	0	0	54
Lane Group Flow (vph)	165	466	0	55	434	0	0	153	0	0	74	19
Confl. Peds. (#/hr)	120		75	75		120	103		112	112		103
Confl. Bikes (#/hr)			7			15			3			4
Heavy Vehicles (%)	6%	6%	6%	9%	9%	9%	2%	2%	2%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		8	8									
Turn Type	D.P+P			Perm			Perm			Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2			2		2
Actuated Green, G (s)	71.6	74.6		62.2	62.2			17.4			17.4	26.8
Effective Green, g (s)	70.6	74.6		62.2	62.2			17.4			17.4	25.8
Actuated g/C Ratio	0.71	0.75		0.62	0.62			0.17			0.17	0.26
Clearance Time (s)	3.0			4.0	4.0			4.0			4.0	3.0
Vehicle Extension (s)	3.0			3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	500	957		58	754			215			224	356
v/s Ratio Prot	0.03	c0.36			0.36							0.00
v/s Ratio Perm	0.21			c0.58				c0.12			0.06	0.01
v/c Ratio	0.33	0.49		0.95	0.58			0.71			0.33	0.05
Uniform Delay, d1	5.4	5.1		17.4	11.1			38.9			36.2	27.9
Progression Factor	1.97	2.02		0.57	0.33			1.00			1.00	1.00
Incremental Delay, d2	0.4	0.4		98.1	2.9			10.7			0.9	0.1
Delay (s)	11.0	10.6		108.0	6.6			49.6			37.1	28.0
Level of Service	B	B		F	A			D			D	C
Approach Delay (s)		10.7			17.7			49.6			32.5	
Approach LOS		B			B			D			C	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	10	10
Turning Speed (mph)	15			9	15	9
Link Speed (mph)		25	25		25	
Link Distance (ft)		597	1171		374	
Travel Time (s)		16.3	31.9		10.2	
Volume (vph)	40	320	390	15	10	25
Confl. Peds. (#/hr)	113			113	13	22
Confl. Bikes (#/hr)				17		
Peak Hour Factor	0.88	0.88	0.94	0.94	0.83	0.83
Heavy Vehicles (%)	9%	9%	8%	8%	21%	21%
Parking (#/hr)	8	8	8	8	8	8
Lane Group Flow (vph)	0	409	431	0	42	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	40	320	390	15	10	25
Peak Hour Factor	0.88	0.88	0.94	0.94	0.83	0.83
Hourly flow rate (vph)	45	364	415	16	12	30
Pedestrians		22	13		113	
Lane Width (ft)		14.0	12.0		10.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	1		8	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		597	1171			
pX, platoon unblocked						
vC, conflicting volume	544				1003	558
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	544				1003	558
tC, single (s)	4.2				6.6	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.5
p0 queue free %	95				94	93
cM capacity (veh/h)	913				214	446

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	409	431	42
Volume Left	45	0	12
Volume Right	0	16	30
cSH	913	1700	341
Volume to Capacity	0.05	0.25	0.12
Queue Length 95th (ft)	4	0	10
Control Delay (s)	1.5	0.0	17.0
Lane LOS	A		C
Approach Delay (s)	1.5	0.0	17.0
Approach LOS			C

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	64.0%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBR	SBR2	NER	NER2	ø2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)		50			175		0	150		25		
Storage Lanes		0			1		0	1		1		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)	50			50	50	50		50	50	50	50	
Trailing Detector (ft)	0			0	0	0		0	0	0	0	
Turning Speed (mph)		9	9	15	15		9	9	9	9	9	
Right Turn on Red			Yes				No	No	No		No	
Link Speed (mph)	25					25						
Link Distance (ft)	119					737						
Travel Time (s)	3.2					20.1						
Volume (vph)	435	35	15	300	630	440	15	295	15	700	15	
Confl. Peds. (#/hr)							115				228	
Confl. Bikes (#/hr)		74	80				9					
Peak Hour Factor	0.89	0.89	0.89	0.90	0.90	0.90	0.90	0.94	0.70	0.87	0.87	
Heavy Vehicles (%)	1%	1%	1%	7%	7%	7%	7%	10%	0%	6%	6%	
Parking (#/hr)						8	8			8	8	
Lane Group Flow (vph)	545	0	0	333	413	793	0	314	21	805	17	
Turn Type				Prot	Split			custom	custom	custom	custom	
Protected Phases	1			2 3	3 4	3 4		3	1	4		2
Permitted Phases											4	
Detector Phases	1			2 3	3 4	3 4		3	1	4	4	
Minimum Initial (s)	4.0							4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	25.0							22.0	25.0	25.0	25.0	15.0
Total Split (s)	30.0	0.0	0.0	38.0	55.0	55.0	0.0	23.0	30.0	32.0	32.0	15.0
Total Split (%)	30.0%	0.0%	0.0%	38.0%	55.0%	55.0%	0.0%	23.0%	30.0%	32.0%	32.0%	15%
Yellow Time (s)	3.0							3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	4.0							4.0	4.0	4.0	4.0	0.0
Lead/Lag	Lead							Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes							Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max							None	C-Max	None	None	None
v/c Ratio	0.67			0.65	0.59	0.59		0.71	0.05	1.28	0.12	
Control Delay	37.7			34.8	21.4	19.5		43.1	28.4	154.2	8.5	
Queue Delay	0.0			0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	37.7			34.8	21.4	19.5		43.1	28.4	154.2	8.5	
Queue Length 50th (ft)	163			178	193	186		73	10	~374	2	
Queue Length 95th (ft)	219			277	303	250		m145	22	#466	m3	
Internal Link Dist (ft)	39					657						
Turn Bay Length (ft)				175	175			150		25	25	
Base Capacity (vph)	814			516	705	1339		442	385	628	145	
Starvation Cap Reductn	0			0	0	0		0	0	0	0	
Spillback Cap Reductn	0			0	0	0		0	0	0	0	
Storage Cap Reductn	0			0	0	0		0	0	0	0	
Reduced v/c Ratio	0.67			0.65	0.59	0.59		0.71	0.05	1.28	0.12	

Intersection Summary	
Area Type:	CBD
Cycle Length: 100	

Actuated Cycle Length: 100
Offset: 28 (28%), Referenced to phase 1:EBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Commonwealth Ave & Deerfield Street

Movement	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBR	SBR2	NER	NER2
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95			1.00	0.91	0.91		0.88	1.00	0.88	1.00
Frpb, ped/bikes	0.99			1.00	1.00	0.99		1.00	1.00	1.00	0.44
Flpb, ped/bikes	1.00			1.00	1.00	1.00		1.00	1.00	1.00	1.00
Frt	0.98			1.00	1.00	1.00		0.85	0.86	0.85	0.85
Flt Protected	1.00			0.95	0.95	0.98		1.00	1.00	1.00	1.00
Satd. Flow (prot)	3121			1518	1382	2626		2326	1479	2244	518
Flt Permitted	1.00			0.95	0.95	0.98		1.00	1.00	1.00	1.00
Satd. Flow (perm)	3121			1518	1382	2626		2326	1479	2244	518
Volume (vph)	435	35	15	300	630	440	15	295	15	700	15
Peak-hour factor, PHF	0.89	0.89	0.89	0.90	0.90	0.90	0.90	0.94	0.70	0.87	0.87
Adj. Flow (vph)	489	39	17	333	700	489	17	314	21	805	17
RTOR Reduction (vph)	2	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	543	0	0	333	413	793	0	314	21	805	17
Confl. Peds. (#/hr)							115				228
Confl. Bikes (#/hr)		74	80				9				
Heavy Vehicles (%)	1%	1%	1%	7%	7%	7%	7%	10%	0%	6%	6%
Parking (#/hr)						8	8			8	8
Turn Type				Prot	Split			custom	custom	custom	custom
Protected Phases	1			2 3	3 4	3 4		3	1	4	
Permitted Phases											4
Actuated Green, G (s)	23.0			31.0	48.0	48.0		16.0	23.0	25.0	25.0
Effective Green, g (s)	26.0			34.0	51.0	51.0		19.0	26.0	28.0	28.0
Actuated g/C Ratio	0.26			0.34	0.51	0.51		0.19	0.26	0.28	0.28
Clearance Time (s)	7.0							7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0							3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	811			516	705	1339		442	385	628	145
v/s Ratio Prot	c0.17			c0.22	0.30	0.30		0.14	0.01	c0.36	
v/s Ratio Perm											0.03
v/c Ratio	0.67			0.65	0.59	0.59		0.71	0.05	1.28	0.12
Uniform Delay, d1	33.1			27.9	17.1	17.2		37.9	27.8	36.0	26.8
Progression Factor	1.00			1.00	1.00	1.00		0.90	1.00	0.38	0.26
Incremental Delay, d2	4.4			2.8	1.2	0.7		4.8	0.3	135.2	0.2
Delay (s)	37.5			30.7	18.4	17.9		38.9	28.0	148.9	7.3
Level of Service	D			C	B	B		D	C	F	A
Approach Delay (s)	37.5					20.8					
Approach LOS	D					C					

Intersection Summary			
HCM Average Control Delay	57.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	16	16	16	16
Turning Speed (mph)		9	15		15	9
Link Speed (mph)	25			25	25	
Link Distance (ft)	148			1203	667	
Travel Time (s)	4.0			32.8	18.2	
Volume (vph)	0	645	5	45	430	0
Confl. Peds. (#/hr)		3	3		19	
Peak Hour Factor	0.93	0.93	0.85	0.85	0.87	0.87
Heavy Vehicles (%)	3%	3%	7%	7%	5%	5%
Lane Group Flow (vph)	0	694	0	59	494	0
Sign Control	Stop			Stop	Free	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	645	5	45	430	0
Peak Hour Factor	0.93	0.93	0.85	0.85	0.87	0.87
Hourly flow rate (vph)	0	694	6	53	494	0
Pedestrians	19				3	
Lane Width (ft)	11.0				16.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)					667	
pX, platoon unblocked						
vC, conflicting volume	1008	22	992	1008	19	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1008	22	992	1008	19	
tC, single (s)	6.5	6.2	7.2	6.6	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.6	4.1	2.2	
p0 queue free %	100	33	89	67	68	
cM capacity (veh/h)	161	1034	54	159	1555	

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	347	347	59	494
Volume Left	0	0	6	494
Volume Right	347	347	0	0
cSH	1034	1034	133	1555
Volume to Capacity	0.34	0.34	0.44	0.32
Queue Length 95th (ft)	37	37	49	35
Control Delay (s)	10.2	10.2	52.1	8.4
Lane LOS	B	B	F	A
Approach Delay (s)	10.2		52.1	8.4
Approach LOS	B		F	

Intersection Summary			
Average Delay	11.5		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	12	12	12	12	12	14	12	11	11
Storage Length (ft)	0		100		0		100	0		100	0	
Storage Lanes	0		1		0		1	0		1	0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Right Turn on Red			No				Yes			Yes		
Link Speed (mph)		25				25			25			25
Link Distance (ft)		65				253			719			667
Travel Time (s)		1.8				6.9			19.6			18.2
Volume (vph)	30	440	130	5	270	655	15	130	460	65	25	570
Confl. Bikes (#/hr)			22				82			48		
Peak Hour Factor	0.91	0.91	0.91	0.98	0.98	0.98	0.98	0.85	0.85	0.85	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	8
Parking (#/hr)		8	8			8	8		8	8		
Lane Group Flow (vph)	0	517	143	0	0	949	15	0	694	76	0	626
Turn Type	Perm		Prot	custom	D.P+P		Perm	D.P+P		Perm	Perm	
Protected Phases		4	4		3	3 4		8	1 8			1
Permitted Phases	4			3	4		3 4	1		1 8	1	
Detector Phases	4	4	4	3	3	3 4	3 4	8	1 8	1 8	1	1
Minimum Initial (s)	2.0	2.0	2.0	4.0	4.0			1.0			10.0	10.0
Minimum Split (s)	19.0	19.0	19.0	9.0	9.0			7.0			20.0	20.0
Total Split (s)	40.0	40.0	40.0	15.0	15.0	55.0	55.0	9.0	40.0	40.0	31.0	31.0
Total Split (%)	36.4%	36.4%	36.4%	13.6%	13.6%	50.0%	50.0%	8.2%	36.4%	36.4%	28.2%	28.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	0.0	0.0			0.0			1.0	1.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead						Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes						Yes	Yes
Recall Mode	None	None	None	Min	Min			None			C-Min	C-Min
v/c Ratio		0.44	0.36			1.03	0.03		1.05	0.17		1.06
Control Delay		30.5	31.5			69.9	12.3		86.9	12.3		93.2
Queue Delay		0.0	0.0			0.0	0.0		0.0	0.0		0.0
Total Delay		30.5	31.5			69.9	12.3		86.9	12.3		93.2
Queue Length 50th (ft)		104	77			~372	6		~278	12		~255
Queue Length 95th (ft)		139	134			m#516	m9		#380	42		#371
Internal Link Dist (ft)		1				173			639			587
Turn Bay Length (ft)			100				100			100		
Base Capacity (vph)		1183	395			921	530		658	452		593
Starvation Cap Reductn		0	0			0	0		0	0		0
Spillback Cap Reductn		0	0			0	0		0	0		0
Storage Cap Reductn		0	0			0	0		0	0		0
Reduced v/c Ratio		0.44	0.36			1.03	0.03		1.05	0.17		1.06

Intersection Summary

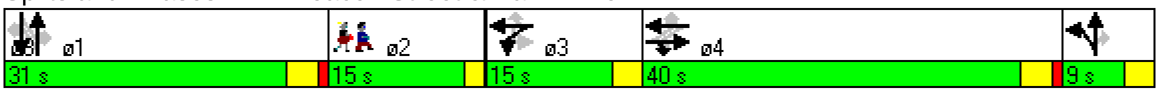
Area Type: CBD

Lane Group	SBR	ø2
Lane Configurations		
Ideal Flow (vphpl)	1900	
Lane Width (ft)	12	
Storage Length (ft)	100	
Storage Lanes	1	
Total Lost Time (s)	4.0	
Leading Detector (ft)	50	
Trailing Detector (ft)	0	
Turning Speed (mph)	9	
Right Turn on Red	Yes	
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Volume (vph)	15	
Confl. Bikes (#/hr)	33	
Peak Hour Factor	0.95	
Heavy Vehicles (%)	1%	
Bus Blockages (#/hr)	8	
Parking (#/hr)	1	
Lane Group Flow (vph)	16	
Turn Type	Perm	
Protected Phases		2
Permitted Phases	1	
Detector Phases	1	
Minimum Initial (s)	10.0	2.0
Minimum Split (s)	20.0	15.0
Total Split (s)	31.0	15.0
Total Split (%)	28.2%	14%
Yellow Time (s)	3.0	2.0
All-Red Time (s)	1.0	0.0
Lead/Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes
Recall Mode	C-Min	None
v/c Ratio	0.05	
Control Delay	19.6	
Queue Delay	0.0	
Total Delay	19.6	
Queue Length 50th (ft)	3	
Queue Length 95th (ft)	21	
Internal Link Dist (ft)		
Turn Bay Length (ft)	100	
Base Capacity (vph)	302	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.05	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 77 (70%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Beacon Street & Park Drive



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	12	12	12	12	12	14	12	11	11
Total Lost time (s)		4.0	4.0			4.0	4.0		4.0	4.0		4.0
Lane Util. Factor		0.91	1.00			0.95	1.00		0.95	1.00		0.95
Frpb, ped/bikes		1.00	1.00			1.00	0.91		1.00	0.96		1.00
Flpb, ped/bikes		1.00	1.00			1.00	1.00		1.00	1.00		1.00
Frt		1.00	0.85			1.00	0.85		1.00	0.85		1.00
Flt Protected		1.00	1.00			0.99	1.00		0.99	1.00		1.00
Satd. Flow (prot)		4288	1208			2948	1132		3156	1185		3054
Flt Permitted		0.84	1.00			0.64	1.00		0.54	1.00		0.79
Satd. Flow (perm)		3615	1208			1915	1132		1736	1185		2432
Volume (vph)	30	440	130	5	270	655	15	130	460	65	25	570
Peak-hour factor, PHF	0.91	0.91	0.91	0.98	0.98	0.98	0.98	0.85	0.85	0.85	0.95	0.95
Adj. Flow (vph)	33	484	143	5	276	668	15	153	541	76	26	600
RTOR Reduction (vph)	0	0	0	0	0	0	5	0	0	33	0	0
Lane Group Flow (vph)	0	517	143	0	0	949	10	0	694	43	0	626
Confl. Bikes (#/hr)			22				82			48		
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	8
Parking (#/hr)		8	8			8	8		8	8		
Turn Type	Perm		Prot	custom	D.P+P		Perm	D.P+P		Perm	Perm	
Protected Phases		4	4		3	3 4		8	1 8			1
Permitted Phases	4			3	4		3 4	1		1 8	1	
Actuated Green, G (s)		36.0	36.0			48.0	51.0		35.6	38.6		26.6
Effective Green, g (s)		36.0	36.0			47.0	51.0		34.6	38.6		26.6
Actuated g/C Ratio		0.33	0.33			0.43	0.46		0.31	0.35		0.24
Clearance Time (s)		4.0	4.0									4.0
Vehicle Extension (s)		2.0	2.0									2.0
Lane Grp Cap (vph)		1183	395			922	525		649	416		588
v/s Ratio Prot			0.12			c0.10			c0.08			
v/s Ratio Perm		0.14				c0.34	0.01		c0.26	0.04		0.26
v/c Ratio		0.44	0.36			1.03	0.02		1.07	0.10		1.06
Uniform Delay, d1		29.0	28.2			31.5	16.0		37.7	24.0		41.7
Progression Factor		1.00	1.00			1.27	1.15		1.00	1.00		1.00
Incremental Delay, d2		0.1	0.2			34.2	0.0		55.3	0.1		55.5
Delay (s)		29.1	28.4			74.1	18.4		93.0	24.2		97.2
Level of Service		C	C			E	B		F	C		F
Approach Delay (s)		29.0				73.2			86.2			95.6
Approach LOS		C				E			F			F

Intersection Summary			
HCM Average Control Delay	71.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	28.4
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Ideal Flow (vphpl)	1900
Lane Width	12
Total Lost time (s)	4.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.96
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1194
Flt Permitted	1.00
Satd. Flow (perm)	1194
Volume (vph)	15
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	16
RTOR Reduction (vph)	8
Lane Group Flow (vph)	8
Confl. Bikes (#/hr)	33
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	8
Parking (#/hr)	1
Turn Type	Perm
Protected Phases	
Permitted Phases	1
Actuated Green, G (s)	26.6
Effective Green, g (s)	26.6
Actuated g/C Ratio	0.24
Clearance Time (s)	4.0
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	289
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.03
Uniform Delay, d1	31.8
Progression Factor	1.00
Incremental Delay, d2	0.2
Delay (s)	32.0
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary

Lane Group	EBU	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	12	12	12	9	9
Turning Speed (mph)	9		9	9	15		15	9
Link Speed (mph)		25				25	25	
Link Distance (ft)		253				234	263	
Travel Time (s)		6.9				6.4	7.2	
Volume (vph)	5	520	5	5	5	940	5	10
Confl. Peds. (#/hr)			119		119		21	11
Confl. Bikes (#/hr)			27					
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.88	0.88
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%
Parking (#/hr)		8	8			8		
Lane Group Flow (vph)	0	569	0	0	0	1056	17	0
Sign Control		Free				Free	Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations								
Sign Control		Free				Free	Stop	
Grade		0%				0%	0%	
Volume (veh/h)	5	520	5	5	5	940	5	10
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.88	0.88
Hourly flow rate (vph)	0	559	5	0	6	1044	6	11
Pedestrians		21				11	119	
Lane Width (ft)		12.0				12.0	9.0	
Walking Speed (ft/s)		4.0				4.0	4.0	
Percent Blockage		2				1	7	
Right turn flare (veh)								
Median type							Raised	
Median storage veh)							0	
Upstream signal (ft)		253						
pX, platoon unblocked	0.00			0.00	0.91		0.91	0.91
vC, conflicting volume	0			0	684		1235	412
vC1, stage 1 conf vol							681	
vC2, stage 2 conf vol							554	
vCu, unblocked vol	0			0	548		1156	249
tC, single (s)	0.0			0.0	4.1		6.8	6.9
tC, 2 stage (s)							5.8	
tF (s)	0.0			0.0	2.2		3.5	3.3
p0 queue free %	0			0	99		97	98
cM capacity (veh/h)	0			0	860		221	630

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	373	192	354	696	17
Volume Left	0	0	6	0	6
Volume Right	0	5	0	0	11
cSH	1700	1700	860	1700	390
Volume to Capacity	0.22	0.11	0.01	0.41	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	0.2	0.0	14.7
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		14.7
Approach LOS					B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	11	12	12	10	10	10	10	10	10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		234			225			229			172	
Travel Time (s)		6.4			6.1			6.2			4.7	
Volume (vph)	5	510	20	10	905	5	40	15	35	5	5	5
Confl. Peds. (#/hr)	144		115	115		144	89		9	9		89
Confl. Bikes (#/hr)			30			71			10			5
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.84	0.84	0.84	0.69	0.69	0.69
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		8	8		8	8	4	4	4	4	4	4
Lane Group Flow (vph)	0	581	0	0	1045	0	0	108	0	0	21	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	510	20	10	905	5	40	15	35	5	5	5
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.84	0.84	0.84	0.69	0.69	0.69
Hourly flow rate (vph)	5	554	22	11	1028	6	48	18	42	7	7	7
Pedestrians		89			9			115			144	
Lane Width (ft)		12.0			12.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		7			1			8			10	
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		487										
pX, platoon unblocked				0.91			0.91	0.91	0.91	0.91	0.91	
vC, conflicting volume	1178			691			1328	1892	412	1546	1900	750
vC1, stage 1 conf vol							691	691		1198	1198	
vC2, stage 2 conf vol							637	1201		348	702	
vCu, unblocked vol	1178			564			1262	1881	257	1501	1890	750
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			70	85	93	93	94	98
cM capacity (veh/h)	535			848			157	115	620	105	117	299

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	283	299	526	520	107	22
Volume Left	5	0	11	0	48	7
Volume Right	0	22	0	6	42	7
cSH	535	1700	848	1700	204	140
Volume to Capacity	0.01	0.18	0.01	0.31	0.53	0.16
Queue Length 95th (ft)	1	0	1	0	68	13
Control Delay (s)	0.4	0.0	0.4	0.0	40.6	35.4
Lane LOS	A		A		E	E
Approach Delay (s)	0.2		0.2		40.6	35.4
Approach LOS					E	E

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	9	9
Turning Speed (mph)		9	15		15	9
Link Speed (mph)	25			25	25	
Link Distance (ft)	225			217	275	
Travel Time (s)	6.1			5.9	7.5	
Volume (vph)	545	5	0	910	5	5
Confl. Peds. (#/hr)		131	131		7	10
Confl. Bikes (#/hr)		32				
Peak Hour Factor	0.93	0.93	0.92	0.92	0.50	0.50
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%
Parking (#/hr)	8	8		8		
Lane Group Flow (vph)	591	0	0	989	20	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	545	5	0	910	5	5
Peak Hour Factor	0.93	0.93	0.92	0.92	0.50	0.50
Hourly flow rate (vph)	586	5	0	989	10	10
Pedestrians	7			10	131	
Lane Width (ft)	10.0			11.0	9.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			1	8	
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)	712					
pX, platoon unblocked			0.93		0.93	0.93
vC, conflicting volume			722		1221	437
vC1, stage 1 conf vol					720	
vC2, stage 2 conf vol					502	
vCu, unblocked vol			624		1161	317
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	98
cM capacity (veh/h)			818		221	580

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	391	201	330	659	20
Volume Left	0	0	0	0	10
Volume Right	0	5	0	0	10
cSH	1700	1700	818	1700	320
Volume to Capacity	0.23	0.12	0.00	0.39	0.06
Queue Length 95th (ft)	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	17.0
Lane LOS					C
Approach Delay (s)	0.0		0.0		17.0
Approach LOS					C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	13	13	13	11	11	8
Turning Speed (mph)	15		9	15		9	15		9	15		9
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		217			1360			234			1203	
Travel Time (s)		5.9			37.1			6.4			32.8	
Volume (vph)	5	535	10	5	875	15	30	10	40	15	0	5
Confl. Peds. (#/hr)	151		91	91		151	3		29	29		3
Confl. Bikes (#/hr)			24			71			4			1
Peak Hour Factor	0.96	0.96	0.96	0.93	0.93	0.93	0.68	0.68	0.68	0.82	0.82	0.82
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		8	8		8	8				4	4	4
Lane Group Flow (vph)	0	572	0	0	962	0	0	118	0	0	24	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	535	10	5	875	15	30	10	40	15	0	5
Peak Hour Factor	0.96	0.96	0.96	0.93	0.93	0.93	0.68	0.68	0.68	0.82	0.82	0.82
Hourly flow rate (vph)	5	557	10	5	941	16	44	15	59	18	0	6
Pedestrians		3			29			91			151	
Lane Width (ft)		11.0			11.0			13.0			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			2			8			12	
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		929										
pX, platoon unblocked				0.95			0.95	0.95	0.95	0.95	0.95	
vC, conflicting volume	1108			659			1154	1783	404	1495	1780	632
vC1, stage 1 conf vol							664	664		1111	1111	
vC2, stage 2 conf vol							490	1119		384	669	
vCu, unblocked vol	1108			592			1112	1772	324	1470	1769	632
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			77	88	90	84	100	98
cM capacity (veh/h)	559			863			193	126	579	112	127	377

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	284	289	476	487	118	24
Volume Left	5	0	5	0	44	18
Volume Right	0	10	0	16	59	6
cSH	559	1700	863	1700	263	136
Volume to Capacity	0.01	0.17	0.01	0.29	0.45	0.18
Queue Length 95th (ft)	1	0	0	0	54	16
Control Delay (s)	0.3	0.0	0.2	0.0	29.3	37.1
Lane LOS	A		A		D	E
Approach Delay (s)	0.2		0.1		29.3	37.1
Approach LOS					D	E

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		100
Storage Lanes	0		0	2		0	0		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)				50	50						50	50
Trailing Detector (ft)				0	0						0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			No	No		No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		410			185			253			279	
Travel Time (s)		11.2			5.0			6.9			7.6	
Volume (vph)	0	0	0	300	860	0	0	0	0	0	445	515
Confl. Peds. (#/hr)												65
Confl. Bikes (#/hr)												11
Peak Hour Factor	0.95	0.95	0.95	0.97	0.97	0.97	0.95	0.95	0.95	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	2%	2%	2%
Lane Group Flow (vph)	0	0	0	309	887	0	0	0	0	0	500	579
Turn Type				Split								Prot
Protected Phases				1	1						5	5
Permitted Phases												
Detector Phases				1	1						5	5
Minimum Initial (s)				13.0	13.0						13.0	13.0
Minimum Split (s)				23.0	23.0						23.0	23.0
Total Split (s)	0.0	0.0	0.0	50.0	50.0	0.0	0.0	0.0	0.0	0.0	50.0	50.0
Total Split (%)	0.0%	0.0%	0.0%	50.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	50.0%
Yellow Time (s)				3.0	3.0						3.0	3.0
All-Red Time (s)				2.0	2.0						2.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				C-Min	C-Min						None	None
v/c Ratio				0.23	0.45						0.32	0.82
Control Delay				25.8	27.3						14.6	30.2
Queue Delay				0.4	0.8						0.0	0.0
Total Delay				26.2	28.2						14.6	30.2
Queue Length 50th (ft)				72	156						93	291
Queue Length 95th (ft)				133	241						95	335
Internal Link Dist (ft)		330			105			173			199	
Turn Bay Length (ft)												100
Base Capacity (vph)				1531	2267						1684	754
Starvation Cap Reductn				775	1002						0	0
Spillback Cap Reductn				0	0						0	0
Storage Cap Reductn				0	0						0	0
Reduced v/c Ratio				0.41	0.70						0.30	0.77

Intersection Summary

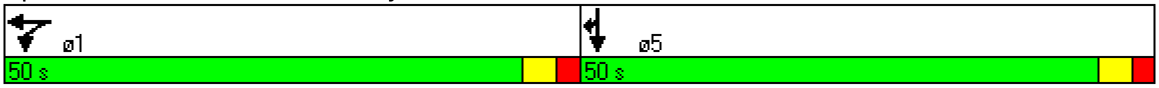
Area Type: CBD

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 38 (38%), Referenced to phase 1:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 7: Riverway & Park Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.97	0.91						0.95	1.00
Frpb, ped/bikes				1.00	1.00						1.00	1.00
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				3120	4622						3185	1425
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				3120	4622						3185	1425
Volume (vph)	0	0	0	300	860	0	0	0	0	0	445	515
Peak-hour factor, PHF	0.95	0.95	0.95	0.97	0.97	0.97	0.95	0.95	0.95	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	309	887	0	0	0	0	0	500	579
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	309	887	0	0	0	0	0	500	579
Confl. Peds. (#/hr)												65
Confl. Bikes (#/hr)												11
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	2%	2%	2%
Turn Type				Split								Prot
Protected Phases				1	1						5	5
Permitted Phases												
Actuated Green, G (s)				41.2	41.2						48.8	48.8
Effective Green, g (s)				42.2	42.2						49.8	49.8
Actuated g/C Ratio				0.42	0.42						0.50	0.50
Clearance Time (s)				5.0	5.0						5.0	5.0
Vehicle Extension (s)				2.0	2.0						2.0	2.0
Lane Grp Cap (vph)				1317	1950						1586	710
v/s Ratio Prot				0.10	c0.19						0.16	c0.41
v/s Ratio Perm												
v/c Ratio				0.23	0.45						0.32	0.82
Uniform Delay, d1				18.5	20.7						14.9	21.2
Progression Factor				1.19	1.15						1.00	1.00
Incremental Delay, d2				0.4	0.7						0.0	6.8
Delay (s)				22.3	24.6						15.0	28.0
Level of Service				C	C						B	C
Approach Delay (s)		0.0			24.0			0.0			22.0	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	97.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)		9	15		15	9
Link Speed (mph)	25			25	25	
Link Distance (ft)	360			253	341	
Travel Time (s)	9.8			6.9	9.3	
Volume (vph)	0	740	745	0	0	0
Peak Hour Factor	0.96	0.96	0.93	0.93	0.95	0.95
Heavy Vehicles (%)	2%	2%	0%	0%	0%	0%
Lane Group Flow (vph)	0	771	801	0	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	0	740	745	0	0	0
Peak Hour Factor	0.96	0.96	0.93	0.93	0.95	0.95
Hourly flow rate (vph)	0	771	801	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				253		
pX, platoon unblocked						
vC, conflicting volume			0		1602	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		1602	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			51		100	100
cM capacity (veh/h)			1636		60	1091

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3
Volume Total	257	257	257	267	267	267
Volume Left	0	0	0	267	267	267
Volume Right	257	257	257	0	0	0
cSH	1700	1700	1700	1636	1636	1636
Volume to Capacity	0.15	0.15	0.15	0.49	0.49	0.49
Queue Length 95th (ft)	0	0	0	70	70	70
Control Delay (s)	0.0	0.0	0.0	9.3	9.3	9.3
Lane LOS				A	A	A
Approach Delay (s)	0.0			9.3		
Approach LOS						

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)					50	50	50	50				
Trailing Detector (ft)					0	0	0	0				
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			No	No		No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		185			128			405			282	
Travel Time (s)		5.0			3.5			11.0			7.7	
Volume (vph)	0	0	0	0	115	60	1045	605	0	0	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.97	0.97	0.97	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	1%	0%	0%	0%
Lane Group Flow (vph)	0	0	0	0	121	63	1077	624	0	0	0	0
Turn Type						Perm	Split					
Protected Phases					5		1	1				
Permitted Phases						5						
Detector Phases					5	5	1	1				
Minimum Initial (s)					17.0	17.0	5.0	5.0				
Minimum Split (s)					27.0	27.0	10.0	10.0				
Total Split (s)	0.0	0.0	0.0	0.0	37.0	37.0	63.0	63.0	0.0	0.0	0.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	0.0%	37.0%	37.0%	63.0%	63.0%	0.0%	0.0%	0.0%	0.0%
Yellow Time (s)					3.0	3.0	3.0	3.0				
All-Red Time (s)					2.0	2.0	2.0	2.0				
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode					None	None	C-Min	C-Min				
v/c Ratio					0.34	0.21	0.49	0.27				
Control Delay					35.9	33.6	6.8	5.7				
Queue Delay					0.1	0.0	0.3	0.0				
Total Delay					35.9	33.6	7.1	5.7				
Queue Length 50th (ft)					64	32	113	63				
Queue Length 95th (ft)					116	69	m119	m65				
Internal Link Dist (ft)		105			48			325			202	
Turn Bay Length (ft)												
Base Capacity (vph)					564	480	2215	2284				
Starvation Cap Reductn					0	0	526	0				
Spillback Cap Reductn					68	0	473	0				
Storage Cap Reductn					0	0	0	0				
Reduced v/c Ratio					0.24	0.13	0.64	0.27				

Intersection Summary

Area Type: CBD

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 76 (76%), Referenced to phase 1:NBTL, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Park Dr & Park Drive

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0				
Lane Util. Factor					1.00	1.00	0.97	0.95				
Frt					1.00	0.85	1.00	1.00				
Flt Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					1710	1454	3120	3217				
Flt Permitted					1.00	1.00	0.95	1.00				
Satd. Flow (perm)					1710	1454	3120	3217				
Volume (vph)	0	0	0	0	115	60	1045	605	0	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	121	63	1077	624	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	121	63	1077	624	0	0	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	1%	0%	0%	0%
Turn Type						Perm	Split					
Protected Phases					5		1	1				
Permitted Phases						5						
Actuated Green, G (s)					20.0	20.0	70.0	70.0				
Effective Green, g (s)					21.0	21.0	71.0	71.0				
Actuated g/C Ratio					0.21	0.21	0.71	0.71				
Clearance Time (s)					5.0	5.0	5.0	5.0				
Vehicle Extension (s)					2.0	2.0	2.0	2.0				
Lane Grp Cap (vph)					359	305	2215	2284				
v/s Ratio Prot					c0.07		c0.35	0.19				
v/s Ratio Perm						0.04						
v/c Ratio					0.34	0.21	0.49	0.27				
Uniform Delay, d1					33.6	32.6	6.4	5.2				
Progression Factor					1.00	1.00	0.93	1.01				
Incremental Delay, d2					0.2	0.1	0.4	0.2				
Delay (s)					33.8	32.7	6.4	5.4				
Level of Service					C	C	A	A				
Approach Delay (s)		0.0			33.4			6.1			0.0	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

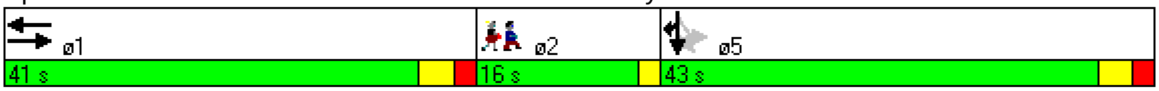
Lane Group	EBT	EBR	EBR2	WBT	SBL2	SBL	SBT	SBR	ø2
Lane Configurations									
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)	50			50	50	50	50	50	
Trailing Detector (ft)	0			0	0	0	0	0	
Turning Speed (mph)		9	9		15	15		9	
Right Turn on Red			Yes					No	
Link Speed (mph)	25			25			25		
Link Distance (ft)	975			262			341		
Travel Time (s)	26.6			7.1			9.3		
Volume (vph)	750	60	60	780	545	110	715	115	
Confl. Bikes (#/hr)		7	7					2	
Peak Hour Factor	0.80	0.80	0.80	0.94	0.94	0.94	0.94	0.94	
Heavy Vehicles (%)	4%	4%	4%	3%	1%	1%	1%	1%	
Lane Group Flow (vph)	1088	0	0	830	472	0	986	122	
Turn Type					Perm	Perm		Prot	
Protected Phases	1			1			5	5	2
Permitted Phases					5	5			
Detector Phases	1			1	5	5	5	5	
Minimum Initial (s)	10.0			10.0	10.0	10.0	10.0	10.0	7.0
Minimum Split (s)	15.0			15.0	15.0	15.0	15.0	15.0	16.0
Total Split (s)	41.0	0.0	0.0	41.0	43.0	43.0	43.0	43.0	16.0
Total Split (%)	41.0%	0.0%	0.0%	41.0%	43.0%	43.0%	43.0%	43.0%	16%
Yellow Time (s)	3.0			3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	2.0			2.0	2.0	2.0	2.0	2.0	0.0
Lead/Lag	Lead			Lead					Lag
Lead-Lag Optimize?	Yes			Yes					Yes
Recall Mode	C-Max			C-Max	Max	Max	Max	Max	None
v/c Ratio	0.53			0.56	0.83		0.83	0.22	
Control Delay	21.3			12.2	37.9		31.0	19.1	
Queue Delay	0.1			3.0	0.0		0.0	0.0	
Total Delay	21.4			15.2	37.9		31.0	19.1	
Queue Length 50th (ft)	148			74	232		244	47	
Queue Length 95th (ft)	218			242	#490		410	89	
Internal Link Dist (ft)	895			182			261		
Turn Bay Length (ft)									
Base Capacity (vph)	2049			1470	571		1188	561	
Starvation Cap Reductn	0			514	0		0	0	
Spillback Cap Reductn	140			0	0		1	0	
Storage Cap Reductn	0			0	0		0	0	
Reduced v/c Ratio	0.57			0.87	0.83		0.83	0.22	

Intersection Summary

Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 14 (14%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 10: Brookline Avenue & Riverway



Movement	EBT	EBR	EBR2	WBT	SBL2	SBL	SBT	SBR
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	0.91			0.95	0.91		0.91	1.00
Frpb, ped/bikes	1.00			1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00		1.00	1.00
Frt	0.98			1.00	1.00		1.00	0.85
Flt Protected	1.00			1.00	0.95		0.99	1.00
Satd. Flow (prot)	4384			3154	1464		3047	1439
Flt Permitted	1.00			1.00	0.95		0.99	1.00
Satd. Flow (perm)	4384			3154	1464		3047	1439
Volume (vph)	750	60	60	780	545	110	715	115
Peak-hour factor, PHF	0.80	0.80	0.80	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	938	75	75	830	580	117	761	122
RTOR Reduction (vph)	7	0	0	0	0	0	0	0
Lane Group Flow (vph)	1081	0	0	830	472	0	986	122
Confl. Bikes (#/hr)		7	7					2
Heavy Vehicles (%)	4%	4%	4%	3%	1%	1%	1%	1%
Turn Type					Perm	Perm		Prot
Protected Phases	1			1			5	5
Permitted Phases					5	5		
Actuated Green, G (s)	44.4			44.4	38.0		38.0	38.0
Effective Green, g (s)	45.4			45.4	39.0		39.0	39.0
Actuated g/C Ratio	0.45			0.45	0.39		0.39	0.39
Clearance Time (s)	5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)	2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	1990			1432	571		1188	561
v/s Ratio Prot	0.25			c0.26				0.08
v/s Ratio Perm					0.32		0.32	
v/c Ratio	0.54			0.58	0.83		0.83	0.22
Uniform Delay, d1	19.8			20.2	27.5		27.5	20.3
Progression Factor	1.00			0.51	0.86		0.86	0.88
Incremental Delay, d2	1.1			1.3	12.8		6.8	0.9
Delay (s)	20.9			11.7	36.5		30.4	18.7
Level of Service	C			B	D		C	B
Approach Delay (s)	20.9			11.7			31.3	
Approach LOS	C			B			C	

Intersection Summary			
HCM Average Control Delay	23.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.6
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		150	0		0		0	150	
Storage Lanes		2		1	0		0		2	1	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50			50	50	
Trailing Detector (ft)	0	0	0	0	0	0			0	0	
Turning Speed (mph)		9		9	15		9	9	15	9	9
Right Turn on Red				No				No			Yes
Link Speed (mph)	25		25			25			25		
Link Distance (ft)	262		728			256			807		
Travel Time (s)	7.1		19.9			7.0			22.0		
Volume (vph)	345	950	235	315	95	745	80	95	450	590	25
Confl. Bikes (#/hr)		8		12			25	34			2
Peak Hour Factor	0.89	0.89	0.95	0.95	0.88	0.88	0.88	0.88	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	4%	2%	2%	2%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	16	16	0	0	0	0	0	0	0
Parking (#/hr)			2	2							
Lane Group Flow (vph)	388	1067	247	332	0	1154	0	0	819	338	0
Turn Type		pm+ov		custom	Split					Perm	
Protected Phases	2	1	2	2	3	3			1		
Permitted Phases		2		2						1	
Detector Phases	2	1	2	2	3	3			1	1	
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0			10.0	10.0	
Minimum Split (s)	19.0	19.0	19.0	19.0	21.0	21.0			19.0	19.0	
Total Split (s)	32.0	38.0	32.0	32.0	30.0	30.0	0.0	0.0	38.0	38.0	0.0
Total Split (%)	32.0%	38.0%	32.0%	32.0%	30.0%	30.0%	0.0%	0.0%	38.0%	38.0%	0.0%
Yellow Time (s)	4.0	5.0	4.0	4.0	4.0	4.0			5.0	5.0	
All-Red Time (s)	2.0	1.0	2.0	2.0	2.0	2.0			1.0	1.0	
Lead/Lag	Lag	Lead	Lag	Lag					Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					Yes	Yes	
Recall Mode	Max	C-Max	Max	Max	Max	Max			C-Max	C-Max	
v/c Ratio	0.43	0.69	0.31	1.02		0.80			0.80	0.76	
Control Delay	30.3	11.4	28.1	85.0		39.7			36.7	42.0	
Queue Delay	1.7	0.5	0.0	0.0		0.0			2.6	0.0	
Total Delay	32.0	11.9	28.1	85.0		39.7			39.4	42.0	
Queue Length 50th (ft)	121	318	51	~189		200			241	206	
Queue Length 95th (ft)	m161	149	m89	m#383		235			316	#358	
Internal Link Dist (ft)	182		648			176			727		
Turn Bay Length (ft)				150						150	
Base Capacity (vph)	892	1538	800	326		1438			1030	443	
Starvation Cap Reductn	335	158	0	0		0			0	0	
Spillback Cap Reductn	0	0	0	0		0			116	0	
Storage Cap Reductn	0	0	0	0		0			0	0	
Reduced v/c Ratio	0.70	0.77	0.31	1.02		0.80			0.90	0.76	

Intersection Summary

Area Type: CBD

Cycle Length: 100

Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:NWL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Brookline Avenue & Park Drive

Movement	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0		4.0			4.0	4.0	
Lane Util. Factor	0.95	0.88	0.95	1.00		0.86			0.97	0.91	
Frpb, ped/bikes	1.00	0.99	1.00	1.00		0.99			1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00			1.00	1.00	
Frt	1.00	0.85	1.00	0.85		0.97			0.94	0.85	
Flt Protected	1.00	1.00	1.00	1.00		1.00			0.97	1.00	
Satd. Flow (prot)	3185	2480	2858	1164		5532			3027	1293	
Flt Permitted	1.00	1.00	1.00	1.00		1.00			0.97	1.00	
Satd. Flow (perm)	3185	2480	2858	1164		5532			3027	1293	
Volume (vph)	345	950	235	315	95	745	80	95	450	590	25
Peak-hour factor, PHF	0.89	0.89	0.95	0.95	0.88	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	388	1067	247	332	108	847	91	108	489	641	27
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	388	1067	247	332	0	1154	0	0	819	335	0
Confl. Bikes (#/hr)		8		12			25	34			2
Heavy Vehicles (%)	2%	2%	4%	4%	2%	2%	2%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	16	16	0	0	0	0	0	0	0
Parking (#/hr)			2	2							
Turn Type		pm+ov		custom	Split					Perm	
Protected Phases	2	1	2	2	3	3			1		
Permitted Phases		2		2						1	
Actuated Green, G (s)	26.0	58.0	26.0	26.0		24.0			32.0	32.0	
Effective Green, g (s)	28.0	62.0	28.0	28.0		26.0			34.0	34.0	
Actuated g/C Ratio	0.28	0.62	0.28	0.28		0.26			0.34	0.34	
Clearance Time (s)	6.0	6.0	6.0	6.0		6.0			6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0			3.0	3.0	
Lane Grp Cap (vph)	892	1637	800	326		1438			1029	440	
v/s Ratio Prot	0.12	0.22	0.09	c0.29		c0.21			c0.27		
v/s Ratio Perm		0.21								0.26	
v/c Ratio	0.43	0.65	0.31	1.02		0.80			0.80	0.76	
Uniform Delay, d1	29.5	12.1	28.4	36.0		34.6			29.9	29.4	
Progression Factor	0.98	0.89	0.95	0.92		1.00			1.00	1.00	
Incremental Delay, d2	1.2	1.6	0.8	49.8		4.8			6.4	11.7	
Delay (s)	30.0	12.3	27.8	83.0		39.4			36.2	41.1	
Level of Service	C	B	C	F		D			D	D	
Approach Delay (s)	17.0		59.4			39.4			37.7		
Approach LOS	B		E			D			D		

Intersection Summary			
HCM Average Control Delay	34.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	10	10	10	12	12	12	11	11	11
Storage Length (ft)	200		0	50		0	0		0	0		100
Storage Lanes	1		0	1		0	0		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		728			597			287			432	
Travel Time (s)		19.9			16.3			7.8			11.8	
Volume (vph)	90	320	30	40	315	35	90	35	45	60	65	135
Confl. Peds. (#/hr)	389		189	189		389	139		131	131		139
Confl. Bikes (#/hr)			6			9			5			3
Peak Hour Factor	0.90	0.90	0.90	0.79	0.79	0.79	0.89	0.89	0.89	0.86	0.86	0.86
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	1%	1%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		8	8									
Lane Group Flow (vph)	100	389	0	51	443	0	0	191	0	0	146	157
Turn Type	D.P+P			Perm			Perm			Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2			2		2
Detector Phases	3	1 3		1	1		2	2		2	2	3
Minimum Initial (s)	4.0			8.0	8.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0			23.0	23.0		24.0	24.0		24.0	24.0	10.0
Total Split (s)	10.0	67.0	0.0	57.0	57.0	0.0	33.0	33.0	0.0	33.0	33.0	10.0
Total Split (%)	10.0%	67.0%	0.0%	57.0%	57.0%	0.0%	33.0%	33.0%	0.0%	33.0%	33.0%	10.0%
Yellow Time (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.0			1.0	1.0		1.0	1.0		1.0	1.0	0.0
Lead/Lag				Lead	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?				Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None			C-Max	C-Max		None	None		None	None	None
v/c Ratio	0.25	0.43		0.78	0.59			0.84			0.58	0.40
Control Delay	10.2	14.6		90.2	18.7			62.8			43.5	17.6
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Delay	10.2	14.6		90.2	18.7			62.8			43.5	17.6
Queue Length 50th (ft)	10	95		26	187			106			83	42
Queue Length 95th (ft)	m45	m172		#88	237			173			128	83
Internal Link Dist (ft)		648			517			207			352	
Turn Bay Length (ft)	200			50								100
Base Capacity (vph)	399	907		65	756			303			341	392
Starvation Cap Reductn	0	0		0	0			0			0	0
Spillback Cap Reductn	0	0		0	0			0			0	0
Storage Cap Reductn	0	0		0	0			0			0	0
Reduced v/c Ratio	0.25	0.43		0.78	0.59			0.63			0.43	0.40

Intersection Summary

Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 24 (24%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Brookline Avenue & Fullerton St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	10	10	12	12	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.96		1.00	0.94			0.90			1.00	0.83
Flpb, ped/bikes	0.91	1.00		1.00	1.00			0.91			0.90	1.00
Frt	1.00	0.99		1.00	0.99			0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.98	1.00
Satd. Flow (prot)	1308	1278		1430	1302			1297			1456	1168
Flt Permitted	0.42	1.00		0.07	1.00			0.66			0.76	1.00
Satd. Flow (perm)	578	1278		104	1302			875			1138	1168
Volume (vph)	90	320	30	40	315	35	90	35	45	60	65	135
Peak-hour factor, PHF	0.90	0.90	0.90	0.79	0.79	0.79	0.89	0.89	0.89	0.86	0.86	0.86
Adj. Flow (vph)	100	356	33	51	399	44	101	39	51	70	76	157
RTOR Reduction (vph)	0	3	0	0	3	0	0	14	0	0	0	39
Lane Group Flow (vph)	100	386	0	51	440	0	0	177	0	0	146	118
Confl. Peds. (#/hr)	389		189	189		389	139		131	131		139
Confl. Bikes (#/hr)			6			9			5			3
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	1%	1%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		8	8									
Turn Type	D.P+P			Perm			Perm			Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2			2		2
Actuated Green, G (s)	67.7	70.7		57.7	57.7			21.3			21.3	31.3
Effective Green, g (s)	66.7	70.7		57.7	57.7			21.3			21.3	30.3
Actuated g/C Ratio	0.67	0.71		0.58	0.58			0.21			0.21	0.30
Clearance Time (s)	3.0			4.0	4.0			4.0			4.0	3.0
Vehicle Extension (s)	3.0			3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	451	904		60	751			186			242	401
v/s Ratio Prot	0.02	c0.30			0.34							0.03
v/s Ratio Perm	0.13			c0.49				c0.20			0.13	0.07
v/c Ratio	0.22	0.43		0.85	0.59			0.95			0.60	0.29
Uniform Delay, d1	6.6	6.2		17.6	13.5			38.8			35.5	26.7
Progression Factor	1.46	1.77		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.2	0.3		78.6	3.3			51.6			4.2	0.4
Delay (s)	9.8	11.2		96.1	16.8			90.4			39.7	27.1
Level of Service	A	B		F	B			F			D	C
Approach Delay (s)		10.9			25.0			90.4			33.2	
Approach LOS		B			C			F			C	

Intersection Summary			
HCM Average Control Delay	30.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	10	10
Turning Speed (mph)	15			9	15	9
Link Speed (mph)		25	25		25	
Link Distance (ft)		597	1171		374	
Travel Time (s)		16.3	31.9		10.2	
Volume (vph)	35	385	335	15	15	50
Confl. Peds. (#/hr)	188			188	30	10
Confl. Bikes (#/hr)				11		
Peak Hour Factor	0.93	0.93	0.84	0.84	0.77	0.77
Heavy Vehicles (%)	6%	6%	4%	4%	13%	13%
Parking (#/hr)	8	8	8	8	8	8
Lane Group Flow (vph)	0	452	417	0	84	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	35	385	335	15	15	50
Peak Hour Factor	0.93	0.93	0.84	0.84	0.77	0.77
Hourly flow rate (vph)	38	414	399	18	19	65
Pedestrians		10	30		188	
Lane Width (ft)		14.0	12.0		10.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		1	2		13	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		597	1171			
pX, platoon unblocked						
vC, conflicting volume	605				1115	606
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	605				1115	606
tC, single (s)	4.2				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	95				89	84
cM capacity (veh/h)	829				177	411

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	452	417	84
Volume Left	38	0	19
Volume Right	0	18	65
cSH	829	1700	315
Volume to Capacity	0.05	0.25	0.27
Queue Length 95th (ft)	4	0	26
Control Delay (s)	1.3	0.0	20.6
Lane LOS	A		C
Approach Delay (s)	1.3	0.0	20.6
Approach LOS			C

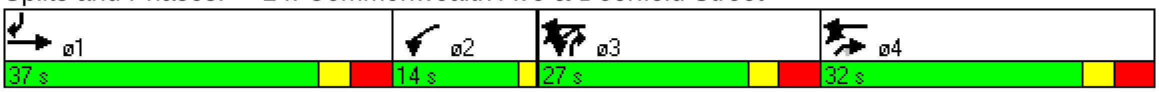
Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBR	SBR2	NER	NER2	ø2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)		50			175		0	150		25		
Storage Lanes		0			1		0	1		1		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)	50			50	50	50		50	50	50	50	
Trailing Detector (ft)	0			0	0	0		0	0	0	0	
Turning Speed (mph)		9	9	15	15		9	9	9	9	9	
Right Turn on Red			Yes				No	No	No		No	
Link Speed (mph)	25					25						
Link Distance (ft)	99					737						
Travel Time (s)	2.7					20.1						
Volume (vph)	545	35	30	310	855	450	30	370	15	570	25	
Confl. Peds. (#/hr)							354				337	
Confl. Bikes (#/hr)		47	51				95				25	
Peak Hour Factor	0.95	0.95	0.95	0.91	0.91	0.91	0.91	0.89	0.34	0.87	0.87	
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	3%	6%	0%	1%	1%	
Parking (#/hr)						8	8			8	8	
Lane Group Flow (vph)	643	0	0	341	514	954	0	416	44	655	29	
Turn Type				Prot	Split			custom	custom	custom	custom	
Protected Phases	1			2 3	3 4	3 4		3	1	4		2
Permitted Phases											4	
Detector Phases	1			2 3	3 4	3 4		3	1	4	4	
Minimum Initial (s)	4.0							4.0	4.0	4.0	4.0	8.0
Minimum Split (s)	23.0							23.0	23.0	23.0	23.0	14.0
Total Split (s)	37.0	0.0	0.0	41.0	59.0	59.0	0.0	27.0	37.0	32.0	32.0	14.0
Total Split (%)	33.6%	0.0%	0.0%	37.3%	53.6%	53.6%	0.0%	24.5%	33.6%	29.1%	29.1%	13%
Yellow Time (s)	3.0							3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	4.0							4.0	4.0	4.0	4.0	0.0
Lead/Lag	Lead							Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes							Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max							None	C-Max	None	None	None
v/c Ratio	0.71			0.64	0.72	0.71		0.82	0.10	1.09	0.28	
Control Delay	39.0			37.6	28.4	25.2		56.4	28.7	117.2	57.2	
Queue Delay	0.0			0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	39.0			37.6	28.4	25.2		56.4	28.7	117.2	57.2	
Queue Length 50th (ft)	210			203	300	277		160	22	~303	20	
Queue Length 95th (ft)	277			306	449	361		#241	18	m#407	m47	
Internal Link Dist (ft)	19					657						
Turn Bay Length (ft)				175	175			150		25	25	
Base Capacity (vph)	909			530	718	1335		505	444	600	105	
Starvation Cap Reductn	0			0	0	0		0	0	0	0	
Spillback Cap Reductn	0			0	0	0		0	0	0	0	
Storage Cap Reductn	0			0	0	0		0	0	0	0	
Reduced v/c Ratio	0.71			0.64	0.72	0.71		0.82	0.10	1.09	0.28	

Intersection Summary	
Area Type:	CBD
Cycle Length: 110	

Actuated Cycle Length: 110
Offset: 81 (74%), Referenced to phase 1:EBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Commonwealth Ave & Deerfield Street



Movement	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBR	SBR2	NER	NER2
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95			1.00	0.91	0.91		0.88	1.00	0.88	1.00
Frpb, ped/bikes	0.99			1.00	1.00	0.98		1.00	1.00	1.00	0.33
Flpb, ped/bikes	1.00			1.00	1.00	1.00		1.00	1.00	1.00	1.00
Frt	0.98			1.00	1.00	0.99		0.85	0.86	0.85	0.85
Flt Protected	1.00			0.95	0.95	0.98		1.00	1.00	1.00	1.00
Satd. Flow (prot)	3017			1577	1435	2669		2413	1479	2356	412
Flt Permitted	1.00			0.95	0.95	0.98		1.00	1.00	1.00	1.00
Satd. Flow (perm)	3017			1577	1435	2669		2413	1479	2356	412
Volume (vph)	545	35	30	310	855	450	30	370	15	570	25
Peak-hour factor, PHF	0.95	0.95	0.95	0.91	0.91	0.91	0.91	0.89	0.34	0.87	0.87
Adj. Flow (vph)	574	37	32	341	940	495	33	416	44	655	29
RTOR Reduction (vph)	4	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	640	0	0	341	514	954	0	416	44	655	29
Confl. Peds. (#/hr)							354				337
Confl. Bikes (#/hr)		47	51				95				25
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	3%	6%	0%	1%	1%
Parking (#/hr)						8	8			8	8
Turn Type				Prot	Split			custom	custom	custom	custom
Protected Phases	1			2 3	3 4	3 4		3	1	4	
Permitted Phases											4
Actuated Green, G (s)	30.0			34.0	52.0	52.0		20.0	30.0	25.0	25.0
Effective Green, g (s)	33.0			37.0	55.0	55.0		23.0	33.0	28.0	28.0
Actuated g/C Ratio	0.30			0.34	0.50	0.50		0.21	0.30	0.25	0.25
Clearance Time (s)	7.0							7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0							3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	905			530	718	1335		505	444	600	105
v/s Ratio Prot	c0.21			c0.22	0.36	0.36		c0.17	0.03	c0.28	
v/s Ratio Perm											0.07
v/c Ratio	0.71			0.64	0.72	0.71		0.82	0.10	1.09	0.28
Uniform Delay, d1	34.2			30.9	21.4	21.4		41.6	27.8	41.0	32.9
Progression Factor	1.00			1.00	1.00	1.00		1.00	1.00	1.44	1.47
Incremental Delay, d2	4.6			2.7	3.4	1.8		10.5	0.4	63.6	1.4
Delay (s)	38.8			33.6	24.8	23.2		52.0	28.2	122.7	49.6
Level of Service	D			C	C	C		D	C	F	D
Approach Delay (s)	38.8					25.6					
Approach LOS	D					C					

Intersection Summary			
HCM Average Control Delay	49.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

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Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	16	16	16	16
Turning Speed (mph)		9	15		15	9
Link Speed (mph)	25			25	25	
Link Distance (ft)	148			1203	667	
Travel Time (s)	4.0			32.8	18.2	
Volume (vph)	45	586	5	47	342	0
Confl. Peds. (#/hr)		3	3		5	
Peak Hour Factor	0.93	0.93	0.85	0.85	0.87	0.87
Heavy Vehicles (%)	3%	3%	7%	7%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	8	8
Parking (#/hr)			8	8		
Lane Group Flow (vph)	48	630	0	61	393	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	45	586	5	47	342	0
Peak Hour Factor	0.93	0.93	0.85	0.85	0.87	0.87
Hourly flow rate (vph)	48	630	6	55	393	0
Pedestrians	5				3	
Lane Width (ft)	11.0				16.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				1203		
pX, platoon unblocked						
vC, conflicting volume			681		123	51
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			681		123	51
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			99		54	100
cM capacity (veh/h)			885		853	1005

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	48	630	61	393
Volume Left	0	0	6	393
Volume Right	0	630	0	0
cSH	1700	1700	885	853
Volume to Capacity	0.03	0.37	0.01	0.46
Queue Length 95th (ft)	0	0	1	62
Control Delay (s)	0.0	0.0	0.9	12.8
Lane LOS			A	B
Approach Delay (s)	0.0		0.9	12.8
Approach LOS				B

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	10	10	11	11	11	11	11	11	11
Storage Length (ft)	0		200		125		0	80		0	0	
Storage Lanes	0		1		1		0	1		0	0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50		50	50		50	50
Trailing Detector (ft)	0	0	0	0	0	0		0	0		0	0
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Right Turn on Red			No				No			No		
Link Speed (mph)		25				25			25			25
Link Distance (ft)		66				253			719			667
Travel Time (s)		1.8				6.9			19.6			18.2
Volume (vph)	26	797	214	5	257	445	22	49	320	54	50	516
Confl. Bikes (#/hr)			82				8			26		
Peak Hour Factor	0.89	0.89	0.89	0.95	0.95	0.95	0.95	0.93	0.93	0.93	0.90	0.90
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	3%	6%	6%	6%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	8
Parking (#/hr)		8	8			8	8		8	8		
Lane Group Flow (vph)	0	925	240	0	276	491	0	53	402	0	0	665
Turn Type	Perm		pm+ov	Perm	D.P+P			D.P+P			Perm	
Protected Phases		3	4		2	2 3		4	1 4			1
Permitted Phases	3		3	2 3	3			1			1	
Detector Phases	3	3	4	2 3	2	2 3		4	1 4		1	1
Minimum Initial (s)	4.0	4.0	4.0		4.0			4.0			10.0	10.0
Minimum Split (s)	29.0	29.0	7.0		9.0			7.0			38.0	38.0
Total Split (s)	35.0	35.0	7.0	51.0	16.0	51.0	0.0	7.0	49.0	0.0	42.0	42.0
Total Split (%)	35.0%	35.0%	7.0%	51.0%	16.0%	51.0%	0.0%	7.0%	49.0%	0.0%	42.0%	42.0%
Yellow Time (s)	3.0	3.0	2.0		2.0			2.0			3.0	3.0
All-Red Time (s)	1.0	1.0	0.0		0.0			0.0			1.0	1.0
Lead/Lag	Lead	Lead	Lag		Lag			Lag			Lead	Lead
Lead-Lag Optimize?												
Recall Mode	None	None	None		None			None			C-Min	C-Min
v/c Ratio		1.11	0.63		1.15	0.37		0.25	0.33			1.07
Control Delay		101.2	33.2		118.9	7.4		13.8	15.8			87.6
Queue Delay		0.0	0.0		0.0	0.0		0.0	0.0			0.0
Total Delay		101.2	33.2		118.9	7.4		13.8	15.8			87.6
Queue Length 50th (ft)		~357	117		~162	87		11	105			~248
Queue Length 95th (ft)		#473	192		m#221	m52		21	150			m#366
Internal Link Dist (ft)		1				173			639			587
Turn Bay Length (ft)			200		125			80				
Base Capacity (vph)		830	382		239	1322		213	1208			622
Starvation Cap Reductn		0	0		0	0		0	0			0
Spillback Cap Reductn		0	0		0	0		0	0			0
Storage Cap Reductn		0	0		0	0		0	0			0
Reduced v/c Ratio		1.11	0.63		1.15	0.37		0.25	0.33			1.07

Intersection Summary	
Area Type:	CBD

Lane Group	SBR
Lane Configurations	
Ideal Flow (vphpl)	1900
Lane Width (ft)	11
Storage Length (ft)	0
Storage Lanes	0
Total Lost Time (s)	4.0
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	9
Right Turn on Red	No
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	32
Confl. Bikes (#/hr)	35
Peak Hour Factor	0.90
Heavy Vehicles (%)	3%
Bus Blockages (#/hr)	8
Parking (#/hr)	1
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phases	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Yellow Time (s)	
All-Red Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 15 (15%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Beacon Street & Park Drive

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	10	11	11	11	11	11	11	11
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0	4.0			4.0
Lane Util. Factor		0.95	1.00		1.00	0.95		1.00	0.95			0.95
Frpb, ped/bikes		1.00	0.94		1.00	1.00		1.00	1.00			1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00			1.00
Frt		1.00	0.85		1.00	0.99		1.00	0.98			0.99
Flt Protected		1.00	1.00		0.95	1.00		0.95	1.00			1.00
Satd. Flow (prot)		2887	1125		1472	2812		1481	2686			2958
Flt Permitted		0.93	1.00		0.13	1.00		0.28	1.00			0.55
Satd. Flow (perm)		2677	1125		200	2812		443	2686			1638
Volume (vph)	26	797	214	5	257	445	22	49	320	54	50	516
Peak-hour factor, PHF	0.89	0.89	0.89	0.95	0.95	0.95	0.95	0.93	0.93	0.93	0.90	0.90
Adj. Flow (vph)	29	896	240	5	271	468	23	53	344	58	56	573
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	925	240	0	276	491	0	53	402	0	0	665
Confl. Bikes (#/hr)			82				8			26		
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	3%	6%	6%	6%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	8
Parking (#/hr)		8	8			8	8		8	8		
Turn Type	Perm		pm+ov	Perm	D.P+P			D.P+P			Perm	
Protected Phases		3	4		2	2 3		4	1 4			1
Permitted Phases	3		3	2 3	3			1			1	
Actuated Green, G (s)		31.0	36.0		45.0	47.0		43.0	45.0			38.0
Effective Green, g (s)		31.0	34.0		43.0	47.0		41.0	45.0			38.0
Actuated g/C Ratio		0.31	0.34		0.43	0.47		0.41	0.45			0.38
Clearance Time (s)		4.0	2.0		2.0			2.0				4.0
Vehicle Extension (s)		2.0	3.0		2.0			3.0				2.0
Lane Grp Cap (vph)		830	428		239	1322		213	1209			622
v/s Ratio Prot			c0.02		c0.14	0.17		0.01	0.15			
v/s Ratio Perm		0.35	0.20		c0.36			0.09				c0.41
v/c Ratio		1.11	0.56		1.15	0.37		0.25	0.33			1.07
Uniform Delay, d1		34.5	26.9		26.5	17.0		18.7	17.8			31.0
Progression Factor		1.00	1.00		0.84	0.40		0.66	0.83			1.00
Incremental Delay, d2		67.6	1.7		94.7	0.0		0.6	0.2			56.0
Delay (s)		102.1	28.6		116.8	6.9		13.0	15.0			87.0
Level of Service		F	C		F	A		B	B			F
Approach Delay (s)		87.0				46.5			14.8			87.0
Approach LOS		F				D			B			F

Intersection Summary			
HCM Average Control Delay	66.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Ideal Flow (vphpl)	1900
Lane Width	11
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Volume (vph)	32
Peak-hour factor, PHF	0.90
Adj. Flow (vph)	36
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Bikes (#/hr)	35
Heavy Vehicles (%)	3%
Bus Blockages (#/hr)	8
Parking (#/hr)	1
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Lane Group	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	11	12	12	9	9
Turning Speed (mph)		9	9	15		15	9
Link Speed (mph)	25				25	25	
Link Distance (ft)	253				234	263	
Travel Time (s)	6.9				6.4	7.2	
Volume (vph)	895	11	5	10	719	5	5
Confl. Peds. (#/hr)		65		65			
Confl. Bikes (#/hr)		112					
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.55	0.55
Heavy Vehicles (%)	2%	2%	2%	3%	3%	9%	9%
Parking (#/hr)	8	8			8		
Lane Group Flow (vph)	985	0	0	0	764	18	0
Sign Control	Free				Free	Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations							
Sign Control	Free				Free	Stop	
Grade	0%				0%	0%	
Volume (veh/h)	895	11	5	10	719	5	5
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.55	0.55
Hourly flow rate (vph)	973	12	0	10	749	9	9
Pedestrians						65	
Lane Width (ft)						9.0	
Walking Speed (ft/s)						4.0	
Percent Blockage						4	
Right turn flare (veh)							
Median type						None	
Median storage veh)							
Upstream signal (ft)	253				676		
pX, platoon unblocked			0.00	0.72		0.72	0.72
vC, conflicting volume			0	1050		1439	557
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			0	671		1216	0
tC, single (s)			0.0	4.2		7.0	7.1
tC, 2 stage (s)							
tF (s)			0.0	2.2		3.6	3.4
p0 queue free %			0	98		92	99
cM capacity (veh/h)			0	623		111	729

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	649	336	260	499	18
Volume Left	0	0	10	0	9
Volume Right	0	12	0	0	9
cSH	1700	1700	623	1700	192
Volume to Capacity	0.38	0.20	0.02	0.29	0.09
Queue Length 95th (ft)	0	0	1	0	8
Control Delay (s)	0.0	0.0	0.6	0.0	25.7
Lane LOS			A		D
Approach Delay (s)	0.0		0.2		25.7
Approach LOS					D

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	11	12	12	10	10	10	10	10	10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		234			225			229			172	
Travel Time (s)		6.4			6.1			6.2			4.7	
Volume (vph)	5	826	75	22	703	5	21	16	14	0	16	5
Confl. Peds. (#/hr)	55		69	69		55	38		5	5		38
Confl. Bikes (#/hr)			103			11			1			1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.68	0.68	0.68	0.58	0.58	0.58
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		8	8		8	8	4	4	4	4	4	4
Lane Group Flow (vph)	0	974	0	0	785	0	0	76	0	0	37	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	826	75	22	703	5	21	16	14	0	16	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.68	0.68	0.68	0.58	0.58	0.58
Hourly flow rate (vph)	5	888	81	24	756	5	31	24	21	0	28	9
Pedestrians		38			5			69			55	
Lane Width (ft)		12.0			12.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		3			0			5			4	
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		487			442							
pX, platoon unblocked	0.90			0.73			0.78	0.78	0.73	0.78	0.78	0.90
vC, conflicting volume	816			1038			1494	1872	558	1353	1909	474
vC1, stage 1 conf vol							1008	1008		861	861	
vC2, stage 2 conf vol							486	864		492	1049	
vCu, unblocked vol	681			687			961	1443	33	782	1491	299
tC, single (s)	4.1			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			81	84	97	100	80	99
cM capacity (veh/h)	783			625			164	146	722	192	136	588

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	449	525	402	383	75	36
Volume Left	5	0	24	0	31	0
Volume Right	0	81	0	5	21	9
cSH	783	1700	625	1700	198	167
Volume to Capacity	0.01	0.31	0.04	0.23	0.38	0.22
Queue Length 95th (ft)	1	0	3	0	41	20
Control Delay (s)	0.2	0.0	1.1	0.0	33.8	32.5
Lane LOS	A		A		D	D
Approach Delay (s)	0.1		0.6		33.8	32.5
Approach LOS					D	D

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	9	9
Turning Speed (mph)		9	15		15	9
Link Speed (mph)	25			25	25	
Link Distance (ft)	225			217	275	
Travel Time (s)	6.1			5.9	7.5	
Volume (vph)	834	5	5	725	0	5
Confl. Peds. (#/hr)		69	69			
Confl. Bikes (#/hr)		116				
Peak Hour Factor	0.92	0.92	0.96	0.96	1.00	1.00
Heavy Vehicles (%)	2%	2%	3%	3%	0%	0%
Parking (#/hr)	8	8		8		
Lane Group Flow (vph)	912	0	0	760	5	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	834	5	5	725	0	5
Peak Hour Factor	0.92	0.92	0.96	0.96	1.00	1.00
Hourly flow rate (vph)	907	5	5	755	0	5
Pedestrians					69	
Lane Width (ft)					9.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					4	
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)	712			217		
pX, platoon unblocked			0.77		0.85	0.77
vC, conflicting volume			981		1366	525
vC1, stage 1 conf vol					978	
vC2, stage 2 conf vol					388	
vCu, unblocked vol			685		741	96
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			666		232	703

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	604	308	257	503	5
Volume Left	0	0	5	0	0
Volume Right	0	5	0	0	5
cSH	1700	1700	666	1700	703
Volume to Capacity	0.36	0.18	0.01	0.30	0.01
Queue Length 95th (ft)	0	0	1	0	1
Control Delay (s)	0.0	0.0	0.3	0.0	10.2
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.2
Approach LOS					B

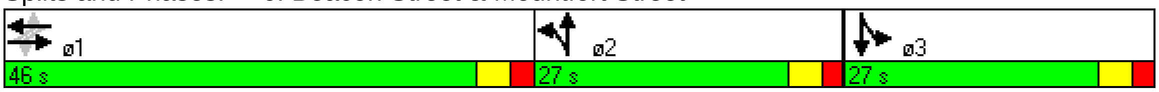
Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	13	13	13	11	11	11
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		217			1360			234			1203	
Travel Time (s)		5.9			37.1			6.4			32.8	
Volume (vph)	5	762	73	120	708	28	12	11	27	50	0	5
Confl. Peds. (#/hr)	54		56	56		54	2		16	16		2
Confl. Bikes (#/hr)			101			11						2
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.63	0.63	0.63	0.56	0.56	0.56
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		8	8		8	8				4	4	4
Lane Group Flow (vph)	0	912	0	0	920	0	0	79	0	0	98	0
Turn Type	Perm			Perm			Split			Split		
Protected Phases		1			1		2	2		3	3	
Permitted Phases	1			1								
Detector Phases	1	1		1	1		2	2		3	3	
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		27.0	27.0		27.0	27.0	
Total Split (s)	46.0	46.0	0.0	46.0	46.0	0.0	27.0	27.0	0.0	27.0	27.0	0.0
Total Split (%)	46.0%	46.0%	0.0%	46.0%	46.0%	0.0%	27.0%	27.0%	0.0%	27.0%	27.0%	0.0%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag				
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
v/c Ratio		0.54			0.89			0.31			0.46	
Control Delay		13.2			26.1			21.4			41.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.2			26.1			21.4			41.3	
Queue Length 50th (ft)		12			153			22			56	
Queue Length 95th (ft)		m292			#550			32			56	
Internal Link Dist (ft)		137			1280			154			1123	
Turn Bay Length (ft)												
Base Capacity (vph)		1692			1034			399			320	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.54			0.89			0.20			0.31	

Intersection Summary	
Area Type:	CBD
Cycle Length: 100	
Actuated Cycle Length: 100	

Offset: 22 (22%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Beacon Street & Mountfort Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	13	13	13	11	11	11
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			0.98			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			1.00			0.93			0.99	
Flt Protected		1.00			0.99			0.99			0.96	
Satd. Flow (prot)		2768			2773			1588			1372	
Flt Permitted		0.95			0.65			0.99			0.96	
Satd. Flow (perm)		2633			1815			1588			1372	
Volume (vph)	5	762	73	120	708	28	12	11	27	50	0	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.63	0.63	0.63	0.56	0.56	0.56
Adj. Flow (vph)	5	828	79	129	761	30	19	17	43	89	0	9
RTOR Reduction (vph)	0	5	0	0	2	0	0	38	0	0	4	0
Lane Group Flow (vph)	0	907	0	0	918	0	0	41	0	0	94	0
Confl. Peds. (#/hr)	54		56	56		54	2		16	16		2
Confl. Bikes (#/hr)			101			11						2
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		8	8		8	8				4	4	4
Turn Type	Perm			Perm			Split			Split		
Protected Phases		1			1		2	2		3	3	
Permitted Phases	1			1								
Actuated Green, G (s)		60.4			60.4			11.5			13.1	
Effective Green, g (s)		61.4			61.4			12.5			14.1	
Actuated g/C Ratio		0.61			0.61			0.12			0.14	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1617			1114			199			193	
v/s Ratio Prot								c0.03			c0.07	
v/s Ratio Perm		0.34			c0.51							
v/c Ratio		0.56			0.82			0.21			0.49	
Uniform Delay, d1		11.4			15.1			39.3			39.6	
Progression Factor		0.81			0.57			1.00			1.00	
Incremental Delay, d2		0.1			4.9			0.5			1.9	
Delay (s)		9.3			13.5			39.8			41.5	
Level of Service		A			B			D			D	
Approach Delay (s)		9.3			13.5			39.8			41.5	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

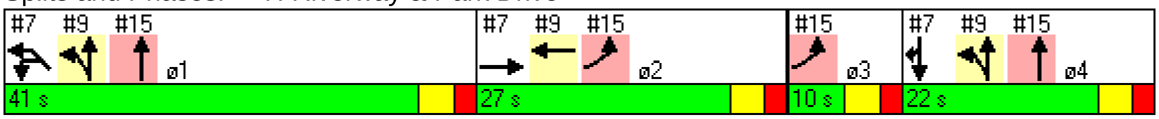
c Critical Lane Group

Lane Group	EBT	SBT	SBR	NWL2	NWL	ø3
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	
Lane Width (ft)	10	11	11	12	12	
Storage Length (ft)			100		0	
Storage Lanes			1		3	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)	50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0	
Turning Speed (mph)			9	15	15	
Right Turn on Red			No	No		
Link Speed (mph)	25	25			25	
Link Distance (ft)	410	279			185	
Travel Time (s)	11.2	7.6			5.0	
Volume (vph)	74	632	361	275	540	
Confl. Peds. (#/hr)			65		65	
Confl. Bikes (#/hr)			25			
Peak Hour Factor	0.92	0.95	0.95	0.90	0.90	
Heavy Vehicles (%)	2%	3%	3%	2%	2%	
Lane Group Flow (vph)	80	665	380	306	600	
Turn Type			Prot	Split		
Protected Phases	2	4	4	1	1	3
Permitted Phases						
Detector Phases	2	4	4	1	1	
Minimum Initial (s)	4.0	4.0	4.0	5.0	5.0	1.0
Minimum Split (s)	27.0	22.0	22.0	33.0	33.0	6.0
Total Split (s)	27.0	22.0	22.0	41.0	41.0	10.0
Total Split (%)	27.0%	22.0%	22.0%	41.0%	41.0%	10%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	None
v/c Ratio	0.16	0.75	0.96	0.52	0.52	
Control Delay	33.7	34.3	52.2	22.1	20.9	
Queue Delay	0.0	17.3	0.0	674.0	1.2	
Total Delay	33.7	51.6	52.2	696.1	22.0	
Queue Length 50th (ft)	21	~264	~336	170	172	
Queue Length 95th (ft)	41	m#259	m#342	262	231	
Internal Link Dist (ft)	330	199			105	
Turn Bay Length (ft)			100			
Base Capacity (vph)	684	884	395	589	1143	
Starvation Cap Reductn	0	0	0	157	314	
Spillback Cap Reductn	0	219	0	513	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.12	1.00	0.96	4.03	0.72	

Intersection Summary	
Area Type:	CBD
Cycle Length: 100	

Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:NWL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Riverway & Park Drive



Movement	EBT	SBT	SBR	NWL2	NWL
Lane Configurations					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Lane Width	10	11	11	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	1.00	0.97
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00
Flt Protected	1.00	1.00	1.00	0.95	0.95
Satd. Flow (prot)	2973	3049	1364	1593	3090
Flt Permitted	1.00	1.00	1.00	0.95	0.95
Satd. Flow (perm)	2973	3049	1364	1593	3090
Volume (vph)	74	632	361	275	540
Peak-hour factor, PHF	0.92	0.95	0.95	0.90	0.90
Adj. Flow (vph)	80	665	380	306	600
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	80	665	380	306	600
Confl. Peds. (#/hr)			65		65
Confl. Bikes (#/hr)			25		
Heavy Vehicles (%)	2%	3%	3%	2%	2%
Turn Type			Prot	Split	
Protected Phases	2	4	4	1	1
Permitted Phases					
Actuated Green, G (s)	14.4	28.0	28.0	34.0	34.0
Effective Green, g (s)	15.4	29.0	29.0	35.0	35.0
Actuated g/C Ratio	0.15	0.29	0.29	0.35	0.35
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	458	884	396	558	1082
v/s Ratio Prot	c0.03	0.22	c0.28	0.19	c0.19
v/s Ratio Perm					
v/c Ratio	0.17	0.75	0.96	0.55	0.55
Uniform Delay, d1	36.8	32.2	34.9	26.1	26.2
Progression Factor	1.00	0.82	0.82	0.75	0.77
Incremental Delay, d2	0.1	0.8	13.7	3.6	1.9
Delay (s)	36.8	27.4	42.5	23.4	22.1
Level of Service	D	C	D	C	C
Approach Delay (s)	36.8	32.9			22.6
Approach LOS	D	C			C

Intersection Summary			
HCM Average Control Delay	28.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50			
Trailing Detector (ft)		0	0			
Turning Speed (mph)		9	15		15	9
Right Turn on Red		No	No			Yes
Link Speed (mph)	25			25	25	
Link Distance (ft)	360			253	341	
Travel Time (s)	9.8			6.9	9.3	
Volume (vph)	0	861	907	0	0	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.95	0.95
Heavy Vehicles (%)	1%	1%	3%	3%	0%	0%
Lane Group Flow (vph)	0	916	965	0	0	0
Turn Type		custom	Prot			
Protected Phases		2	1			
Permitted Phases						
Detector Phases		2	1			
Minimum Initial (s)		6.0	10.0			
Minimum Split (s)		31.0	51.0			
Total Split (s)	0.0	35.0	65.0	0.0	0.0	0.0
Total Split (%)	0.0%	35.0%	65.0%	0.0%	0.0%	0.0%
Yellow Time (s)		4.0	4.0			
All-Red Time (s)		1.0	1.0			
Lead/Lag		Lag	Lead			
Lead-Lag Optimize?		Yes	Yes			
Recall Mode		None	C-Min			
v/c Ratio		0.68	0.81			
Control Delay		22.5	47.4			
Queue Delay		1.1	15.8			
Total Delay		23.6	63.2			
Queue Length 50th (ft)		272	345			
Queue Length 95th (ft)		364	409			
Internal Link Dist (ft)	280			173	261	
Turn Bay Length (ft)						
Base Capacity (vph)		1348	1867			
Starvation Cap Reductn		0	903			
Spillback Cap Reductn		217	0			
Storage Cap Reductn		0	0			
Reduced v/c Ratio		0.81	1.00			

Intersection Summary

Area Type: CBD

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 25 (25%), Referenced to phase 1:WBL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Splits and Phases: 8: Riverway & Park Dr

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			
Lane Util. Factor		0.88	0.97			
Frt		0.85	1.00			
Flt Protected		1.00	0.95			
Satd. Flow (prot)		2533	3060			
Flt Permitted		1.00	0.95			
Satd. Flow (perm)		2533	3060			
Volume (vph)	0	861	907	0	0	0
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.95	0.95
Adj. Flow (vph)	0	916	965	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	916	965	0	0	0
Heavy Vehicles (%)	1%	1%	3%	3%	0%	0%
Turn Type		custom	Prot			
Protected Phases		2	1			
Permitted Phases						
Actuated Green, G (s)		52.2	37.8			
Effective Green, g (s)		53.2	38.8			
Actuated g/C Ratio		0.53	0.39			
Clearance Time (s)		5.0	5.0			
Vehicle Extension (s)		2.0	2.0			
Lane Grp Cap (vph)		1348	1187			
v/s Ratio Prot		c0.36	c0.32			
v/s Ratio Perm						
v/c Ratio		0.68	0.81			
Uniform Delay, d1		17.2	27.4			
Progression Factor		1.00	1.61			
Incremental Delay, d2		1.1	4.5			
Delay (s)		18.2	48.5			
Level of Service		B	D			
Approach Delay (s)	18.2			48.5	0.0	
Approach LOS	B			D	A	

Intersection Summary			
HCM Average Control Delay	33.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)					50		50	50				
Trailing Detector (ft)					0		0	0				
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			No	No		No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		185			128			405			130	
Travel Time (s)		5.0			3.5			11.0			3.5	
Volume (vph)	0	0	0	0	37	27	779	343	0	0	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.90	0.90	0.90	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	0%	0%	0%
Lane Group Flow (vph)	0	0	0	0	67	0	866	381	0	0	0	0
Turn Type							Split					
Protected Phases					2		1 4	1 4				
Permitted Phases												
Detector Phases					2		1 4	1 4				
Minimum Initial (s)					4.0							
Minimum Split (s)					27.0							
Total Split (s)	0.0	0.0	0.0	0.0	27.0	0.0	63.0	63.0	0.0	0.0	0.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	0.0%	27.0%	0.0%	63.0%	63.0%	0.0%	0.0%	0.0%	0.0%
Yellow Time (s)					3.0							
All-Red Time (s)					2.0							
Lead/Lag					Lag							
Lead-Lag Optimize?					Yes							
Recall Mode					None							
v/c Ratio					0.13		0.40	0.17				
Control Delay					33.0		11.9	9.4				
Queue Delay					0.0		0.4	0.0				
Total Delay					33.0		12.2	9.4				
Queue Length 50th (ft)					17		178	61				
Queue Length 95th (ft)					36		m198	m73				
Internal Link Dist (ft)		105			48			325			50	
Turn Bay Length (ft)												
Base Capacity (vph)					700		2187	2254				
Starvation Cap Reductn					0		726	0				
Spillback Cap Reductn					0		326	0				
Storage Cap Reductn					0		0	0				
Reduced v/c Ratio					0.10		0.59	0.17				

Intersection Summary

Area Type: CBD

Cycle Length: 100

Actuated Cycle Length: 100

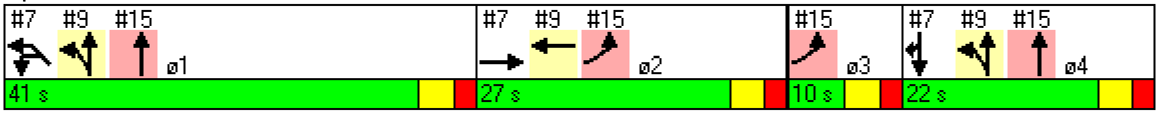
Offset: 0 (0%), Referenced to phase 1:NWL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Park Dr & Park Drive



Lane Group	ø1	ø3	ø4
Lane Configurations			
Ideal Flow (vphpl)			
Total Lost Time (s)			
Leading Detector (ft)			
Trailing Detector (ft)			
Turning Speed (mph)			
Right Turn on Red			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Volume (vph)			
Peak Hour Factor			
Heavy Vehicles (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	1	3	4
Permitted Phases			
Detector Phases			
Minimum Initial (s)	5.0	1.0	4.0
Minimum Split (s)	33.0	6.0	22.0
Total Split (s)	41.0	10.0	22.0
Total Split (%)	41%	10%	22%
Yellow Time (s)	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0
Lead/Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes
Recall Mode	C-Max	None	None
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				
Lane Util. Factor					0.95		0.97	0.95				
Frt					0.94		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3045		3090	3185				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3045		3090	3185				
Volume (vph)	0	0	0	0	37	27	779	343	0	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.90	0.90	0.90	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	39	28	866	381	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	67	0	866	381	0	0	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	0%	0%	0%
Turn Type							Split					
Protected Phases					2		1 4	1 4				
Permitted Phases												
Actuated Green, G (s)					14.4		67.0	67.0				
Effective Green, g (s)					15.4		68.0	68.0				
Actuated g/C Ratio					0.15		0.68	0.68				
Clearance Time (s)					5.0							
Vehicle Extension (s)					2.0							
Lane Grp Cap (vph)					469		2101	2166				
v/s Ratio Prot					c0.02		c0.28	0.12				
v/s Ratio Perm												
v/c Ratio					0.14		0.41	0.18				
Uniform Delay, d1					36.6		7.1	5.8				
Progression Factor					1.00		1.32	1.26				
Incremental Delay, d2					0.1		0.0	0.0				
Delay (s)					36.6		9.4	7.3				
Level of Service					D		A	A				
Approach Delay (s)		0.0			36.6			8.8			0.0	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50			50					50	50	50
Trailing Detector (ft)		0			0					0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			No			Yes			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		975			262			688			341	
Travel Time (s)		26.6			7.1			18.8			9.3	
Volume (vph)	0	945	63	0	1207	0	0	0	0	842	732	195
Confl. Bikes (#/hr)			9									17
Peak Hour Factor	0.94	0.94	0.94	0.87	0.87	0.87	0.92	0.92	0.92	0.98	0.98	0.98
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	25	25	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1072	0	0	1387	0	0	0	0	517	1089	199
Turn Type										Split		Prot
Protected Phases		3			3					1	1	1
Permitted Phases												
Detector Phases		3			3					1	1	1
Minimum Initial (s)		10.0			10.0					10.0	10.0	10.0
Minimum Split (s)		46.0			46.0					34.0	34.0	34.0
Total Split (s)	0.0	46.0	0.0	0.0	46.0	0.0	0.0	0.0	0.0	54.0	54.0	54.0
Total Split (%)	0.0%	46.0%	0.0%	0.0%	46.0%	0.0%	0.0%	0.0%	0.0%	54.0%	54.0%	54.0%
Yellow Time (s)		3.0			3.0					3.0	3.0	3.0
All-Red Time (s)		2.0			2.0					2.0	2.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		Max			Max					C-Min	C-Min	C-Min
v/c Ratio		0.52			0.91					0.82	0.84	0.32
Control Delay		19.7			22.2					36.9	34.1	21.9
Queue Delay		0.3			27.3					7.7	6.6	0.0
Total Delay		20.0			49.5					44.6	40.7	21.9
Queue Length 50th (ft)		166			194					316	333	82
Queue Length 95th (ft)		234			m#201					m393	367	m97
Internal Link Dist (ft)		895			182			608			261	
Turn Bay Length (ft)												
Base Capacity (vph)		2060			1522					725	1503	713
Starvation Cap Reductn		0			206					167	364	0
Spillback Cap Reductn		391			0					7	14	0
Storage Cap Reductn		0			0					0	0	0
Reduced v/c Ratio		0.64			1.05					0.93	0.96	0.28

Intersection Summary

Area Type: CBD

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 1:SBTL, Start of Green

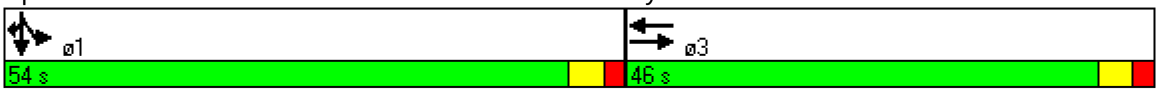
Natural Cycle: 90

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Brookline Avenue & Riverway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0					4.0	4.0	4.0
Lane Util. Factor		0.91			0.95					0.91	0.91	1.00
Frpb, ped/bikes		1.00			1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00			1.00					1.00	1.00	1.00
Frt		0.99			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	0.98	1.00
Satd. Flow (prot)		4213			3124					1449	3004	1425
Flt Permitted		1.00			1.00					0.95	0.98	1.00
Satd. Flow (perm)		4213			3124					1449	3004	1425
Volume (vph)	0	945	63	0	1207	0	0	0	0	842	732	195
Peak-hour factor, PHF	0.94	0.94	0.94	0.87	0.87	0.87	0.92	0.92	0.92	0.98	0.98	0.98
Adj. Flow (vph)	0	1005	67	0	1387	0	0	0	0	859	747	199
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1065	0	0	1387	0	0	0	0	517	1089	199
Confl. Bikes (#/hr)			9									17
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	25	25	0	0	0	0	0	0	0	0	0
Turn Type										Split		Prot
Protected Phases		3			3					1	1	1
Permitted Phases												
Actuated Green, G (s)		47.7			47.7					42.3	42.3	42.3
Effective Green, g (s)		48.7			48.7					43.3	43.3	43.3
Actuated g/C Ratio		0.49			0.49					0.43	0.43	0.43
Clearance Time (s)		5.0			5.0					5.0	5.0	5.0
Vehicle Extension (s)		2.0			2.0					2.0	2.0	2.0
Lane Grp Cap (vph)		2052			1521					627	1301	617
v/s Ratio Prot		0.25			c0.44					0.36	c0.36	0.14
v/s Ratio Perm												
v/c Ratio		0.52			0.91					0.82	0.84	0.32
Uniform Delay, d1		17.6			23.7					25.0	25.2	18.7
Progression Factor		1.00			0.64					1.19	1.21	1.19
Incremental Delay, d2		0.9			3.8					7.9	4.3	0.9
Delay (s)		18.6			19.0					37.5	34.7	23.2
Level of Service		B			B					D	C	C
Approach Delay (s)		18.6			19.0			0.0			34.2	
Approach LOS		B			B			A			C	

Intersection Summary			
HCM Average Control Delay	25.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0		150	0		0		0	150	
Storage Lanes	1		2		1	0		1		2	1	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Turning Speed (mph)	15		9		9	15		9	9	15	9	9
Right Turn on Red					No				No			Yes
Link Speed (mph)		25		25			25			25		
Link Distance (ft)		262		728			1058			807		
Travel Time (s)		7.1		19.9			28.9			22.0		
Volume (vph)	125	576	1098	302	210	123	481	222	110	771	476	15
Confl. Bikes (#/hr)			6		8			3	6			
Peak Hour Factor	0.95	0.95	0.95	0.84	0.84	0.90	0.90	0.90	0.90	0.88	0.88	0.88
Heavy Vehicles (%)	2%	2%	2%	9%	9%	1%	1%	1%	1%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	16	16	0	0	0	0	0	0	0
Parking (#/hr)				2	2							
Lane Group Flow (vph)	132	606	1156	360	250	0	671	369	0	1009	425	0
Turn Type	Prot		pt+ov		Perm	Perm		Perm			Perm	
Protected Phases	3	2 3	1 2 3	2			4			1		
Permitted Phases					2	4		4			1	
Detector Phases	3	2 3	1 2 3	2	2	4	4	4		1	1	
Minimum Initial (s)	4.0			10.0	10.0	4.0	4.0	4.0		10.0	10.0	
Minimum Split (s)	9.0			22.0	22.0	27.0	27.0	27.0		23.0	23.0	
Total Split (s)	15.0	39.0	73.0	24.0	24.0	27.0	27.0	27.0	0.0	34.0	34.0	0.0
Total Split (%)	15.0%	39.0%	73.0%	24.0%	24.0%	27.0%	27.0%	27.0%	0.0%	34.0%	34.0%	0.0%
Yellow Time (s)	3.0			3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0			2.0	2.0	2.0	2.0	2.0		3.0	3.0	
Lead/Lag	Lead			Lag	Lag	Lag	Lag	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	Max			Max	Max	Max	Max	Max		C-Max	C-Max	
v/c Ratio	0.75	1.03	0.67	0.66	1.15		0.64	1.14		1.12	1.11	
Control Delay	64.7	74.0	11.5	47.6	138.4		38.0	130.0		103.5	113.5	
Queue Delay	0.0	191.5	1.3	0.9	0.0		2.1	0.0		10.9	0.0	
Total Delay	64.7	265.5	12.8	48.5	138.4		40.0	130.0		114.4	113.5	
Queue Length 50th (ft)	80	~414	273	118	~186		142	~276		~385	~342	
Queue Length 95th (ft)	m#140	m#612	384	m145	m#261		184	#455		#491	#534	
Internal Link Dist (ft)		182		648			978			727		
Turn Bay Length (ft)					150						150	
Base Capacity (vph)	175	587	1731	545	218		1052	324		899	383	
Starvation Cap Reductn	0	178	347	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	49	0		237	0		20	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.75	1.48	0.84	0.73	1.15		0.82	1.14		1.15	1.11	

Intersection Summary	
Area Type:	CBD
Cycle Length: 100	

Actuated Cycle Length: 100
Offset: 60 (60%), Referenced to phase 1:NWL, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Brookline Avenue & Park Drive

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	0.88	0.95	1.00		0.91	1.00		0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.98		1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	0.85		0.98	0.85	
Flt Protected	0.95	1.00	1.00	1.00	1.00		0.99	1.00		0.96	1.00	
Satd. Flow (prot)	1593	1676	2508	2727	1088		4575	1409		2997	1272	
Flt Permitted	0.95	1.00	1.00	1.00	1.00		0.99	1.00		0.96	1.00	
Satd. Flow (perm)	1593	1676	2508	2727	1088		4575	1409		2997	1272	
Volume (vph)	125	576	1098	302	210	123	481	222	110	771	476	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.84	0.84	0.90	0.90	0.90	0.90	0.88	0.88	0.88
Adj. Flow (vph)	132	606	1156	360	250	137	534	247	122	876	541	17
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	132	606	1156	360	250	0	671	369	0	1009	424	0
Confl. Bikes (#/hr)			6		8			3	6			
Heavy Vehicles (%)	2%	2%	2%	9%	9%	1%	1%	1%	1%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	16	16	0	0	0	0	0	0	0
Parking (#/hr)				2	2							
Turn Type	Prot		pt+ov		Perm	Perm		Perm			Perm	
Protected Phases	3	2 3	1 2 3	2			4			1		
Permitted Phases					2	4		4			1	
Actuated Green, G (s)	10.0	34.0	68.0	19.0	19.0		22.0	22.0		28.0	28.0	
Effective Green, g (s)	11.0	35.0	69.0	20.0	20.0		23.0	23.0		30.0	30.0	
Actuated g/C Ratio	0.11	0.35	0.69	0.20	0.20		0.23	0.23		0.30	0.30	
Clearance Time (s)	5.0			5.0	5.0		5.0	5.0		6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	175	587	1731	545	218		1052	324		899	382	
v/s Ratio Prot	0.08	c0.36	0.46	0.13						c0.34		
v/s Ratio Perm					c0.23		0.15	c0.26			0.33	
v/c Ratio	0.75	1.03	0.67	0.66	1.15		0.64	1.14		1.12	1.11	
Uniform Delay, d1	43.2	32.5	8.9	36.9	40.0		34.7	38.5		35.0	35.0	
Progression Factor	1.00	0.99	1.08	1.16	1.15		1.00	1.00		1.00	1.00	
Incremental Delay, d2	20.1	40.8	1.6	4.3	96.2		3.0	93.1		69.6	78.8	
Delay (s)	63.3	73.0	11.2	47.1	142.1		37.7	131.6		104.6	113.8	
Level of Service	E	E	B	D	F		D	F		F	F	
Approach Delay (s)		34.6		86.0			71.0			107.3		
Approach LOS		C		F			E			F		

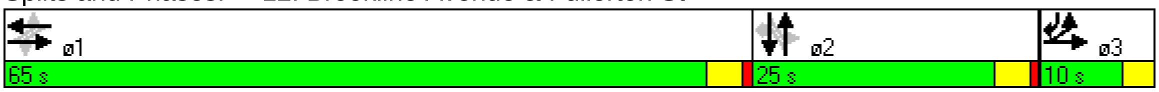
Intersection Summary			
HCM Average Control Delay	69.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	10	10	10	12	12	12	11	11	11
Storage Length (ft)	200		0	50		0	0		0	0		100
Storage Lanes	1		0	1		0	0		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		728			597			287			432	
Travel Time (s)		19.9			16.3			7.8			11.8	
Volume (vph)	252	454	47	18	332	166	66	105	21	30	44	78
Confl. Peds. (#/hr)	120		75	75		120	103		112	112		103
Confl. Bikes (#/hr)			7			15			3			4
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.85	0.85	0.85	0.75	0.75	0.75
Heavy Vehicles (%)	6%	6%	6%	9%	9%	9%	2%	2%	2%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		8	8									
Lane Group Flow (vph)	307	611	0	22	607	0	0	227	0	0	99	104
Turn Type	D.P+P			Perm			Perm			Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2			2		2
Detector Phases	3	1 3		1	1		2	2		2	2	3
Minimum Initial (s)	4.0			8.0	8.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0			23.0	23.0		24.0	24.0		24.0	24.0	10.0
Total Split (s)	10.0	75.0	0.0	65.0	65.0	0.0	25.0	25.0	0.0	25.0	25.0	10.0
Total Split (%)	10.0%	75.0%	0.0%	65.0%	65.0%	0.0%	25.0%	25.0%	0.0%	25.0%	25.0%	10.0%
Yellow Time (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.0			1.0	1.0		1.0	1.0		1.0	1.0	0.0
Lead/Lag				Lead	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?				Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None			C-Max	C-Max		None	None		None	None	None
v/c Ratio	0.81	0.65		0.37	0.84			0.88			0.43	0.26
Control Delay	20.6	8.2		8.1	10.7			70.9			41.1	7.0
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Delay	20.6	8.2		8.1	10.7			70.9			41.1	7.0
Queue Length 50th (ft)	94	121		2	96			136			55	0
Queue Length 95th (ft)	m85	m115		m3	m107			#241			86	23
Internal Link Dist (ft)		648			517			207			352	
Turn Bay Length (ft)	200			50								100
Base Capacity (vph)	378	941		59	719			276			246	395
Starvation Cap Reductn	0	0		0	0			0			0	0
Spillback Cap Reductn	0	0		0	0			0			0	0
Storage Cap Reductn	0	0		0	0			0			0	0
Reduced v/c Ratio	0.81	0.65		0.37	0.84			0.82			0.40	0.26

Intersection Summary

Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 89 (89%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Brookline Avenue & Fullerton St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	10	10	12	12	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.88			0.96			1.00	0.87
Flpb, ped/bikes	0.98	1.00		1.00	1.00			0.95			0.94	1.00
Frt	1.00	0.99		1.00	0.95			0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	1.00
Satd. Flow (prot)	1397	1294		1391	1149			1486			1477	1183
Flt Permitted	0.32	1.00		0.07	1.00			0.85			0.76	1.00
Satd. Flow (perm)	474	1294		96	1149			1289			1146	1183
Volume (vph)	252	454	47	18	332	166	66	105	21	30	44	78
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.85	0.85	0.85	0.75	0.75	0.75
Adj. Flow (vph)	307	554	57	22	405	202	78	124	25	40	59	104
RTOR Reduction (vph)	0	4	0	0	18	0	0	5	0	0	0	76
Lane Group Flow (vph)	307	607	0	22	589	0	0	222	0	0	99	28
Confl. Peds. (#/hr)	120		75	75		120	103		112	112		103
Confl. Bikes (#/hr)			7			15			3			4
Heavy Vehicles (%)	6%	6%	6%	9%	9%	9%	2%	2%	2%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		8	8									
Turn Type	D.P+P			Perm			Perm			Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2			2		2
Actuated Green, G (s)	69.4	72.4		61.0	61.0			19.6			19.6	28.0
Effective Green, g (s)	68.4	72.4		61.0	61.0			19.6			19.6	27.0
Actuated g/C Ratio	0.68	0.72		0.61	0.61			0.20			0.20	0.27
Clearance Time (s)	3.0			4.0	4.0			4.0			4.0	3.0
Vehicle Extension (s)	3.0			3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	393	937		59	701			253			225	367
v/s Ratio Prot	c0.06	0.47			c0.51							0.01
v/s Ratio Perm	0.48			0.23				c0.17			0.09	0.02
v/c Ratio	0.78	0.65		0.37	0.84			0.88			0.44	0.08
Uniform Delay, d1	10.5	7.2		9.8	15.6			39.0			35.4	27.2
Progression Factor	2.05	0.99		0.44	0.55			1.00			1.00	1.00
Incremental Delay, d2	1.0	0.1		12.7	8.8			27.2			1.4	0.1
Delay (s)	22.5	7.2		17.0	17.4			66.2			36.7	27.3
Level of Service	C	A		B	B			E			D	C
Approach Delay (s)		12.3			17.4			66.2			31.9	
Approach LOS		B			B			E			C	

Intersection Summary			
HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	10	10
Turning Speed (mph)	15			9	15	9
Link Speed (mph)		25	25		25	
Link Distance (ft)		597	1171		374	
Travel Time (s)		16.3	31.9		10.2	
Volume (vph)	96	381	474	25	24	38
Confl. Peds. (#/hr)	113			113	13	22
Confl. Bikes (#/hr)				17		
Peak Hour Factor	0.88	0.88	0.94	0.94	0.83	0.83
Heavy Vehicles (%)	9%	9%	8%	8%	21%	21%
Parking (#/hr)	8	8	8	8	8	8
Lane Group Flow (vph)	0	542	531	0	75	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	96	381	474	25	24	38
Peak Hour Factor	0.88	0.88	0.94	0.94	0.83	0.83
Hourly flow rate (vph)	109	433	504	27	29	46
Pedestrians		22	13		113	
Lane Width (ft)		14.0	12.0		10.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	1		8	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		597	1171			
pX, platoon unblocked					0.98	
vC, conflicting volume	644				1295	653
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	644				1301	653
tC, single (s)	4.2				6.6	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.5
p0 queue free %	87				77	88
cM capacity (veh/h)	837				126	393

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	542	531	75
Volume Left	109	0	29
Volume Right	0	27	46
cSH	837	1700	216
Volume to Capacity	0.13	0.31	0.35
Queue Length 95th (ft)	11	0	37
Control Delay (s)	3.4	0.0	30.3
Lane LOS	A		D
Approach Delay (s)	3.4	0.0	30.3
Approach LOS			D

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBR	SBR2	NER	NER2	ø2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)		50			175		0	150		25		
Storage Lanes		0			1		0	1		1		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)	50			50	50	50		50	50	50	50	
Trailing Detector (ft)	0			0	0	0		0	0	0	0	
Turning Speed (mph)		9	9	15	15		9	9	9	9	9	
Right Turn on Red			Yes				No	No	No		No	
Link Speed (mph)	25					25						
Link Distance (ft)	119					737						
Travel Time (s)	3.2					20.1						
Volume (vph)	457	37	26	415	835	463	16	335	16	778	16	
Confl. Peds. (#/hr)							115				228	
Confl. Bikes (#/hr)		74	80				9					
Peak Hour Factor	0.89	0.89	0.89	0.90	0.90	0.90	0.90	0.94	0.70	0.87	0.87	
Heavy Vehicles (%)	1%	1%	1%	7%	7%	7%	7%	10%	0%	6%	6%	
Parking (#/hr)						8	8			8	8	
Lane Group Flow (vph)	584	0	0	461	500	960	0	356	23	894	18	
Turn Type				Prot	Split			custom	custom	custom	custom	
Protected Phases	1			2 3	3 4	3 4		3	1	4		2
Permitted Phases											4	
Detector Phases	1			2 3	3 4	3 4		3	1	4	4	
Minimum Initial (s)	4.0							4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	25.0							22.0	25.0	25.0	25.0	15.0
Total Split (s)	30.0	0.0	0.0	38.0	55.0	55.0	0.0	23.0	30.0	32.0	32.0	15.0
Total Split (%)	30.0%	0.0%	0.0%	38.0%	55.0%	55.0%	0.0%	23.0%	30.0%	32.0%	32.0%	15%
Yellow Time (s)	3.0							3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	4.0							4.0	4.0	4.0	4.0	0.0
Lead/Lag	Lead							Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes							Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max							None	C-Max	None	None	None
v/c Ratio	0.72			0.89	0.71	0.72		0.81	0.06	1.42	0.12	
Control Delay	39.3			53.2	25.7	22.8		44.2	28.5	232.7	28.8	
Queue Delay	0.0			0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	39.3			53.2	25.7	22.8		44.2	28.5	232.7	28.8	
Queue Length 50th (ft)	177			276	257	248		109	11	~439	11	
Queue Length 95th (ft)	236			#464	402	330		m#197	24	#567	m20	
Internal Link Dist (ft)	39					657						
Turn Bay Length (ft)				175	175			150		25	25	
Base Capacity (vph)	811			516	705	1335		442	385	628	145	
Starvation Cap Reductn	0			0	0	0		0	0	0	0	
Spillback Cap Reductn	0			0	0	0		0	0	0	0	
Storage Cap Reductn	0			0	0	0		0	0	0	0	
Reduced v/c Ratio	0.72			0.89	0.71	0.72		0.81	0.06	1.42	0.12	

Intersection Summary	
Area Type:	CBD
Cycle Length: 100	

Actuated Cycle Length: 100
Offset: 28 (28%), Referenced to phase 1:EBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Commonwealth Ave & Deerfield Street

Movement	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBR	SBR2	NER	NER2
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95			1.00	0.91	0.91		0.88	1.00	0.88	1.00
Frpb, ped/bikes	0.98			1.00	1.00	0.99		1.00	1.00	1.00	0.44
Flpb, ped/bikes	1.00			1.00	1.00	1.00		1.00	1.00	1.00	1.00
Frt	0.98			1.00	1.00	1.00		0.85	0.86	0.85	0.85
Flt Protected	1.00			0.95	0.95	0.98		1.00	1.00	1.00	1.00
Satd. Flow (prot)	3103			1518	1382	2619		2326	1479	2244	518
Flt Permitted	1.00			0.95	0.95	0.98		1.00	1.00	1.00	1.00
Satd. Flow (perm)	3103			1518	1382	2619		2326	1479	2244	518
Volume (vph)	457	37	26	415	835	463	16	335	16	778	16
Peak-hour factor, PHF	0.89	0.89	0.89	0.90	0.90	0.90	0.90	0.94	0.70	0.87	0.87
Adj. Flow (vph)	513	42	29	461	928	514	18	356	23	894	18
RTOR Reduction (vph)	4	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	580	0	0	461	500	960	0	356	23	894	18
Confl. Peds. (#/hr)							115				228
Confl. Bikes (#/hr)		74	80				9				
Heavy Vehicles (%)	1%	1%	1%	7%	7%	7%	7%	10%	0%	6%	6%
Parking (#/hr)						8	8			8	8
Turn Type				Prot	Split			custom	custom	custom	custom
Protected Phases	1			2 3	3 4	3 4		3	1	4	
Permitted Phases											4
Actuated Green, G (s)	23.0			31.0	48.0	48.0		16.0	23.0	25.0	25.0
Effective Green, g (s)	26.0			34.0	51.0	51.0		19.0	26.0	28.0	28.0
Actuated g/C Ratio	0.26			0.34	0.51	0.51		0.19	0.26	0.28	0.28
Clearance Time (s)	7.0							7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0							3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	807			516	705	1336		442	385	628	145
v/s Ratio Prot	c0.19			c0.30	0.36	0.37		0.15	0.02	c0.40	
v/s Ratio Perm											0.03
v/c Ratio	0.72			0.89	0.71	0.72		0.81	0.06	1.42	0.12
Uniform Delay, d1	33.7			31.3	18.8	18.9		38.7	27.8	36.0	26.9
Progression Factor	1.00			1.00	1.00	1.00		0.81	1.00	1.21	0.98
Incremental Delay, d2	5.5			17.6	3.3	1.9		8.4	0.3	198.6	0.3
Delay (s)	39.1			48.9	22.1	20.8		39.6	28.1	242.3	26.5
Level of Service	D			D	C	C		D	C	F	C
Approach Delay (s)	39.1					27.9					
Approach LOS	D					C					

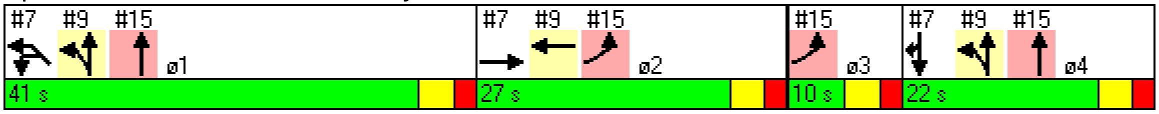
Intersection Summary			
HCM Average Control Delay	81.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	ø1	ø2	ø3	ø4
Lane Configurations										
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900				
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0				
Leading Detector (ft)	50			50						
Trailing Detector (ft)	0			0						
Turning Speed (mph)	15	9	15			9				
Right Turn on Red	No	No				Yes				
Link Speed (mph)	25			25	25					
Link Distance (ft)	185			130	152					
Travel Time (s)	5.0			3.5	4.1					
Volume (vph)	74	0	0	370	0	0				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				
Lane Group Flow (vph)	80	0	0	402	0	0				
Turn Type										
Protected Phases	2 3			1 4			1	2	3	4
Permitted Phases										
Detector Phases	2 3			1 4						
Minimum Initial (s)							5.0	4.0	1.0	4.0
Minimum Split (s)							33.0	27.0	6.0	22.0
Total Split (s)	37.0	0.0	0.0	63.0	0.0	0.0	41.0	27.0	10.0	22.0
Total Split (%)	37.0%	0.0%	0.0%	63.0%	0.0%	0.0%	41%	27%	10%	22%
Yellow Time (s)							3.0	3.0	3.0	3.0
All-Red Time (s)							2.0	2.0	2.0	2.0
Lead/Lag							Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes
Recall Mode							C-Max	None	None	None
v/c Ratio	0.10			0.16						
Control Delay	0.4			2.7						
Queue Delay	0.0			0.2						
Total Delay	0.4			2.9						
Queue Length 50th (ft)	0			15						
Queue Length 95th (ft)	0			18						
Internal Link Dist (ft)	105			50	72					
Turn Bay Length (ft)										
Base Capacity (vph)	996			2505						
Starvation Cap Reductn	0			1264						
Spillback Cap Reductn	0			0						
Storage Cap Reductn	0			0						
Reduced v/c Ratio	0.08			0.32						

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:NWL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 15: Riverway Ext & Park Drive



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.97			0.95		
Frt	1.00			1.00		
Flt Protected	0.95			1.00		
Satd. Flow (prot)	3433			3539		
Flt Permitted	0.95			1.00		
Satd. Flow (perm)	3433			3539		
Volume (vph)	74	0	0	370	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	80	0	0	402	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	80	0	0	402	0	0
Turn Type						
Protected Phases	2 3			1 4		
Permitted Phases						
Actuated Green, G (s)	23.0			67.0		
Effective Green, g (s)	24.0			68.0		
Actuated g/C Ratio	0.24			0.68		
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	824			2407		
v/s Ratio Prot	c0.02			c0.11		
v/s Ratio Perm						
v/c Ratio	0.10			0.17		
Uniform Delay, d1	29.6			5.8		
Progression Factor	0.01			0.35		
Incremental Delay, d2	0.0			0.0		
Delay (s)	0.2			2.0		
Level of Service	A			A		
Approach Delay (s)	0.2			2.0	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	16	16	16	16
Turning Speed (mph)		9	15		15	9
Link Speed (mph)	25			25	25	
Link Distance (ft)	148			1203	667	
Travel Time (s)	4.0			32.8	18.2	
Volume (vph)	45	668	5	81	507	0
Confl. Peds. (#/hr)		3	3		19	
Peak Hour Factor	0.93	0.93	0.85	0.85	0.87	0.87
Heavy Vehicles (%)	3%	3%	7%	7%	5%	5%
Lane Group Flow (vph)	48	718	0	101	583	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	45	668	5	81	507	0
Peak Hour Factor	0.93	0.93	0.85	0.85	0.87	0.87
Hourly flow rate (vph)	48	718	6	95	583	0
Pedestrians	19				3	
Lane Width (ft)	11.0				16.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				1203		
pX, platoon unblocked						
vC, conflicting volume			770		177	51
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			770		177	51
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			99		26	100
cM capacity (veh/h)			820		785	1005

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	48	718	101	583
Volume Left	0	0	6	583
Volume Right	0	718	0	0
cSH	1700	1700	820	785
Volume to Capacity	0.03	0.42	0.01	0.74
Queue Length 95th (ft)	0	0	1	170
Control Delay (s)	0.0	0.0	0.6	21.5
Lane LOS			A	C
Approach Delay (s)	0.0		0.6	21.5
Approach LOS				C

Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	10	10	11	11	11	11	11	11	11
Storage Length (ft)	0		200		125		0	80		0	0	
Storage Lanes	0		1		1		0	1		0	0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50		50	50		50	50
Trailing Detector (ft)	0	0	0	0	0	0		0	0		0	0
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Right Turn on Red			No				No			No		
Link Speed (mph)		25				25			25			25
Link Distance (ft)		65				253			719			667
Travel Time (s)		1.8				6.9			19.6			18.2
Volume (vph)	32	470	137	5	297	703	34	148	522	131	0	616
Confl. Bikes (#/hr)			22				82			48		
Peak Hour Factor	0.91	0.91	0.91	0.98	0.98	0.98	0.98	0.85	0.85	0.85	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	8
Parking (#/hr)		8	8			8	8		8	8		
Lane Group Flow (vph)	0	551	151	0	308	752	0	174	768	0	0	667
Turn Type	Perm		pm+ov	Perm	D.P+P			D.P+P			Perm	
Protected Phases		3	4		2	2 3		4	1 4			1
Permitted Phases	3		3	2 3	3			1			1	
Detector Phases	3	3	4	2 3	2	2 3		4	1 4		1	1
Minimum Initial (s)	4.0	4.0	2.0		2.0			2.0			10.0	10.0
Minimum Split (s)	29.0	29.0	7.0		15.0			7.0			38.0	38.0
Total Split (s)	29.0	29.0	10.0	50.0	21.0	50.0	0.0	10.0	50.0	0.0	40.0	40.0
Total Split (%)	29.0%	29.0%	10.0%	50.0%	21.0%	50.0%	0.0%	10.0%	50.0%	0.0%	40.0%	40.0%
Yellow Time (s)	3.0	3.0	2.0		2.0			2.0			3.0	3.0
All-Red Time (s)	1.0	1.0	0.0		0.0			0.0			1.0	1.0
Lead/Lag	Lead	Lead	Lag		Lag			Lag			Lead	Lead
Lead-Lag Optimize?												
Recall Mode	None	None	None		None			None			C-Min	C-Min
v/c Ratio		0.91	0.43		0.87	0.58		0.68	0.59			0.59
Control Delay		57.3	29.0		34.6	12.4		28.6	10.9			28.4
Queue Delay		0.0	0.0		0.0	0.0		0.0	0.0			0.0
Total Delay		57.3	29.0		34.6	12.4		28.6	10.9			28.4
Queue Length 50th (ft)		177	71		127	204		33	80			181
Queue Length 95th (ft)		#273	126		m#202	m168		#76	88			m241
Internal Link Dist (ft)		1				173			639			587
Turn Bay Length (ft)			200		125			80				
Base Capacity (vph)		631	355		354	1316		257	1308			1125
Starvation Cap Reductn		0	0		0	0		0	0			0
Spillback Cap Reductn		0	0		0	0		0	0			0
Storage Cap Reductn		0	0		0	0		0	0			0
Reduced v/c Ratio		0.87	0.43		0.87	0.57		0.68	0.59			0.59

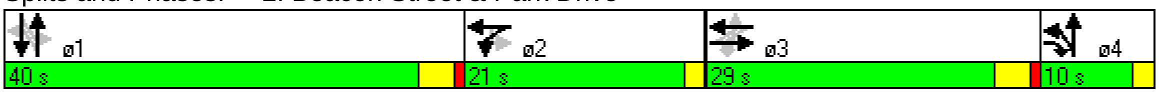
Intersection Summary	
Area Type:	CBD

Lane Group	SBR
Lane Configurations	
Ideal Flow (vphpl)	1900
Lane Width (ft)	11
Storage Length (ft)	0
Storage Lanes	0
Total Lost Time (s)	4.0
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	9
Right Turn on Red	No
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	18
Confl. Bikes (#/hr)	33
Peak Hour Factor	0.95
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	8
Parking (#/hr)	1
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phases	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Yellow Time (s)	
All-Red Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 14 (14%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
\#   95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m   Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Beacon Street & Park Drive



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	10	11	11	11	11	11	11	11
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0	4.0			4.0
Lane Util. Factor		0.95	1.00		1.00	0.95		1.00	0.95			0.95
Frpb, ped/bikes		1.00	0.98		1.00	1.00		1.00	0.99			1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00			1.00
Frt		1.00	0.85		1.00	0.99		1.00	0.97			1.00
Flt Protected		1.00	1.00		0.95	1.00		0.95	1.00			1.00
Satd. Flow (prot)		2912	1181		1501	2860		1555	2785			3044
Flt Permitted		0.86	1.00		0.25	1.00		0.28	1.00			1.00
Satd. Flow (perm)		2523	1181		394	2860		453	2785			3044
Volume (vph)	32	470	137	5	297	703	34	148	522	131	0	616
Peak-hour factor, PHF	0.91	0.91	0.91	0.98	0.98	0.98	0.98	0.85	0.85	0.85	0.95	0.95
Adj. Flow (vph)	35	516	151	5	303	717	35	174	614	154	0	648
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	551	151	0	308	752	0	174	768	0	0	667
Confl. Bikes (#/hr)			22				82			48		
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	8
Parking (#/hr)		8	8			8	8		8	8		
Turn Type	Perm		pm+ov	Perm	D.P+P			D.P+P			Perm	
Protected Phases		3	4		2	2 3		4	1 4			1
Permitted Phases	3		3	2 3	3			1			1	
Actuated Green, G (s)		24.0	32.0		43.0	45.0		45.0	47.0			37.0
Effective Green, g (s)		24.0	30.0		41.0	45.0		43.0	47.0			37.0
Actuated g/C Ratio		0.24	0.30		0.41	0.45		0.43	0.47			0.37
Clearance Time (s)		4.0	2.0		2.0			2.0				4.0
Vehicle Extension (s)		2.0	2.0		2.0			2.0				2.0
Lane Grp Cap (vph)		606	402		350	1287		261	1309			1126
v/s Ratio Prot			0.02		c0.15	0.26		0.04	c0.28			0.22
v/s Ratio Perm		c0.22	0.11		0.21			c0.25				
v/c Ratio		0.91	0.38		0.88	0.58		0.67	0.59			0.59
Uniform Delay, d1		36.9	27.6		22.9	20.5		20.7	19.4			25.4
Progression Factor		1.00	1.00		0.72	0.54		0.76	0.45			1.00
Incremental Delay, d2		17.2	0.2		15.9	0.3		4.8	0.4			2.3
Delay (s)		54.1	27.8		32.3	11.3		20.5	9.2			27.7
Level of Service		D	C		C	B		C	A			C
Approach Delay (s)		48.5				17.4			11.3			27.7
Approach LOS		D				B			B			C

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	91.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Ideal Flow (vphpl)	1900
Lane Width	11
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Volume (vph)	18
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	19
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Bikes (#/hr)	33
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	8
Parking (#/hr)	1
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Lane Group	EBU	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	12	12	12	9	9
Turning Speed (mph)	9		9	9	15		15	9
Link Speed (mph)		25				25	25	
Link Distance (ft)		253				234	263	
Travel Time (s)		6.9				6.4	7.2	
Volume (vph)	5	590	5	5	5	1032	5	11
Confl. Peds. (#/hr)			119		119		21	11
Confl. Bikes (#/hr)			27					
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.88	0.88
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%
Parking (#/hr)		8	8			8		
Lane Group Flow (vph)	0	644	0	0	0	1159	18	0
Sign Control		Free				Free	Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations								
Sign Control		Free				Free	Stop	
Grade		0%				0%	0%	
Volume (veh/h)	5	590	5	5	5	1032	5	11
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.88	0.88
Hourly flow rate (vph)	0	634	5	0	6	1147	6	12
Pedestrians		21				11	119	
Lane Width (ft)		12.0				12.0	9.0	
Walking Speed (ft/s)		4.0				4.0	4.0	
Percent Blockage		2				1	7	
Right turn flare (veh)								
Median type							Raised	
Median storage veh)							0	
Upstream signal (ft)		253				676		
pX, platoon unblocked	0.00			0.00	0.85		0.86	0.85
vC, conflicting volume	0			0	759		1362	450
vC1, stage 1 conf vol							756	
vC2, stage 2 conf vol							605	
vCu, unblocked vol	0			0	540		733	177
tC, single (s)	0.0			0.0	4.1		6.8	6.9
tC, 2 stage (s)							5.8	
tF (s)	0.0			0.0	2.2		3.5	3.3
p0 queue free %	0			0	99		98	98
cM capacity (veh/h)	0			0	812		263	657

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	423	217	388	764	18
Volume Left	0	0	6	0	6
Volume Right	0	5	0	0	12
cSH	1700	1700	812	1700	447
Volume to Capacity	0.25	0.13	0.01	0.45	0.04
Queue Length 95th (ft)	0	0	1	0	3
Control Delay (s)	0.0	0.0	0.2	0.0	13.4
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		13.4
Approach LOS					B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	11	12	12	10	10	10	10	10	10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		234			225			229			172	
Travel Time (s)		6.4			6.1			6.2			4.7	
Volume (vph)	5	574	26	14	995	5	44	16	39	5	5	5
Confl. Peds. (#/hr)	144		115	115		144	89		9	9		89
Confl. Bikes (#/hr)			30			71			10			5
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.84	0.84	0.84	0.69	0.69	0.69
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		8	8		8	8	4	4	4	4	4	4
Lane Group Flow (vph)	0	657	0	0	1153	0	0	117	0	0	21	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	574	26	14	995	5	44	16	39	5	5	5
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.84	0.84	0.84	0.69	0.69	0.69
Hourly flow rate (vph)	5	624	28	16	1131	6	52	19	46	7	7	7
Pedestrians		89			9			115			144	
Lane Width (ft)		12.0			12.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		7			1			8			10	
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		487			442							
pX, platoon unblocked	0.75			0.87			0.81	0.81	0.87	0.81	0.81	0.75
vC, conflicting volume	1280			767			1461	2076	450	1697	2087	801
vC1, stage 1 conf vol							764	764		1309	1309	
vC2, stage 2 conf vol							697	1312		388	778	
vCu, unblocked vol	1041			591			876	1632	229	1166	1646	403
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			72	82	93	93	93	98
cM capacity (veh/h)	452			795			184	106	621	99	107	377

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	317	340	581	571	118	22
Volume Left	5	0	16	0	52	7
Volume Right	0	28	0	6	46	7
cSH	452	1700	795	1700	218	136
Volume to Capacity	0.01	0.20	0.02	0.34	0.54	0.16
Queue Length 95th (ft)	1	0	2	0	72	14
Control Delay (s)	0.4	0.0	0.5	0.0	39.3	36.5
Lane LOS	A		A		E	E
Approach Delay (s)	0.2		0.3		39.3	36.5
Approach LOS					E	E

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	9	9
Turning Speed (mph)		9	15		15	9
Link Speed (mph)	25			25	25	
Link Distance (ft)	225			217	275	
Travel Time (s)	6.1			5.9	7.5	
Volume (vph)	613	5	0	1004	5	5
Confl. Peds. (#/hr)		131	131		7	10
Confl. Bikes (#/hr)		32				
Peak Hour Factor	0.93	0.93	0.92	0.92	0.50	0.50
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%
Parking (#/hr)	8	8		8		
Lane Group Flow (vph)	664	0	0	1091	20	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	613	5	0	1004	5	5
Peak Hour Factor	0.93	0.93	0.92	0.92	0.50	0.50
Hourly flow rate (vph)	659	5	0	1091	10	10
Pedestrians	7			10	131	
Lane Width (ft)	10.0			11.0	9.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			1	8	
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)	712			217		
pX, platoon unblocked			0.92		0.77	0.92
vC, conflicting volume			796		1345	473
vC1, stage 1 conf vol					793	
vC2, stage 2 conf vol					553	
vCu, unblocked vol			695		853	346
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		96	98
cM capacity (veh/h)			765		235	552

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	439	225	364	728	20
Volume Left	0	0	0	0	10
Volume Right	0	5	0	0	10
cSH	1700	1700	765	1700	330
Volume to Capacity	0.26	0.13	0.00	0.43	0.06
Queue Length 95th (ft)	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	16.6
Lane LOS					C
Approach Delay (s)	0.0		0.0		16.6
Approach LOS					C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	13	13	13	11	11	8
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		217			1360			234			1203	
Travel Time (s)		5.9			37.1			6.4			32.8	
Volume (vph)	5	586	27	44	939	27	60	34	125	61	0	5
Confl. Peds. (#/hr)	151		91	91		151	3		29	29		3
Confl. Bikes (#/hr)			24			71			4			1
Peak Hour Factor	0.96	0.96	0.96	0.93	0.93	0.93	0.68	0.68	0.68	0.82	0.82	0.82
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		8	8		8	8				4	4	4
Lane Group Flow (vph)	0	643	0	0	1086	0	0	322	0	0	80	0
Turn Type	Perm			Perm			Split			Split		
Protected Phases		1			1		2	2		3	3	
Permitted Phases	1			1								
Detector Phases	1	1		1	1		2	2		3	3	
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		27.0	27.0		27.0	27.0	
Total Split (s)	46.0	46.0	0.0	46.0	46.0	0.0	27.0	27.0	0.0	27.0	27.0	0.0
Total Split (%)	46.0%	46.0%	0.0%	46.0%	46.0%	0.0%	27.0%	27.0%	0.0%	27.0%	27.0%	0.0%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag				
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
v/c Ratio		0.44			0.79			0.86			0.39	
Control Delay		13.0			27.2			53.2			39.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.0			27.2			53.2			39.5	
Queue Length 50th (ft)		171			281			158			46	
Queue Length 95th (ft)		m226			#520			171			73	
Internal Link Dist (ft)		137			1280			154			1123	
Turn Bay Length (ft)												
Base Capacity (vph)		1468			1382			407			319	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.44			0.79			0.79			0.25	

Intersection Summary

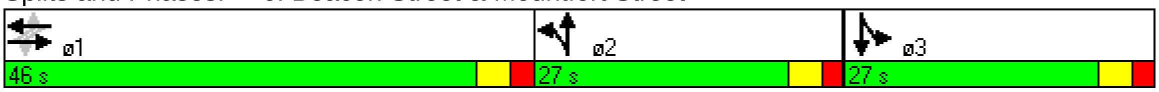
Area Type: CBD

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 19 (19%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
\#   95th percentile volume exceeds capacity, queue may be longer.
     Queue shown is maximum after two cycles.
m   Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Beacon Street & Mountfort Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	13	13	13	11	11	8
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.99			0.99			0.97			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			1.00			0.92			0.99	
Flt Protected		1.00			1.00			0.99			0.96	
Satd. Flow (prot)		2835			2826			1558			1374	
Flt Permitted		0.95			0.89			0.99			0.96	
Satd. Flow (perm)		2688			2532			1558			1374	
Volume (vph)	5	586	27	44	939	27	60	34	125	61	0	5
Peak-hour factor, PHF	0.96	0.96	0.96	0.93	0.93	0.93	0.68	0.68	0.68	0.82	0.82	0.82
Adj. Flow (vph)	5	610	28	47	1010	29	88	50	184	74	0	6
RTOR Reduction (vph)	0	3	0	0	1	0	0	49	0	0	3	0
Lane Group Flow (vph)	0	640	0	0	1085	0	0	273	0	0	77	0
Confl. Peds. (#/hr)	151		91	91		151	3		29	29		3
Confl. Bikes (#/hr)			24			71			4			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		8	8		8	8				4	4	4
Turn Type	Perm			Perm			Split			Split		
Protected Phases		1			1		2	2		3	3	
Permitted Phases	1			1								
Actuated Green, G (s)		52.6			52.6			19.8			12.6	
Effective Green, g (s)		53.6			53.6			20.8			13.6	
Actuated g/C Ratio		0.54			0.54			0.21			0.14	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1441			1357			324			187	
v/s Ratio Prot								c0.18			c0.06	
v/s Ratio Perm		0.24			c0.43							
v/c Ratio		0.44			0.80			0.84			0.41	
Uniform Delay, d1		14.1			18.8			38.0			39.5	
Progression Factor		0.75			1.00			1.00			1.00	
Incremental Delay, d2		0.7			5.0			17.7			1.5	
Delay (s)		11.2			23.8			55.7			41.0	
Level of Service		B			C			E			D	
Approach Delay (s)		11.2			23.8			55.7			41.0	
Approach LOS		B			C			E			D	

Intersection Summary			
HCM Average Control Delay	25.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		

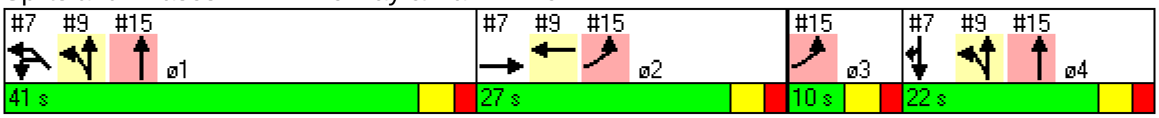
c Critical Lane Group

Lane Group	EBT	SBT	SBR	NWL2	NWL	ø3
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	
Storage Length (ft)			100		0	
Storage Lanes			1		3	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)	50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0	
Turning Speed (mph)			9	15	15	
Right Turn on Red			No	No		
Link Speed (mph)	25	25			25	
Link Distance (ft)	410	279			185	
Travel Time (s)	11.2	7.6			5.0	
Volume (vph)	116	486	542	442	1055	
Confl. Peds. (#/hr)			65		65	
Confl. Bikes (#/hr)			11			
Peak Hour Factor	0.92	0.89	0.89	0.97	0.97	
Heavy Vehicles (%)	2%	2%	2%	1%	1%	
Lane Group Flow (vph)	126	546	609	456	1088	
Turn Type			Prot	Split		
Protected Phases	2	4	4	1	1	3
Permitted Phases						
Detector Phases	2	4	4	1	1	
Minimum Initial (s)	4.0	4.0	4.0	5.0	5.0	1.0
Minimum Split (s)	27.0	22.0	22.0	33.0	33.0	6.0
Total Split (s)	27.0	22.0	22.0	41.0	41.0	10.0
Total Split (%)	27.0%	22.0%	22.0%	41.0%	41.0%	10%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	None
v/c Ratio	0.19	0.84	2.09	0.77	0.94	
Control Delay	32.9	50.3	523.5	31.9	41.1	
Queue Delay	0.0	57.4	0.0	184.1	90.5	
Total Delay	32.9	107.7	523.5	216.0	131.6	
Queue Length 50th (ft)	34	177	~649	293	372	
Queue Length 95th (ft)	59	m#275	m#834	#404	#480	
Internal Link Dist (ft)	330	199			105	
Turn Bay Length (ft)			100			
Base Capacity (vph)	733	651	292	595	1154	
Starvation Cap Reductn	0	0	0	182	253	
Spillback Cap Reductn	0	162	0	270	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.17	1.12	2.09	1.40	1.21	

Intersection Summary	
Area Type:	CBD
Cycle Length: 100	
Actuated Cycle Length: 100	

Offset: 15 (15%), Referenced to phase 1:NWL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Riverway & Park Drive



Movement	EBT	SBT	SBR	NWL2	NWL
Lane Configurations					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	1.00	0.97
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00
Flt Protected	1.00	1.00	1.00	0.95	0.95
Satd. Flow (prot)	3185	3185	1425	1608	3120
Flt Permitted	1.00	1.00	1.00	0.95	0.95
Satd. Flow (perm)	3185	3185	1425	1608	3120
Volume (vph)	116	486	542	442	1055
Peak-hour factor, PHF	0.92	0.89	0.89	0.97	0.97
Adj. Flow (vph)	126	546	609	456	1088
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	126	546	609	456	1088
Confl. Peds. (#/hr)			65		65
Confl. Bikes (#/hr)			11		
Heavy Vehicles (%)	2%	2%	2%	1%	1%
Turn Type			Prot	Split	
Protected Phases	2	4	4	1	1
Permitted Phases					
Actuated Green, G (s)	19.3	19.4	19.4	36.1	36.1
Effective Green, g (s)	20.3	20.4	20.4	37.1	37.1
Actuated g/C Ratio	0.20	0.20	0.20	0.37	0.37
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	2.0	2.0
Lane Grp Cap (vph)	647	650	291	597	1158
v/s Ratio Prot	c0.04	0.17	c0.43	0.28	c0.35
v/s Ratio Perm					
v/c Ratio	0.19	0.84	2.09	0.76	0.94
Uniform Delay, d1	33.1	38.2	39.8	27.6	30.4
Progression Factor	1.00	1.01	1.04	0.87	0.90
Incremental Delay, d2	0.1	7.8	501.0	6.7	12.2
Delay (s)	33.2	46.3	542.5	30.7	39.6
Level of Service	C	D	F	C	D
Approach Delay (s)	33.2	307.9			37.0
Approach LOS	C	F			D

Intersection Summary			
HCM Average Control Delay	147.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50			
Trailing Detector (ft)		0	0			
Turning Speed (mph)		9	15		15	9
Right Turn on Red		No	No			Yes
Link Speed (mph)	25			25	25	
Link Distance (ft)	360			253	341	
Travel Time (s)	9.8			6.9	9.3	
Volume (vph)	0	756	928	0	0	0
Peak Hour Factor	0.96	0.96	0.93	0.93	0.95	0.95
Heavy Vehicles (%)	2%	2%	0%	0%	0%	0%
Lane Group Flow (vph)	0	788	998	0	0	0
Turn Type		custom	Prot			
Protected Phases		2	1			
Permitted Phases						
Detector Phases		2	1			
Minimum Initial (s)		4.0	4.0			
Minimum Split (s)		31.0	51.0			
Total Split (s)	0.0	35.0	65.0	0.0	0.0	0.0
Total Split (%)	0.0%	35.0%	65.0%	0.0%	0.0%	0.0%
Yellow Time (s)		4.0	4.0			
All-Red Time (s)		1.0	1.0			
Lead/Lag		Lag	Lead			
Lead-Lag Optimize?		Yes	Yes			
Recall Mode		None	C-Min			
v/c Ratio		0.71	0.66			
Control Delay		26.7	17.3			
Queue Delay		5.9	1.6			
Total Delay		32.5	18.9			
Queue Length 50th (ft)		217	350			
Queue Length 95th (ft)		294	397			
Internal Link Dist (ft)	280			173	261	
Turn Bay Length (ft)						
Base Capacity (vph)		1109	1923			
Starvation Cap Reductn		0	703			
Spillback Cap Reductn		263	0			
Storage Cap Reductn		0	0			
Reduced v/c Ratio		0.93	0.82			

Intersection Summary

Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 25 (25%), Referenced to phase 1:WBL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 8: Riverway & Park Dr

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			
Lane Util. Factor		0.88	0.97			
Frt		0.85	1.00			
Flt Protected		1.00	0.95			
Satd. Flow (prot)		2508	3152			
Flt Permitted		1.00	0.95			
Satd. Flow (perm)		2508	3152			
Volume (vph)	0	756	928	0	0	0
Peak-hour factor, PHF	0.96	0.96	0.93	0.93	0.95	0.95
Adj. Flow (vph)	0	788	998	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	788	998	0	0	0
Heavy Vehicles (%)	2%	2%	0%	0%	0%	0%
Turn Type		custom	Prot			
Protected Phases		2	1			
Permitted Phases						
Actuated Green, G (s)		43.2	46.8			
Effective Green, g (s)		44.2	47.8			
Actuated g/C Ratio		0.44	0.48			
Clearance Time (s)		5.0	5.0			
Vehicle Extension (s)		2.0	2.0			
Lane Grp Cap (vph)		1109	1507			
v/s Ratio Prot		c0.31	c0.32			
v/s Ratio Perm						
v/c Ratio		0.71	0.66			
Uniform Delay, d1		22.7	19.9			
Progression Factor		1.00	0.77			
Incremental Delay, d2		1.8	1.3			
Delay (s)		24.5	16.7			
Level of Service		C	B			
Approach Delay (s)	24.5			16.7	0.0	
Approach LOS	C			B	A	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)					50		50	50				
Trailing Detector (ft)					0		0	0				
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			No	No		No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		185			128			405			130	
Travel Time (s)		5.0			3.5			11.0			3.5	
Volume (vph)	0	0	0	0	227	150	1270	545	0	0	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.97	0.97	0.97	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	1%	0%	0%	0%
Lane Group Flow (vph)	0	0	0	0	397	0	1309	562	0	0	0	0
Turn Type							Split					
Protected Phases					2		1 4	1 4				
Permitted Phases												
Detector Phases					2		1 4	1 4				
Minimum Initial (s)					4.0							
Minimum Split (s)					27.0							
Total Split (s)	0.0	0.0	0.0	0.0	27.0	0.0	63.0	63.0	0.0	0.0	0.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	0.0%	27.0%	0.0%	63.0%	63.0%	0.0%	0.0%	0.0%	0.0%
Yellow Time (s)					3.0							
All-Red Time (s)					2.0							
Lead/Lag					Lag							
Lead-Lag Optimize?					Yes							
Recall Mode					None							
v/c Ratio					0.64		0.68	0.28				
Control Delay					41.1		18.2	12.3				
Queue Delay					3.9		13.4	0.0				
Total Delay					45.0		31.6	12.3				
Queue Length 50th (ft)					118		342	107				
Queue Length 95th (ft)					168		m297	m99				
Internal Link Dist (ft)		105			48			325			50	
Turn Bay Length (ft)												
Base Capacity (vph)					702		1917	1976				
Starvation Cap Reductn					0		610	0				
Spillback Cap Reductn					219		429	19				
Storage Cap Reductn					0		0	0				
Reduced v/c Ratio					0.82		1.00	0.29				

Intersection Summary

Area Type: CBD

Cycle Length: 100

Actuated Cycle Length: 100

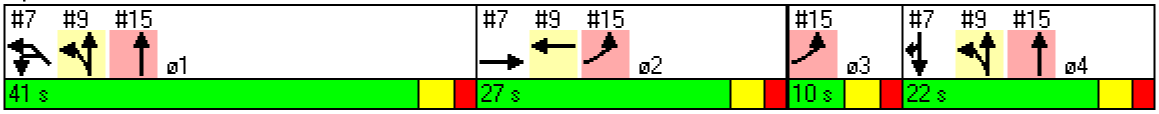
Offset: 15 (15%), Referenced to phase 1:NWL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Park Dr & Park Drive



Lane Group	ø1	ø3	ø4
Lane Configurations			
Ideal Flow (vphpl)			
Total Lost Time (s)			
Leading Detector (ft)			
Trailing Detector (ft)			
Turning Speed (mph)			
Right Turn on Red			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Volume (vph)			
Peak Hour Factor			
Heavy Vehicles (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	1	3	4
Permitted Phases			
Detector Phases			
Minimum Initial (s)	5.0	1.0	4.0
Minimum Split (s)	33.0	6.0	22.0
Total Split (s)	41.0	10.0	22.0
Total Split (%)	41%	10%	22%
Yellow Time (s)	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0
Lead/Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes
Recall Mode	C-Max	None	None
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				
Lane Util. Factor					0.95		0.97	0.95				
Frt					0.94		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3055		3120	3217				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3055		3120	3217				
Volume (vph)	0	0	0	0	227	150	1270	545	0	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	239	158	1309	562	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	397	0	1309	562	0	0	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	1%	0%	0%	0%
Turn Type							Split					
Protected Phases					2		1 4	1 4				
Permitted Phases												
Actuated Green, G (s)					19.3		60.5	60.5				
Effective Green, g (s)					20.3		61.5	61.5				
Actuated g/C Ratio					0.20		0.62	0.62				
Clearance Time (s)					5.0							
Vehicle Extension (s)					3.0							
Lane Grp Cap (vph)					620		1919	1978				
v/s Ratio Prot					c0.13		c0.42	0.17				
v/s Ratio Perm												
v/c Ratio					0.64		0.68	0.28				
Uniform Delay, d1					36.5		12.8	9.0				
Progression Factor					1.00		1.32	1.29				
Incremental Delay, d2					2.3		0.1	0.0				
Delay (s)					38.8		16.9	11.6				
Level of Service					D		B	B				
Approach Delay (s)		0.0			38.8			15.3			0.0	
Approach LOS		A			D			B			A	

Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

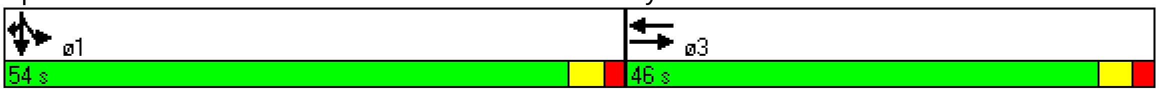
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50			50					50	50	50
Trailing Detector (ft)		0			0					0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			No			Yes			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		975			262			688			341	
Travel Time (s)		26.6			7.1			18.8			9.3	
Volume (vph)	0	1009	95	0	980	0	0	0	0	641	918	126
Confl. Bikes (#/hr)			7			6						2
Peak Hour Factor	0.80	0.80	0.80	0.94	0.94	0.94	0.92	0.92	0.92	0.94	0.94	0.94
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	1%	1%	1%
Lane Group Flow (vph)	0	1380	0	0	1043	0	0	0	0	534	1125	134
Turn Type										Split		Prot
Protected Phases		3			3					1	1	1
Permitted Phases												
Detector Phases		3			3					1	1	1
Minimum Initial (s)		10.0			10.0					10.0	10.0	10.0
Minimum Split (s)		46.0			46.0					34.0	34.0	34.0
Total Split (s)	0.0	46.0	0.0	0.0	46.0	0.0	0.0	0.0	0.0	54.0	54.0	54.0
Total Split (%)	0.0%	46.0%	0.0%	0.0%	46.0%	0.0%	0.0%	0.0%	0.0%	54.0%	54.0%	54.0%
Yellow Time (s)		3.0			3.0					3.0	3.0	3.0
All-Red Time (s)		2.0			2.0					2.0	2.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		Max			Max					C-Min	C-Min	C-Min
v/c Ratio		0.64			0.68					0.84	0.84	0.21
Control Delay		21.9			18.5					34.3	30.0	18.0
Queue Delay		0.5			5.7					7.7	6.6	0.0
Total Delay		22.4			24.2					42.0	36.6	18.0
Queue Length 50th (ft)		234			165					318	336	55
Queue Length 95th (ft)		266			m177					406	380	m72
Internal Link Dist (ft)		895			182			608			261	
Turn Bay Length (ft)												
Base Capacity (vph)		2152			1527					732	1530	720
Starvation Cap Reductn		0			421					158	356	0
Spillback Cap Reductn		334			0					7	15	0
Storage Cap Reductn		0			0					0	0	0
Reduced v/c Ratio		0.76			0.94					0.93	0.96	0.19

Intersection Summary	
Area Type:	CBD
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 1:SBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Brookline Avenue & Riverway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0					4.0	4.0	4.0
Lane Util. Factor		0.91			0.95					0.91	0.91	1.00
Frpb, ped/bikes		1.00			1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00			1.00					1.00	1.00	1.00
Frt		0.99			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	0.99	1.00
Satd. Flow (prot)		4425			3154					1464	3061	1439
Flt Permitted		1.00			1.00					0.95	0.99	1.00
Satd. Flow (perm)		4425			3154					1464	3061	1439
Volume (vph)	0	1009	95	0	980	0	0	0	0	641	918	126
Peak-hour factor, PHF	0.80	0.80	0.80	0.94	0.94	0.94	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	0	1261	119	0	1043	0	0	0	0	682	977	134
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1370	0	0	1043	0	0	0	0	534	1125	134
Confl. Bikes (#/hr)			7			6						2
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	1%	1%	1%
Turn Type										Split		Prot
Protected Phases		3			3					1	1	1
Permitted Phases												
Actuated Green, G (s)		47.4			47.4					42.6	42.6	42.6
Effective Green, g (s)		48.4			48.4					43.6	43.6	43.6
Actuated g/C Ratio		0.48			0.48					0.44	0.44	0.44
Clearance Time (s)		5.0			5.0					5.0	5.0	5.0
Vehicle Extension (s)		2.0			2.0					2.0	2.0	2.0
Lane Grp Cap (vph)		2142			1527					638	1335	627
v/s Ratio Prot		0.31			c0.33					0.36	c0.37	0.09
v/s Ratio Perm												
v/c Ratio		0.64			0.68					0.84	0.84	0.21
Uniform Delay, d1		19.3			19.9					25.0	25.1	17.5
Progression Factor		1.00			0.81					1.02	1.01	1.07
Incremental Delay, d2		1.5			1.0					9.3	4.9	0.6
Delay (s)		20.8			17.1					34.7	30.4	19.4
Level of Service		C			B					C	C	B
Approach Delay (s)		20.8			17.1			0.0			30.9	
Approach LOS		C			B			A			C	

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0		150	0		0		0	150	
Storage Lanes	1		2		1	0		0		2	1	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50			50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0			0	0	
Turning Speed (mph)	15		9		9	15		9	9	15	9	9
Right Turn on Red					No				No			Yes
Link Speed (mph)		25		25			25			25		
Link Distance (ft)		262		728			867			807		
Travel Time (s)		7.1		19.9			23.6			22.0		
Volume (vph)	83	441	1134	323	453	105	622	118	128	552	690	30
Confl. Bikes (#/hr)			8		12			25	34			2
Peak Hour Factor	0.89	0.89	0.89	0.95	0.95	0.88	0.88	0.88	0.88	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	4%	4%	2%	2%	2%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	16	16	0	0	0	0	0	0	0
Parking (#/hr)				2	2							
Lane Group Flow (vph)	93	496	1274	340	477	0	1105	0	0	979	404	0
Turn Type	Prot		custom		Perm	Perm					Perm	
Protected Phases	3	2 3	1 2 3	2			4			1		
Permitted Phases			2		2	4					1	
Detector Phases	3	2 3	1 2 3	2	2	4	4			1	1	
Minimum Initial (s)	10.0			10.0	10.0	4.0	4.0			10.0	10.0	
Minimum Split (s)	15.0			23.0	23.0	27.0	27.0			23.0	23.0	
Total Split (s)	15.0	39.0	73.0	24.0	24.0	27.0	27.0	0.0	0.0	34.0	34.0	0.0
Total Split (%)	15.0%	39.0%	73.0%	24.0%	24.0%	27.0%	27.0%	0.0%	0.0%	34.0%	34.0%	0.0%
Yellow Time (s)	3.0			3.0	3.0	3.0	3.0			3.0	3.0	
All-Red Time (s)	2.0			2.0	2.0	2.0	2.0			3.0	3.0	
Lead/Lag	Lead			Lag	Lag	Lag	Lag			Lead	Lead	
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	Max			Max	Max	Max	Max			C-Max	C-Max	
v/c Ratio	0.53	0.84	0.74	0.59	2.10		0.89			1.08	1.03	
Control Delay	50.8	41.6	12.3	36.3	527.4		47.1			87.5	90.0	
Queue Delay	0.0	189.9	4.8	0.0	174.9		1.9			14.5	0.8	
Total Delay	50.8	231.6	17.1	36.3	702.3		49.1			102.0	90.8	
Queue Length 50th (ft)	57	291	351	97	~484		199			~360	~303	
Queue Length 95th (ft)	m86	m#443	473	m132	m#641		#238			#484	#509	
Internal Link Dist (ft)		182		648			787			727		
Turn Bay Length (ft)					150						150	
Base Capacity (vph)	175	587	1731	572	227		1248			909	391	
Starvation Cap Reductn	0	238	384	0	0		0			0	0	
Spillback Cap Reductn	0	0	0	0	58		58			29	1	
Storage Cap Reductn	0	0	0	0	0		0			0	0	
Reduced v/c Ratio	0.53	1.42	0.95	0.59	2.82		0.93			1.11	1.04	

Intersection Summary

Area Type: CBD

Cycle Length: 100

Actuated Cycle Length: 100
Offset: 60 (60%), Referenced to phase 1:NWL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Brookline Avenue & Park Drive

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0			4.0	4.0	
Lane Util. Factor	1.00	1.00	0.88	0.95	1.00		0.86			0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.97		0.98			1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00			1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.85		0.96			0.94	0.85	
Flt Protected	0.95	1.00	1.00	1.00	1.00		0.99			0.97	1.00	
Satd. Flow (prot)	1593	1676	2508	2858	1135		5423			3032	1293	
Flt Permitted	0.95	1.00	1.00	1.00	1.00		0.99			0.97	1.00	
Satd. Flow (perm)	1593	1676	2508	2858	1135		5423			3032	1293	
Volume (vph)	83	441	1134	323	453	105	622	118	128	552	690	30
Peak-hour factor, PHF	0.89	0.89	0.89	0.95	0.95	0.88	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	93	496	1274	340	477	119	707	134	145	600	750	33
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	93	496	1274	340	477	0	1105	0	0	979	401	0
Confl. Bikes (#/hr)			8		12			25	34			2
Heavy Vehicles (%)	2%	2%	2%	4%	4%	2%	2%	2%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	16	16	0	0	0	0	0	0	0
Parking (#/hr)				2	2							
Turn Type	Prot		custom		Perm	Perm					Perm	
Protected Phases	3	2 3	1 2 3	2			4			1		
Permitted Phases			2		2	4					1	
Actuated Green, G (s)	10.0	34.0	68.0	19.0	19.0		22.0			28.0	28.0	
Effective Green, g (s)	11.0	35.0	69.0	20.0	20.0		23.0			30.0	30.0	
Actuated g/C Ratio	0.11	0.35	0.69	0.20	0.20		0.23			0.30	0.30	
Clearance Time (s)	5.0			5.0	5.0		5.0			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0		3.0			3.0	3.0	
Lane Grp Cap (vph)	175	587	1731	572	227		1247			910	388	
v/s Ratio Prot	0.06	c0.30	0.51	0.12						c0.32		
v/s Ratio Perm					c0.42		0.20				0.31	
v/c Ratio	0.53	0.84	0.74	0.59	2.10		0.89			1.08	1.03	
Uniform Delay, d1	42.1	30.0	9.8	36.3	40.0		37.2			35.0	35.0	
Progression Factor	1.00	1.01	1.01	0.91	0.90		1.00			1.00	1.00	
Incremental Delay, d2	7.8	10.1	2.0	2.6	504.2		9.5			52.4	54.2	
Delay (s)	50.0	40.4	11.8	35.9	540.3		46.7			87.4	89.2	
Level of Service	D	D	B	D	F		D			F	F	
Approach Delay (s)		21.4		330.4			46.7			87.9		
Approach LOS		C		F			D			F		

Intersection Summary			
HCM Average Control Delay	93.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	10	10	10	12	12	12	11	11	11
Storage Length (ft)	200		0	50		0	0		0	0		100
Storage Lanes	1		0	1		0	0		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		728			597			287			432	
Travel Time (s)		19.9			16.3			7.8			11.8	
Volume (vph)	115	387	32	42	423	46	96	43	47	103	104	237
Confl. Peds. (#/hr)	389		189	189		389	139		131	131		139
Confl. Bikes (#/hr)			6			9			5			3
Peak Hour Factor	0.90	0.90	0.90	0.79	0.79	0.79	0.89	0.89	0.89	0.86	0.86	0.86
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	1%	1%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		8	8									
Lane Group Flow (vph)	128	466	0	53	593	0	0	209	0	0	241	276
Turn Type	D.P+P			Perm			Perm			Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2			2		2
Detector Phases	3	1 3		1	1		2	2		2	2	3
Minimum Initial (s)	4.0			8.0	8.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0			23.0	23.0		24.0	24.0		24.0	24.0	10.0
Total Split (s)	10.0	67.0	0.0	57.0	57.0	0.0	33.0	33.0	0.0	33.0	33.0	10.0
Total Split (%)	10.0%	67.0%	0.0%	57.0%	57.0%	0.0%	33.0%	33.0%	0.0%	33.0%	33.0%	10.0%
Yellow Time (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.0			1.0	1.0		1.0	1.0		1.0	1.0	0.0
Lead/Lag				Lead	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?				Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None			C-Max	C-Max		None	None		None	None	None
v/c Ratio	0.40	0.55		0.84	0.81			0.93			0.84	0.71
Control Delay	4.3	3.0		104.2	29.8			77.8			59.6	33.4
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Delay	4.3	3.0		104.2	29.8			77.8			59.6	33.4
Queue Length 50th (ft)	4	12		28	306			116			140	111
Queue Length 95th (ft)	m5	m14		#92	373			#247			#242	175
Internal Link Dist (ft)		648			517			207			352	
Turn Bay Length (ft)	200			50								100
Base Capacity (vph)	326	827		63	730			246			316	392
Starvation Cap Reductn	0	0		0	0			0			0	0
Spillback Cap Reductn	0	0		0	0			0			0	0
Storage Cap Reductn	0	0		0	0			0			0	0
Reduced v/c Ratio	0.39	0.56		0.84	0.81			0.85			0.76	0.70

Intersection Summary

Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 24 (24%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Brookline Avenue & Fullerton St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	10	10	12	12	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.96		1.00	0.94			0.90			1.00	0.80
Flpb, ped/bikes	0.96	1.00		1.00	1.00			0.93			0.90	1.00
Frt	1.00	0.99		1.00	0.99			0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.98	1.00
Satd. Flow (prot)	1392	1285		1430	1304			1342			1453	1128
Flt Permitted	0.30	1.00		0.07	1.00			0.54			0.73	1.00
Satd. Flow (perm)	441	1285		108	1304			748			1080	1128
Volume (vph)	115	387	32	42	423	46	96	43	47	103	104	237
Peak-hour factor, PHF	0.90	0.90	0.90	0.79	0.79	0.79	0.89	0.89	0.89	0.86	0.86	0.86
Adj. Flow (vph)	128	430	36	53	535	58	108	48	53	120	121	276
RTOR Reduction (vph)	0	3	0	0	4	0	0	13	0	0	0	26
Lane Group Flow (vph)	128	463	0	53	589	0	0	196	0	0	241	250
Confl. Peds. (#/hr)	389		189	189		389	139		131	131		139
Confl. Bikes (#/hr)			6			9			5			3
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	1%	1%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		8	8									
Turn Type	D.P+P			Perm			Perm			Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2			2		2
Actuated Green, G (s)	62.6	65.6		55.8	55.8			26.4			26.4	33.2
Effective Green, g (s)	61.6	65.6		55.8	55.8			26.4			26.4	32.2
Actuated g/C Ratio	0.62	0.66		0.56	0.56			0.26			0.26	0.32
Clearance Time (s)	3.0			4.0	4.0			4.0			4.0	3.0
Vehicle Extension (s)	3.0			3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	327	843		60	728			197			285	408
v/s Ratio Prot	0.02	0.36			0.45							c0.04
v/s Ratio Perm	0.22			c0.49				c0.26			0.22	0.19
v/c Ratio	0.39	0.55		0.88	0.81			1.00			0.85	0.61
Uniform Delay, d1	10.1	9.3		19.3	17.8			36.8			34.9	28.6
Progression Factor	0.34	0.17		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.4	0.4		86.1	9.5			62.9			20.0	2.7
Delay (s)	3.8	1.9		105.3	27.3			99.7			54.9	31.3
Level of Service	A	A		F	C			F			D	C
Approach Delay (s)		2.3			33.7			99.7			42.3	
Approach LOS		A			C			F			D	

Intersection Summary			
HCM Average Control Delay	33.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	10	10
Turning Speed (mph)	15			9	15	9
Link Speed (mph)		25	25		25	
Link Distance (ft)		597	1171		374	
Travel Time (s)		16.3	31.9		10.2	
Volume (vph)	62	467	390	26	64	101
Confl. Peds. (#/hr)	188			188	30	10
Confl. Bikes (#/hr)				11		
Peak Hour Factor	0.93	0.93	0.84	0.84	0.77	0.77
Heavy Vehicles (%)	6%	6%	4%	4%	13%	13%
Parking (#/hr)	8	8	8	8	8	8
Lane Group Flow (vph)	0	569	495	0	214	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	62	467	390	26	64	101
Peak Hour Factor	0.93	0.93	0.84	0.84	0.77	0.77
Hourly flow rate (vph)	67	502	464	31	83	131
Pedestrians		10	30		188	
Lane Width (ft)		14.0	12.0		10.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		1	2		13	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		597	1171			
pX, platoon unblocked					0.94	
vC, conflicting volume	683				1333	678
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	683				1355	678
tC, single (s)	4.2				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	91				27	65
cM capacity (veh/h)	775				113	374

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	569	495	214
Volume Left	67	0	83
Volume Right	0	31	131
cSH	775	1700	198
Volume to Capacity	0.09	0.29	1.08
Queue Length 95th (ft)	7	0	252
Control Delay (s)	2.3	0.0	138.4
Lane LOS	A		F
Approach Delay (s)	2.3	0.0	138.4
Approach LOS			F

Intersection Summary			
Average Delay	24.2		
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBR	SBR2	NER	NER2	ø2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)		50			175		0	150		25		
Storage Lanes		0			1		0	1		1		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)	50			50	50	50		50	50	50	50	
Trailing Detector (ft)	0			0	0	0		0	0	0	0	
Turning Speed (mph)		9	9	15	15		9	9	9	9	9	
Right Turn on Red			Yes				No	No	No		No	
Link Speed (mph)	25					25						
Link Distance (ft)	99					737						
Travel Time (s)	2.7					20.1						
Volume (vph)	573	37	36	362	954	473	32	472	16	785	26	
Confl. Peds. (#/hr)							354				337	
Confl. Bikes (#/hr)		47	51				95				25	
Peak Hour Factor	0.95	0.95	0.95	0.91	0.91	0.91	0.91	0.89	0.34	0.87	0.87	
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	3%	6%	0%	1%	1%	
Parking (#/hr)						8	8			8	8	
Lane Group Flow (vph)	680	0	0	398	561	1042	0	530	47	902	30	
Turn Type				Prot	Split			custom	custom	custom	custom	
Protected Phases	1			2 3	3 4	3 4		3	1	4		2
Permitted Phases											4	
Detector Phases	1			2 3	3 4	3 4		3	1	4	4	
Minimum Initial (s)	4.0							4.0	4.0	4.0	4.0	8.0
Minimum Split (s)	23.0							23.0	23.0	23.0	23.0	14.0
Total Split (s)	37.0	0.0	0.0	41.0	59.0	59.0	0.0	27.0	37.0	32.0	32.0	14.0
Total Split (%)	33.6%	0.0%	0.0%	37.3%	53.6%	53.6%	0.0%	24.5%	33.6%	29.1%	29.1%	13%
Yellow Time (s)	3.0							3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	4.0							4.0	4.0	4.0	4.0	0.0
Lead/Lag	Lead							Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes							Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max							None	C-Max	None	None	None
v/c Ratio	0.75			0.75	0.78	0.78		1.05	0.11	1.50	0.29	
Control Delay	40.5			42.8	32.0	27.7		96.4	28.8	266.6	41.7	
Queue Delay	0.0			0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	40.5			42.8	32.0	27.7		96.4	28.8	266.6	41.7	
Queue Length 50th (ft)	225			248	345	319		~232	24	~503	17	
Queue Length 95th (ft)	296			368	519	415		#345	19	#611	45	
Internal Link Dist (ft)	19					657						
Turn Bay Length (ft)				175	175			150		25	25	
Base Capacity (vph)	908			530	718	1334		505	444	600	105	
Starvation Cap Reductn	0			0	0	0		0	0	0	0	
Spillback Cap Reductn	0			0	0	0		0	0	0	0	
Storage Cap Reductn	0			0	0	0		0	0	0	0	
Reduced v/c Ratio	0.75			0.75	0.78	0.78		1.05	0.11	1.50	0.29	

Intersection Summary	
Area Type:	CBD
Cycle Length: 110	

Actuated Cycle Length: 110
Offset: 81 (74%), Referenced to phase 1:EBT, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 14: Commonwealth Ave & Deerfield Street

Movement	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBR	SBR2	NER	NER2
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95			1.00	0.91	0.91		0.88	1.00	0.88	1.00
Frpb, ped/bikes	0.99			1.00	1.00	0.98		1.00	1.00	1.00	0.33
Flpb, ped/bikes	1.00			1.00	1.00	1.00		1.00	1.00	1.00	1.00
Frt	0.98			1.00	1.00	0.99		0.85	0.86	0.85	0.85
Flt Protected	1.00			0.95	0.95	0.98		1.00	1.00	1.00	1.00
Satd. Flow (prot)	3013			1577	1435	2669		2413	1479	2356	412
Flt Permitted	1.00			0.95	0.95	0.98		1.00	1.00	1.00	1.00
Satd. Flow (perm)	3013			1577	1435	2669		2413	1479	2356	412
Volume (vph)	573	37	36	362	954	473	32	472	16	785	26
Peak-hour factor, PHF	0.95	0.95	0.95	0.91	0.91	0.91	0.91	0.89	0.34	0.87	0.87
Adj. Flow (vph)	603	39	38	398	1048	520	35	530	47	902	30
RTOR Reduction (vph)	4	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	676	0	0	398	561	1042	0	530	47	902	30
Confl. Peds. (#/hr)							354				337
Confl. Bikes (#/hr)		47	51				95				25
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	3%	6%	0%	1%	1%
Parking (#/hr)						8	8			8	8
Turn Type				Prot	Split			custom	custom	custom	custom
Protected Phases	1			2 3	3 4	3 4		3	1	4	
Permitted Phases											4
Actuated Green, G (s)	30.0			34.0	52.0	52.0		20.0	30.0	25.0	25.0
Effective Green, g (s)	33.0			37.0	55.0	55.0		23.0	33.0	28.0	28.0
Actuated g/C Ratio	0.30			0.34	0.50	0.50		0.21	0.30	0.25	0.25
Clearance Time (s)	7.0							7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0							3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	904			530	718	1335		505	444	600	105
v/s Ratio Prot	c0.22			c0.25	0.39	0.39		c0.22	0.03	c0.38	
v/s Ratio Perm											0.07
v/c Ratio	0.75			0.75	0.78	0.78		1.05	0.11	1.50	0.29
Uniform Delay, d1	34.7			32.4	22.6	22.6		43.5	27.8	41.0	33.0
Progression Factor	1.00			1.00	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	5.6			5.9	5.5	3.0		53.7	0.5	235.1	1.5
Delay (s)	40.4			38.3	28.1	25.6		97.2	28.3	276.1	34.5
Level of Service	D			D	C	C		F	C	F	C
Approach Delay (s)	40.4					28.8					
Approach LOS	D					C					

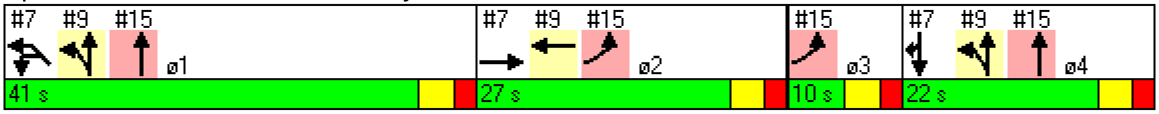
Intersection Summary			
HCM Average Control Delay	92.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	ø1	ø2	ø3	ø4
Lane Configurations										
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900				
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0				
Leading Detector (ft)	50			50						
Trailing Detector (ft)	0			0						
Turning Speed (mph)	15	9	15			9				
Right Turn on Red	No	No				Yes				
Link Speed (mph)	25			25	25					
Link Distance (ft)	185			130	152					
Travel Time (s)	5.0			3.5	4.1					
Volume (vph)	116	0	0	695	0	0				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				
Lane Group Flow (vph)	126	0	0	755	0	0				
Turn Type										
Protected Phases	2 3			1 4			1	2	3	4
Permitted Phases										
Detector Phases	2 3			1 4						
Minimum Initial (s)							5.0	4.0	1.0	4.0
Minimum Split (s)							33.0	27.0	6.0	22.0
Total Split (s)	37.0	0.0	0.0	63.0	0.0	0.0	41.0	27.0	10.0	22.0
Total Split (%)	37.0%	0.0%	0.0%	63.0%	0.0%	0.0%	41%	27%	10%	22%
Yellow Time (s)							3.0	3.0	3.0	3.0
All-Red Time (s)							2.0	2.0	2.0	2.0
Lead/Lag							Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes
Recall Mode							C-Max	None	None	None
v/c Ratio	0.12			0.35						
Control Delay	0.2			9.3						
Queue Delay	0.0			0.5						
Total Delay	0.2			9.8						
Queue Length 50th (ft)	0			75						
Queue Length 95th (ft)	0			90						
Internal Link Dist (ft)	105			50	72					
Turn Bay Length (ft)										
Base Capacity (vph)	1049			2174						
Starvation Cap Reductn	0			888						
Spillback Cap Reductn	0			0						
Storage Cap Reductn	0			0						
Reduced v/c Ratio	0.12			0.59						

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 15 (15%), Referenced to phase 1:NWL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 15: Riverway Ext & Park Drive



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.97			0.95		
Frt	1.00			1.00		
Flt Protected	0.95			1.00		
Satd. Flow (prot)	3433			3539		
Flt Permitted	0.95			1.00		
Satd. Flow (perm)	3433			3539		
Volume (vph)	116	0	0	695	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	126	0	0	755	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	126	0	0	755	0	0
Turn Type						
Protected Phases	2 3			1 4		
Permitted Phases						
Actuated Green, G (s)	29.5			60.5		
Effective Green, g (s)	30.5			61.5		
Actuated g/C Ratio	0.30			0.62		
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	1047			2176		
v/s Ratio Prot	c0.04			c0.21		
v/s Ratio Perm						
v/c Ratio	0.12			0.35		
Uniform Delay, d1	25.1			9.4		
Progression Factor	0.00			0.90		
Incremental Delay, d2	0.1			0.1		
Delay (s)	0.1			8.5		
Level of Service	A			A		
Approach Delay (s)	0.1			8.5	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	7.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

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Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	16	16	16	16
Turning Speed (mph)		9	15		15	9
Link Speed (mph)	25			25	25	
Link Distance (ft)	148			1203	667	
Travel Time (s)	4.0			32.8	18.2	
Volume (vph)	57	586	5	48	342	0
Confl. Peds. (#/hr)		3	3		5	
Peak Hour Factor	0.93	0.93	0.85	0.85	0.87	0.87
Heavy Vehicles (%)	3%	3%	7%	7%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	8	8
Parking (#/hr)			8	8		
Lane Group Flow (vph)	61	630	0	62	393	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	57	586	5	48	342	0
Peak Hour Factor	0.93	0.93	0.85	0.85	0.87	0.87
Hourly flow rate (vph)	61	630	6	56	393	0
Pedestrians	5				3	
Lane Width (ft)	11.0				16.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				1203		
pX, platoon unblocked						
vC, conflicting volume			694		138	64
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			694		138	64
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			99		53	100
cM capacity (veh/h)			875		837	988

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	61	630	62	393
Volume Left	0	0	6	393
Volume Right	0	630	0	0
cSH	1700	1700	875	837
Volume to Capacity	0.04	0.37	0.01	0.47
Queue Length 95th (ft)	0	0	1	64
Control Delay (s)	0.0	0.0	0.9	13.1
Lane LOS			A	B
Approach Delay (s)	0.0		0.9	13.1
Approach LOS				B

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	10	10	11	11	11	11	11	11	11
Storage Length (ft)	0		200		125		0	80		0	0	
Storage Lanes	0		1		1		0	1		0	0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50		50	50		50	50
Trailing Detector (ft)	0	0	0	0	0	0		0	0		0	0
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Right Turn on Red			No				No			No		
Link Speed (mph)		25				25			25			25
Link Distance (ft)		66				253			719			667
Travel Time (s)		1.8				6.9			19.6			18.2
Volume (vph)	26	807	214	5	262	447	22	49	320	94	50	516
Confl. Bikes (#/hr)			82				8			26		
Peak Hour Factor	0.89	0.89	0.89	0.95	0.95	0.95	0.95	0.93	0.93	0.93	0.90	0.90
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	3%	6%	6%	6%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	8
Parking (#/hr)		8	8			8	8		8	8		
Lane Group Flow (vph)	0	936	240	0	281	494	0	53	445	0	0	665
Turn Type	Perm		pm+ov	Perm	D.P+P			D.P+P			Perm	
Protected Phases		3	4		2	2 3		4	1 4			1
Permitted Phases	3		3	2 3	3			1			1	
Detector Phases	3	3	4	2 3	2	2 3		4	1 4		1	1
Minimum Initial (s)	4.0	4.0	4.0		4.0			4.0			10.0	10.0
Minimum Split (s)	29.0	29.0	7.0		9.0			7.0			38.0	38.0
Total Split (s)	35.0	35.0	7.0	51.0	16.0	51.0	0.0	7.0	49.0	0.0	42.0	42.0
Total Split (%)	35.0%	35.0%	7.0%	51.0%	16.0%	51.0%	0.0%	7.0%	49.0%	0.0%	42.0%	42.0%
Yellow Time (s)	3.0	3.0	2.0		2.0			2.0			3.0	3.0
All-Red Time (s)	1.0	1.0	0.0		0.0			0.0			1.0	1.0
Lead/Lag	Lead	Lead	Lag		Lag			Lag			Lead	Lead
Lead-Lag Optimize?												
Recall Mode	None	None	None		None			None			C-Min	C-Min
v/c Ratio		1.13	0.63		1.18	0.37		0.25	0.37			1.07
Control Delay		106.1	33.2		123.9	7.6		15.3	17.5			87.6
Queue Delay		0.0	0.0		0.0	0.0		0.0	0.0			0.0
Total Delay		106.1	33.2		123.9	7.6		15.3	17.5			87.6
Queue Length 50th (ft)		~365	117		~169	90		12	121			~249
Queue Length 95th (ft)		#482	192		m#199	m46		25	171			m#364
Internal Link Dist (ft)		1				173			639			587
Turn Bay Length (ft)			200		125			80				
Base Capacity (vph)		830	382		239	1322		213	1191			622
Starvation Cap Reductn		0	0		0	0		0	0			0
Spillback Cap Reductn		0	0		0	0		0	0			0
Storage Cap Reductn		0	0		0	0		0	0			0
Reduced v/c Ratio		1.13	0.63		1.18	0.37		0.25	0.37			1.07

Intersection Summary	
Area Type:	CBD

Lane Group	SBR
Lane Configurations	
Ideal Flow (vphpl)	1900
Lane Width (ft)	11
Storage Length (ft)	0
Storage Lanes	0
Total Lost Time (s)	4.0
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	9
Right Turn on Red	No
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	32
Confl. Bikes (#/hr)	35
Peak Hour Factor	0.90
Heavy Vehicles (%)	3%
Bus Blockages (#/hr)	8
Parking (#/hr)	1
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phases	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Yellow Time (s)	
All-Red Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 15 (15%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Beacon Street & Park Drive

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	10	11	11	11	11	11	11	11
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0	4.0			4.0
Lane Util. Factor		0.95	1.00		1.00	0.95		1.00	0.95			0.95
Frpb, ped/bikes		1.00	0.94		1.00	1.00		1.00	0.99			1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00			1.00
Frt		1.00	0.85		1.00	0.99		1.00	0.97			0.99
Flt Protected		1.00	1.00		0.95	1.00		0.95	1.00			1.00
Satd. Flow (prot)		2887	1125		1472	2813		1481	2647			2958
Flt Permitted		0.93	1.00		0.13	1.00		0.28	1.00			0.55
Satd. Flow (perm)		2678	1125		200	2813		443	2647			1638
Volume (vph)	26	807	214	5	262	447	22	49	320	94	50	516
Peak-hour factor, PHF	0.89	0.89	0.89	0.95	0.95	0.95	0.95	0.93	0.93	0.93	0.90	0.90
Adj. Flow (vph)	29	907	240	5	276	471	23	53	344	101	56	573
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	936	240	0	281	494	0	53	445	0	0	665
Confl. Bikes (#/hr)			82				8			26		
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	3%	6%	6%	6%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	8
Parking (#/hr)		8	8			8	8		8	8		
Turn Type	Perm		pm+ov	Perm	D.P+P			D.P+P			Perm	
Protected Phases		3	4		2	2 3		4	1 4			1
Permitted Phases	3		3	2 3	3			1			1	
Actuated Green, G (s)		31.0	36.0		45.0	47.0		43.0	45.0			38.0
Effective Green, g (s)		31.0	34.0		43.0	47.0		41.0	45.0			38.0
Actuated g/C Ratio		0.31	0.34		0.43	0.47		0.41	0.45			0.38
Clearance Time (s)		4.0	2.0		2.0			2.0				4.0
Vehicle Extension (s)		2.0	3.0		2.0			3.0				2.0
Lane Grp Cap (vph)		830	428		239	1322		213	1191			622
v/s Ratio Prot			c0.02		c0.14	0.18		0.01	0.17			
v/s Ratio Perm		0.35	0.20		c0.37			0.09				c0.41
v/c Ratio		1.13	0.56		1.18	0.37		0.25	0.37			1.07
Uniform Delay, d1		34.5	26.9		26.5	17.0		18.7	18.2			31.0
Progression Factor		1.00	1.00		0.85	0.42		0.75	0.90			1.00
Incremental Delay, d2		72.6	1.7		99.5	0.0		0.6	0.2			56.0
Delay (s)		107.1	28.6		122.1	7.1		14.7	16.6			87.1
Level of Service		F	C		F	A		B	B			F
Approach Delay (s)		91.1				48.8			16.4			87.1
Approach LOS		F				D			B			F

Intersection Summary			
HCM Average Control Delay	67.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Ideal Flow (vphpl)	1900
Lane Width	11
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Volume (vph)	32
Peak-hour factor, PHF	0.90
Adj. Flow (vph)	36
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Bikes (#/hr)	35
Heavy Vehicles (%)	3%
Bus Blockages (#/hr)	8
Parking (#/hr)	1
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Lane Group	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	11	12	12	9	9
Turning Speed (mph)		9	9	15		15	9
Link Speed (mph)	25				25	25	
Link Distance (ft)	253				234	263	
Travel Time (s)	6.9				6.4	7.2	
Volume (vph)	945	11	5	10	725	5	5
Confl. Peds. (#/hr)		65		65			
Confl. Bikes (#/hr)		112					
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.55	0.55
Heavy Vehicles (%)	2%	2%	2%	3%	3%	9%	9%
Parking (#/hr)	8	8			8		
Lane Group Flow (vph)	1039	0	0	0	770	18	0
Sign Control	Free				Free	Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations							
Sign Control	Free				Free	Stop	
Grade	0%				0%	0%	
Volume (veh/h)	945	11	5	10	725	5	5
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.55	0.55
Hourly flow rate (vph)	1027	12	0	10	755	9	9
Pedestrians						65	
Lane Width (ft)						9.0	
Walking Speed (ft/s)						4.0	
Percent Blockage						4	
Right turn flare (veh)							
Median type						None	
Median storage veh)							
Upstream signal (ft)	253				676		
pX, platoon unblocked			0.00	0.71		0.71	0.71
vC, conflicting volume			0	1104		1497	585
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			0	745		1295	17
tC, single (s)			0.0	4.2		7.0	7.1
tC, 2 stage (s)							
tF (s)			0.0	2.2		3.6	3.4
p0 queue free %			0	98		91	99
cM capacity (veh/h)			0	584		98	709

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	685	354	262	503	18
Volume Left	0	0	10	0	9
Volume Right	0	12	0	0	9
cSH	1700	1700	584	1700	172
Volume to Capacity	0.40	0.21	0.02	0.30	0.11
Queue Length 95th (ft)	0	0	1	0	9
Control Delay (s)	0.0	0.0	0.7	0.0	28.5
Lane LOS			A		D
Approach Delay (s)	0.0		0.2		28.5
Approach LOS					D

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	11	12	12	10	10	10	10	10	10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		234			225			229			172	
Travel Time (s)		6.4			6.1			6.2			4.7	
Volume (vph)	5	875	75	22	709	5	21	16	14	0	16	5
Confl. Peds. (#/hr)	55		69	69		55	38		5	5		38
Confl. Bikes (#/hr)			103			11			1			1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.68	0.68	0.68	0.58	0.58	0.58
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		8	8		8	8	4	4	4	4	4	4
Lane Group Flow (vph)	0	1027	0	0	791	0	0	76	0	0	37	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	875	75	22	709	5	21	16	14	0	16	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.68	0.68	0.68	0.58	0.58	0.58
Hourly flow rate (vph)	5	941	81	24	762	5	31	24	21	0	28	9
Pedestrians		38			5			69			55	
Lane Width (ft)		12.0			12.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		3			0			5			4	
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		487			442							
pX, platoon unblocked				0.73			0.73	0.73	0.73	0.73	0.73	
vC, conflicting volume	823			1091			1550	1931	585	1386	1969	477
vC1, stage 1 conf vol							1061	1061		867	867	
vC2, stage 2 conf vol							489	870		519	1101	
vCu, unblocked vol	823			755			1384	1906	63	1160	1957	477
tC, single (s)	4.1			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			76	81	97	100	76	98
cM capacity (veh/h)	772			587			131	123	689	160	115	503

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	476	551	405	387	75	36
Volume Left	5	0	24	0	31	0
Volume Right	0	81	0	5	21	9
cSH	772	1700	587	1700	164	141
Volume to Capacity	0.01	0.32	0.04	0.23	0.46	0.26
Queue Length 95th (ft)	1	0	3	0	53	24
Control Delay (s)	0.2	0.0	1.2	0.0	44.1	39.3
Lane LOS	A		A		E	E
Approach Delay (s)	0.1		0.6		44.1	39.3
Approach LOS					E	E

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	9	9
Turning Speed (mph)		9	15		15	9
Link Speed (mph)	25			25	25	
Link Distance (ft)	225			217	275	
Travel Time (s)	6.1			5.9	7.5	
Volume (vph)	875	13	11	730	1	6
Confl. Peds. (#/hr)		69	69			
Confl. Bikes (#/hr)		116				
Peak Hour Factor	0.92	0.92	0.96	0.96	1.00	1.00
Heavy Vehicles (%)	2%	2%	3%	3%	0%	0%
Parking (#/hr)	8	8		8		
Lane Group Flow (vph)	965	0	0	771	7	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	875	13	11	730	1	6
Peak Hour Factor	0.92	0.92	0.96	0.96	1.00	1.00
Hourly flow rate (vph)	951	14	11	760	1	6
Pedestrians					69	
Lane Width (ft)					9.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					4	
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)	712			217		
pX, platoon unblocked			0.77		0.77	0.77
vC, conflicting volume			1034		1430	552
vC1, stage 1 conf vol					1027	
vC2, stage 2 conf vol					403	
vCu, unblocked vol			744		1259	117
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	99
cM capacity (veh/h)			627		181	677

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	634	331	265	507	7
Volume Left	0	0	11	0	1
Volume Right	0	14	0	0	6
cSH	1700	1700	627	1700	486
Volume to Capacity	0.37	0.19	0.02	0.30	0.01
Queue Length 95th (ft)	0	0	1	0	1
Control Delay (s)	0.0	0.0	0.7	0.0	12.5
Lane LOS			A		B
Approach Delay (s)	0.0		0.2		12.5
Approach LOS					B

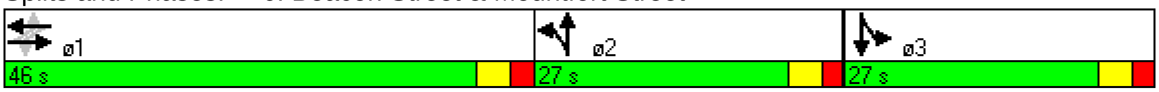
Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	13	13	13	11	11	11
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		217			1360			234			1203	
Travel Time (s)		5.9			37.1			6.4			32.8	
Volume (vph)	5	762	114	151	713	28	17	13	31	50	12	5
Confl. Peds. (#/hr)	54		56	56		54	2		16	16		2
Confl. Bikes (#/hr)			101			11						2
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.63	0.63	0.63	0.56	0.56	0.56
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		8	8		8	8				4	4	4
Lane Group Flow (vph)	0	957	0	162	797	0	0	97	0	0	119	0
Turn Type	Perm			Perm			Split			Split		
Protected Phases		1			1		2	2		3	3	
Permitted Phases	1			1								
Detector Phases	1	1		1	1		2	2		3	3	
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		27.0	27.0		27.0	27.0	
Total Split (s)	46.0	46.0	0.0	46.0	46.0	0.0	27.0	27.0	0.0	27.0	27.0	0.0
Total Split (%)	46.0%	46.0%	0.0%	46.0%	46.0%	0.0%	27.0%	27.0%	0.0%	27.0%	27.0%	0.0%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag				
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
v/c Ratio		0.73		1.01	0.97			0.37			0.52	
Control Delay		17.0		82.3	38.3			23.3			43.9	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		17.0		82.3	38.3			23.3			43.9	
Queue Length 50th (ft)		302		54	261			30			70	
Queue Length 95th (ft)		m314		m#159	#939			38			67	
Internal Link Dist (ft)		137			1280			154			1123	
Turn Bay Length (ft)												
Base Capacity (vph)		1317		161	820			404			322	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.73		1.01	0.97			0.24			0.37	

Intersection Summary	
Area Type:	CBD
Cycle Length: 100	
Actuated Cycle Length: 100	

Offset: 22 (22%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Beacon Street & Mountfort Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	13	13	13	11	11	11
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor		0.95		1.00	1.00			1.00			1.00	
Frpb, ped/bikes		0.97		1.00	0.99			0.98			1.00	
Flpb, ped/bikes		1.00		0.97	1.00			1.00			1.00	
Frt		0.98		1.00	0.99			0.93			0.99	
Flt Protected		1.00		0.95	1.00			0.99			0.96	
Satd. Flow (prot)		2722		1481	1363			1597			1386	
Flt Permitted		0.95		0.24	1.00			0.99			0.96	
Satd. Flow (perm)		2592		373	1363			1597			1386	
Volume (vph)	5	762	114	151	713	28	17	13	31	50	12	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.63	0.63	0.63	0.56	0.56	0.56
Adj. Flow (vph)	5	828	124	162	767	30	27	21	49	89	21	9
RTOR Reduction (vph)	0	8	0	0	1	0	0	42	0	0	3	0
Lane Group Flow (vph)	0	949	0	162	796	0	0	55	0	0	116	0
Confl. Peds. (#/hr)	54		56	56		54	2		16	16		2
Confl. Bikes (#/hr)			101			11						2
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		8	8		8	8				4	4	4
Turn Type	Perm			Perm			Split			Split		
Protected Phases		1			1		2	2		3	3	
Permitted Phases	1			1								
Actuated Green, G (s)		58.1		58.1	58.1			11.8			15.1	
Effective Green, g (s)		59.1		59.1	59.1			12.8			16.1	
Actuated g/C Ratio		0.59		0.59	0.59			0.13			0.16	
Clearance Time (s)		5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		1532		220	806			204			223	
v/s Ratio Prot					c0.58			c0.03			c0.08	
v/s Ratio Perm		0.37		0.43								
v/c Ratio		0.62		0.74	0.99			0.27			0.52	
Uniform Delay, d1		13.2		14.8	20.1			39.4			38.4	
Progression Factor		0.78		0.50	0.54			1.00			1.00	
Incremental Delay, d2		0.2		13.6	23.0			0.7			2.0	
Delay (s)		10.5		21.0	33.8			40.1			40.4	
Level of Service		B		C	C			D			D	
Approach Delay (s)		10.5			31.6			40.1			40.4	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	SBT	SBR	NWL2	NWL	ø3
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	
Lane Width (ft)	10	11	11	12	12	
Storage Length (ft)			100		0	
Storage Lanes			1		3	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)	50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0	
Turning Speed (mph)			9	15	15	
Right Turn on Red			No	No		
Link Speed (mph)	25	25			25	
Link Distance (ft)	410	279			185	
Travel Time (s)	11.2	7.6			5.0	
Volume (vph)	104	633	365	278	540	
Confl. Peds. (#/hr)			65		65	
Confl. Bikes (#/hr)			25			
Peak Hour Factor	0.92	0.95	0.95	0.90	0.90	
Heavy Vehicles (%)	2%	3%	3%	2%	2%	
Lane Group Flow (vph)	113	666	384	309	600	
Turn Type			Prot	Split		
Protected Phases	2	4	4	1	1	3
Permitted Phases						
Detector Phases	2	4	4	1	1	
Minimum Initial (s)	4.0	4.0	4.0	5.0	5.0	1.0
Minimum Split (s)	27.0	22.0	22.0	33.0	33.0	6.0
Total Split (s)	27.0	22.0	22.0	41.0	41.0	10.0
Total Split (%)	27.0%	22.0%	22.0%	41.0%	41.0%	10%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	None
v/c Ratio	0.23	0.88	1.13	0.52	0.52	
Control Delay	34.9	38.3	103.5	21.5	20.0	
Queue Delay	0.0	107.3	0.0	674.0	1.2	
Total Delay	34.9	145.6	103.5	695.5	21.2	
Queue Length 50th (ft)	30	~266	~342	172	172	
Queue Length 95th (ft)	54	m#259	m#346	264	231	
Internal Link Dist (ft)	330	199			105	
Turn Bay Length (ft)			100			
Base Capacity (vph)	684	757	339	589	1143	
Starvation Cap Reductn	0	0	0	154	313	
Spillback Cap Reductn	0	219	0	513	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.17	1.24	1.13	4.07	0.72	

Intersection Summary

Area Type: CBD

Cycle Length: 100

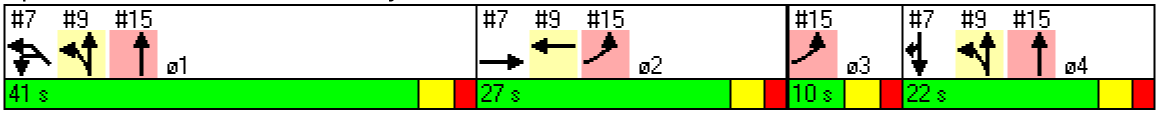
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:NWL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Riverway & Park Drive



Movement	EBT	SBT	SBR	NWL2	NWL
Lane Configurations					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Lane Width	10	11	11	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	1.00	0.97
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00
Flt Protected	1.00	1.00	1.00	0.95	0.95
Satd. Flow (prot)	2973	3049	1364	1593	3090
Flt Permitted	1.00	1.00	1.00	0.95	0.95
Satd. Flow (perm)	2973	3049	1364	1593	3090
Volume (vph)	104	633	365	278	540
Peak-hour factor, PHF	0.92	0.95	0.95	0.90	0.90
Adj. Flow (vph)	113	666	384	309	600
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	113	666	384	309	600
Confl. Peds. (#/hr)			65		65
Confl. Bikes (#/hr)			25		
Heavy Vehicles (%)	2%	3%	3%	2%	2%
Turn Type			Prot	Split	
Protected Phases	2	4	4	1	1
Permitted Phases					
Actuated Green, G (s)	15.6	23.8	23.8	36.0	36.0
Effective Green, g (s)	16.6	24.8	24.8	37.0	37.0
Actuated g/C Ratio	0.17	0.25	0.25	0.37	0.37
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	494	756	338	589	1143
v/s Ratio Prot	c0.04	0.22	c0.28	0.19	c0.19
v/s Ratio Perm					
v/c Ratio	0.23	0.88	1.14	0.52	0.52
Uniform Delay, d1	36.2	36.2	37.6	24.6	24.6
Progression Factor	1.00	0.83	0.83	0.73	0.74
Incremental Delay, d2	0.1	3.0	70.0	3.1	1.6
Delay (s)	36.2	32.9	101.1	21.0	19.8
Level of Service	D	C	F	C	B
Approach Delay (s)	36.2	57.9			20.2
Approach LOS	D	E			C

Intersection Summary			
HCM Average Control Delay	40.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	21.6
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50			
Trailing Detector (ft)		0	0			
Turning Speed (mph)		9	15		15	9
Right Turn on Red		No	No			Yes
Link Speed (mph)	25			25	25	
Link Distance (ft)	360			253	341	
Travel Time (s)	9.8			6.9	9.3	
Volume (vph)	0	861	911	0	0	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.95	0.95
Heavy Vehicles (%)	1%	1%	3%	3%	0%	0%
Lane Group Flow (vph)	0	916	969	0	0	0
Turn Type		custom	Prot			
Protected Phases		2	1			
Permitted Phases						
Detector Phases		2	1			
Minimum Initial (s)		6.0	10.0			
Minimum Split (s)		31.0	51.0			
Total Split (s)	0.0	35.0	65.0	0.0	0.0	0.0
Total Split (%)	0.0%	35.0%	65.0%	0.0%	0.0%	0.0%
Yellow Time (s)		4.0	4.0			
All-Red Time (s)		1.0	1.0			
Lead/Lag		Lag	Lead			
Lead-Lag Optimize?		Yes	Yes			
Recall Mode		None	C-Min			
v/c Ratio		0.68	0.81			
Control Delay		22.5	46.9			
Queue Delay		1.2	16.8			
Total Delay		23.7	63.7			
Queue Length 50th (ft)		272	346			
Queue Length 95th (ft)		364	m399			
Internal Link Dist (ft)	280			173	261	
Turn Bay Length (ft)						
Base Capacity (vph)		1346	1867			
Starvation Cap Reductn		0	903			
Spillback Cap Reductn		219	0			
Storage Cap Reductn		0	0			
Reduced v/c Ratio		0.81	1.01			

Intersection Summary

Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 25 (25%), Referenced to phase 1:WBL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Riverway & Park Dr

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			
Lane Util. Factor		0.88	0.97			
Frt		0.85	1.00			
Flt Protected		1.00	0.95			
Satd. Flow (prot)		2533	3060			
Flt Permitted		1.00	0.95			
Satd. Flow (perm)		2533	3060			
Volume (vph)	0	861	911	0	0	0
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.95	0.95
Adj. Flow (vph)	0	916	969	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	916	969	0	0	0
Heavy Vehicles (%)	1%	1%	3%	3%	0%	0%
Turn Type		custom	Prot			
Protected Phases		2	1			
Permitted Phases						
Actuated Green, G (s)		52.2	37.8			
Effective Green, g (s)		53.2	38.8			
Actuated g/C Ratio		0.53	0.39			
Clearance Time (s)		5.0	5.0			
Vehicle Extension (s)		2.0	2.0			
Lane Grp Cap (vph)		1348	1187			
v/s Ratio Prot		c0.36	c0.32			
v/s Ratio Perm						
v/c Ratio		0.68	0.82			
Uniform Delay, d1		17.2	27.4			
Progression Factor		1.00	1.61			
Incremental Delay, d2		1.1	4.0			
Delay (s)		18.2	48.1			
Level of Service		B	D			
Approach Delay (s)	18.2			48.1	0.0	
Approach LOS	B			D	A	

Intersection Summary			
HCM Average Control Delay	33.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)					50		50	50				
Trailing Detector (ft)					0		0	0				
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			No	No		No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		185			128			405			130	
Travel Time (s)		5.0			3.5			11.0			3.5	
Volume (vph)	0	0	0	0	37	27	782	353	0	0	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.90	0.90	0.90	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	0%	0%	0%
Lane Group Flow (vph)	0	0	0	0	67	0	869	392	0	0	0	0
Turn Type							Split					
Protected Phases					2		1 4	1 4				
Permitted Phases												
Detector Phases					2		1 4	1 4				
Minimum Initial (s)					4.0							
Minimum Split (s)					27.0							
Total Split (s)	0.0	0.0	0.0	0.0	27.0	0.0	63.0	63.0	0.0	0.0	0.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	0.0%	27.0%	0.0%	63.0%	63.0%	0.0%	0.0%	0.0%	0.0%
Yellow Time (s)					3.0							
All-Red Time (s)					2.0							
Lead/Lag					Lag							
Lead-Lag Optimize?					Yes							
Recall Mode					None							
v/c Ratio					0.13		0.43	0.19				
Control Delay					32.9		12.8	10.1				
Queue Delay					0.0		0.6	0.0				
Total Delay					32.9		13.4	10.1				
Queue Length 50th (ft)					17		180	64				
Queue Length 95th (ft)					36		m199	m75				
Internal Link Dist (ft)		105			48			325			50	
Turn Bay Length (ft)												
Base Capacity (vph)					700		2034	2096				
Starvation Cap Reductn					0		724	0				
Spillback Cap Reductn					0		322	0				
Storage Cap Reductn					0		0	0				
Reduced v/c Ratio					0.10		0.66	0.19				

Intersection Summary

Area Type: CBD

Cycle Length: 100

Actuated Cycle Length: 100

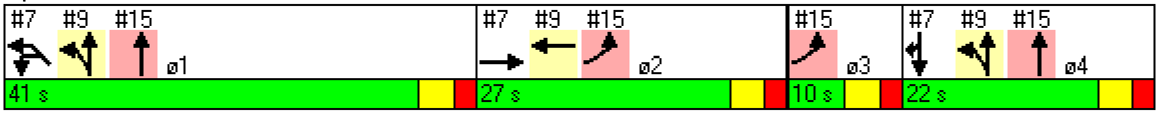
Offset: 0 (0%), Referenced to phase 1:NWL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Park Dr & Park Drive



Lane Group	ø1	ø3	ø4
Lane Configurations			
Ideal Flow (vphpl)			
Total Lost Time (s)			
Leading Detector (ft)			
Trailing Detector (ft)			
Turning Speed (mph)			
Right Turn on Red			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Volume (vph)			
Peak Hour Factor			
Heavy Vehicles (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	1	3	4
Permitted Phases			
Detector Phases			
Minimum Initial (s)	5.0	1.0	4.0
Minimum Split (s)	33.0	6.0	22.0
Total Split (s)	41.0	10.0	22.0
Total Split (%)	41%	10%	22%
Yellow Time (s)	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0
Lead/Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes
Recall Mode	C-Max	None	None
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				
Lane Util. Factor					0.95		0.97	0.95				
Frt					0.94		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3045		3090	3185				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3045		3090	3185				
Volume (vph)	0	0	0	0	37	27	782	353	0	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.90	0.90	0.90	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	39	28	869	392	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	67	0	869	392	0	0	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	0%	0%	0%
Turn Type							Split					
Protected Phases					2		1 4	1 4				
Permitted Phases												
Actuated Green, G (s)					15.6		64.8	64.8				
Effective Green, g (s)					16.6		65.8	65.8				
Actuated g/C Ratio					0.17		0.66	0.66				
Clearance Time (s)					5.0							
Vehicle Extension (s)					2.0							
Lane Grp Cap (vph)					505		2033	2096				
v/s Ratio Prot					c0.02		c0.28	0.12				
v/s Ratio Perm												
v/c Ratio					0.13		0.43	0.19				
Uniform Delay, d1					35.6		8.1	6.7				
Progression Factor					1.00		1.33	1.28				
Incremental Delay, d2					0.0		0.0	0.0				
Delay (s)					35.6		10.8	8.5				
Level of Service					D		B	A				
Approach Delay (s)		0.0			35.6			10.1			0.0	
Approach LOS		A			D			B			A	

Intersection Summary			
HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.6
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50			50					50	50	50
Trailing Detector (ft)		0			0					0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			No			Yes			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		975			262			688			341	
Travel Time (s)		26.6			7.1			18.8			9.3	
Volume (vph)	0	954	63	0	1207	0	0	0	0	842	734	196
Confl. Bikes (#/hr)			9									17
Peak Hour Factor	0.94	0.94	0.94	0.87	0.87	0.87	0.92	0.92	0.92	0.98	0.98	0.98
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	25	25	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1082	0	0	1387	0	0	0	0	518	1090	200
Turn Type										Split		Prot
Protected Phases		3			3					1	1	1
Permitted Phases												
Detector Phases		3			3					1	1	1
Minimum Initial (s)		10.0			10.0					10.0	10.0	10.0
Minimum Split (s)		46.0			46.0					34.0	34.0	34.0
Total Split (s)	0.0	46.0	0.0	0.0	46.0	0.0	0.0	0.0	0.0	54.0	54.0	54.0
Total Split (%)	0.0%	46.0%	0.0%	0.0%	46.0%	0.0%	0.0%	0.0%	0.0%	54.0%	54.0%	54.0%
Yellow Time (s)		3.0			3.0					3.0	3.0	3.0
All-Red Time (s)		2.0			2.0					2.0	2.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		Max			Max					C-Min	C-Min	C-Min
v/c Ratio		0.53			0.91					0.83	0.84	0.32
Control Delay		19.8			22.2					37.0	34.2	22.0
Queue Delay		0.3			27.3					7.8	6.6	0.0
Total Delay		20.1			49.5					44.9	40.8	22.0
Queue Length 50th (ft)		168			194					317	334	83
Queue Length 95th (ft)		236			m#201					m393	368	m97
Internal Link Dist (ft)		895			182			608			261	
Turn Bay Length (ft)												
Base Capacity (vph)		2060			1522					725	1503	713
Starvation Cap Reductn		0			206					167	364	0
Spillback Cap Reductn		393			0					7	14	0
Storage Cap Reductn		0			0					0	0	0
Reduced v/c Ratio		0.65			1.05					0.93	0.96	0.28

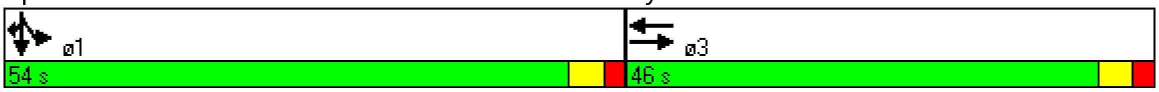
Intersection Summary	
Area Type:	CBD
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 1:SBTL, Start of Green	
Natural Cycle: 90	

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Brookline Avenue & Riverway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0					4.0	4.0	4.0
Lane Util. Factor		0.91			0.95					0.91	0.91	1.00
Frpb, ped/bikes		1.00			1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00			1.00					1.00	1.00	1.00
Frt		0.99			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	0.98	1.00
Satd. Flow (prot)		4214			3124					1449	3004	1425
Flt Permitted		1.00			1.00					0.95	0.98	1.00
Satd. Flow (perm)		4214			3124					1449	3004	1425
Volume (vph)	0	954	63	0	1207	0	0	0	0	842	734	196
Peak-hour factor, PHF	0.94	0.94	0.94	0.87	0.87	0.87	0.92	0.92	0.92	0.98	0.98	0.98
Adj. Flow (vph)	0	1015	67	0	1387	0	0	0	0	859	749	200
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1075	0	0	1387	0	0	0	0	518	1090	200
Confl. Bikes (#/hr)			9									17
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	25	25	0	0	0	0	0	0	0	0	0
Turn Type										Split		Prot
Protected Phases		3			3					1	1	1
Permitted Phases												
Actuated Green, G (s)		47.7			47.7					42.3	42.3	42.3
Effective Green, g (s)		48.7			48.7					43.3	43.3	43.3
Actuated g/C Ratio		0.49			0.49					0.43	0.43	0.43
Clearance Time (s)		5.0			5.0					5.0	5.0	5.0
Vehicle Extension (s)		2.0			2.0					2.0	2.0	2.0
Lane Grp Cap (vph)		2052			1521					627	1301	617
v/s Ratio Prot		0.26			c0.44					0.36	c0.36	0.14
v/s Ratio Perm												
v/c Ratio		0.52			0.91					0.83	0.84	0.32
Uniform Delay, d1		17.7			23.7					25.0	25.2	18.7
Progression Factor		1.00			0.64					1.19	1.21	1.20
Incremental Delay, d2		1.0			3.7					7.9	4.3	0.9
Delay (s)		18.6			18.9					37.7	34.8	23.2
Level of Service		B			B					D	C	C
Approach Delay (s)		18.6			18.9			0.0			34.3	
Approach LOS		B			B			A			C	

Intersection Summary			
HCM Average Control Delay	25.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0		150	0		0		0	150	
Storage Lanes	1		2		1	0		1		2	1	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Turning Speed (mph)	15		9		9	15		9	9	15	9	9
Right Turn on Red					No				No			Yes
Link Speed (mph)		25		25			25			25		
Link Distance (ft)		262		728			1058			807		
Travel Time (s)		7.1		19.9			28.9			22.0		
Volume (vph)	128	583	1098	302	213	123	488	238	110	771	476	15
Confl. Bikes (#/hr)			6		8			3	6			
Peak Hour Factor	0.95	0.95	0.95	0.84	0.84	0.90	0.90	0.90	0.90	0.88	0.88	0.88
Heavy Vehicles (%)	2%	2%	2%	9%	9%	1%	1%	1%	1%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	16	16	0	0	0	0	0	0	0
Parking (#/hr)				2	2							
Lane Group Flow (vph)	135	614	1156	360	254	0	679	386	0	1009	425	0
Turn Type	Prot		pt+ov		Perm	Perm		Perm			Perm	
Protected Phases	3	2 3	1 2 3	2			4			1		
Permitted Phases					2	4		4			1	
Detector Phases	3	2 3	1 2 3	2	2	4	4	4		1	1	
Minimum Initial (s)	4.0			10.0	10.0	4.0	4.0	4.0		10.0	10.0	
Minimum Split (s)	9.0			22.0	22.0	27.0	27.0	27.0		23.0	23.0	
Total Split (s)	15.0	39.0	73.0	24.0	24.0	27.0	27.0	27.0	0.0	34.0	34.0	0.0
Total Split (%)	15.0%	39.0%	73.0%	24.0%	24.0%	27.0%	27.0%	27.0%	0.0%	34.0%	34.0%	0.0%
Yellow Time (s)	3.0			3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0			2.0	2.0	2.0	2.0	2.0		3.0	3.0	
Lead/Lag	Lead			Lag	Lag	Lag	Lag	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	Max			Max	Max	Max	Max	Max		C-Max	C-Max	
v/c Ratio	0.77	1.05	0.67	0.66	1.17		0.65	1.19		1.12	1.11	
Control Delay	66.3	77.8	11.5	47.6	144.4		38.1	148.3		103.5	113.5	
Queue Delay	0.0	194.2	1.3	0.9	0.0		2.2	0.0		10.9	0.0	
Total Delay	66.3	272.1	12.9	48.5	144.4		40.3	148.3		114.4	113.5	
Queue Length 50th (ft)	82	~423	274	118	~192		144	~299		~385	~342	
Queue Length 95th (ft)	m#146	m#625	385	m145	m#266		186	#480		#491	#534	
Internal Link Dist (ft)		182		648			978			727		
Turn Bay Length (ft)					150						150	
Base Capacity (vph)	175	587	1731	545	218		1052	324		899	383	
Starvation Cap Reductn	0	177	351	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	49	0		235	0		20	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.77	1.50	0.84	0.73	1.17		0.83	1.19		1.15	1.11	

Intersection Summary

Area Type: CBD

Cycle Length: 100

Actuated Cycle Length: 100
Offset: 60 (60%), Referenced to phase 1:NWL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Brookline Avenue & Park Drive

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	0.88	0.95	1.00		0.91	1.00		0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.98		1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	0.85		0.98	0.85	
Flt Protected	0.95	1.00	1.00	1.00	1.00		0.99	1.00		0.96	1.00	
Satd. Flow (prot)	1593	1676	2508	2727	1088		4576	1409		2997	1272	
Flt Permitted	0.95	1.00	1.00	1.00	1.00		0.99	1.00		0.96	1.00	
Satd. Flow (perm)	1593	1676	2508	2727	1088		4576	1409		2997	1272	
Volume (vph)	128	583	1098	302	213	123	488	238	110	771	476	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.84	0.84	0.90	0.90	0.90	0.90	0.88	0.88	0.88
Adj. Flow (vph)	135	614	1156	360	254	137	542	264	122	876	541	17
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	135	614	1156	360	254	0	679	386	0	1009	424	0
Confl. Bikes (#/hr)			6		8			3	6			
Heavy Vehicles (%)	2%	2%	2%	9%	9%	1%	1%	1%	1%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	16	16	0	0	0	0	0	0	0
Parking (#/hr)				2	2							
Turn Type	Prot		pt+ov		Perm	Perm		Perm			Perm	
Protected Phases	3	2 3	1 2 3	2			4			1		
Permitted Phases					2	4		4			1	
Actuated Green, G (s)	10.0	34.0	68.0	19.0	19.0		22.0	22.0		28.0	28.0	
Effective Green, g (s)	11.0	35.0	69.0	20.0	20.0		23.0	23.0		30.0	30.0	
Actuated g/C Ratio	0.11	0.35	0.69	0.20	0.20		0.23	0.23		0.30	0.30	
Clearance Time (s)	5.0			5.0	5.0		5.0	5.0		6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	175	587	1731	545	218		1052	324		899	382	
v/s Ratio Prot	0.08	c0.37	0.46	0.13						c0.34		
v/s Ratio Perm					c0.23		0.15	c0.27			0.33	
v/c Ratio	0.77	1.05	0.67	0.66	1.17		0.65	1.19		1.12	1.11	
Uniform Delay, d1	43.3	32.5	8.9	36.9	40.0		34.8	38.5		35.0	35.0	
Progression Factor	1.00	0.99	1.08	1.16	1.15		1.00	1.00		1.00	1.00	
Incremental Delay, d2	21.5	44.9	1.6	4.2	102.8		3.1	112.6		69.6	78.8	
Delay (s)	64.8	77.0	11.2	47.1	148.7		37.9	151.1		104.6	113.8	
Level of Service	E	E	B	D	F		D	F		F	F	
Approach Delay (s)		36.2		89.1			78.9			107.3		
Approach LOS		D		F			E			F		

Intersection Summary			
HCM Average Control Delay	72.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	10	10	10	12	12	12	11	11	11
Storage Length (ft)	200		0	50		0	0		0	0		100
Storage Lanes	1		0	1		0	0		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		728			597			287			432	
Travel Time (s)		19.9			16.3			7.8			11.8	
Volume (vph)	252	478	47	18	335	166	66	105	21	30	44	78
Confl. Peds. (#/hr)	120		75	75		120	103		112	112		103
Confl. Bikes (#/hr)			7			15			3			4
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.85	0.85	0.85	0.75	0.75	0.75
Heavy Vehicles (%)	6%	6%	6%	9%	9%	9%	2%	2%	2%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		8	8									
Lane Group Flow (vph)	307	640	0	22	611	0	0	227	0	0	99	104
Turn Type	D.P+P			Perm			Perm			Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2			2		2
Detector Phases	3	1 3		1	1		2	2		2	2	3
Minimum Initial (s)	4.0			8.0	8.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0			23.0	23.0		24.0	24.0		24.0	24.0	10.0
Total Split (s)	10.0	75.0	0.0	65.0	65.0	0.0	25.0	25.0	0.0	25.0	25.0	10.0
Total Split (%)	10.0%	75.0%	0.0%	65.0%	65.0%	0.0%	25.0%	25.0%	0.0%	25.0%	25.0%	10.0%
Yellow Time (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.0			1.0	1.0		1.0	1.0		1.0	1.0	0.0
Lead/Lag				Lead	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?				Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None			C-Max	C-Max		None	None		None	None	None
v/c Ratio	0.82	0.68		0.37	0.85			0.88			0.43	0.26
Control Delay	20.5	9.1		19.1	18.4			70.9			41.1	7.0
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Delay	20.5	9.1		19.1	18.4			70.9			41.1	7.0
Queue Length 50th (ft)	95	133		2	85			136			55	0
Queue Length 95th (ft)	m83	m123		m3	m97			#241			86	23
Internal Link Dist (ft)		648			517			207			352	
Turn Bay Length (ft)	200			50								100
Base Capacity (vph)	375	942		59	719			276			246	395
Starvation Cap Reductn	0	0		0	0			0			0	0
Spillback Cap Reductn	0	0		0	0			0			0	0
Storage Cap Reductn	0	0		0	0			0			0	0
Reduced v/c Ratio	0.82	0.68		0.37	0.85			0.82			0.40	0.26

Intersection Summary

Area Type: CBD

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 89 (89%), Referenced to phase 1:EBWB, Start of Green

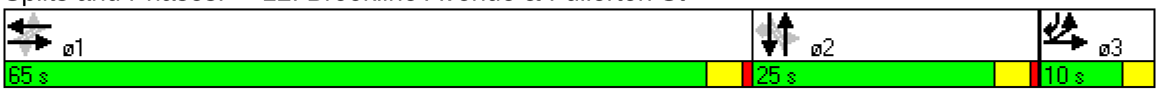
Natural Cycle: 90

Control Type: Actuated-Coordinated

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Brookline Avenue & Fullerton St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	10	10	12	12	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.88			0.96			1.00	0.87
Flpb, ped/bikes	0.98	1.00		1.00	1.00			0.95			0.94	1.00
Frt	1.00	0.99		1.00	0.95			0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	1.00
Satd. Flow (prot)	1398	1296		1391	1151			1486			1477	1183
Flt Permitted	0.32	1.00		0.07	1.00			0.85			0.76	1.00
Satd. Flow (perm)	470	1296		96	1151			1289			1146	1183
Volume (vph)	252	478	47	18	335	166	66	105	21	30	44	78
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.85	0.85	0.85	0.75	0.75	0.75
Adj. Flow (vph)	307	583	57	22	409	202	78	124	25	40	59	104
RTOR Reduction (vph)	0	3	0	0	18	0	0	5	0	0	0	76
Lane Group Flow (vph)	307	637	0	22	593	0	0	222	0	0	99	28
Confl. Peds. (#/hr)	120		75	75		120	103		112	112		103
Confl. Bikes (#/hr)			7			15			3			4
Heavy Vehicles (%)	6%	6%	6%	9%	9%	9%	2%	2%	2%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		8	8									
Turn Type	D.P+P			Perm			Perm			Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2			2		2
Actuated Green, G (s)	69.4	72.4		61.0	61.0			19.6			19.6	28.0
Effective Green, g (s)	68.4	72.4		61.0	61.0			19.6			19.6	27.0
Actuated g/C Ratio	0.68	0.72		0.61	0.61			0.20			0.20	0.27
Clearance Time (s)	3.0			4.0	4.0			4.0			4.0	3.0
Vehicle Extension (s)	3.0			3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	390	938		59	702			253			225	367
v/s Ratio Prot	0.06	c0.49			c0.52							0.01
v/s Ratio Perm	0.48			0.23				c0.17			0.09	0.02
v/c Ratio	0.79	0.68		0.37	0.84			0.88			0.44	0.08
Uniform Delay, d1	10.6	7.5		9.8	15.7			39.0			35.4	27.2
Progression Factor	2.03	1.04		0.46	0.54			1.00			1.00	1.00
Incremental Delay, d2	1.0	0.2		12.4	8.8			27.2			1.4	0.1
Delay (s)	22.5	8.0		16.9	17.3			66.2			36.7	27.3
Level of Service	C	A		B	B			E			D	C
Approach Delay (s)		12.7			17.3			66.2			31.9	
Approach LOS		B			B			E			C	

Intersection Summary			
HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	10	10
Turning Speed (mph)	15			9	15	9
Link Speed (mph)		25	25		25	
Link Distance (ft)		597	1171		374	
Travel Time (s)		16.3	31.9		10.2	
Volume (vph)	119	381	474	40	25	41
Confl. Peds. (#/hr)	113			113	13	22
Confl. Bikes (#/hr)				17		
Peak Hour Factor	0.88	0.88	0.94	0.94	0.83	0.83
Heavy Vehicles (%)	9%	9%	8%	8%	21%	21%
Parking (#/hr)	8	8	8	8	8	8
Lane Group Flow (vph)	0	568	547	0	79	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	119	381	474	40	25	41
Peak Hour Factor	0.88	0.88	0.94	0.94	0.83	0.83
Hourly flow rate (vph)	135	433	504	43	30	49
Pedestrians		22	13		113	
Lane Width (ft)		14.0	12.0		10.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	1		8	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		597	1171			
pX, platoon unblocked					0.94	
vC, conflicting volume	660				1355	661
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	660				1378	661
tC, single (s)	4.2				6.6	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.5
p0 queue free %	84				71	87
cM capacity (veh/h)	826				104	389

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	568	547	80
Volume Left	135	0	30
Volume Right	0	43	49
cSH	826	1700	191
Volume to Capacity	0.16	0.32	0.42
Queue Length 95th (ft)	15	0	47
Control Delay (s)	4.1	0.0	36.7
Lane LOS	A		E
Approach Delay (s)	4.1	0.0	36.7
Approach LOS			E

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBR	SBR2	NER	NER2	ø2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)		50			175		0	150		25		
Storage Lanes		0			1		0	1		1		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)	50			50	50	50		50	50	50	50	
Trailing Detector (ft)	0			0	0	0		0	0	0	0	
Turning Speed (mph)		9	9	15	15		9	9	9	9	9	
Right Turn on Red			Yes				No	No	No		No	
Link Speed (mph)	25					25						
Link Distance (ft)	119					737						
Travel Time (s)	3.2					20.1						
Volume (vph)	457	37	26	430	872	463	16	337	16	782	16	
Confl. Peds. (#/hr)							115				228	
Confl. Bikes (#/hr)		74	80				9					
Peak Hour Factor	0.89	0.89	0.89	0.90	0.90	0.90	0.90	0.94	0.70	0.87	0.87	
Heavy Vehicles (%)	1%	1%	1%	7%	7%	7%	7%	10%	0%	6%	6%	
Parking (#/hr)						8	8			8	8	
Lane Group Flow (vph)	584	0	0	478	514	987	0	359	23	899	18	
Turn Type				Prot	Split			custom	custom	custom	custom	
Protected Phases	1			2 3	3 4	3 4		3	1	4		2
Permitted Phases											4	
Detector Phases	1			2 3	3 4	3 4		3	1	4	4	
Minimum Initial (s)	4.0							4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	25.0							22.0	25.0	25.0	25.0	15.0
Total Split (s)	30.0	0.0	0.0	38.0	55.0	55.0	0.0	23.0	30.0	32.0	32.0	15.0
Total Split (%)	30.0%	0.0%	0.0%	38.0%	55.0%	55.0%	0.0%	23.0%	30.0%	32.0%	32.0%	15%
Yellow Time (s)	3.0							3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	4.0							4.0	4.0	4.0	4.0	0.0
Lead/Lag	Lead							Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes							Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max							None	C-Max	None	None	None
v/c Ratio	0.72			0.93	0.73	0.74		0.81	0.06	1.43	0.12	
Control Delay	39.3			58.3	26.6	23.5		44.4	28.5	233.9	27.7	
Queue Delay	0.0			0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	39.3			58.3	26.6	23.5		44.4	28.5	233.9	27.7	
Queue Length 50th (ft)	177			291	269	259		110	11	~446	11	
Queue Length 95th (ft)	236			#490	419	345		m#200	24	#571	m14	
Internal Link Dist (ft)	39					657						
Turn Bay Length (ft)				175	175			150		25	25	
Base Capacity (vph)	811			516	705	1334		442	385	628	145	
Starvation Cap Reductn	0			0	0	0		0	0	0	0	
Spillback Cap Reductn	0			0	0	0		0	0	0	0	
Storage Cap Reductn	0			0	0	0		0	0	0	0	
Reduced v/c Ratio	0.72			0.93	0.73	0.74		0.81	0.06	1.43	0.12	

Intersection Summary	
Area Type:	CBD
Cycle Length: 100	

Actuated Cycle Length: 100
Offset: 28 (28%), Referenced to phase 1:EBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Commonwealth Ave & Deerfield Street

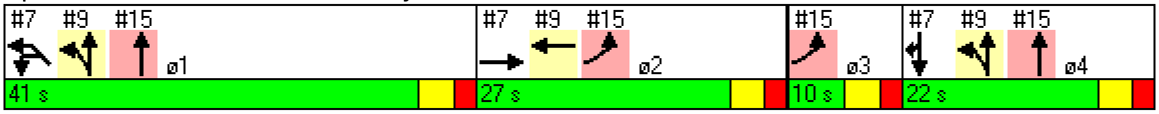
Movement	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBR	SBR2	NER	NER2
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95			1.00	0.91	0.91		0.88	1.00	0.88	1.00
Frpb, ped/bikes	0.98			1.00	1.00	0.99		1.00	1.00	1.00	0.44
Flpb, ped/bikes	1.00			1.00	1.00	1.00		1.00	1.00	1.00	1.00
Frt	0.98			1.00	1.00	1.00		0.85	0.86	0.85	0.85
Flt Protected	1.00			0.95	0.95	0.98		1.00	1.00	1.00	1.00
Satd. Flow (prot)	3103			1518	1382	2618		2326	1479	2244	518
Flt Permitted	1.00			0.95	0.95	0.98		1.00	1.00	1.00	1.00
Satd. Flow (perm)	3103			1518	1382	2618		2326	1479	2244	518
Volume (vph)	457	37	26	430	872	463	16	337	16	782	16
Peak-hour factor, PHF	0.89	0.89	0.89	0.90	0.90	0.90	0.90	0.94	0.70	0.87	0.87
Adj. Flow (vph)	513	42	29	478	969	514	18	359	23	899	18
RTOR Reduction (vph)	4	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	580	0	0	478	514	987	0	359	23	899	18
Confl. Peds. (#/hr)							115				228
Confl. Bikes (#/hr)		74	80				9				
Heavy Vehicles (%)	1%	1%	1%	7%	7%	7%	7%	10%	0%	6%	6%
Parking (#/hr)						8	8			8	8
Turn Type				Prot	Split			custom	custom	custom	custom
Protected Phases	1			2 3	3 4	3 4		3	1	4	
Permitted Phases											4
Actuated Green, G (s)	23.0			31.0	48.0	48.0		16.0	23.0	25.0	25.0
Effective Green, g (s)	26.0			34.0	51.0	51.0		19.0	26.0	28.0	28.0
Actuated g/C Ratio	0.26			0.34	0.51	0.51		0.19	0.26	0.28	0.28
Clearance Time (s)	7.0							7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0							3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	807			516	705	1335		442	385	628	145
v/s Ratio Prot	c0.19			c0.31	0.37	0.38		0.15	0.02	c0.40	
v/s Ratio Perm											0.03
v/c Ratio	0.72			0.93	0.73	0.74		0.81	0.06	1.43	0.12
Uniform Delay, d1	33.7			31.8	19.1	19.3		38.8	27.8	36.0	26.9
Progression Factor	1.00			1.00	1.00	1.00		0.81	1.00	1.17	0.95
Incremental Delay, d2	5.5			22.7	3.8	2.2		8.6	0.3	200.7	0.3
Delay (s)	39.1			54.5	22.9	21.5		39.9	28.1	242.8	25.7
Level of Service	D			D	C	C		D	C	F	C
Approach Delay (s)	39.1					29.8					
Approach LOS	D					C					

Intersection Summary			
HCM Average Control Delay	81.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	ø1	ø2	ø3	ø4
Lane Configurations	↰↰			↑↑						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900				
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0				
Leading Detector (ft)	50			50						
Trailing Detector (ft)	0			0						
Turning Speed (mph)	15	9	15			9				
Right Turn on Red	No	No				Yes				
Link Speed (mph)	25			25	25					
Link Distance (ft)	185			130	152					
Travel Time (s)	5.0			3.5	4.1					
Volume (vph)	104	0	0	380	0	0				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				
Lane Group Flow (vph)	113	0	0	413	0	0				
Turn Type										
Protected Phases	2 3			1 4			1	2	3	4
Permitted Phases										
Detector Phases	2 3			1 4						
Minimum Initial (s)							5.0	4.0	1.0	4.0
Minimum Split (s)							33.0	27.0	6.0	22.0
Total Split (s)	37.0	0.0	0.0	63.0	0.0	0.0	41.0	27.0	10.0	22.0
Total Split (%)	37.0%	0.0%	0.0%	63.0%	0.0%	0.0%	41%	27%	10%	22%
Yellow Time (s)							3.0	3.0	3.0	3.0
All-Red Time (s)							2.0	2.0	2.0	2.0
Lead/Lag							Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes
Recall Mode							C-Max	None	None	None
v/c Ratio	0.13			0.18						
Control Delay	0.3			2.9						
Queue Delay	0.0			0.3						
Total Delay	0.3			3.1						
Queue Length 50th (ft)	0			15						
Queue Length 95th (ft)	0			18						
Internal Link Dist (ft)	105			50	72					
Turn Bay Length (ft)										
Base Capacity (vph)	996			2329						
Starvation Cap Reductn	0			1239						
Spillback Cap Reductn	0			0						
Storage Cap Reductn	0			0						
Reduced v/c Ratio	0.11			0.38						

Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 1:NWL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	

Splits and Phases: 15: Riverway Ext & Park Drive



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.97			0.95		
Frt	1.00			1.00		
Flt Protected	0.95			1.00		
Satd. Flow (prot)	3433			3539		
Flt Permitted	0.95			1.00		
Satd. Flow (perm)	3433			3539		
Volume (vph)	104	0	0	380	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	113	0	0	413	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	113	0	0	413	0	0
Turn Type						
Protected Phases	2 3			1 4		
Permitted Phases						
Actuated Green, G (s)	25.2			64.8		
Effective Green, g (s)	26.2			65.8		
Actuated g/C Ratio	0.26			0.66		
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	899			2329		
v/s Ratio Prot	c0.03			c0.12		
v/s Ratio Perm						
v/c Ratio	0.13			0.18		
Uniform Delay, d1	28.2			6.6		
Progression Factor	0.00			0.35		
Incremental Delay, d2	0.0			0.0		
Delay (s)	0.0			2.3		
Level of Service	A			A		
Approach Delay (s)	0.0			2.3	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	16	16	16	16
Turning Speed (mph)		9	15		15	9
Link Speed (mph)	25			25	25	
Link Distance (ft)	148			1203	667	
Travel Time (s)	4.0			32.8	18.2	
Volume (vph)	47	668	5	91	507	0
Confl. Peds. (#/hr)		3	3		19	
Peak Hour Factor	0.93	0.93	0.85	0.85	0.87	0.87
Heavy Vehicles (%)	3%	3%	7%	7%	5%	5%
Lane Group Flow (vph)	51	718	0	113	583	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	47	668	5	91	507	0
Peak Hour Factor	0.93	0.93	0.85	0.85	0.87	0.87
Hourly flow rate (vph)	51	718	6	107	583	0
Pedestrians	19				3	
Lane Width (ft)	11.0				16.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				1203		
pX, platoon unblocked						
vC, conflicting volume			772		191	54
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			772		191	54
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			99		24	100
cM capacity (veh/h)			818		771	1002

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	51	718	113	583
Volume Left	0	0	6	583
Volume Right	0	718	0	0
cSH	1700	1700	818	771
Volume to Capacity	0.03	0.42	0.01	0.76
Queue Length 95th (ft)	0	0	1	178
Control Delay (s)	0.0	0.0	0.6	22.6
Lane LOS			A	C
Approach Delay (s)	0.0		0.6	22.6
Approach LOS				C

Intersection Summary			
Average Delay	9.0		
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	10	10	11	11	11	11	11	11	11
Storage Length (ft)	0		200		125		0	80		0	0	
Storage Lanes	0		1		1		0	1		0	0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50		50	50		50	50
Trailing Detector (ft)	0	0	0	0	0	0		0	0		0	0
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Right Turn on Red			No				No			No		
Link Speed (mph)		25				25			25			25
Link Distance (ft)		65				253			719			667
Travel Time (s)		1.8				6.9			19.6			18.2
Volume (vph)	32	471	137	5	330	711	34	148	522	139	0	616
Confl. Bikes (#/hr)			22				82			48		
Peak Hour Factor	0.91	0.91	0.91	0.98	0.98	0.98	0.98	0.85	0.85	0.85	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	8
Parking (#/hr)		8	8			8	8		8	8		
Lane Group Flow (vph)	0	553	151	0	342	761	0	174	778	0	0	667
Turn Type	Perm		pm+ov	Perm	D.P+P			D.P+P			Perm	
Protected Phases		3	4		2	2 3		4	1 4			1
Permitted Phases	3		3	2 3	3			1			1	
Detector Phases	3	3	4	2 3	2	2 3		4	1 4		1	1
Minimum Initial (s)	4.0	4.0	2.0		2.0			2.0			10.0	10.0
Minimum Split (s)	29.0	29.0	7.0		15.0			7.0			38.0	38.0
Total Split (s)	29.0	29.0	10.0	50.0	21.0	50.0	0.0	10.0	50.0	0.0	40.0	40.0
Total Split (%)	29.0%	29.0%	10.0%	50.0%	21.0%	50.0%	0.0%	10.0%	50.0%	0.0%	40.0%	40.0%
Yellow Time (s)	3.0	3.0	2.0		2.0			2.0			3.0	3.0
All-Red Time (s)	1.0	1.0	0.0		0.0			0.0			1.0	1.0
Lead/Lag	Lead	Lead	Lag		Lag			Lag			Lead	Lead
Lead-Lag Optimize?												
Recall Mode	None	None	None		None			None			C-Min	C-Min
v/c Ratio		0.91	0.43		0.97	0.59		0.68	0.60			0.59
Control Delay		57.5	29.0		49.2	12.7		28.3	11.2			28.4
Queue Delay		0.0	0.0		0.0	0.0		0.0	0.0			0.0
Total Delay		57.5	29.0		49.2	12.7		28.3	11.2			28.4
Queue Length 50th (ft)		178	71		147	196		34	83			180
Queue Length 95th (ft)		#274	126		m#217	m154		#77	91			m241
Internal Link Dist (ft)		1				173			639			587
Turn Bay Length (ft)			200		125			80				
Base Capacity (vph)		631	355		353	1316		257	1304			1124
Starvation Cap Reductn		0	0		0	0		0	0			0
Spillback Cap Reductn		0	0		0	0		0	0			0
Storage Cap Reductn		0	0		0	0		0	0			0
Reduced v/c Ratio		0.88	0.43		0.97	0.58		0.68	0.60			0.59

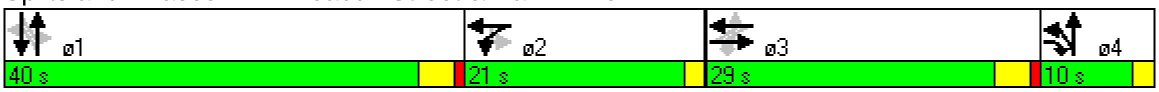
Intersection Summary	
Area Type:	CBD

Lane Group	SBR
Lane Configurations	
Ideal Flow (vphpl)	1900
Lane Width (ft)	11
Storage Length (ft)	0
Storage Lanes	0
Total Lost Time (s)	4.0
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	9
Right Turn on Red	No
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	18
Confl. Bikes (#/hr)	33
Peak Hour Factor	0.95
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	8
Parking (#/hr)	1
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phases	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Yellow Time (s)	
All-Red Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 14 (14%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Beacon Street & Park Drive



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	10	11	11	11	11	11	11	11
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0	4.0			4.0
Lane Util. Factor		0.95	1.00		1.00	0.95		1.00	0.95			0.95
Frpb, ped/bikes		1.00	0.98		1.00	1.00		1.00	0.99			1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00			1.00
Frt		1.00	0.85		1.00	0.99		1.00	0.97			1.00
Flt Protected		1.00	1.00		0.95	1.00		0.95	1.00			1.00
Satd. Flow (prot)		2912	1181		1501	2860		1555	2780			3044
Flt Permitted		0.86	1.00		0.25	1.00		0.28	1.00			1.00
Satd. Flow (perm)		2521	1181		393	2860		452	2780			3044
Volume (vph)	32	471	137	5	330	711	34	148	522	139	0	616
Peak-hour factor, PHF	0.91	0.91	0.91	0.98	0.98	0.98	0.98	0.85	0.85	0.85	0.95	0.95
Adj. Flow (vph)	35	518	151	5	337	726	35	174	614	164	0	648
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	553	151	0	342	761	0	174	778	0	0	667
Confl. Bikes (#/hr)			22				82			48		
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	8
Parking (#/hr)		8	8			8	8		8	8		
Turn Type	Perm		pm+ov	Perm	D.P+P			D.P+P			Perm	
Protected Phases		3	4		2	2 3		4	1 4			1
Permitted Phases	3		3	2 3	3			1			1	
Actuated Green, G (s)		24.1	32.1		43.1	45.1		44.9	46.9			36.9
Effective Green, g (s)		24.1	30.1		41.1	45.1		42.9	46.9			36.9
Actuated g/C Ratio		0.24	0.30		0.41	0.45		0.43	0.47			0.37
Clearance Time (s)		4.0	2.0		2.0			2.0				4.0
Vehicle Extension (s)		2.0	2.0		2.0			2.0				2.0
Lane Grp Cap (vph)		608	403		350	1290		260	1304			1123
v/s Ratio Prot			0.02		c0.17	0.27		0.04	c0.28			0.22
v/s Ratio Perm		0.22	0.11		c0.24			c0.25				
v/c Ratio		0.91	0.37		0.98	0.59		0.67	0.60			0.59
Uniform Delay, d1		36.9	27.5		23.8	20.5		20.8	19.6			25.5
Progression Factor		1.00	1.00		0.75	0.56		0.75	0.46			1.00
Incremental Delay, d2		17.2	0.2		31.2	0.3		4.9	0.5			2.3
Delay (s)		54.1	27.7		49.1	11.7		20.4	9.4			27.7
Level of Service		D	C		D	B		C	A			C
Approach Delay (s)		48.4				23.3			11.4			27.7
Approach LOS		D				C			B			C

Intersection Summary			
HCM Average Control Delay	26.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Ideal Flow (vphpl)	1900
Lane Width	11
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Volume (vph)	18
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	19
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Bikes (#/hr)	33
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	8
Parking (#/hr)	1
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Lane Group	EBU	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	12	12	12	9	9
Turning Speed (mph)	9		9	9	15		15	9
Link Speed (mph)		25				25	25	
Link Distance (ft)		253				234	263	
Travel Time (s)		6.9				6.4	7.2	
Volume (vph)	5	599	5	5	7	1073	5	11
Confl. Peds. (#/hr)			119		119		21	11
Confl. Bikes (#/hr)			27					
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.88	0.88
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%
Parking (#/hr)		8	8			8		
Lane Group Flow (vph)	0	654	0	0	0	1206	18	0
Sign Control		Free				Free	Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations								
Sign Control		Free				Free	Stop	
Grade		0%				0%	0%	
Volume (veh/h)	5	599	5	5	7	1073	5	11
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.88	0.88
Hourly flow rate (vph)	0	644	5	0	8	1192	6	12
Pedestrians		21				11	119	
Lane Width (ft)		12.0				12.0	9.0	
Walking Speed (ft/s)		4.0				4.0	4.0	
Percent Blockage		2				1	7	
Right turn flare (veh)								
Median type							Raised	
Median storage veh)							0	
Upstream signal (ft)		253				676		
pX, platoon unblocked	0.00			0.00	0.85		0.85	0.85
vC, conflicting volume	0			0	768		1398	455
vC1, stage 1 conf vol							766	
vC2, stage 2 conf vol							633	
vCu, unblocked vol	0			0	551		757	182
tC, single (s)	0.0			0.0	4.1		6.8	6.9
tC, 2 stage (s)							5.8	
tF (s)	0.0			0.0	2.2		3.5	3.3
p0 queue free %	0			0	99		98	98
cM capacity (veh/h)	0			0	804		256	652

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	429	220	405	795	18
Volume Left	0	0	8	0	6
Volume Right	0	5	0	0	12
cSH	1700	1700	804	1700	439
Volume to Capacity	0.25	0.13	0.01	0.47	0.04
Queue Length 95th (ft)	0	0	1	0	3
Control Delay (s)	0.0	0.0	0.3	0.0	13.6
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		13.6
Approach LOS					B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	11	12	12	10	10	10	10	10	10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		234			225			229			172	
Travel Time (s)		6.4			6.1			6.2			4.7	
Volume (vph)	5	583	26	14	1036	5	44	16	39	5	5	5
Confl. Peds. (#/hr)	144		115	115		144	89		9	9		89
Confl. Bikes (#/hr)			30			71			10			5
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.84	0.84	0.84	0.69	0.69	0.69
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		8	8		8	8	4	4	4	4	4	4
Lane Group Flow (vph)	0	667	0	0	1199	0	0	117	0	0	21	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	583	26	14	1036	5	44	16	39	5	5	5
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.84	0.84	0.84	0.69	0.69	0.69
Hourly flow rate (vph)	5	634	28	16	1177	6	52	19	46	7	7	7
Pedestrians		89			9			115			144	
Lane Width (ft)		12.0			12.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		7			1			8			10	
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		487			442							
pX, platoon unblocked	0.74			0.87			0.80	0.80	0.87	0.80	0.80	0.74
vC, conflicting volume	1327			777			1494	2132	455	1749	2144	824
vC1, stage 1 conf vol							774	774		1356	1356	
vC2, stage 2 conf vol							720	1359		393	788	
vCu, unblocked vol	1086			602			897	1696	234	1215	1710	404
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			71	81	92	92	93	98
cM capacity (veh/h)	427			788			179	99	616	91	101	369

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	322	345	605	594	118	22
Volume Left	5	0	16	0	52	7
Volume Right	0	28	0	6	46	7
cSH	427	1700	788	1700	210	127
Volume to Capacity	0.01	0.20	0.02	0.35	0.56	0.17
Queue Length 95th (ft)	1	0	2	0	76	15
Control Delay (s)	0.4	0.0	0.5	0.0	41.9	39.1
Lane LOS	A		A		E	E
Approach Delay (s)	0.2		0.3		41.9	39.1
Approach LOS					E	E

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	9	9
Turning Speed (mph)		9	15		15	9
Link Speed (mph)	25			25	25	
Link Distance (ft)	225			217	275	
Travel Time (s)	6.1			5.9	7.5	
Volume (vph)	620	7	1	1037	12	10
Confl. Peds. (#/hr)		131	131		7	10
Confl. Bikes (#/hr)		32				
Peak Hour Factor	0.93	0.93	0.92	0.92	0.50	0.50
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%
Parking (#/hr)	8	8		8		
Lane Group Flow (vph)	675	0	0	1128	44	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	620	7	1	1037	12	10
Peak Hour Factor	0.93	0.93	0.92	0.92	0.50	0.50
Hourly flow rate (vph)	667	8	1	1127	24	20
Pedestrians	7			10	131	
Lane Width (ft)	10.0			11.0	9.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			1	8	
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)	712			217		
pX, platoon unblocked			0.92		0.76	0.92
vC, conflicting volume			805		1374	478
vC1, stage 1 conf vol					801	
vC2, stage 2 conf vol					573	
vCu, unblocked vol			704		864	350
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		90	96
cM capacity (veh/h)			759		232	548

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	444	230	377	751	44
Volume Left	0	0	1	0	24
Volume Right	0	8	0	0	20
cSH	1700	1700	759	1700	314
Volume to Capacity	0.26	0.14	0.00	0.44	0.14
Queue Length 95th (ft)	0	0	0	0	12
Control Delay (s)	0.0	0.0	0.0	0.0	18.3
Lane LOS			A		C
Approach Delay (s)	0.0		0.0		18.3
Approach LOS					C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	13	13	13	11	11	8
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		217			1360			234			1203	
Travel Time (s)		5.9			37.1			6.4			32.8	
Volume (vph)	5	591	34	50	940	27	93	44	151	61	2	5
Confl. Peds. (#/hr)	151		91	91		151	3		29	29		3
Confl. Bikes (#/hr)			24			71			4			1
Peak Hour Factor	0.96	0.96	0.96	0.93	0.93	0.93	0.68	0.68	0.68	0.82	0.82	0.82
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		8	8		8	8				4	4	4
Lane Group Flow (vph)	0	656	0	0	1094	0	0	424	0	0	82	0
Turn Type	Perm			Perm			Split			Split		
Protected Phases		1			1		2	2		3	3	
Permitted Phases	1			1								
Detector Phases	1	1		1	1		2	2		3	3	
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		27.0	27.0		27.0	27.0	
Total Split (s)	46.0	46.0	0.0	46.0	46.0	0.0	27.0	27.0	0.0	27.0	27.0	0.0
Total Split (%)	46.0%	46.0%	0.0%	46.0%	46.0%	0.0%	27.0%	27.0%	0.0%	27.0%	27.0%	0.0%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag				
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
v/c Ratio		0.47			0.85			1.06			0.39	
Control Delay		14.2			31.3			96.0			39.7	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		14.2			31.3			96.0			39.7	
Queue Length 50th (ft)		175			292			~272			47	
Queue Length 95th (ft)		m229			#537			#275			74	
Internal Link Dist (ft)		137			1280			154			1123	
Turn Bay Length (ft)												
Base Capacity (vph)		1402			1288			400			320	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.47			0.85			1.06			0.26	

Intersection Summary	
Area Type:	CBD
Cycle Length: 100	
Actuated Cycle Length: 100	

Offset: 19 (19%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Beacon Street & Mountfort Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	13	13	13	11	11	8
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			0.97			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			1.00			0.93			0.99	
Flt Protected		1.00			1.00			0.98			0.96	
Satd. Flow (prot)		2823			2825			1570			1376	
Flt Permitted		0.95			0.88			0.98			0.96	
Satd. Flow (perm)		2676			2494			1570			1376	
Volume (vph)	5	591	34	50	940	27	93	44	151	61	2	5
Peak-hour factor, PHF	0.96	0.96	0.96	0.93	0.93	0.93	0.68	0.68	0.68	0.82	0.82	0.82
Adj. Flow (vph)	5	616	35	54	1011	29	137	65	222	74	2	6
RTOR Reduction (vph)	0	3	0	0	1	0	0	39	0	0	3	0
Lane Group Flow (vph)	0	653	0	0	1093	0	0	385	0	0	79	0
Confl. Peds. (#/hr)	151		91	91		151	3		29	29		3
Confl. Bikes (#/hr)			24			71			4			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		8	8		8	8				4	4	4
Turn Type	Perm			Perm			Split			Split		
Protected Phases		1			1		2	2		3	3	
Permitted Phases	1			1								
Actuated Green, G (s)		50.3			50.3			22.0			12.7	
Effective Green, g (s)		51.3			51.3			23.0			13.7	
Actuated g/C Ratio		0.51			0.51			0.23			0.14	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1373			1279			361			189	
v/s Ratio Prot								c0.25			c0.06	
v/s Ratio Perm		0.24			c0.44							
v/c Ratio		0.48			0.85			1.07			0.42	
Uniform Delay, d1		15.7			21.1			38.5			39.5	
Progression Factor		0.77			1.00			1.00			1.00	
Incremental Delay, d2		0.8			7.4			65.9			1.5	
Delay (s)		12.9			28.5			104.4			41.0	
Level of Service		B			C			F			D	
Approach Delay (s)		12.9			28.5			104.4			41.0	
Approach LOS		B			C			F			D	

Intersection Summary			
HCM Average Control Delay	38.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		

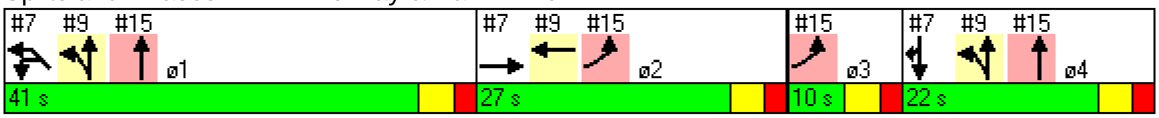
c Critical Lane Group

Lane Group	EBT	SBT	SBR	NWL2	NWL	ø3
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	
Storage Length (ft)			100		0	
Storage Lanes			1		3	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)	50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0	
Turning Speed (mph)			9	15	15	
Right Turn on Red			No	No		
Link Speed (mph)	25	25			25	
Link Distance (ft)	410	279			185	
Travel Time (s)	11.2	7.6			5.0	
Volume (vph)	122	494	567	462	1055	
Confl. Peds. (#/hr)			65		65	
Confl. Bikes (#/hr)			11			
Peak Hour Factor	0.92	0.89	0.89	0.97	0.97	
Heavy Vehicles (%)	2%	2%	2%	1%	1%	
Lane Group Flow (vph)	133	555	637	476	1088	
Turn Type			Prot	Split		
Protected Phases	2	4	4	1	1	3
Permitted Phases						
Detector Phases	2	4	4	1	1	
Minimum Initial (s)	4.0	4.0	4.0	5.0	5.0	1.0
Minimum Split (s)	27.0	22.0	22.0	33.0	33.0	6.0
Total Split (s)	27.0	22.0	22.0	41.0	41.0	10.0
Total Split (%)	27.0%	22.0%	22.0%	41.0%	41.0%	10%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	None
v/c Ratio	0.20	0.87	2.23	0.80	0.94	
Control Delay	32.8	52.3	584.7	33.3	40.4	
Queue Delay	0.0	78.8	0.0	210.7	95.3	
Total Delay	32.8	131.2	584.7	244.0	135.7	
Queue Length 50th (ft)	35	181	~688	310	372	
Queue Length 95th (ft)	62	m#266	m#847	#434	#480	
Internal Link Dist (ft)	330	199			105	
Turn Bay Length (ft)			100			
Base Capacity (vph)	733	638	286	595	1154	
Starvation Cap Reductn	0	0	0	174	261	
Spillback Cap Reductn	0	164	0	270	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.18	1.17	2.23	1.46	1.22	

Intersection Summary	
Area Type:	CBD
Cycle Length: 100	
Actuated Cycle Length: 100	

Offset: 15 (15%), Referenced to phase 1:NWL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Riverway & Park Drive



Movement	EBT	SBT	SBR	NWL2	NWL
Lane Configurations					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	1.00	0.97
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00
Flt Protected	1.00	1.00	1.00	0.95	0.95
Satd. Flow (prot)	3185	3185	1425	1608	3120
Flt Permitted	1.00	1.00	1.00	0.95	0.95
Satd. Flow (perm)	3185	3185	1425	1608	3120
Volume (vph)	122	494	567	462	1055
Peak-hour factor, PHF	0.92	0.89	0.89	0.97	0.97
Adj. Flow (vph)	133	555	637	476	1088
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	133	555	637	476	1088
Confl. Peds. (#/hr)			65		65
Confl. Bikes (#/hr)			11		
Heavy Vehicles (%)	2%	2%	2%	1%	1%
Turn Type			Prot	Split	
Protected Phases	2	4	4	1	1
Permitted Phases					
Actuated Green, G (s)	19.7	19.0	19.0	36.1	36.1
Effective Green, g (s)	20.7	20.0	20.0	37.1	37.1
Actuated g/C Ratio	0.21	0.20	0.20	0.37	0.37
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	2.0	2.0
Lane Grp Cap (vph)	659	637	285	597	1158
v/s Ratio Prot	c0.04	0.17	c0.45	0.30	c0.35
v/s Ratio Perm					
v/c Ratio	0.20	0.87	2.24	0.80	0.94
Uniform Delay, d1	32.8	38.8	40.0	28.1	30.4
Progression Factor	1.00	1.00	1.03	0.86	0.88
Incremental Delay, d2	0.2	9.9	564.4	7.8	12.0
Delay (s)	33.0	48.6	605.6	31.9	38.9
Level of Service	C	D	F	C	D
Approach Delay (s)	33.0	346.3			36.8
Approach LOS	C	F			D

Intersection Summary			
HCM Average Control Delay	164.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50			
Trailing Detector (ft)		0	0			
Turning Speed (mph)		9	15		15	9
Right Turn on Red		No	No			Yes
Link Speed (mph)	25			25	25	
Link Distance (ft)	360			253	341	
Travel Time (s)	9.8			6.9	9.3	
Volume (vph)	0	756	955	0	0	0
Peak Hour Factor	0.96	0.96	0.93	0.93	0.95	0.95
Heavy Vehicles (%)	2%	2%	0%	0%	0%	0%
Lane Group Flow (vph)	0	788	1027	0	0	0
Turn Type		custom	Prot			
Protected Phases		2	1			
Permitted Phases						
Detector Phases		2	1			
Minimum Initial (s)		4.0	4.0			
Minimum Split (s)		31.0	51.0			
Total Split (s)	0.0	35.0	65.0	0.0	0.0	0.0
Total Split (%)	0.0%	35.0%	65.0%	0.0%	0.0%	0.0%
Yellow Time (s)		4.0	4.0			
All-Red Time (s)		1.0	1.0			
Lead/Lag		Lag	Lead			
Lead-Lag Optimize?		Yes	Yes			
Recall Mode		None	C-Min			
v/c Ratio		0.71	0.68			
Control Delay		26.7	17.2			
Queue Delay		6.8	2.0			
Total Delay		33.4	19.2			
Queue Length 50th (ft)		217	360			
Queue Length 95th (ft)		294	m407			
Internal Link Dist (ft)	280			173	261	
Turn Bay Length (ft)						
Base Capacity (vph)		1109	1923			
Starvation Cap Reductn		0	703			
Spillback Cap Reductn		272	0			
Storage Cap Reductn		0	0			
Reduced v/c Ratio		0.94	0.84			

Intersection Summary

Area Type: CBD

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 25 (25%), Referenced to phase 1:WBL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Riverway & Park Dr

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			
Lane Util. Factor		0.88	0.97			
Frt		0.85	1.00			
Flt Protected		1.00	0.95			
Satd. Flow (prot)		2508	3152			
Flt Permitted		1.00	0.95			
Satd. Flow (perm)		2508	3152			
Volume (vph)	0	756	955	0	0	0
Peak-hour factor, PHF	0.96	0.96	0.93	0.93	0.95	0.95
Adj. Flow (vph)	0	788	1027	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	788	1027	0	0	0
Heavy Vehicles (%)	2%	2%	0%	0%	0%	0%
Turn Type		custom	Prot			
Protected Phases		2	1			
Permitted Phases						
Actuated Green, G (s)		43.2	46.8			
Effective Green, g (s)		44.2	47.8			
Actuated g/C Ratio		0.44	0.48			
Clearance Time (s)		5.0	5.0			
Vehicle Extension (s)		2.0	2.0			
Lane Grp Cap (vph)		1109	1507			
v/s Ratio Prot		c0.31	c0.33			
v/s Ratio Perm						
v/c Ratio		0.71	0.68			
Uniform Delay, d1		22.7	20.2			
Progression Factor		1.00	0.76			
Incremental Delay, d2		1.8	1.3			
Delay (s)		24.5	16.6			
Level of Service		C	B			
Approach Delay (s)	24.5			16.6	0.0	
Approach LOS	C			B	A	

Intersection Summary			
HCM Average Control Delay	20.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		

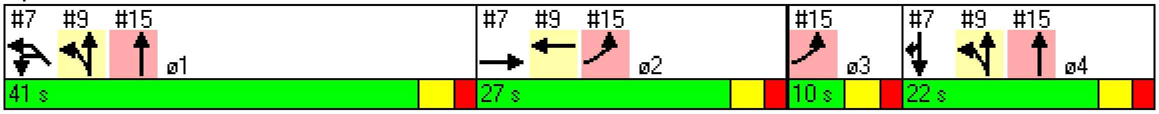
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)					50		50	50				
Trailing Detector (ft)					0		0	0				
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			No	No		No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		185			128			405			130	
Travel Time (s)		5.0			3.5			11.0			3.5	
Volume (vph)	0	0	0	0	227	150	1290	547	0	0	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.97	0.97	0.97	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	1%	0%	0%	0%
Lane Group Flow (vph)	0	0	0	0	397	0	1330	564	0	0	0	0
Turn Type							Split					
Protected Phases					2		1 4	1 4				
Permitted Phases												
Detector Phases					2		1 4	1 4				
Minimum Initial (s)					4.0							
Minimum Split (s)					27.0							
Total Split (s)	0.0	0.0	0.0	0.0	27.0	0.0	63.0	63.0	0.0	0.0	0.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	0.0%	27.0%	0.0%	63.0%	63.0%	0.0%	0.0%	0.0%	0.0%
Yellow Time (s)					3.0							
All-Red Time (s)					2.0							
Lead/Lag					Lag							
Lead-Lag Optimize?					Yes							
Recall Mode					None							
v/c Ratio					0.63		0.70	0.29				
Control Delay					40.5		18.4	12.3				
Queue Delay					3.9		20.3	0.0				
Total Delay					44.4		38.7	12.3				
Queue Length 50th (ft)					118		353	106				
Queue Length 95th (ft)					168		m297	m96				
Internal Link Dist (ft)		105			48			325			50	
Turn Bay Length (ft)												
Base Capacity (vph)					702		1905	1964				
Starvation Cap Reductn					0		609	0				
Spillback Cap Reductn					219		426	19				
Storage Cap Reductn					0		0	0				
Reduced v/c Ratio					0.82		1.03	0.29				

Intersection Summary

Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 15 (15%), Referenced to phase 1:NWL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Park Dr & Park Drive



Lane Group	ø1	ø3	ø4
Lane Configurations			
Ideal Flow (vphpl)			
Total Lost Time (s)			
Leading Detector (ft)			
Trailing Detector (ft)			
Turning Speed (mph)			
Right Turn on Red			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Volume (vph)			
Peak Hour Factor			
Heavy Vehicles (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	1	3	4
Permitted Phases			
Detector Phases			
Minimum Initial (s)	5.0	1.0	4.0
Minimum Split (s)	33.0	6.0	22.0
Total Split (s)	41.0	10.0	22.0
Total Split (%)	41%	10%	22%
Yellow Time (s)	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0
Lead/Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes
Recall Mode	C-Max	None	None
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				
Lane Util. Factor					0.95		0.97	0.95				
Frt					0.94		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3055		3120	3217				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3055		3120	3217				
Volume (vph)	0	0	0	0	227	150	1290	547	0	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	239	158	1330	564	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	397	0	1330	564	0	0	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	1%	0%	0%	0%
Turn Type							Split					
Protected Phases					2		1 4	1 4				
Permitted Phases												
Actuated Green, G (s)					19.7		60.1	60.1				
Effective Green, g (s)					20.7		61.1	61.1				
Actuated g/C Ratio					0.21		0.61	0.61				
Clearance Time (s)					5.0							
Vehicle Extension (s)					3.0							
Lane Grp Cap (vph)					632		1906	1966				
v/s Ratio Prot					c0.13		c0.43	0.18				
v/s Ratio Perm												
v/c Ratio					0.63		0.70	0.29				
Uniform Delay, d1					36.1		13.2	9.2				
Progression Factor					1.00		1.30	1.28				
Incremental Delay, d2					2.0		0.1	0.0				
Delay (s)					38.1		17.2	11.7				
Level of Service					D		B	B				
Approach Delay (s)		0.0			38.1			15.6			0.0	
Approach LOS		A			D			B			A	

Intersection Summary			
HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

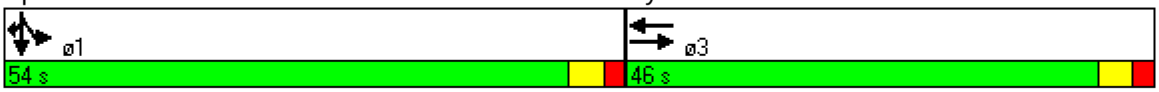
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50			50					50	50	50
Trailing Detector (ft)		0			0					0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			No			Yes			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		975			262			688			341	
Travel Time (s)		26.6			7.1			18.8			9.3	
Volume (vph)	0	1011	95	0	980	0	0	0	0	641	937	134
Confl. Bikes (#/hr)			7			6						2
Peak Hour Factor	0.80	0.80	0.80	0.94	0.94	0.94	0.92	0.92	0.92	0.94	0.94	0.94
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	1%	1%	1%
Lane Group Flow (vph)	0	1383	0	0	1043	0	0	0	0	541	1138	143
Turn Type										Split		Prot
Protected Phases		3			3					1	1	1
Permitted Phases												
Detector Phases		3			3					1	1	1
Minimum Initial (s)		10.0			10.0					10.0	10.0	10.0
Minimum Split (s)		46.0			46.0					34.0	34.0	34.0
Total Split (s)	0.0	46.0	0.0	0.0	46.0	0.0	0.0	0.0	0.0	54.0	54.0	54.0
Total Split (%)	0.0%	46.0%	0.0%	0.0%	46.0%	0.0%	0.0%	0.0%	0.0%	54.0%	54.0%	54.0%
Yellow Time (s)		3.0			3.0					3.0	3.0	3.0
All-Red Time (s)		2.0			2.0					2.0	2.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		Max			Max					C-Min	C-Min	C-Min
v/c Ratio		0.65			0.69					0.84	0.85	0.23
Control Delay		22.1			18.6					34.6	30.1	18.3
Queue Delay		0.5			5.6					9.2	8.3	0.0
Total Delay		22.6			24.2					43.8	38.4	18.3
Queue Length 50th (ft)		237			166					321	339	59
Queue Length 95th (ft)		266			m177					413	387	m77
Internal Link Dist (ft)		895			182			608			261	
Turn Bay Length (ft)												
Base Capacity (vph)		2141			1520					732	1532	720
Starvation Cap Reductn		0			413					160	362	0
Spillback Cap Reductn		334			0					7	15	0
Storage Cap Reductn		0			0					0	0	0
Reduced v/c Ratio		0.77			0.94					0.95	0.97	0.20

Intersection Summary	
Area Type:	CBD
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 1:SBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Brookline Avenue & Riverway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0					4.0	4.0	4.0
Lane Util. Factor		0.91			0.95					0.91	0.91	1.00
Frpb, ped/bikes		1.00			1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00			1.00					1.00	1.00	1.00
Frt		0.99			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	0.99	1.00
Satd. Flow (prot)		4425			3154					1464	3062	1439
Flt Permitted		1.00			1.00					0.95	0.99	1.00
Satd. Flow (perm)		4425			3154					1464	3062	1439
Volume (vph)	0	1011	95	0	980	0	0	0	0	641	937	134
Peak-hour factor, PHF	0.80	0.80	0.80	0.94	0.94	0.94	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	0	1264	119	0	1043	0	0	0	0	682	997	143
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1373	0	0	1043	0	0	0	0	541	1138	143
Confl. Bikes (#/hr)			7			6						2
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	1%	1%	1%
Turn Type										Split		Prot
Protected Phases		3			3					1	1	1
Permitted Phases												
Actuated Green, G (s)		47.2			47.2					42.8	42.8	42.8
Effective Green, g (s)		48.2			48.2					43.8	43.8	43.8
Actuated g/C Ratio		0.48			0.48					0.44	0.44	0.44
Clearance Time (s)		5.0			5.0					5.0	5.0	5.0
Vehicle Extension (s)		2.0			2.0					2.0	2.0	2.0
Lane Grp Cap (vph)		2133			1520					641	1341	630
v/s Ratio Prot		0.31			c0.33					0.37	c0.37	0.10
v/s Ratio Perm												
v/c Ratio		0.64			0.69					0.84	0.85	0.23
Uniform Delay, d1		19.5			20.0					25.1	25.1	17.5
Progression Factor		1.00			0.81					1.02	1.02	1.08
Incremental Delay, d2		1.5			1.1					9.5	5.0	0.6
Delay (s)		21.0			17.2					35.1	30.6	19.6
Level of Service		C			B					D	C	B
Approach Delay (s)		21.0			17.2			0.0			31.1	
Approach LOS		C			B			A			C	

Intersection Summary			
HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0		150	0		0		0	150	
Storage Lanes	1		2		1	0		0		2	1	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50			50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0			0	0	
Turning Speed (mph)	15		9		9	15		9	9	15	9	9
Right Turn on Red					No				No			Yes
Link Speed (mph)		25		25			25			25		
Link Distance (ft)		262		728			867			807		
Travel Time (s)		7.1		19.9			23.6			22.0		
Volume (vph)	84	442	1134	323	472	105	623	121	128	552	690	30
Confl. Bikes (#/hr)			8		12			25	34			2
Peak Hour Factor	0.89	0.89	0.89	0.95	0.95	0.88	0.88	0.88	0.88	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	4%	4%	2%	2%	2%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	16	16	0	0	0	0	0	0	0
Parking (#/hr)				2	2							
Lane Group Flow (vph)	94	497	1274	340	497	0	1110	0	0	979	404	0
Turn Type	Prot		custom		Perm	Perm					Perm	
Protected Phases	3	2 3	1 2 3	2			4			1		
Permitted Phases			2		2	4					1	
Detector Phases	3	2 3	1 2 3	2	2	4	4			1	1	
Minimum Initial (s)	10.0			10.0	10.0	4.0	4.0			10.0	10.0	
Minimum Split (s)	15.0			23.0	23.0	27.0	27.0			23.0	23.0	
Total Split (s)	15.0	39.0	73.0	24.0	24.0	27.0	27.0	0.0	0.0	34.0	34.0	0.0
Total Split (%)	15.0%	39.0%	73.0%	24.0%	24.0%	27.0%	27.0%	0.0%	0.0%	34.0%	34.0%	0.0%
Yellow Time (s)	3.0			3.0	3.0	3.0	3.0			3.0	3.0	
All-Red Time (s)	2.0			2.0	2.0	2.0	2.0			3.0	3.0	
Lead/Lag	Lead			Lag	Lag	Lag	Lag			Lead	Lead	
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	Max			Max	Max	Max	Max			C-Max	C-Max	
v/c Ratio	0.54	0.85	0.74	0.59	2.19		0.89			1.08	1.03	
Control Delay	51.0	41.8	12.3	36.0	565.6		47.5			87.5	90.0	
Queue Delay	0.0	193.0	5.0	0.0	135.4		2.1			14.5	1.7	
Total Delay	51.0	234.8	17.4	36.0	701.0		49.6			102.0	91.7	
Queue Length 50th (ft)	58	293	353	97	~511		200			~360	~303	
Queue Length 95th (ft)	m87	m#442	475	m130	m#657		#241			#484	#509	
Internal Link Dist (ft)		182		648			787			727		
Turn Bay Length (ft)					150						150	
Base Capacity (vph)	175	587	1731	572	227		1247			909	391	
Starvation Cap Reductn	0	239	388	0	0		0			0	0	
Spillback Cap Reductn	0	0	0	0	62		58			29	2	
Storage Cap Reductn	0	0	0	0	0		0			0	0	
Reduced v/c Ratio	0.54	1.43	0.95	0.59	3.01		0.93			1.11	1.04	

Intersection Summary	
Area Type:	CBD
Cycle Length: 100	

Actuated Cycle Length: 100
Offset: 60 (60%), Referenced to phase 1:NWL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Brookline Avenue & Park Drive

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0			4.0	4.0	
Lane Util. Factor	1.00	1.00	0.88	0.95	1.00		0.86			0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.97		0.98			1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00			1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.85		0.96			0.94	0.85	
Flt Protected	0.95	1.00	1.00	1.00	1.00		0.99			0.97	1.00	
Satd. Flow (prot)	1593	1676	2508	2858	1135		5420			3032	1293	
Flt Permitted	0.95	1.00	1.00	1.00	1.00		0.99			0.97	1.00	
Satd. Flow (perm)	1593	1676	2508	2858	1135		5420			3032	1293	
Volume (vph)	84	442	1134	323	472	105	623	121	128	552	690	30
Peak-hour factor, PHF	0.89	0.89	0.89	0.95	0.95	0.88	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	94	497	1274	340	497	119	708	138	145	600	750	33
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	94	497	1274	340	497	0	1110	0	0	979	401	0
Confl. Bikes (#/hr)			8		12			25	34			2
Heavy Vehicles (%)	2%	2%	2%	4%	4%	2%	2%	2%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	16	16	0	0	0	0	0	0	0
Parking (#/hr)				2	2							
Turn Type	Prot		custom		Perm	Perm					Perm	
Protected Phases	3	2 3	1 2 3	2			4			1		
Permitted Phases			2		2	4					1	
Actuated Green, G (s)	10.0	34.0	68.0	19.0	19.0		22.0			28.0	28.0	
Effective Green, g (s)	11.0	35.0	69.0	20.0	20.0		23.0			30.0	30.0	
Actuated g/C Ratio	0.11	0.35	0.69	0.20	0.20		0.23			0.30	0.30	
Clearance Time (s)	5.0			5.0	5.0		5.0			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0		3.0			3.0	3.0	
Lane Grp Cap (vph)	175	587	1731	572	227		1247			910	388	
v/s Ratio Prot	0.06	c0.30	0.51	0.12						c0.32		
v/s Ratio Perm					c0.44		0.20				0.31	
v/c Ratio	0.54	0.85	0.74	0.59	2.19		0.89			1.08	1.03	
Uniform Delay, d1	42.1	30.0	9.8	36.3	40.0		37.3			35.0	35.0	
Progression Factor	1.01	1.02	1.01	0.91	0.90		1.00			1.00	1.00	
Incremental Delay, d2	7.9	10.1	1.9	2.5	543.2		9.8			52.4	54.2	
Delay (s)	50.2	40.6	11.9	35.6	579.1		47.0			87.4	89.2	
Level of Service	D	D	B	D	F		D			F	F	
Approach Delay (s)		21.4		358.3			47.0			87.9		
Approach LOS		C		F			D			F		

Intersection Summary			
HCM Average Control Delay	98.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	10	10	10	12	12	12	11	11	11
Storage Length (ft)	200		0	50		0	0		0	0		100
Storage Lanes	1		0	1		0	0		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		728			597			287			432	
Travel Time (s)		19.9			16.3			7.8			11.8	
Volume (vph)	115	392	32	42	442	46	96	43	47	103	104	237
Confl. Peds. (#/hr)	389		189	189		389	139		131	131		139
Confl. Bikes (#/hr)			6			9			5			3
Peak Hour Factor	0.90	0.90	0.90	0.79	0.79	0.79	0.89	0.89	0.89	0.86	0.86	0.86
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	1%	1%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		8	8									
Lane Group Flow (vph)	128	472	0	53	617	0	0	209	0	0	241	276
Turn Type	D.P+P			Perm			Perm			Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2			2		2
Detector Phases	3	1 3		1	1		2	2		2	2	3
Minimum Initial (s)	4.0			8.0	8.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0			23.0	23.0		24.0	24.0		24.0	24.0	10.0
Total Split (s)	10.0	67.0	0.0	57.0	57.0	0.0	33.0	33.0	0.0	33.0	33.0	10.0
Total Split (%)	10.0%	67.0%	0.0%	57.0%	57.0%	0.0%	33.0%	33.0%	0.0%	33.0%	33.0%	10.0%
Yellow Time (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.0			1.0	1.0		1.0	1.0		1.0	1.0	0.0
Lead/Lag				Lead	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?				Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None			C-Max	C-Max		None	None		None	None	None
v/c Ratio	0.42	0.56		0.84	0.84			0.93			0.84	0.71
Control Delay	4.9	3.0		104.2	32.1			77.8			59.6	33.9
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Delay	4.9	3.0		104.2	32.1			77.8			59.6	33.9
Queue Length 50th (ft)	4	12		28	328			116			140	112
Queue Length 95th (ft)	m5	m15		#92	399			#247			#242	177
Internal Link Dist (ft)		648			517			207			352	
Turn Bay Length (ft)	200			50								100
Base Capacity (vph)	310	828		63	733			246			316	390
Starvation Cap Reductn	0	0		0	0			0			0	0
Spillback Cap Reductn	0	0		0	0			0			0	0
Storage Cap Reductn	0	0		0	0			0			0	0
Reduced v/c Ratio	0.41	0.57		0.84	0.84			0.85			0.76	0.71

Intersection Summary

Area Type: CBD

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 24 (24%), Referenced to phase 1:EBWB, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Brookline Avenue & Fullerton St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	10	10	12	12	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.96		1.00	0.94			0.90			1.00	0.80
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.93			0.90	1.00
Frt	1.00	0.99		1.00	0.99			0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.98	1.00
Satd. Flow (prot)	1444	1286		1430	1308			1342			1453	1128
Flt Permitted	0.28	1.00		0.07	1.00			0.54			0.73	1.00
Satd. Flow (perm)	431	1286		108	1308			748			1080	1128
Volume (vph)	115	392	32	42	442	46	96	43	47	103	104	237
Peak-hour factor, PHF	0.90	0.90	0.90	0.79	0.79	0.79	0.89	0.89	0.89	0.86	0.86	0.86
Adj. Flow (vph)	128	436	36	53	559	58	108	48	53	120	121	276
RTOR Reduction (vph)	0	3	0	0	4	0	0	13	0	0	0	24
Lane Group Flow (vph)	128	469	0	53	613	0	0	196	0	0	241	252
Confl. Peds. (#/hr)	389		189	189		389	139		131	131		139
Confl. Bikes (#/hr)			6			9			5			3
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	1%	1%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		8	8									
Turn Type	D.P+P			Perm			Perm			Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2			2		2
Actuated Green, G (s)	62.6	65.6		55.8	55.8			26.4			26.4	33.2
Effective Green, g (s)	61.6	65.6		55.8	55.8			26.4			26.4	32.2
Actuated g/C Ratio	0.62	0.66		0.56	0.56			0.26			0.26	0.32
Clearance Time (s)	3.0			4.0	4.0			4.0			4.0	3.0
Vehicle Extension (s)	3.0			3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	324	844		60	730			197			285	408
v/s Ratio Prot	0.02	0.36			0.47							c0.04
v/s Ratio Perm	0.22			c0.49				c0.26			0.22	0.19
v/c Ratio	0.40	0.56		0.88	0.84			1.00			0.85	0.62
Uniform Delay, d1	10.3	9.3		19.3	18.4			36.8			34.9	28.7
Progression Factor	0.39	0.17		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.4	0.4		86.1	11.2			62.9			20.0	2.8
Delay (s)	4.4	1.9		105.3	29.6			99.7			54.9	31.4
Level of Service	A	A		F	C			F			D	C
Approach Delay (s)		2.5			35.6			99.7			42.4	
Approach LOS		A			D			F			D	

Intersection Summary			
HCM Average Control Delay	34.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	10	10
Turning Speed (mph)	15			9	15	9
Link Speed (mph)		25	25		25	
Link Distance (ft)		597	1171		374	
Travel Time (s)		16.3	31.9		10.2	
Volume (vph)	66	467	390	29	76	120
Confl. Peds. (#/hr)	188			188	30	10
Confl. Bikes (#/hr)				11		
Peak Hour Factor	0.93	0.93	0.84	0.84	0.77	0.77
Heavy Vehicles (%)	6%	6%	4%	4%	13%	13%
Parking (#/hr)	8	8	8	8	8	8
Lane Group Flow (vph)	0	573	499	0	255	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	CBD
Control Type: Unsignalized	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	66	467	390	29	76	120
Peak Hour Factor	0.93	0.93	0.84	0.84	0.77	0.77
Hourly flow rate (vph)	71	502	464	35	99	156
Pedestrians		10	30		188	
Lane Width (ft)		14.0	12.0		10.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		1	2		13	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		597	1171			
pX, platoon unblocked					0.93	
vC, conflicting volume	687				1344	680
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	687				1368	680
tC, single (s)	4.2				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	91				10	58
cM capacity (veh/h)	773				110	373

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	573	499	255
Volume Left	71	0	99
Volume Right	0	35	156
cSH	773	1700	194
Volume to Capacity	0.09	0.29	1.31
Queue Length 95th (ft)	8	0	357
Control Delay (s)	2.4	0.0	220.5
Lane LOS	A		F
Approach Delay (s)	2.4	0.0	220.5
Approach LOS			F

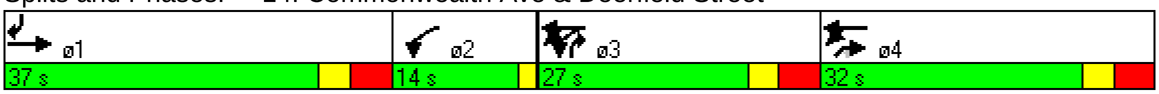
Intersection Summary			
Average Delay	43.4		
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBR	SBR2	NER	NER2	ø2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)		50			175		0	150		25		
Storage Lanes		0			1		0	1		1		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)	50			50	50	50		50	50	50	50	
Trailing Detector (ft)	0			0	0	0		0	0	0	0	
Turning Speed (mph)		9	9	15	15		9	9	9	9	9	
Right Turn on Red			Yes				No	No	No		No	
Link Speed (mph)	25					25						
Link Distance (ft)	99					737						
Travel Time (s)	2.7					20.1						
Volume (vph)	573	37	36	365	960	473	32	484	16	816	26	
Confl. Peds. (#/hr)							354				337	
Confl. Bikes (#/hr)		47	51				95				25	
Peak Hour Factor	0.95	0.95	0.95	0.91	0.91	0.91	0.91	0.89	0.34	0.87	0.87	
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	3%	6%	0%	1%	1%	
Parking (#/hr)						8	8			8	8	
Lane Group Flow (vph)	680	0	0	401	564	1046	0	544	47	938	30	
Turn Type				Prot	Split			custom	custom	custom	custom	
Protected Phases	1			2 3	3 4	3 4		3	1	4		2
Permitted Phases											4	
Detector Phases	1			2 3	3 4	3 4		3	1	4	4	
Minimum Initial (s)	4.0							4.0	4.0	4.0	4.0	8.0
Minimum Split (s)	23.0							23.0	23.0	23.0	23.0	14.0
Total Split (s)	37.0	0.0	0.0	41.0	59.0	59.0	0.0	27.0	37.0	32.0	32.0	14.0
Total Split (%)	33.6%	0.0%	0.0%	37.3%	53.6%	53.6%	0.0%	24.5%	33.6%	29.1%	29.1%	13%
Yellow Time (s)	3.0							3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	4.0							4.0	4.0	4.0	4.0	0.0
Lead/Lag	Lead							Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes							Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max							None	C-Max	None	None	None
v/c Ratio	0.75			0.76	0.79	0.78		1.08	0.11	1.56	0.29	
Control Delay	40.5			43.1	32.2	27.8		104.4	28.8	292.2	41.7	
Queue Delay	0.0			0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	40.5			43.1	32.2	27.8		104.4	28.8	292.2	41.7	
Queue Length 50th (ft)	225			250	348	321		~244	24	~534	17	
Queue Length 95th (ft)	296			372	523	417		#357	19	#642	45	
Internal Link Dist (ft)	19					657						
Turn Bay Length (ft)				175	175			150		25	25	
Base Capacity (vph)	908			530	718	1335		505	444	600	105	
Starvation Cap Reductn	0			0	0	0		0	0	0	0	
Spillback Cap Reductn	0			0	0	0		0	0	0	0	
Storage Cap Reductn	0			0	0	0		0	0	0	0	
Reduced v/c Ratio	0.75			0.76	0.79	0.78		1.08	0.11	1.56	0.29	

Intersection Summary	
Area Type:	CBD
Cycle Length: 110	

Actuated Cycle Length: 110
Offset: 81 (74%), Referenced to phase 1:EBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 14: Commonwealth Ave & Deerfield Street



Movement	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBR	SBR2	NER	NER2
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95			1.00	0.91	0.91		0.88	1.00	0.88	1.00
Frpb, ped/bikes	0.99			1.00	1.00	0.98		1.00	1.00	1.00	0.33
Flpb, ped/bikes	1.00			1.00	1.00	1.00		1.00	1.00	1.00	1.00
Frt	0.98			1.00	1.00	0.99		0.85	0.86	0.85	0.85
Flt Protected	1.00			0.95	0.95	0.98		1.00	1.00	1.00	1.00
Satd. Flow (prot)	3013			1577	1435	2669		2413	1479	2356	412
Flt Permitted	1.00			0.95	0.95	0.98		1.00	1.00	1.00	1.00
Satd. Flow (perm)	3013			1577	1435	2669		2413	1479	2356	412
Volume (vph)	573	37	36	365	960	473	32	484	16	816	26
Peak-hour factor, PHF	0.95	0.95	0.95	0.91	0.91	0.91	0.91	0.89	0.34	0.87	0.87
Adj. Flow (vph)	603	39	38	401	1055	520	35	544	47	938	30
RTOR Reduction (vph)	4	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	676	0	0	401	564	1046	0	544	47	938	30
Confl. Peds. (#/hr)							354				337
Confl. Bikes (#/hr)		47	51				95				25
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	3%	6%	0%	1%	1%
Parking (#/hr)						8	8			8	8
Turn Type				Prot	Split			custom	custom	custom	custom
Protected Phases	1			2 3	3 4	3 4		3	1	4	
Permitted Phases											4
Actuated Green, G (s)	30.0			34.0	52.0	52.0		20.0	30.0	25.0	25.0
Effective Green, g (s)	33.0			37.0	55.0	55.0		23.0	33.0	28.0	28.0
Actuated g/C Ratio	0.30			0.34	0.50	0.50		0.21	0.30	0.25	0.25
Clearance Time (s)	7.0							7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0							3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	904			530	718	1335		505	444	600	105
v/s Ratio Prot	c0.22			c0.25	0.39	0.39		c0.23	0.03	c0.40	
v/s Ratio Perm											0.07
v/c Ratio	0.75			0.76	0.79	0.78		1.08	0.11	1.56	0.29
Uniform Delay, d1	34.7			32.5	22.6	22.6		43.5	27.8	41.0	33.0
Progression Factor	1.00			1.00	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	5.6			6.1	5.7	3.1		62.4	0.5	261.6	1.5
Delay (s)	40.4			38.6	28.3	25.7		105.9	28.3	302.6	34.5
Level of Service	D			D	C	C		F	C	F	C
Approach Delay (s)	40.4					29.0					
Approach LOS	D					C					

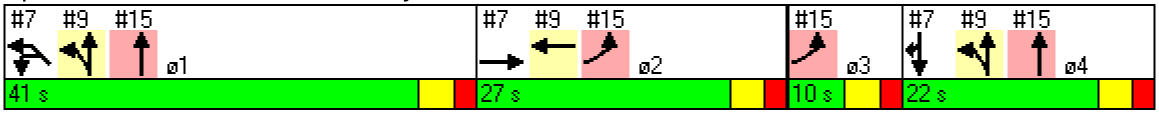
Intersection Summary			
HCM Average Control Delay	101.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	ø1	ø2	ø3	ø4
Lane Configurations										
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900				
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0				
Leading Detector (ft)	50			50						
Trailing Detector (ft)	0			0						
Turning Speed (mph)	15	9	15			9				
Right Turn on Red	No	No				Yes				
Link Speed (mph)	25			25	25					
Link Distance (ft)	185			130	152					
Travel Time (s)	5.0			3.5	4.1					
Volume (vph)	122	0	0	697	0	0				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				
Lane Group Flow (vph)	133	0	0	758	0	0				
Turn Type										
Protected Phases	2 3			1 4			1	2	3	4
Permitted Phases										
Detector Phases	2 3			1 4						
Minimum Initial (s)							5.0	4.0	1.0	4.0
Minimum Split (s)							33.0	27.0	6.0	22.0
Total Split (s)	37.0	0.0	0.0	63.0	0.0	0.0	41.0	27.0	10.0	22.0
Total Split (%)	37.0%	0.0%	0.0%	63.0%	0.0%	0.0%	41%	27%	10%	22%
Yellow Time (s)							3.0	3.0	3.0	3.0
All-Red Time (s)							2.0	2.0	2.0	2.0
Lead/Lag							Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes
Recall Mode							C-Max	None	None	None
v/c Ratio	0.13			0.35						
Control Delay	0.2			9.4						
Queue Delay	0.4			0.5						
Total Delay	0.7			9.9						
Queue Length 50th (ft)	0			75						
Queue Length 95th (ft)	0			90						
Internal Link Dist (ft)	105			50	72					
Turn Bay Length (ft)										
Base Capacity (vph)	1063			2160						
Starvation Cap Reductn	618			884						
Spillback Cap Reductn	0			0						
Storage Cap Reductn	0			0						
Reduced v/c Ratio	0.30			0.59						

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 15 (15%), Referenced to phase 1:NWL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 15: Riverway Ext & Park Drive



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.97			0.95		
Frt	1.00			1.00		
Flt Protected	0.95			1.00		
Satd. Flow (prot)	3433			3539		
Flt Permitted	0.95			1.00		
Satd. Flow (perm)	3433			3539		
Volume (vph)	122	0	0	697	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	133	0	0	758	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	133	0	0	758	0	0
Turn Type						
Protected Phases	2 3			1 4		
Permitted Phases						
Actuated Green, G (s)	29.9			60.1		
Effective Green, g (s)	30.9			61.1		
Actuated g/C Ratio	0.31			0.61		
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	1061			2162		
v/s Ratio Prot	c0.04			c0.21		
v/s Ratio Perm						
v/c Ratio	0.13			0.35		
Uniform Delay, d1	24.8			9.6		
Progression Factor	0.00			0.89		
Incremental Delay, d2	0.1			0.1		
Delay (s)	0.1			8.7		
Level of Service	A			A		
Approach Delay (s)	0.1			8.7	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	7.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Trip Generation

Boston Children's Hospital
Children's Clinical Building - DPIR
Trip Generation Estimate
December 2012

Children's Clinical Building - Hospital Trip Generation

	Size	Trip Rate	Unadjusted Vehicle Trips	VOR	Person Trips	Transit Share	Walk/Other Share	Vehicle Share	Local VOR	Transit Trips	Walk/Other Trips	Vehicle Trips
Daily Existing Hospital		11.07	25,915		31,098					6,531	14,305	8,552
In	2,341,876	5.53	12,957	1.2	15,549	21%	46%	33%	1.2	3,265	7,153	4,276
Out	SF	5.53	12,957	1.2	15,549	21%	46%	33%	1.2	3,265	7,153	4,276
Daily Existing + Clinical Tower + Bridge		10.93	30,033		36,040					7,568	16,578	9,911
In	2,748,387	5.46	15,016	1.2	18,020	21%	46%	33%	1.2	3,784	8,289	4,955
Out	SF	5.46	15,016	1.2	18,020	21%	46%	33%	1.2	3,784	8,289	4,955
Total Net New Daily			**4,118**		**4,942**					**1,038**	**2,273**	**1,359**
In			**2,059**		**2,471**					**519**	**1,137**	**679**
Out			**2,059**		**2,471**					**519**	**1,137**	**679**
AM Peak Existing Hospital		0.93	2,170		2,603					807	937	716
In	2,341,876	0.55	1,280	1.2	1,536	31%	36%	33%	1.2	476	553	422
Out	SF	0.38	890	1.2	1,067	31%	36%	33%	1.2	331	384	294
AM Peak Existing + Proposed		0.92	2,523		3,028					939	1,090	833
In	2,748,387	0.54	1,489	1.2	1,786	31%	36%	33%	1.2	554	643	491
Out	SF	0.38	1035	1.2	1,241	31%	36%	33%	1.2	385	447	341
Total Net New AM Peak			**354**		**424**					**132**	**153**	**117**
In			**209**		**250**					**78**	**90**	**69**
Out			**145**		**174**					**54**	**63**	**48**
PM Existing Hospital		0.86	2,013		2,416					749	870	664
In	2,341,876	0.36	846	1.2	1,015	31%	36%	33%	1.2	315	365	279
Out	SF	0.50	1168	1.2	1,401	31%	36%	33%	1.2	434	504	385
PM Existing + Proposed		0.85	2,330		2,796					867	1,007	770
In	2,748,387	0.36	979	1.2	1,174	31%	36%	33%	1.2	364	423	323
Out	SF	0.49	1352	1.2	1,622	31%	36%	33%	1.2	503	584	447
Total Net New PM Peak			**317**		**380**					**118**	**137**	**106**
In			**133**		**160**					**50**	**58**	**44**
Out			**184**		**221**					**68**	**79**	**62**

Notes:
ITE LUC 610 Hospital, per sf - 8th Edition (regression)

Mode Split: BTD Area 5

Boston Children's Hospital
819 Beacon Street - DPIR
Trip Generation Estimate
December 2012

819 Beacon Street - Office/Retial Trip Generation

	Size	Trip Rate	Unadjusted Vehicle Trips	VOR	Person Trips	Transit Share	Walk/Other Share	Vehicle Share	Local VOR	Transit Trips	Walk/Other Trips	Vehicle Trips
Daily Office		11.34	2,296		2756					882	661	1012
In	202	5.67	1148	1.2	1378	32%	24%	44%	1.2	441	331	506
Out	ksf	5.67	1148	1.2	1378	32%	24%	44%	1.2	441	331	506
Daily Retail		42.94	375		676					142	311	124
In	8.7	21.47	188	1.8	338	21%	46%	33%	1.8	71	155	62
Out	ksf	21.47	188	1.8	338	21%	46%	33%	1.8	71	155	62
Total Daily			2,671		3,431					1,024	972	1,136
In			1,336		1,716					512	486	568
Out			1,336		1,715					512	486	568
AM Office		1.63	330		396					150	99	123
In	202	1.43	290	1.2	348	38%	25%	37%	1.2	132	87	108
Out	ksf	0.20	40	1.2	47	38%	25%	37%	1.2	18	12	15
AM Retail		1.00	9		16					5	6	3
In	8.7	0.61	5	1.8	10	31%	36%	33%	1.8	3	3	2
Out	ksf	0.39	3	1.8	6	31%	36%	33%	1.8	2	2	1
Total AM Peak Hour			338		411					155	105	126
In			296		358					135	91	110
Out			43		54					20	14	16
PM Office		1.51	306		367					139	92	113
In	202	0.26	52	1.2	62	38%	25%	37%	1.2	24	16	19
Out	ksf	1.25	254	1.2	304	38%	25%	37%	1.2	116	76	94
PM Retail		3.73	33		59					18	21	11
In	8.7	1.83	16	1.8	29	31%	36%	33%	1.8	9	10	6
Out	ksf	1.90	17	1.8	30	31%	36%	33%	1.8	9	11	5
Total PM Peak Hour			338		426					158	113	124.5
In			68		91					33	26	25
Out			270		334					125	87	99

Notes:
ITE LUC 820, per sf - Retail, 8th Edition (average rate)
ITE LUC 710, per sf - Office, 8th Edition (regression)

Mode Split: BTD Area 4

Trip Distribution

Clinical Building - BCH DPIR
Morning Peak Hour Volumes

October 2012

2022 Growth	
Percent	0.5%
Years	10

2022 Trips	
In	69
Out	48

						Background Projects													2022 Project Trips			
Intersection	Raw Volumes	Rounded Volumes	Balanced Raw	Two-Way Binney	Existing 2012 Volumes	Childrens	Landmark	Joslin + Pilgrim 2-way	Fenway Triangle	LRI sum of 2008 and 2013 layers	Brigham Green	MMHC Phase 2	Winsor	BWH Parcel C	Total	2022 Grown	2022 No-Build	% IN	% OUT	Trips	2022 Build
Longwood Ave/Brookline Ave																					
Longwood SB Right	22	20			20			8			4	3	7		22	21	43	0%	0%	0	43
Longwood SB Thru	257	255	-25		230			19		2			7		28	242	269	4%	0%	3	272
Longwood SB Left	104	105	-10		95			19		6			4		29	100	129	0%	0%	0	129
Brookline WB Right	142	140	-5		135			74		3			54		131	142	273	0%	0%	0	273
Brookline WB Thru	496	495			495		13		10	31	9	23			86	520	606	0%	0%	0	606
Brookline WB Left	158	160			160	5						7			12	168	180	34%	0%	23	204
Longwood NB Right	165	165			165	2				-1		5	1		7	173	180	0%	39%	19	199
Longwood NB Thru	204	205	-10		195			33		-1			36		68	205	273	0%	4%	2	275
Longwood NB Left	74	75			75	1				-4					-3	79	76	0%	18%	9	84
Brookline EB Right	188	190		-95	95	2		-16		-40					-54	100	46	13%	0%	9	55
Brookline EB Thru	612	610		-30	580		46	-10	10	119	2	6			173	610	783	0%	0%	0	783
Brookline EB Left	26	25			25			-1		-4	2	9	23		29	26	55	0%	0%	0	55
Riverway/Brookline Ave																					
Riverway SB Right	94	95			95								1		1	100	101	0%	0%	0	101
Riverway SB Thru	548	550			550					-1			5		4	578	582	0%	0%	0	582
Brookline WB Right	29	30			30										0	32	32	0%	0%	0	32
Brookline WB Thru	343	345			345	1	24	6	5	6	3	15	10		70	363	433	0%	6%	3	435
Brookline WB Left	208	210			210			6	5	14	3	5	2		35	221	256	0%	12%	6	262
Riverway NB Right	333	335			335		22	43	5	53	6	2	8		139	352	491	12%	0%	8	499
Riverway NB Thru	777	775			775					15			17		32	815	847	0%	0%	0	847
Riverway NB Left	3	5			5										0	5	5	0%	0%	0	5
Brookline EB Right	2	5			5										0	5	5	0%	0%	0	5
Brookline EB Thru	357	355			355	2	8	1	5	23	7	31	36		113	373	486	6%	0%	4	490
Brookline EB Left	186	185			185		5			4			21		30	194	224	0%	0%	0	224
Longwood/Riverway																					
Longwood SB Right	77	75			75					-1					-1	79	78	0%	0%	0	78
Longwood SB Thru	256	255			255			8		18	4	5	5		40	268	308	4%	0%	3	310
Longwood SB Left	98	100			100								2		2	105	107	0%	0%	0	107
Riverway WB Right	91	90			90								1		1	95	95	0%	0%	0	95
Riverway WB Thru	768	770			770		10		2	13			13		38	809	847	0%	0%	0	847
Riverway WB Left	3	5			5										0	5	5	0%	0%	0	5
Longwood NB Right	32	30			30							4	9		13	32	45	0%	0%	0	45
Longwood NB Thru	191	190			190			3		4	2	5	1		15	200	215	0%	4%	2	217
Longwood NB Left	67	65			65			5					2		7	68	75	0%	0%	0	75
Riverway EB Right	87	85			85			-33					22		-11	89	78	0%	0%	0	78
Riverway EB Thru	795	795			795		19					4	4		27	836	863	0%	0%	0	863
Riverway EB Left	318	320			320					2		4			6	336	342	0%	0%	0	342

Clinical Building - BCH DPIR
Morning Peak Hour Volumes

October 2012

2022 Growth	
Percent	0.5%
Years	10

2022 Trips	
In	69
Out	48

Intersection	Raw Volumes	Rounded Volumes	Balanced Raw	Two-Way Binney	Existing 2012 Volumes	Background Projects: Childrens	Landmark	Joslin + Pilgrim 2-way	Fenway Triangle	LRI sum of 2008 and 2013 layers	Brigham Green	MMHC Phase 2	Winsor	BWH Parcel C	Total	2022 Grown	2022 No-Build	2022 Project Trips: % IN	% OUT	Trips	2022 Build
Francis/Binney																					
Francis SB Right	63	65			65											68	68	0%	0%	0	68
Francis SB Thru	207	205			205											215	215	0%	0%	0	215
Francis SB Left	58	60		70	130											137	137	5%	0%	3	140
Binney WB Right	82	80			80											84	84	0%	0%	0	84
Binney WB Thru	29	30			30										17	32	49	0%	0%	0	49
Binney WB Left	83	85			85											89	89	0%	0%	0	89
Francis NB Right	59	60		100	160											168	168	0%	0%	0	168
Francis NB Thru	275	275		-20	255											268	268	0%	0%	0	268
Francis NB Left	11	10			10											11	11	0%	0%	0	11
Binney EB Right	8	10		-5	5											5	5	0%	0%	0	5
Binney EB Thru	28	30		10	40										9	42	51	0%	0%	0	51
Binney EB Left	37	35		-5	30											32	32	0%	0%	0	32
Jimmy Fund Way/Binney Street																					
JFW SB Right	36	35			35											37	37	0%	0%	0	37
JFW SB Thru	0	0			0											0	0	0%	0%	0	0
JFW SB Left	0	0		30	30											32	32	0%	0%	0	32
Binney WB Right	67	65			65											68	68	0%	0%	0	68
Binney WB Thru	54	55			55										17	58	75	0%	0%	0	75
Binney WB Left	1	5			5											5	5	0%	0%	0	5
CHB NB Right	0	0		5	5											5	5	0%	0%	0	5
CHB NB Thru	12	10			10											11	11	0%	0%	0	11
CHB NB Left	14	15		-5	10											11	11	0%	0%	0	11
Binney EB Right	4	5			5											5	5	0%	0%	0	5
Binney EB Thru	1	5		170	175										9	184	193	5%	0%	3	196
Binney EB Left	164	165			165											173	173	0%	0%	0	173
Shattuck St/Binney St																					
Binney WB Thru	66	65			65										17	68	85	0%	0%	0	85
Binney WB Left	37	35			35											37	37	0%	0%	0	37
Shattuck NB Right	19	20			20											21	21	0%	0%	0	21
Shattuck NB Left	27	25			25											26	26	0%	0%	0	26
Binney EB Right	30	30			30										9	32	41	0%	0%	0	41
Binney EB Thru	145	145		170	315											331	331	5%	0%	3	335
Blackfan St/Avenue Louis Pasteur																					
Blackfan SB Right	20	20			20									-2	-2	21	19	0%	0%	0	19
Blackfan SB Left	61	60			60									-1	-1	63	62	0%	15%	7	69
ALP WB Right	139	140			140									13	13	147	160	15%	0%	10	171
ALP WB Thru	435	435			435										0	457	457	0%	0%	0	457
ALP EB Thru	156	155			155										0	163	163	0%	0%	0	163
ALP EB Left	53	55			55									10	10	58	68	0%	0%	0	68
Longwood Ave/Palace Road																					
Longwood SB Thru	309	310			310								7	-1	6	326	332	0%	24%	12	343
Longwood SB Left	51	50			50										0	53	53	0%	0%	0	53
Longwood NB Right	195	195			195										0	205	205	0%	0%	0	205
Longwood NB Thru	507	505		-80	425								37	7	44	447	491	24%	0%	17	507

Clinical Building - BCH DPIR
Morning Peak Hour Volumes

October 2012

2022 Growth	
Percent	0.5%
Years	10

2022 Trips	
In	69
Out	48

Intersection	Raw Volumes	Rounded Volumes	Balanced Raw	Two-Way Binney	Existing 2012 Volumes	Background Projects: Childrens	Landmark	Joslin + Pilgrim 2-way	Fenway Triangle	LRI sum of 2008 and 2013 layers	Brigham Green	MMHC Phase 2	Winsor	BWH Parcel C	Total	2022 Grown	2022 No-Build	2022 Project Trips: % IN	% OUT	Trips	2022 Build
Longwood Ave/Huntington Ave																					
Longwood SB Right	48	50			50										0	53	53	0%	0%	0	53
Longwood SB Thru	126	125			125								4	-1	3	131	134	0%	16%	8	142
Longwood SB Left	137	135			135								3		3	142	145	0%	8%	4	149
Huntington WB U-Turn	3	5			5										0	5	5	0%	0%	0	5
Huntington WB Right	250	250			250								21	3	24	263	287	8%	0%	6	292
Huntington WB Thru	463	465			465										0	489	489	0%	0%	0	489
Huntington WB Left	99	100			100										0	105	105	0%	0%	0	105
Longwood NB U-Turn	0	0			0										0	0	0	0%	0%	0	0
Longwood NB Right	11	10			10										0	11	11	0%	0%	0	11
Longwood NB Thru	307	305	-10		295								16	3	19	310	329	16%	0%	11	340
Longwood NB Left	28	30			30										0	32	32	0%	0%	0	32
Huntington EB U-Turn	11	10			10										0	11	11	0%	0%	0	11
Huntington EB Right	35	35			35										0	37	37	0%	0%	0	37
Huntington EB Thru	604	605			605										0	636	636	0%	0%	0	636
Huntington EB Left	163	165	-10	-80	75									1	1	79	80	0%	0%	0	80
Deaoness/JFW/Brookline																					
Deaconess SB Right	59	60			60			13					5		18	63	81	0%	0%	0	81
Deaconess SB Thru	10	10			10										0	11	11	0%	0%	0	11
Deaconess SB Left	57	55			55			-20							-20	58	38	0%	0%	0	38
Brookline WB Thru	514	515			515	1	13	8	10	27	13	26	7		105	541	646	0%	18%	9	655
Brookline WB Left	68	70			70										0	74	74	0%	0%	0	74
JFW NB Right	100	100		-30	70										0	74	74	0%	0%	0	74
JFW NB Left	63	65			65										0	68	68	0%	0%	0	68
Brookline EB Right	35	35			35										0	37	37	0%	0%	0	37
Brookline EB Thru	761	760		-95	665	2	46	47	10	76	4	15	44		244	699	943	13%	0%	9	952
Francis/Brookline																					
Francis SB right	30	30			30										0	32	32	0%	0%	0	32
Francis SB Thru	128	130			130										0	137	137	0%	0%	0	137
Francis SB Left	16	15			15										0	16	16	0%	0%	0	16
Brookline WB Right	29	30			30										0	32	32	0%	0%	0	32
Brookline WB Thru	405	405			405								12		12	426	438	0%	18%	9	446
Brookline WB Left	205	205			205										0	215	215	0%	0%	0	215
Francis NB Right	57	55		-25	30										0	32	32	0%	0%	0	32
Francis NB Thru	66	65			65										0	68	68	0%	0%	0	68
Franics NB Left	138	140			140										0	147	147	0%	0%	0	147
Brookline EB Right	75	75		70	145										0	152	152	5%	0%	3	156
Brookline EB Thru	712	710		-70	640								44		44	673	717	13%	0%	9	726
Brookline EB Left	17	15			15										0	16	16	0%	0%	0	16

Clinical Building - BCH DPIR **October 2012**

Morning Peak Hour Volumes

2022 Growth	
Percent	0.5%
Years	10

2022 Trips	
In	69
Out	48

						Background Projects													2022 Project Trips		
Intersection	Raw Volumes	Rounded Volumes	Balanced Raw	Two-Way Binney	Existing 2012 Volumes	Childrens	Landmark	Joslin + Pilgrim 2-way	Fenway Triangle	LRI sum of 2008 and 2013 layers	Brigham Green	MMHC Phase 2	Winsor	BWH Parcel C	Total	2022 Grown	2022 No-Build	% IN	% OUT	Trips	2022 Build
Longwood/Pilgrim																					
Longwood SB Right	41	40			40			-25		23					-2	42	40	0%	0%	0	40
Longwood SB Thru	311	310	25		335			18		8	4	5			35	352	387	4%	0%	3	390
Longwood SB Left	135	135			135								27		27	142	169	0%	0%	0	169
Pilgrim WB Right	10	10			10								12		12	11	23	0%	0%	0	23
Pilgrim WB Thru	2	5			5								5		5	5	11	0%	0%	0	11
Pilgrim WB Left	6	5	5		10								18		18	11	29	0%	0%	0	29
Longwood NB Right	75	75	5		80								113		113	84	197	0%	0%	0	197
Longwood NB Thru	200	200	10		210					3	2	9			14	221	235	0%	4%	2	237
Longwood NB Left	66	65			65			102		-5					97	68	165	0%	0%	0	165
Pilgrim EB Right	3	5			5			29							29	5	34	0%	0%	0	34
Pilgrim EB Thru	0	0			0								34		34	0	34	0%	0%	0	34
Pilgrim EB Left	0	0			0			5							5	0	5	0%	0%	0	5
Longwood/Binney																					
Longwood SB Right	45	45			45							7			7	47	54	0%	0%	0	54
Longwood SB Thru	370	370		-75	295	7		3		-28			7		-11	310	299	51%	0%	35	334
Longwood SB Left	151	150		-20	130					-10					-10	137	127	0%	0%	0	127
Binney WB Right	88	90			90					-2					-2	95	93	0%	0%	0	93
Binney WB Thru	36	35			35							5			5	37	42	0%	0%	0	42
Binney WB Left	68	70			70					-1					-1	74	73	0%	0%	0	73
Longwood NB Right	66	65		-30	35					-11					-11	37	26	0%	0%	0	26
Longwood NB Thru	358	360		-50	310	4		33		-4			37		70	326	396	0%	61%	29	425
Longwood NB Left	56	55			55						3	2			5	58	63	0%	0%	0	63
Binney EB Right	1	5		90	95							4			4	100	104	5%	0%	3	107
Binney EB Thru	1	5		45	50										0	53	53	0%	0%	0	53
Binney EB Left	2	5		80	85							5			5	89	94	0%	0%	0	94
Longwood/Blackfan																					
Longwood SB Right	38	40			40										0	42	42	16%	0%	11	53
Longwood SB Thru	364	365			365								7	3	10	384	394	0%	0%	0	394
Longwood SB Left	72	70			70									6	6	74	80	40%	0%	28	107
Blackfan WB Right	112	110			110									-3	-3	116	113	0%	45%	22	134
Blackfan WB Thru	11	10			10										0	11	11	0%	27%	13	23
Blackfan WB Left	32	30			30										0	32	32	0%	13%	6	38
Longwood NB Right	60	60			60										0	63	63	13%	0%	9	72
Longwood NB Thru	354	355		-80	275								37	-1	36	289	325	0%	0%	0	325
Longwood NB Left	23	25			25										0	26	26	11%	0%	8	34
Blackfan EB Right	23	25			25										0	26	26	0%	11%	5	32
Blackfan EB Thru	23	25			25										0	26	26	27%	0%	19	45
Blackfan EB Left	30	30			30										0	32	32	0%	16%	8	39
Longwood/Avenue Louis Pasteur																					
Longwood SB Thru	275	275			275								7		7	289	296	0%	24%	12	308
Longwood SB Left	134	135			135									3	3	142	145	0%	0%	0	145
ALP WB Right	118	120	5		125									-1	-1	131	130	0%	0%	0	130
ALP WB Left	92	90			90									-1	-1	95	94	0%	0%	0	94
Longwood NB Right	138	140			140									7	7	147	154	0%	0%	0	154
Longwood NB Thru	259	260	50	-80	230								37		37	242	279	24%	0%	17	295

Note: 2 way binney based on longwood/binney volumes from Winsor Project

Clinical Building - BCH DPIR

Evening Peak Hour Volumes

October 2012

2022 Growth	
Percent	0.5%
Years	10

2022 Trips	
In	44
Out	62

Intersection	Raw Volumes	Rounded Volumes	Balanced Volumes	Binney Two Way	Existing 2012 Volumes	Background Projects: Childrens	Landmark	Joslin + Pilgrim 2-way	Fenway Triangle	LRI sum of 2008 and 2013 layers	Brigham Green	MMHC Phase 2	Winsor	BWH Parcel C	Total	2022 Grown	2022 No-Build	2022 Project Trips: % IN	% OUT	Trips	2022 Build
Longwood Ave/Brookline Ave																					
Longwood SB Right	24	25			25						2	2	38		42	26	68	0%	0%	0	68
Longwood SB Thru	164	165	-5		160			65		-5			36		96	168	264	4%	0%	2	266
Longwood SB Left	58	60			60			117		8			18		143	63	206	0%	0%	0	206
Brookline WB Right	67	65			65			21		19			14		54	68	122	0%	0%	0	122
Brookline WB Thru	570	570			570		47		27	114	4	12			204	599	803	0%	0%	0	803
Brookline WB Left	160	160			160	2						5			7	168	175	37%	0%	16	191
Longwood NB Right	236	235			235	4				-10		12			6	247	253	0%	39%	24	277
Longwood NB Thru	237	235	-10		225			10		-6			9		13	237	250	0%	4%	2	252
Longwood NB Left	206	205			205	2				-36					-34	215	181	0%	18%	11	193
Brookline EB Right	137	135		-65	70	1		-34		-11					-44	74	30	13%	0%	6	35
Brookline EB Thru	517	515		-20	495		12	-40	30	40	4	11			57	520	577	0%	0%	0	577
Brookline EB Left	48	50			50			1			3	20	6		30	53	83	0%	0%	0	83
Riverway/Brookline Ave																					
Riverway SB Right	54	55			55								2		2	58	60	0%	0%	0	60
Riverway SB Thru	1012	1010			1010					-4			13		9	1062	1071	0%	0%	0	1071
Brookline WB Right	18	20	-5		15										0	16	16	0%	0%	0	16
Brookline WB Thru	713	715	-15		700	2	7	3	16	25	6	36	54		149	736	885	0%	6%	4	889
Brookline WB Left	466	465	-5		460			43	11	59	5	11	13		142	484	626	0%	12%	7	633
Riverway NB Right	215	215			215		5	7	12	6	3	1	2		36	226	262	12%	0%	5	267
Riverway NB Thru	566	565			565					8			4		12	594	606	0%	0%	0	606
Riverway NB Left	4	5			5										0	5	5	0%	0%	0	5
Brookline EB Right	14	15			15										0	16	16	0%	0%	0	16
Brookline EB Thru	254	255			255	1	29	6	18	6	3	12	10		85	268	353	6%	0%	3	356
Brookline EB Left	100	100			100		18			2			5		25	105	130	0%	0%	0	130
Longwood/Riverway																					
Longwood SB Right	178	180			180										0	189	189	0%	0%	0	189
Longwood SB Thru	186	185			185			3		8	2	3	1		17	194	212	4%	0%	2	213
Longwood SB Left	56	55			55										0	58	58	0%	0%	0	58
Riverway WB Right	139	140			140								1		1	147	148	0%	0%	0	148
Riverway WB Thru	1096	1095			1095		73			7			8		88	1151	1239	0%	0%	0	1239
Riverway WB Left	0	0			0										0	0	0	0%	0%	0	0
Longwood NB Right	26	25			25							8	45		53	26	79	0%	0%	0	79
Longwood NB Thru	277	275			275			9		10	3	12	5		39	289	328	0%	4%	2	330
Longwood NB Left	96	95			95			10					9		19	100	119	0%	0%	0	119
Riverway EB Right	23	25			25			-25					6		-19	26	7	0%	0%	0	7
Riverway EB Thru	521	520			520		3		4			10	1		18	547	565	0%	0%	0	565
Riverway EB Left	236	235			235					2		10			12	247	259	0%	0%	0	259

Clinical Building - BCH DPIR
Evening Peak Hour Volumes

October 2012

2022 Growth	
Percent	0.5%
Years	10

2022 Trips	
In	44
Out	62

Intersection	Raw Volumes	Rounded Volumes	Balanced Volumes	Binney Two Way	Existing 2012 Volumes	Background Projects: Childrens	Landmark	Joslin + Pilgrim 2-way	Fenway Triangle	LRI sum of 2008 and 2013 layers	Brigham Green	MMHC Phase 2	Winsor	BWH Parcel C	Total	2022 Grown	2022 No-Build	2022 Project Trips: % IN	% OUT	Trips	2022 Build
Francis/Binney																					
Francis SB Right	44	45			45										0	47	47	0%	0%	0	47
Francis SB Thru	246	245			245										0	258	258	0%	0%	0	258
Francis SB Left	25	25		30	55										0	58	58	5%	0%	2	60
Binney WB Right	142	140			140										0	147	147	0%	0%	0	147
Binney WB Thru	19	20			20										8	21	29	0%	0%	0	29
Binney WB Left	110	110			110										0	116	116	0%	0%	0	116
Francis NB Right	44	45		50	95										0	100	100	0%	0%	0	100
Francis NB Thru	210	210		-20	190										0	200	200	0%	0%	0	200
Francis NB Left	5	5			5										0	5	5	0%	0%	0	5
Binney EB Right	23	25		-10	15										0	16	16	0%	0%	0	16
Binney EB Thru	28	30		20	50										22	53	75	0%	0%	0	75
Binney EB Left	43	45		-10	35										0	37	37	0%	0%	0	37
Jimmy Fund Way/Binney Street																					
JFW SB Right	48	50			50										0	53	53	0%	0%	0	53
JFW SB Thru	2	5			5										0	5	5	0%	0%	0	5
JFW SB Left	0	0		25	25										0	26	26	0%	0%	0	26
Binney WB Right	75	75			75										0	79	79	0%	0%	0	79
Binney WB Thru	68	70			70										8	74	82	0%	0%	0	82
Binney WB Left	0	0			0										0	0	0	0%	0%	0	0
CHB NB Right	1	5		40	45										0	47	47	0%	0%	0	47
CHB NB Thru	30	30		-5	25										0	26	26	0%	0%	0	26
CHB NB Left	12	10		-5	5										0	5	5	0%	0%	0	5
Binney EB Right	2	5			5										0	5	5	0%	0%	0	5
Binney EB Thru	0	0		90	90										22	95	117	5%	0%	2	119
Binney EB Left	96	95			95										0	100	100	0%	0%	0	100
Shattuck St/Binney St																					
Binney WB Thru	101	100			100										8	105	113	0%	0%	0	113
Binney WB Left	25	25			25										0	26	26	0%	0%	0	26
Shattuck NB Right	32	30			30										0	32	32	0%	0%	0	32
Shattuck NB Left	37	35			35										0	37	37	0%	0%	0	37
Binney EB Right	32	30			30										0	32	32	0%	0%	0	32
Binney EB Thru	66	65		90	155										22	163	185	5%	0%	2	187
Blackfan St/Avenue Louis Pasteur																					
Blackfan SB Right	28	30			30									6	6	32	38	0%	20%	12	50
Blackfan SB Left	117	115			115									3	3	121	124	0%	15%	9	133
ALP WB Right	41	40			40									-5	-5	42	37	15%	0%	7	44
ALP WB Thru	203	205			205										0	215	215	0%	0%	0	215
ALP EB Thru	137	135			135										0	142	142	0%	0%	0	142
ALP EB Left	26	25			25									-4	-4	26	22	0%	0%	0	22
Longwood Ave/Palace Road																					
Longwood SB Thru	532	530	-15		515								36	2	38	541	579	0%	24%	15	594
Longwood SB Left	52	50			50										0	53	53	0%	0%	0	53
Longwood NB Right	36	35			35										0	37	37	0%	0%	0	37
Longwood NB Thru	263	265		-30	235								9	-3	6	247	253	24%	0%	11	264

Clinical Building - BCH DPIR
Evening Peak Hour Volumes

October 2012

2022 Growth	
Percent	0.5%
Years	10

2022 Trips	
In	44
Out	62

Intersection	Raw Volumes	Rounded Volumes	Balanced Volumes	Binney Two Way	Existing 2012 Volumes	Background Projects: Childrens	Landmark	Joslin + Pilgrim 2-way	Fenway Triangle	LRI sum of 2008 and 2013 layers	Brigham Green	MMHC Phase 2	Winsor	BWH Parcel C	Total	2022 Grown	2022 No-Build	2022 Project Trips: % IN	% OUT	Trips	2022 Build
Longwood Ave/Huntington Ave																					
Longwood SB Right	92	90			90										0	95	95	0%	0%	0	95
Longwood SB Thru	229	230			230								18	1	19	242	261	0%	16%	10	271
Longwood SB Left	196	195			195								18	1	19	205	224	0%	8%	5	229
Huntington WB U-Turn	7	5			5										0	5	5	0%	0%	0	5
Huntington WB Right	146	145	-5		140								4	-2	2	147	149	8%	0%	4	153
Huntington WB Thru	591	590			590										0	620	620	0%	0%	0	620
Huntington WB Left	134	135			135										0	142	142	0%	0%	0	142
Longwood NB U-Turn	2	5			5										0	5	5	0%	0%	0	5
Longwood NB Right	2	5			5										0	5	5	0%	0%	0	5
Longwood NB Thru	113	115	-5		110								5	-1	4	116	120	16%	0%	7	127
Longwood NB Left	22	20			20										0	21	21	0%	0%	0	21
Huntington EB U-Turn	19	20			20										0	21	21	0%	0%	0	21
Huntington EB Right	48	50			50										0	53	53	0%	0%	0	53
Huntington EB Thru	560	560			560										0	589	589	0%	0%	0	589
Huntington EB Left	54	55	-5	-30	20										0	21	21	0%	0%	0	21
Deaoness/JFW/Brookline																					
Deaconess SB Right	87	85			85			50					29		79	89	168	0%	0%	0	168
Deaconess SB Thru	6	5	5		10										0	11	11	0%	0%	0	11
Deaconess SB Left	55	55			55			-74							-74	58	-16	0%	0%	0	-16
Brookline WB Thru	695	695	5		700	2	47		27	68	6	14	38		202	736	938	0%	18%	11	949
Brookline WB Left	24	25			25										0	26	26	0%	0%	0	26
JFW NB Right	143	145		-25	120										0	126	126	0%	0%	0	126
JFW NB Left	155	155			155										0	163	163	0%	0%	0	163
Brookline EB Right	27	25			25										0	26	26	0%	0%	0	26
Brookline EB Thru	608	610		-60	550	1	12	15	30	30	7	31	12		138	578	716	13%	0%	6	722
Francis/Brookline																					
Francis SB right	100	100			100										0	105	105	0%	0%	0	105
Francis SB Thru	42	40			40										0	42	42	0%	0%	0	42
Francis SB Left	32	30			30										0	32	32	0%	0%	0	32
Brookline WB Right	27	25			25										0	26	26	0%	0%	0	26
Brookline WB Thru	793	795			795								67		67	836	903	0%	18%	11	914
Brookline WB Left	129	130			130										0	137	137	0%	0%	0	137
Francis NB Right	155	155		-30	125										0	131	131	0%	0%	0	131
Francis NB Thru	74	75			75										0	79	79	0%	0%	0	79
Franics NB Left	270	270			270										0	284	284	0%	0%	0	284
Brookline EB Right	54	55		30	85										0	89	89	5%	0%	2	92
Brookline EB Thru	441	440		-30	410								12		12	431	443	13%	0%	6	449
Brookline EB Left	11	10			10										0	11	11	0%	0%	0	11

Clinical Building - BCH DPIR
Evening Peak Hour Volumes

October 2012

2022 Growth	
Percent	0.5%
Years	10

2022 Trips	
In	44
Out	62

						Background Projects												2022 Project Trips			
Intersection	Raw Volumes	Rounded Volumes	Balanced Volumes	Binney Two Way	Existing 2012 Volumes	Childrens	Landmark	Joslin + Pilgrim 2-way	Fenway Triangle	LRI sum of 2008 and 2013 layers	Brigham Green	MMHC Phase 2	Winsor	BWH Parcel C	Total	2022 Grown	2022 No-Build	% IN	% OUT	Trips	2022 Build
Longwood/Pilgrim																					
Longwood SB Right	23	25			25			-22		13					-9	26	17	0%	0%	0	17
Longwood SB Thru	212	210			210			77		3	2	3			85	221	306	4%	0%	2	307
Longwood SB Left	24	25			25								7		7	26	33	0%	0%	0	33
Pilgrim WB Right	54	55			55								59		59	58	117	0%	0%	0	117
Pilgrim WB Thru	55	55			55								29		29	58	87	0%	0%	0	87
Pilgrim WB Left	29	30	5		35								92		92	37	129	0%	0%	0	129
Longwood NB Right	17	15			15								29		29	16	45	0%	0%	0	45
Longwood NB Thru	263	265	5		270					9	3	20			32	284	316	0%	4%	2	318
Longwood NB Left	57	55			55			32		4					36	58	94	0%	0%	0	94
Pilgrim EB Right	0	0			0			105							105	0	105	0%	0%	0	105
Pilgrim EB Thru	0	0			0								10		10	0	10	0%	0%	0	10
Pilgrim EB Left	0	0			0			10							10	0	10	0%	0%	0	10
Longwood/Binney																					
Longwood SB Right	49	50			50							5			5	53	58	0%	0%	0	58
Longwood SB Thru	368	370		-50	320	3		31		-10			36		60	336	396	54%	0%	24	420
Longwood SB Left	26	25		-15	10					-7					-7	11	4	0%	0%	0	4
Binney WB Right	172	170			170					-9					-9	179	170	0%	0%	0	170
Binney WB Thru	67	65			65							1			1	68	69	0%	0%	0	69
Binney WB Left	73	75			75					-3					-3	79	76	0%	0%	0	76
Longwood NB Right	25	25		-15	10					-3					-3	11	8	0%	0%	0	8
Longwood NB Thru	460	460		-15	445	6		10		-43			9		-18	468	450	0%	61%	38	488
Longwood NB Left	43	45			45						1	1			2	47	49	0%	0%	0	49
Binney EB Right	1	5		80	85							10			10	89	99	5%	0%	2	102
Binney EB Thru	1	5		20	25										0	26	26	0%	0%	0	26
Binney EB Left	1	5		50	55							12			12	58	70	0%	0%	0	70
Longwood/Blackfan																					
Longwood SB Right	46	45			45										0	47	47	16%	0%	7	54
Longwood SB Thru	370	370			370								36	-1	35	389	424	0%	0%	0	424
Longwood SB Left	51	50			50									-3	-3	53	50	43%	0%	19	68
Blackfan WB Right	164	165			165									7	7	173	180	0%	29%	18	198
Blackfan WB Thru	54	55			55										0	58	58	0%	27%	17	75
Blackfan WB Left	63	65			65										0	68	68	0%	9%	6	74
Longwood NB Right	34	35			35										0	37	37	13%	0%	6	43
Longwood NB Thru	275	275		-30	245								9	4	13	258	271	0%	16%	10	280
Longwood NB Left	24	25			25										0	26	26	11%	0%	5	31
Blackfan EB Right	43	45			45										0	47	47	0%	11%	7	54
Blackfan EB Thru	21	20			20										0	21	21	27%	0%	12	33
Blackfan EB Left	61	60			60										0	63	63	0%	16%	10	73
Longwood/Avenue Louis Pasteur																					
Longwood SB Thru	400	400			400								36		36	420	456	0%	24%	15	471
Longwood SB Left	85	85			85									-1	-1	89	88	0%	0%	0	88
ALP WB Right	112	110			110									4	4	116	120	0%	16%	10	130
ALP WB Left	69	70			70									2	2	74	76	0%	4%	2	78
Longwood NB Right	33	35			35									-3	-3	37	34	0%	0%	0	34
Longwood NB Thru	190	190	20	-30	180								9		9	189	198	24%	0%	11	209

Note: 2 way binney based on longwood/binney volumes from Winsor Project

819 Beacon Street - BCH DPIR

December 2012

Morning Peak Hour Volumes

2022 Growth	
Percent	0.5%
Years	10

2022 Trips	
In	137
Out	16

					Background Projects												Improvements					2022 Project Trips			
Intersection	Raw Volumes	Rounded Volumes	Balanced Volumes	Existing 2012 Volumes	Parcel 7	1282 Boylston St	Fenway Hotel	Fenway Triangle	Winsor	Mass Mental	57 Binney	LRI	Landmark North	Longwood Center	Stonewall Audubon	Total	Sears Rotary	Mountfort Street	Total	2022 Grown	2022 No-Build	% IN	% OUT	Trips	2022 Build
Park/Mountfort																									
Park NB left	309	310		310	4			2					3	5	2	16			0	326	342	0%	0%	0	342
Mountfort EB thru	0	0		0												0		45	45	0	45	9%	0%	12	57
Mountfort EB right	531	530		530	42							2	12	18		74		-45	-45	557	586	0%	0%	0	586
Mountfort WB left	5	5		5	0											0			0	5	5	0%	0%	0	5
Mountfort WB thru	39	40		40	5											5			0	42	47	0%	9%	1	48
Beacon/Park																									
Park NB left	45	45		45	0								2			2			0	47	49	0%	0%	0	49
Park NB thru	269	270	25	295	0			2					3	5		10			0	310	320	0%	0%	0	320
Park NB right	42	40		40	0								11		1	12			0	42	54	29%	0%	40	94
Park SB left	51	50		50	42										0	42		-45	-45	53	50	0%	0%	0	50
Park SB thru	459	460		460	0							2	12	18		32			0	484	516	0%	0%	0	516
Park SB right	29	30		30	0											0			0	32	32	0%	0%	0	32
Beacon EB uturn	14	15		15	0											0			0	16	16	0%	0%	0	16
Beacon EB left	26	25		25	0											0			0	26	26	0%	0%	0	26
Beacon EB thru	727	725	20	745	14											14			0	783	797	7%	0%	10	807
Beacon EB right	197	195		195	0								9			9			0	205	214	0%	0%	0	214
Beacon WB uturn	3	5		5	0											0			0	5	5	0%	0%	0	5
Beacon WB left	193	195		195	2								48		2	52			0	205	257	0%	29%	5	262
Beacon WB thru	424	425	-5	420	3										1	4			0	441	445	0%	7%	1	447
Beacon WB right	13	15		15	4										2	6			0	16	22	0%	0%	0	22
Beacon/Aberdeen																									
Aberdeen NB left	5	5		5	0											0			0	5	5	0%	0%	0	5
Aberdeen NB right	6	5		5	0											0			0	5	5	0%	0%	0	5
Beacon EB thru	822	820	10	830	56								11		1	68		-45	-45	872	895	36%	0%	49	945
Beacon EB right	12	10		10	0											0			0	11	11	0%	0%	0	11
Beacon WB uturn	2	5		5	0											0			0	5	5	0%	0%	0	5
Beacon WB left	2	5		5	0										5	5			0	5	10	0%	0%	0	10
Beacon WB thru	631	630		630	9								48			57			0	662	719	0%	36%	6	725
Beacon/Arundel/Miner																									
Miner NB left	15	15		15	0										5	5			0	16	21	0%	0%	0	21
Miner NB thru	14	15		15	0											0			0	16	16	0%	0%	0	16
Miner NB right	12	10		10	0										3	3			0	11	14	0%	0%	0	14
Arundel SB thru	16	15		15	0											0			0	16	16	0%	0%	0	16
Arundel SB right	5	5		5	0											0			0	5	5	0%	0%	0	5
Beacon EB left	2	5		5	0											0			0	5	5	0%	0%	0	5
Beacon EB thru	757	755	10	765	56								11			67		-45	-45	804	826	36%	0%	49	875
Beacon EB right	70	70		70	0										1	1			0	74	75	0%	0%	0	75
Beacon WB left	21	20		20	0										1	1			0	21	22	0%	0%	0	22
Beacon WB thru	616	615		615	9								48			57			0	646	703	0%	36%	6	709
Beacon WB right	1	5		5	0											0			0	5	5	0%	0%	0	5
Beacon/Munson																									
Munson NB left	0	0		0												0			0	0	0	0%	6%	1	1
Munson NB right	1	5		5	0											0			0	5	5	0%	4%	1	6
Beacon EB thru	766	765	5	770	56								11		3	70		-45	-45	809	834	30%	0%	41	875
Beacon EB right	1	5		5	0											0			0	5	5	6%	0%	8	13
Beacon WB left	2	5		5	0											0			0	5	5	4%	0%	5	11
Beacon WB thru	631	630	5	635	9								48		1	58			0	667	725	0%	30%	5	730
Beacon/Mountfort/Maitland																									
Maitland NB left	3	5		5	7											7			0	5	12	0%	30%	5	17
Maitland NB thru	1	5		5	6											6			0	5	11	0%	9%	1	13
Maitland NB right	1	5		5	22											22			0	5	27	0%	23%	4	31
Mountfort SB left	7	5		5	0											0		45	45	5	50	0%	0%	0	50
Mountfort SB thru	0	0		0												0			0	0	0	9%	0%	12	12
Mountfort SB right	2	5		5	0											0			0	5	5	0%	0%	0	5
Beacon EB left	2	5		5	0											0			0	5	5	0%	0%	0	5
Beacon EB thru	737	735		735	20								11		3	34		-45	-45	773	762	0%	4%	1	762
Beacon EB right	36	35		35	36											36			0	37	73	30%	0%	41	114
Beacon WB left	31	30		30	88											88			0	32	120	23%	0%	32	151
Beacon WB thru	626	625		625	2								48		1	51			0	657	708	4%	0%	5	713
Beacon WB right	27	25		25	2											2			0	26	28	0%	0%	0	28

819 Beacon Street - BCH DPIR

Morning Peak Hour Volumes

December 2012

2022 Growth	
Percent	0.5%
Years	10

2022 Trips	
In	137
Out	16

Intersection	Raw Volumes	Rounded Volumes	Balanced Volumes	Existing 2012 Volumes	Background Projects: Parcel 7	1282 Boylston St	Fenway Hotel	Fenway Triangle	Winsor	Mass Mental	57 Binney	LRI	Landmark North	Longwood Center	Stonewall Audubon	Total	Improvements: Sears Rotary	Mountfort Street	Total	2022 Grown	2022 No-Build	2022 Project Trips: % IN	% OUT	Trips	2022 Build
Brookline/Fullerton/Kilmarnock																									
Kilmarnock NB left	53	55		55	0			8								8			0	58	66	0%	0%	0	66
Kilmarnock NB thru	61	60		60	0								42			42			0	63	105	0%	0%	0	105
Kilmarnock NB right	19	20		20	0											0			0	21	21	0%	0%	0	21
Fullerton SB left	21	20		20	0								9			9			0	21	30	0%	0%	0	30
Fullerton SB thru	37	35		35	0								7			7			0	37	44	0%	0%	0	44
Fullerton SB right	53	55		55	0								20			20			0	58	78	0%	0%	0	78
Brookline EB left	134	135		135	0								110			110			0	142	252	0%	0%	0	252
Brookline EB thru	283	285	55	340	82		14					1				97			0	357	454	17%	0%	23	478
Brookline EB right	46	45		45	0											0			0	47	47	0%	0%	0	47
Brookline WB left	45	45		45	0			-29								-29			0	47	18	0%	0%	0	18
Brookline WB thru	281	280		280	16		10					1	11			38			0	294	332	0%	17%	3	335
Brookline WB right	83	85		85	0								77			77			0	89	166	0%	0%	0	166
Brookline/Overland																									
SB Overland left	9	10		10	13											13			0	11	24	0%	11%	2	25
SB Overland right	24	25		25	12											12			0	26	38	0%	17%	3	41
Brookline EB left	41	40		40	54											54			0	42	96	17%	0%	23	119
Brookline EB thru	282	280	40	320	28		7					1	9			45			0	336	381	0%	0%	0	381
Brookline WB thru	393	395	-5	390	4			-29				1	88			64			0	410	474	0%	0%	0	474
Brookline WB right	14	15		15	0		9									9			0	16	25	11%	0%	15	40
Kenmore Square																									
Brookline NB right	297	295		295	8		7					1	9			25			0	310	335	0%	11%	2	337
Deerfield SB right	14	15		15	0											0			0	16	16	0%	0%	0	16
Comm EB uturn	84	85		85	0											0			0	89	89	0%	0%	0	89
Comm EB thru	436	435		435	0											0			0	457	457	0%	0%	0	457
Comm EB right (brookline)	36	35		35	0											0			0	37	37	0%	0%	0	37
Comm EB hard right (beacon)	17	15		15	10											10			0	16	26	0%	0%	0	26
Comm/Beacon WB uturn	25	25		25	0											0			0	26	26	0%	0%	0	26
Comm/Beacon WB left (brookline)	276	275		275	31		9	-29				1	88			100			0	289	389	11%	0%	15	404
Comm/Beacon WB soft left (beacon)	570	570	60	630	124								48		1	173			0	662	835	27%	0%	37	872
Comm/Beacon WB thru	439	440		440	0											0			0	463	463	0%	0%	0	463
Comm/Beacon WB right	13	15		15	0											0			0	16	16	0%	0%	0	16
Beacon NEB soft right	702	700		700	28								11		3	42			0	736	778	0%	27%	4	782
Beacon NEB hard right	17	15		15	0											0			0	16	16	0%	0%	0	16
Sear's Rotary																			0		0				
Riverway/Fenway																									
EB Riverway right	819	820	-5	815	21	13	7	10	4	4	0		19			78	-74		-74	857	861	0%	0%	0	861
WB Park left	753	755	5	760	11							-2	81	18		108			0	799	907	0%	24%	4	911
Riverway/Park																									
NB Park hard left	236	235	5	240	11								12			23			0	252	275	0%	17%	3	278
NB Park bare left	450	450	15	465	2	2		12	9	0	0	16	10			51			0	489	540	0%	0%	0	540
EB Riverway thru		0		0	0											0	74		74	0	74	22%	0%	30	104
WB Park thru	517	515	5	520	0							-2	69	18		85			0	547	632	0%	7%	1	633
WB Park right	338	340		340	0							2			2	4			0	357	361	0%	22%	4	365
Park Drive NB/Landmark																									
WB Landmark thru	20	20		20	0								16			16			0	21	37	0%	0%	0	37
WB Landmark right	10	10		10	0								16			16			0	11	27	0%	0%	0	27
NB Park left	686	685		685	13	2		12	9	0	0	16	7			59			0	720	779	0%	17%	3	782
NB Park thru	389	390		390	0			2						5		7	-74		-74	410	343	7%	0%	10	353
Brookline/Fenway																									
EB Brookline thru	734	735		735	14	14	7	10	4	5	3	2	46	14		119	53		53	773	945	7%	0%	10	954
EB Brookline bare right (jughandle)	50	50		50	0											0	-53		-53	53	0	0%	0%	0	0
EB Brookline right	57	55		55	0							1		4		5			0	58	63	0%	0%	0	63
WB Brookline thru	943	945	5	950	13	2	10	10	68	30	9	-1	13	54		208			0	999	1207	0%	0%	0	1207
SB Fenway left	674	675		675	21	13			4	4	0		90			132			0	710	842	0%	0%	0	842
SB Fenway bare left	71	70		70	0											0	-74		-74	74	0	0%	0%	0	0
SB Fenway thru	656	655	5	660	11		7	10					10			38			0	694	732	0%	17%	3	734
SB Fenway right	168	170		170	0							-2		18		16			0	179	195	0%	7%	1	196

819 Beacon Street - BCH DPIR **December 2012**

Morning Peak Hour Volumes

2022 Growth	
Percent	0.5%
Years	10

2022 Trips	
In	137
Out	16

Intersection	Raw Volumes	Rounded Volumes	Balanced Volumes	Existing 2012 Volumes	Background Projects: Parcel 7	1282 Boylston St	Fenway Hotel	Fenway Triangle	Winsor	Mass Mental	57 Binney	LRI	Landmark North	Longwood Center	Stonewall Audubon	Total	Improvements: Sears Rotary	Mountfort Street	Total	2022 Grown	2022 No-Build	2022 Project Trips: % IN	% OUT	Trips	2022 Build
Brookline/Park Dr./Boylston																									
NB Park left (Brookline)	101	100		100	0									18		18			0	105	123	0%	0%	0	123
NB Park thru (Park)	514	515	10	525	0							14	42			56	-127		-127	552	481	5%	0%	7	488
NB Park bare right (Brookline)	131	130		130	47			4					34			85			0	137	222	12%	0%	16	238
NB Park hard right (Boylston)	82	80		80	0	8		18								26			0	84	110	0%	0%	0	110
EB Brookline left (Park Dr)	0	0		0	0								67	5		72	53		53	0	125	2%	0%	3	128
EB Brookline thru (Brookline)	409	410		410	35	27	14	-4				1	72			145			0	431	576	5%	0%	7	583
EB Brookline right (Boylston)	988	990	10	1000	0			14	8	9	3	1	3	9		47			0	1051	1098	0%	0%	0	1098
WB Brookline thru (Brookline)	259	260		260	3		10	4				-1	13			29			0	273	302	0%	0%	0	302
WB Brookline right (Park)	168	170	-5	165	13			4				2	18			37			0	173	210	0%	17%	3	213
NWB Boylston bare left (Brookline)	590	590		590	0	2		6	68	30	9			36		151			0	620	771	0%	0%	0	771
NWB Boylston bare right (Park Dr)	381	380	5	385	0	2		10	9	0	0	12	38			71			0	405	476	0%	0%	0	476
NWB Boylston hard right (Brookline)	10	10		10	0								4			4			0	11	15	0%	0%	0	15

819 Beacon Street - BCH DPIR

Evening Peak Hour Volumes

December 2012

2022 Growth			2022 Trips	
Percent	0.5%		In	25
Years	10		Out	113

										Background Projects							Improvements					2022 Project Trips			
Intersection	**Raw Volumes**	**Rounded Volumes**	**Balanced Volumes**	**Existing 2012 Volumes**	**Parcel 7**	**1282 Boylston St**	**Fenway Hotel**	**Fenway Triangle**	**Winsor**	**Mass Mental**	**57 Binney**	**LRI**	**Landmark North**	**Longwood Center**	**Stonewall Audubon**	**Total**	**Sears Rotary**	**Mountfort Street**	**Total**	**2022 Grown**	**2022 No-Build**	**% IN**	**% OUT**	**Trips**	**2022 Build**
Park/Mountfort																									
Park NB left	432	430		430	17			6				2	15	15		55			0	452	507	0%	0%	0	507
Mountfort EB thru	0	0		0	0											0		45	45	0	45	9%	0%	2	47
Mountfort EB right	647	645		645	16			9				1	1	6	2	35		-45	-45	678	668	0%	0%	0	668
Mountfort WB left	5	5		5	0											0			0	5	5	0%	0%	0	5
Mountfort WB thru	46	45		45	34											34			0	47	81	0%	9%	10	91
Beacon/Park																									
Park NB left	122	120	10	130	0								11			11			0	137	148	0%	0%	0	148
Park NB thru	415	415	45	460	0			6				2	15	15		38			0	484	522	0%	0%	0	522
Park NB right	58	60	5	65	0								61		2	63			0	68	131	29%	0%	7	139
Park SB left	24	25		25	16											16		-45	-45	26	-3	0%	0%	0	-3
Park SB thru	568	570		570	0			9				1	1	6		17			0	599	616	0%	0%	0	616
Park SB right	16	15		15	0										2	2			0	16	18	0%	0%	0	18
Beacon EB uturn	24	25		25	0											0			0	26	26	0%	0%	0	26
Beacon EB left	29	30		30	0											0			0	32	32	0%	0%	0	32
Beacon EB thru	437	435	5	440	6										1	7			0	463	470	7%	0%	2	471
Beacon EB right	130	130		130	0								0			0			0	137	137	0%	0%	0	137
Beacon WB uturn	3	5		5	0											0			0	5	5	0%	0%	0	5
Beacon WB left	268	270		270	9								3		1	13			0	284	297	0%	29%	33	330
Beacon WB thru	628	630	25	655	15											15			0	688	703	0%	7%	8	711
Beacon WB right	13	15		15	17										1	18			0	16	34	0%	0%	0	34
Beacon/Aberdeen																									
Aberdeen NB left	4	5		5												0			0	5	5	0%	0%	0	5
Aberdeen NB right	11	10		10												0			0	11	11	0%	0%	0	11
Beacon EB uturn	1	5		5												0			0	5	5	0%	0%	0	5
Beacon EB thru	528	530	-10	520	22								61		5	88		-45	-45	547	590	36%	0%	9	599
Beacon EB right	7	5		5												0			0	5	5	0%	0%	0	5
Beacon WB uturn	1	5		5												0			0	5	5	0%	0%	0	5
Beacon WB left	3	5		5											2	2			0	5	7	0%	0%	0	7
Beacon WB thru	941	940		940	41								3			44			0	988	1032	0%	36%	41	1073
Beacon/Arundel/Miner																									
Miner NB left	39	40		40											2	2			0	42	44	0%	0%	0	44
Miner NB thru	16	15		15												0			0	16	16	0%	0%	0	16
Miner NB right	36	35		35											2	2			0	37	39	0%	0%	0	39
Arundel SB left	2	5		5												0			0	5	5	0%	0%	0	5
Arundel SB thru	4	5		5												0			0	5	5	0%	0%	0	5
Arundel SB right	5	5		5												0			0	5	5	0%	0%	0	5
Beacon EB left	2	5		5												0			0	5	5	0%	0%	0	5
Beacon EB thru	511	510		510	22								61			83		-45	-45	536	574	36%	0%	9	583
Beacon EB right	21	20		20											5	5			0	21	26	0%	0%	0	26
Beacon WB left	12	10		10											3	3			0	11	14	0%	0%	0	14
Beacon WB thru	906	905		905	41								3			44			0	951	995	0%	36%	41	1036
Beacon WB right	6	5		5												0			0	5	5	0%	0%	0	5
Beacon/Munson																									
Munson NB left	1	5		5												0			0	5	5	0%	6%	7	12
Munson NB right	1	5		5												0			0	5	5	0%	4%	5	10
Beacon EB thru	544	545		545	22								61		2	85		-45	-45	573	613	30%	0%	8	620
Beacon EB right	1	5		5												0			0	5	5	6%	0%	2	7
Beacon WB left	0	0		0												0			0	0	0	4%	0%	1	1
Beacon WB thru	911	910		910	41								3		3	47			0	957	1004	0%	30%	34	1037

819 Beacon Street - BCH DPIR **December 2012**

Evening Peak Hour Volumes

2022 Growth	
Percent	0.5%
Years	10

2022 Trips	
In	25
Out	113

										Background Projects							Improvements					2022 Project Trips			
Intersection	**Raw Volumes**	**Rounded Volumes**	**Balanced Volumes**	**Existing 2012 Volumes**	**Parcel 7**	**1282 Boylston St**	**Fenway Hotel**	**Fenway Triangle**	**Winsor**	**Mass Mental**	**57 Binney**	**LRI**	**Landmark North**	**Longwood Center**	**Stonewall Audubon**	**Total**	**Sears Rotary**	**Mountfort Street**	**Total**	**2022 Grown**	**2022 No-Build**	**% IN**	**% OUT**	**Trips**	**2022 Build**
Beacon/Mountfort/Maitland																									
Maitland NB left	31	30		30	28											28			0	32	60	0%	30%	34	93
Maitland NB thru	10	10		10	23											23			0	11	34	0%	9%	10	44
Maitland NB right	41	40		40	83											83			0	42	125	0%	23%	26	151
Mountfort SB left	16	15		15												0		45	45	16	61	0%	0%	0	61
Mountfort SB thru	0	0		0												0			0	0	0	9%	0%	2	2
Mountfort SB right	3	5		5												0			0	5	5	0%	0%	0	5
Beacon EB left	5	5		5												0			0	5	5	0%	0%	0	5
Beacon EB thru	536	535		535	6								61		2	69		-45	-45	562	586	0%	4%	5	591
Beacon EB right	8	10		10	16											16			0	11	27	30%	0%	8	34
Beacon WB left	2	5		5	39											39			0	5	44	23%	0%	6	50
Beacon WB thru	874	875		875	13								3		3	19			0	920	939	4%	0%	1	940
Beacon WB right	16	15		15	11											11			0	16	27	0%	0%	0	27
Brookline/Fullerton/Kilmarnock																									
Kilmarnock NB left	90	90		90									1			1			0	95	96	0%	0%	0	96
Kilmarnock NB thru	34	35		35									6			6			0	37	43	0%	0%	0	43
Kilmarnock NB right	47	45		45												0			0	47	47	0%	0%	0	47
Fullerton SB left	61	60		60									40			40			0	63	103	0%	0%	0	103
Fullerton SB thru	64	65		65									36			36			0	68	104	0%	0%	0	104
Fullerton SB right	135	135		135									95			95			0	142	237	0%	0%	0	237
Brookline EB left	90	90		90									20			20			0	95	115	0%	0%	0	115
Brookline EB thru	290	290	30	320	34	3	14									51			0	336	387	17%	0%	4	392
Brookline EB right	31	30		30												0			0	32	32	0%	0%	0	32
Brookline WB left	40	40		40												0			0	42	42	0%	0%	0	42
Brookline WB thru	315	315		315	71		15						6			92			0	331	423	0%	17%	19	442
Brookline WB right	36	35		35									9			9			0	37	46	0%	0%	0	46
Brookline/Overland																									
SB Overland left	16	15		15	48											48			0	16	64	0%	11%	12	76
SB Overland right	52	50		50	48											48			0	53	101	0%	17%	19	120
Brookline EB left	33	35		35	25											25			0	37	62	17%	0%	4	66
Brookline EB thru	386	385		385	9	3	10						40			62			0	405	467	0%	0%	0	467
Brookline WB thru	326	325	10	335	23								15			38			0	352	390	0%	0%	0	390
Brookline WB right	14	15		15	0		10									10			0	16	26	11%	0%	3	29
Kenmore Square																									
Brookline NB right	369	370		370	30	3	10						40			83			0	389	472	0%	11%	12	484
Deerfield SB right	16	15		15	0											0			0	16	16	0%	0%	0	16
Comm EB uturn	52	50		50												0			0	53	53	0%	0%	0	53
Comm EB thru	547	545		545												0			0	573	573	0%	0%	0	573
Comm EB right (brookline)	33	35		35												0			0	37	37	0%	0%	0	37
Comm EB hard right (beacon)	28	30		30	4											4			0	32	36	0%	0%	0	36
Comm/Beacon WB uturn	57	55		55												0			0	58	58	0%	0%	0	58
Comm/Beacon WB left (brookline)	255	255		255	11		10						15			36			0	268	304	11%	0%	3	307
Comm/Beacon WB soft left (beacon)	845	845	10	855	49								3		3	55			0	899	954	27%	0%	7	960
Comm/Beacon WB thru	451	450		450												0			0	473	473	0%	0%	0	473
Comm/Beacon WB right	28	30		30												0			0	32	32	0%	0%	0	32
Beacon NEB soft right	591	590	-20	570	123								61		2	186			0	599	785	0%	27%	31	816
Beacon NEB hard right	25	25		25												0			0	26	26	0%	0%	0	26
Sear's Rotary																									
Riverway/Fenway																									
EB Riverway right	740	740		740	8	10	7	51	7	8	0		3			94	-116		-116	778	756	0%	0%	0	756
WB Park left	715	715	30	745	47			9				-1	84	6		145			0	783	928	0%	24%	27	955
Riverway/Park																									
NB Park hard left	270	270	30	300	47								80			127			0	315	442	0%	17%	19	462
NB Park bare left	777	775	85	860	10	8		46	2	0	0	12	73			151			0	904	1055	0%	0%	0	1055
EB Riverway thru	0	0		0												0	116		116	0	116	22%	0%	6	122
WB Park thru	440	440	5	445				9				-1	4	6		18			0	468	486	0%	7%	8	494
WB Park right	500	500	15	515								1				1			0	541	542	0%	22%	25	567

819 Beacon Street - BCH DPIR **December 2012**

Evening Peak Hour Volumes

2022 Growth	
Percent	0.5%
Years	10

2022 Trips	
In	25
Out	113

Intersection	Raw Volumes	Rounded Volumes	Balanced Volumes	Existing 2012 Volumes	Background Projects: Parcel 7	1282 Boylston St	Fenway Hotel	Fenway Triangle	Winsor	Mass Mental	57 Binney	LRI	Landmark North	Longwood Center	Stonewall Audubon	Total	Improvements: Sears Rotary	Mountfort Street	Total	2022 Grown	2022 No-Build	2022 Project Trips: % IN	% OUT	Trips	2022 Build
Park Drive NB/Landmark																									
WB Landmark thru	115	115		115									106			106			0	121	227	0%	0%	0	227
WB Landmark right	60	60		60									87			87			0	63	150	0%	0%	0	150
NB Park left	1047	1045		1045	57	8		46	2	0	0	12	47			172			0	1098	1270	0%	17%	19	1290
NB Park thru	605	605		605				6				2		15	2	25	-116		-116	636	545	7%	0%	2	547
Brookline/Fenway																									
EB Brookline thru	751	750		750	7	10	7	30	18	12	7	10	12	45		158	63		63	788	1009	7%	0%	2	1011
EB Brookline bare right (jughandle)	60	60		60												0	-63		-63	63	0	0%	0%	0	0
EB Brookline right	58	60		60								17		15		32			0	63	95	0%	0%	0	95
WB Brookline thru	788	790	-10	780	14	7	15	27	18	17	3	-3	47	15		160			0	820	980	0%	0%	0	980
SB Fenway left	529	530	15	545	8	10		13	7	8	0		22			68			0	573	641	0%	0%	0	641
SB Fenway bare left	110	110		110												0	-116		-116	116	0	0%	0%	0	0
SB Fenway thru	692	690	25	715	47		7	47					65			166			0	752	918	0%	17%	19	937
SB Fenway right	112	110	5	115								-1		6		5			0	121	126	0%	7%	8	134
Brookline/Park Dr./Boylston																									
NB Park left (Brookline)	91	90	5	95										5		5			0	100	105	0%	0%	0	105
NB Park thru (Park)	754	755	-10	745								6	10		2	18	-179		-179	783	622	5%	0%	1	623
NB Park bare right (Brookline)	78	80		80	19			11					4			34			0	84	118	12%	0%	3	121
NB Park hard right (Boylston)	93	95		95		5		23								28			0	100	128	0%	0%	0	128
EB Brookline left (Park Dr)		0		0								2	3	15		20	63		63	0	83	2%	0%	1	84
EB Brookline thru (Brookline)	344	345		345	15	20	14	13					16			78			0	363	441	5%	0%	1	442
EB Brookline right (Boylston)	918	920	30	950				30	25	20	7	8	15	30		135			0	999	1134	0%	0%	0	1134
WB Brookline thru (Brookline)	233	235		235	14		15						47			76			0	247	323	0%	0%	0	323
WB Brookline right (Park)	313	315		315	57			10					55			122			0	331	453	0%	17%	19	472
NWB Boylston bare left (Brookline)	452	450		450		7		27	18	17	3	-3		10		79			0	473	552	0%	0%	0	552
NWB Boylston bare right (Park Dr)	597	595	-5	590		8		42	2	0	0	6	12			70			0	620	690	0%	0%	0	690
NWB Boylston hard right (Brookline)	24	25		25		3							1			4			0	26	30	0%	0%	0	30

Vanasse Hangen Brustlin, Inc.

Crash / Accident Analysis

CCB Vehicle Crash Summary (2008-2010)

	Brookline Avenue at:				Longwood Avenue at:							Binney Street at:			Blackfan Street at:
	Riverway	Francis Street	Jimmy Fund Way/ Deaconess Road	Longwood Avenue	Riverway	Pilgrim Road	Binney Street	Blackfan Street	Avenue Louis Pasteur	Palace Road	Huntington Avenue	Francis Street	Jimmy Fund Way	Shattuck Street	Avenue Louis Pasteur
Currently Signalized?	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	No	No	No
MassHighway ACR	0.77	0.77	0.77	0.77	0.77	0.57	0.77	0.77	0.57	0.57	0.77	0.77	0.57	0.57	0.57
MassHighway CCR	1.09	0.20	0.10	0.47	0.61	0.11	0.12	0.14	0.46	0.36	0.34	0.16	0.00	0.00	0.00
Exceeds?	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Year															
2008	23	3	2	7	6	0	1	1	3	1	5	1	0	0	0
2009	12	1	0	3	9	0	0	1	0	2	2	0	0	0	0
2010	10	1	0	3	6	1	1	0	2	1	2	1	0	0	0
Total	45	5	2	13	21	1	2	2	5	4	9	2	0	0	0
Collision Type															
Angle	19	2	0	2	8	0	0	0	3	0	2	0	0	0	0
Head-on	3	0	0	0	1	0	0	0	0	0	1	0	0	0	0
Rear-end	9	1	0	5	4	0	1	1	0	1	2	0	0	0	0
Sideswipe, opposite direction	3	0	0	1	2	0	0	0	0	0	0	0	0	0	0
Sideswipe, same direction	4	0	1	1	0	0	0	0	0	1	0	0	0	0	0
Single vehicle crash	3	0	0	2	6	0	1	0	2	0	1	1	0	0	0
Not reported/Unknown	4	2	1	2	0	1	0	1	0	2	3	1	0	0	0
Total	45	5	2	13	21	1	2	2	5	4	9	2	0	0	0
Crash Severity															
Fatal injury	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-fatal injury	16	2	0	2	12	0	2	1	2	0	4	1	0	0	0
Property damage only (none injured)	29	2	2	6	8	1	0	1	2	2	4	0	0	0	0
Not reported/Unknown	0	1	0	5	1	0	0	0	1	**2**	1	1	0	0	0
Total	45	5	2	13	21	1	2	2	5	4	9	2	0	0	0
Time of Day															
Weekday, 7:00 AM - 9:00 AM	5	0	0	4	5	0	1	1	1	2	1	1	0	0	0
Weekday, 4:00 PM - 6:00 PM	5	0	1	2	1	0	0	0	1	1	1	0	0	0	0
Saturday, 11:00 AM - 2:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Weekday, other time	27	4	1	7	9	0	0	1	3	**1**	4	1	0	0	0
Weekend, other time	8	1	0	0	6	1	0	0	0	0	3	0	0	0	0
Total	45	5	2	13	21	1	2	2	5	4	9	2	0	0	0
Pavement Conditions															
Dry	35	5	2	10	19	0	2	1	4	1	6	1	0	0	0
Wet	9	0	0	1	2	0	0	1	1	1	1	1	0	0	0
Snow	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Not reported/Unknown	1	0	0	2	0	1	0	0	0	2	1	0	0	0	0
Total	45	5	2	13	21	1	2	2	5	4	9	2	0	0	0
Non Motroist (Bike, Pedestrian)															
Total	3	0	0	1	8	0	1	0	1	0	0	1	0	0	0

819 Beacon Street Vehicle Crash Summary (2008-2010)

	Sears Rotary					Brookline Avenue at:		Audubon Circle	Beacon Street at:				Kenmore Square	Park Drive at:
	Riverway/ Park Drive	Riverway/ Fenway	Brookline Avenue/ Fenway	Park Drive/ Landmark Driveway	Brookline Avenue/Park Drive/Boylston Street	Fullerton Street/ Kilmarnock Street	Overland Street	Beacon Street/Park Drive	Aberdeen Street	Arundel Street/Miner Street	Munson Street	Mountfort Street/ Maitland Street	Beacon St/ Comm Ave/ Brookline Ave	Mountfort Street
Currently Signalized?	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	No	No
MassHighway ACR	0.77	0.77	0.77	0.77	0.77	0.57	0.77	0.77	0.57	0.57	0.77	0.77	0.57	0.57
MassHighway CCR Exceeds?	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Year														
2008	0	0	9	3	25	3	0	11	1	1	1	0	11	2
2009	0	1	8	5	11	2	1	8	0	3	0	0	3	0
2010	0	1	3	2	5	0	0	3	0	3	0	1	0	3
Total	0	2	20	10	41	5	1	22	1	7	1	1	14	5
Collision Type														
Angle	0	0	7	4	15	3	0	8	1	2	0	0	1	1
Head-on	0	0	1	0	4	0	0	1	0	0	0	0	1	1
Rear-end	0	2	6	1	6	0	0	3	0	1	1	0	1	0
Rear-to-Rear	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Sideswipe, opposite direction	0	0	0	0	1	0	0	1	0	0	0	0	0	0
Sideswipe, same direction	0	0	3	3	6	1	0	1	0	**0**	0	1	7	2
Single vehicle crash	0	0	2	1	6	0	0	0	0	0	0	0	0	0
Not reported/Unknown	0	0	1	1	3	1	1	7	0	4	0	0	4	1
Total	0	2	20	10	41	5	1	22	1	7	1	1	14	5
Crash Severity														
Fatal injury	0	0	0	0	0	0	0	0	0	**0**	0	0	0	0
Non-fatal injury	0	0	6	2	13	1	1	6	0	0	0	0	1	0
Property damage only (none injured)	0	2	10	6	22	2	0	10	1	2	1	1	10	3
Not reported/Unknown	0	0	4	2	6	2	0	6	0	5	0	0	3	2
Total	0	2	20	10	41	5	1	22	1	7	1	1	14	5
Time of Day														
Weekday, 7:00 AM - 9:00 AM	0	0	1	1	6	0	0	4	0	1	0	1	1	1
Weekday, 4:00 PM - 6:00 PM	0	0	2	0	3	1	1	0	1	1	0	0	0	0
Saturday, 11:00 AM - 2:00 PM	0	0	0	0	3	0	0	1	0	1	0	0	0	0
Weekday, other time	0	2	9	6	22	2	0	10	0	4	0	0	11	3
Weekend, other time	0	0	8	3	7	2	0	7	0	0	1	0	2	1
Total	0	2	20	10	41	5	1	22	1	7	1	1	14	5
Pavement Conditions														
Dry	0	1	17	7	30	5	0	16	1	2	0	1	10	4
Wet	0	1	2	3	10	0	1	3	0	2	1	0	2	0
Snow	0	0	1	0	1	0	0	0	0	0	0	0	0	0
Not reported/Unknown	0	0	0	0	0	0	0	3	0	3	0	0	2	1
Total	0	2	20	10	41	5	1	22	1	7	1	1	14	5
Non Motroist (Bike, Pedestrian)														
Total	0	0	0	0	2	0	1	0	0	0	0	0	0	1

Crash Date	Crash Time	Crash Severity	Total Vehicles	Total Injured	Total Fatals	Collision manner	Road Surface	Lighting	Weather	Intersection	Distance From Nearest Intersection	Vehicles Travel Directions	Most Harmful Events	Vehicle Action Prior to Crash	Vehicle Configuration	Non Motorist Type
2/6/2008	7:05 AM	Not Reported	2	0	0	Not reported	Wet	Daylight	Rain	BINNEY STREET / FRANCIS STREET		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Backing	V1: Passenger car / V2:Passenger car	
2/2/2010	12:25 PM	Non-fatal injury	1	1	0	Single vehicle crash	Dry	Daylight	Clear	FRANCIS STREET / BINNEY STREET		V1:Westbound	V1: Collision with pedestrian	V1: Travelling straight ahead	V1: Passenger car	P3:Pedestrian
9/15/2008	3:15 AM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Clear	BROOKLINE AVENUE / FRANCIS STREET		V1:Southbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Travelling straight ahead	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Not reported	
10/28/2008	2:30 AM	Non-fatal injury	2	2	0	Rear-end	Dry	Daylight	Clear	BROOKLINE AVENUE / FRANCIS STREET		V1:Northbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
12/12/2008	10:37 AM	Property damage only (none injured)	2	0	0	Not reported	Dry	Daylight	Clear		500 BROOKLINE AVENUE	V1:Southbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
12/8/2009	11:58 AM	Not Reported	2	0	0	Not reported	Dry	Daylight	Clear	BROOKLINE AVENUE / FRANCIS STREET		V1:Eastbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Not reported	V1: Passenger car / V2:Not reported	
9/19/2010	3:45 PM	Non-fatal injury	2	1	0	Angle	Dry	Daylight	Clear		BROOKLINE AVENUE / FRANCIS STREET	V1:Southbound / V2:Not reported	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Turning right	V1: Not reported / V2:Not reported	
3/24/2008	10:15 AM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear	BROOKLINE AVENUE / DEACONESS ROAD		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Travelling straight ahead	V1: Passenger car / V2:Not reported	
11/4/2008	4:00 PM	Property damage only (none injured)	2	0	0	Not reported	Dry	Daylight	Clear		456 BROOKLINE AVENUE	V1:Westbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Not reported / V2:Not reported	
1/3/2008	5:15 AM	Non-fatal injury	2	1	0	Angle	Dry	Daylight	Clear	BROOKLINE AVENUE / LONGWOOD AVENUE		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
2/14/2008	5:40 PM	Property damage only (none injured)	2	0	0	Rear-end	Dry	Dark - lighted roadway	Clear	JOSLIN PLACE / BROOKLINE AVENUE / LONGWOOD AVENUE		V1:Northbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Travelling straight ahead	V1: Not reported / V2:Passenger car	
4/4/2008	2:19 AM	Property damage only (none injured)	1	0	0	Angle	Wet	Daylight	Cloudy	LONGWOOD AVENUE / BROOKLINE AVENUE		V1:Westbound	V1: Not reported	V1: Turning left	V1: Passenger car	
4/8/2008	9:26 AM	Property damage only (none injured)	3	0	0	Rear-end	Dry	Daylight	Clear	LONGWOOD AVENUE / BROOKLINE AVENUE		V1:Southbound / V2:Southbound / V3:Not reported	V1: Not reported / V2: Not reported / V3: Not reported	V1: Travelling straight ahead / V2:Not reported / V3:Not reported	V1: Passenger car / V2:Passenger car / V3:Not reported	
6/13/2008	6:15 AM	Non-fatal injury	2	1	0	Rear-end	Dry	Daylight	Clear	LONGWOOD AVENUE / BROOKLINE AVENUE		V1:Westbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
10/8/2008	7:10 PM	Property damage only (none injured)	2	0	0	Rear-end	Dry	Dusk	Clear	BROOKLINE AVENUE / LONGWOOD AVENUE		V1:Northbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Travelling straight ahead	V1: Not reported / V2:Not reported	
12/18/2008	6:00 AM	Unknown	2	0	0	Not reported	Not reported	Not reported	Not Reported	BROOKLINE AVENUE / LONGWOOD AVENUE		V1:Northbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Not reported / V2:Not reported	V1: Not reported / V2:Not reported	
8/7/2009	9:20 AM	Property damage only (none injured)	2	0	0	Rear-end	Dry	Daylight	Clear	BROOKLINE AVENUE / LONGWOOD AVENUE		V1:Southbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Turning right / V2:Travelling straight ahead	V1: Not reported / V2:Not reported	
8/13/2009	6:15 PM	Not Reported	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear	LONGWOOD AVENUE / BROOKLINE AVENUE		V1:Westbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Leaving traffic lane / V2:Slowing or stopped in traffic	V1: Not reported / V2:Not reported	
11/26/2009	7:11 AM	Not Reported	2	0	0	Sideswipe, opposite direction	Dry	Daylight	Clear	BROOKLINE AVENUE / LONGWOOD AVENUE		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Not reported / V2:Not reported	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
1/1/2010	8:35 AM	Unknown	2	0	0	Not reported	Not reported	Not reported	Not Reported	LONGWOOD AVENUE / BROOKLINE AVENUE		V1:Not reported / V2:Northbound	V1: Collision with other movable object / V2: Collision with unknown movable object	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Not reported / V2:Not reported	
1/8/2010	3:50 PM	Property damage only (none injured)	2	0	0	Single vehicle crash	Dry	Daylight	Snow		BROOKLINE AVENUE / LONGWOOD AVENUE	V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Entering traffic lane	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
1/13/2010	3:15 PM	Not Reported	1	0	0	Single vehicle crash	Dry	Daylight	Clear/Clear	BROOKLINE AVENUE / LONGWOOD AVENUE		V1:Eastbound	V1: Collision with pedestrian	V1: Travelling straight ahead	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	P2:Pedestrian
1/4/2008	9:00 AM	Property damage only (none injured)	2	0	0	Not reported	Not reported	Not reported	Not Reported	BROOKLINE AVENUE / RIVERWAY		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Not reported	V1: Passenger car / V2:Passenger car	
2/24/2008	7:00 AM	Property damage only (none injured)	2	0	0	Angle	Dry	Dawn	Clear	BROOKLINE AVENUE / RIVERWAY		V1:Northbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	

Crash Date	Crash Time	Crash Severity	Total Vehicles	Total Injured	Total Fatals	Collision manner	Road Surface	Lighting	Weather	Intersection	Distance From Nearest Intersection	Vehicles Travel Directions	Most Harmful Events	Vehicle Action Prior to Crash	Vehicle Configuration	Non Motorist Type
2/24/2008	7:01 AM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Clear	BROOKLINE AVENUE / RIVERWAY		V1:Eastbound / V2:Northbound	V1: Collision with motor vehicle in traffic / V2: Not reported	V1: Travelling straight ahead / V2:Not reported	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
3/16/2008	9:30 AM	Non-fatal injury	1	1	0	Not reported	Dry	Daylight	Cloudy		RIVERWAY / WASHINGTON STREET	V1:Southbound	V1: Not reported	V1: Slowing or stopped in traffic	V1: Passenger car	
3/21/2008	6:50 PM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear	RIVERWAY / BROOKLINE AVENUE		V1:Northbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Turning right / V2:Turning right	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
3/26/2008	5:12 PM	Non-fatal injury	1	1	0	Not reported	Dry	Daylight	Clear		RIVERWAY / BROOKLINE AVENUE	V1:Eastbound	V1: Collision with pedestrian	V1: Backing	V1: Passenger car	P1:Pedestrian
3/27/2008	5:15 PM	Non-fatal injury	2	1	0	Angle	Dry	Daylight	Cloudy	RIVERWAY / BROOKLINE AVENUE		V1:Northbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
4/8/2008	8:30 PM	Non-fatal injury	2	1	0	Rear-end	Dry	Dusk	Clear		RIVERWAY / BROOKLINE AVENUE	V1:Northbound / V2:Northbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
4/24/2008	9:40 AM	Property damage only (none injured)	2	0	0	Rear-end	Dry	Dark - lighted roadway	Clear	BROOKLINE AVENUE / RIVERWAY		V1:Northbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Unknown	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
5/31/2008	11:16 PM	Property damage only (none injured)	2	0	0	Sideswipe, opposite direction	Dry	Dark - lighted roadway	Clear	RIVERWAY / BROOKLINE AVENUE		V1:Westbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
6/4/2008	5:30 AM	Property damage only (none injured)	2	0	0	Rear-end	Wet	Daylight	Cloudy		BROOKLINE AVENUE / RIVERWAY	V1:Westbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Slowing or stopped in traffic	V1: Passenger car / V2:Passenger car	
6/4/2008	6:00 AM	Property damage only (none injured)	3	0	0	Rear-end	Wet	Dusk	Rain	BROOKLINE AVENUE / RIVERWAY		V1:Westbound / V2:Westbound / V3:Not reported	V1: Not reported / V2: Not reported / V3: Not reported	V1: Slowing or stopped in traffic / V2:Slowing or stopped in traffic / V3:Slowing or stopped in traffic	V1: Passenger car / V2:Passenger car / V3:Passenger car	
6/20/2008	7:38 AM	Non-fatal injury	2	1	0	Rear-end	Dry	Dusk	Clear	RIVERWAY / BROOKLINE AVENUE		V1:Southbound / V2:Southbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Travelling straight ahead	V1: Passenger car / V2:Truck/trailer	
7/10/2008	1:45 AM	Property damage only (none injured)	2	0	0	Rear-end	Dry	Daylight	Clear		RIVERWAY / BROOKLINE AVENUE	V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Slowing or stopped in traffic	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
9/4/2008	9:12 PM	Non-fatal injury	2	2	0	Head-on	Dry	Dark - lighted roadway	Clear	RIVERWAY / BROOKLINE AVENUE		V1:Southbound / V2:Northbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Not reported / V2:Turning left	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
11/4/2008	3:25 PM	Property damage only (none injured)	2	0	0	Rear-end	Dry	Daylight	Clear		RIVERWAY / BROOKLINE AVENUE	V1:Southbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Slowing or stopped in traffic / V2:Slowing or stopped in traffic	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
11/7/2008	10:02 PM	Non-fatal injury	2	1	0	Angle	Wet	Dark - lighted roadway	Cloudy/Rain		RIVERWAY / BROOKLINE AVENUE	V1:Eastbound / V2:Northbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Turning left / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
12/11/2008	11:45 AM	Property damage only (none injured)	2	0	0	Single vehicle crash	Wet	Daylight	Cloudy	RIVERWAY / BROOKLINE AVENUE		V1:Southbound / V2:Southbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Not reported	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	

Crash Date	Crash Time	Crash Severity	Total Vehicles	Total Injured	Total Fatals	Collision manner	Road Surface	Lighting	Weather	Intersection	Distance From Nearest Intersection	Vehicles Travel Directions	Most Harmful Events	Vehicle Action Prior to Crash	Vehicle Configuration	Non Motorist Type
12/26/2008	11:05 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Dark - lighted roadway	Clear		RIVERWAY / BROOKLINE AVENUE	V1:Southbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Turning left	V1: Passenger car / V2:Passenger car	
12/28/2008	11:30 AM	Property damage only (none injured)	2	0	0	Angle	Wet	Daylight	Clear	BROOKLINE AVENUE / RIVERWAY		V1:Southbound / V2:Westbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
12/30/2008	3:10 AM	Property damage only (none injured)	2	0	0	Not reported	Dry	Daylight	Clear	BROOKLINE AVENUE / RIVERWAY		V1:Northbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Turning left / V2:Turning left	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
12/30/2008	10:45 AM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear	RIVERWAY / BROOKLINE AVENUE		V1:Northbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Turning left / V2:Slowing or stopped in traffic	V1: Passenger car / V2:Passenger car	
12/31/2008	12:15 PM	Property damage only (none injured)	2	0	0	Rear-end	Wet	Daylight	Snow	BROOKLINE AVENUE / RIVERWAY		V1:Northbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Slowing or stopped in traffic	V1: Passenger car / V2:Passenger car	
3/3/2009	11:16 PM	Non-fatal injury	2	3	0	Angle	Dry	Dark - lighted roadway	Not Reported		BROOKLINE AVENUE / RIVERWAY	V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Not reported / V2:Not reported	V1: Single-unit truck (2-axle, 6-tire) / V2:Not reported	
1/19/2009	8:59 PM	Non-fatal injury	2	3	0	Angle	Dry	Dark - lighted roadway	Cloudy	BROOKLINE AVENUE / RIVERWAY		V1:Westbound / V2:Northbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
2/6/2009	3:51 PM	Non-fatal injury	2	1	0	Angle	Dry	Daylight	Clear		BROOKLINE AVENUE / RIVERWAY	V1:Northbound / V2:Eastbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Turning left	V1: Passenger car / V2:Passenger car	
5/27/2009	4:45 PM	Non-fatal injury	1	1	0	Angle	Dry	Daylight	Cloudy	RIVERWAY / BROOKLINE AVENUE		V1:Northbound	V1: Collision with pedestrian	V1: Turning left	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	P1:Pedestrian
6/19/2009	5:00 AM	Property damage only (none injured)	2	0	0	Angle	Wet	Dawn	Cloudy/Rain		BROOKLINE AVENUE / RIVERWAY	V1:Eastbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
7/15/2009	8:15 PM	Property damage only (none injured)	1	0	0	Single vehicle crash	Dry	Dusk	Clear	BROOKLINE AVENUE / RIVERWAY		V1:Not reported	V1: Collision with cyclist (bicycle, tricycle, unicycle, pedal car)	V1: Turning right	V1: Passenger car	P3:Pedalcyclist (bicycle, tricycle, unicycle, pedal car)
9/1/2009	9:00 AM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear	RIVERWAY / BROOKLINE AVENUE		V1:Southbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Slowing or stopped in traffic / V2:Slowing or stopped in traffic	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
9/6/2009	8:27 PM	Non-fatal injury	2	1	0	Rear-end	Dry	Dark - lighted roadway	Not Reported		RIVERWAY / BROOKLINE AVENUE	V1:Westbound / V2:Westbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Slowing or stopped in traffic / V2:Slowing or stopped in traffic	V1: Passenger car / V2:Passenger car	
9/21/2009	11:10 AM	Property damage only (none injured)	2	0	0	Sideswipe, opposite direction	Dry	Daylight	Not Reported		RIVERWAY / BROOKLINE AVENUE	V1:Southbound / V2:Westbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
9/21/2009	8:38 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Dark - lighted roadway	Cloudy		RIVERWAY / BROOKLINE AVENUE	V1:Eastbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Turning left	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	

Crash Date	Crash Time	Crash Severity	Total Vehicles	Total Injured	Total Fatals	Collision manner	Road Surface	Lighting	Weather	Intersection	Distance From Nearest Intersection	Vehicles Travel Directions	Most Harmful Events	Vehicle Action Prior to Crash	Vehicle Configuration	Non Motorist Type
10/15/2009	00:00 AM	Non-fatal injury	2	1	0	Angle	Dry	Dark - lighted roadway	Not Reported		RIVERWAY / BROOKLINE AVENUE	V1:Southbound / V2:Eastbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
10/25/2009	00:00 AM	Property damage only (none injured)	3	0	0	Angle	Wet	Dark - lighted roadway	Rain		RIVERWAY / BROOKLINE AVENUE	V1:Southbound / V2:Eastbound / V3:Northbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic / V3: Not reported	V1: Travelling straight ahead / V2:Travelling straight ahead / V3:Travelling straight ahead	V1: Passenger car / V2:Passenger car / V3:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
2/25/2010	11:12 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Dark - lighted roadway	Not Reported		RIVERWAY / BROOKLINE AVENUE	V1:Eastbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
5/11/2010	9:11 AM	Property damage only (none injured)	1	0	0	Single vehicle crash	Dry	Daylight	Clear	RIVERWAY / BROOKLINE AVENUE		V1:Northbound	V1: Collision with light pole or other post/support	V1: Travelling straight ahead	V1: Passenger car	
7/26/2010	11:35 PM	Non-fatal injury	2	1	0	Angle	Dry	Dark - lighted roadway	Clear	BROOKLINE AVENUE / RIVERWAY		V1:Northbound / V2:Westbound	V1: Collision with other movable object / V2: Collision with other movable object	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
9/11/2010	11:22 PM	Property damage only (none injured)	2	0	0	Sideswipe, opposite direction	Dry	Dark - lighted roadway	Not Reported	RIVERWAY / BROOKLINE AVENUE		V1:Eastbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
10/1/2010	11:04 PM	Property damage only (none injured)	2	0	0	Angle	Wet	Dark - lighted roadway	Rain	RIVERWAY / BROOKLINE AVENUE		V1:Northbound / V2:Eastbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
10/5/2010	11:49 PM	Non-fatal injury	2	3	0	Head-on	Dry	Dark - lighted roadway	Cloudy		RIVERWAY / BROOKLINE AVENUE	V1:Westbound / V2:Northbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
11/12/2010	4:40 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Dark - lighted roadway	Clear	RIVERWAY / BROOKLINE AVENUE		V1:Westbound / V2:Eastbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Turning left / V2:Travelling straight ahead	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
11/15/2010	1:00 PM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Daylight	Cloudy	BROOKLINE AVENUE / RIVERWAY / FENWOOD ROAD		V1:Eastbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Changing lanes / V2:Unknown	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Not reported	
11/16/2010	10:24 PM	Non-fatal injury	2	2	0	Angle	Dry	Dark - lighted roadway	Cloudy	RIVERWAY / BROOKLINE AVENUE		V1:Northbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Turning left / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
12/6/2010	12:57 PM	Property damage only (none injured)	2	0	0	Head-on	Dry	Daylight	Not Reported	RIVERWAY / BROOKLINE AVENUE		V1:Northbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Turning left / V2:Travelling straight ahead	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
2/11/2008	4:15 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Cloudy	LONGWOOD AVENUE / AVENUE LOUIS PASTEUR		V1:Westbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Slowing or stopped in traffic	V1: Not reported / V2:Not reported	
3/26/2008	3:01 PM	Non-fatal injury	2	1	0	Angle	Dry	Daylight	Clear	AVENUE LOUIS PASTEUR / LONGWOOD AVENUE		V1:Southbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Turning right / V2:Turning right	V1: Passenger car / V2:Bus (seats for more than 15 people, including driver)	

Crash Date	Crash Time	Crash Severity	Total Vehicles	Total Injured	Total Fatals	Collision manner	Road Surface	Lighting	Weather	Intersection	Distance From Nearest Intersection	Vehicles Travel Directions	Most Harmful Events	Vehicle Action Prior to Crash	Vehicle Configuration	Non Motorist Type
6/2/2008	7:30 AM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Clear	LONGWOOD AVENUE / AVENUE LOUIS PASTEUR		V1:Northbound / V2:Not reported	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Slowing or stopped in traffic	V1: Passenger car / V2:Truck/trailer	
3/30/2010	3:28 PM	Non-fatal injury	1	1	0	Single vehicle crash	Wet	Daylight	Rain	LONGWOOD AVENUE / AVENUE LOUIS PASTEUR		V1:Not reported	V1: Collision with pedestrian	V1: Travelling straight ahead	V1: Not reported	P2:Pedestrian
6/2/2010	11:30 AM	Not Reported	1	0	0	Single vehicle crash	Dry	Daylight	Clear	AVENUE LOUIS PASTEUR / LONGWOOD AVENUE		V1:Not reported	V1: Not reported	V1: Not reported	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
9/26/2008	7:50 AM	Non-fatal injury	2	1	0	Rear-end	Wet	Daylight	Rain		320 LONGWOOD AVENUE	V1:Southbound / V2:Southbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Travelling straight ahead	V1: Not reported / V2:Not reported	
6/30/2009	3:15 PM	Property damage only (none injured)	2	0	0	Not reported	Dry	Daylight	Cloudy	LONGWOOD AVENUE / BLACKFAN STREET		V1:Southbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Turning left	V1: Not reported / V2:Not reported	
3/29/2008	11:30 AM	Non-fatal injury	2	1	0	Rear-end	Dry	Dark - lighted roadway	Clear	LONGWOOD AVENUE / BINNEY STREET		V1:Westbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Turning right / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
8/13/2010	8:00 AM	Non-fatal injury	1	1	0	Single vehicle crash	Dry	Daylight	Clear	LONGWOOD AVENUE / BINNEY STREET		V1:Not reported	V1: Collision with cyclist (bicycle, tricycle, unicycle, pedal car)	V1: Turning left	V1: Passenger car	P4:Pedalcyclist (bicycle, tricycle, unicycle, pedal car)
1/2/2008	11:43 AM	Property damage only (none injured)	2	0	0	Rear-end	Dry	Daylight	Cloudy		LONGWOOD AVENUE / HUNTINGTON AVENUE	V1:Eastbound / V2:Not reported	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Not reported	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
1/27/2008	00:00 AM	Non-fatal injury	1	1	0	Single vehicle crash	Dry	Dark - lighted roadway	Clear	HUNTINGTON AVENUE / LONGWOOD AVENUE		V1:Eastbound	V1: Collision with other fixed object (wall, building, tunnel, etc.)	V1: Unknown	V1: Passenger car	
2/22/2008	3:20 PM	Non-fatal injury	2	1	0	Not reported	Snow	Not reported	Snow	HUNTINGTON AVENUE Rte 9 / LONGWOOD AVENUE		V1:Eastbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Changing lanes	V1: Passenger car / V2:Passenger car	
5/15/2008	9:40 AM	Property damage only (none injured)	2	0	0	Head-on	Dry	Dark - lighted roadway	Clear	LONGWOOD AVENUE / HUNTINGTON AVENUE		V1:Northbound / V2:Southbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Turning left	V1: Passenger car / V2:Passenger car	
9/14/2008	6:30 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Cloudy		77 LONGWOOD AVENUE	V1:Northbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Making U-turn	V1: Not reported / V2:Not reported	
7/29/2009	12:00 PM	Property damage only (none injured)	2	0	0	Not reported	Dry	Daylight	Cloudy	HUNTINGTON AVENUE / LONGWOOD AVENUE		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Not reported	V1: Not reported / V2:Not reported	
12/14/2009	5:57 PM	Non-fatal injury	2	1	0	Rear-end	Dry	Dark - lighted roadway	Clear	HUNTINGTON AVENUE Rte 9 / LONGWOOD AVENUE		V1:Eastbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Changing lanes	V1: Passenger car / V2:Not reported	
9/16/2010	9:41 PM	Non-fatal injury	2	1	0	Angle	Wet	Dark - lighted roadway	Cloudy/Rain	HUNTINGTON AVENUE / LONGWOOD AVENUE		V1:Southbound / V2:Westbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Turning left	V1: Not reported / V2:Not reported	
10/16/2010	5:00 PM	Not Reported	2	0	0	Not reported	Not reported	Not reported	Not Reported	LONGWOOD AVENUE / HUNTINGTON AVENUE		V1:Southbound / V2:Southbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Slowing or stopped in traffic	V1: Not reported / V2:Not reported	
5/27/2008	4:20 AM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Wet	Daylight	Rain	PALACE ROAD / LONGWOOD AVENUE / TETLOW STREET		V1:Eastbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Turning left / V2:Travelling straight ahead	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
10/2/2009	7:08 AM	Not Reported	2	0	0	Not reported	Not reported	Not reported	Not Reported	LONGWOOD AVENUE / PALACE ROAD		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Overtaking/passing	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
9/17/2009	4:15 PM	Not Reported	3	0	0	Rear-end	Dry	Daylight	Clear		PALACE ROAD / LONGWOOD AVENUE	V1:Northbound / V2:Northbound / V3:Northbound	V1: Not reported / V2: Not reported / V3: Not reported	V1: Slowing or stopped in traffic / V2:Slowing or stopped in traffic / V3:Travelling straight ahead	V1: Not reported / V2:Not reported / V3:Passenger car	
9/8/2010	9:45 AM	Property damage only (none injured)	2	0	0	Not reported	Not reported	Not reported	Not Reported	LONGWOOD AVENUE / PALACE ROAD		V1:Not reported / V2:Not reported	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Turning left	V1: Not reported / V2:Not reported	
6/5/2010	11:30 PM	Property damage only (none injured)	2	0	0	Not reported	Not reported	Not reported	Not Reported		LONGWOOD AVENUE / PILGRIM ROAD	V1:Southbound / V2:Southbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Not reported / V2:Not reported	
4/7/2008	4:40 AM	Property damage only (none injured)	2	0	0	Rear-end	Dry	Daylight	Clear		RIVERWAY / LONGWOOD AVENUE	V1:Southbound / V2:Southbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Changing lanes	V1: Passenger car / V2:Passenger car	
9/14/2008	11:10 PM	Non-fatal injury	1	1	0	Single vehicle crash	Dry	Dark - lighted roadway	Clear	RIVERWAY / LONGWOOD AVENUE		V1:Southbound	V1: Collision with pedestrian	V1: Travelling straight ahead	V1: Passenger car	P1:Pedestrian

Crash Date	Crash Time	Crash Severity	Total Vehicles	Total Injured	Total Fatals	Collision manner	Road Surface	Lighting	Weather	Intersection	Distance From Nearest Intersection	Vehicles Travel Directions	Most Harmful Events	Vehicle Action Prior to Crash	Vehicle Configuration	Non Motorist Type
9/30/2008	3:40 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Cloudy	RIVERWAY / LONGWOOD AVENUE		V1:Southbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Changing lanes / V2:Travelling straight ahead	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
10/24/2008	7:30 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Dark - lighted roadway	Clear	RIVERWAY / LONGWOOD AVENUE		V1:Eastbound / V2:Eastbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Turning right	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
12/16/2008	9:36 AM	Non-fatal injury	1	1	0	Sideswipe, opposite direction	Wet	Daylight	Cloudy	RIVERWAY / LONGWOOD AVENUE		V1:Eastbound	V1: Collision with cyclist (bicycle, tricycle, unicycle, pedal car)	V1: Turning left	V1: Passenger car	P1:Pedalcyclist (bicycle, tricycle, unicycle, pedal car)
12/17/2008	7:35 AM	Not Reported	2	0	0	Rear-end	Dry	Dark - lighted roadway	Clear	RIVERWAY / LONGWOOD AVENUE		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Slowing or stopped in traffic	V1: Passenger car / V2:Passenger car	
1/9/2009	2:30 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Clear	RIVERWAY / LONGWOOD AVENUE		V1:Southbound / V2:Northbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Turning left	V1: Passenger car / V2:Passenger car	
6/20/2009	8:46 PM	Property damage only (none injured)	2	0	0	Rear-end	Dry	Dark - lighted roadway	Cloudy	RIVERWAY / LONGWOOD AVENUE		V1:Southbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
8/6/2009	2:15 PM	Property damage only (none injured)	2	0	0	Rear-end	Dry	Daylight	Clear	RIVERWAY / LONGWOOD AVENUE		V1:Southbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Slowing or stopped in traffic / V2:Travelling straight ahead	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
9/25/2009	8:50 PM	Non-fatal injury	1	1	0	Single vehicle crash	Dry	Dark - lighted roadway	Clear		RIVERWAY / LONGWOOD AVENUE	V1:Southbound	V1: Collision with curb	V1: Travelling straight ahead	V1: Motorcycle	
10/24/2009	3:24 PM	Property damage only (none injured)	2	0	0	Sideswipe, opposite direction	Dry	Daylight	Clear		RIVERWAY / LONGWOOD AVENUE	V1:Northbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Turning left / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
12/14/2009	9:14 AM	Non-fatal injury	3	1	0	Angle	Dry	Daylight	Not Reported	RIVERWAY / LONGWOOD AVENUE		V1:Westbound / V2:Southbound / V3:Eastbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic / V3: Collision with motor vehicle in traffic	V1: Turning left / V2:Travelling straight ahead / V3:Slowing or stopped in traffic	V1: Passenger car / V2:Passenger car / V3:Passenger car	P1:Pedalcyclist (bicycle, tricycle, unicycle, pedal car)
12/14/2009	4:46 PM	Non-fatal injury	2	1	0	Angle	Dry	Dark - lighted roadway	Cloudy		RIVERWAY / LONGWOOD AVENUE	V1:Southbound / V2:Eastbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Turning left	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
12/17/2009	9:04 AM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Clear		RIVERWAY / LONGWOOD AVENUE	V1:Eastbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Entering traffic lane	V1: Passenger car / V2:Bus (seats for 7-15 people, including driver)	
12/18/2009	00:00 AM	Non-fatal injury	1	1	0	Angle	Dry	Dark - lighted roadway	Clear		RIVERWAY / LONGWOOD AVENUE	V1:Southbound	V1: Collision with cyclist (bicycle, tricycle, unicycle, pedal car)	V1: Travelling straight ahead	V1: Passenger car	P1:Pedalcyclist (bicycle, tricycle, unicycle, pedal car)
6/5/2010	7:22 AM	Non-fatal injury	1	1	0	Single vehicle crash	Wet	Daylight	Not Reported		RIVERWAY / LONGWOOD AVENUE	V1:Not reported	V1: Not reported	V1: Not reported	V1: Passenger car	

Crash Date	Crash Time	Crash Severity	Total Vehicles	Total Injured	Total Fatals	Collision manner	Road Surface	Lighting	Weather	Intersection	Distance From Nearest Intersection	Vehicles Travel Directions	Most Harmful Events	Vehicle Action Prior to Crash	Vehicle Configuration	Non Motorist Type
6/18/2010	11:57 PM	Non-fatal injury	2	1	0	Angle	Dry	Dark - lighted roadway	Clear		RIVERWAY / LONGWOOD AVENUE	V1:Westbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Turning left / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
8/10/2010	10:25 AM	Non-fatal injury	1	1	0	Single vehicle crash	Dry	Daylight	Clear		RIVERWAY / LONGWOOD AVENUE	V1:Southbound	V1: Other	V1: Travelling straight ahead	V1: Motorcycle	P2:Pedalcyclist (bicycle, tricycle, unicycle, pedal car)
9/22/2010	9:10 AM	Non-fatal injury	1	1	0	Single vehicle crash	Dry	Daylight	Clear		RIVERWAY / LONGWOOD AVENUE	V1:Northbound	V1: Collision with pedestrian	V1: Travelling straight ahead	V1: Passenger car	P3:Pedestrian
9/25/2010	3:17 AM	Non-fatal injury	1	1	0	Single vehicle crash	Dry	Dark - roadway not lighted	Not Reported		RIVERWAY / LONGWOOD AVENUE	V1:Southbound	V1: Collision with cyclist (bicycle, tricycle, unicycle, pedal car)	V1: Travelling straight ahead	V1: Passenger car	P2:Pedalcyclist (bicycle, tricycle, unicycle, pedal car)
10/24/2010	00:00 AM	Non-fatal injury	1	3	0	Head-on	Dry	Dark - roadway not lighted	Clear/Clear	LONGWOOD AVENUE / RIVERWAY		V1:Westbound	V1: Collision with cyclist (bicycle, tricycle, unicycle, pedal car)	V1: Turning right	V1: Passenger car	P3:Pedalcyclist (bicycle, tricycle, unicycle, pedal car)

Crash Date	Crash Time	Crash Severity	Total Vehicles	Total Injured	Total Fatals	Collision manner	Road Surface	Lighting	Weather	Intersection	Distance From Nearest Intersection	Vehicles Travel Directions	Most Harmful Events	Vehicle Action Prior to Crash	Vehicle Configuration	Non Motorist Type
1/10/2008	8:30 AM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Dark - lighted roadway	Clear	PARK DRIVE / BROOKLINE AVENUE		V1:Eastbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Turning right / V2:Turning right	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
1/23/2008	5:30 AM	Property damage only (none injured)	2	0	0	Rear-end	Wet	Dark - lighted roadway	Clear		BOYLSTON STREET / BROOKLINE AVENUE	V1:Eastbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Slowing or stopped in traffic	V1: Passenger car / V2:Passenger car	
2/2/2008	00:00 AM	Property damage only (none injured)	2	0	0	Angle	Wet	Dark - lighted roadway	Rain		PARK DRIVE / BEACON STREET	V1:Westbound / V2:Northbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Turning left	V1: Passenger car / V2:Passenger car	
2/25/2008	7:00 AM	Property damage only (none injured)	5	0	0	Rear-end	Dry	Daylight	Clear	PARK DRIVE / BOYLSTON STREET		V1:Not reported / V2:Not reported / V3:Not reported / V4:Not reported / V5:Not reported	V1: Not reported / V2: Not reported / V3: Not reported / V4: Not reported / V5: Not reported	V1: Travelling straight ahead / V2:Not reported / V3:Not reported / V4:Not reported / V5:Not reported	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Not reported / V3:Not reported / V4:Not reported / V5:Passenger car	
3/2/2008	3:00 AM	Non-fatal injury	2	1	0	Rear-end	Dry	Dark - lighted roadway	Clear	STORROW DRIVE / FENWAY / BROOKLINE AVENUE		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Not reported	V1: Passenger car / V2:Not reported	
3/18/2008	3:59 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Cloudy		BROOKLINE AVENUE / PARK DRIVE	V1:Southbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
3/23/2008	12:15 PM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear	BOYLSTON STREET / BROOKLINE AVENUE		V1:Northbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Turning left	V1: Not reported / V2:Not reported	
3/28/2008	12:30 PM	Not Reported	2	0	0	Sideswipe, same direction	Wet	Daylight	Cloudy	COMMONWEALTH AVENUE / BEACON STREET		V1:Eastbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Not reported	V1: Passenger car / V2:Single-unit truck (2-axle, 6-tire)	
3/28/2008	1:11 AM	Property damage only (none injured)	2	0	0	Angle	Dry	Dark - lighted roadway	Not Reported	PARK DRIVE / BROOKLINE AVENUE		V1:Westbound / V2:Westbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Turning left	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
4/1/2008	7:10 AM	Property damage only (none injured)	2	0	0	Angle	Wet	Daylight	Rain	RIVERWAY / BROOKLINE AVENUE		V1:Westbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Turning left	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
4/5/2008	2:10 AM	Property damage only (none injured)	2	0	0	Angle	Dry	Dark - lighted roadway	Clear	PARK DRIVE / BEACON STREET		V1:Westbound / V2:Eastbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Turning left	V1: Passenger car / V2:Passenger car	
4/6/2008	10:10 AM	Property damage only (none injured)	2	0	0	Rear-end	Wet	Dark - lighted roadway	Rain	FENWAY / STORROW DRIVE / BROOKLINE AVENUE		V1:Eastbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
4/7/2008	2:30 AM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Clear		COMMONWEALTH AVENUE	V1:Eastbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Backing / V2:Changing lanes	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Tractor/triples	
4/8/2008	3:20 AM	Non-fatal injury	2	1	0	Angle	Dry	Daylight	Clear		FULLERTON STREET / BROOKLINE AVENUE	V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Turning left / V2:Backing	V1: Passenger car / V2:Passenger car	
4/10/2008	9:50 AM	Non-fatal injury	2	1	0	Rear-end	Dry	Dark - lighted roadway	Clear	PARK DRIVE / BEACON STREET		V1:Southbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Turning left / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
4/10/2008	3:50 AM	Non-fatal injury	2	1	0	Angle	Dry	Daylight	Clear		1 feet E from Intersection 1400 BOYLSTON STREET / PARK DRIVE	V1:Eastbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Turning left	V1: Passenger car / V2:Passenger car	
4/12/2008	8:30 AM	Property damage only (none injured)	2	0	0	Angle	Wet	Dark - lighted roadway	Clear		BOYLSTON STREET	V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Turning right	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
4/13/2008	10:30 AM	Non-fatal injury	2	2	0	Angle	Dry	Dark - lighted roadway	Clear	BEACON STREET / PARK DRIVE		V1:Northbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Turning left / V2:Travelling straight ahead	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
4/16/2008	4:15 AM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Clear		401 PARK DRIVE	V1:Northbound / V2:Southbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Backing	V1: Passenger car / V2:Passenger car	
4/18/2008	11:45 AM	Property damage only (none injured)	2	0	0	Head-on	Dry	Dark - lighted roadway	Clear	BROOKLINE AVENUE / BOYLSTON STREET / PARK DRIVE		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
4/19/2008	4:36 PM	Property damage only (none injured)	2	0	0	Unknown	Dry	Daylight	Clear	BEACON STREET / PARK DRIVE		V1:Eastbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Turning left / V2:Travelling straight ahead	V1: Passenger car / V2:Motorcycle	
4/19/2008	11:00 AM	Not Reported	2	0	0	Single vehicle crash	Dry	Dark - lighted roadway	Clear	BOYLSTON STREET / PARK DRIVE		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Turning right / V2:Turning right	V1: Passenger car / V2:Passenger car	
5/7/2008	3:16 PM	Property damage only (none injured)	1	0	0	Single vehicle crash	Dry	Daylight	Clear		BROOKLINE AVENUE / FENWAY	V1:Eastbound	V1: Collision with other movable object	V1: Turning right	V1: Bus (seats for more than 15 people, including driver)	
5/8/2008	9:50 AM	Property damage only (none injured)	2	0	0	Angle	Dry	Dark - lighted roadway	Clear	BEACON STREET / PARK DRIVE		V1:Westbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Turning left / V2:Travelling straight ahead	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
5/12/2008	6:40 AM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Daylight	Cloudy	BOYLSTON STREET / BROOKLINE AVENUE		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Travelling straight ahead	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
5/14/2008	12:30 PM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear		660 COMMONWEALTH AVENUE / BEACON STREET	V1:Northbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Changing lanes	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
5/16/2008	10:39 AM	Property damage only (none injured)	2	0	0	Not reported	Dry	Daylight	Cloudy	BROOKLINE AVENUE / Rte 2		V1:Northbound / V2:Not reported	V1: Not reported / V2: Not reported	V1: Turning right / V2:Not reported	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
5/23/2008	9:20 AM	Unknown	2	0	0	Head-on	Dry	Daylight	Clear	PARK DRIVE / MOUNTFORT STREET		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Not reported	V1: Passenger car / V2:Passenger car	
5/25/2008	7:56 PM	Not Reported	2	0	0	Angle	Dry	Daylight	Clear		PARK DRIVE / BROOKLINE AVENUE	V1:Southbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
6/1/2008	3:35 AM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Dark - lighted roadway	Clear	DEERFIELD STREET / COMMONWEALTH AVENUE		V1:Northbound / V2:Southbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Turning right	V1: Passenger car / V2:Not reported	

Crash Date	Crash Time	Crash Severity	Total Vehicles	Total Injured	Total Fatals	Collision manner	Road Surface	Lighting	Weather	Intersection	Distance From Nearest Intersection	Vehicles Travel Directions	Most Harmful Events	Vehicle Action Prior to Crash	Vehicle Configuration	Non Motorist Type
6/4/2008	5:00 AM	Non-fatal injury	2	1	0	Angle	Wet	Daylight	Cloudy	RIVERWAY / PARK DRIVE		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Turning left / V2:Travelling straight ahead	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
6/5/2008	5:00 PM	Not Reported	1	0	0	Angle	Dry	Daylight	Clear	BROOKLINE AVENUE / FENWAY		V1:Eastbound	V1: Unknown	V1: Turning right	V1: Bus (seats for more than 15 people, including driver)	
6/7/2008	12:00 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Clear	BOYLSTON STREET / PARK DRIVE / BROOKLINE AVENUE		V1:Northbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Turning right / V2:Travelling straight ahead	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
6/11/2008	7:00 AM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear		COMMONWEALTH AVENUE / BEACON STREET	V1:Westbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Changing lanes	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
6/21/2008	10:34 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Dark - lighted roadway	Cloudy	BROOKLINE AVENUE / FENWAY		V1:Not reported / V2:Eastbound	V1: Not reported / V2: Collision with motor vehicle in traffic	V1: Not reported / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
6/27/2008	4:30 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Cloudy	BEACON STREET / ABERDEEN STREET		V1:Westbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Turning left / V2:Travelling straight ahead	V1: Not reported / V2:Not reported	
6/29/2008	10:45 AM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Clear	RIVERWAY / BROOKLINE AVENUE		V1:Eastbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
7/22/2008	6:00 PM	Not Reported	2	0	0	Angle	Dry	Daylight	Clear		150 BROOKLINE AVENUE	V1:Northbound / V2:Southbound	V1: Not reported / V2: Not reported	V1: Making U-turn / V2:Travelling straight ahead	V1: Passenger car / V2:Not reported	
7/22/2008	4:00 AM	Property damage only (none injured)	2	0	0	Not reported	Dry	Daylight	Clear	BEACON STREET / COMMONWEALTH AVENUE / BROOKLINE AVENUE		V1:Eastbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
8/7/2008	4:00 AM	Property damage only (none injured)	2	0	0	Angle	Wet	Daylight	Rain		401 PARK DRIVE / BROOKLINE AVENUE	V1:Northbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
8/13/2008	3:30 AM	Non-fatal injury	2	1	0	Angle	Dry	Daylight	Clear	BEACON STREET / PARK DRIVE		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Not reported / V2:Passenger car	
8/15/2008	5:45 AM	Non-fatal injury	2	1	0	Rear-end	Wet	Daylight	Cloudy		401 PARK DRIVE / BROOKLINE AVENUE	V1:Northbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
8/16/2008	2:00 AM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Dark - unknown roadway lighting	Clear	BROOKLINE AVENUE / KILMARNOCK STREET / PARK DRIVE	BROOKLINE AVENUE / KILMARNOCK STREET	V1:Northbound / V2:Not reported	V1: Not reported / V2: Not reported	V1: Parked / V2:Not reported	V1: Passenger car / V2:Not reported	
8/25/2008	9:45 PM	Non-fatal injury	2	1	0	Sideswipe, same direction	Dry	Dark - unknown roadway lighting	Clear	BOYLSTON STREET / PARK STREET		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Turning left / V2:Turning left	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
8/30/2008	10:50 PM	Property damage only (none injured)	2	0	0	Rear-end	Dry	Dark - lighted roadway	Clear		FENWAY / RIVERWAY	V1:Eastbound / V2:Eastbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Entering traffic lane / V2:Slowing or stopped in traffic	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
9/5/2008	3:15 AM	Not Reported	3	0	0	Unknown	Dry	Daylight	Clear	BEACON STREET / PARK DRIVE		V1:Not reported / V2:Not reported / V3:Not reported	V1: Not reported / V2: Not reported / V3: Not reported	V1: Parked / V2:Turning right / V3:Not reported	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Not reported / V3:Not reported	
9/5/2008	11:35 AM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear		BEACON STREET Rte 1 / COMMONWEALTH AVENUE Rte 1	V1:Westbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Slowing or stopped in traffic	V1: Not reported / V2:Not reported	
9/8/2008	2:45 AM	Property damage only (none injured)	2	0	0	Not reported	Dry	Daylight	Clear	BROOKLINE AVENUE / BOYLSTON STREET		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Turning right	V1: Passenger car / V2:Passenger car	
9/9/2008	4:45 AM	Property damage only (none injured)	2	0	0	Angle	Wet	Daylight	Cloudy	MINER STREET / BEACON STREET		V1:Northbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
9/10/2008	12:00 PM	Not Reported	2	0	0	Not reported	Dry	Daylight	Clear	BROOKLINE AVENUE / KENMORE STREET / FENWAY		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Not reported	V1: Not reported / V2:Not reported	
9/12/2008	11:00 AM	Property damage only (none injured)	2	0	0	Not reported	Dry	Dark - lighted roadway	Clear	FULLERTON STREET / BROOKLINE AVENUE		V1:Northbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Turning right / V2:Overtaking/passing	V1: Passenger car / V2:Not reported	
9/14/2008	2:21 AM	Property damage only (none injured)	2	0	0	Single vehicle crash	Dry	Dark - lighted roadway	Clear		RIVERWAY / PARK DRIVE	V1:Southbound / V2:Westbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Slowing or stopped in traffic / V2:Travelling straight ahead	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
9/26/2008	11:50 AM	Not Reported	2	0	0	Not reported	Not reported	Not reported	Not Reported	CHESTNUT AVENUE / BEACON STREET / COMMONWEALTH AVENUE		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Not reported / V2:Not reported	V1: Not reported / V2:Not reported	
9/28/2008	1:00 AM	Property damage only (none injured)	3	0	0	Head-on	Wet	Daylight	Rain	BROOKLINE AVENUE / COMMONWEALTH AVENUE		V1:Northbound / V2:Southbound / V3:Not reported	V1: Not reported / V2: Not reported / V3: Not reported	V1: Slowing or stopped in traffic / V2:Not reported / V3:Not reported	V1: Passenger car / V2:Passenger car / V3:Not reported	
10/3/2008	10:00 AM	Non-fatal injury	1	1	0	Single vehicle crash	Dry	Daylight	Clear		RIVERWAY / PARK DRIVE	V1:Eastbound	V1: Collision with light pole or other post/support	V1: Travelling straight ahead	V1: Passenger car	
10/6/2008	8:55 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Dark - lighted roadway	Clear		PARK DRIVE / RIVERWAY	V1:Northbound / V2:Northbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Turning right	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
11/19/2008	7:43 PM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Dark - lighted roadway	Clear	PARK DRIVE / MOUNTFORT STREET		V1:Northbound / V2:Northbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
11/21/2008	12:58 PM	Non-fatal injury	1	1	0	Single vehicle crash	Dry	Daylight	Clear		PARK DRIVE / RIVERWAY	V1:Southbound	V1: Collision with ditch	V1: Travelling straight ahead	V1: Motorcycle	
11/25/2008	5:30 PM	Property damage only (none injured)	1	0	0	Single vehicle crash	Wet	Dark - lighted roadway	Cloudy/Rain		PARK DRIVE / BROOKLINE AVENUE	V1:Eastbound	V1: Collision with cyclist (bicycle, tricycle, unicycle, pedal car)	V1: Leaving traffic lane	V1: Passenger car	P1:Pedalcyclist (bicycle, tricycle, unicycle, pedal car)
12/8/2008	12:30 PM	Non-fatal injury	2	3	0	Not reported	Not reported	Not reported	Not Reported		COMMONWEALTH AVENUE / BEACON STREET	V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Not reported / V2:Not reported	V1: Passenger car / V2:Not reported	
12/12/2008	10:23 PM	Non-fatal injury	2	1	0	Rear-end	Wet	Dark - lighted roadway	Cloudy/Rain		PARK DRIVE / BROOKLINE AVENUE	V1:Westbound / V2:Westbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Slowing or stopped in traffic / V2:Travelling straight ahead	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	

Crash Date	Crash Time	Crash Severity	Total Vehicles	Total Injured	Total Fatals	Collision manner	Road Surface	Lighting	Weather	Intersection	Distance From Nearest Intersection	Vehicles Travel Directions	Most Harmful Events	Vehicle Action Prior to Crash	Vehicle Configuration	Non Motorist Type
12/18/2008	7:50 AM	Not Reported	2	0	0	Sideswipe, same direction	Wet	Daylight	Rain	BROOKLINE AVENUE / BOYLSTON STREET		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Changing lanes	V1: Not reported / V2:Not reported	
12/21/2008	5:33 PM	Property damage only (none injured)	2	0	0	Rear-end	Wet	Dark - lighted roadway	Rain/Snow		828 BEACON STREET	V1:Westbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Slowing or stopped in traffic	V1: Passenger car / V2:Passenger car	
12/21/2008	1:00 PM	Property damage only (none injured)	2	0	0	Rear-end	Snow	Daylight	Snow	PARK DRIVE / RIVERWAY		V1:Southbound / V2:Southbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Travelling straight ahead	V1: Not reported / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
12/22/2008	11:00 AM	Property damage only (none injured)	2	0	0	Rear-end	Wet	Daylight	Clear	BEACON STREET / PARK DRIVE		V1:Eastbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Slowing or stopped in traffic	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
12/23/2008	10:30 AM	Non-fatal injury	2	1	0	Angle	Dry	Daylight	Clear	PARK DRIVE / BEACON STREET		V1:Northbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Turning left / V2:Travelling straight ahead	V1: Passenger car / V2:Not reported	
12/24/2008	8:50 AM	Not Reported	2	0	0	Sideswipe, opposite direction	Wet	Daylight	Rain	BOYLSTON STREET / BROOKLINE AVENUE		V1:Westbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Turning right	V1: Not reported / V2:Not reported	
12/25/2008	9:30 AM	Non-fatal injury	2	1	0	Not reported	Dry	Daylight	Clear	PARK DRIVE / BEACON STREET		V1:Northbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
12/29/2008	11:00 AM	Not Reported	2	0	0	Rear-end	Dry	Daylight	Clear	BROOKLINE AVENUE / FENWAY		V1:Northbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Not reported / V2:Not reported	
1/2/2009	7:55 PM	Non-fatal injury	2	1	0	Head-on	Wet	Dark - lighted roadway	Cloudy		BOYLSTON STREET / BROOKLINE AVENUE	V1:Southbound / V2:Northbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Slowing or stopped in traffic	V1: Passenger car / V2:Passenger car	
1/18/2009	7:58 AM	Property damage only (none injured)	2	0	0	Rear-end	Snow	Daylight	Snow	BROOKLINE AVENUE / FENWAY		V1:Northbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Travelling straight ahead	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
1/21/2009	7:34 AM	Not Reported	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear		PARK DRIVE / RIVERWAY	V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Not reported / V2:Not reported	V1: Not reported / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
1/22/2009	10:15 AM	Non-fatal injury	2	1	0	Angle	Wet	Daylight	Clear	PARK DRIVE / RIVERWAY		V1:Not reported / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
2/13/2009	10:45 AM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Clear	BEACON STREET / PARK DRIVE		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Turning left / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
2/25/2009	6:30 AM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Dark - lighted roadway	Clear		BEACON STREET / PARK DRIVE	V1:Eastbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Parked / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
2/26/2009	1:15 PM	Property damage only (none injured)	2	0	0	Head-on	Dry	Daylight	Clear	BEACON STREET / PARK DRIVE		V1:Northbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Turning left / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
2/26/2009	3:15 PM	Property damage only (none injured)	2	0	0	Rear-end	Dry	Daylight	Clear		132 RIVERWAY / BROOKLYN AVE	V1:Southbound / V2:Southbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Travelling straight ahead	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
2/26/2009	10:27 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Dark - lighted roadway	Clear		FENWAY / BROOKLINE AVENUE	V1:Southbound / V2:Eastbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
3/3/2009	9:20 AM	Not Reported	3	0	0	Rear-to-rear	Wet	Daylight	Clear	PARK DRIVE / BEACON STREET		V1:Southbound / V2:Eastbound / V3:Eastbound	V1: Not reported / V2: Not reported / V3: Not reported	V1: Slowing or stopped in traffic / V2:Travelling straight ahead / V3:Slowing or stopped in traffic	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car / V3:Passenger car	
4/4/2009	11:38 AM	Property damage only (none injured)	2	0	0	Rear-end	Dry	Daylight	Clear		401 PARK DRIVE / BROOKLINE AVENUE	V1:Not reported / V2:Not reported	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Turning left / V2:Travelling straight ahead	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
6/11/2009	9:57 PM	Non-fatal injury	2	1	0	Angle	Wet	Dark - lighted roadway	Rain		PARK DRIVE / BROOKLINE AVENUE	V1:Northbound / V2:Eastbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Entering traffic lane / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
6/12/2009	11:47 PM	Not Reported	1	0	0	Single vehicle crash	Dry	Dark - lighted roadway	Not Reported		PARK DRIVE / BOYLSTON STREET	V1:Northbound	V1: Collision with light pole or other post/support	V1: Travelling straight ahead	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
6/28/2009	9:55 AM	Not Reported	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear		PARK DRIVE	V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Not reported / V2:Not reported	V1: Passenger car / V2:Passenger car	
7/8/2009	7:55 AM	Non-fatal injury	2	1	0	Angle	Dry	Daylight	Cloudy	PARK DRIVE / BROOKLINE AVENUE		V1:Northbound / V2:Southbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
7/8/2009	5:15 PM	Non-fatal injury	2	1	0	Single vehicle crash	Dry	Daylight	Clear	RIVERWAY / PARK DRIVE / BROOKLINE AVENUE		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Travelling straight ahead	V1: Not reported / V2:Not reported	
7/17/2009	11:00 AM	Non-fatal injury	2	2	0	Not reported	Dry	Daylight	Clear	BEACON STREET / PARK DRIVE		V1:Westbound / V2:Northbound	V1: Collision with light pole or other post/support / V2: Not reported	V1: Travelling straight ahead / V2:Turning left	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
7/19/2009	3:38 AM	Property damage only (none injured)	1	0	0	Single vehicle crash	Dry	Dark - lighted roadway	Clear		FENWAY / BROOKLINE AVENUE	V1:Eastbound	V1: Collision with light pole or other post/support	V1: Travelling straight ahead	V1: Passenger car	
7/27/2009	2:00 PM	Property damage only (none injured)	2	0	0	Sideswipe, opposite direction	Dry	Daylight	Clear	BEACON STREET / BEACON STREET / PARK DRIVE		V1:Eastbound / V2:Not reported	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Not reported	V1: Passenger car / V2:Passenger car	
7/30/2009	2:00 PM	Not Reported	2	0	0	Rear-end	Dry	Daylight	Clear		656 BEACON STREET	V1:Westbound / V2:Not reported	V1: Not reported / V2: Not reported	V1: Changing lanes / V2:Not reported	V1: Not reported / V2:Not reported	
8/2/2009	1:41 PM	Not Reported	2	0	0	Angle	Dry	Daylight	Cloudy	BEACON STREET / PARK DRIVE		V1:Northbound / V2:Southbound	V1: Not reported / V2: Collision with motor vehicle in traffic	V1: Turning left / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
8/19/2009	12:14 PM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear		BEACON STREET / BROOKLINE AVENUE	V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Overtaking/passing	V1: Not reported / V2:Not reported	
8/19/2009	2:30 PM	Not Reported	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear	FENWAY / BROOKLINE AVENUE		V1:Southbound / V2:Southbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Slowing or stopped in traffic	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
8/22/2009	9:00 AM	Not Reported	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear	BROOKLINE AVENUE / FULLERTON STREET		V1:Southbound / V2:Southbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Turning left	V1: Passenger car / V2:Not reported	

Crash Date	Crash Time	Crash Severity	Total Vehicles	Total Injured	Total Fatals	Collision manner	Road Surface	Lighting	Weather	Intersection	Distance From Nearest Intersection	Vehicles Travel Directions	Most Harmful Events	Vehicle Action Prior to Crash	Vehicle Configuration	Non Motorist Type
8/25/2009	5:30 PM	Property damage only (none injured)	2	0	0	Not reported	Dry	Daylight	Clear	BEACON STREET / MINER STREET		V1:Not reported / V2:Southbound	V1: Not reported / V2: Not reported	V1: Parked / V2:Turning right	V1: Not reported / V2:Not reported	
8/30/2009	9:05 AM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Clear		FULLERTON STREET	V1:Eastbound / V2:Southbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Turning left	V1: Passenger car / V2:Passenger car	
9/6/2009	6:00 AM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Clear	BROOKLINE AVENUE / PARK DRIVE		V1:Northbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Turning left / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
9/11/2009	2:00 PM	Property damage only (none injured)	2	0	0	Not reported	Dry	Daylight	Clear	PARK DRIVE / BOYLSTON STREET / BEACON STREET		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Backing	V1: Not reported / V2:Not reported	
9/12/2009	12:30 PM	Not Reported	2	0	0	Rear-end	Wet	Dark - lighted roadway	Rain	BEACON STREET / ARUNDEL STREET / MINER STREET		V1:Eastbound / V2:Not reported	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
9/16/2009	1:50 PM	Non-fatal injury	2	1	0	Rear-end	Dry	Daylight	Not Reported	RIVERWAY / BROOKLINE AVENUE / FENWAY		V1:Southbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Changing lanes / V2:Slowing or stopped in traffic	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
9/18/2009	11:50 PM	Non-fatal injury	2	1	0	Head-on	Dry	Dark - lighted roadway	Clear	RIVERWAY / BROOKLINE AVENUE / PARK DRIVE		V1:Eastbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Not reported / V2:Passenger car	
9/22/2009	9:28 PM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Dark - lighted roadway	Cloudy		FENWAY / BROOKLINE AVENUE	V1:Southbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Changing lanes	V1: Passenger car / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
9/27/2009	4:00 AM	Property damage only (none injured)	2	0	0	Not reported	Dry	Daylight	Clear	PARK DRIVE / RIVERWAY		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
10/6/2009	1:11 PM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear		530 COMMONWEALTH AVENUE	V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Parked / V2:Leaving traffic lane	V1: Not reported / V2:Not reported	
10/10/2009	4:19 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Clear	PARK DRIVE / BROOKLINE AVENUE		V1:Northbound / V2:Northbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Turning left	V1: Passenger car / V2:Passenger car	
10/15/2009	5:40 PM	Non-fatal injury	1	1	0	Unknown	Wet	Dusk	Rain	BROOKLINE AVENUE / OVERLAND STREET		V1:Southbound	V1: Collision with pedestrian	V1: Travelling straight ahead	V1: Single-unit truck (2-axle, 6-tire)	P2:Pedestrian
10/27/2009	11:01 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Dark - lighted roadway	Clear		PARK DRIVE / BROOKLINE AVENUE	V1:Southbound / V2:Westbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
11/8/2009	12:01 PM	Not Reported	2	0	0	Not reported	Not reported	Not reported	Not Reported		BEACON STREET / PARK DRIVE	V1:Southbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Not reported / V2:Not reported	V1: Not reported / V2:Not reported	
11/16/2009	9:52 AM	Not Reported	2	0	0	Not reported	Not reported	Not reported	Not Reported		7 MINER STREET	V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Not reported / V2:Parked	V1: Not reported / V2:Not reported	
11/23/2009	6:50 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Dark - lighted roadway	Not Reported	RIVERWAY / BROOKLINE AVENUE		V1:Southbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Turning left / V2:Travelling straight ahead	V1: Passenger car / V2:Bus (seats for 7-15 people, including driver)	
11/29/2009	9:00 PM	Non-fatal injury	2	1	0	Angle	Dry	Dark - lighted roadway	Cloudy	BROOKLINE AVENUE / FENWAY		V1:Southbound / V2:Eastbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
12/10/2009	11:05 AM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear		PARK DRIVE / RIVERWAY	V1:Westbound / V2:Westbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Other / V2:Other	V1: Passenger car / V2:Passenger car	
1/1/2010	8:00 AM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear		1 MOUNTFORT STREET	V1:Northbound / V2:Not reported	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Parked	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	
2/18/2010	3:55 PM	Property damage only (none injured)	2	0	0	Angle	Wet	Daylight	Cloudy		RIVERWAY / PARK DRIVE	V1:Eastbound / V2:Eastbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Entering traffic lane	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
3/11/2010	12:22 PM	Not Reported	2	0	0	Not reported	Not reported	Not reported	Not Reported	BEACON STREET / MINER STREET		V1:Westbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Not reported / V2:Not reported	V1: Not reported / V2:Not reported	
3/14/2010	6:22 PM	Property damage only (none injured)	2	0	0	Rear-end	Wet	Daylight	Rain/Severe crosswinds		PARK DRIVE / RIVERWAY	V1:Eastbound / V2:Eastbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Slowing or stopped in traffic / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
5/3/2010	6:07 PM	Non-fatal injury	1	1	0	Angle	Dry	Daylight	Cloudy	PARK DRIVE / BROOKLINE AVENUE		V1:Northbound	V1: Collision with cyclist (bicycle, tricycle, unicycle, pedal car)	V1: Travelling straight ahead	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	P2:Pedalcyclist (bicycle, tricycle, unicycle, pedal car)
5/17/2010	3:45 PM	Not Reported	2	0	0	Angle	Dry	Daylight	Clear		MINER STREET / BEACON STREET	V1:Northbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Not reported / V2:Not reported	
5/22/2010	2:45 AM	Non-fatal injury	2	2	0	Head-on	Dry	Dark - lighted roadway	Not Reported	BROOKLINE AVENUE / FENWAY		V1:Westbound / V2:Southbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
5/27/2010	10:45 AM	Property damage only (none injured)	2	0	0	Not reported	Dry	Dark - lighted roadway	Clear	BROOKLINE AVENUE / BOYLSTON STREET		V1:Westbound / V2:Not reported	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Not reported	V1: Not reported / V2:Not reported	
6/2/2010	2:20 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Clear	MOUNTFORT STREET / PARK DRIVE		V1:Eastbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Turning right	V1: Not reported / V2:Not reported	
6/19/2010	12:33 PM	Not Reported	2	0	0	Not reported	Not reported	Not reported	Not Reported	BEACON STREET / PARK DRIVE		V1:Southbound / V2:Northbound	V1: Not reported / V2: Not reported	V1: Not reported / V2:Not reported	V1: Not reported / V2:Not reported	
9/1/2010	11:34 AM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Clear	PARK DRIVE / BOYLSTON STREET		V1:Northbound / V2:Northbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Changing lanes	V1: Passenger car / V2:Passenger car	
9/9/2010	11:15 AM	Non-fatal injury	2	2	0	Head-on	Dry	Daylight	Not Reported	BROOKLINE AVENUE / PARK DRIVE		V1:Southbound / V2:Westbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Travelling straight ahead / V2:Travelling straight ahead	V1: Passenger car / V2:Passenger car	
9/21/2010	8:50 AM	Not Reported	2	0	0	Angle	Dry	Daylight	Clear	BROOKLINE AVENUE / BOYLSTON STREET		V1:Eastbound / V2:Eastbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Not reported	V1: Not reported / V2:Not reported	
9/23/2010	11:10 PM	Not Reported	2	0	0	Not reported	Not reported	Not reported	Not Reported	BEACON STREET / MINER STREET		V1:Not reported / V2:Northbound	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Not reported	V1: Light truck(van, mini-van, panel, pickup, sport utility) with only four tires / V2:Passenger car	

Crash Date	Crash Time	Crash Severity	Total Vehicles	Total Injured	Total Fatals	Collision manner	Road Surface	Lighting	Weather	Intersection	Distance From Nearest Intersection	Vehicles Travel Directions	Most Harmful Events	Vehicle Action Prior to Crash	Vehicle Configuration	Non Motorist Type
10/6/2010	1:55 PM	Property damage only (none injured)	2	0	0	Rear-end	Wet	Daylight	Rain		110 RIVERWAY	V1:Southbound / V2:Not reported	V1: Not reported / V2: Not reported	V1: Travelling straight ahead / V2:Not reported	V1: Not reported / V2:Not reported	
10/8/2010	3:50 PM	Not Reported	1	0	0	Not reported	Not reported	Not reported	Not Reported	PARK DRIVE / MOUNTFORT STREET		V1:Not reported	V1: Not reported	V1: Not reported	V1: Passenger car	P2:Pedalcyclist (bicycle, tricycle, unicycle, pedal car)
10/10/2010	1:50 PM	Property damage only (none injured)	2	0	0	Rear-end	Dry	Daylight	Clear	BEACON STREET / PARK DRIVE		V1:Westbound / V2:Westbound	V1: Not reported / V2: Not reported	V1: Slowing or stopped in traffic / V2:Turning left	V1: Not reported / V2:Not reported	
10/18/2010	9:27 PM	Non-fatal injury	2	1	0	Sideswipe, same direction	Dry	Dark - lighted roadway	Cloudy	BROOKLINE AVENUE / FENWAY		V1:Eastbound / V2:Eastbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Turning left / V2:Turning left	V1: Motorcycle / V2:Light truck(van, mini-van, panel, pickup, sport utility) with only four tires	
10/30/2010	6:40 PM	Property damage only (none injured)	2	0	0	Sideswipe, same direction	Dry	Dark - lighted roadway	Clear		MOUNTFORT STREET / PARK DRIVE	V1:Westbound / V2:Not reported	V1: Not reported / V2: Not reported	V1: Turning left / V2:Not reported	V1: Not reported / V2:Not reported	
11/30/2010	11:35 PM	Not Reported	2	0	0	Not reported	Not reported	Dark - lighted roadway	Clear	PARK DRIVE / BEACON STREET		V1:Not reported / V2:Not reported	V1: Not reported / V2: Not reported	V1: Not reported / V2:Not reported	V1: Not reported / V2:Not reported	
12/1/2010	7:10 PM	Non-fatal injury	2	3	0	Angle	Wet	Dark - lighted roadway	Rain	RIVERWAY / BROOKLINE AVENUE		V1:Eastbound / V2:Westbound	V1: Collision with motor vehicle in traffic / V2: Collision with motor vehicle in traffic	V1: Turning left / V2:Travelling straight ahead	V1: Bus (seats for 7-15 people, including driver) / V2:Passenger car	

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston COUNT DATE : May 16, 2012

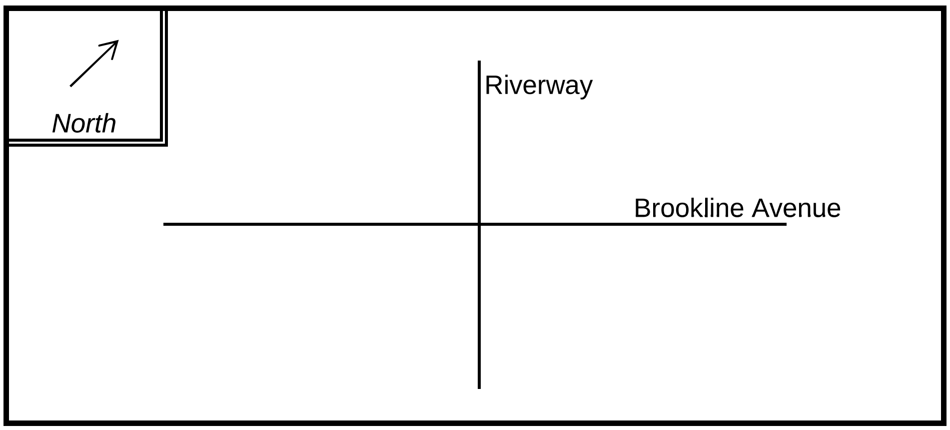
DISTRICT : 6 UNSIGNALIZED :   SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Brookline Avenue

MINOR STREET(S) : Riverway

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	370	1,175	1,065	785		**3,395**

" K " FACTOR : **0.09** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **37,722**

TOTAL # OF CRASHES : 45 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR (**A**) : **15.00**

CRASH RATE CALCULATION : **1.09** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: BCH IMP, Children’s Clinical Building, November 2012

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston

COUNT DATE : May 13, 2012

DISTRICT : 6

UNSIGNALIZED :

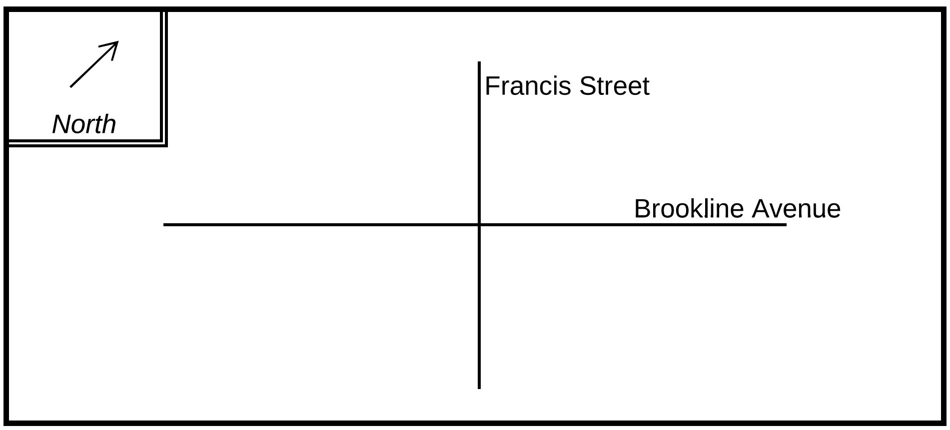
SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Brookline Avenue

MINOR STREET(S) : Francis Street

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	480	170	505	950		**2,105**

" K " FACTOR : **0.09**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **23,389**

TOTAL # OF CRASHES : 5

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **1.67**

CRASH RATE CALCULATION : **0.20**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: BCH IMP, Children’s Clinical Building, November 2012

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston COUNT DATE : May 16, 2012

DISTRICT : 6 UNSIGNALIZED : SIGNALIZED : X

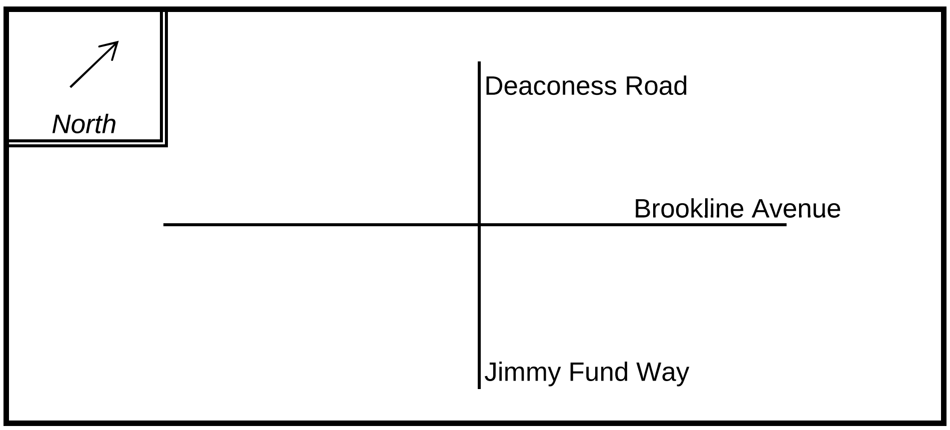
~ INTERSECTION DATA ~

MAJOR STREET : Brookline Avenue

MINOR STREET(S) : Jimmy Fund Way

Deaconess Road

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	265	150	555	725		1,695

" K " FACTOR : **0.09** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **18,833**

TOTAL # OF CRASHES : 2 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR (**A**) : **0.67**

CRASH RATE CALCULATION : **0.10** RATE = $\frac{(A * 1,000,000)}{(V * 365)}$

Comments :

Project Title & Date: BCH IMP, Children's Clinical Building, November 2012

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston   COUNT DATE : May 16, 2012

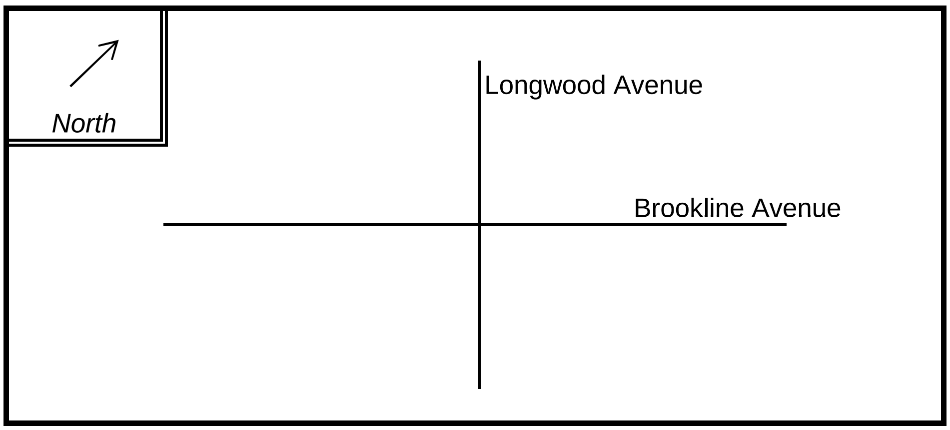
DISTRICT : 6   UNSIGNALIZED : [ ]   SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Brookline Avenue

MINOR STREET(S) : Longwood Avenue

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	585	795	245	665		2,290

" K " FACTOR : **0.09**   INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **25,444**

TOTAL # OF CRASHES : 13   # OF YEARS : 3   AVERAGE # OF CRASHES PER YEAR (**A**) : **4.33**

CRASH RATE CALCULATION : **0.47**   RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: BCH IMP, Children’s Clinical Building, November 2012

Moving Massachusetts Forward. massDOT Highway

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston　　COUNT DATE : May 16, 2012

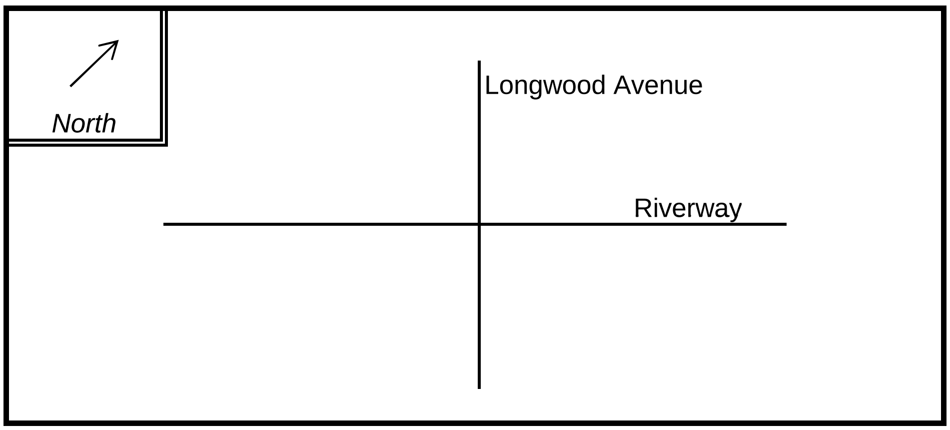
DISTRICT : 6　　UNSIGNALIZED : 　　SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Riverway

MINOR STREET(S) : Longwood Avenue

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	395	420	780	1,235		2,830

" K " FACTOR : **0.09**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **31,444**

TOTAL # OF CRASHES : 21　　# OF YEARS : 3　　AVERAGE # OF CRASHES PER YEAR (**A**) : **7.00**

CRASH RATE CALCULATION : **0.61**　　RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: BCH IMP, Children’s Clinical Building, November 2012

Moving Massachusetts Forward. massDOT Highway

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston

COUNT DATE : May 17, 2012

DISTRICT : 6

UNSIGNALIZED : X

SIGNALIZED :

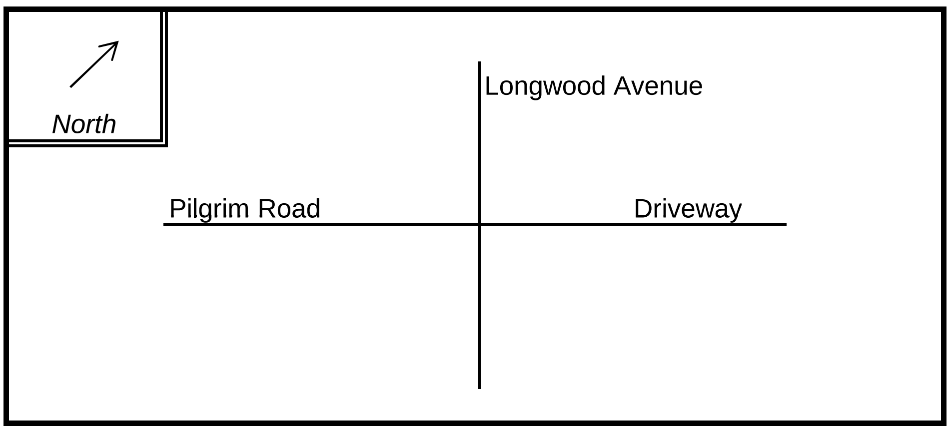
~ INTERSECTION DATA ~

MAJOR STREET : Longwood Avenue

MINOR STREET(S) : Pilgrim Road

Driveway

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	340	260	0	145		**745**

" K " FACTOR : **0.09**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **8,278**

TOTAL # OF CRASHES : 1

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **0.33**

CRASH RATE CALCULATION : **0.11**

$$\text{RATE} = \frac{(A * 1{,}000{,}000)}{(V * 365)}$$

Comments :

Project Title & Date: BCH IMP, Children's Clinical Building, November 2012

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston | COUNT DATE : May 16, 2012

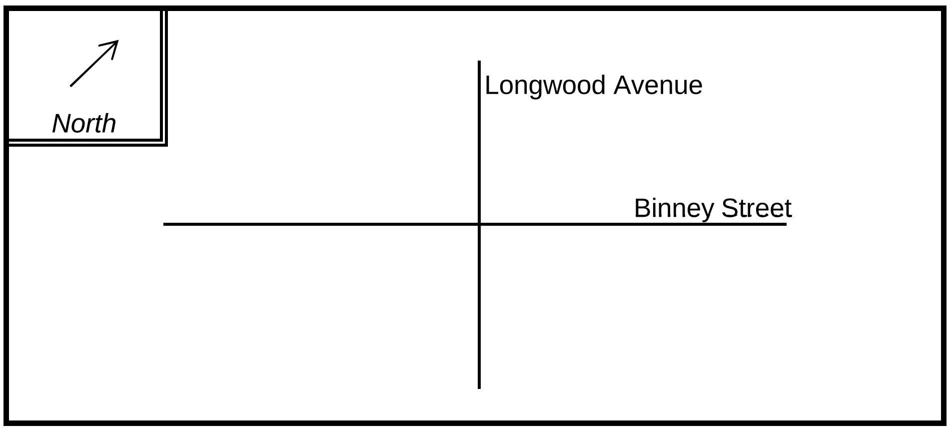
DISTRICT : 6 | UNSIGNALIZED : | SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Longwood Avenue

MINOR STREET(S) : Binney Street

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	510	350	165	310		1,335

" K " FACTOR : **0.09** | INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **14,833**

TOTAL # OF CRASHES : 2 | # OF YEARS : 3 | AVERAGE # OF CRASHES PER YEAR (**A**) : **0.67**

CRASH RATE CALCULATION : **0.12** | RATE = $\frac{(A * 1,000,000)}{(V * 365)}$

Comments :

Project Title & Date: BCH IMP, Children's Clinical Building, November 2012

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston COUNT DATE : May 16, 2012

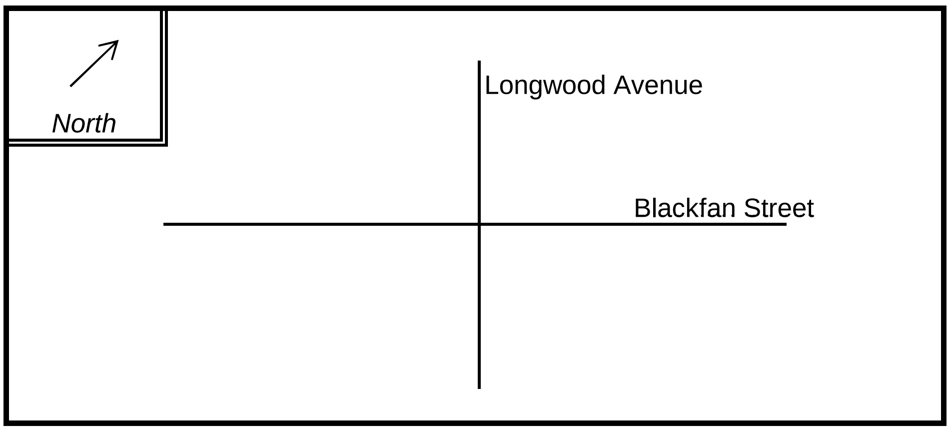
DISTRICT : 6 UNSIGNALIZED : [ ] SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Longwood Avenue

MINOR STREET(S) : Blackfan Street

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	315	465	125	285		**1,190**

" K " FACTOR : **0.09** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **13,222**

TOTAL # OF CRASHES : 2 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR (**A**) : **0.67**

CRASH RATE CALCULATION : **0.14** RATE = $\frac{(A * 1,000,000)}{(V * 365)}$

Comments :

Project Title & Date: BCH IMP, Children’s Clinical Building, November 2012

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston COUNT DATE : May 16, 2012

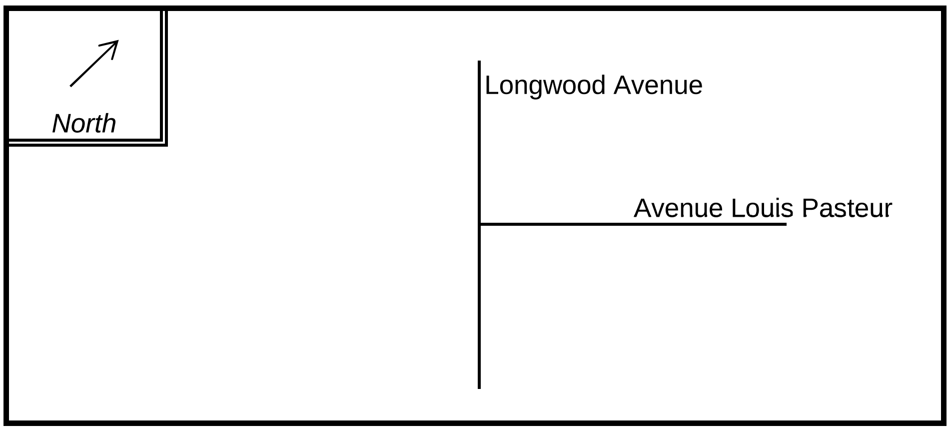
DISTRICT : 6 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Longwood Avenue

MINOR STREET(S) : Avenue Louis Pasteur

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	WB			
PEAK HOURLY VOLUMES (AM/PM) :	225	485	180			**890**

" K " FACTOR : **0.09** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **9,889**

TOTAL # OF CRASHES : 5 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR (**A**) : **1.67**

CRASH RATE CALCULATION : **0.46** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: BCH IMP, Children’s Clinical Building, November 2012

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston | COUNT DATE : May 22, 2012

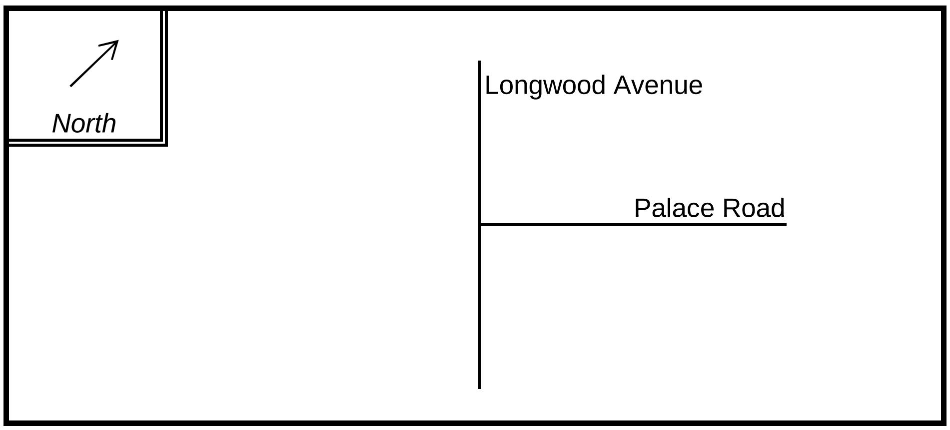
DISTRICT : 6 | UNSIGNALIZED : X | SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Longwood Avenue

MINOR STREET(S) : Palace Road

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB				
PEAK HOURLY VOLUMES (AM/PM) :	280	565				**845**

" K " FACTOR : **0.09** | INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **9,389**

TOTAL # OF CRASHES : 4 | # OF YEARS : 3 | AVERAGE # OF CRASHES PER YEAR (**A**) : **1.33**

CRASH RATE CALCULATION : **0.39**

$$RATE = \frac{(A * 1{,}000{,}000)}{(V * 365)}$$

Comments :

Project Title & Date: BCH IMP, Children's Clinical Building, November 2012

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston

COUNT DATE : May 16, 2012

DISTRICT : 6

UNSIGNALIZED :

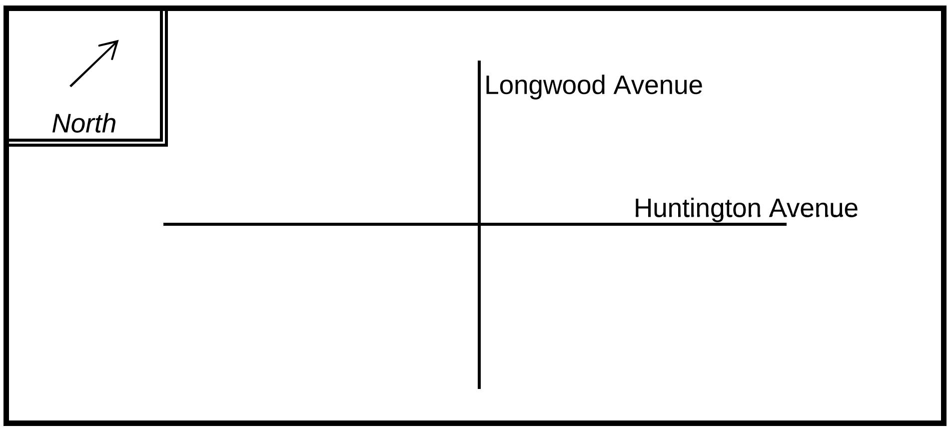
SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Huntington Avenue

MINOR STREET(S) : Longwood Avenue

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	140	515	660	870		2,185

" K " FACTOR : **0.09**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **24,278**

TOTAL # OF CRASHES : 9

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **3.00**

CRASH RATE CALCULATION : **0.34**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: BCH IMP, Children’s Clinical Building, November 2012

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston

COUNT DATE : May 22, 2012

DISTRICT : 6

UNSIGNALIZED : X

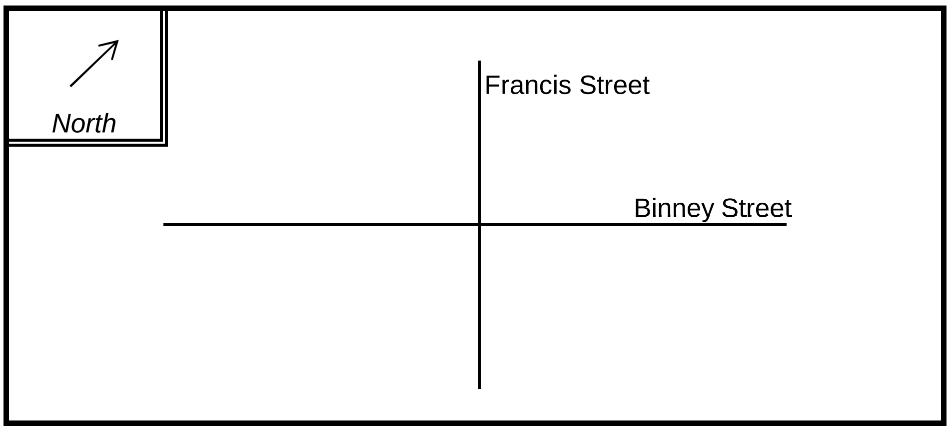
SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Francis Street

MINOR STREET(S) : Binney Street

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	280	365	100	270		1,015

" K " FACTOR : **0.09**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **11,278**

TOTAL # OF CRASHES : 2

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **0.67**

CRASH RATE CALCULATION : **0.16**

$$\text{RATE} = \frac{(A * 1{,}000{,}000)}{(V * 365)}$$

Comments :

Project Title & Date: BCH IMP, Children's Clinical Building, November 2012

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston

COUNT DATE : May 17, 2012

DISTRICT : 6

UNSIGNALIZED : X

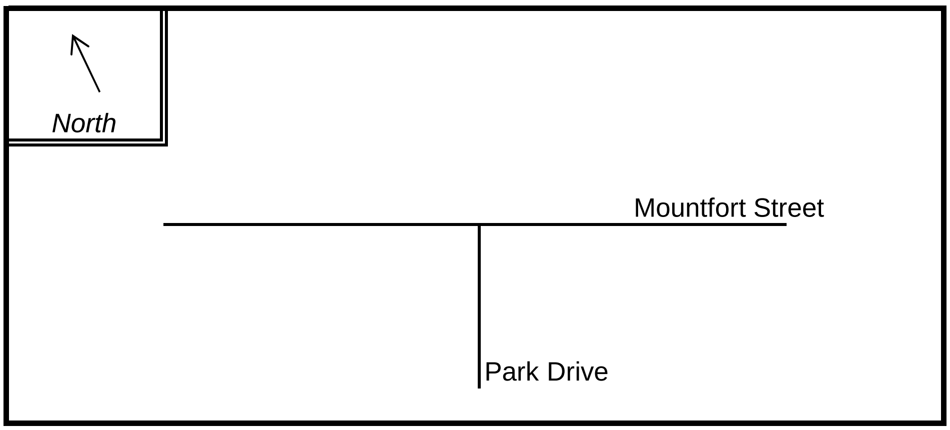
SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Park Drive

MINOR STREET(S) : Mountfort Street

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	EB	WB			
PEAK HOURLY VOLUMES (AM/PM) :	432	647	51			1,130

" K " FACTOR : **0.09**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **12,556**

TOTAL # OF CRASHES : 5

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **1.67**

CRASH RATE CALCULATION : **0.36**

$$\text{RATE} = \frac{(A * 1{,}000{,}000)}{(V * 365)}$$

Comments :

Project Title & Date: BCH IMP, 819 Beacon Street, November 2012

Moving Massachusetts Forward. massDOT Highway

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston COUNT DATE : May 17, 2012

DISTRICT : 6 UNSIGNALIZED : SIGNALIZED : X

~ INTERSECTION DATA ~

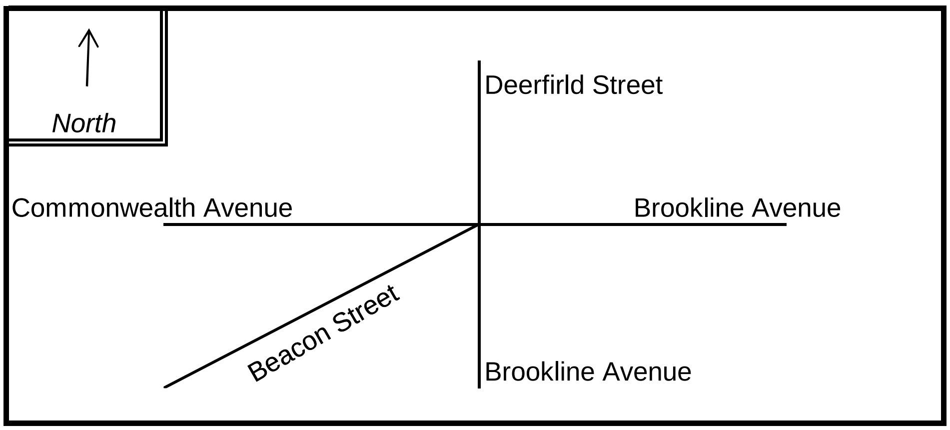
MAJOR STREET : Commonwealth Avenue

MINOR STREET(S) : Beacon Street

Brookline Avenue

Deerfield Street

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	**1**	**2**	**3**	**4**	**5**	**Total Peak Hourly Approach Volume**
DIRECTION :	NB	SB	EB	WB	NEB	
PEAK HOURLY VOLUMES (AM/PM) :	369	16	660	1,636	616	**3,297**

" K " FACTOR : **0.09** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **36,633**

TOTAL # OF CRASHES : 14 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR (**A**) : **4.67**

CRASH RATE CALCULATION : **0.35** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: BCH IMP, 819 Beacon Street, November 2012

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston | COUNT DATE : May 16, 2012

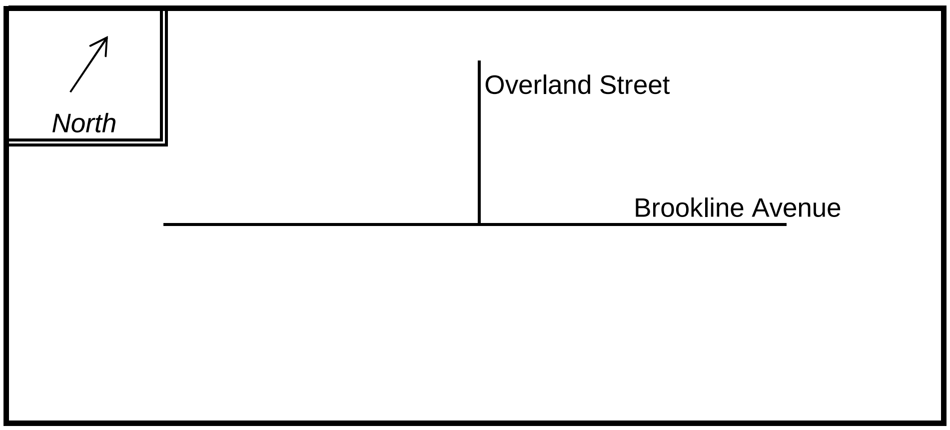
DISTRICT : 6 | UNSIGNALIZED : X | SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Brookline Avenue

MINOR STREET(S) : Overland Street

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	SB	EB	WB			
PEAK HOURLY VOLUMES (AM/PM) :	68	419	340			**827**

" K " FACTOR : **0.09** | INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **9,189**

TOTAL # OF CRASHES : 1 | # OF YEARS : 3 | AVERAGE # OF CRASHES PER YEAR (**A**) : **0.33**

CRASH RATE CALCULATION : **0.10**

$$RATE = \frac{(A * 1{,}000{,}000)}{(V * 365)}$$

Comments :

Project Title & Date: BCH IMP, 819 Beacon Street, November 2012

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston

COUNT DATE : May 17, 2012

DISTRICT : 6

UNSIGNALIZED :

SIGNALIZED : X

~ INTERSECTION DATA ~

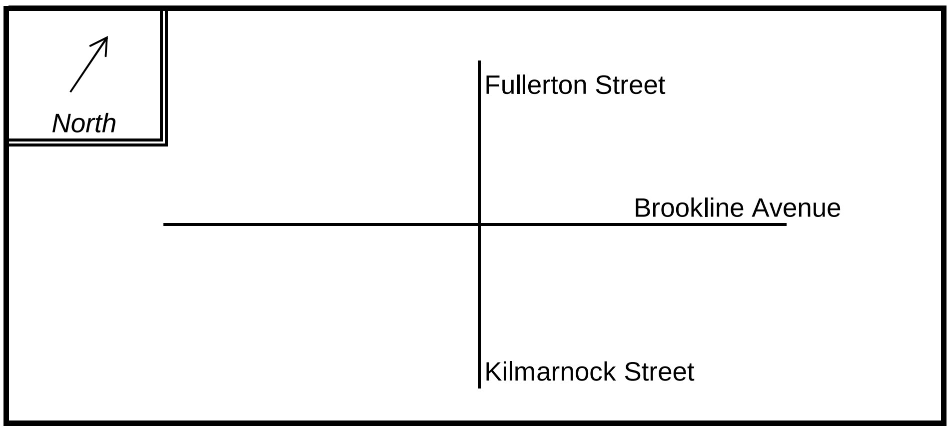
MAJOR STREET : Brookline Avenue

MINOR STREET(S) : Fullerton Atreet

Kilmarnock Street

INTERSECTION DIAGRAM

(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	171	260	411	391		**1,233**

" K " FACTOR : **0.09**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **13,700**

TOTAL # OF CRASHES : 5

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **1.67**

CRASH RATE CALCULATION : **0.33**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: BCH IMP, 819 Beacon Street, November 2012

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston

COUNT DATE : May 17, 2012

DISTRICT : 6

UNSIGNALIZED :

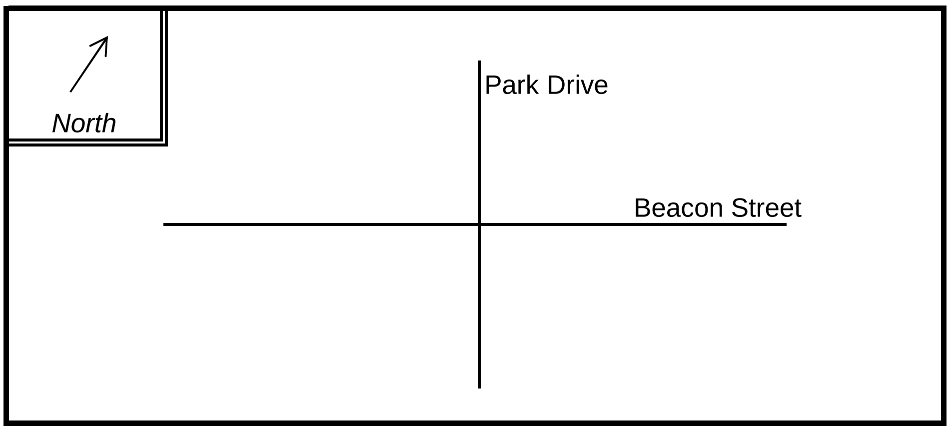
SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Beacon Street

MINOR STREET(S) : Park Drive

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	595	608	620	912		**2,735**

" K " FACTOR : **0.09**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **30,389**

TOTAL # OF CRASHES : 22

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **7.33**

CRASH RATE CALCULATION : **0.66**

$$\text{RATE} = \frac{(A * 1{,}000{,}000)}{(V * 365)}$$

Comments :

Project Title & Date: BCH IMP, 819 Beacon Street, November 2012

Moving Massachusetts Forward. massDOT Highway

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston

COUNT DATE : May 17, 2012

DISTRICT : 6

UNSIGNALIZED : X

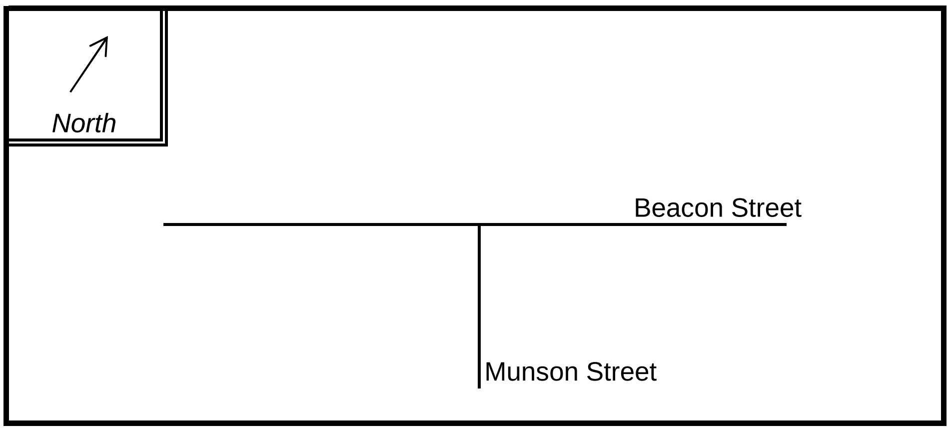
SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Beacon Street

MINOR STREET(S) : Munson Street

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	**1**	**2**	**3**	**4**	**5**	**Total Peak Hourly Approach Volume**
DIRECTION :	NB	EB	WB			
PEAK HOURLY VOLUMES (AM/PM) :	2	545	911			**1,458**

" K " FACTOR : **0.09**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **16,200**

TOTAL # OF CRASHES : 1

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **0.33**

CRASH RATE CALCULATION : **0.06**

$$\text{RATE} = \frac{(A * 1{,}000{,}000)}{(V * 365)}$$

Comments :

Project Title & Date: BCH IMP, 819 Beacon Street, November 2012

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston

COUNT DATE : May 17, 2012

DISTRICT : 6

UNSIGNALIZED : X

SIGNALIZED :

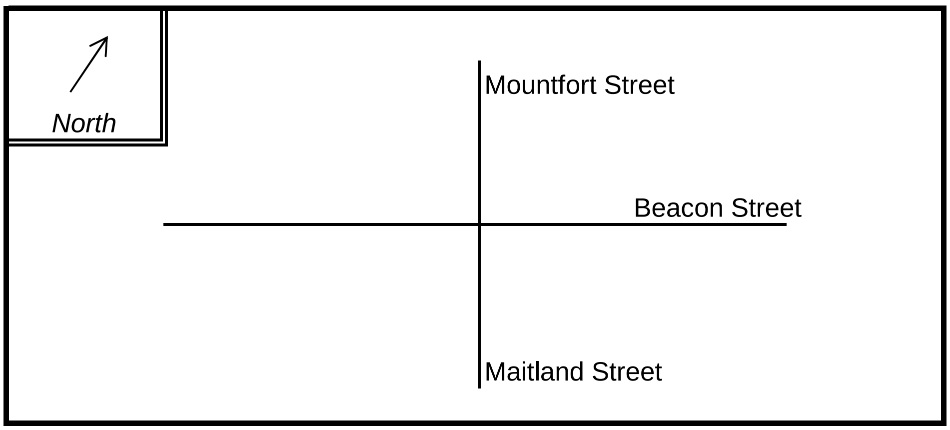
~ INTERSECTION DATA ~

MAJOR STREET : Beacon Street

MINOR STREET(S) : Mountfort Street

Maitland Street

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	82	19	549	892		1,542

" K " FACTOR : **0.09**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **17,133**

TOTAL # OF CRASHES : 1

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **0.33**

CRASH RATE CALCULATION : **0.05**

$$\text{RATE} = \frac{(A * 1{,}000{,}000)}{(V * 365)}$$

Comments :

Project Title & Date: BCH IMP, 819 Beacon Street, November 2012

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston   COUNT DATE : May 17, 2012

DISTRICT : 6   UNSIGNALIZED : X   SIGNALIZED :

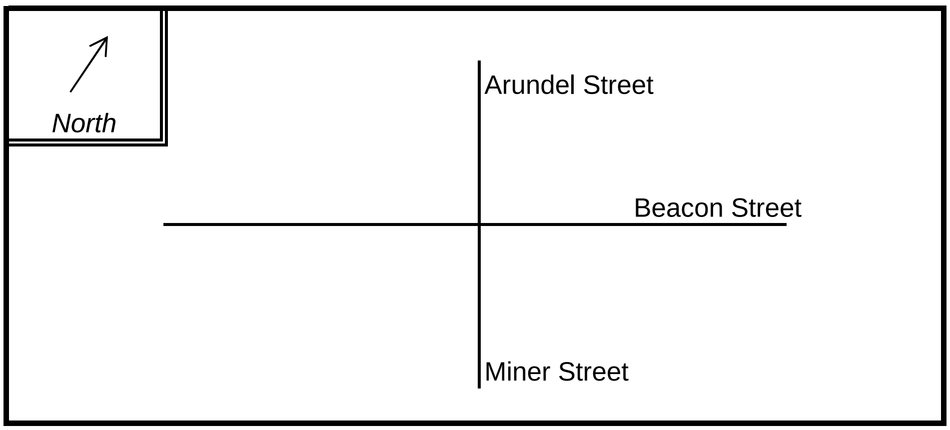
~ INTERSECTION DATA ~

MAJOR STREET : Beacon Street

MINOR STREET(S) : Arundel Street

Miner Street

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	91	11	594	924		**1,620**

" K " FACTOR : **0.09**   INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **18,000**

TOTAL # OF CRASHES : 7   # OF YEARS : 3   AVERAGE # OF CRASHES PER YEAR (**A**) : **2.33**

CRASH RATE CALCULATION : **0.36**   RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: BCH IMP, 819 Beacon Street, November 2012

Moving Massachusetts Forward. massDOT Highway

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston COUNT DATE : May 17, 2012

DISTRICT : 6 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Beacon Street

MINOR STREET(S) : Aberdeen Steret

INTERSECTION DIAGRAM (Label Approaches)

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	EB	WB			
PEAK HOURLY VOLUMES (AM/PM) :	15	536	945			**1,496**

" K " FACTOR : **0.09** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **16,622**

TOTAL # OF CRASHES : 1 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR (**A**) : **0.33**

CRASH RATE CALCULATION : **0.05** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: BCH IMP, 819 Beacon Street, November 2012

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston

COUNT DATE : May 16, 2012

DISTRICT : 6

UNSIGNALIZED : X

SIGNALIZED :

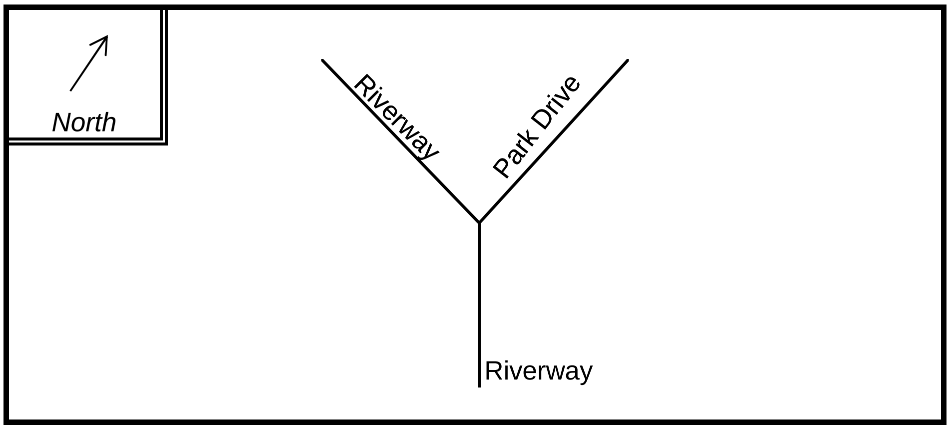
~ INTERSECTION DATA ~

MAJOR STREET : Riverway

MINOR STREET(S) : Park Drive

INTERSECTION DIAGRAM

(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	SEB	SWB				
PEAK HOURLY VOLUMES (AM/PM) :	715	740				1,455

" K " FACTOR : **0.09**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **16,167**

TOTAL # OF CRASHES : 2

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **0.67**

CRASH RATE CALCULATION : **0.11**

$$\text{RATE} = \frac{(A * 1{,}000{,}000)}{(V * 365)}$$

Comments :

Project Title & Date: BCH IMP, 819 Beacon Street, November 2012

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston COUNT DATE : May 16, 2012

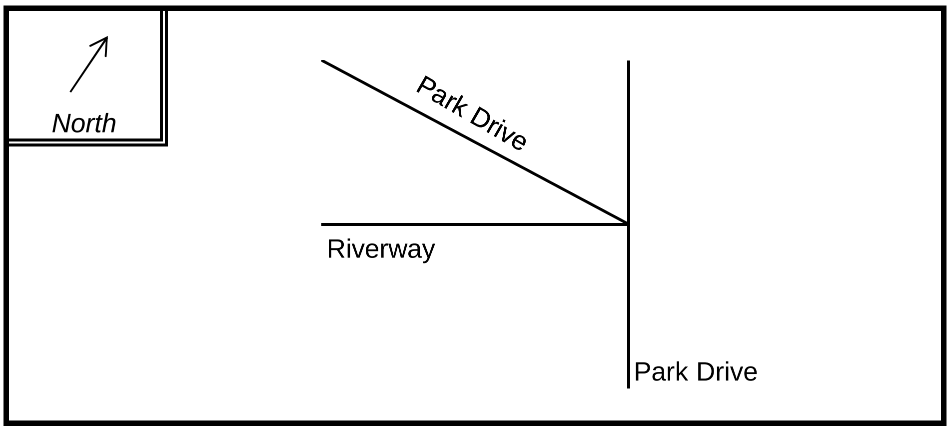
DISTRICT : 6 UNSIGNALIZED : SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Park Drive

MINOR STREET(S) : Riverway

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB					
PEAK HOURLY VOLUMES (AM/PM) :	1,652					**1,652**

" K " FACTOR : **0.09**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **18,356**

TOTAL # OF CRASHES : 10 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR (**A**) : **3.33**

CRASH RATE CALCULATION : **0.50** RATE = $\frac{(A * 1,000,000)}{(V * 365)}$

Comments :

Project Title & Date: BCH IMP, 819 Beacon Street, November 2012

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston

COUNT DATE : May 22, 2012

DISTRICT : 6

UNSIGNALIZED :

SIGNALIZED : X

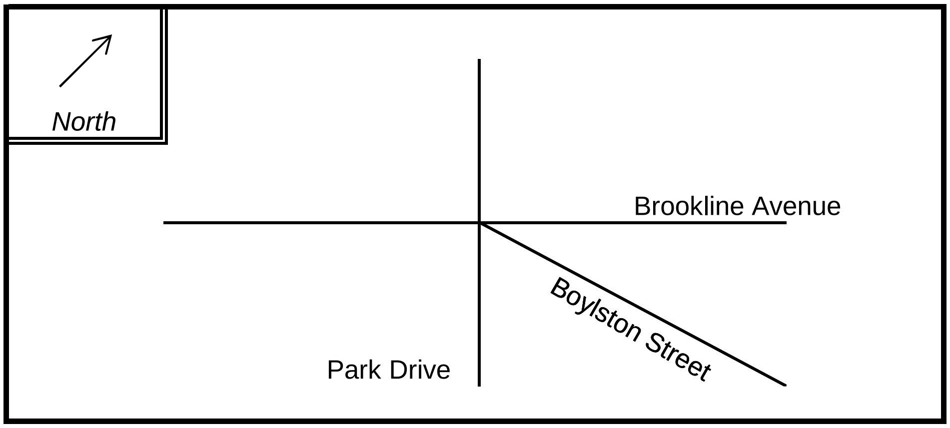
~ INTERSECTION DATA ~

MAJOR STREET : Brookline Avenue

MINOR STREET(S) : Park Drive

Boylston Street

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	EB	WB	NWB		
PEAK HOURLY VOLUMES (AM/PM) :	1,016	1,262	546	1,073		**3,897**

" K " FACTOR : **0.09**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **43,300**

TOTAL # OF CRASHES : 41

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **13.67**

CRASH RATE CALCULATION : **0.86**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: BCH IMP, 819 Beacon Street, November 2012

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Boston COUNT DATE : May 16, 2012

DISTRICT : 6 UNSIGNALIZED : [ ] SIGNALIZED : X

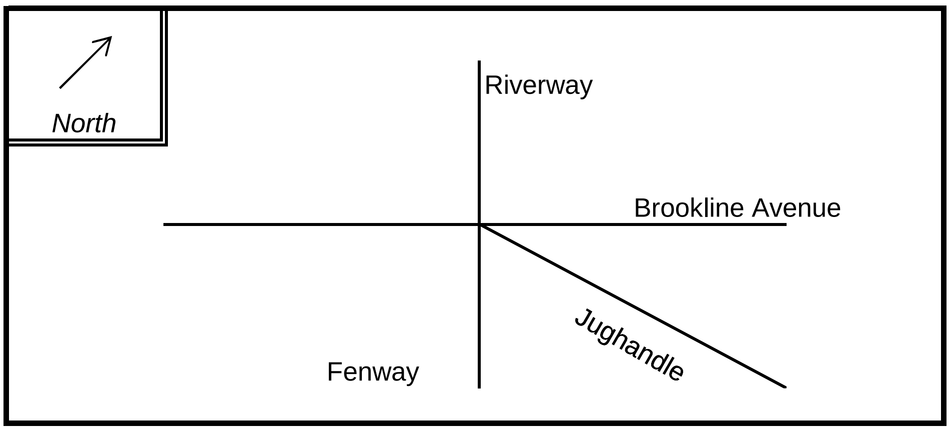
~ INTERSECTION DATA ~

MAJOR STREET : Brookline Avenue

MINOR STREET(S) : Riverway

Fenway

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	SB	EB	WB			
PEAK HOURLY VOLUMES (AM/PM) :	1,443	869	778			**3,090**

" K " FACTOR : **0.09** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **34,333**

TOTAL # OF CRASHES : 20 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR (**A**) : **6.67**

CRASH RATE CALCULATION : **0.53** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: BCH IMP, 819 Beacon Street, November 2012

Appendix D

Wind

CONSULTING ENGINEERS & SCIENTISTS

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
1	A	Spring	6		Sitting	10		Acceptable
		Summer	5		Sitting	8		Acceptable
		Fall	6		Sitting	10		Acceptable
		Winter	6		Sitting	10		Acceptable
		Annual	6		Sitting	10		Acceptable
	B	Spring	5	-17%	Sitting	9		Acceptable
		Summer	4	-20%	Sitting	7	-12%	Acceptable
		Fall	5	-17%	Sitting	8	-20%	Acceptable
		Winter	6		Sitting	9		Acceptable
		Annual	5	-17%	Sitting	8	-20%	Acceptable
2	A	Spring	6		Sitting	10		Acceptable
		Summer	5		Sitting	9		Acceptable
		Fall	6		Sitting	10		Acceptable
		Winter	6		Sitting	10		Acceptable
		Annual	6		Sitting	10		Acceptable
	B	Spring	6		Sitting	10		Acceptable
		Summer	5		Sitting	9		Acceptable
		Fall	6		Sitting	9		Acceptable
		Winter	6		Sitting	10		Acceptable
		Annual	6		Sitting	10		Acceptable
3	A	Spring	9		Sitting	14		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	9		Sitting	14		Acceptable
		Annual	9		Sitting	14		Acceptable
	B	Spring	15	+67%	Standing	21	+50%	Acceptable
		Summer	13	+62%	Standing	18	+50%	Acceptable
		Fall	14	+56%	Standing	19	+36%	Acceptable
		Winter	14	+56%	Standing	19	+36%	Acceptable
		Annual	14	+56%	Standing	20	+43%	Acceptable

Notes:
1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

<u>Configurations</u>

A - No Build
B – Build

<u>Mean Wind Speed Criteria</u>

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

<u>Effective Gust Criteria</u>

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
4	A	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	10		Sitting	15		Acceptable
	B	Spring	19	+90%	Walking	25	+56%	Acceptable
		Summer	16	+100%	Walking	22	+83%	Acceptable
		Fall	17	+89%	Walking	23	+53%	Acceptable
		Winter	18	+80%	Walking	24	+50%	Acceptable
		Annual	17	+70%	Walking	23	+53%	Acceptable
5	A	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	12		Sitting	19		Acceptable
		Summer	11		Sitting	15		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable
6	A	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	11	-21%	Sitting	18	-14%	Acceptable
		Summer	8	-27%	Sitting	14	-18%	Acceptable
		Fall	10	-23%	Sitting	16	-20%	Acceptable
		Winter	11	-31%	Sitting	19	-21%	Acceptable
		Annual	10	-29%	Sitting	17	-19%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A - No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting: ≤ 12 mph
Comfortable for Standing: > 12 and ≤ 15 mph
Comfortable for Walking: > 15 and ≤ 19 mph
Uncomfortable for Walking: > 19 and ≤ 27 mph
Dangerous Conditions: > 27 mph

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
7	A	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	23		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	9	-31%	Sitting	16	-20%	Acceptable
		Summer	7	-30%	Sitting	13	-19%	Acceptable
		Fall	9	-25%	Sitting	15	-21%	Acceptable
		Winter	10	-29%	Sitting	18	-22%	Acceptable
		Annual	9	-31%	Sitting	16	-20%	Acceptable
8	A	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	18	+29%	Walking	24	+14%	Acceptable
		Summer	14	+27%	Standing	19	+12%	Acceptable
		Fall	16	+23%	Walking	22		Acceptable
		Winter	18	+20%	Walking	25		Acceptable
		Annual	17	+21%	Walking	23		Acceptable
9	A	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	16		Walking	23		Acceptable
	B	Spring	19	+19%	Walking	26	+13%	Acceptable
		Summer	16	+23%	Walking	22	+16%	Acceptable
		Fall	18	+20%	Walking	25	+14%	Acceptable
		Winter	20	+11%	Uncomfortable	28		Acceptable
		Annual	19	+19%	Walking	26	+13%	Acceptable

Notes:
1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
10	A	Spring	17		Walking	24		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	20	+18%	Uncomfortable	27	+12%	Acceptable
		Summer	17	+21%	Walking	23	+15%	Acceptable
		Fall	19	+19%	Walking	26	+13%	Acceptable
		Winter	21	+11%	Uncomfortable	28		Acceptable
		Annual	19	+12%	Walking	26		Acceptable
11	A	Spring	16		Walking	23		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	B	Spring	6	-62%	Sitting	11	-52%	Acceptable
		Summer	5	-64%	Sitting	9	-55%	Acceptable
		Fall	6	-62%	Sitting	10	-55%	Acceptable
		Winter	7	-61%	Sitting	11	-56%	Acceptable
		Annual	6	-62%	Sitting	10	-57%	Acceptable
12	A	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	10		Sitting	15		Acceptable
	B	Spring	10		Sitting	15		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	11		Sitting	16		Acceptable
		Annual	10		Sitting	14		Acceptable

Notes:
1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A - No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
13	A	Spring	12		Sitting	18		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	9	-25%	Sitting	14	-22%	Acceptable
		Summer	8	-20%	Sitting	12	-20%	Acceptable
		Fall	9	-18%	Sitting	13	-24%	Acceptable
		Winter	10	-17%	Sitting	15	-21%	Acceptable
		Annual	9	-18%	Sitting	14	-22%	Acceptable
14	A	Spring	DATA NOT AVAILABLE					
		Summer	DATA NOT AVAILABLE					
		Fall	DATA NOT AVAILABLE					
		Winter	DATA NOT AVAILABLE					
		Annual	DATA NOT AVAILABLE					
	B	Spring	8		Sitting	13		Acceptable
		Summer	6		Sitting	10		Acceptable
		Fall	8		Sitting	12		Acceptable
		Winter	8		Sitting	12		Acceptable
		Annual	8		Sitting	12		Acceptable
15	A	Spring	10		Sitting	16		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	9		Sitting	14		Acceptable
		Annual	9		Sitting	14		Acceptable
	B	Spring	7	-30%	Sitting	12	-25%	Acceptable
		Summer	5	-44%	Sitting	9	-36%	Acceptable
		Fall	6	-33%	Sitting	11	-21%	Acceptable
		Winter	7	-22%	Sitting	12	-14%	Acceptable
		Annual	7	-22%	Sitting	11	-21%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A - No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
16	A	Spring	6		Sitting	10		Acceptable
		Summer	5		Sitting	8		Acceptable
		Fall	6		Sitting	9		Acceptable
		Winter	6		Sitting	10		Acceptable
		Annual	6		Sitting	9		Acceptable
	B	Spring	7	+17%	Sitting	12	+20%	Acceptable
		Summer	6	+20%	Sitting	9	+12%	Acceptable
		Fall	7	+17%	Sitting	11	+22%	Acceptable
		Winter	7	+17%	Sitting	12	+20%	Acceptable
		Annual	7	+17%	Sitting	11	+22%	Acceptable
17	A	Spring	9		Sitting	14		Acceptable
		Summer	7		Sitting	10		Acceptable
		Fall	8		Sitting	13		Acceptable
		Winter	9		Sitting	13		Acceptable
		Annual	8		Sitting	13		Acceptable
	B	Spring	10	+11%	Sitting	15		Acceptable
		Summer	8	+14%	Sitting	11		Acceptable
		Fall	9	+12%	Sitting	14		Acceptable
		Winter	10	+11%	Sitting	15	+15%	Acceptable
		Annual	9	+12%	Sitting	14		Acceptable
18	A	Spring	10		Sitting	15		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	9		Sitting	14		Acceptable
		Annual	9		Sitting	14		Acceptable
	B	Spring	8	-20%	Sitting	13	-13%	Acceptable
		Summer	6	-25%	Sitting	10	-23%	Acceptable
		Fall	7	-22%	Sitting	12	-14%	Acceptable
		Winter	8	-11%	Sitting	13		Acceptable
		Annual	7	-22%	Sitting	12	-14%	Acceptable

Notes:
1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
19	A	Spring	8		Sitting	12		Acceptable
		Summer	7		Sitting	11		Acceptable
		Fall	7		Sitting	11		Acceptable
		Winter	8		Sitting	12		Acceptable
		Annual	8		Sitting	12		Acceptable
	B	Spring	5	-38%	Sitting	8	-33%	Acceptable
		Summer	4	-43%	Sitting	6	-45%	Acceptable
		Fall	5	-29%	Sitting	7	-36%	Acceptable
		Winter	5	-38%	Sitting	8	-33%	Acceptable
		Annual	5	-38%	Sitting	7	-42%	Acceptable
20	A	Spring	12		Sitting	20		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	10		Sitting	18		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	12		Sitting	20		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	11		Sitting	18		Acceptable
21	A	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	11		Sitting	17		Acceptable
		Summer	9	+12%	Sitting	14		Acceptable
		Fall	11	+22%	Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable

Notes:
1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

CONSULTING ENGINEERS & SCIENTISTS

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
22	A	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	12		Sitting	18		Acceptable
23	A	Spring	8		Sitting	14		Acceptable
		Summer	7		Sitting	11		Acceptable
		Fall	8		Sitting	13		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	8		Sitting	14		Acceptable
	B	Spring	9	+12%	Sitting	15		Acceptable
		Summer	8	+14%	Sitting	12		Acceptable
		Fall	9	+12%	Sitting	14		Acceptable
		Winter	10	+11%	Sitting	16		Acceptable
		Annual	9	+12%	Sitting	15		Acceptable
24	A	Spring	18		Walking	24		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	18		Walking	24		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable

Notes:
1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

CONSULTING ENGINEERS & SCIENTISTS

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
25	A	Spring	16		Walking	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	15		Standing	23		Acceptable
	B	Spring	16		Walking	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
26	A	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	12		Sitting	18		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable
27	A	Spring	9		Sitting	14		Acceptable
		Summer	7		Sitting	11		Acceptable
		Fall	8		Sitting	13		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	8		Sitting	13		Acceptable
	B	Spring	9		Sitting	14		Acceptable
		Summer	7		Sitting	11		Acceptable
		Fall	8		Sitting	13		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	8		Sitting	14		Acceptable

Notes:
1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A - No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
28	A	Spring	21		Uncomfortable	27		Acceptable
		Summer	17		Walking	22		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	22		Uncomfortable	29		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	B	Spring	21		Uncomfortable	27		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	22		Uncomfortable	29		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
29	A	Spring	11		Sitting	19		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	12		Sitting	20		Acceptable
		Summer	10	+11%	Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	19		Acceptable
30	A	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	9		Sitting	16		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	10		Sitting	17		Acceptable
		Summer	8	-11%	Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	9		Sitting	16		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A - No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
31	A	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	B	Spring	17		Walking	23		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
32	A	Spring	10		Sitting	16		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	9		Sitting	15		Acceptable
	B	Spring	9		Sitting	16		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	9		Sitting	15		Acceptable
33	A	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	22		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
34	A	Spring	16		Walking	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	16		Walking	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
35	A	Spring	7		Sitting	11		Acceptable
		Summer	5		Sitting	9		Acceptable
		Fall	6		Sitting	10		Acceptable
		Winter	7		Sitting	12		Acceptable
		Annual	6		Sitting	11		Acceptable
	B	Spring	7		Sitting	11		Acceptable
		Summer	5		Sitting	9		Acceptable
		Fall	6		Sitting	10		Acceptable
		Winter	7		Sitting	12		Acceptable
		Annual	6		Sitting	11		Acceptable
36	A	Spring	14		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	20		Acceptable
	B	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	15		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

<u>Configurations</u>

A - No Build
B – Build

<u>Mean Wind Speed Criteria</u>

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

<u>Effective Gust Criteria</u>

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
37	A	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	11		Sitting	16		Acceptable
		Summer	8	-11%	Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	16		Acceptable
38	A	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	21		Acceptable
	B	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	21		Acceptable
39	A	Spring	28		Dangerous	39		Unacceptable
		Summer	22		Uncomfortable	30		Acceptable
		Fall	26		Uncomfortable	37		Unacceptable
		Winter	31		Dangerous	43		Unacceptable
		Annual	28		Dangerous	39		Unacceptable
	B	Spring	28		Dangerous	39		Unacceptable
		Summer	22		Uncomfortable	30		Acceptable
		Fall	26		Uncomfortable	37		Unacceptable
		Winter	31		Dangerous	43		Unacceptable
		Annual	28		Dangerous	39		Unacceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A - No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
40	A	Spring	19		Walking	25		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	21		Uncomfortable	27		Acceptable
		Annual	19		Walking	25		Acceptable
	B	Spring	19		Walking	25		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	21		Uncomfortable	27		Acceptable
		Annual	19		Walking	25		Acceptable
41	A	Spring	8		Sitting	13		Acceptable
		Summer	7		Sitting	11		Acceptable
		Fall	8		Sitting	12		Acceptable
		Winter	8		Sitting	13		Acceptable
		Annual	8		Sitting	12		Acceptable
	B	Spring	8		Sitting	13		Acceptable
		Summer	7		Sitting	11		Acceptable
		Fall	8		Sitting	12		Acceptable
		Winter	8		Sitting	13		Acceptable
		Annual	8		Sitting	12		Acceptable
42	A	Spring	10		Sitting	17		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	10		Sitting	16		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A - No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
43	A	Spring	10		Sitting	17		Acceptable
		Summer	8		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	17		Acceptable
	B	Spring	10		Sitting	17		Acceptable
		Summer	8		Sitting	14		Acceptable
		Fall	9		Sitting	16		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
44	A	Spring	16		Walking	24		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17		Walking	27		Acceptable
		Annual	16		Walking	24		Acceptable
	B	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	16		Walking	24		Acceptable
45	A	Spring	12		Sitting	18		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	12		Sitting	18		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	12		Sitting	18		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A - No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

CONSULTING ENGINEERS & SCIENTISTS

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
46	A	Spring	9		Sitting	14		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	9		Sitting	14		Acceptable
	B	Spring	9		Sitting	14		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	10	+11%	Sitting	15		Acceptable
		Annual	9		Sitting	14		Acceptable
47	A	Spring	10		Sitting	16		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	10		Sitting	15		Acceptable
	B	Spring	10		Sitting	16		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
48	A	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	9		Sitting	15		Acceptable
	B	Spring	10		Sitting	15		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	9		Sitting	14		Acceptable

Notes:
1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

<u>Configurations</u>

A - No Build
B – Build

<u>Mean Wind Speed Criteria</u>

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

<u>Effective Gust Criteria</u>

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
49	A	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	17		Acceptable
		Winter	11		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	11		Sitting	17		Acceptable
		Summer	8	-11%	Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	16	-11%	Acceptable
50	A	Spring	13		Standing	21		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	11	-15%	Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	12		Sitting	19		Acceptable
51	A	Spring	9		Sitting	15		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	8		Sitting	14		Acceptable
		Winter	9		Sitting	16		Acceptable
		Annual	9		Sitting	14		Acceptable
	B	Spring	9		Sitting	15		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	9	+12%	Sitting	14		Acceptable
		Winter	10	+11%	Sitting	16		Acceptable
		Annual	9		Sitting	15		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A - No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

CONSULTING ENGINEERS & SCIENTISTS

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
52	A	Spring	19		Walking	28		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	21		Uncomfortable	31		Acceptable
		Annual	19		Walking	28		Acceptable
	B	Spring	18		Walking	27		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	20		Uncomfortable	29		Acceptable
		Annual	17	-11%	Walking	26		Acceptable
53	A	Spring	11		Sitting	18		Acceptable
		Summer	8		Sitting	14		Acceptable
		Fall	10		Sitting	17		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	17		Acceptable
	B	Spring	11		Sitting	17		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	17		Acceptable
54	A	Spring	8		Sitting	14		Acceptable
		Summer	6		Sitting	11		Acceptable
		Fall	8		Sitting	13		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	8		Sitting	14		Acceptable
	B	Spring	7	-12%	Sitting	13		Acceptable
		Summer	6		Sitting	10		Acceptable
		Fall	7	-12%	Sitting	12		Acceptable
		Winter	8	-11%	Sitting	14		Acceptable
		Annual	7	-12%	Sitting	13		Acceptable

Notes:
1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
55	A	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	17		Acceptable
	B	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	17		Acceptable
56	A	Spring	9		Sitting	16		Acceptable
		Summer	7		Sitting	13		Acceptable
		Fall	8		Sitting	14		Acceptable
		Winter	9		Sitting	16		Acceptable
		Annual	9		Sitting	15		Acceptable
	B	Spring	9		Sitting	16		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	8		Sitting	14		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	8	-11%	Sitting	14		Acceptable
57	A	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A - No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
58	A	Spring	9		Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	9		Sitting	16		Acceptable
	B	Spring	9		Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	9		Sitting	16		Acceptable
59	A	Spring	10		Sitting	17		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	9		Sitting	15		Acceptable
	B	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	9		Sitting	15		Acceptable
60	A	Spring	10		Sitting	18		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	9		Sitting	16		Acceptable
		Winter	9		Sitting	16		Acceptable
		Annual	9		Sitting	16		Acceptable
	B	Spring	10		Sitting	17		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	9		Sitting	16		Acceptable
		Annual	9		Sitting	15		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
61	A	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	9		Sitting	15		Acceptable
	B	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	9		Sitting	15		Acceptable
62	A	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	13		Standing	21		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	19		Acceptable
63	A	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	12		Sitting	20		Acceptable
		Winter	13		Standing	22		Acceptable
		Annual	12		Sitting	20		Acceptable
	B	Spring	12		Sitting	20		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	20		Acceptable

Notes:
1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A - No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
64	A	Spring	12		Sitting	20		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	19		Acceptable
	B	Spring	12		Sitting	19		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	19		Acceptable
65	A	Spring	9		Sitting	14		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	8		Sitting	13		Acceptable
		Winter	9		Sitting	14		Acceptable
		Annual	8		Sitting	14		Acceptable
	B	Spring	9		Sitting	15		Acceptable
		Summer	8	+14%	Sitting	12		Acceptable
		Fall	9	+12%	Sitting	14		Acceptable
		Winter	9		Sitting	14		Acceptable
		Annual	9	+12%	Sitting	14		Acceptable
66	A	Spring	10		Sitting	15		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	15		Acceptable
		Annual	9		Sitting	15		Acceptable
	B	Spring	10		Sitting	16		Acceptable
		Summer	8	+14%	Sitting	13		Acceptable
		Fall	10	+11%	Sitting	15		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	10	+11%	Sitting	15		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A - No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

CONSULTING ENGINEERS & SCIENTISTS

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
67	A	Spring	10		Sitting	15		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	10		Sitting	15		Acceptable
		Annual	10		Sitting	15		Acceptable
	B	Spring	7	-30%	Sitting	11	-27%	Acceptable
		Summer	6	-33%	Sitting	9	-36%	Acceptable
		Fall	6	-40%	Sitting	10	-33%	Acceptable
		Winter	7	-30%	Sitting	12	-20%	Acceptable
		Annual	7	-30%	Sitting	11	-27%	Acceptable
68	A	Spring	10		Sitting	15		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	9		Sitting	15		Acceptable
	B	Spring	9		Sitting	15		Acceptable
		Summer	7	-12%	Sitting	11		Acceptable
		Fall	8	-11%	Sitting	13		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	9		Sitting	14		Acceptable
69	A	Spring	10		Sitting	15		Acceptable
		Summer	8		Sitting	11		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	10		Sitting	15		Acceptable
		Annual	10		Sitting	14		Acceptable
	B	Spring	10		Sitting	15		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	11		Sitting	16		Acceptable
		Annual	10		Sitting	14		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

<u>Configurations</u>

A - No Build
B – Build

<u>Mean Wind Speed Criteria</u>

Comfortable for Sitting: ≤ 12 mph
Comfortable for Standing: > 12 and ≤ 15 mph
Comfortable for Walking: > 15 and ≤ 19 mph
Uncomfortable for Walking: > 19 and ≤ 27 mph
Dangerous Conditions: > 27 mph

<u>Effective Gust Criteria</u>

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
70	A	Spring	14		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	12		Sitting	20		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	19	+12%	Acceptable
		Fall	14	+17%	Standing	21		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	14		Standing	21		Acceptable
71	A	Spring	13		Standing	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	17	+31%	Walking	24	+26%	Acceptable
		Summer	15	+50%	Standing	20	+33%	Acceptable
		Fall	17	+42%	Walking	23	+28%	Acceptable
		Winter	18	+38%	Walking	26	+30%	Acceptable
		Annual	17	+42%	Walking	24	+33%	Acceptable
72	A	Spring	12		Sitting	20		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	21		Acceptable
		Annual	11		Sitting	19		Acceptable
	B	Spring	14	+17%	Standing	21		Acceptable
		Summer	12	+33%	Sitting	16		Acceptable
		Fall	13	+18%	Standing	19		Acceptable
		Winter	14	+17%	Standing	21		Acceptable
		Annual	13	+18%	Standing	20		Acceptable

Notes:
1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

<u>Configurations</u>

A - No Build
B – Build

<u>Mean Wind Speed Criteria</u>

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

<u>Effective Gust Criteria</u>

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
73	A	Spring	9		Sitting	14		Acceptable
		Summer	7		Sitting	11		Acceptable
		Fall	8		Sitting	13		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	9		Sitting	13		Acceptable
	B	Spring	15	+67%	Standing	21	+50%	Acceptable
		Summer	12	+71%	Sitting	17	+55%	Acceptable
		Fall	13	+62%	Standing	18	+38%	Acceptable
		Winter	15	+67%	Standing	21	+40%	Acceptable
		Annual	14	+56%	Standing	19	+46%	Acceptable
74	A	Spring	8		Sitting	14		Acceptable
		Summer	7		Sitting	11		Acceptable
		Fall	7		Sitting	12		Acceptable
		Winter	8		Sitting	13		Acceptable
		Annual	8		Sitting	13		Acceptable
	B	Spring	11	+38%	Sitting	16	+14%	Acceptable
		Summer	10	+43%	Sitting	14	+27%	Acceptable
		Fall	10	+43%	Sitting	15	+25%	Acceptable
		Winter	11	+38%	Sitting	15	+15%	Acceptable
		Annual	11	+38%	Sitting	15	+15%	Acceptable
75	A	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
	B	Spring	11	-21%	Sitting	18	-14%	Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11	-15%	Sitting	16	-16%	Acceptable
		Winter	11	-21%	Sitting	17	-19%	Acceptable
		Annual	11	-15%	Sitting	17	-11%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A - No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
76	A	Spring	9		Sitting	15		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	9		Sitting	14		Acceptable
	B	Spring	9		Sitting	14		Acceptable
		Summer	7		Sitting	11		Acceptable
		Fall	8	-11%	Sitting	13		Acceptable
		Winter	9		Sitting	14	-12%	Acceptable
		Annual	9		Sitting	13		Acceptable
77	A	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	14		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	13		Standing	19		Acceptable
78	A	Spring	16		Walking	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	15		Standing	23		Acceptable
	B	Spring	16		Walking	23		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable

Notes:
1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
79	A	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	13		Standing	19		Acceptable
		Summer	10	+11%	Sitting	14		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	18		Acceptable
80	A	Spring	19		Walking	28		Acceptable
		Summer	15		Standing	23		Acceptable
		Fall	17		Walking	26		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	18		Walking	27		Acceptable
	B	Spring	19		Walking	27		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	17	-11%	Walking	26		Acceptable
		Annual	17		Walking	25		Acceptable
81	A	Spring	DATA NOT AVAILABLE					
		Summer	DATA NOT AVAILABLE					
		Fall	DATA NOT AVAILABLE					
		Winter	DATA NOT AVAILABLE					
		Annual	DATA NOT AVAILABLE					
	B	Spring	10		Sitting	16		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A - No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
82	A	Spring	DATA NOT AVAILABLE					
		Summer	DATA NOT AVAILABLE					
		Fall	DATA NOT AVAILABLE					
		Winter	DATA NOT AVAILABLE					
		Annual	DATA NOT AVAILABLE					
	B	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	10		Sitting	17		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	17		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

D2

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
1	A	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	12	-14%	Sitting	18	-14%	Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11	-15%	Sitting	17	-15%	Acceptable
		Winter	12	-20%	Sitting	19	-14%	Acceptable
		Annual	12		Sitting	18		Acceptable
2	A	Spring	9		Sitting	14		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	8		Sitting	14		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	8		Sitting	14		Acceptable
	B	Spring	8	-11%	Sitting	14		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	8		Sitting	14		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	8		Sitting	14		Acceptable
3	A	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	10	-17%	Sitting	17	-11%	Acceptable
		Summer	8	-20%	Sitting	14	-12%	Acceptable
		Fall	10	-17%	Sitting	16	-11%	Acceptable
		Winter	11	-15%	Sitting	18		Acceptable
		Annual	10	-17%	Sitting	17	-11%	Acceptable
4	A	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	15	+15%	Standing	22		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	14	+17%	Standing	20		Acceptable
		Winter	16	+14%	Walking	24		Acceptable
		Annual	14		Standing	22		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

CONSULTING ENGINEERS & SCIENTISTS

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
5	A	Spring	14		Standing	21		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	11	-21%	Sitting	18	-14%	Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11	-15%	Sitting	18		Acceptable
		Winter	12	-14%	Sitting	20		Acceptable
		Annual	11	-15%	Sitting	18		Acceptable
6	A	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	17		Acceptable
	B	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	17		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	17		Acceptable
7	A	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	25		Acceptable
		Annual	15		Standing	23		Acceptable
	B	Spring	15		Standing	23		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	22		Acceptable
8	A	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	22		Acceptable
	B	Spring	16		Walking	24		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	15		Standing	23		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

CONSULTING ENGINEERS & SCIENTISTS

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
		Annual	14		Standing	22		Acceptable
9	A	Spring	15		Standing	22		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	15		Standing	23		Acceptable
		Summer	13	+18%	Standing	20	+18%	Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	15		Standing	24		Acceptable
		Annual	14		Standing	22		Acceptable
10	A	Spring	14		Standing	22		Acceptable
		Summer	10		Sitting	17		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	21		Acceptable
	B	Spring	15		Standing	23		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	14		Standing	23		Acceptable
		Annual	14		Standing	22		Acceptable
11	A	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	20		Acceptable
	B	Spring	18	+29%	Walking	26	+24%	Acceptable
		Summer	15	+36%	Standing	21	+31%	Acceptable
		Fall	17	+31%	Walking	24	+26%	Acceptable
		Winter	18	+20%	Walking	26	+18%	Acceptable
		Annual	17	+21%	Walking	25	+25%	Acceptable
12	A	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	11	-15%	Sitting	18		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	10	-17%	Sitting	17	-11%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting: ≤ 12 mph
Comfortable for Standing: > 12 and ≤ 15 mph
Comfortable for Walking: > 15 and ≤ 19 mph
Uncomfortable for Walking: > 19 and ≤ 27 mph
Dangerous Conditions: > 27 mph

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
		Winter	11	-21%	Sitting	18	-14%	Acceptable
		Annual	10	-23%	Sitting	17	-15%	Acceptable
13	A	Spring	15		Standing	22		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	19	+27%	Walking	28	+27%	Acceptable
		Summer	15	+36%	Standing	22	+29%	Acceptable
		Fall	17	+21%	Walking	25	+25%	Acceptable
		Winter	18	+20%	Walking	27	+23%	Acceptable
		Annual	17	+21%	Walking	26	+24%	Acceptable
14	A	Spring	14		Standing	22		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	21		Acceptable
	B	Spring	16	+14%	Walking	24		Acceptable
		Summer	12		Sitting	18	+12%	Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	14		Standing	23		Acceptable
		Annual	14		Standing	22		Acceptable
15	A	Spring	16		Walking	24		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	16		Walking	25		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	16		Walking	25		Acceptable
		Annual	15		Standing	24		Acceptable
16	A	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	22		Acceptable
	B	Spring	20	+33%	Uncomfortable	29	+26%	Acceptable
		Summer	16	+33%	Walking	22	+22%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

<u>Configurations</u>

A – No Build
B – Build

<u>Mean Wind Speed Criteria</u>

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

<u>Effective Gust Criteria</u>

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

CONSULTING ENGINEERS & SCIENTISTS

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
		Fall	19	+36%	Walking	27	+29%	Acceptable
		Winter	22	+47%	Uncomfortable	31	+35%	Acceptable
		Annual	20	+43%	Uncomfortable	28	+27%	Acceptable
17	A	Spring	12		Sitting	20		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	11		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	17	+42%	Walking	27	+35%	Acceptable
		Summer	14	+40%	Standing	21	+31%	Acceptable
		Fall	16	+45%	Walking	25	+32%	Acceptable
		Winter	19	+46%	Walking	28	+33%	Acceptable
		Annual	17	+42%	Walking	26	+37%	Acceptable
18	A	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	18	+12%	Walking	24		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17	+13%	Walking	23		Acceptable
		Winter	19	+12%	Walking	26		Acceptable
		Annual	18	+20%	Walking	24		Acceptable
19	A	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	20		Acceptable
	B	Spring	13		Standing	21		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12	-14%	Sitting	19		Acceptable
		Winter	13	-13%	Standing	21		Acceptable
		Annual	12	-14%	Sitting	20		Acceptable
20	A	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	13	-13%	Standing	22		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
		Summer	11		Sitting	17		Acceptable
		Fall	12	-14%	Sitting	20		Acceptable
		Winter	13	-19%	Standing	22		Acceptable
		Annual	12	-20%	Sitting	20		Acceptable
21	A	Spring	12		Sitting	20		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	8	-33%	Sitting	11	-45%	Acceptable
		Summer	7	-30%	Sitting	9	-40%	Acceptable
		Fall	7	-42%	Sitting	11	-42%	Acceptable
		Winter	8	-38%	Sitting	11	-48%	Acceptable
		Annual	8	-33%	Sitting	11	-42%	Acceptable
22	A	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	7	-42%	Sitting	11	-42%	Acceptable
		Summer	6	-40%	Sitting	9	-40%	Acceptable
		Fall	7	-36%	Sitting	10	-44%	Acceptable
		Winter	7	-46%	Sitting	11	-48%	Acceptable
		Annual	7	-42%	Sitting	10	-47%	Acceptable
23	A	Spring	13		Standing	21		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	12		Sitting	20		Acceptable
		Winter	14		Standing	23		Acceptable
		Annual	13		Standing	21		Acceptable
	B	Spring	14		Standing	20		Acceptable
		Summer	11		Sitting	15	-12%	Acceptable
		Fall	13		Standing	18		Acceptable
		Winter	15		Standing	21		Acceptable
		Annual	14		Standing	19		Acceptable
24	A	Spring	12		Sitting	19		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	18		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

CONSULTING ENGINEERS & SCIENTISTS

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	7	-42%	Sitting	11	-42%	Acceptable
		Summer	6	-33%	Sitting	10	-33%	Acceptable
		Fall	7	-36%	Sitting	11	-39%	Acceptable
		Winter	8	-33%	Sitting	12	-40%	Acceptable
		Annual	7	-36%	Sitting	11	-39%	Acceptable
25	A	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	11	-15%	Sitting	17	-15%	Acceptable
		Summer	9		Sitting	13	-19%	Acceptable
		Fall	11		Sitting	16	-16%	Acceptable
		Winter	12	-14%	Sitting	18	-18%	Acceptable
		Annual	11	-15%	Sitting	16	-20%	Acceptable
26	A	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	7	-30%	Sitting	12	-25%	Acceptable
		Summer	6	-25%	Sitting	10	-23%	Acceptable
		Fall	7	-30%	Sitting	11	-27%	Acceptable
		Winter	8	-27%	Sitting	12	-29%	Acceptable
		Annual	7	-30%	Sitting	12	-25%	Acceptable
27	A	Spring	17		Walking	24		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
	B	Spring	12	-29%	Sitting	19	-21%	Acceptable
		Summer	9	-31%	Sitting	15	-17%	Acceptable
		Fall	11	-27%	Sitting	18	-18%	Acceptable
		Winter	13	-28%	Standing	21	-19%	Acceptable
		Annual	12	-25%	Sitting	19	-21%	Acceptable
28	A	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	17		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	17		Acceptable

Notes:
1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

<u>Configurations</u>

A – No Build
B – Build

<u>Mean Wind Speed Criteria</u>

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

<u>Effective Gust Criteria</u>

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

CONSULTING ENGINEERS & SCIENTISTS

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	11		Sitting	19		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
29	A	Spring	DATA NOT AVAILABLE					
		Summer	DATA NOT AVAILABLE					
		Fall	DATA NOT AVAILABLE					
		Winter	DATA NOT AVAILABLE					
		Annual	DATA NOT AVAILABLE					
	B	Spring	18		Walking	26		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	20		Uncomfortable	29		Acceptable
		Annual	18		Walking	26		Acceptable
30	A	Spring	DATA NOT AVAILABLE					
		Summer	DATA NOT AVAILABLE					
		Fall	DATA NOT AVAILABLE					
		Winter	DATA NOT AVAILABLE					
		Annual	DATA NOT AVAILABLE					
	B	Spring	13		Standing	21		Acceptable
		Summer	10		Sitting	17		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	22		Acceptable
		Annual	12		Sitting	20		Acceptable
31	A	Spring	DATA NOT AVAILABLE					
		Summer	DATA NOT AVAILABLE					
		Fall	DATA NOT AVAILABLE					
		Winter	DATA NOT AVAILABLE					
		Annual	DATA NOT AVAILABLE					
	B	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	16		Walking	25		Acceptable
		Annual	15		Standing	23		Acceptable
32	A	Spring	DATA NOT AVAILABLE					
		Summer	DATA NOT AVAILABLE					
		Fall	DATA NOT AVAILABLE					
		Winter	DATA NOT AVAILABLE					

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

<u>Configurations</u>

A – No Build
B – Build

<u>Mean Wind Speed Criteria</u>

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

<u>Effective Gust Criteria</u>

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
		Annual	DATA NOT AVAILABLE					
	B	Spring	15		Standing	24		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	16		Walking	26		Acceptable
		Annual	15		Standing	24		Acceptable
33	A	Spring	21		Uncomfortable	27		Acceptable
		Summer	16		Walking	21		Acceptable
		Fall	20		Uncomfortable	26		Acceptable
		Winter	22		Uncomfortable	29		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	B	Spring	18	-14%	Walking	26		Acceptable
		Summer	14	-12%	Standing	20		Acceptable
		Fall	17	-15%	Walking	24		Acceptable
		Winter	19	-14%	Walking	27		Acceptable
		Annual	18		Walking	25		Acceptable
34	A	Spring	16		Walking	24		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	15		Standing	23		Acceptable
	B	Spring	25	+56%	Uncomfortable	34	+42%	Unacceptable
		Summer	20	+67%	Uncomfortable	27	+42%	Acceptable
		Fall	24	+60%	Uncomfortable	32	+45%	Unacceptable
		Winter	27	+59%	Uncomfortable	37	+48%	Unacceptable
		Annual	25	+67%	Uncomfortable	34	+48%	Unacceptable
35	A	Spring	19		Walking	28		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	20		Uncomfortable	29		Acceptable
		Annual	18		Walking	27		Acceptable
	B	Spring	18		Walking	27		Acceptable
		Summer	13	-13%	Standing	21		Acceptable
		Fall	16	-11%	Walking	25		Acceptable
		Winter	18		Walking	28		Acceptable
		Annual	17		Walking	26		Acceptable
36	A	Spring	22		Uncomfortable	32		Unacceptable
		Summer	18		Walking	26		Acceptable
		Fall	21		Uncomfortable	30		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
		Winter	24		Uncomfortable	34		Unacceptable
		Annual	22		Uncomfortable	31		Acceptable
	B	Spring	23		Uncomfortable	33		Unacceptable
		Summer	18		Walking	27		Acceptable
		Fall	22		Uncomfortable	31		Acceptable
		Winter	25		Uncomfortable	36		Unacceptable
		Annual	23		Uncomfortable	33		Unacceptable
37	A	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	16		Walking	22		Acceptable
	B	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	21		Acceptable
38	A	Spring	20		Uncomfortable	28		Acceptable
		Summer	17		Walking	24		Acceptable
		Fall	20		Uncomfortable	27		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	20		Uncomfortable	28		Acceptable
	B	Spring	17	-15%	Walking	25	-11%	Acceptable
		Summer	14	-18%	Standing	21	-12%	Acceptable
		Fall	17	-15%	Walking	24	-11%	Acceptable
		Winter	19	-14%	Walking	27		Acceptable
		Annual	17	-15%	Walking	25	-11%	Acceptable
39	A	Spring	19		Walking	28		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	18		Walking	25		Acceptable
	B	Spring	19		Walking	27		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	17		Walking	25		Acceptable
40	A	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	15		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

<u>Configurations</u>

A – No Build
B – Build

<u>Mean Wind Speed Criteria</u>

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

<u>Effective Gust Criteria</u>

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
41	A	Spring	4		Sitting	6		Acceptable
		Summer	4		Sitting	5		Acceptable
		Fall	4		Sitting	6		Acceptable
		Winter	5		Sitting	7		Acceptable
		Annual	4		Sitting	6		Acceptable
	B	Spring	5	+25%	Sitting	7	+17%	Acceptable
		Summer	4		Sitting	6	+20%	Acceptable
		Fall	5	+25%	Sitting	7	+17%	Acceptable
		Winter	5		Sitting	8	+14%	Acceptable
		Annual	5	+25%	Sitting	7	+17%	Acceptable
42	A	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	13		Standing	20		Acceptable
43	A	Spring	5		Sitting	7		Acceptable
		Summer	4		Sitting	6		Acceptable
		Fall	5		Sitting	7		Acceptable
		Winter	5		Sitting	8		Acceptable
		Annual	5		Sitting	7		Acceptable
	B	Spring	4	-20%	Sitting	5	-29%	Acceptable
		Summer	3	-25%	Sitting	4	-33%	Acceptable
		Fall	4	-20%	Sitting	5	-29%	Acceptable
		Winter	4	-20%	Sitting	6	-25%	Acceptable
		Annual	4	-20%	Sitting	5	-29%	Acceptable
44	A	Spring	21		Uncomfortable	28		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

<u>Configurations</u>

A – No Build
B – Build

<u>Mean Wind Speed Criteria</u>

Comfortable for Sitting: ≤ 12 mph
Comfortable for Standing: > 12 and ≤ 15 mph
Comfortable for Walking: > 15 and ≤ 19 mph
Uncomfortable for Walking: > 19 and ≤ 27 mph
Dangerous Conditions: > 27 mph

<u>Effective Gust Criteria</u>

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	19		Walking	27		Acceptable
	B	Spring	20		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
45	A	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
46	A	Spring	DATA NOT AVAILABLE					
		Summer	DATA NOT AVAILABLE					
		Fall	DATA NOT AVAILABLE					
		Winter	DATA NOT AVAILABLE					
		Annual	DATA NOT AVAILABLE					
	B	Spring	DATA NOT AVAILABLE					
		Summer	DATA NOT AVAILABLE					
		Fall	DATA NOT AVAILABLE					
		Winter	DATA NOT AVAILABLE					
		Annual	DATA NOT AVAILABLE					
47	A	Spring	4		Sitting	6		Acceptable
		Summer	4		Sitting	5		Acceptable
		Fall	4		Sitting	6		Acceptable
		Winter	5		Sitting	6		Acceptable
		Annual	4		Sitting	6		Acceptable
	B	Spring	5	+25%	Sitting	7	+17%	Acceptable
		Summer	4		Sitting	5		Acceptable
		Fall	4		Sitting	6		Acceptable
		Winter	5		Sitting	7	+17%	Acceptable
		Annual	4		Sitting	6		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
48	A	Spring	20		Uncomfortable	25		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	18		Walking	23		Acceptable
		Winter	19		Walking	25		Acceptable
		Annual	18		Walking	23		Acceptable
	B	Spring	19		Walking	25		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	19		Walking	25		Acceptable
		Annual	18		Walking	24		Acceptable
49	A	Spring	5		Sitting	6		Acceptable
		Summer	4		Sitting	5		Acceptable
		Fall	4		Sitting	6		Acceptable
		Winter	5		Sitting	7		Acceptable
		Annual	5		Sitting	6		Acceptable
	B	Spring	5		Sitting	6		Acceptable
		Summer	4		Sitting	5		Acceptable
		Fall	4		Sitting	6		Acceptable
		Winter	5		Sitting	7		Acceptable
		Annual	5		Sitting	6		Acceptable
50	A	Spring	10		Sitting	14		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	10		Sitting	15		Acceptable
		Annual	9		Sitting	14		Acceptable
	B	Spring	4	-60%	Sitting	6	-57%	Acceptable
		Summer	4	-50%	Sitting	5	-58%	Acceptable
		Fall	4	-56%	Sitting	6	-57%	Acceptable
		Winter	4	-60%	Sitting	6	-60%	Acceptable
		Annual	4	-56%	Sitting	6	-57%	Acceptable
51	A	Spring	5		Sitting	6		Acceptable
		Summer	4		Sitting	5		Acceptable
		Fall	4		Sitting	6		Acceptable
		Winter	5		Sitting	7		Acceptable
		Annual	4		Sitting	6		Acceptable
	B	Spring	4	-20%	Sitting	6		Acceptable
		Summer	4		Sitting	5		Acceptable
		Fall	4		Sitting	5	-17%	Acceptable
		Winter	4	-20%	Sitting	6	-14%	Acceptable
		Annual	4		Sitting	6		Acceptable

Notes:
1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

CONSULTING ENGINEERS & SCIENTISTS

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
52	A	Spring	5		Sitting	6		Acceptable
		Summer	4		Sitting	5		Acceptable
		Fall	4		Sitting	6		Acceptable
		Winter	5		Sitting	7		Acceptable
		Annual	5		Sitting	6		Acceptable
	B	Spring	4	-20%	Sitting	5	-17%	Acceptable
		Summer	3	-25%	Sitting	4	-20%	Acceptable
		Fall	4		Sitting	5	-17%	Acceptable
		Winter	4	-20%	Sitting	6	-14%	Acceptable
		Annual	4	-20%	Sitting	5	-17%	Acceptable
53	A	Spring	14		Standing	21		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	16	-11%	Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	19		Acceptable
54	A	Spring	10		Sitting	17		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	10		Sitting	17		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
55	A	Spring	23		Uncomfortable	29		Acceptable
		Summer	21		Uncomfortable	26		Acceptable
		Fall	22		Uncomfortable	28		Acceptable
		Winter	24		Uncomfortable	30		Acceptable
		Annual	23		Uncomfortable	28		Acceptable
	B	Spring	22		Uncomfortable	29		Acceptable
		Summer	20		Uncomfortable	25		Acceptable
		Fall	21		Uncomfortable	27		Acceptable
		Winter	23		Uncomfortable	30		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

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Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
		Annual	22		Uncomfortable	28		Acceptable
56	A	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	22		Acceptable
57	A	Spring	15		Standing	21		Acceptable
		Summer	13		Standing	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	16		Walking	22		Acceptable
		Annual	14		Standing	20		Acceptable
	B	Spring	14		Standing	21		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	20		Acceptable
58	A	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	15		Standing	24		Acceptable
		Annual	14		Standing	22		Acceptable
	B	Spring	15		Standing	24		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	16		Walking	25		Acceptable
		Annual	15		Standing	23		Acceptable
59	A	Spring	18		Walking	25		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	17		Walking	24		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	16		Walking	23		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

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Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
		Winter	18		Walking	25		Acceptable
		Annual	17		Walking	23		Acceptable
60	A	Spring	22		Uncomfortable	29		Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	20		Uncomfortable	27		Acceptable
		Winter	22		Uncomfortable	29		Acceptable
		Annual	21		Uncomfortable	27		Acceptable
	B	Spring	22		Uncomfortable	29		Acceptable
		Summer	18		Walking	24		Acceptable
		Fall	21		Uncomfortable	27		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	21		Uncomfortable	28		Acceptable
61	A	Spring	20		Uncomfortable	27		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
	B	Spring	20		Uncomfortable	27		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	18		Walking	26		Acceptable
62	A	Spring	20		Uncomfortable	28		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	18		Walking	25		Acceptable
	B	Spring	19		Walking	28		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable
63	A	Spring	17		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	16		Walking	23		Acceptable
	B	Spring	17		Walking	25		Acceptable
		Summer	12		Sitting	18		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
		Fall	15		Standing	23		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	16		Walking	23		Acceptable
64	A	Spring	13		Standing	21		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	13		Standing	19		Acceptable
		Summer	9		Sitting	14	-12%	Acceptable
		Fall	11		Sitting	17	-11%	Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11	-15%	Sitting	18		Acceptable
65	A	Spring	16		Walking	22		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	14		Standing	19		Acceptable
		Winter	14		Standing	19		Acceptable
		Annual	14		Standing	19		Acceptable
	B	Spring	18	+12%	Walking	24		Acceptable
		Summer	13	+18%	Standing	18	+12%	Acceptable
		Fall	16	+14%	Walking	22	+16%	Acceptable
		Winter	16	+14%	Walking	23	+21%	Acceptable
		Annual	16	+14%	Walking	22	+16%	Acceptable
66	A	Spring	17		Walking	24		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	17		Walking	25		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	15		Standing	22		Acceptable
67	A	Spring	14		Standing	20		Acceptable
		Summer	11		Sitting	15		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	20		Acceptable
		Annual	13		Standing	19		Acceptable
	B	Spring	15		Standing	22		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

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Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	13		Standing	20		Acceptable
68	A	Spring	13		Standing	19		Acceptable
		Summer	10		Sitting	14		Acceptable
		Fall	12		Sitting	17		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	11		Sitting	16		Acceptable
		Winter	11	-15%	Sitting	17	-11%	Acceptable
		Annual	11		Sitting	16	-11%	Acceptable
69	A	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	11		Sitting	16		Acceptable
	B	Spring	10		Sitting	16		Acceptable
		Summer	8	-11%	Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	10		Sitting	15		Acceptable
70	A	Spring	12		Sitting	18		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable
71	A	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	12		Sitting	17		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

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Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	12		Sitting	19		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
72	A	Spring	14		Standing	20		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	15		Standing	21		Acceptable
		Annual	14		Standing	19		Acceptable
	B	Spring	13		Standing	19		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13	-13%	Standing	20		Acceptable
		Annual	12	-14%	Sitting	19		Acceptable
73	A	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	15		Standing	20		Acceptable
		Winter	17		Walking	23		Acceptable
		Annual	15		Standing	21		Acceptable
	B	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13	-13%	Standing	20		Acceptable
		Winter	15	-12%	Standing	22		Acceptable
		Annual	14		Standing	21		Acceptable
74	A	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
	B	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	19		Acceptable
75	A	Spring	16		Walking	22		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	17		Walking	23		Acceptable
		Annual	15		Standing	21		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	15		Standing	21		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15	-12%	Standing	22		Acceptable
		Annual	14		Standing	20		Acceptable
76	A	Spring	13		Standing	19		Acceptable
		Summer	11		Sitting	15		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	13		Standing	18		Acceptable
	B	Spring	13		Standing	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable
77	A	Spring	12		Sitting	17		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	16		Acceptable
		Winter	12		Sitting	17		Acceptable
		Annual	11		Sitting	16		Acceptable
	B	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	16		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	11		Sitting	16		Acceptable
78	A	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	16		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
79	A	Spring	19		Walking	27		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	20		Uncomfortable	29		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
		Annual	18		Walking	26		Acceptable
	B	Spring	18		Walking	26		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	17		Walking	26		Acceptable
80	A	Spring	17		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
	B	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	24		Acceptable
81	A	Spring	16		Walking	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	B	Spring	14	-12%	Standing	22		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13	-13%	Standing	20		Acceptable
		Winter	15	-12%	Standing	23		Acceptable
		Annual	14	-12%	Standing	21		Acceptable
82	A	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	17		Acceptable
83	A	Spring	11		Sitting	19		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

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Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
84	A	Spring	10		Sitting	17		Acceptable
		Summer	8		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	19		Acceptable
		Annual	10		Sitting	17		Acceptable
	B	Spring	10		Sitting	17		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	16		Acceptable
85	A	Spring	14		Standing	19		Acceptable
		Summer	12		Sitting	16		Acceptable
		Fall	13		Standing	18		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	13		Standing	18		Acceptable
	B	Spring	13		Standing	18		Acceptable
		Summer	11		Sitting	15		Acceptable
		Fall	12		Sitting	17		Acceptable
		Winter	13		Standing	18		Acceptable
		Annual	13		Standing	18		Acceptable
86	A	Spring	14		Standing	20		Acceptable
		Summer	12		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	20		Acceptable
		Annual	13		Standing	19		Acceptable
	B	Spring	13		Standing	19		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable
87	A	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
88	A	Spring	7		Sitting	11		Acceptable
		Summer	6		Sitting	9		Acceptable
		Fall	6		Sitting	10		Acceptable
		Winter	7		Sitting	11		Acceptable
		Annual	6		Sitting	10		Acceptable
	B	Spring	7		Sitting	11		Acceptable
		Summer	6		Sitting	9		Acceptable
		Fall	6		Sitting	10		Acceptable
		Winter	7		Sitting	11		Acceptable
		Annual	7	+17%	Sitting	11		Acceptable
89	A	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
90	A	Spring	12		Sitting	20		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10	-17%	Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
91	A	Spring	11		Sitting	17		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	13	+18%	Standing	19	+12%	Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13	+18%	Standing	18		Acceptable
		Winter	14	+17%	Standing	20	+11%	Acceptable
		Annual	13	+18%	Standing	19	+12%	Acceptable
92	A	Spring	9		Sitting	15		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	9		Sitting	15		Acceptable
	B	Spring	10	+11%	Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10	+11%	Sitting	15		Acceptable
		Winter	11		Sitting	18	+12%	Acceptable
		Annual	10	+11%	Sitting	16		Acceptable
93	A	Spring	10		Sitting	16		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	10		Sitting	16		Acceptable
		Summer	8	-11%	Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	10		Sitting	15		Acceptable
94	A	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	21		Acceptable
	B	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	22		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

<u>Configurations</u>

A – No Build
B – Build

<u>Mean Wind Speed Criteria</u>

Comfortable for Sitting: ≤ 12 mph
Comfortable for Standing: > 12 and ≤ 15 mph
Comfortable for Walking: > 15 and ≤ 19 mph
Uncomfortable for Walking: > 19 and ≤ 27 mph
Dangerous Conditions: > 27 mph

<u>Effective Gust Criteria</u>

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
95	A	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	12		Sitting	18		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
96	A	Spring	13		Standing	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	14		Standing	20		Acceptable
		Annual	13		Standing	18		Acceptable
	B	Spring	12		Sitting	18		Acceptable
		Summer	10		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable
97	A	Spring	10		Sitting	15		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	11		Sitting	16		Acceptable
		Annual	10		Sitting	15		Acceptable
	B	Spring	9		Sitting	15		Acceptable
		Summer	7	-12%	Sitting	11		Acceptable
		Fall	8	-11%	Sitting	14		Acceptable
		Winter	9	-18%	Sitting	15		Acceptable
		Annual	9		Sitting	14		Acceptable
98	A	Spring	11		Sitting	16		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	16		Acceptable
		Annual	10		Sitting	15		Acceptable
	B	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
99	A	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	B	Spring	13	-19%	Standing	20	-13%	Acceptable
		Summer	10	-23%	Sitting	16	-11%	Acceptable
		Fall	12	-20%	Sitting	19	-14%	Acceptable
		Winter	14	-22%	Standing	21	-16%	Acceptable
		Annual	13	-19%	Standing	20	-13%	Acceptable
100	A	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	21		Acceptable
	B	Spring	16		Walking	24		Acceptable
		Summer	14	+17%	Standing	19		Acceptable
		Fall	16	+14%	Walking	23	+15%	Acceptable
		Winter	18	+12%	Walking	25		Acceptable
		Annual	16		Walking	24	+14%	Acceptable
101	A	Spring	22		Uncomfortable	29		Acceptable
		Summer	17		Walking	22		Acceptable
		Fall	20		Uncomfortable	27		Acceptable
		Winter	23		Uncomfortable	30		Acceptable
		Annual	21		Uncomfortable	28		Acceptable
	B	Spring	17	-23%	Walking	26	-10%	Acceptable
		Summer	13	-24%	Standing	20		Acceptable
		Fall	16	-20%	Walking	24	-11%	Acceptable
		Winter	17	-26%	Walking	26	-13%	Acceptable
		Annual	16	-24%	Walking	24	-14%	Acceptable
102	A	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
	B	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11	-15%	Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable

Notes:
1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
		Annual	12		Sitting	18		Acceptable
103	A	Spring	11		Sitting	17		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	11		Sitting	18		Acceptable
		Summer	8		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	17		Acceptable
104	A	Spring	21		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	22		Uncomfortable	29		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	B	Spring	17	-19%	Walking	25	-11%	Acceptable
		Summer	13	-19%	Standing	19	-14%	Acceptable
		Fall	16	-16%	Walking	24		Acceptable
		Winter	18	-18%	Walking	26	-10%	Acceptable
		Annual	16	-20%	Walking	24	-11%	Acceptable
105	A	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	24		Acceptable
	B	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
106	A	Spring	21		Uncomfortable	29		Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	19		Walking	27		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	20		Uncomfortable	28		Acceptable
	B	Spring	21		Uncomfortable	30		Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	19		Walking	27		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: Pedestrian Mean Wind Speed and Effective Gust Categories – Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
		Winter	21		Uncomfortable	30		Acceptable
		Annual	20		Uncomfortable	28		Acceptable
107	A	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	11		Sitting	16		Acceptable
	B	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18	+12%	Acceptable
108	A	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	14	+17%	Standing	21	+17%	Acceptable
		Summer	11	+22%	Sitting	17	+21%	Acceptable
		Fall	13	+18%	Standing	20	+18%	Acceptable
		Winter	15	+25%	Standing	23	+21%	Acceptable
		Annual	14	+27%	Standing	21	+24%	Acceptable
109	A	Spring	18		Walking	27		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	18		Walking	26		Acceptable
	B	Spring	18		Walking	26		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Appendix E

Air Quality

APPENDIX E AIR QUALITY

Introduction

This Air Quality Appendix provides modeling assumptions and backup for results presented in Section 5.5 of the DPIR/DEIR. Included within this documentation is a brief description of the methodology employed along with pertinent calculations and data used in the emissions and dispersion calculations supporting the mesoscale, microscale, and stationary source air quality analyses.

Motor Vehicle Emission Rates (Microscale & Mesoscale)

The EPA MOBILE6.2 computer program generated motor vehicle emissions used in the garage stationary source analysis along with the mobile source CAL3QHC modeling and mesoscale analysis. The model input parameters were provided by MassDEP. Emission rates were derived for 2012 and 2022 for speed limits of 2.5, 10, 15, and 30 mph for use in the microscale analyses. The 10 mph rate was used to estimate parking garage emissions.

Mesoscale Analysis (including Greenhouse Gases)

A mesoscale analysis consists of using link and intersection data to calculate total emissions of NOx, VOC, and GHG over the project transportation study area. All calculations are made using Microsoft Excel and are presented in this appendix.

CAL3QHC (Microscale) Analysis

For the intersections studied, the CAL3QHC model was applied to calculate CO concentrations at sensitive receptor locations using emission rates derived in MOBILE6.2. The intersection's queue links and free flow links were input to the model along with sensitive receptors at all locations nearby each intersection. The meteorological assumptions input into the model were a 1.0 meter per second wind speed, Pasquill-Gifford Class D stability combined with a mixing height of 1,000 meters. For each direction, the full range of wind directions at 10 degree intervals was examined. In addition, a surface roughness (z_0) of 175 cm was used for all intersections. Idle emission rates for queue links were based on 2.5 mph emission rates derived in MOBILE6.2 and converted from grams per mile to grams per hour. Emission rates for speeds of 10, 15, and 30 mph were used for right turn, left turn, and free flow links, respectively.

Stationary Source Emissions

Emissions for the heating combustion units were calculated using the latest DEP emission limits for boilers based on the Boiler Environmental Results Program (ERP). Boiler stack data were obtained from engineering plans, vendor data, and engineering judgment. The emergency generator emissions were calculated based on a g/bhp-hr emission factor provided by vendor information for typical size units. A combination of vendor data and engineering judgment were also used for the

CHP facility. Since final design has not yet been completed, all equipment provided is subject to change.

The hourly emission rates were converted to grams per second and input to the AERMOD model. For the NAAQS analysis, modeling was conducted for CO, SO_2, NOx, PM-10, and PM-2.5.

All assumptions and data used in the stationary source emissions and stack parameter calculations are provided herein.

AERMOD

The EPA AERMOD model was used to calculate air quality impacts due to the installation of heating combustion boilers, emergency generators, CHP, and cooling towers. For non-combustion sources, ambient temperature releases were assumed; otherwise temperatures of the exhaust gas were used. Urban dispersion coefficients were used. Building downwash was accounted for in the modeling based on the building heights and projected widths of the buildings. The maximum modeled impacts from the stack sources were conservatively added to monitored background values for comparison to the NAAQS.

Boiler, Cooling Tower, Emergency Generator, and CHP Exhaust Emissions Calculations

Children's Hospital Boston - Clinical Tower

Heating Boilers

			Notes
Source Name		CCBBLR1-2	
Make		Cleaver Brooks	
Model		CBEX Prem	
Qty.		2	From 11/27/12 email from S. Carroll to C. Emil
Boiler Heat Input	MMBTU/hr (ea.):	33.500	
Boiler Emission Rates	lb/MMBTU	g/s	
NOx	0.035	0.14773	from Waldron NG data sheet
CO	0.036	0.15195	from Waldron NG data sheet
VOC	0.006	0.02533	from Waldron NG data sheet
PM-2.5	0.007	0.02955	from Waldron NG data sheet (filterable only)
PM-10	0.007	0.02955	from Waldron NG data sheet (filterable only)
SO2	0.0017	0.00718	from Waldron NG data sheet
CO2	115.385	487.02772	AP42 Table 1.4-2 (assuming 1040 Btu/scf)
Gas Exit Temp	°F	508	from Waldron NG data sheet
Gas Exit Temp	°K	537.6	calculated
Exhaust air (CFM)	CFM	11659.14	from Waldron NG data sheet scaled to 33.5 MMBTU/hr
Gas Exit Velocity	fps	61.85	calculated
Gas Exit Velocity	mps	18.85	calculated
Roof Height	feet	161.00	from site plans
Stack height	feet above roofline	30	client stated
Stack height	feet	191	calculated
Stack height	meters	58.217	calculated
Stack Diameter	feet	2.000	assumed to meet exit velocity value
Stack Diameter	meters	0.610	calculated

Cooling Towers

			Notes
Designation		CCBCT1-4	From 11/27/12 email from S. Carroll to C. Emil (4) 1400 ton
Make		BAC	assumed
Model		3728C-2	assumed
Cooling Tower Rate	tons	1456	from mfg
Tower Overall Dimensions	feet	~24x21x16	from mfg
CT Stack Height (above roofline)	feet	16.42	from mfg
Primary Building Height (ft)	feet	161.00	from site plans
CT Stack Height	feet	177.4	calculated
CT Stack Height	meters	54.08	calculated
Number of cells (per tower)	#	2	from mfg
Cooling Tower Specs			
Cooling Tower Exhaust Flow	CFM	357720	from mfg
Cooling Tower Cell Exhaust Flow	CFM	178860	calculated (per cell)
Cooling Tower Cell Exhaust Flow	kg/s	94.1	calculated
Cooling Tower Exhaust Temp	°F	78	assumed
Cooling Tower Exhaust Temp	K	298.7	calculated
Cooling Tower Cell Diameter	feet	12	assumed essentially same 0.5xL
Cooling Tower Cell Diameter	meters	3.66	calculated
Cooling Tower Stack Velocity	fps	26.36	calculated
Cooling Tower Stack Velocity	mps	8.03	calculated
Cooling Tower Drift			
Drift Rate	% of circ water	0.001	assumed
Circulating Water Rate	gpm	4,368	assumed 3gpm/ton cooling
Circulating Water Rate	gph	262,080	calculated
TDS+TSS concentration in drift	mg/L	1,500	assumed
PM emission rate in drift (per cell)	lb/hr	0.016	calculated
PM emission rate in drift (per cell)	g/s	0.00207	calculated

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Emergency Generators			
			Notes
Designation		CCBEG1-4	
Number		4	From 11/27/12 email from S. Carroll to C. Emil
Electrical output	kilowatts	2500	From 11/27/12 email from S. Carroll to C. Emil
Make		Caterpillar	Assumed
model		3516C	Assumed
Engine Horsepower	BHP	3604.00	Mfg data
Engine power	kilowatts	2687.50	calculated
Fuel consumption @full load	gph	173.30	Mfg data
Heat Input	MMBTU/hr:	23.7421	calculated
Stack Parameters			
Exhaust Temperature	°F	921.2	Mfg data
Exhaust Temperature	°K	767.2	calculated
Total Exhaust Flow	ACFM	19059.34	Mfg data
Flange Diameter	in.	8	Mfg data
Maximum Backpressure	in. H2O	26.9	Mfg data
Maximum velocity	fpm	16362.30	calculated
Flow area required	sq. ft	1.165	calculated
Number of exhausts (typ. 1 or 2)	#	1	from roof plan Roof-PH H1.P-H3.01.pdf
Selected silencer diameter	in	16	From 11/27/12 email from S. Carroll to C. Emil
Actual silencer opening area	sq. ft each	1.396	calculated
Actual velocity	fpm each	13650.247	calculated
Actual velocity	fps each	227.504	calculated
Single Stack Effective Diameter	ft	1.333	calculated
Single Stack Effective Diameter	m	0.406	calculated
Single Stack Effective Velocity	fps	227.504	calculated
Single Stack Effective Velocity	mps	69.343	calculated
Primary Building Height	ft	161.00	from site plans
Stack Height (10' above roofline)	ft	*191.00*	From 11/27/12 email from S. Carroll to C. Emil
Stack Height	m	*58.22*	calculated
Pollutant	Emission factor unit	Emission factor	
NOx	g/BHP-hr	6.05	EF from mfg data (Not to exceed)
CO	g/BHP-hr	0.74	EF from mfg data (Not to exceed)
VOC	g/BHP-hr	0.13	EF from mfg data (Not to exceed)
PM10	g/BHP-hr	0.05	EF from mfg data (Not to exceed)
PM2.5	g/BHP-hr	0.05	EF from mfg data (Not to exceed)
SO2	g/BHP-hr	0.004630658	15 ppm S mass conserved
HAPs	lb/MMBTU	0.00149	AP42 Table 3.4-4 & 3.3-2
CO2	lb/MMBTU	165	AP42 Table 3.4-1 & 3.3-1
Short Term Emission Rate			
NOx	g/s	0.2076	uses EPA 'intermittent" factor (300 hrs/yr)
CO	g/s	0.7383	calculated
VOC	g/s	0.1348	calculated
PM10	g/s	0.0504	calculated
PM2.5	g/s	0.0504	calculated
SO2	g/s	0.0046	calculated
Long Term (300 hr/yr) Emission Rate			
NOx	g/s	0.2076	calculated
CO	g/s	0.0253	calculated
VOC	g/s	0.0046	calculated
PM10	g/s	0.0017	calculated
PM2.5	g/s	0.0017	calculated
SO2	g/s	0.00016	calculated

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Cogeneration Unit

			Notes
Designation		CHPRECIP	
Number		1	
Electrical output	kilowatts	1200	
Make			
model			
Fuel			
Horsepower	BrakeHP	1686.92	
Fuel consumption @full load	scf/hr	9076.92	
Heat Input	MMBTU/hr:	9.44	
Pollutant	Emission factor unit		
NOx	g/bhp-hr	1.00	
CO	g/bhp-hr	2.10E+00	
VOC	g/bhp-hr	3.50E-01	
PM10	lb/MMBtu	1.00E-02	
PM2.5	lb/MMBtu	1.00E-02	
SO2	lb/MMBtu	5.88E-04	
HAPs	lb/MMBtu	6.71E-02	
CO2	lb/MMBtu	1.10E+02	
Uncontrolled Emission Rates			
NOx	g/s	0.4686	
CO	g/s	0.9840	
VOC	g/s	0.1640	
PM10	g/s	0.0119	
PM2.5	g/s	0.0119	
SO2	g/s	0.0007	
Controlled Emission Rates			
NOx	g/s	0.0225	
CO	g/s	0.0285	
VOC	g/s	0.1640	
PM10	g/s	0.0119	
PM2.5	g/s	0.0119	
SO2	g/s	0.0007	
Stack Parameters			
Exhaust Temperature	°F	240	
Exhaust Temperature	°K	388.7	
Total Exhaust Flow	ACFM	4265.8	
Selected exhaust diameter	in	17.5	
Single Stack Effective Diameter	ft	1.458	
Single Stack Effective Diameter	m	0.445	
Single Stack Effective Velocity	fps	42.565	
Single Stack Effective Velocity	mps	12.974	
Primary Building Height	ft	161.00	
Stack Height (30' above roofline)	ft	*191.00*	
Stack Height	m	*58.22*	

Children's Hospital Boston - 819 Beacon Street

Heating Boilers

			Notes
Source Name			
Make		TBD	
Model		TBD	
Qty.		3	from roof plan
Boiler Heat Input	MMBTU/hr (ea.):	3.000	assumed
Boiler Emission Rates	lb/MMBTU	g/s	
NOx	0.035	0.01323	ERP limits
CO	0.080	0.03024	ERP limits
VOC	0.030	0.01134	ERP limits
PM-2.5	0.010	0.00378	ERP limits Assume PM10=PM2.5
PM-10	0.010	0.00378	ERP limits Assume PM10=PM2.5
SO2	0.0006	0.00022	AP42 Table 1.4-2 (assuming 1040 Btu/scf)
CO2	115.385	43.61442	AP42 Table 1.4-2 (assuming 1040 Btu/scf)
Gas Exit Temp	°F	170	Assumed
Gas Exit Temp	°K	349.8	
Exhaust air (CFM)	CFM	1486.44	Assumed
Gas Exit Velocity	fps	45.42	calculated, 40 fps minimum
Gas Exit Velocity	mps	13.84	
Roof Height	feet	110.00	from site plans
Stack height	feet above roofline	10	ERP minimum
Stack height	feet	120	calculated
Stack height	meters	36.576	
Stack Diameter	feet	0.833	Assumed
Stack Diameter	meters	0.254	

Cooling Towers

			Notes
Designation		819CT1-2	2 cooling towers
Make		Marley	
Model		NC8405NLN2	
Cooling Tower Rate	tons	350	from mfg
Tower Overall Dimensions	feet	20'W X 20'L X 12'H	from mfg
CT Stack Height (above roofline)	feet	12	from mfg
Primary Building Height (ft)	feet	110.00	from site plans
CT Stack Height	feet	122.0	calculated
CT Stack Height	meters	37.19	calculated
Number of cells (per tower)	#	2	from mfg
Cooling Tower Specs			
Cooling Tower Exhaust Flow	CFM	177780	from mfg
Cooling Tower Cell Exhaust Flow	CFM	88890	calculated (per cell)
Cooling Tower Cell Exhaust Flow	kg/s	46.8	calculated
Cooling Tower Exhaust Temp	°F	90.4	from mfg
Cooling Tower Exhaust Temp	K	305.6	calculated
Cooling Tower Cell Diameter	feet	9	Fan width
Cooling Tower Cell Diameter	meters	2.74	calculated
Cooling Tower Stack Velocity	fps	23.29	calculated (per cell)
Cooling Tower Stack Velocity	mps	7.10	calculated
Cooling Tower Drift			
Drift Rate	% of circ water	0.001	assumed
Circulating Water Rate	gpm	1,400	from Mfg
Circulating Water Rate	gph	84,000	calculated
TDS+TSS concentration in drift	mg/L	1,500	assumed
PM emission rate in drift (per cell)	lb/hr	0.005	calculated
PM emission rate in drift (per cell)	g/s	0.00066	calculated (per cell)

Children's Hospital Boston - 819 Beacon Street

Emergency Generator

			Notes
Designation		819EG1	
Number		1	
Electrical output	kilowatts	750	
Make		CAT	Assumed
model		C27 DITA	Assumed
Engine Horsepower	BHP	1141.00	Mfg data
Engine power	kilowatts	850.84	calculated
Fuel consumption @full load	gph	53.50	Mfg data
Heat Input	MMBTU/hr:	7.3295	calculated
Stack Parameters			
Exhaust Temperature	°F	949.8	Mfg data
Exhaust Temperature	°K	783.0	calculated
Total Exhaust Flow	ACFM	5646.8	Mfg data
Flange Diameter	in.	8	assumed
Maximum Backpressure	in. H2O	40.2	Mfg data
Maximum velocity	fpm	20208.39	calculated
Flow area required	sq. ft	0.279	calculated
Number of exhausts (typ. 1 or 2)	#	1	assumed
Selected silencer diameter	in	8	assumed
Actual silencer opening area	sq. ft each	0.349	calculated
Actual velocity	fpm each	16176.890	calculated
Actual velocity	fps each	269.615	calculated
Single Stack Effective Diameter	ft	0.667	calculated
Single Stack Effective Diameter	m	0.203	calculated
Single Stack Effective Velocity	fps	269.615	calculated
Single Stack Effective Velocity	mps	82.179	calculated
Primary Building Height	ft	110.00	from site plans
Stack Height (15' above roofline)	ft	*125.00*	calculated
Stack Height	m	*38.10*	calculated
Pollutant	Emission factor unit	Emission factor	
NOx	g/BHP-hr	5.32	EF from mfg data
CO	g/BHP-hr	0.24	EF from mfg data
VOC	g/BHP-hr	0.03	EF from mfg data
PM10	g/BHP-hr	0.02	EF from mfg data
PM2.5	g/BHP-hr	0.02	EF from mfg data
SO2	g/BHP-hr	0.004515408	15 ppm S mass conserved
HAPs	lb/MMBTU	0.00149	AP42 Table 3.4-4
CO2	g/BHP-hr	464.44	EF from mfg data
Short Term Emission Rate			
NOx	g/s	0.0578	uses EPA 'intermittent" factor (300 hrs/yr)
CO	g/s	0.0769	calculated
VOC	g/s	0.0088	calculated
PM10	g/s	0.0063	calculated
PM2.5	g/s	0.0063	calculated
SO2	g/s	0.0014	calculated
Long Term (300 hr/yr) Emission Rate			
NOx	g/s	0.0578	calculated
CO	g/s	0.0026	calculated
VOC	g/s	0.0003	calculated
PM10	g/s	0.0002	calculated
PM2.5	g/s	0.0002	calculated
SO2	g/s	0.00005	calculated

Mesoscale and GHG Emissions Calculations

Children's Hospital (819 Beacon Street)

Roads

	VOC lbs/day	VOC tons/yr	NOx lbs/day	NOx tons/yr	CO2 lbs/day	CO2 tons/yr
2012 Existing	39.64	6.18	84.03	13.11	63570.59	9917.01
2022 No Build	27.31	4.26	30.10	4.69	75498.02	11777.69
delta from Existing	-12.33	-1.92	-53.94	-8.41	11927.43	1860.68
2022 Build	27.38	4.27	30.17	4.71	75679.59	11806.02
delta from No Build	0.07	0.01	0.07	0.01	181.56	28.32

Intersections

	VOC lbs/day	VOC tons/yr	NOx lbs/day	NOx tons/yr	CO2 lbs/day	CO2 tons/yr
2012 Existing	7.32	1.14	4.50	0.70	1857.13	289.71
2022 No Build	10.06	1.57	2.99	0.47	3999.15	623.87
delta from Existing	2.74	0.43	-1.50	-0.23	2142.02	334.16
2022 Build	11.05	1.72	3.29	0.51	4392.85	685.28
delta from No Build	0.99	0.15	0.29	0.05	393.70	61.42

Total

Pollutant	VOC lbs/day	VOC tons/yr	NOx lbs/day	NOx tons/yr	CO2 lbs/day	CO2 tons/yr
2012 Existing	46.96	7.33	88.53	13.81	65427.72	10206.72
2022 No Build	37.37	5.83	33.09	5.16	79497.17	12401.56
delta from Existing	-9.59	-1.50	-55.44	-8.65	14069.45	2194.83
2022 Build	38.43	5.99	33.46	5.22	80072.44	12491.30
delta from No Build	1.06	0.17	0.37	0.06	575.27	89.74

Minor differences in sums and/or differences are due to rounding of individual values.
Pound per day to tons per year is based on an 85% factor to account for peak daily to annual data.

Children's Hospital (819 Beacon Street)

	Case 1
	2022
	Build minus No Action
Net VMT, miles/day	142.5
Roadway GHG, tpy	28.3
Net Delay, hrs/day	125.5
Intersection GHG, tpy	61.4
Net GHG Emissions, tpy	89.7
Percent Change	---

Children's Hospital (819 Beacon Street)

Regional Mesoscale Emissions Analysis - Roadway Emissions
Link Data

Link Number	Roadway Segment	Link Distance (miles)	Average Speed (mph)	AM Peak Hour Volume			PM Peak Hour Volume			K-factor	Average Daily Traffic (ADT) Volumes		
				2012 Existing	2022 No-Build	2022 Build	2012 Existing	2022 No-Build	2022 Build		2012 Existing	2022 No-Build	2022 Build
1	Deerfield St	0.25	30	30	32	32	45	48	48	10.0%	450	480	480
2	Commonwealth Ave (W of Kenmore)	0.25	30	1,025	1,088	1,088	1,125	1,188	1,188	10.0%	11,250	11,880	11,880
3	Commonwealth Ave (E of Kenmore)	0.25	30	2,815	3,299	3,357	3,185	3,651	3,703	10.0%	31,850	36,510	37,030
4	Brookline Ave (Kenmore to Overland)	0.20	30	700	834	851	720	888	903	10.0%	7,200	8,880	9,030
5	Overland St	0.08	30	50	183	225	115	253	291	10.0%	1,150	2,530	2,910
6	Brookline Ave (Overland to Fullerton/Kilmarnock)	0.10	30	770	993	1,019	810	1,040	1,063	10.0%	8,100	10,400	10,630
7	Fullerton St	0.07	30	390	675	675	420	648	648	10.0%	4,200	6,750	6,750
8	Kilmarnock St.	0.25	30	260	301	301	305	364	364	10.0%	3,050	3,640	3,640
9	Brookline Ave (Fullerton to Boylston/Park)	0.13	30	945	1,265	1,292	990	1,310	1,334	10.0%	9,900	13,100	13,340
10	Boylston St.	0.25	30	2,065	2,470	2,470	2,110	2,534	2,534	10.0%	21,100	25,340	25,340
11	Park Dr. (S of Brookline)	0.25	30	835	936	959	1,015	973	977	10.0%	10,150	9,730	9,770
12	Park Dr. (Brookline to Landmark)	0.05	30	1,075	1,121	1,134	1,650	1,815	1,837	10.0%	16,500	18,150	18,370
13	Landmark Ctr	0.02	30	30	64	64	175	377	377	10.0%	1,750	3,770	3,770
14	Park Dr (NB to Riverway)	0.05	30	450	512	512	775	885	885	10.0%	7,750	8,850	8,850
15	Park Dr (Uturn to Fenway)	0.01	30	235	266	269	270	385	405	10.0%	2,700	3,850	4,050
16	Park Dri (SB to Riverway)	0.05	30	340	361	365	515	542	567	10.0%	5,150	5,420	5,670
17	Park Dr. (SB to Fenway)	0.10	30	760	907	911	745	928	955	10.0%	7,600	9,280	9,550
18	Riverway (to Fenway)	0.08	30	815	861	861	740	756	756	10.0%	8,150	8,610	8,610
19	Brookline Ave. (RH Left to Park NB)	0.06	30	120	0	0	170	0	0	10.0%	1,700	0	0
20	Riverway (direct to Park NB)	0.12	30	0	74	104	0	116	122	10.0%	0	1,160	1,220
20	Brookline Ave. (Park to Fenway)	0.06	30	2,360	3,006	3,016	2,075	2,638	2,640	10.0%	23,600	30,060	30,160
21	Brookline Ave. (S of Fenway)	0.25	30	1,960	2,410	2,420	1,765	2,210	2,220	10.0%	19,600	24,100	24,200
22	Riverway to Brookline	0.05	30	1,575	1,769	1,772	1,485	1,685	1,712	10.0%	15,750	17,690	17,720
23	Fenway (S of Brookine)	0.25	30	715	795	797	775	1,013	1,032	10.0%	7,750	10,130	10,320
24	Beacon St (Kenmore to Maitland)	0.25	30	1,395	1,650	1,690	1,490	1,821	1,859	10.0%	14,900	18,210	18,590
25	Maitland St	0.04	30	80	243	338	95	290	374	10.0%	950	2,900	3,740
26	Mountfort St (Beacon to Park)	0.27	30	55	107	120	70	152	164	10.0%	700	1,520	1,640
27	Beacon St (Maitland to Munson)	0.04	30	1,415	1,570	1,622	1,460	1,622	1,668	10.0%	14,600	16,220	16,680
28	Munson St	0.04	30	15	15	31	15	15	30	10.0%	150	150	310
29	Beacon St (Munson to Arundel/Miner)	0.04	30	1,415	1,569	1,624	1,470	1,632	1,682	10.0%	14,700	16,320	16,820
30	Arundel St	0.05	30	45	47	47	40	41	41	10.0%	450	470	470
31	Miner St	0.07	30	130	164	164	125	144	144	10.0%	1,300	1,640	1,640
32	Beacon St (Miner to Aberdeen)	0.04	30	1,480	1,640	1,695	1,485	1,649	1,699	10.0%	14,850	16,490	16,990
33	Aberdeen St	0.08	30	25	31	31	25	28	28	10.0%	250	310	310
34	Beacon St (Aberdeen to Park)	0.06	30	1,475	1,635	1,692	1,475	1,639	1,689	10.0%	14,750	16,390	16,920
35	Park Dr (Beacon to Riverway)	0.15	30	1,240	1,416	1,460	1,625	1,829	1,398	10.0%	16,250	18,290	14,600
36	Beacon (W of Park)	0.25	30	1,475	1,579	1,591	1,425	1,534	1,543	10.0%	14,750	15,790	15,910
37	Park Dr. (Beacon to Mountfort)	0.13	30	850	940	940	1,040	1,141	1,141	10.0%	10,400	11,410	11,410
38	Mountfort St. (W of Park)	0.12	30	910	1,020	1,033	1,120	1,301	1,313	10.0%	11,200	13,010	13,130

Children's Hospital (819 Beacon Street)

Regional Mesoscale Emissions Analysis - Roadway Emissions
2012 Existing

	Link	Daily Average Volumes	Miles Per Link	Miles Traveled	Vehicle Speed (mph)	Avg Idle Time (hr/veh)	Idle M6.2 VOC (g/hr)	M6.2 VOC (g/mile)	lbs/day	tons/year	Idle M6.2 NOX (g/hr)	M6.2 NOX (g/mile)	lbs/day	tons/year	Idle M6.2 CO2 (g/hr)	M6.2 CO2 (g/mile)	lbs/day	tons/year
1	**Deerfield St**	450	0.25	112.5	30	0.02	5.530	0.341	0.086	0.013	3.398	0.739	0.184	0.029	1403.250	561.300	139.601	21.778
2	**Commonwealth Ave (W of Kenmore)**	11,250	0.25	2812.5	30	0.02	5.530	0.341	2.152	0.336	3.398	0.739	4.606	0.718	1403.250	561.300	3490.027	544.444
3	**Commonwealth Ave (E of Kenmore)**	31,850	0.25	7962.5	30	0.02	5.530	0.341	6.094	0.951	3.398	0.739	13.039	2.034	1403.250	561.300	9880.655	1541.382
4	**Brookline Ave (Kenmore to Overland)**	7,200	0.20	1440.0	30	0.02	5.530	0.341	1.107	0.173	3.398	0.739	2.361	0.368	1403.250	561.300	1788.131	278.948
5	**Overland St**	1,150	0.08	94.7	30	0.02	5.530	0.341	0.075	0.012	3.398	0.739	0.157	0.024	1403.250	561.300	118.231	18.444
6	**Brookline Ave (Overland to Fullerton/Kilmarnock)**	8,100	0.10	843.8	30	0.02	5.530	0.341	0.662	0.103	3.398	0.739	1.392	0.217	1403.250	561.300	1051.069	163.967
7	**Fullerton St**	4,200	0.07	297.5	30	0.02	5.530	0.341	0.238	0.037	3.398	0.739	0.493	0.077	1403.250	561.300	371.754	57.994
8	**Kilmarnock St.**	3,050	0.25	762.5	30	0.02	5.530	0.341	0.584	0.091	3.398	0.739	1.249	0.195	1403.250	561.300	946.185	147.605
9	**Brookline Ave (Fullerton to Boylston/Park)**	9,900	0.13	1308.8	30	0.02	5.530	0.341	1.017	0.159	3.398	0.739	2.153	0.336	1403.250	561.300	1628.035	253.973
10	**Boylston St.**	21,100	0.25	5275.0	30	0.02	5.530	0.341	4.037	0.630	3.398	0.739	8.638	1.348	1403.250	561.300	6545.740	1021.135
11	**Park Dr. (S of Brookline)**	10,150	0.25	2537.5	30	0.02	5.530	0.341	1.942	0.303	3.398	0.739	4.155	0.648	1403.250	561.300	3148.780	491.210
12	**Park Dr. (Brookline to Landmark)**	16,500	0.05	834.4	30	0.02	5.530	0.341	0.683	0.107	3.398	0.739	1.394	0.217	1403.250	561.300	1046.686	163.283
13	**Landmark Ctr**	1,750	0.02	38.4	30	0.02	5.530	0.341	0.035	0.005	3.398	0.739	0.066	0.010	1403.250	561.300	49.080	7.657
14	**Park Dr (NB to Riverway)**	7,750	0.05	374.3	30	0.02	5.530	0.341	0.308	0.048	3.398	0.739	0.626	0.098	1403.250	561.300	469.829	73.293
15	**Park Dr (Uturn to Fenway)**	2,700	0.01	15.3	30	0.02	5.530	0.341	0.021	0.003	3.398	0.739	0.031	0.005	1403.250	561.300	21.304	3.323
16	**Park Dri (SB to Riverway)**	5,150	0.05	257.5	30	0.02	5.530	0.341	0.211	0.033	3.398	0.739	0.430	0.067	1403.250	561.300	323.072	50.399
17	**Park Dr. (SB to Fenway)**	7,600	0.10	725.5	30	0.02	5.530	0.341	0.571	0.089	3.398	0.739	1.198	0.187	1403.250	561.300	904.253	141.063
18	**Riverway (to Fenway)**	8,150	0.08	668.4	30	0.02	5.530	0.341	0.530	0.083	3.398	0.739	1.106	0.173	1403.250	561.300	834.075	130.116
19	**Brookline Ave. (RH Left to Park NB)**	1,700	0.06	106.9	30	0.02	5.530	0.341	0.086	0.013	3.398	0.739	0.178	0.028	1403.250	561.300	133.738	20.863
20	**Riverway (direct to Park NB)**	0	0.12	0.0	30	0.02	5.530	0.341	0.000	0.000	3.398	0.739	0.000	0.000	1403.250	561.300	0.000	0.000
20	**Brookline Ave. (Park to Fenway)**	23,600	0.06	1309.6	30	0.02	5.530	0.341	1.064	0.166	3.398	0.739	2.183	0.341	1403.250	561.300	1640.886	255.978
21	**Brookline Ave. (S of Fenway)**	19,600	0.25	4900.0	30	0.02	5.530	0.341	3.750	0.585	3.398	0.739	8.024	1.252	1403.250	561.300	6080.403	948.543
22	**Riverway to Brookline**	15,750	0.05	856.1	30	0.02	5.530	0.341	0.697	0.109	3.398	0.739	1.428	0.223	1403.250	561.300	1072.935	167.378
23	**Fenway (S of Brookine)**	7,750	0.25	1937.5	30	0.02	5.530	0.341	1.483	0.231	3.398	0.739	3.173	0.495	1403.250	561.300	2404.241	375.062
24	**Beacon St (Kenmore to Maitland)**	14,900	0.25	3795.5	30	0.02	5.530	0.341	2.904	0.453	3.398	0.739	6.215	0.970	1403.250	561.300	4709.649	734.705
25	**Maitland St**	950	0.04	41.6	30	0.02	5.530	0.341	0.034	0.005	3.398	0.739	0.070	0.011	1403.250	561.300	52.248	8.151
26	**Mountfort St (Beacon to Park)**	700	0.27	190.9	30	0.02	5.530	0.341	0.146	0.023	3.398	0.739	0.312	0.049	1403.250	561.300	236.844	36.948
27	**Beacon St (Maitland to Munson)**	14,600	0.04	622.2	30	0.02	5.530	0.341	0.517	0.081	3.398	0.739	1.044	0.163	1403.250	561.300	782.444	122.061
28	**Munson St**	150	0.04	5.5	30	0.02	5.530	0.341	0.005	0.001	3.398	0.739	0.009	0.001	1403.250	561.300	6.914	1.079
29	**Beacon St (Munson to Arundel/Miner)**	14,700	0.04	595.8	30	0.02	5.530	0.341	0.498	0.078	3.398	0.739	1.001	0.156	1403.250	561.300	749.906	116.985
30	**Arundel St**	450	0.05	21.3	30	0.02	5.530	0.341	0.018	0.003	3.398	0.739	0.036	0.006	1403.250	561.300	26.753	4.173
31	**Miner St**	1,300	0.07	95.0	30	0.02	5.530	0.341	0.076	0.012	3.398	0.739	0.158	0.025	1403.250	561.300	118.723	18.521
32	**Beacon St (Miner to Aberdeen)**	14,850	0.04	627.2	30	0.02	5.530	0.341	0.522	0.081	3.398	0.739	1.053	0.164	1403.250	561.300	788.881	123.066
33	**Aberdeen St**	250	0.08	19.3	30	0.02	5.530	0.341	0.015	0.002	3.398	0.739	0.032	0.005	1403.250	561.300	24.062	3.754
34	**Beacon St (Aberdeen to Park)**	14,750	0.06	838.1	30	0.02	5.530	0.341	0.680	0.106	3.398	0.739	1.396	0.218	1403.250	561.300	1049.752	163.761
35	**Park Dr (Beacon to Riverway)**	16,250	0.15	2462.1	30	0.02	5.530	0.341	1.906	0.297	3.398	0.739	4.045	0.631	1403.250	561.300	3060.744	477.476
36	**Beacon (W of Park)**	14,750	0.25	3687.5	30	0.02	5.530	0.341	2.822	0.440	3.398	0.739	6.038	0.942	1403.250	561.300	4575.813	713.827
37	**Park Dr. (Beacon to Mountfort)**	10,400	0.13	1329.5	30	0.02	5.530	0.341	1.035	0.161	3.398	0.739	2.188	0.341	1403.250	561.300	1654.198	258.055
38	**Mountfort St. (W of Park)**	11,200	0.12	1321.5	30	0.02	5.530	0.341	1.031	0.161	3.398	0.739	2.176	0.340	1403.250	561.300	1644.948	256.612
	Total	356600.000	4.869	51124.148					39.642	6.184			84.035	13.109			63570.590	9917.012

Notes: Daily to annual factor (6 days/week * 52 weeks per year / 365 days per year) = 85%

Children's Hospital (819 Beacon Street)

Regional Mesoscale Emissions Analysis - Roadway Emissions
2022 No Build

	Link	Daily Average Volumes	Miles Per Link	Miles Traveled	Vehicle Speed (mph)	Avg Idle Time (hr/veh)	Idle M6.2 VOC (g/hr)	M6.2 VOC (g/mile)	lbs/day	tons/year	Idle M6.2 NOX (g/hr)	M6.2 NOX (g/mile)	lbs/day	tons/year	Idle M6.2 CO2 (g/hr)	M6.2 CO2 (g/mile)	lbs/day	tons/year
1	**Deerfield St**	480	0.25	120.0	30	0.02	3.580	0.200	0.054	0.008	1.065	0.226	0.060	0.009	1423.450	569.380	151.051	23.564
2	**Commonwealth Ave (W of Kenmore)**	11,880	0.25	2970.0	30	0.02	3.580	0.200	1.336	0.208	1.065	0.226	1.488	0.232	1423.450	569.380	3738.522	583.209
3	**Commonwealth Ave (E of Kenmore)**	36,510	0.25	9127.5	30	0.02	3.580	0.200	4.105	0.640	1.065	0.226	4.572	0.713	1423.450	569.380	11489.345	1792.338
4	**Brookline Ave (Kenmore to Overland)**	8,880	0.20	1776.0	30	0.02	3.580	0.200	0.803	0.125	1.065	0.226	0.891	0.139	1423.450	569.380	2237.109	348.989
5	**Overland St**	2,530	0.08	208.4	30	0.02	3.580	0.200	0.097	0.015	1.065	0.226	0.106	0.016	1423.450	569.380	263.852	41.161
6	**Brookline Ave (Overland to Fullerton/Kilmarnock)**	10,400	0.10	1083.3	30	0.02	3.580	0.200	0.500	0.078	1.065	0.226	0.547	0.085	1423.450	569.380	1368.947	213.556
7	**Fullerton St**	6,750	0.07	478.1	30	0.02	3.580	0.200	0.226	0.035	1.065	0.226	0.243	0.038	1423.450	569.380	606.062	94.546
8	**Kilmarnock St.**	3,640	0.25	910.0	30	0.02	3.580	0.200	0.409	0.064	1.065	0.226	0.456	0.071	1423.450	569.380	1145.473	178.694
9	**Brookline Ave (Fullerton to Boylston/Park)**	13,100	0.13	1731.8	30	0.02	3.580	0.200	0.792	0.124	1.065	0.226	0.871	0.136	1423.450	569.380	2185.279	340.904
10	**Boylston St.**	25,340	0.25	6335.0	30	0.02	3.580	0.200	2.849	0.444	1.065	0.226	3.173	0.495	1423.450	569.380	7974.254	1243.984
11	**Park Dr. (S of Brookline)**	9,730	0.25	2432.5	30	0.02	3.580	0.200	1.094	0.171	1.065	0.226	1.218	0.190	1423.450	569.380	3061.937	477.662
12	**Park Dr. (Brookline to Landmark)**	18,150	0.05	917.8	30	0.02	3.580	0.200	0.444	0.069	1.065	0.226	0.469	0.073	1423.450	569.380	1167.928	182.197
13	**Landmark Ctr**	3,770	0.02	82.8	30	0.02	3.580	0.200	0.045	0.007	1.065	0.226	0.044	0.007	1423.450	569.380	107.255	16.732
14	**Park Dr (NB to Riverway)**	8,850	0.05	427.4	30	0.02	3.580	0.200	0.208	0.032	1.065	0.226	0.219	0.034	1423.450	569.380	544.238	84.901
15	**Park Dr (Uturn to Fenway)**	3,850	0.01	21.9	30	0.02	3.580	0.200	0.018	0.003	1.065	0.226	0.013	0.002	1423.450	569.380	30.815	4.807
16	**Park Dri (SB to Riverway)**	5,420	0.05	271.0	30	0.02	3.580	0.200	0.131	0.020	1.065	0.226	0.139	0.022	1423.450	569.380	344.904	53.805
17	**Park Dr. (SB to Fenway)**	9,280	0.10	885.8	30	0.02	3.580	0.200	0.411	0.064	1.065	0.226	0.447	0.070	1423.450	569.380	1120.035	174.725
18	**Riverway (to Fenway)**	8,610	0.08	706.1	30	0.02	3.580	0.200	0.330	0.052	1.065	0.226	0.357	0.056	1423.450	569.380	893.836	139.438
19	**Brookline Ave. (RH Left to Park NB)**	0	0.06	0.0	30	0.02	3.580	0.200	0.000	0.000	1.065	0.226	0.000	0.000	1423.450	569.380	0.000	0.000
20	**Riverway (direct to Park NB)**	1,160	0.12	136.2	30	0.02	3.580	0.200	0.063	0.010	1.065	0.226	0.069	0.011	1423.450	569.380	171.995	26.831
20	**Brookline Ave. (Park to Fenway)**	30,060	0.06	1668.1	30	0.02	3.580	0.200	0.801	0.125	1.065	0.226	0.851	0.133	1423.450	569.380	2120.130	330.740
21	**Brookline Ave. (S of Fenway)**	24,100	0.25	6025.0	30	0.02	3.580	0.200	2.709	0.423	1.065	0.226	3.018	0.471	1423.450	569.380	7584.038	1183.110
22	**Riverway to Brookline**	17,690	0.05	961.6	30	0.02	3.580	0.200	0.463	0.072	1.065	0.226	0.491	0.077	1423.450	569.380	1222.441	190.701
23	**Fenway (S of Brookine)**	10,130	0.25	2532.5	30	0.02	3.580	0.200	1.139	0.178	1.065	0.226	1.268	0.198	1423.450	569.380	3187.813	497.299
24	**Beacon St (Kenmore to Maitland)**	18,210	0.25	4638.7	30	0.02	3.580	0.200	2.085	0.325	1.065	0.226	2.323	0.362	1423.450	569.380	5838.743	910.844
25	**Maitland St**	2,900	0.04	126.9	30	0.02	3.580	0.200	0.062	0.010	1.065	0.226	0.065	0.010	1423.450	569.380	161.791	25.239
26	**Mountfort St (Beacon to Park)**	1,520	0.27	414.5	30	0.02	3.580	0.200	0.186	0.029	1.065	0.226	0.208	0.032	1423.450	569.380	521.693	81.384
27	**Beacon St (Maitland to Munson)**	16,220	0.04	691.2	30	0.02	3.580	0.200	0.340	0.053	1.065	0.226	0.355	0.055	1423.450	569.380	881.777	137.557
28	**Munson St**	150	0.04	5.5	30	0.02	3.580	0.200	0.003	0.000	1.065	0.226	0.003	0.000	1423.450	569.380	7.013	1.094
29	**Beacon St (Munson to Arundel/Miner)**	16,320	0.04	661.5	30	0.02	3.580	0.200	0.327	0.051	1.065	0.226	0.340	0.053	1423.450	569.380	844.534	131.747
30	**Arundel St**	470	0.05	22.3	30	0.02	3.580	0.200	0.011	0.002	1.065	0.226	0.011	0.002	1423.450	569.380	28.344	4.422
31	**Miner St**	1,640	0.07	119.9	30	0.02	3.580	0.200	0.056	0.009	1.065	0.226	0.061	0.009	1423.450	569.380	151.929	23.701
32	**Beacon St (Miner to Aberdeen)**	16,490	0.04	696.5	30	0.02	3.580	0.200	0.343	0.054	1.065	0.226	0.358	0.056	1423.450	569.380	888.614	138.624
33	**Aberdeen St**	310	0.08	23.9	30	0.02	3.580	0.200	0.011	0.002	1.065	0.226	0.012	0.002	1423.450	569.380	30.266	4.722
34	**Beacon St (Aberdeen to Park)**	16,390	0.06	931.3	30	0.02	3.580	0.200	0.447	0.070	1.065	0.226	0.475	0.074	1423.450	569.380	1183.262	184.589
35	**Park Dr (Beacon to Riverway)**	18,290	0.15	2771.2	30	0.02	3.580	0.200	1.262	0.197	1.065	0.226	1.393	0.217	1423.450	569.380	3494.576	545.154
36	**Beacon (W of Park)**	15,790	0.25	3947.5	30	0.02	3.580	0.200	1.775	0.277	1.065	0.226	1.977	0.308	1423.450	569.380	4968.961	775.158
37	**Park Dr. (Beacon to Mountfort)**	11,410	0.13	1458.7	30	0.02	3.580	0.200	0.668	0.104	1.065	0.226	0.734	0.115	1423.450	569.380	1840.971	287.191
38	**Mountfort St. (W of Park)**	13,010	0.12	1535.1	30	0.02	3.580	0.200	0.705	0.110	1.065	0.226	0.773	0.121	1423.450	569.380	1938.290	302.373
	Total	419430.000	4.869	59853.358					27.311	4.260			30.095	4.695			75498.024	11777.692

Notes: Daily to annual factor (6 days/week * 52 weeks per year / 365 days per year) = 85%

Children's Hospital (819 Beacon Street)

Regional Mesoscale Emissions Analysis - Roadway Emissions
2022 Build

	Link	Daily Average Volumes	Miles Per Link	Miles Traveled	Vehicle Speed (mph)	Avg Idle Time (hr/veh)	Idle M6.2 VOC (g/hr)	M6.2 VOC (g/mile)	lbs/day	tons/year	Idle M6.2 NOX (g/hr)	M6.2 NOX (g/mile)	lbs/day	tons/year	Idle M6.2 CO2 (g/hr)	M6.2 CO2 (g/mile)	lbs/day	tons/year
1	**Deerfield St**	480	0.25	120.0	30	0.02	3.580	0.200	0.054	0.008	1.065	0.226	0.060	0.009	1423.450	569.380	151.051	23.564
2	**Commonwealth Ave (W of Kenmore)**	11,880	0.25	2970.0	30	0.02	3.580	0.200	1.336	0.208	1.065	0.226	1.488	0.232	1423.450	569.380	3738.522	583.209
3	**Commonwealth Ave (E of Kenmore)**	37,030	0.25	9257.5	30	0.02	3.580	0.200	4.163	0.649	1.065	0.226	4.637	0.723	1423.450	569.380	11652.984	1817.866
4	**Brookline Ave (Kenmore to Overland)**	9,030	0.20	1806.0	30	0.02	3.580	0.200	0.816	0.127	1.065	0.226	0.906	0.141	1423.450	569.380	2274.898	354.884
5	**Overland St**	2,910	0.08	239.7	30	0.02	3.580	0.200	0.112	0.017	1.065	0.226	0.121	0.019	1423.450	569.380	303.482	47.343
6	**Brookline Ave (Overland to Fullerton/Kilmarnock)**	10,630	0.10	1107.3	30	0.02	3.580	0.200	0.512	0.080	1.065	0.226	0.559	0.087	1423.450	569.380	1399.221	218.279
7	**Fullerton St**	6,750	0.07	478.1	30	0.02	3.580	0.200	0.226	0.035	1.065	0.226	0.243	0.038	1423.450	569.380	606.062	94.546
8	**Kilmarnock St.**	3,640	0.25	910.0	30	0.02	3.580	0.200	0.409	0.064	1.065	0.226	0.456	0.071	1423.450	569.380	1145.473	178.694
9	**Brookline Ave (Fullerton to Boylston/Park)**	13,340	0.13	1763.5	30	0.02	3.580	0.200	0.807	0.126	1.065	0.226	0.887	0.138	1423.450	569.380	2225.315	347.149
10	**Boylston St.**	25,340	0.25	6335.0	30	0.02	3.580	0.200	2.849	0.444	1.065	0.226	3.173	0.495	1423.450	569.380	7974.254	1243.984
11	**Park Dr. (S of Brookline)**	9,770	0.25	2442.5	30	0.02	3.580	0.200	1.098	0.171	1.065	0.226	1.223	0.191	1423.450	569.380	3074.525	479.626
12	**Park Dr. (Brookline to Landmark)**	18,370	0.05	928.9	30	0.02	3.580	0.200	0.450	0.070	1.065	0.226	0.475	0.074	1423.450	569.380	1182.085	184.405
13	**Landmark Ctr**	3,770	0.02	82.8	30	0.02	3.580	0.200	0.045	0.007	1.065	0.226	0.044	0.007	1423.450	569.380	107.255	16.732
14	**Park Dr (NB to Riverway)**	8,850	0.05	427.4	30	0.02	3.580	0.200	0.208	0.032	1.065	0.226	0.219	0.034	1423.450	569.380	544.238	84.901
15	**Park Dr (Uturn to Fenway)**	4,050	0.01	23.0	30	0.02	3.580	0.200	0.019	0.003	1.065	0.226	0.014	0.002	1423.450	569.380	32.416	5.057
16	**Park Dri (SB to Riverway)**	5,670	0.05	283.5	30	0.02	3.580	0.200	0.137	0.021	1.065	0.226	0.145	0.023	1423.450	569.380	360.813	56.287
17	**Park Dr. (SB to Fenway)**	9,550	0.10	911.6	30	0.02	3.580	0.200	0.423	0.066	1.065	0.226	0.460	0.072	1423.450	569.380	1152.622	179.809
18	**Riverway (to Fenway)**	8,610	0.08	706.1	30	0.02	3.580	0.200	0.330	0.052	1.065	0.226	0.357	0.056	1423.450	569.380	893.836	139.438
19	**Brookline Ave. (RH Left to Park NB)**	0	0.06	0.0	30	0.02	3.580	0.200	0.000	0.000	1.065	0.226	0.000	0.000	1423.450	569.380	0.000	0.000
20	**Riverway (direct to Park NB)**	1,220	0.12	143.3	30	0.02	3.580	0.200	0.066	0.010	1.065	0.226	0.072	0.011	1423.450	569.380	180.891	28.219
20	**Brookline Ave. (Park to Fenway)**	30,160	0.06	1673.7	30	0.02	3.580	0.200	0.804	0.125	1.065	0.226	0.854	0.133	1423.450	569.380	2127.183	331.841
21	**Brookline Ave. (S of Fenway)**	24,200	0.25	6050.0	30	0.02	3.580	0.200	2.721	0.424	1.065	0.226	3.030	0.473	1423.450	569.380	7615.507	1188.019
22	**Riverway to Brookline**	17,720	0.05	963.2	30	0.02	3.580	0.200	0.464	0.072	1.065	0.226	0.491	0.077	1423.450	569.380	1224.514	191.024
23	**Fenway (S of Brookine)**	10,320	0.25	2580.0	30	0.02	3.580	0.200	1.160	0.181	1.065	0.226	1.292	0.202	1423.450	569.380	3247.605	506.626
24	**Beacon St (Kenmore to Maitland)**	18,590	0.25	4735.5	30	0.02	3.580	0.200	2.129	0.332	1.065	0.226	2.372	0.370	1423.450	569.380	5960.584	929.851
25	**Maitland St**	3,740	0.04	163.6	30	0.02	3.580	0.200	0.080	0.013	1.065	0.226	0.084	0.013	1423.450	569.380	208.655	32.550
26	**Mountfort St (Beacon to Park)**	1,640	0.27	447.3	30	0.02	3.580	0.200	0.201	0.031	1.065	0.226	0.224	0.035	1423.450	569.380	562.880	87.809
27	**Beacon St (Maitland to Munson)**	16,680	0.04	710.8	30	0.02	3.580	0.200	0.350	0.055	1.065	0.226	0.365	0.057	1423.450	569.380	906.784	141.458
28	**Munson St**	310	0.04	11.3	30	0.02	3.580	0.200	0.006	0.001	1.065	0.226	0.006	0.001	1423.450	569.380	14.494	2.261
29	**Beacon St (Munson to Arundel/Miner)**	16,820	0.04	681.7	30	0.02	3.580	0.200	0.337	0.053	1.065	0.226	0.351	0.055	1423.450	569.380	870.408	135.784
30	**Arundel St**	470	0.05	22.3	30	0.02	3.580	0.200	0.011	0.002	1.065	0.226	0.011	0.002	1423.450	569.380	28.344	4.422
31	**Miner St**	1,640	0.07	119.9	30	0.02	3.580	0.200	0.056	0.009	1.065	0.226	0.061	0.009	1423.450	569.380	151.929	23.701
32	**Beacon St (Miner to Aberdeen)**	16,990	0.04	717.6	30	0.02	3.580	0.200	0.354	0.055	1.065	0.226	0.369	0.058	1423.450	569.380	915.558	142.827
33	**Aberdeen St**	310	0.08	23.9	30	0.02	3.580	0.200	0.011	0.002	1.065	0.226	0.012	0.002	1423.450	569.380	30.266	4.722
34	**Beacon St (Aberdeen to Park)**	16,920	0.06	961.4	30	0.02	3.580	0.200	0.461	0.072	1.065	0.226	0.490	0.076	1423.450	569.380	1221.525	190.558
35	**Park Dr (Beacon to Riverway)**	14,600	0.15	2212.1	30	0.02	3.580	0.200	1.007	0.157	1.065	0.226	1.112	0.173	1423.450	569.380	2789.547	435.169
36	**Beacon (W of Park)**	15,910	0.25	3977.5	30	0.02	3.580	0.200	1.789	0.279	1.065	0.226	1.992	0.311	1423.450	569.380	5006.724	781.049
37	**Park Dr. (Beacon to Mountfort)**	11,410	0.13	1458.7	30	0.02	3.580	0.200	0.668	0.104	1.065	0.226	0.734	0.115	1423.450	569.380	1840.971	287.191
38	**Mountfort St. (W of Park)**	13,130	0.12	1549.2	30	0.02	3.580	0.200	0.712	0.111	1.065	0.226	0.780	0.122	1423.450	569.380	1956.168	305.162
	Total	422450.000	4.869	59995.902					27.380	4.271			30.168	4.706			75679.588	11806.016

Notes: Daily to annual factor (6 days/week * 52 weeks per year / 365 days per year) = 85%

Children's Hospital DPIR - (819 Beacon Street)	2012 Existing AM Peak			2012 Existing PM Peak		
Intersections (Signalized and *Unsignalized*)	LOS	Delay (Sec)	Traffic Volume	LOS	Delay (Sec)	Traffic Volume
2. Beacon Street & Park Drive	C	34.2	2490	E	71.6	2795
6. Beacon S, Mountfort St, & Maitland St	B	0.9	1480	A	2.7	1545
7. Riverway & Park Drive	B	13.1	1565	C	23.0	2120
8. Riverway & Park Drive	C	4.6	1575	E	4.7	1485
9. Park Dr. & Park Drive	A	4.1	1105	A	8.7	1825
10. Brookline Avenue, Riverway & Fenway	C	25.6	3365	C	23.4	3135
11. B rookline Avenue, Park Drive & Boylston Street	C	33.5	3655	C	34.1	3925
12. Brookline Avenue , Fullerton Street, & Kilmarnock Street	B	19.7	1175	C	30.5	1260
14. Beacon Street, Brookline Ave, Commonwealth Ave, & Deerfield St.	E	57.2	2895	D	49.0	3235
15. Riverway Ext. & Park Drive	A	1.7	444	A	7.3	811
1. Park Drive & Mountfort St.	A	9.8	885	A	11.5	1125
3. Beacon St. & Aberdeen St	A	0.3	1490	A	0.2	1495
4. Beacon St, Arundel St, & Miner St	A	2.1	1540	B	3.1	1560
5. Beacon St & Munson St	A	0.1	1420	A	0.2	1470
13. Brookline Ave & Overland St.	B	1.5	800	B	2.4	835

LOS is HCM value for signalized intersections and ICU value for unsignalized intersections.
Color Code:
Red = Signalized intersections at LOS D or worse.
Green = Top 3 signalized intersections based on volume.
Dark Blue = Volume increase >20%
Light Blue = Volume increase > 10%
Yellow = Unsignalized intersection with delay > 150s. Capped at 150s
Gold = Unsignalized intersection with missing delay. Assigned value based on HCM LOS
A = 10s
B = 15s
C = 25s
D = 35s
E = 50 s
F or worse = 80s
Pink = Not analyzed or calculated.. Assumed same as No Action.

Children's Hospital DPIR - (819 Beacon Street)	2022 No Action AM Peak			2022 No Action PM Peak		
Intersections (Signalized and *Unsignalized*)	LOS	Delay (Sec)	Traffic Volume	LOS	Delay (Sec)	Traffic Volume
2. Beacon Street & Park Drive	E	66.0	2755	C	24.2	3095
6. Beacon S, Mountfort St, & Maitland St	B	14.0	1801	C	25.5	1913
7. Riverway & Park Drive	C	28.4	1882	F	147.6	2641
8. Riverway & Park Drive	C	33.7	1768	C	20.1	1684
9. Park Dr. & Park Drive	B	10.2	1186	B	19.4	2192
10. Brookline Avenue, Riverway & Fenway	C	25.3	3984	C	24.2	3769
11. B rookline Avenue, Park Drive & Boylston Street	E	69.5	4509	F	93.4	4679
12. Brookline Avenue , Fullerton Street, & Kilmarnock Street	C	22.1	1613	C	33.5	1675
14. Beacon Street, Brookline Ave, Commonwealth Ave, & Deerfield St.	F	81.2	3394	F	92.6	3766
15. Riverway Ext. & Park Drive	A	1.7	444	A	7.3	811
1. Park Drive & Mountfort St.	A	4.5	1025	B	8.7	1306
3. Beacon St. & Aberdeen St	A	0.4	1650	A	0.2	1658
4. Beacon St, Arundel St, & Miner St	B	2.3	1708	B	3.0	1733
5. Beacon St & Munson St	A	0.1	1574	A	0.2	1632
13. Brookline Ave & Overland St.	D	3.6	1038	D	24.2	1110

LOS is HCM value for signalized intersections and ICU value for unsignalized intersections.
Color Code:
Red = Signalized intersections at LOS D or worse.
Green = Top 3 signalized intersections based on volume.
Dark Blue = Volume increase >20%
Light Blue = Volume increase > 10%
Yellow = Unsignalized intersection with delay > 150s. Capped at 150s
Gold = Unsignalized intersection with missing delay. Assigned value based on HCM LOS
A = 10s
B = 15s
C = 25s
D = 35s
E = 50 s
F or worse = 80s
Pink = Not analyzed or calculated.. Assumed same as No Action.

Children's Hospital DPIR - (819 Beacon Street)	2022 Build AM Peak				2022 Build PM Peak			
Intersections (Signalized and *Unsignalized*)	LOS	Delay (Sec)	Traffic Volume	No-Build to Build Volume % Increase	LOS	Delay (Sec)	Traffic Volume	No-Build to Build Volume % Increase
2. Beacon Street & Park Drive	E	67.8	2812	2%	C	26.0	3145	2%
6. Beacon S, Mountfort St, & Maitland St	C	23.0	1901	6%	D	38.7	2003	5%
7. Riverway & Park Drive	D	40.2	1920	2%	F	164.3	2700	2%
8. Riverway & Park Drive	C	33.6	1772	0%	C	20.0	1711	2%
9. Park Dr. & Park Drive	B	11.4	1199	1%	B	19.5	2214	1%
10. Brookline Avenue, Riverway & Fenway	C	25.4	3996	0%	C	24.4	3798	1%
11. B rookline Avenue, Park Drive & Boylston Street	E	72.1	4545	1%	F	98.9	4704	1%
12. Brookline Avenue , Fullerton Street, & Kilmarnock Street	C	22.1	1640	2%	C	34.1	1699	1%
14. Beacon Street, Brookline Ave, Commonwealth Ave, & Deerfield St.	F	81.7	3452	2%	F	101.1	3818	1%
15. Riverway Ext. & Park Drive	A	1.8	484	9%	A	7.4	819	1%
1. Park Drive & Mountfort St.	A	4.5	1038	1%	B	9.0	1318	1%
3. Beacon St. & Aberdeen St	A	0.4	1706	3%	B	0.2	1710	3%
4. Beacon St, Arundel St, & Miner St	B	2.8	1763	3%	B	3.1	1783	3%
5. Beacon St & Munson St	A	0.2	1636	4%	A	0.4	1687	3%
13. Brookline Ave & Overland St.	D	4.4	1080	4%	D	43.4	1148	3%

LOS is HCM value for signalized intersections and ICU value for unsignalized intersections.
Color Code:
Red = Signalized intersections at LOS D or worse.
Green = Top 3 signalized intersections based on volume.
Dark Blue = Volume increase >20%
Light Blue = Volume increase > 10%
Yellow = Unsignalized intersection with delay > 150s. Capped at 150s
Gold = Unsignalized intersection with missing delay. Assigned value based on HCM LOS
A = 10s
B = 15s
C = 25s
D = 35s
E = 50 s
F or worse = 80s
Pink = Not analyzed or calculated.. Assumed same as No Action.

Children's Hospital DPIR - (819 Beacon Street)

2012 Existing

K Factor	10%	factors peak hour vehicle volumes to daily volumes
Peak hr delay to daily Factor (8hr/day)	33%	Factors peak hour delay to daily delay
Daily delay to annual Factor (6 days/wk, 52 wk/yr)	85%	factors peak daily delay to annual delay

Intersection	Average Peak Delay time (s)	Traffic Volume (adt)	Idle MOBILE6 VOC (g/hr)	VOC (lb/day)	VOC (tpy)	Idle MOBILE6 NOX (g/hr)	NOX (lb/day)	NOX (tpy)	Idle MOBILE6 CO2 (g/hr)	CO2 (lb/day)	CO2 (tpy)
2. Beacon Street & Park Drive	52.90	27950	5.530	1.67	0.26	3.398	1.03	0.160	1403.250	423.53	66.071
6. Beacon S, Mountfort St, & Maitland St	1.80	15450	5.530	0.03	0.00	3.398	0.02	0.003	1403.250	7.97	1.243
7. Riverway & Park Drive	18.05	21200	5.530	0.43	0.07	3.398	0.27	0.041	1403.250	109.61	17.100
8. Riverway & Park Drive	4.65	15750	5.530	0.08	0.01	3.398	0.05	0.008	1403.250	20.98	3.273
9. Park Dr. & Park Drive	6.40	18250	5.530	0.13	0.02	3.398	0.08	0.013	1403.250	33.46	5.219
10. Brookline Avenue, Riverway & Fenway	24.50	33650	5.530	0.93	0.15	3.398	0.57	0.089	1403.250	236.16	36.840
11. B rookline Avenue, Park Drive & Boylston Street	33.80	39250	5.530	1.50	0.23	3.398	0.92	0.144	1403.250	380.02	59.283
12. Brookline Avenue , Fullerton Street, & Kilmarnock Street	25.10	12600	5.530	0.36	0.06	3.398	0.22	0.034	1403.250	90.59	14.132
14. Beacon Street, Brookline Ave, Commonwealth Ave, & Deerfield St.	53.10	32350	5.530	1.94	0.30	3.398	1.19	0.186	1403.250	492.06	76.761
15. Riverway Ext. & Park Drive	4.50	8110	5.530	0.04	0.01	3.398	0.03	0.004	1403.250	10.45	1.631
1. Park Drive & Mountfort St.	10.65	11250	5.530	0.14	0.02	3.398	0.08	0.013	1403.250	34.32	5.354
3. Beacon St. & Aberdeen St	0.25	14950	5.530	0.00	0.00	3.398	0.00	0.000	1403.250	1.07	0.167
4. Beacon St, Arundel St, & Miner St	2.60	15600	5.530	0.05	0.01	3.398	0.03	0.004	1403.250	11.62	1.812
5. Beacon St & Munson St	0.15	14700	5.530	0.00	0.00	3.398	0.00	0.000	1403.250	0.63	0.099
13. Brookline Ave & Overland St.	1.95	8350	5.530	0.02	0.00	3.398	0.01	0.002	1403.250	4.66	0.728
Totals	hrs	600.3032		7.32	1.14		4.50	0.70		1857.13	289.71

Children's Hospital DPIR - (819 Beacon Street)

2022 No Build

K Factor	10%	factors peak hour vehicle volumes to daily volumes
Peak hr delay to daily Factor (8hr/day)	33%	Factors peak hour delay to daily delay
Daily delay to annual Factor (6 days/wk, 52 wk/yr)	85%	factors peak daily delay to annual delay

Intersection	Average Peak Delay time (s)	Traffic Volume (adt)	Idle MOBILE6 VOC (g/hr)	VOC (lb/day)	VOC (tpy)	Idle MOBILE6 NOX (g/hr)	NOX (lb/day)	NOX (tpy)	Idle MOBILE6 CO2 (g/hr)	CO2 (lb/day)	CO2 (tpy)
2. Beacon Street & Park Drive	45.10	30950	3.580	1.02	0.16	1.065	0.30	0.047	1423.400	405.58	63.271
6. Beacon S, Mountfort St, & Maitland St	19.75	19130	3.580	0.28	0.04	1.065	0.08	0.013	1423.400	109.78	17.126
7. Riverway & Park Drive	88.00	26410	3.580	1.70	0.26	1.065	0.51	0.079	1423.400	675.29	105.345
8. Riverway & Park Drive	26.90	17680	3.580	0.35	0.05	1.065	0.10	0.016	1423.400	138.19	21.558
9. Park Dr. & Park Drive	14.80	21920	3.580	0.24	0.04	1.065	0.07	0.011	1423.400	94.26	14.705
10. Brookline Avenue, Riverway & Fenway	24.75	39840	3.580	0.72	0.11	1.065	0.21	0.033	1423.400	286.51	44.695
11. B rookline Avenue, Park Drive & Boylston Street	81.45	46790	3.580	2.79	0.43	1.065	0.83	0.129	1423.400	1107.35	172.746
12. Brookline Avenue , Fullerton Street, & Kilmarnock Street	27.80	16750	3.580	0.34	0.05	1.065	0.10	0.016	1423.400	135.30	21.107
14. Beacon Street, Brookline Ave, Commonwealth Ave, & Deerfield St.	86.90	37660	3.580	2.39	0.37	1.065	0.71	0.111	1423.400	950.91	148.342
15. Riverway Ext. & Park Drive	4.50	8110	3.580	0.03	0.00	1.065	0.01	0.001	1423.400	10.60	1.654
1. Park Drive & Mountfort St.	6.60	13060	3.580	0.06	0.01	1.065	0.02	0.003	1423.400	25.05	3.907
3. Beacon St. & Aberdeen St	0.30	16580	3.580	0.00	0.00	1.065	0.00	0.000	1423.400	1.45	0.225
4. Beacon St, Arundel St, & Miner St	2.65	17330	3.580	0.03	0.01	1.065	0.01	0.002	1423.400	13.34	2.082
5. Beacon St & Munson St	0.15	16320	3.580	0.00	0.00	1.065	0.00	0.000	1423.400	0.71	0.111
13. Brookline Ave & Overland St.	13.90	11100	3.580	0.11	0.02	1.065	0.03	0.005	1423.400	44.83	6.994
Totals	hrs	1274.395		10.06	1.57		2.99	0.47		3999.15	623.87

Children's Hospital DPIR - (819 Beacon Street)
2022 Build

K Factor	10%	factors peak hour vehicle volumes to daily volumes
Peak hr delay to daily Factor (8hr/day)	33%	Factors peak hour delay to daily delay
Daily delay to annual Factor (6 days/wk, 52 wk/yr)	85%	factors peak daily delay to annual delay

Intersection	Average Peak Delay time (s)	Traffic Volume (adt)	Idle MOBILE6 VOC (g/hr)	VOC (lb/day)	VOC (tpy)	Idle MOBILE6 NOX (g/hr)	NOX (lb/day)	NOX (tpy)	Idle MOBILE6 CO2 (g/hr)	CO2 (lb/day)	CO2 (tpy)
2. Beacon Street & Park Drive	46.90	31450	3.580	1.08	0.17	1.065	0.32	0.050	1423.400	428.58	66.859
6. Beacon S, Mountfort St, & Maitland St	30.85	20030	3.580	0.45	0.07	1.065	0.13	0.021	1423.400	179.55	28.009
7. Riverway & Park Drive	102.25	27000	3.580	2.02	0.31	1.065	0.60	0.094	1423.400	802.17	125.139
8. Riverway & Park Drive	26.80	17720	3.580	0.35	0.05	1.065	0.10	0.016	1423.400	137.99	21.526
9. Park Dr. & Park Drive	15.45	22140	3.580	0.25	0.04	1.065	0.07	0.012	1423.400	99.39	15.505
10. Brookline Avenue, Riverway & Fenway	24.90	39960	3.580	0.73	0.11	1.065	0.22	0.034	1423.400	289.11	45.101
11. B rookline Avenue, Park Drive & Boylston Street	85.50	47040	3.580	2.94	0.46	1.065	0.87	0.136	1423.400	1168.62	182.305
12. Brookline Avenue , Fullerton Street, & Kilmarnock Street	28.10	16990	3.580	0.35	0.05	1.065	0.10	0.016	1423.400	138.72	21.640
14. Beacon Street, Brookline Ave, Commonwealth Ave, & Deerfield St.	91.40	38180	3.580	2.55	0.40	1.065	0.76	0.118	1423.400	1013.96	158.178
15. Riverway Ext. & Park Drive	4.60	8190	3.580	0.03	0.00	1.065	0.01	0.001	1423.400	10.95	1.708
1. Park Drive & Mountfort St.	6.75	13180	3.580	0.07	0.01	1.065	0.02	0.003	1423.400	25.85	4.033
3. Beacon St. & Aberdeen St	0.30	17100	3.580	0.00	0.00	1.065	0.00	0.000	1423.400	1.49	0.233
4. Beacon St, Arundel St, & Miner St	2.95	17830	3.580	0.04	0.01	1.065	0.01	0.002	1423.400	15.28	2.384
5. Beacon St & Munson St	0.30	16870	3.580	0.00	0.00	1.065	0.00	0.000	1423.400	1.47	0.229
13. Brookline Ave & Overland St.	23.90	11480	3.580	0.20	0.03	1.065	0.06	0.009	1423.400	79.72	12.437
Totals	hrs	1399.855		11.05	1.72		3.29	0.51		4392.85	685.28

Children's Hospital (CCB)

Roads

	VOC lbs/day	VOC tons/yr	NOx lbs/day	NOx tons/yr	CO2 lbs/day	CO2 tons/yr
2012 Existing	31.08	4.85	65.73	10.25	49699.53	7753.13
2022 No Build	20.65	3.22	22.69	3.54	56895.27	8875.66
delta from Existing	-10.43	-1.63	-43.04	-6.71	7195.74	1122.54
2022 Build	20.95	3.27	23.01	3.59	57704.27	9001.87
delta from No Build	0.30	0.05	0.32	0.05	809.00	126.20

Intersections

	VOC lbs/day	VOC tons/yr	NOx lbs/day	NOx tons/yr	CO2 lbs/day	CO2 tons/yr
2012 Existing	15.58	2.43	9.57	1.49	3953.09	616.68
2022 No Build	16.36	2.55	4.87	0.76	6504.83	1014.75
delta from Existing	0.78	0.12	-4.70	-0.73	2551.73	398.07
2022 Build	16.98	2.65	5.05	0.79	6752.44	1053.38
delta from No Build	0.62	0.10	0.19	0.03	247.61	38.63

Total

Pollutant	VOC lbs/day	VOC tons/yr	NOx lbs/day	NOx tons/yr	CO2 lbs/day	CO2 tons/yr
2012 Existing	46.66	7.28	75.30	11.75	53652.62	8369.81
2022 No Build	37.01	5.77	27.56	4.30	63400.10	9890.42
delta from Existing	-9.64	-1.50	-47.74	-7.45	9747.48	1520.61
2022 Build	37.93	5.92	28.07	4.38	64456.70	10055.25
delta from No Build	0.92	0.14	0.51	0.08	1056.60	164.83

Minor differences in sums and/or differences are due to rounding of individual values.
Pound per day to tons per year is based on an 85% factor to account for peak daily to annual data.

Children's Hospital (CCB)

	Case 1
	2022
	Build minus No Action
Net VMT, miles/day	639.5
Roadway GHG, tpy	126.2
Net Delay, hrs/day	78.9
Intersection GHG, tpy	38.6
Net GHG Emissions, tpy	164.8
Percent Change	---

Children's Hospital (Children's Clinical Bldg.)

Regional Mesoscale Emissions Analysis - Roadway Emissions
Link Data

Link Number	Roadway Segment	Link Distance (miles)	Average Speed (mph)	AM Peak Hour Volume 2012 Existing	AM Peak Hour Volume 2022 No-Build	AM Peak Hour Volume 2022 Build	PM Peak Hour Volume 2012 Existing	PM Peak Hour Volume 2022 No-Build	PM Peak Hour Volume 2022 Build	K-factor	Average Daily Traffic (ADT) Volumes 2012 Existing	Average Daily Traffic (ADT) Volumes 2022 No-Build	Average Daily Traffic (ADT) Volumes 2022 Build
1	Longwood Ave (W of Riverway)	0.14	30	1,030	1,145	1,149	1,070	1,094	1,097	10.0%	10,700	11,450	11,490
2	Riverway (N of Longwood)	0.15	30	1,785	1,962	1,962	1,835	2,089	2,089	10.0%	18,350	20,890	20,890
3	Longwood Ave (Riverway to Masco/Pilgrim)	0.10	30	795	931	936	655	882	885	10.0%	7,950	9,310	9,360
4	Pilgrim Rd	0.08	30	110	289	289	135	323	325	10.0%	1,350	3,230	3,250
5	Masco Dr.	0.03	30	240	463	463	185	421	421	10.0%	2,400	4,630	4,630
6	Longwood Ave (Pilgrim to Brookline)	0.07	30	700	1,038	1,043	585	993	997	10.0%	7,000	10,380	10,430
7	Brookline Ave (N of Longwood)	0.06	30	1,630	2,151	2,194	1,585	2,136	2,176	10.0%	16,300	21,510	21,940
8	Longwood Ave (Brookline to Binney)	0.07	30	905	1,009	1,072	1,045	1,142	1,204	10.0%	10,450	11,420	12,040
9	Binney St (N of Longwood)	0.13	30	410	414	414	355	348	353	10.0%	4,100	4,140	4,140
10	Longwood Ave (Binney to Blackfan)	0.06	30	875	1,001	1,068	925	1,028	1,091	10.0%	9,250	10,280	10,910
11	Main Entrance	0.06	30	155	163	226	250	262	320	10.0%	2,500	2,620	3,200
12	Blackfan Circle	0.25	30	230	237	283	430	468	530	10.0%	4,300	4,680	5,300
13	Longwood (Blackfan to Ave Louis Pasteur)	0.11	30	770	765	884	790	878	913	10.0%	7,900	8,780	9,130
14	Louis Pasteur (Longwood to Blackfan)	0.17	30	425	445	455	325	360	372	10.0%	4,250	4,450	4,550
15	Louis Pasteur (N of Blackfan)	0.08	30	790	836	860	495	508	534	10.0%	7,900	8,360	8,600
16	Longwood (Louis Pasteur to Palace)	0.13	30	730	817	845	780	847	890	10.0%	7,800	8,470	8,900
17	Palace Rd	0.07	30	245	258	258	85	90	90	10.0%	2,450	2,580	2,580
18	Longwood (Palace to Huntington)	0.04	30	930	816	1,056	785	870	896	10.0%	9,300	8,700	10,560
19	Huntington (N of Longwood)	0.13	30	1,570	1,678	1,687	1,630	1,734	1,743	10.0%	16,300	17,340	17,430
20	Huntington (S of Longwood)	0.26	30	1,270	1,338	1,338	1,350	1,420	1,420	10.0%	13,500	14,200	14,200
21	Longwood (E of Huntington)	0.03	30	595	648	667	600	607	634	10.0%	6,000	6,480	6,670
22	Riverway (Longwood to Brookline)	0.29	30	1,845	1,966	1,966	1,845	1,862	1,862	10.0%	18,450	19,660	19,660
23	Deaconess (W of Brookline)	0.06	30	125	130	130	150	179	179	10.0%	1,500	1,790	1,790
24	Jimmy Fund Way	0.08	30	200	211	211	355	373	373	10.0%	3,550	3,730	3,730
25	Childrens Way	0.06	30	35	37	37	85	88	88	10.0%	850	880	880
26	Brookline Ave (Deaconess to Longwood)	0.08	30	1,270	1,604	1,622	1,340	1,654	1,670	10.0%	13,400	16,540	16,700
27	Binney St (Childrens Way to Longwood)	0.08	30	355	399	402	310	356	359	10.0%	3,550	3,990	4,020
28	Brookline Ave (Francis to Deaconess)	0.08	30	1,330	1,665	1,682	1,525	1,808	1,825	10.0%	15,250	18,080	18,250
29	Francis St (W of Brookline)	0.06	30	285	301	301	280	295	295	10.0%	2,850	3,010	3,010
30	Francis St (Brookline to Binney)	0.08	30	635	667	670	815	857	859	10.0%	8,150	8,570	8,590
31	Francis St (E of Binney)	0.14	30	720	756	756	660	695	695	10.0%	7,200	7,560	7,560
32	Binney St (Childrens Way to Shattuck)	0.03	30	445	493	496	315	360	362	10.0%	4,450	4,930	4,960
33	Shattuck St	0.13	30	110	123	123	120	126	126	10.0%	1,200	1,260	1,260
34	Binney St (Francis to Shattuck)	0.06	30	540	594	598	455	509	511	10.0%	5,400	5,940	5,980
35	Binney St (S of Francis)	0.04	30	180	216	216	170	209	209	10.0%	1,800	2,160	2,160
36	Brookline Ave (Francis to Riverway)	0.06	30	1,385	1,606	1,626	1,680	2,070	2,090	10.0%	16,800	20,700	20,900
37	Brookline (S of Riverway)	0.25	30	990	1,254	1,260	1,130	1,449	1,456	10.0%	11,300	14,490	14,560
38	Riverway (S of Brookline)	0.25	30	1,880	2,186	2,200	2,270	2,586	2,598	10.0%	22,700	25,860	25,980

Children's Hospital (Children's Clinical Bldg.)

Regional Mesoscale Emissions Analysis - Roadway Emissions
2012 Existing

	Link	Daily Average Volumes	Miles Per Link	Miles Traveled	Vehicle Speed (mph)	Avg Idle Time (hr/veh)	Idle M6.2 VOC (g/hr)	M6.2 VOC (g/mile)	lbs/day	tons/year	Idle M6.2 NOX (g/hr)	M6.2 NOX (g/mile)	lbs/day	tons/year	Idle M6.2 CO2 (g/hr)	M6.2 CO2 (g/mile)	lbs/day	tons/year
1	**Longwood Ave (W of Riverway)**	10,700	0.14	1469.2	30	0.02	5.530	0.341	1.141	0.178	3.398	0.739	2.416	0.377	1403.250	561.300	1827.302	285.059
2	**Riverway (N of Longwood)**	18,350	0.15	2703.8	30	0.02	5.530	0.341	2.095	0.327	3.398	0.739	4.443	0.693	1403.250	561.300	3361.672	524.421
3	**Longwood Ave (Riverway to Masco/Pilgrim)**	7,950	0.10	779.9	30	0.02	5.530	0.341	0.613	0.096	3.398	0.739	1.287	0.201	1403.250	561.300	971.981	151.629
4	**Pilgrim Rd**	1,350	0.08	111.2	30	0.02	5.530	0.341	0.088	0.014	3.398	0.739	0.184	0.029	1403.250	561.300	138.793	21.652
5	**Masco Dr.**	2,400	0.03	72.7	30	0.02	5.530	0.341	0.063	0.010	3.398	0.739	0.123	0.019	1403.250	561.300	92.060	14.361
6	**Longwood Ave (Pilgrim to Brookline)**	7,000	0.07	472.0	30	0.02	5.530	0.341	0.379	0.059	3.398	0.739	0.784	0.122	1403.250	561.300	590.060	92.049
7	**Brookline Ave (N of Longwood)**	16,300	0.06	1049.6	30	0.02	5.530	0.341	0.844	0.132	3.398	0.739	1.744	0.272	1403.250	561.300	1312.873	204.808
8	**Longwood Ave (Brookline to Binney)**	10,450	0.07	752.1	30	0.02	5.530	0.341	0.601	0.094	3.398	0.739	1.247	0.195	1403.250	561.300	939.654	146.586
9	**Binney St (N of Longwood)**	4,100	0.13	532.7	30	0.02	5.530	0.341	0.414	0.065	3.398	0.739	0.876	0.137	1403.250	561.300	662.706	103.382
10	**Longwood Ave (Binney to Blackfan)**	9,250	0.06	546.6	30	0.02	5.530	0.341	0.442	0.069	3.398	0.739	0.910	0.142	1403.250	561.300	684.334	106.756
11	**Main Entrance**	2,500	0.06	159.1	30	0.02	5.530	0.341	0.128	0.020	3.398	0.739	0.264	0.041	1403.250	561.300	199.017	31.047
12	**Blackfan Circle**	4,300	0.25	1071.7	30	0.02	5.530	0.341	0.820	0.128	3.398	0.739	1.755	0.274	1403.250	561.300	1329.935	207.470
13	**Longwood (Blackfan to Ave Louis Pasteur)**	7,900	0.11	879.8	30	0.02	5.530	0.341	0.688	0.107	3.398	0.739	1.450	0.226	1403.250	561.300	1095.473	170.894
14	**Louis Pasteur (Longwood to Blackfan)**	4,250	0.17	735.7	30	0.02	5.530	0.341	0.567	0.089	3.398	0.739	1.207	0.188	1403.250	561.300	914.053	142.592
15	**Louis Pasteur (N of Blackfan)**	7,900	0.08	644.9	30	0.02	5.530	0.341	0.512	0.080	3.398	0.739	1.067	0.166	1403.250	561.300	804.787	125.547
16	**Longwood (Louis Pasteur to Palace)**	7,800	0.13	1041.5	30	0.02	5.530	0.341	0.809	0.126	3.398	0.739	1.713	0.267	1403.250	561.300	1295.491	202.097
17	**Palace Rd**	2,450	0.07	162.9	30	0.02	5.530	0.341	0.131	0.020	3.398	0.739	0.270	0.042	1403.250	561.300	203.650	31.769
18	**Longwood (Palace to Huntington)**	9,300	0.04	384.0	30	0.02	5.530	0.341	0.320	0.050	3.398	0.739	0.645	0.101	1403.250	561.300	483.149	75.371
19	**Huntington (N of Longwood)**	16,300	0.13	2046.8	30	0.02	5.530	0.341	1.594	0.249	3.398	0.739	3.369	0.525	1403.250	561.300	2546.795	397.300
20	**Huntington (S of Longwood)**	13,500	0.26	3577.0	30	0.02	5.530	0.341	2.735	0.427	3.398	0.739	5.856	0.914	1403.250	561.300	4437.986	692.326
21	**Longwood (E of Huntington)**	6,000	0.03	205.7	30	0.02	5.530	0.341	0.175	0.027	3.398	0.739	0.348	0.054	1403.250	561.300	259.679	40.510
22	**Riverway (Longwood to Brookline)**	18,450	0.29	5335.8	30	0.02	5.530	0.341	4.074	0.636	3.398	0.739	8.732	1.362	1403.250	561.300	6618.730	1032.522
23	**Deaconess (W of Brookline)**	1,500	0.06	95.2	30	0.02	5.530	0.341	0.077	0.012	3.398	0.739	0.158	0.025	1403.250	561.300	119.059	18.573
24	**Jimmy Fund Way**	3,550	0.08	276.3	30	0.02	5.530	0.341	0.220	0.034	3.398	0.739	0.458	0.071	1403.250	561.300	345.005	53.821
25	**Childrens Way**	850	0.06	54.3	30	0.02	5.530	0.341	0.044	0.007	3.398	0.739	0.090	0.014	1403.250	561.300	67.865	10.587
26	**Brookline Ave (Deaconess to Longwood)**	13,400	0.08	1131.9	30	0.02	5.530	0.341	0.896	0.140	3.398	0.739	1.872	0.292	1403.250	561.300	1412.190	220.302
27	**Binney St (Childrens Way to Longwood)**	3,550	0.08	294.5	30	0.02	5.530	0.341	0.233	0.036	3.398	0.739	0.487	0.076	1403.250	561.300	367.469	57.325
28	**Brookline Ave (Francis to Deaconess)**	15,250	0.08	1291.1	30	0.02	5.530	0.341	1.022	0.159	3.398	0.739	2.135	0.333	1403.250	561.300	1610.731	251.274
29	**Francis St (W of Brookline)**	2,850	0.06	181.4	30	0.02	5.530	0.341	0.146	0.023	3.398	0.739	0.301	0.047	1403.250	561.300	226.880	35.393
30	**Francis St (Brookline to Binney)**	8,150	0.08	620.5	30	0.02	5.530	0.341	0.494	0.077	3.398	0.739	1.028	0.160	1403.250	561.300	774.862	120.879
31	**Francis St (E of Binney)**	7,200	0.14	1028.2	30	0.02	5.530	0.341	0.797	0.124	3.398	0.739	1.690	0.264	1403.250	561.300	1278.522	199.449
32	**Binney St (Childrens Way to Shattuck)**	4,450	0.03	128.1	30	0.02	5.530	0.341	0.111	0.017	3.398	0.739	0.218	0.034	1403.250	561.300	162.350	25.327
33	**Shattuck St**	1,200	0.13	157.5	30	0.02	5.530	0.341	0.122	0.019	3.398	0.739	0.259	0.040	1403.250	561.300	195.931	30.565
34	**Binney St (Francis to Shattuck)**	5,400	0.06	324.2	30	0.02	5.530	0.341	0.262	0.041	3.398	0.739	0.539	0.084	1403.250	561.300	405.831	63.310
35	**Binney St (S of Francis)**	1,800	0.04	77.4	30	0.02	5.530	0.341	0.064	0.010	3.398	0.739	0.130	0.020	1403.250	561.300	97.309	15.180
36	**Brookline Ave (Francis to Riverway)**	16,800	0.06	1053.2	30	0.02	5.530	0.341	0.849	0.132	3.398	0.739	1.751	0.273	1403.250	561.300	1317.709	205.563
37	**Brookline (S of Riverway)**	11,300	0.25	2825.0	30	0.02	5.530	0.341	2.162	0.337	3.398	0.739	4.626	0.722	1403.250	561.300	3505.538	546.864
38	**Riverway (S of Brookline)**	22,700	0.25	5675.0	30	0.02	5.530	0.341	4.343	0.678	3.398	0.739	9.293	1.450	1403.250	561.300	7042.099	1098.567
	Total	308450.000	4.088	39948.295					31.077	4.848			65.727	10.253			49699.529	7753.127

Notes: Daily to annual factor (6 days/week * 52 weeks per year / 365 days per year) = 85%

Children's Hospital (Children's Clinical Bldg.)

Regional Mesoscale Emissions Analysis - Roadway Emissions
2022 No Build

	Link	Daily Average Volumes	Miles Per Link	Miles Traveled	Vehicle Speed (mph)	Avg Idle Time (hr/veh)	Idle M6.2 VOC (g/hr)	M6.2 VOC (g/mile)	lbs/day	tons/year	Idle M6.2 NOX (g/hr)	M6.2 NOX (g/mile)	lbs/day	tons/year	Idle M6.2 CO2 (g/hr)	M6.2 CO2 (g/mile)	lbs/day	tons/year
1	**Longwood Ave (W of Riverway)**	11,450	0.14	1572.2	30	0.02	3.580	0.200	0.718	0.112	1.065	0.226	0.791	0.123	1423.450	569.380	1983.532	309.431
2	**Riverway (N of Longwood)**	20,890	0.15	3078.1	30	0.02	3.580	0.200	1.403	0.219	1.065	0.226	1.547	0.241	1423.450	569.380	3882.083	605.605
3	**Longwood Ave (Riverway to Masco/Pilgrim)**	9,310	0.10	913.4	30	0.02	3.580	0.200	0.423	0.066	1.065	0.226	0.461	0.072	1423.450	569.380	1154.643	180.124
4	**Pilgrim Rd**	3,230	0.08	266.1	30	0.02	3.580	0.200	0.124	0.019	1.065	0.226	0.135	0.021	1423.450	569.380	336.854	52.549
5	**Masco Dr.**	4,630	0.03	140.3	30	0.02	3.580	0.200	0.072	0.011	1.065	0.226	0.073	0.011	1423.450	569.380	180.155	28.104
6	**Longwood Ave (Pilgrim to Brookline)**	10,380	0.07	699.9	30	0.02	3.580	0.200	0.331	0.052	1.065	0.226	0.355	0.055	1423.450	569.380	887.569	138.461
7	**Brookline Ave (N of Longwood)**	21,510	0.06	1385.1	30	0.02	3.580	0.200	0.658	0.103	1.065	0.226	0.704	0.110	1423.450	569.380	1757.449	274.162
8	**Longwood Ave (Brookline to Binney)**	11,420	0.07	821.9	30	0.02	3.580	0.200	0.387	0.060	1.065	0.226	0.417	0.065	1423.450	569.380	1041.658	162.499
9	**Binney St (N of Longwood)**	4,140	0.13	537.9	30	0.02	3.580	0.200	0.246	0.038	1.065	0.226	0.271	0.042	1423.450	569.380	678.804	105.893
10	**Longwood Ave (Binney to Blackfan)**	10,280	0.06	607.5	30	0.02	3.580	0.200	0.290	0.045	1.065	0.226	0.309	0.048	1423.450	569.380	771.484	120.351
11	**Main Entrance**	2,620	0.06	166.7	30	0.02	3.580	0.200	0.079	0.012	1.065	0.226	0.085	0.013	1423.450	569.380	211.572	33.005
12	**Blackfan Circle**	4,680	0.25	1166.5	30	0.02	3.580	0.200	0.525	0.082	1.065	0.226	0.584	0.091	1423.450	569.380	1468.300	229.055
13	**Longwood (Blackfan to Ave Louis Pasteur)**	8,780	0.11	977.8	30	0.02	3.580	0.200	0.450	0.070	1.065	0.226	0.493	0.077	1423.450	569.380	1235.027	192.664
14	**Louis Pasteur (Longwood to Blackfan)**	4,450	0.17	770.3	30	0.02	3.580	0.200	0.349	0.055	1.065	0.226	0.387	0.060	1423.450	569.380	970.845	151.452
15	**Louis Pasteur (N of Blackfan)**	8,360	0.08	682.4	30	0.02	3.580	0.200	0.319	0.050	1.065	0.226	0.345	0.054	1423.450	569.380	863.908	134.770
16	**Longwood (Louis Pasteur to Palace)**	8,470	0.13	1130.9	30	0.02	3.580	0.200	0.517	0.081	1.065	0.226	0.569	0.089	1423.450	569.380	1427.021	222.615
17	**Palace Rd**	2,580	0.07	171.5	30	0.02	3.580	0.200	0.081	0.013	1.065	0.226	0.087	0.014	1423.450	569.380	217.543	33.937
18	**Longwood (Palace to Huntington)**	8,700	0.04	359.2	30	0.02	3.580	0.200	0.177	0.028	1.065	0.226	0.185	0.029	1423.450	569.380	458.484	71.524
19	**Huntington (N of Longwood)**	17,340	0.13	2177.4	30	0.02	3.580	0.200	0.998	0.156	1.065	0.226	1.096	0.171	1423.450	569.380	2748.291	428.733
20	**Huntington (S of Longwood)**	14,200	0.26	3762.5	30	0.02	3.580	0.200	1.690	0.264	1.065	0.226	1.884	0.294	1423.450	569.380	4735.301	738.707
21	**Longwood (E of Huntington)**	6,480	0.03	222.1	30	0.02	3.580	0.200	0.112	0.017	1.065	0.226	0.115	0.018	1423.450	569.380	284.491	44.381
22	**Riverway (Longwood to Brookline)**	19,660	0.29	5685.8	30	0.02	3.580	0.200	2.550	0.398	1.065	0.226	2.846	0.444	1423.450	569.380	7154.330	1116.075
23	**Deaconess (W of Brookline)**	1,790	0.06	113.6	30	0.02	3.580	0.200	0.054	0.008	1.065	0.226	0.058	0.009	1423.450	569.380	144.122	22.483
24	**Jimmy Fund Way**	3,730	0.08	290.3	30	0.02	3.580	0.200	0.136	0.021	1.065	0.226	0.147	0.023	1423.450	569.380	367.716	57.364
25	**Childrens Way**	880	0.06	56.2	30	0.02	3.580	0.200	0.027	0.004	1.065	0.226	0.029	0.004	1423.450	569.380	71.272	11.118
26	**Brookline Ave (Deaconess to Longwood)**	16,540	0.08	1397.1	30	0.02	3.580	0.200	0.652	0.102	1.065	0.226	0.707	0.110	1423.450	569.380	1768.198	275.839
27	**Binney St (Childrens Way to Longwood)**	3,990	0.08	331.0	30	0.02	3.580	0.200	0.155	0.024	1.065	0.226	0.168	0.026	1423.450	569.380	418.960	65.358
28	**Brookline Ave (Francis to Deaconess)**	18,080	0.08	1530.6	30	0.02	3.580	0.200	0.715	0.111	1.065	0.226	0.774	0.121	1423.450	569.380	1937.130	302.192
29	**Francis St (W of Brookline)**	3,010	0.06	191.5	30	0.02	3.580	0.200	0.091	0.014	1.065	0.226	0.097	0.015	1423.450	569.380	243.066	37.918
30	**Francis St (Brookline to Binney)**	8,570	0.08	652.5	30	0.02	3.580	0.200	0.306	0.048	1.065	0.226	0.331	0.052	1423.450	569.380	826.523	128.938
31	**Francis St (E of Binney)**	7,560	0.14	1079.6	30	0.02	3.580	0.200	0.493	0.077	1.065	0.226	0.543	0.085	1423.450	569.380	1361.773	212.437
32	**Binney St (Childrens Way to Shattuck)**	4,930	0.03	141.9	30	0.02	3.580	0.200	0.073	0.011	1.065	0.226	0.074	0.012	1423.450	569.380	182.451	28.462
33	**Shattuck St**	1,260	0.13	165.4	30	0.02	3.580	0.200	0.076	0.012	1.065	0.226	0.083	0.013	1423.450	569.380	208.689	32.556
34	**Binney St (Francis to Shattuck)**	5,940	0.06	356.6	30	0.02	3.580	0.200	0.170	0.027	1.065	0.226	0.182	0.028	1423.450	569.380	452.840	70.643
35	**Binney St (S of Francis)**	2,160	0.04	92.9	30	0.02	3.580	0.200	0.046	0.007	1.065	0.226	0.048	0.007	1423.450	569.380	118.452	18.479
36	**Brookline Ave (Francis to Riverway)**	20,700	0.06	1297.7	30	0.02	3.580	0.200	0.618	0.096	1.065	0.226	0.660	0.103	1423.450	569.380	1646.977	256.928
37	**Brookline (S of Riverway)**	14,490	0.25	3622.5	30	0.02	3.580	0.200	1.629	0.254	1.065	0.226	1.814	0.283	1423.450	569.380	4559.863	711.339
38	**Riverway (S of Brookline)**	25,860	0.25	6465.0	30	0.02	3.580	0.200	2.907	0.454	1.065	0.226	3.238	0.505	1423.450	569.380	8137.893	1269.511
	Total	353050.000	4.088	45079.786					20.651	3.222			22.691	3.540			56895.270	8875.662

Notes: Daily to annual factor (6 days/week * 52 weeks per year / 365 days per year) = 85%

Children's Hospital (Children's Clinical Bldg.)

Regional Mesoscale Emissions Analysis - Roadway Emissions
2022 Build

	Link	Daily Average Volumes	Miles Per Link	Miles Traveled	Vehicle Speed (mph)	Avg Idle Time (hr/veh)	Idle M6.2 VOC (g/hr)	M6.2 VOC (g/mile)	lbs/day	tons/year	Idle M6.2 NOX (g/hr)	M6.2 NOX (g/mile)	lbs/day	tons/year	Idle M6.2 CO2 (g/hr)	M6.2 CO2 (g/mile)	lbs/day	tons/year
1	**Longwood Ave (W of Riverway)**	11,490	0.14	1577.7	30	0.02	3.580	0.200	0.721	0.112	1.065	0.226	0.794	0.124	1423.450	569.380	1990.461	310.512
2	**Riverway (N of Longwood)**	20,890	0.15	3078.1	30	0.02	3.580	0.200	1.403	0.219	1.065	0.226	1.547	0.241	1423.450	569.380	3882.083	605.605
3	**Longwood Ave (Riverway to Masco/Pilgrim)**	9,360	0.10	918.3	30	0.02	3.580	0.200	0.425	0.066	1.065	0.226	0.464	0.072	1423.450	569.380	1160.844	181.092
4	**Pilgrim Rd**	3,250	0.08	267.8	30	0.02	3.580	0.200	0.125	0.020	1.065	0.226	0.136	0.021	1423.450	569.380	338.940	52.875
5	**Masco Dr.**	4,630	0.03	140.3	30	0.02	3.580	0.200	0.072	0.011	1.065	0.226	0.073	0.011	1423.450	569.380	180.155	28.104
6	**Longwood Ave (Pilgrim to Brookline)**	10,430	0.07	703.2	30	0.02	3.580	0.200	0.333	0.052	1.065	0.226	0.357	0.056	1423.450	569.380	891.845	139.128
7	**Brookline Ave (N of Longwood)**	21,940	0.06	1412.8	30	0.02	3.580	0.200	0.671	0.105	1.065	0.226	0.718	0.112	1423.450	569.380	1792.581	279.643
8	**Longwood Ave (Brookline to Binney)**	12,040	0.07	866.5	30	0.02	3.580	0.200	0.408	0.064	1.065	0.226	0.440	0.069	1423.450	569.380	1098.210	171.321
9	**Binney St (N of Longwood)**	4,140	0.13	537.9	30	0.02	3.580	0.200	0.246	0.038	1.065	0.226	0.271	0.042	1423.450	569.380	678.804	105.893
10	**Longwood Ave (Binney to Blackfan)**	10,910	0.06	644.7	30	0.02	3.580	0.200	0.308	0.048	1.065	0.226	0.328	0.051	1423.450	569.380	818.763	127.727
11	**Main Entrance**	3,200	0.06	203.6	30	0.02	3.580	0.200	0.097	0.015	1.065	0.226	0.104	0.016	1423.450	569.380	258.409	40.312
12	**Blackfan Circle**	5,300	0.25	1321.0	30	0.02	3.580	0.200	0.594	0.093	1.065	0.226	0.662	0.103	1423.450	569.380	1662.819	259.400
13	**Longwood (Blackfan to Ave Louis Pasteur)**	9,130	0.11	1016.8	30	0.02	3.580	0.200	0.468	0.073	1.065	0.226	0.513	0.080	1423.450	569.380	1284.259	200.344
14	**Louis Pasteur (Longwood to Blackfan)**	4,550	0.17	787.6	30	0.02	3.580	0.200	0.357	0.056	1.065	0.226	0.395	0.062	1423.450	569.380	992.661	154.855
15	**Louis Pasteur (N of Blackfan)**	8,600	0.08	702.0	30	0.02	3.580	0.200	0.328	0.051	1.065	0.226	0.355	0.055	1423.450	569.380	888.709	138.639
16	**Longwood (Louis Pasteur to Palace)**	8,900	0.13	1188.4	30	0.02	3.580	0.200	0.543	0.085	1.065	0.226	0.598	0.093	1423.450	569.380	1499.467	233.917
17	**Palace Rd**	2,580	0.07	171.5	30	0.02	3.580	0.200	0.081	0.013	1.065	0.226	0.087	0.014	1423.450	569.380	217.543	33.937
18	**Longwood (Palace to Huntington)**	10,560	0.04	436.0	30	0.02	3.580	0.200	0.215	0.034	1.065	0.226	0.224	0.035	1423.450	569.380	556.505	86.815
19	**Huntington (N of Longwood)**	17,430	0.13	2188.7	30	0.02	3.580	0.200	1.003	0.157	1.065	0.226	1.102	0.172	1423.450	569.380	2762.555	430.959
20	**Huntington (S of Longwood)**	14,200	0.26	3762.5	30	0.02	3.580	0.200	1.690	0.264	1.065	0.226	1.884	0.294	1423.450	569.380	4735.301	738.707
21	**Longwood (E of Huntington)**	6,670	0.03	228.6	30	0.02	3.580	0.200	0.115	0.018	1.065	0.226	0.118	0.018	1423.450	569.380	292.832	45.682
22	**Riverway (Longwood to Brookline)**	19,660	0.29	5685.8	30	0.02	3.580	0.200	2.550	0.398	1.065	0.226	2.846	0.444	1423.450	569.380	7154.330	1116.075
23	**Deaconess (W of Brookline)**	1,790	0.06	113.6	30	0.02	3.580	0.200	0.054	0.008	1.065	0.226	0.058	0.009	1423.450	569.380	144.122	22.483
24	**Jimmy Fund Way**	3,730	0.08	290.3	30	0.02	3.580	0.200	0.136	0.021	1.065	0.226	0.147	0.023	1423.450	569.380	367.716	57.364
25	**Childrens Way**	880	0.06	56.2	30	0.02	3.580	0.200	0.027	0.004	1.065	0.226	0.029	0.004	1423.450	569.380	71.272	11.118
26	**Brookline Ave (Deaconess to Longwood)**	16,700	0.08	1410.6	30	0.02	3.580	0.200	0.659	0.103	1.065	0.226	0.714	0.111	1423.450	569.380	1785.303	278.507
27	**Binney St (Childrens Way to Longwood)**	4,020	0.08	333.5	30	0.02	3.580	0.200	0.156	0.024	1.065	0.226	0.169	0.026	1423.450	569.380	422.110	65.849
28	**Brookline Ave (Francis to Deaconess)**	18,250	0.08	1545.0	30	0.02	3.580	0.200	0.721	0.113	1.065	0.226	0.782	0.122	1423.450	569.380	1955.344	305.034
29	**Francis St (W of Brookline)**	3,010	0.06	191.5	30	0.02	3.580	0.200	0.091	0.014	1.065	0.226	0.097	0.015	1423.450	569.380	243.066	37.918
30	**Francis St (Brookline to Binney)**	8,590	0.08	654.0	30	0.02	3.580	0.200	0.307	0.048	1.065	0.226	0.331	0.052	1423.450	569.380	828.452	129.238
31	**Francis St (E of Binney)**	7,560	0.14	1079.6	30	0.02	3.580	0.200	0.493	0.077	1.065	0.226	0.543	0.085	1423.450	569.380	1361.773	212.437
32	**Binney St (Childrens Way to Shattuck)**	4,960	0.03	142.8	30	0.02	3.580	0.200	0.074	0.012	1.065	0.226	0.074	0.012	1423.450	569.380	183.562	28.636
33	**Shattuck St**	1,260	0.13	165.4	30	0.02	3.580	0.200	0.076	0.012	1.065	0.226	0.083	0.013	1423.450	569.380	208.689	32.556
34	**Binney St (Francis to Shattuck)**	5,980	0.06	359.0	30	0.02	3.580	0.200	0.171	0.027	1.065	0.226	0.183	0.029	1423.450	569.380	455.890	71.119
35	**Binney St (S of Francis)**	2,160	0.04	92.9	30	0.02	3.580	0.200	0.046	0.007	1.065	0.226	0.048	0.007	1423.450	569.380	118.452	18.479
36	**Brookline Ave (Francis to Riverway)**	20,900	0.06	1310.2	30	0.02	3.580	0.200	0.624	0.097	1.065	0.226	0.666	0.104	1423.450	569.380	1662.890	259.411
37	**Brookline (S of Riverway)**	14,560	0.25	3640.0	30	0.02	3.580	0.200	1.637	0.255	1.065	0.226	1.823	0.284	1423.450	569.380	4581.892	714.775
38	**Riverway (S of Brookline)**	25,980	0.25	6495.0	30	0.02	3.580	0.200	2.921	0.456	1.065	0.226	3.253	0.507	1423.450	569.380	8175.656	1275.402
	Total	360190.000	4.088	45719.305					20.949	3.268			23.014	3.590			57704.266	9001.865

Notes: Daily to annual factor (6 days/week * 52 weeks per year / 365 days per year) = 85%

Children's Hospital DPIR (CCB)	2012 Existing AM Peak			2012 Existing PM Peak		
Intersections (Signalized and *Unsignalized*)	LOS	Delay (Sec)	Traffic Volume	LOS	Delay (Sec)	Traffic Volume
1. Riverway & Longwood Avenue	E	56.0	2775	E	56.8	2830
2. Longwood Avenue & Pilgrim Road/MASCO	A	325.9	890	A	133.7	745
3. Brookline Avenue & Riverway	F	181.1	2890	F	97.1	3395
4. Brookline Avenue & Francis Street	D	54.5	1850	C	22.2	2095
5. Brookline Avenue & Deaconess/Jimmy Fund	F	100.9	1540	C	33.7	1725
6. Brookline Avenue & Longwood Avenue	D	40.5	2270	D	42.9	2320
10. Binney Street & Longwood Avenue	C	28.1	1295	D	36.3	1355
11. BCH Driveway/Blackfan Circle & Longwood Avenue	C	22.7	1065	C	27.9	1180
16. Huntington Avenue & Longwood Avenue	E	73.7	2015	C	33.9	1660
7. Binney Street & Francis Street	D	35.0	1095	D	35.0	1005
8. Binney Street & Shattuck Street	A	5.0	490	A	4.2	375
9. Binney Street & Jimmy Fund Way/BCH Driveway	B	11.5	560	A	9.8	495
12 Unnamed	A	1.6	780	A	9.6	700
13. Avenue Louis Pasteur & Longwood Ave	A	14.9	855	A	15.3	845
14. Avenue Louis Pasteur & Blackfan Circle	A	3.4	865	A	3.9	550
24 Riverway & Nessel Way	A	0.3	1922	A	0.4	1922
38. Palace Road & Longwood Ave	B	1.2	980	A	0.7	835

LOS is HCM value for signalized intersections and ICU value for unsignalized intersections.
Color Code:
Red = Signalized intersections at LOS D or worse.
Green = Top 3 signalized intersections based on volume.
Dark Blue = Volume increase >20%
Light Blue = Volume increase > 10%
Yellow = Unsignalized intersection with delay > 150s. Capped at 150s
Gold = Unsignalized intersection with missing delay. Assigned value based on HCM LOS
A = 10s
B = 15s
C = 25s
D = 35s
E = 50 s
F or worse = 80s
Pink = Not analyzed or calculated.. Assumed same as No Action.

Children's Hospital DPIR (CCB)	2022 No Action AM Peak			2022 No Action PM Peak		
Intersections (Signalized and *Unsignalized*)	LOS	Delay (Sec)	Traffic Volume	LOS	Delay (Sec)	Traffic Volume
1. Riverway & Longwood Avenue	F	108.8	3058	F	88.2	3203
2. Longwood Avenue & Pilgrim Road/MASCO	B	18.0	1329	D	52.8	1269
3. Brookline Avenue & Riverway	F	223.5	3462	F	177.4	4030
4. Brookline Avenue & Francis Street	E	78.9	2002	C	21.6	2282
5. Brookline Avenue & Deaconess/Jimmy Fund	F	255.4	1972	D	42.9	2174
6. Brookline Avenue & Longwood Avenue	F	105.2	2913	F	98.9	3012
10. Binney Street & Longwood Avenue	C	28.3	1424	C	30.6	1475
11. BCH Driveway/Blackfan Circle & Longwood Avenue	C	22.9	1170	C	29.8	1292
16. Huntington Avenue & Longwood Avenue	F	104.0	2167	D	40.7	1751
7. Binney Street & Francis Street	E	50.0	1177	D	35.0	1088
8. Binney Street & Shattuck Street	A	2.5	541	A	4.2	425
9. Binney Street & Jimmy Fund Way/BCH Driveway	B	12.5	615	B	10.5	545
12 Unnamed	A	1.6	874	A	10.1	776
13. Avenue Louis Pasteur & Longwood Ave	A	19.4	944	A	19.0	938
14. Avenue Louis Pasteur & Blackfan Circle	A	4.1	923	A	4.2	578
24 Riverway & Nessel Way	A	0.3	1922	A	0.4	1922
38. Palace Road & Longwood Ave	B	1.4	1081	A	0.7	922

LOS is HCM value for signalized intersections and ICU value for unsignalized intersections.
Color Code:
Red = Signalized intersections at LOS D or worse.
Green = Top 3 signalized intersections based on volume.
Dark Blue = Volume increase >20%
Light Blue = Volume increase > 10%
Yellow = Unsignalized intersection with delay > 150s. Capped at 150s
Gold = Unsignalized intersection with missing delay. Assigned value based on HCM LOS
A = 10s
B = 15s
C = 25s
D = 35s
E = 50 s
F or worse = 80s
Pink = Not analyzed or calculated.. Assumed same as No Action.

Children's Hospital DPIR (CCB)	2022 Build AM Peak				2022 Build PM Peak			
Intersections (Signalized and *Unsignalized*)	LOS	Delay (Sec)	Traffic Volume	No-Build to Build Volume % Increase	LOS	Delay (Sec)	Traffic Volume	No-Build to Build Volume % Increase
1. Riverway & Longwood Avenue	F	110.3	3062	0%	F	88.4	3206	0%
2. Longwood Avenue & Pilgrim Road/MASCO	B	16.8	1334	0%	D	52.7	1272	0%
3. Brookline Avenue & Riverway	F	223.7	3482	1%	F	179.6	4049	0%
4. Brookline Avenue & Francis Street	F	81.2	2022	1%	C	21.7	2302	1%
5. Brookline Avenue & Deaconess/Jimmy Fund	F	260.0	1990	1%	D	43.5	2191	1%
6. Brookline Avenue & Longwood Avenue	F	110.2	2978	2%	F	107.4	3073	2%
10. Binney Street & Longwood Avenue	C	29.4	1490	5%	C	30.3	1540	4%
11. BCH Driveway/Blackfan Circle & Longwood Avenue	C	24.8	1296	11%	C	29.9	1407	9%
16. Huntington Avenue & Longwood Avenue	F	116.4	2187	1%	D	42.8	1762	1%
7. Binney Street & Francis Street	E	50.0	1180	0%	D	35.0	1090	0%
8. Binney Street & Shattuck Street	A	2.4	545	1%	A	4.2	427	0%
9. Binney Street & Jimmy Fund Way/BCH Driveway	B	12.6	618	0%	B	10.5	547	0%
12 Unnamed	A	1.6	902	3%	B	10.3	802	3%
13. Avenue Louis Pasteur & Longwood Ave	A	25.7	980	4%	A	30.8	992	6%
14. Avenue Louis Pasteur & Blackfan Circle	A	4.8	947	3%	A	4.6	606	5%
24 Riverway & Nessel Way	A	0.3	1922		A	0.4	1922	
38. Palace Road & Longwood Ave	B	1.4	1108	2%	A	0.7	948	3%

LOS is HCM value for signalized intersections and ICU value for unsignalized intersections.
Color Code:
Red = Signalized intersections at LOS D or worse.
Green = Top 3 signalized intersections based on volume.
Dark Blue = Volume increase >20%
Light Blue = Volume increase > 10%
Yellow = Unsignalized intersection with delay > 150s. Capped at 150s
Gold = Unsignalized intersection with missing delay. Assigned value based on HCM LOS
A = 10s
B = 15s
C = 25s
D = 35s
E = 50 s
F or worse = 80s
Pink = Not analyzed or calculated.. Assumed same as No Action.

Children's Hospital DPIR (CCB)

2012 Existing

K Factor	10%	factors peak hour vehicle volumes to daily volumes
Peak hr delay to daily Factor (8hr/day)	33%	Factors peak hour delay to daily delay
Daily delay to annual Factor (6 days/wk, 52 wk/yr)	85%	factors peak daily delay to annual delay

Intersection	Average Peak Delay time (s)	Traffic Volume (adt)	Idle MOBILE6 VOC (g/hr)	VOC (lb/day)	VOC (tpy)	Idle MOBILE6 NOX (g/hr)	NOX (lb/day)	NOX (tpy)	Idle MOBILE6 CO2 (g/hr)	CO2 (lb/day)	CO2 (tpy)
1. Riverway & Longwood Avenue	56.40	28300	5.530	1.80	0.28	3.398	1.11	0.173	1403.250	457.21	71.324
2. Longwood Avenue & Pilgrim Road/MASCO	229.80	8900	5.530	2.31	0.36	3.398	1.42	0.221	1403.250	585.85	91.393
3. Brookline Avenue & Riverway	139.10	33950	5.530	5.33	0.83	3.398	3.28	0.511	1403.250	1352.74	211.028
4. Brookline Avenue & Francis Street	38.35	20950	5.530	0.91	0.14	3.398	0.56	0.087	1403.250	230.14	35.902
5. Brookline Avenue & Deaconess/Jimmy Fund	67.30	17250	5.530	1.31	0.20	3.398	0.81	0.126	1403.250	332.55	51.877
6. Brookline Avenue & Longwood Avenue	41.70	23200	5.530	1.09	0.17	3.398	0.67	0.105	1403.250	277.12	43.231
10. Binney Street & Longwood Avenue	32.20	13550	5.530	0.49	0.08	3.398	0.30	0.047	1403.250	124.98	19.497
11. BCH Driveway/Blackfan Circle & Longwood Avenue	25.30	11800	5.530	0.34	0.05	3.398	0.21	0.032	1403.250	85.52	13.341
16. Huntington Avenue & Longwood Avenue	53.80	20150	5.530	1.22	0.19	3.398	0.75	0.117	1403.250	310.53	48.443
7. Binney Street & Francis Street	35.00	10950	5.530	0.43	0.07	3.398	0.27	0.041	1403.250	109.78	17.126
8. Binney Street & Shattuck Street	4.60	4900	5.530	0.03	0.00	3.398	0.02	0.002	1403.250	6.46	1.007
9. Binney Street & Jimmy Fund Way/BCH Driveway	10.65	5600	5.530	0.07	0.01	3.398	0.04	0.006	1403.250	17.08	2.665
12 Unnamed	5.60	7800	5.530	0.05	0.01	3.398	0.03	0.005	1403.250	12.51	1.952
13. Avenue Louis Pasteur & Longwood Ave	15.10	8550	5.530	0.15	0.02	3.398	0.09	0.014	1403.250	36.98	5.769
14. Avenue Louis Pasteur & Blackfan Circle	3.65	8650	5.530	0.04	0.01	3.398	0.02	0.003	1403.250	9.04	1.411
24 Riverway & Nessel Way	0.35	19220	5.530	0.01	0.00	3.398	0.00	0.001	1403.250	1.93	0.301
38. Palace Road & Longwood Ave	0.95	9800	5.530	0.01	0.00	3.398	0.01	0.001	1403.250	2.67	0.416
Totals	hrs	1277.808		15.58	2.43		9.57	1.49		3953.09	616.68

Children's Hospital DPIR (CCB)

2022 No Build

K Factor	10%	factors peak hour vehicle volumes to daily volumes
Peak hr delay to daily Factor (8hr/day)	33%	Factors peak hour delay to daily delay
Daily delay to annual Factor (6 days/wk, 52 wk/yr)	85%	factors peak daily delay to annual delay

Intersection	Average Peak Delay time (s)	Traffic Volume (adt)	Idle MOBILE6 VOC (g/hr)	VOC (lb/day)	VOC (tpy)	Idle MOBILE6 NOX (g/hr)	NOX (lb/day)	NOX (tpy)	Idle MOBILE6 CO2 (g/hr)	CO2 (lb/day)	CO2 (tpy)
1. Riverway & Longwood Avenue	98.50	32030	3.580	2.31	0.36	1.065	0.69	0.107	1423.400	916.71	143.007
2. Longwood Avenue & Pilgrim Road/MASCO	35.40	13290	3.580	0.34	0.05	1.065	0.10	0.016	1423.400	136.70	21.325
3. Brookline Avenue & Riverway	200.45	40300	3.580	5.90	0.92	1.065	1.76	0.274	1423.400	2347.20	366.164
4. Brookline Avenue & Francis Street	50.25	22820	3.580	0.84	0.13	1.065	0.25	0.039	1423.400	333.19	51.978
5. Brookline Avenue & Deaconess/Jimmy Fund	149.15	21740	3.580	2.37	0.37	1.065	0.70	0.110	1423.400	942.16	146.976
6. Brookline Avenue & Longwood Avenue	102.05	30120	3.580	2.25	0.35	1.065	0.67	0.104	1423.400	893.12	139.326
10. Binney Street & Longwood Avenue	29.45	14750	3.580	0.32	0.05	1.065	0.09	0.015	1423.400	126.22	19.690
11. BCH Driveway/Blackfan Circle & Longwood Avenue	26.35	12920	3.580	0.25	0.04	1.065	0.07	0.012	1423.400	98.92	15.431
16. Huntington Avenue & Longwood Avenue	72.35	21670	3.580	1.15	0.18	1.065	0.34	0.053	1423.400	455.55	71.066
7. Binney Street & Francis Street	42.50	11770	3.580	0.37	0.06	1.065	0.11	0.017	1423.400	145.35	22.674
8. Binney Street & Shattuck Street	3.35	5410	3.580	0.01	0.00	1.065	0.00	0.001	1423.400	5.27	0.821
9. Binney Street & Jimmy Fund Way/BCH Driveway	11.50	6150	3.580	0.05	0.01	1.065	0.02	0.002	1423.400	20.55	3.206
12 Unnamed	5.85	8740	3.580	0.04	0.01	1.065	0.01	0.002	1423.400	14.86	2.318
13. Avenue Louis Pasteur & Longwood Ave	19.20	9440	3.580	0.13	0.02	1.065	0.04	0.006	1423.400	52.66	8.216
14. Avenue Louis Pasteur & Blackfan Circle	4.15	9230	3.580	0.03	0.00	1.065	0.01	0.001	1423.400	11.13	1.736
24 Riverway & Nessel Way	0.35	19220	3.580	0.00	0.00	1.065	0.00	0.000	1423.400	1.95	0.305
38. Palace Road & Longwood Ave	1.05	10810	3.580	0.01	0.00	1.065	0.00	0.000	1423.400	3.30	0.514
Totals	hrs	2072.872		16.36	2.55		4.87	0.76		6504.83	1014.75

Children's Hospital DPIR (CCB)

2022 Build

K Factor	10%	factors peak hour vehicle volumes to daily volumes
Peak hr delay to daily Factor (8hr/day)	33%	Factors peak hour delay to daily delay
Daily delay to annual Factor (6 days/wk, 52 wk/yr)	85%	factors peak daily delay to annual delay

Intersection	Average Peak Delay time (s)	Traffic Volume (adt)	Idle MOBILE6 VOC (g/hr)	VOC (lb/day)	VOC (tpy)	Idle MOBILE6 NOX (g/hr)	NOX (lb/day)	NOX (tpy)	Idle MOBILE6 CO2 (g/hr)	CO2 (lb/day)	CO2 (tpy)
1. Riverway & Longwood Avenue	99.35	32060	3.580	2.33	0.36	1.065	0.69	0.108	1423.400	925.49	144.376
2. Longwood Avenue & Pilgrim Road/MASCO	34.75	13340	3.580	0.34	0.05	1.065	0.10	0.016	1423.400	134.69	21.012
3. Brookline Avenue & Riverway	201.65	40490	3.580	5.97	0.93	1.065	1.78	0.277	1423.400	2372.39	370.093
4. Brookline Avenue & Francis Street	51.45	23020	3.580	0.87	0.14	1.065	0.26	0.040	1423.400	344.14	53.685
5. Brookline Avenue & Deaconess/Jimmy Fund	151.75	21910	3.580	2.43	0.38	1.065	0.72	0.113	1423.400	966.07	150.708
6. Brookline Avenue & Longwood Avenue	108.80	30730	3.580	2.44	0.38	1.065	0.73	0.113	1423.400	971.47	151.550
10. Binney Street & Longwood Avenue	29.85	15400	3.580	0.34	0.05	1.065	0.10	0.016	1423.400	133.57	20.837
11. BCH Driveway/Blackfan Circle & Longwood Avenue	27.35	14070	3.580	0.28	0.04	1.065	0.08	0.013	1423.400	111.81	17.443
16. Huntington Avenue & Longwood Avenue	79.60	21870	3.580	1.27	0.20	1.065	0.38	0.059	1423.400	505.83	78.909
7. Binney Street & Francis Street	42.50	11800	3.580	0.37	0.06	1.065	0.11	0.017	1423.400	145.72	22.732
8. Binney Street & Shattuck Street	3.30	5450	3.580	0.01	0.00	1.065	0.00	0.001	1423.400	5.23	0.815
9. Binney Street & Jimmy Fund Way/BCH Driveway	11.55	6180	3.580	0.05	0.01	1.065	0.02	0.002	1423.400	20.74	3.235
12 Unnamed	5.95	9020	3.580	0.04	0.01	1.065	0.01	0.002	1423.400	15.59	2.433
13. Avenue Louis Pasteur & Longwood Ave	28.25	9920	3.580	0.20	0.03	1.065	0.06	0.010	1423.400	81.43	12.703
14. Avenue Louis Pasteur & Blackfan Circle	4.70	9470	3.580	0.03	0.01	1.065	0.01	0.002	1423.400	12.93	2.017
24 Riverway & Nessel Way	0.35	19220	3.580	0.00	0.00	1.065	0.00	0.000	1423.400	1.95	0.305
38. Palace Road & Longwood Ave	1.05	11080	3.580	0.01	0.00	1.065	0.00	0.000	1423.400	3.38	0.527
Totals	hrs	2151.776		16.98	2.65		5.05	0.79		6752.44	1053.38

Mesoscale MOBILE6.2 Emission Factor Summary

MAX Summer/Winter

Year	Speed	VOC	NOX	CO2
2012	Idle	5.53	3.3975	1403.25
2012	2.5	2.212	1.359	561.3
2012	5	0.948	1.221	561.3
2012	10	0.574	1.021	561.3
2012	15	0.462	0.889	561.3
2012	20	0.399	0.812	561.3
2012	25	0.364	0.766	561.3
2012	30	0.341	0.739	561.3
2012	35	0.325	0.733	561.3
2012	40	0.317	0.75	561.3
2012	45	0.312	0.783	561.3
2012	50	0.307	0.832	561.3
2012	55	0.302	0.902	561.3
2012	60	0.301	1.001	561.3
2012	65	0.301	1.194	561.3
2022	Speed	VOC	NOX	CO2
2022	Idle	3.58	1.065	1423.45
2022	2.5	1.432	0.426	569.38
2022	5	0.601	0.375	569.38
2022	10	0.357	0.312	569.38
2022	15	0.284	0.27	569.38
2022	20	0.24	0.247	569.38
2022	25	0.216	0.234	569.38
2022	30	0.2	0.226	569.38
2022	35	0.188	0.223	569.38
2022	40	0.181	0.229	569.38
2022	45	0.178	0.238	569.38
2022	50	0.175	0.251	569.38
2022	55	0.173	0.268	569.38
2022	60	0.173	0.292	569.38
2022	65	0.174	0.325	569.38

All factors in grams/mile except Idle (grams/hour)

Children's Hospital - Boston, MA
Calculation of Microscale Modeling Emission Factors
Summary of MOBILE6 Output

Carbon Monoxide Only

Queues	Idle
Free Flow	30 mph
Right Turns	10 mph
Left Turns	15 mph

Winter	**2012**	**2022**	**Units**
Idle	50.215	45.893	g/hr
2.5 mph	20.086	18.357	g/mile
10 mph	10.834	10.310	g/mile
15 mph	9.736	9.364	g/mile
30 mph	8.682	8.468	g/mile

Note: Winter CO emission factors are higher than Summer and are conservatively used

Due to excessive size AERMOD, CAL3QHC, and MOBILE6.2 input and output files are available on digital media upon request.

Appendix F

LEED Checklists

LEED 2009 for Healthcare: New Construction and Major Renovations

Project Checklist

Children's Hospital Boston - CCB w/ Cogen

Sustainable Sites — Possible Points: 18

Y	?	N			
9	6	3		**Sustainable Sites**	**18**
Y			Prereq 1	Construction Activity Pollution Prevention	
Y			Prereq 2	Environmental Site Assessment	
1			Credit 1	Site Selection	1
1			Credit 2	Development Density and Community Connectivity	1
		1	Credit 3	Brownfield Redevelopment	1
3			Credit 4.1	Alternative Transportation—Public Transportation Access	3
1			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
	1		Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	1
	1		Credit 4.4	Alternative Transportation—Parking Capacity	1
		1	Credit 5.1	Site Development—Protect or Restore Habitat	1
	1		Credit 5.2	Site Development—Maximize Open Space	1
1			Credit 6.1	Stormwater Design—Quantity Control	1
	1		Credit 6.2	Stormwater Design—Quality Control	1
		1	Credit 7.1	Heat Island Effect—Non-roof	1
1			Credit 7.2	Heat Island Effect—Roof	1
	1		Credit 8	Light Pollution Reduction	1
1			Credit 9.1	Connection to the Natural World—Places of Respite	1
	1		Credit 9.2	Connection to the Natural World—Direct Exterior Access for Patients	1

Water Efficiency — Possible Points: 9

Y	?	N			
5	1	3		**Water Efficiency**	**9**
Y			Prereq 1	Water Use Reduction—20% Reduction	
Y			Prereq 2	Minimize Potable Water Use for Medical Equipment Cooling	
	1		Credit 1	Water Efficient Landscaping—No Potable Water Use or No Irrigation	1
1		1	Credit 2	Water Use Reduction: Measurement & Verification	1 to 2
2		1	Credit 3	Water Use Reduction	1 to 3
1			Credit 4.1	Water Use Reduction—Building Equipment	1
1			Credit 4.2	Water Use Reduction—Cooling Towers	1
		1	Credit 4.3	Water Use Reduction— Food Waste Systems	1

Energy and Atmosphere — Possible Points: 39

Y	?	N			
21	0	18		**Energy and Atmosphere**	**39**
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
16		8	Credit 1	Optimize Energy Performance	1 to 24
		8	Credit 2	On-Site Renewable Energy	1 to 8
2			Credit 3	Enhanced Commissioning	1 to 2
1			Credit 4	Enhanced Refrigerant Management	1
2			Credit 5	Measurement and Verification	2
		1	Credit 6	Green Power	1
		1	Credit 7	Community Contaminant Prevention—Airborne Releases	1

Materials and Resources — Possible Points: 16

Y	?	N			
7	1	8		**Materials and Resources**	**16**
Y			Prereq 1	Storage and Collection of Recyclables	
Y			Prereq 2	PBT Source Reduction—Mercury	
		3	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
		1	Credit 1.2	Building Reuse—Maintain Interior Non-Structural Elements	1
2			Credit 2	Construction Waste Management	1 to 2
2		2	Credit 3	Sustainably Sourced Materials and Products	1 to 4
1			Credit 4.1	PBT Source Reduction—Mercury in Lamps	1
1		1	Credit 4.2	PBT Source Reduction—Lead, Cadmium, and Copper	2
1		1	Credit 5	Furniture and Medical Furnishings	1 to 2
	1		Credit 6	Resource Use—Design for Flexibility	1

Indoor Environmental Quality — Possible Points: 18

Y	?	N			
9	4	5		**Indoor Environmental Quality**	**18**
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
Y			Prereq 3	Hazardous Material Removal or Encapsulation	
1			Credit 1	Outdoor Air Delivery Monitoring	1
1		1	Credit 2	Acoustic Environment	1 to 2
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
1			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
2		2	Credit 4	Low-Emitting Materials	1 to 4
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
	1		Credit 6.1	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7	Thermal Comfort—Design and Verification	1
	2		Credit 8.1	Daylight and Views—Daylight	2
	1	2	Credit 8.2	Daylight and Views—Views	1 to 3

Innovation in Design — Possible Points: 6

Y	?	N			
3		3		**Innovation in Design**	**6**
Y			Prereq 1	Integrated Project Planning and Design	
1			Credit 1.1	Innovation in Design: Development Density	1
1			Credit 1.2	Innovation in Design: Public Transportation	1
		1	Credit 1.3	Innovation in Design: Specific Title	1
		1	Credit 1.4	Innovation in Design: Specific Title	1
1			Credit 2	LEED Accredited Professional	1
		1	Credit 3	Integrated Project Planning and Design	1

Regional Priority Credits — Possible Points: 4

Y	?	N			
		4		**Regional Priority Credits**	**4**
		1	Credit 1.1	Regional Priority: Specific Credit	1
		1	Credit 1.2	Regional Priority: Specific Credit	1
		1	Credit 1.3	Regional Priority: Specific Credit	1
		1	Credit 1.4	Regional Priority: Specific Credit	1

Total — Possible Points: 110

Y	?	N		
54	12	44	**Total**	**110**

Certified 40 to 49 points   Silver 50 to 59 points   Gold 60 to 79 points   Platinum 80 to 110

LEED 2009 for New Construction and Major Renovations

Project Checklist

819 Beacon Street

Sustainable Sites — Possible Points: 26

Y	?	N			Points
16	4			**Sustainable Sites**	26
Y			Prereq 1	Construction Activity Pollution Prevention	
1			Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
		N	Credit 3	Brownfield Redevelopment	1
6			Credit 4.1	Alternative Transportation—Public Transportation Access	6
1			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
	3		Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
		N	Credit 4.4	Alternative Transportation—Parking Capacity	2
		N	Credit 5.1	Site Development—Protect or Restore Habitat	1
		N	Credit 5.2	Site Development—Maximize Open Space	1
1			Credit 6.1	Stormwater Design—Quantity Control	1
	1		Credit 6.2	Stormwater Design—Quality Control	1
1			Credit 7.1	Heat Island Effect—Non-roof	1
		N	Credit 7.2	Heat Island Effect—Roof	1
1			Credit 8	Light Pollution Reduction	1

Water Efficiency — Possible Points: 10

Y	?	N			Points
4				**Water Efficiency**	10
Y			Prereq 1	Water Use Reduction—20% Reduction	
		N	Credit 1	Water Efficient Landscaping	2 to 4
2			Credit 2	Innovative Wastewater Technologies	2
2			Credit 3	Water Use Reduction	2 to 4

Energy and Atmosphere — Possible Points: 35

Y	?	N			Points
10	2			**Energy and Atmosphere**	35
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
5			Credit 1	Optimize Energy Performance	1 to 19
		N	Credit 2	On-Site Renewable Energy	1 to 7
2			Credit 3	Enhanced Commissioning	2
		N	Credit 4	Enhanced Refrigerant Management	2
3			Credit 5	Measurement and Verification	3
	2		Credit 6	Green Power	2

Materials and Resources — Possible Points: 14

Y	?	N			Points
3	2			**Materials and Resources**	14
Y			Prereq 1	Storage and Collection of Recyclables	
		N	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
		N	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
1			Credit 2	Construction Waste Management	1 to 2
		N	Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	?	N			Points
	1		Credit 4	Recycled Content	1 to 2
1			Credit 5	Regional Materials	1 to 2
	1		Credit 6	Rapidly Renewable Materials	1
1			Credit 7	Certified Wood	1

Indoor Environmental Quality — Possible Points: 15

Y	?	N			Points
13	2			**Indoor Environmental Quality**	15
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
1			Credit 1	Outdoor Air Delivery Monitoring	1
1			Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
1			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7.1	Thermal Comfort—Design	1
1			Credit 7.2	Thermal Comfort—Verification	1
	1		Credit 8.1	Daylight and Views—Daylight	1
	1		Credit 8.2	Daylight and Views—Views	1

Innovation and Design Process — Possible Points: 6

Y	?	N			Points
2				**Innovation and Design Process**	6
1			Credit 1.1	Innovation in Design: double transit ridership	1
			Credit 1.2	Innovation in Design: Specific Title	1
			Credit 1.3	Innovation in Design: Specific Title	1
			Credit 1.4	Innovation in Design: Specific Title	1
			Credit 1.5	Innovation in Design: Specific Title	1
1			Credit 2	LEED Accredited Professional	1

Regional Priority Credits — Possible Points: 4

Y	?	N			Points
				Regional Priority Credits	4
			Credit 1.1	Regional Priority: Specific Credit	1
			Credit 1.2	Regional Priority: Specific Credit	1
			Credit 1.3	Regional Priority: Specific Credit	1
			Credit 1.4	Regional Priority: Specific Credit	1

Total — Possible Points: 110

Y	?	N		Points
48	10		**Total**	110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

Appendix G

BCCB Floor Plans


Staff Respite Area
Staff Entry
Dock-Entry
3 Bay Loading Dock
Multi Purpose Staff Area
Clinics
Clinics
Clinic Support
0 16 32 48

Boston Children's Hospital

Shepley Bulfinch

ELKUS | MANFREDI ARCHITECTS

Proposed Boston Children's Clinical Building

Floor Plan Level 3: Operating / Procedure Platform

Boston Children's Hospital

Shepley Bulfinch

ELKUS | MANFREDI ARCHITECTS

Proposed Boston Children's Clinical Building

Floor Plan Level 6 (7 & 8 Sim.): Typical 30 Bed Unit

Boston Children's Hospital

Shepley Bulfinch

ELKUS | MANFREDI ARCHITECTS

Proposed Boston Children's Clinical Building

Floor Plan Level 7: NICU 30 Bed Test Fit

Boston Children's Hospital

Shepley Bulfinch

ELKUS | MANFREDI ARCHITECTS

Proposed Boston Children's Clinical Building

Floor Plan Level 9 (10 & 11 Sim.): Typical 30 Bed Unit

Boston Children's Hospital

Shepley Bulfinch

ELKUS | MANFREDI ARCHITECTS

Proposed Boston Children's Clinical Building

Floor Plan Level 12: Sanctuary & Meditation Space

Appendix H

Greenhouse Gas

APPENDIX H
GHG ANALYSIS

TABLE OF CONTENTS

APPENDIX H.1

Key Building Model Input

BCCB Model Input Parameters

819 Beacon Street Model Input Parameters

BCCB Model Input Parameters

	Baseline	Proposed
Architectural		
Gross SF of Building	600,000	same
Gross SF of Building (Modeled)	569,788	same
Window to Wall % Area (max allowed 40%)	34%	same
Wall Assembly (Above Grade, Steel Framed) U-Value	0.064 (Steel framed with R-13 fill and R-7.5 continuous batt)	0.045 (Steel framed with R-13 fill and R-14 continuous 2" polyisocyanurate)[1]
Roof Assembly (Insulation entirely above deck) U-Value	0.048 (R-20 continuous insulation)	same
Vertical Glazing Assembly (Metal Framing Curtain Wall) U-Value	0.45	0.352[2]
Vertical Glazing Assembly SHGC	0.4	0.342[2]
Internal Loads/ Conditions		
Occupancy (area/ person)	200	same
Lighting Power Density (LPD), building average(w/ft^2)	1.21	1.089
Equipment, bldg ave. (w/ft^2)	1.00	same
Elevator Total Power (kW)	120.0	same
Setpoints:		
Hospital Space Cooling (F)	74	same
Hospital Space Heating (F)	72	same
Operating Room heating and Cooling (F)	68	same
Mechanical Space Cooling (F)	85	same
Mechanical Space Heating (F)	65	same
Summer Max Humidity (%RH)	60	same
Winter Min Humidity (%RH	30	same
Mechanical Systems		
Water Loops		
Chilled Water	Constant primary, primary, variable secondary; two way valves on all coils; supply	Variable primary, variable secondary; two way valves on all coils; supply temp @ 42°F

	Baseline	Proposed
	temp @ 44°F with 12°F delta T	with 12°F delta T
Process Chilled Water	Variable Primary	same
Condenser Water	Constant volume primary; supply temp @ 83.1°F with 10°F delta T	Constant volume primary; supply temp @ 85°F with 15°F delta T
Hot Water	Variable primary; two way valves on all coils; supply temp @ 180°F with 50°F delta T, serves reheat and preheat Perimeter radiation: n/a	Variable primary; separate variable secondary serving reheat; separate variable secondary serving perimeter radiation; separate variable secondary serving preheat; two way valves on all coils; supply temp @ 180°F with 50°F delta T
Peak Domestic Hot Water	12 gpm, 85°F rise	same
Process Steam (MBTU)	n/a	same
Pumps		
Primary CHW	3 @ 1113.7 gpm, 16.5 bhp ea	4 @ 1,350 gpm, 40 hp ea
Secondary CHW	1 @ 3344.4 gpm, 49.2 bhp	2 @ 2,600 gpm, 125 hp ea
Process CHW	2 @ 300 gpm, 15 hp ea	same
CW	3 @ 1311.9 gpm, 33.4 bhp ea	4 @ 2,000 gpm, 125 hp ea
Primary HW	1 @ 858.3 gpm, 21.9 bhp	4 @ 600 gpm, 15 hp ea
Secondary Reheat HW	n/a	2 @ 600 gpm, 20 hp ea
Secondary Perimeter Radiation HW	n/a	2 @ 400 gpm, 15 hp ea
Secondary AHU Preheat HW	n/a	2 @ 500 gpm, 20 hp ea
Main Chillers	3 @ 551 tons, 0.576 kW/ ton Full Load, 0.457 kW/ ton NPLV ea	4 @ 1,000 tons, 0.586 kW/ ton Full Load, 0.378 kW/ ton NPLV ea
Water Side Economizer	n/a	480 tons
Cooling Towers	1 @ 1,681 tons, 38 gpm/ hp, two-speed fans	4 @ 1,200 tons, 38.2 gpm/ hp, variable speed fans ea
HW Boilers	2 @ 10,712 MBH, 82% efficient	3 @ 350 hp, 85% efficient, with boiler controls and stack economizer
Steam Boilers, process and humidification	78% efficient	2 @ 500 hp, 85% efficient with boiler controls and stack economizer
Air Handling Units		
One Variable Air Volume System per Floor	Floor 1 – 15,280 cfm, 17.4% OA, 28.09 kW fans Floor 2 – 15,909 cfm, 17.1% OA, 29.24 kW fans Floor 3 – 32,230 cfm, 29.3 %	

	Baseline	Proposed
	OA, 58.63 kW fans Floors 6-8 – 117,563 cfm, 31.3 % OA, 211.61 kW fans Floors 9-11 – 112,271 cfm, 32.6 % OA, 202.09 kW fans Floor LL1 – 36,686 cfm, 32.9 % OA, 66.73 kW fans Floor LL2 – 12,551 cfm, 96.1 % OA, 23.2 kW fans	As Designed see below
Packaged Single Zone Systems	OR System – 26,095 cfm, 20.0 % OA, 47.47 kW fans Mechanical/ Electric Rooms Combined – 97,874 cfm, 77.65 kW fans	
Boiler Room VAV	Baseline Case, see above	30,000 cfm, 25 hp
Electric Room VAV		5 @ 10,000 cfm, 10 hp ea
Chiller Room and Support VAV		15,000 cfm, 15 hp
Pump Room VAV		10,000 cfm, 10 hp
SB2 Shell admin support VAV		40,000 cfm, 125 hp
SB1 Shell/ CPD storage VAV		40,000 cfm, 125 hp
LB Center of Excellence VAV		40,000 cfm, 125 hp
Level 1 Admin Offices VAV		50,000 cfm, 125 hp
Level 2 Radiology VAV		50,000 cfm, 125 hp
Level 3 Card/ Cath OR VAV		2 @ 60,000 cfm, 150 hp ea
Atrium VAV		75,000 cfm, 150 hp
Level 6 Cardiac ICU Patient Rooms VAV		60,000 cfm, 150 hp
Levels 7 and 8 Cardiac Patient Rooms VAV		2 @ 50,000 cfm, 125 hp ea
Levels 9-11 Patient Rooms VAV		3 @ 50,000 cfm, 125 hp ea
Levels 4 and 5 Support VAV		15,000 cfm, 15 hp
PH Level Support VAV		15,000 cfm, 15 hp
Elevator Machine Rooms VAV		15,000 cfm, 15 hp
Total Ventilation Rates	117,567 CFM	same
Outdoor Air Economizers	Outdoor air temperature, 70 max	Dual enthalpy
Control Sequences		
Air Handling Units		
Supply Air Temperature Reset	5°F higher reset under minimum cooling load conditions	same
Fan Static pressure Reset	No	Yes
Water Loops		

BCCB Model Input Parameters

	Baseline	Proposed
Hot Water Supply Temperature Reset	Outdoor air temperature based, from 180°F @ 20°F and below, 150°F @ 50°F and above, ramped linearly between.	Load based, from 180°F to 150°F
Chilled Water Supply Temperature Reset	Outdoor air temperature based, from 44°F @ 80°F and above, 54°F @ 60°F and below, ramped linearly between.	Load based, from 42°F to 47°F
Condenser Water Supply Temperature Reset	Controlled to maintain 70°F when weather permits floating to 83.1°F at design conditions	Controlled to maintain 65°F when weather permits floating to 85°F at design conditions

Notes:

1. In lieu of R-7.5 continuous batt insulation, use 2" of continuous polyisocyanurate (R-14).
2. Assembly glazing performance is based on glass performance having a maximum U-value of 0.29, maximum SHGC of 0.38 and a thermally broken aluminum frame.

819 Beacon St. Model Input Parameters

	Baseline	Proposed
Architectural		
Building Area (sf)	208,315	same
Garage area (for lighting only) (sf)	199,974	same
Window to Wall % Area	19.85%	same
Walls (Above Grade, Steel Framed) U-Value	0.064	0.052
Roof (Insulation entirely above deck) U-Value	0.048	0.040
Vertical Glazing (Metal Framing Curtain Wall) U-Value	0.45	0.40
Vertical Glazing SHGC	0.4	0.25
Internal Loads/ Conditions		
Occupancy (sf/ person)	242	same
Lighting, building average(w/ft^2)	0.684 W/SF	0.575 W/SF
Equipment, building average (w/ft^2)	1.055 W/SF	same
Exterior Lighting (kW)	9.07 kW	8.73 kW
Elevator Total Power (kW)	120 kW	same
Typical Space Set-point Cooling (F)	75	same
Typical Space Set-point Heating (F)	70	same
Stair Set-point Cooling (F)	85	same
Stair Set-point Heating (F)	65	same
Summer Max Humidity Set-point (%RH)	55	same
Winter Min Humidity Set-point (%RH)	-	-
Mechanical Systems		
Water Loops		
Chilled Water	Constant primary, variable secondary; two way valves on all coils; supply temp @ 44°F with 12°F delta T	Variable primary, two way valves on all coils; supply temp @ 42°F with 18°F delta T Variable secondary loop serving chilled beams; two way valves on all coils; supply temp @ 58°F with 4°F delta T
Condenser Water	Constant volume primary; supply temp @ 85°F with 10°F delta T	Constant volume primary; supply temp @ 85°F with 15°F delta T
Hot Water	Variable primary; two way valves on all coils; supply temp @ 180°F with 30°F delta T	Variable primary; supply temp @ 140°F with 30°F delta T
Peak Domestic Hot Water	5 gpm, 100°F rise	same

819 Beacon St. Model Input Parameters

Pumps		
Primary CHW	2 @ 1116 gpm, 12.3 bhp ea	2 @ 700 gpm, 13.3 bhp ea
Secondary CHW	1 @ 2232 gpm, 24.6 bhp	2 @ 1100 gpm, 15.9 bhp ea
CW	2 @ 1674 gpm, 15.9 bhp ea	2 @ 700 gpm, 9.85 bhp ea
Primary HW	1 @ 252 gpm, 2.4 bhp	2 @ 500 gpm, 9.5 bhp ea
PFHX CHP	-	1 @ 500 gpm, 11.0 bhp ea
PFHX CWP	-	1 @ 500 gpm, 9.85 bhp ea
Equipment		
Main Chillers	2 x 280 tons, 0.68 kW/ton at full load, 0.58 kW/ton NPLV	2 x 350 tons, 0.69 kW/ton at full load, 0.42 kW/ton NPLV
Cooling Towers	2 @ 280 Tons, 38 gpm/ hp, two-speed fans	2 @ 350 tons, 38.2 gpm/ hp, variable speed fans ea
Plate and Frame Heat Exchanger	-	1 @ 250 tons
HW Boilers	2 @ 3928 MBH, 82% efficient	3 @ 2500 MBH, 92% efficient condensing boilers
Air Handling Units		
One VAV System per Floor	Floor 1 – 152,068 cfm, 9.5% OA, 203 kW total all fans	n/a
Packaged Single Zone Systems	Level 1 retail space – total 11,865 cfm, 7 % OA, 203 kW total all fans	
CHB AHU-1&2	n/a	50,000 cfm, 87.6 kW
CHB AHU-3&4	n/a	50,000 cfm, 87.6 kW
AHU-5 (FCU)	n/a	4610 cfm, 0.001 kW
AHU-6 (FCU)	n/a	4621 cfm, 0.001 kW
Total Ventilation Rates	15,201 cfm (Constant)	70,000 cfm (Average)

Due to the early stages of the project, the following assumptions have been made

1. Parking Garage assumed to be an "Open Parking Garage" per IBC and will not be provided with mechanical ventilation
2. Conference Rooms assumed to be 15% of floor area on levels 5 to 8
3. Offices are assumed to be 40% open plan and 60% enclosed plan offices
4. Design lighting assumed to have a 15% reduction from Baseline space by space method
5. Site lighting is assumed to have a 10% reduction on tradable surfaces
6. Building will be occupied from 8am to 6pm Monday-Friday, 8am to 12pm Saturday, and unoccupied on Sunday
7. Level 1 retail space will be occupied from 8 am to 9pm Sunday-Saturday.
8. Mechanical systems will turn off when building is unoccupied
9. There is no exterior shading on the proposed building
10. Envelope will meet glass U-Value requirements of Climate Zone 7 and SHGC of Zone 3. Wall and Roof will be better than code.

APPENDIX H.2
eQUEST Model Output

BCCB

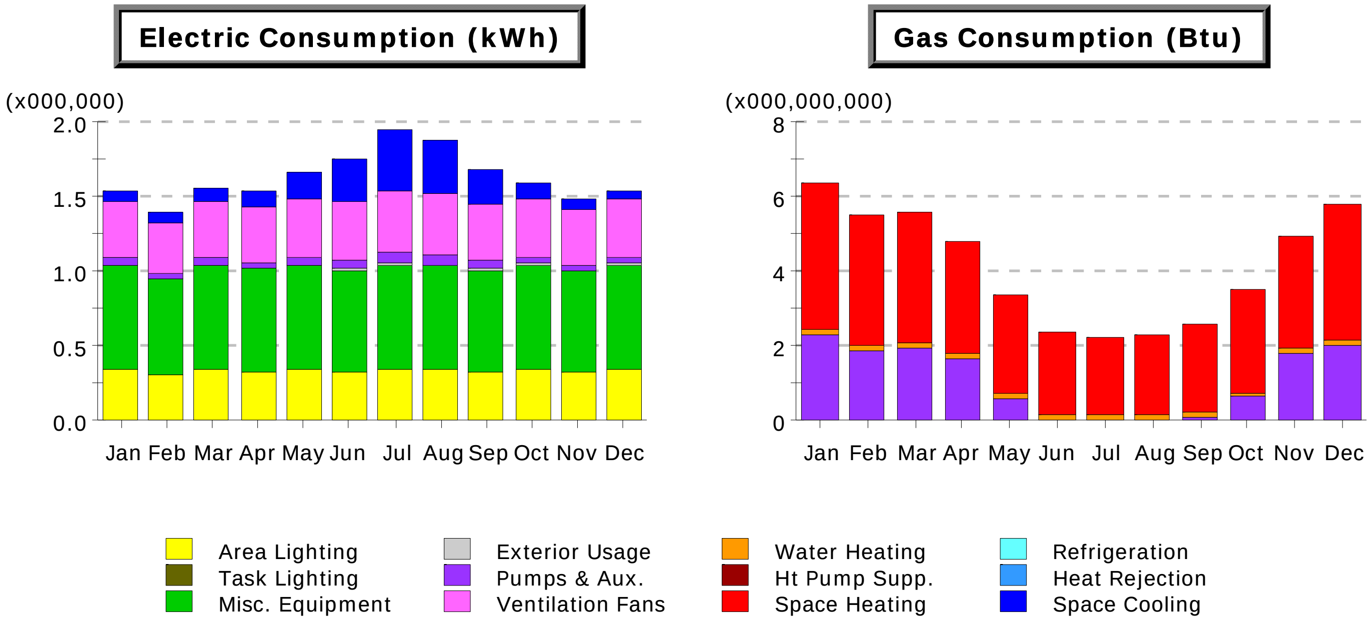
Baseline – Monthly Energy Consumption by End Use

Proposed - Monthly Energy Consumption by End Use

819 Beacon Street

Baseline – Monthly Energy Consumption by End Use

Proposed – Monthly Energy Consumption by End Use “



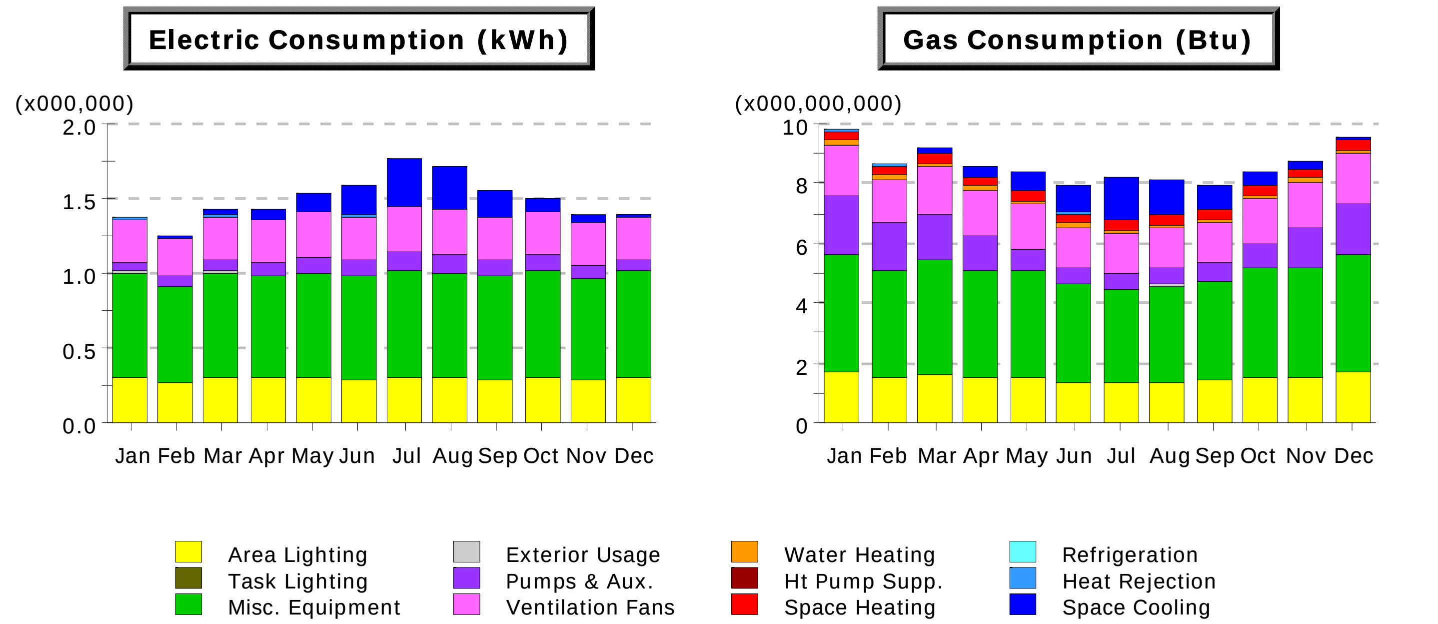
Electric Consumption (kWh x000,000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	0.06	0.06	0.08	0.10	0.18	0.29	0.41	0.36	0.23	0.12	0.07	0.06	2.02
Heat Reject.	0.00	-	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	-	0.04
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	-	-	-	-	-	-	-	-	-	-	-	-	-
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vent. Fans	0.39	0.35	0.39	0.38	0.39	0.39	0.40	0.40	0.38	0.39	0.37	0.39	4.61
Pumps & Aux.	0.04	0.04	0.04	0.04	0.05	0.06	0.08	0.07	0.06	0.04	0.04	0.04	0.60
Ext. Usage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Misc. Equip.	0.70	0.63	0.70	0.68	0.70	0.68	0.70	0.70	0.68	0.70	0.68	0.70	8.28
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	0.34	0.30	0.34	0.33	0.34	0.33	0.34	0.34	0.33	0.34	0.32	0.34	3.96
Total	1.53	1.38	1.55	1.54	1.67	1.75	1.95	1.88	1.69	1.60	1.49	1.54	19.56

Gas Consumption (Btu x000,000,000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	3.87	3.51	3.49	3.01	2.65	2.26	2.10	2.19	2.35	2.77	3.01	3.70	34.90
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	0.16	0.15	0.16	0.15	0.14	0.12	0.12	0.11	0.11	0.12	0.12	0.14	1.60
Vent. Fans	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps & Aux.	2.31	1.85	1.92	1.62	0.57	0.01	-	0.00	0.09	0.63	1.78	1.97	12.75
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	-	-	-	-	-	-	-	-	-	-	-	-	-
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	6.33	5.51	5.57	4.79	3.36	2.39	2.22	2.30	2.55	3.51	4.91	5.80	49.24

BCCB Proposed w/1.2 MW CHP



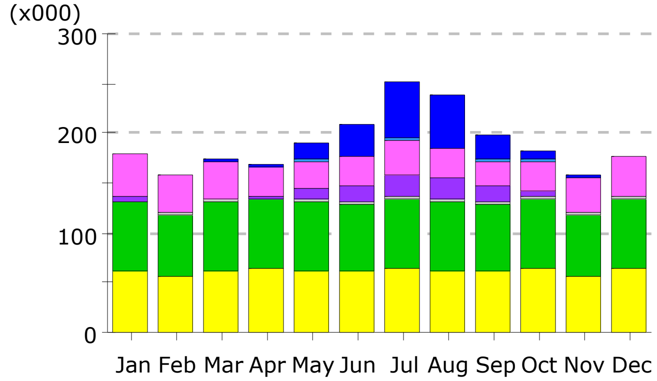
Electric Consumption (kWh x000,000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	0.01	0.01	0.04	0.07	0.12	0.20	0.32	0.27	0.17	0.09	0.05	0.01	1.37
Heat Reject.	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.08
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	-	-	-	-	-	-	-	-	-	-	-	-	-
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent. Fans	0.29	0.26	0.29	0.28	0.29	0.29	0.30	0.29	0.28	0.29	0.28	0.29	3.42
Pumps & Aux.	0.07	0.06	0.09	0.10	0.11	0.11	0.13	0.12	0.11	0.10	0.09	0.07	1.16
Ext. Usage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Misc. Equip.	0.70	0.63	0.70	0.68	0.70	0.68	0.70	0.70	0.68	0.70	0.68	0.70	8.28
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	0.30	0.27	0.30	0.30	0.30	0.29	0.30	0.30	0.29	0.30	0.29	0.30	3.57
Total	1.38	1.25	1.43	1.44	1.54	1.59	1.78	1.71	1.54	1.50	1.39	1.39	17.93

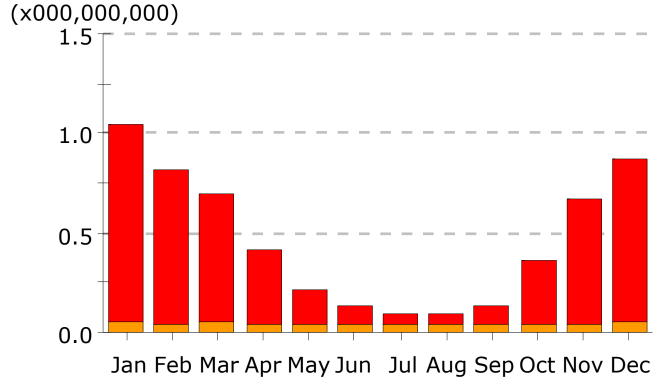
Gas Consumption (Btu x000,000,000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	0.05	0.07	0.21	0.36	0.59	0.91	1.37	1.18	0.77	0.45	0.26	0.07	6.28
Heat Reject.	0.01	0.01	0.02	0.03	0.04	0.05	0.05	0.05	0.05	0.03	0.02	0.01	0.38
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	0.34	0.33	0.31	0.29	0.30	0.29	0.30	0.30	0.29	0.30	0.29	0.36	3.74
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	0.13	0.12	0.14	0.13	0.12	0.11	0.10	0.09	0.09	0.10	0.11	0.12	1.36
Vent. Fans	1.66	1.49	1.61	1.50	1.51	1.39	1.33	1.37	1.40	1.53	1.54	1.65	17.99
Pumps & Aux.	1.97	1.59	1.48	1.18	0.73	0.54	0.58	0.56	0.56	0.78	1.33	1.70	13.00
Ext. Usage	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.26
Misc. Equip.	3.96	3.56	3.83	3.58	3.56	3.24	3.11	3.22	3.33	3.64	3.65	3.94	42.62
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	1.67	1.50	1.61	1.52	1.50	1.37	1.32	1.36	1.41	1.54	1.53	1.67	18.00
Total	9.83	8.69	9.23	8.60	8.37	7.92	8.17	8.17	7.93	8.40	8.75	9.56	103.62

Electric Consumption (kWh)



Gas Consumption (Btu)



Area Lighting
Task Lighting
Misc. Equipment
Exterior Usage
Pumps & Aux.
Ventilation Fans
Water Heating
Ht Pump Supp.
Space Heating
Refrigeration
Heat Rejection
Space Cooling

Electric Consumption (kWh x000)

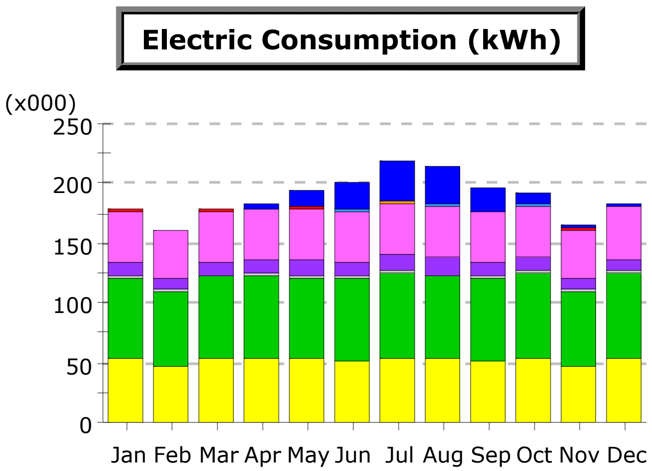
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	0.7	0.1	0.8	2.0	16.3	31.8	57.8	53.1	25.3	7.7	0.9	0.1	196.6
Heat Reject.	0.0	0.0	0.1	0.2	1.0	1.5	2.1	2.1	1.4	0.6	0.1	0.0	9.1
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	-	-	-	-	-	-	-	-	-	-	-	-	-
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.7
Vent. Fans	41.7	36.8	37.1	29.9	27.8	29.0	33.5	29.2	24.9	29.4	34.9	40.0	394.4
Pumps & Aux.	4.0	1.3	1.9	2.4	11.3	15.5	22.3	21.2	15.6	6.6	1.9	1.2	105.1
Ext. Usage	2.0	1.8	2.0	1.9	2.0	1.9	2.0	2.0	1.9	2.0	1.9	2.0	23.2
Misc. Equip.	68.3	62.0	68.9	69.8	68.7	67.8	70.5	68.9	67.7	70.5	61.7	70.5	815.4
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	62.2	56.2	62.2	63.2	62.2	61.4	64.0	62.2	61.4	64.0	56.0	64.0	822.3
Total	179.0	158.2	172.9	169.4	189.3	209.0	252.2	238.7	198.2	180.8	157.6	177.8	2366.7

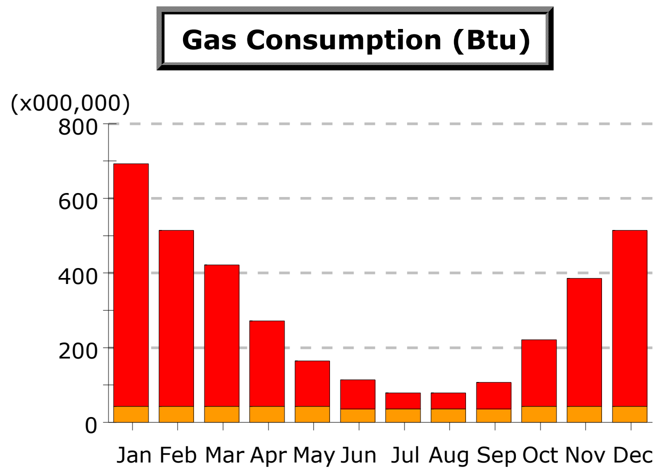
adjusted for pkg garage lighting

Gas Consumption (Btu x000,000,000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	-	-	-	-	-	-	-	-	[illegible]	[illegible]	[illegible]	-	-
Heat Reject.	-	-	-	-	-	-	-	-	[illegible]	[illegible]	[illegible]	-	-
Refrigeration	-	-	-	-	-	-	-	-	[illegible]	[illegible]	[illegible]	-	-
Space Heat	1.00	0.77	0.65	0.37	0.17	0.09	0.05	0.05	0.09	0.31	0.63	0.82	4.99
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.49
Vent. Fans	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps & Aux.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	-	-	-	-	-	-	-	-	-	-	-	-	-
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1.05	0.82	0.70	0.41	0.21	0.13	0.09	0.09	0.13	0.36	0.67	0.86	5.53

819 Beacon St. Proosed





Area Lighting
Task Lighting
Misc. Equipment
Exterior Usage
Pumps & Aux.
Ventilation Fans
Water Heating
Ht Pump Supp.
Space Heating
Refrigeration
Heat Rejection
Space Cooling

Electric Consumption (kWh x000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	0.3	-	1.3	4.3	13.9	21.7	33.0	32.6	18.6	9.7	3.0	0.9	139.3
Heat Reject.	0.0	-	0.1	0.2	1.1	1.5	1.9	1.9	1.4	0.7	0.2	0.0	9.1
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	1.0	0.7	0.6	0.5	0.3	0.2	0.1	0.1	0.2	0.4	0.6	0.7	5.5
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.7
Vent. Fans	43.7	39.5	43.7	43.0	43.1	41.5	43.3	42.7	41.3	42.6	40.5	44.1	508.9
Pumps & Aux.	10.0	8.9	10.0	9.9	12.8	13.2	14.1	14.0	12.7	11.6	9.7	9.8	136.8
Ext. Usage	1.9	1.7	1.9	1.8	1.9	1.8	1.9	1.9	1.8	1.9	1.8	1.9	22.3
Misc. Equip.	68.3	62.0	68.9	69.8	68.7	67.8	70.5	68.9	67.7	70.5	61.7	70.5	815.4
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	52.8	47.8	52.8	53.7	52.8	52.2	54.4	52.8	52.2	54.4	47.6	54.4	719.1
Total	178.1	160.7	179.5	183.2	194.7	200.0	219.3	215.1	196.0	191.8	165.2	182.4	2337.0

adjusted for pkg garage lighting

Gas Consumption (Btu x000,000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug				Dec	Total
Space Cool	-	-	-	-	-	-	-	-				-	-
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	650.6	472.0	377.5	229.1	127.0	75.2	36.6	40.3	69.8	183.2	344.6	473.5	3,079.3
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	44.6	39.8	43.0	40.6	40.4	38.2	38.4	38.8	38.4	41.0	41.1	43.4	487.8
Vent. Fans	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps & Aux.	-	-	-	-	-	-	-	-	-	-	-	-	-
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	-	-	-	-	-	-	-	-	-	-	-	-	-
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	695.3	511.7	420.5	269.7	167.4	113.4	75.1	79.1	108.2	224.3	385.6	516.9	3,567.1

Appendix I

DEIR Circulation List

APPENDIX I DEIR CIRCULATION LIST

Robert K. Sullivan, Jr., Secretary
Executive Office of Energy and
Environmental Affairs
Attn: MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

Department of Environmental Protection
Attn: Commissioner's Office/MEPA
Coordinator
One Winter Street
Boston, MA 02108

Department of Environmental Protection
Northeast Regional Office
Attn: MEPA Coordinator
205B Lowell Street
Wilmington, MA 01887

Massachusetts Historical Commission
The MA Archives Building
220 Morrissey Boulevard
Boston, MA 02125

Division of Energy Resources
Attn: MEPA Coordinator
100 Cambridge Street, 10th floor
Boston, MA 02114

Massachusetts Water Resource Authority
Attn: MEPA Coordinator
100 First Avenue
Charlestown Navy Yard
Boston, MA 02129

Department of Public Health
Director of Environmental Health
250 Washington Street
Boston MA 02115

Boston Water and Sewer Commission
Attn: John P. Sullivan
980 Harrison Avenue
Boston, MA 02119

Friends of Historic Mission Hill
c/o 81 Lawn Street
Roxbury, MA 02120

Boston Public Library
Copley Branch
700 Boylston Street
Boston, MA 02116

Boston Public Library
Parker Hill Branch
1497 Tremont Street
Roxbury, MA 02120