DRAFT PROJECT IMPACT REPORT

GARDEN GARAGE

Submitted Pursuant to Article 80 of the Boston Zoning Code



Submitted to:

Boston Redevelopment Authority
One City Hall Square
Boston, Massachusetts 02201

Submitted by:

Equity Residential
1953 Gallows Road, Suite 340
Vienna, VA 22182

Prepared by:

Epsilon Associates, Inc.
3 Clock Tower Place, Suite 250
Maynard, Massachusetts 01754

In Association with:

Elkus Manfredi Architects Ltd.
Howard/Stein-Hudson Associates, Inc.
McDermott Ventures, LLC
Nitsch Engineering, Inc.
Rackemann, Sawyer & Brewster
RW Sullivan Engineering
Sanborn, Head & Associates

October 19, 2011

Epsilon
ASSOCIATES INC.

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List of Acronyms

ABC TMA	A Better City Transportation Management Association
ADA	Americans with Disabilities Act
ANSI	American National Standards Institute
AP	Accredited Professional
APCC	Air Pollution Control Commission
BAC	Baltimore Aircoil Company
BCB	Boston City Base
BCDC	Boston Civic Design Commission
BFD	Boston Fire Department
BLC	Boston Landmarks Commission
BOD	Basis of Design
BRA	Boston Redevelopment Authority
BRADA	Boston Redevelopment Authority Daylight Analysis
BTD	Boston Transportation Department
BTU	British Thermal Units
BWSC	Boston Water and Sewer Commission
CFC	Chlorofluorocarbon
CFM	Cubic Feet per Minute

CIAQMP	Construction Indoor Air Quality Management Plan
CMP	Construction Management Plan
dB	Decibel
dBA	Decibel (A-weighted)
DEIS	Draft Environmental Impact Statement
DIP	Development Impact Project
DPIR	Draft Project Impact Report
EEA	Executive Office of Energy and Environmental Affairs
EIR	Environmental Impact Report
ENF	Environmental Notification Form
EOT-OTP	Executive Office of Transportation – Office of Transportation Planning
EPA	U.S. Environmental Protection Agency
ERP	Environmental Results Program
ERU	Energy Recovery Unit
ETS	Environmental Tobacco Smoke
FAR	Floor Area Ratio
FHWA	Federal Highway Administration
GEP	Good Engineering Practice
GPD	Gallons per Day
GPM	Gallons per Minute
HCM	Highway Capacity Manual
HVAC	Heating, Ventilation, and Air Conditioning
IAG	Impact Advisory Group
IBC	International Building Code
I/I	Infiltration and Inflow
IPOD	Interim Planning Overlay District
ISD	Inspectional Services Department
ITE	Institute of Transportation Engineers
LEED	Leadership in Energy and Environmental Design
LEED-NC	Leadership in Energy and Environmental Design for New Construction
LOS	Level of Service
LPA	Locally Preferred Alternative
LUC	Land Use Codes
MassDEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation
MBTA	Massachusetts Bay Transportation Authority
MEPA	Massachusetts Environmental Policy Act
MGD	Million Gallons per Day
MGH	Massachusetts General Hospital
MHC	Massachusetts Historical Commission
MIT	Massachusetts Institute of Technology
MPH	Miles per Hour
MWRA	Massachusetts Water Resources Authority
MTU	Meter Transmitter Unit
NAAQS	National Ambient Air Quality Standards

NOI	Net Operating Income
NPDES	National Pollutant Discharge Elimination System
OPR	Owner's Project Requirements
PDA	Planned Development Area
PIC	Public Improvement Commission
PIF	Pressure-Injected Footings
PNF	Project Notification Form
PPM	Parts per Million
PWD	Public Works Department
RDEIR	Revised Draft Environmental Impact Report
RGP	Remedial General Permit
SCAQMD	South Coast Air Quality Management District
SH	Southern High Service
SIP	State Implementation Plan
SL	Southern Low Service
SOV	Single-Occupant Vehicle
SRI	Solar Reflectance Index
SWPPP	Stormwater Pollution Prevention Plan
TAPA	Transportation Access Plan Agreement
TDM	Transportation Demand Management
TMDL	Total Maximum Daily Load
ULSD	Ultra-Low Sulfur Diesel
USBGC	U.S. Green Building Council
USGS	United States Geological Survey
v/c	volume-to-capacity ratio
VFD	Variable Frequency Drive
VOC	Volatile Organic Compounds
VOR	Vehicle Occupancy Rates
WECA	West End Civic Association

Section 1.0

General Information

1.0 GENERAL INFORMATION

Equity Residential is proposing to redevelop the Garden Garage, located at 35 Lomasney Way at the intersection of Downtown and Boston's West End (see Figures 1-1 and 1-2). The redevelopment of this garage site will add 500 new residential units to the Boston housing pipeline and bring an expanded range of residential options to the West End community (see Figure 1-3).

The proposed Project will add retail options and create a strong pedestrian connection that will re-energize the Nashua Street area and reconnect the West End to the Bulfinch Triangle and North End neighborhoods. As a result, this new development is an opportunity to create a "sense of place" in the West End, to pull together the individual buildings toward a centerpiece, a place with community retail and open spaces that invite residents to socialize with residents of this historic community.

The Equity Residential Team initiated a community outreach process prior to submitting a Letter of Intent, by meeting with former Impact Advisory Group (IAG) members and community groups in the West End. The planning process was predicated on a set of agreed-upon planning principles:

- Development that recognizes, respects, and reinforces the scale and character of the existing residential neighborhood;
- Improved pedestrian access into, through, and around the site;
- Creation of an active pedestrian friendly edge along Lomasney Way; and
- Creation of new open space.

Based on these discussions, Equity Residential is submitting a design that has benefitted from the input of these local residents.

As the owner and property manager of the West End Apartments (formerly Charles River Park Apartments until being renamed in 2008) since 1999, Equity Residential has a strong commitment to Boston's West End. In 2008, Equity Residential completed its first development project in Boston, adding 310 new housing units to the West End community. Located adjacent to Boston's historic Beacon Hill, this development was the first addition of housing to the West End community in over 20 years. Today, Equity Residential owns, operates and manages approximately 1,500 apartment units in Boston's West End.

1.1 Project Identification and Development Team

Project Name:	Garden Garage
Address/Location:	Garden Garage will be located off of Martha Road and Lomasney Way at Longfellow Place in the West End.
Developer	Equity Residential 1953 Gallows Road, Suite 340 Vienna, VA 22182 (703) 714-1637 Greg White
Architects	Elkus/Manfredi Architects Ltd 300 A Street Boston, MA 02110 (617) 426-1300 David Manfredi Kevin Lennon
Permitting Consultants	Epsilon Associates, Inc. 3 Clock Tower Place, Suite 250 Maynard, MA 01754 (978) 897-7100 Peggy Briggs Laura Rome Holly Carlson
Transportation and Parking Consultants	Howard/Stein-Hudson Associates, Inc. 38 Chauncy Street Boston, MA 02111 (617) 482-7080 Jane Howard Joe SanClemente
Legal Counsel	Rackemann, Sawyer & Brewster 160 Federal Street Boston, MA 02110 (617) 951-1115 Louis Miller Megan Delehanty

Geotechnical Engineer	Sanborn, Head & Associates 1 Technology Park Drive Westford, MA 01886 (978) 577-1005 Mat DiPilato
Structural Engineer	McNamara/Salvia, Inc. 160 Federal Street, 5th Floor Boston, MA 02110 (617) 737-0040 Joseph Salvia John Matuszewski
Civil Engineer	Nitsch Engineering, Inc. 186 Lincoln Street, Suite 200 Boston, MA 02111 (617) 338-0063 Josh Alston Chelsea Christenson
Mechanical Engineer	RW Sullivan Engineering 529 Main Street, Suite 203 Boston, MA 02129 (617) 337-9300 Paul Sullivan Anthony Preteroti
Strategic Communications and Community Outreach	McDermott Ventures 30 Rowes Wharf, Suite 470 Boston, MA 02110 (617)557-9190 Pamela McDermott
Estimated Commencement: Estimated Completion:	Fall 2012 Fall 2015
Approximate Development Cost:	$300 million
Status of Project Design:	Preliminary

1.2 Legal Information

1.2.1 Legal Judgments Adverse to the Proposed Project

There are no legal judgments or actions pending against Charles River Park "D" Company (an entity controlled by Equity Residential, the Proponent) or Equity Residential that would impair the Proponent from carrying out the Project.

1.2.2 History of Tax Arrears on Property Owned in Boston by the Proponent

There are no tax arrears on the Project site. The Proponent is not delinquent in any tax obligations to the City of Boston.

1.2.3 Site Control and Public Easements

Charles River Park "D" Company, an entity controlled by Equity Residential, currently holds title to the three-acre Project site. There is no property necessary to construct the Project that is not owned by the Proponent. The site is subject to service area easements granted to the neighboring West End Place development including a driveway and sidewalk easement, a loading bay easement, and a drainage and utility easement, which govern space between the buildings on the two properties. The site is also subject to a parking agreement with Amy Lowell Apartments, whereby up to 50 residents of Amy Lowell Apartments are entitled to license parking spaces at prevailing market rates. As of July 2011, six spaces were under agreement with Amy Lowell Apartments residents.

The legal parcel of which the Project site is a part is bounded and described as follows:

- Beginning at a pin in lead located on the southwesterly sideline of Lomasney Way, said pin monuments the intersection of the southerly sideline of Martha Road with the southwesterly sideline of Lomasney Way;
- thence running S 36°04'41"E, a distance of 135.48 feet by the southwesterly sideline of Lomasney Way;
- thence turning and running S 35°00'08"E, a distance of 29.69 feet by said sideline of Lomasney Way,
- thence turning and running S 36°02'51"E, a distance of 73.73 feet by said sideline of Lomasney Way;
- thence turning and running S 15°04'19"W, a distance of 154.39 feet by land now or formerly of Trustees of West End Place Condominiums;
- thence turning and running N 74°55'41"W, a distance of 56.00 feet by land now or formerly of Trustees of West End Place Condominiums;

- thence turning and running S 15°04'19"W, a distance of 183.00 feet by land now or formerly of Trustees of West End Place Condominiums;

- thence turning and running S 74°55'41"E, a distance of 329.61 feet by land now or formerly of Trustees of West End Place Condominiums to a point on the westerly sideline of Staniford Street;

- thence turning and running S 19°47'42"W, a distance of 121.87 feet by said sideline of Staniford Street to a point of curvature;

- thence turning and running southerly by a curve to the left having a radius of 1223.00 feet, a distance of 461.56 along said sideline of Staniford Street to a point of reverse curvature;

- thence turning and running southwesterly by a curve to the right having a radius of 17.64 feet, a distance of 32.58 feet by the southerly sideline of William Cardinal O'Connell Way to a point of tangency;

- thence running `N 76°00'31"W, a distance of 251.40 feet by said sideline of William Cardinal O'Connell Way to a point of curvature;

- thence turning and running northwesterly by a curve to the right having a radius of 20.00 feet, a distance of 27.65 feet by the easterly sideline of William Cardinal O'Connell Way to a point of tangency;

- thence running N 03°11'54"E, a distance of 234.64 feet by said easterly sideline of William Cardinal O'Connell Way to a point of curvature;

- thence turning and running northwesterly by a curve to the left having a radius of 60.00 feet, a distance of 80.16 feet by the northerly sideline of William Cardinal O'Connell Way to a point of tangency;

- thence running N 73°21'08"W, a distance of 75.03 feet by said northerly sideline of William Cardinal O'Connell Way;

- thence turning and running N 15°04'19"E, a distance of 78.85 feet by land now or formerly of Trustees of Hawthorne Place Condominium;

- thence turning and running N 06°43'06"W, a distance of 108.63 feet by land now or formerly of Trustees of Hawthorne Place Condominium;

- thence turning and running N 06°22'59"W, a distance of 37.51 feet by land now or formerly of Trustees of Hawthorne Place Condominium;

- thence turning and running N 15°04′19″E, a distance of 231.50 feet by land now or formerly of Trustees of Hawthorne Place Condominium;
- thence turning and running N 74°55′41″W, a distance of 80.00 feet by land now of formerly of Trustees of Hawthorne Place Condominium;
- thence turning and running N 15°04′19″E, a distance of 123.53 feet by land now or formerly of Trustees of Hawthorne Place Condominium;
- thence turning and running N 74°55′41″W, a distance of 147.51 feet by land now or formerly of Trustees of Hawthorne Place Condominium;
- thence turning and running N 15°04′19″E, a distance of 88.00 feet by land now or formerly of A. L. House LP;
- thence turning and running S 74°55′41″E, a distance of 27.00 feet by land now or formerly of A.L. House LP;
- thence turning and running N 54°27′16″E, a distance of 104.80 feet by land now or formerly of A.L. House LP;
- thence turning and running S 74°55′41″E, a distance of 25.00 feet by land now or formerly of A.L. House LP;
- thence turning and running N 15°04′19″E, a distance of 91.12 feet by land now or formerly of A.L. House LP to a point on the southwesterly sideline of Martha Road;
- thence turning and running S 64°31′00″E, a distance of 91.53 feet by said sideline of Martha Road to a pin in lead;
- thence turning and running S 55°12′25″E, a distance of 46.02 feet by said sideline of Martha Road to the point of beginning.

The above-described parcel of land contains an area of 354,537 square feet. The approximately three-acre Project site is not a separate legal parcel. For zoning purposes, there is no need to create a separate legal parcel for the Project site.

1.3 Regulatory Controls and Permits

The Project is subject to Large Project Review under Article 80 of the Boston Zoning Code. This DPIR is intended to complete that review, and following from the Project Notification Form (PNF) the Proponent expects that it will facilitate a comprehensive public process.

Table 1-1 contains a list of state and local agencies from which permits or other actions are or may be required. The Proponent plans to have these permits and approvals in place by the end of 2011 or in the first quarter of 2012, with construction commencing by the end of 2012.

Table 1-1 Anticipated Permits, Reviews, and Approvals Required for the Project

Agency	*Permit, Review or Approval*
Federal	
Federal Aviation Administration	♦ Determination of No Hazard to Air Navigation
U.S. Environmental Protection Agency	♦ National Pollutant Discharge Elimination System (NPDES) Construction Permit
State	
Department of Environmental Protection	♦ Sewer Extension / Connection Permit ♦ Construction Dewatering Permit ♦ Groundwater Discharge Permit ♦ Air Emissions Discharge Permit ♦ Notifications of Demolition and Construction
Executive Office of Energy and Environmental Affairs	♦ Environmental Review ♦ Public Benefit Determination (for landlocked tidelands)
Massachusetts Historical Commission	♦ State Register Review
Massachusetts Water Resources Authority	♦ Temporary Construction Dewatering Permit
City	
Boston Civic Design Commission	♦ Schematic Design Review
Boston Committee on Licenses/Public Safety Commission	♦ Flammable Storage License ♦ Permit to erect and maintain parking garage
Boston Landmarks Commission	♦ Article 85 ♦ Demolition Permit
Boston Inspectional Services Department	♦ Building Permit ♦ Occupancy Permit
Boston Public Improvement Commission	♦ Specific Repair Plan

Table 1-1 Anticipated Permits, Reviews, and Approvals Required for the Project (Continued)

Boston Redevelopment Authority	♦ Large Project Review ♦ West End Urban Renewal Plan Modification ♦ Cooperation Agreement ♦ PDA Amendment ♦ PDA Development Plan Amendment ♦ Amendment to Article 27D of the Zoning Code
Boston Transportation Department	♦ Transportation Access Plan Agreement ♦ Construction Management Plan
Boston Water and Sewer Commission	♦ Water and Sewer Connection Permits ♦ Hydrant Permit ♦ Temporary Construction Dewatering Permit ♦ General Service Application ♦ Site Plan Review
Boston Zoning Commission	♦ PDA Amendment ♦ PDA Development Plan Amendment ♦ Amendment to Article 27D of the Zoning Code
Board of Street Commissioners	♦ Flammables Permit (parking garage)
Boston Fire Department	♦ Demolition/Alteration/Construction Permit ♦ Approval of Fire Safety Equipment

1.3.1 State Environmental Review

The Proponent submitted an Environmental Notification Form (ENF) to the Massachusetts Environmental Policy Act (MEPA) Office on June 15, 2011. On July 22, 2011, the Secretary of the Executive Office of Environmental Affairs (EEA) issued a Certificate determining that the Project does not require the preparation of an Environmental Impact Report (EIR), thereby completing MEPA review.

A portion of the Project site is located within landlocked tidelands. Pursuant to Section 18 of Chapter 91 of Massachusetts General Laws, structures on landlocked tidelands do not require a Chapter 91 License. A public benefit review is not mandatory when an EIR is not required.

1.3.2 Zoning

The Project is located within an H-3 (Residential, Apartments) district under the City of Boston Zoning Code (the Code), and lies within Subdistrict M of the Downtown Interim Planning Overlay District (IPOD).

The Project is also located within the West End Land Assembly and Renewal Project Area and is, therefore, also governed by the 1957 West End Urban Renewal Plan, which establishes the basic guidelines for land use and development in the West End Project Area. The Project is also located within Planned Development Area (PDA) Number 7, which became effective on February 16, 1972. The existing development on the Project site was built out in accordance with the West End Plan and the PDA; pursuant to the plan and the PDA, Boston Redevelopment Authority (BRA) approval is required for any additions or expansions of the existing development. The Proponent will seek an amendment to the PDA Development Plan.

1.3.2.1 Permitted Uses

The Project will entail the creation of 500 units of housing and approximately 3,000 square feet of retail space on the lobby level. Under both the West End Urban Renewal Plan and the Code, multi-family residential use is permitted as-of-right. Retail use is not allowed under the Code. However, uses within a PDA can differ from underlying zoning as permitted by the development plan. The Proponent will seek an amendment of the PDA Development Plan to change the use of the site from the current garage use.

1.3.2.2 Dimensional Restrictions

Height

Excluding rooftop mechanicals, the East Tower will be approximately 310 feet high and the West Tower will be approximately 240 feet high. The maximum height allowed as-of-right in Subdistrict M of the Downtown IPOD is 125 feet; however, a project that undergoes Large Project Review is eligible for an enhanced maximum height of 155 feet. Projects within a PDA are allowed to exceed the height restrictions imposed by underlying zoning in accordance with the development plan, up to a maximum height of 400 feet. The Proponent will seek an amendment of the PDA Development Plan.

Floor Area Ratio

The Planned Development Area of which the Project site is a part will have a floor area ratio (FAR) of 4.41 The as-of-right FAR in the H-3 District is 3.0. However, Projects within a PDA are allowed to exceed the dimensional restrictions of underlying zoning as permitted by the development plan. The Proponent will seek an amendment of the PDA Development Plan.

Open Space

For residential uses, the minimum square footage per dwelling unit of usable open space is 100 square feet. The Project will comply with this requirement. Furthermore, the Proponent will seek an amendment to the PDA, in which case open space requirements for the Project will be established in the PDA Development Plan.

Off-Street Parking

There are currently 650 parking spaces at the Project site. The Proponent proposes to construct an 850-space parking garage, for a net increase of 200 spaces; 200 of the spaces will be dedicated for use by building residents, at a ratio of 0.4 spaces per unit. Under the Code, the BRA determines off-street parking requirements during Large Project Review. Also, as noted above, the Proponent will seek an amendment to the PDA, in which case the Project's parking requirements will be established in the Project's PDA Development Plan. Accordingly, the Code's underlying zoning requirement of 0.6 spaces per dwelling unit does not apply to the Project, and the Proponent will not need to seek relief for off-street parking.

Off-Street Loading

Under the Code, no loading bays are required for the Project; however, the BRA will determine any off-street loading requirements during Large Project Review. Any such requirements will be included in the PDA Development Plan.

1.3.2.3 Inclusionary Housing

The Mayor's Executive Order dated February 29, 2000 established as City policy that a residential project seeking zoning relief must set aside at least 10 percent of its units to be affordable to moderate income and middle income households or contribute a per unit subsidy to a housing creation fund for 15 percent of the total number of project units. The Project will meet the applicable inclusionary housing goals by setting aside up to 15 percent of the units on the Project site as affordable units.

1.3.3 Federal Aviation Administration

As noted in Table 1-1, the Project will require a Determination of No Hazard to Air Navigation. The Proponent will coordinate with the Federal Aviation Administration as necessary.

1.4 Community Group Consultations

The Proponent has met with several community organizations to introduce the Project and discuss its effects on and benefits to the neighborhood. These outreach efforts have included presentations to the following groups:

- Downtown North Association;
- West End Council;
- Several informal meetings with a group based on, among others, the prior IAG constituted for the Emerson Place Project;
- West End Place; and
- West End Civic Association (WECA).

In 2011, the BRA and the Mayor's Office of Neighborhood Services identified the IAG members for the Project, and meetings were held on January 25, February 24, and March 28, 2011. Community meetings were held on January 25 and February 7. In direct response to recommendations and requests from the community, the Proponent has made the following changes to the Project since its initial conception:

- Reshaped the tower massing to better accommodate pedestrians, adding eight-story massing to the West Tower as a scaling element and relocating the retail space adjacent to the main pedestrian walkway system;
- Shifted placement of the buildings on the site and angled the proposed design, thus preserving views of the Zakim Bridge and the Custom House Tower while improving view corridors for some residents on lower floors of adjacent buildings whose views are obstructed by the existing garage;
- Refined the interface between the Project and the Nashua Street area to be responsive to the crossroads initiative and future improvements envisioned for Nashua Street residences;
- Incorporated a second entrance to the proposed garage from Martha Road to create a safer pedestrian edge along the street;
- Refined the proposed pedestrian walkway system to create a hierarchy of paths;
- Increased the amount of programmed recreation area to include a multi-surface sport court;
- Increased the proposed retail area to 3,000 square feet;
- Designed buildings of varying heights, enabling the Project to integrate with the surrounding West End neighborhood as well as the Nashua Street corridor;
- Refined the building design to allow for consideration of a green roof on the eight-story base;
- Reduced the proposed building heights, thus minimizing potential shadow impacts;

- Refined the plaza to create more active areas adjacent to the proposed buildings; and
- Created more open space and wider sidewalks to enhance the pedestrian experience on the Project site.

1.5 Public Benefits

The Project will include numerous benefits to the neighborhood and the City of Boston, including:

- Providing approximately 500 housing units, consistent with the Mayor's initiative to create more housing in Boston, including provisions for up to 12 three-bedroom units;
- Setting aside up to 15 percent of the Project's units as affordable housing;
- Replacing an unattractive above-grade parking structure with new, appealing residential buildings (paired with below-grade parking) that complement the surrounding area;
- Improving the pedestrian environment within Boston's West End neighborhood by providing new lighting, landscaping, and walkways;
- Creating better pedestrian linkages between North Station and Thoreau Path;
- Enhancing pedestrian safety and convenience by reducing the curb cut at Lomasney Way;
- Improving pedestrian and vehicular circulation by incorporating a second garage entrance from Martha Road as well as a below-grade connection to the Longfellow Garage;
- Providing preferred parking locations for low-emission and fuel-efficient vehicles;
- Providing electric vehicle charging stations in the proposed garage;
- Increasing the area of open space on the Project site, which will include programmable outdoor spaces such as an open-air pavilion;
- Setting aside approximately 3,000 square feet for retail;
- Providing outdoor bike racks for use by residents and the public;
- Increasing the amount of sunlight reaching spaces such as Thoreau Path (see the Shadow Analysis in Section 4.2);
- Improving view corridors for some residents on lower floors of adjacent buildings whose views are obstructed by the existing garage;
- Providing areas suitable for public art;
- Creating approximately 450 full-time and part-time construction jobs; and

- Providing significant property tax revenues for the City of Boston: compared to approximately $663,000 under existing conditions, the Proponent expects to pay $6,138,786 in taxes over the three-year construction period and, as presently calculated, $4,539,088 per year once the Project is complete.

1.6 Economic Feasibility Analysis

The need to build 500 units is based on the fundamental economic analysis that Equity Residential (i.e., the Proponent) and debt sources will undertake to determine whether the Project is financeable and economically feasible. In these difficult times, it is important to propose a project that can actually be built from a financial-feasibility standpoint. There are a number of different economic models that apply, but the most basic economic requirement for the Project is to produce a sufficient yield on investment to justify the risk and expense.

For these purposes, "yield" is defined as the annualized net operating income (NOI) for the Project divided by total development costs. In today's market, a yield of less than 6% is not considered financeable, and hence is not economically feasible. While higher yields may be realized in other markets (including New York), the Proponent believes in the Boston market and has been willing to stretch its economic parameters somewhat to accommodate the Project; however, there are serious economic constraints, especially in the current market.

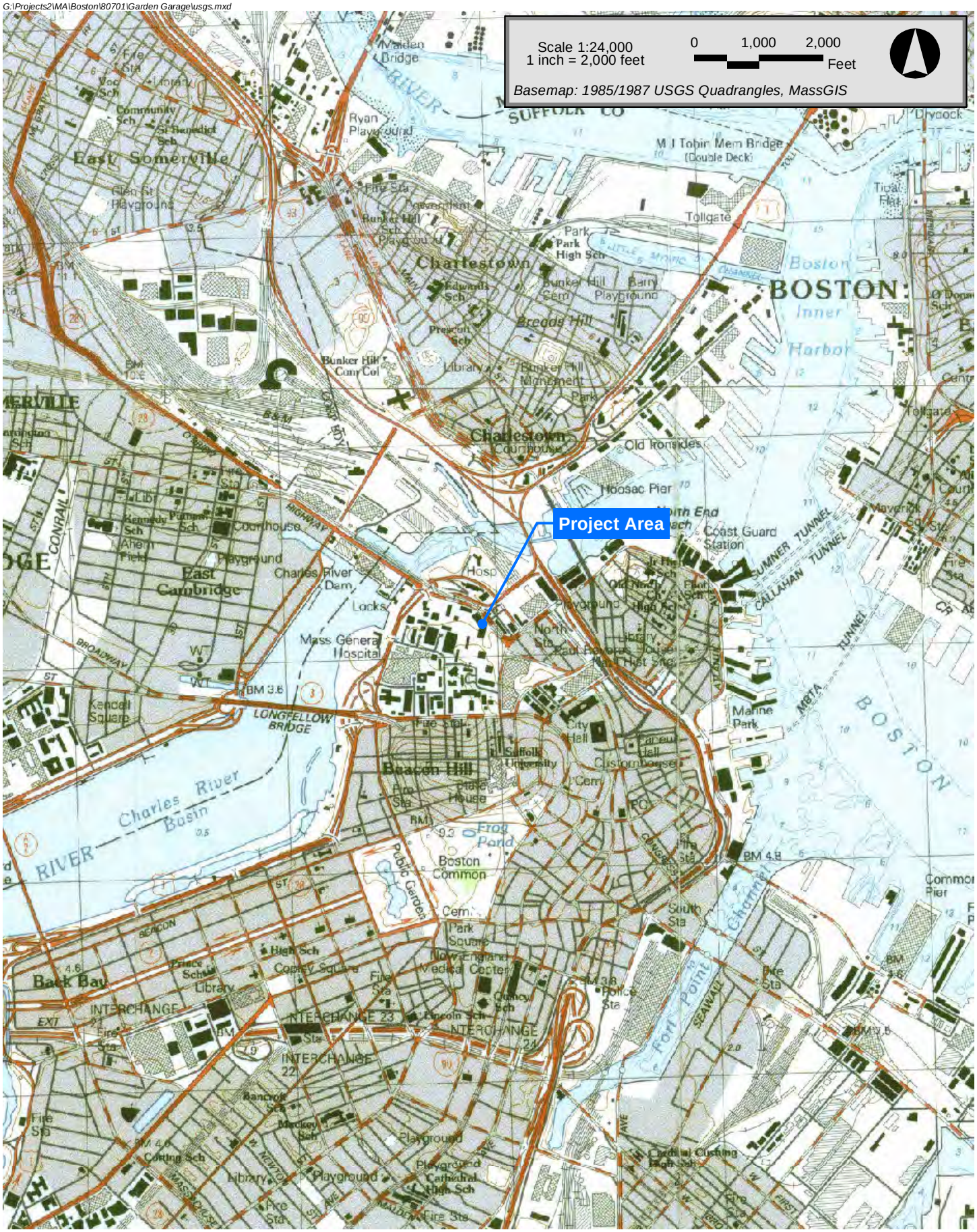
Table 1-2 illustrates the yield for the Project. The NOI per unit in the table is a monthly number. To calculate the yield, the NOI is multiplied by 12 and then by the number of units in the project to realize the annualized NOI for the total development; dividing this annualized NOI by the total development costs results in the yield for the property. As shown in Table 1-2, the yield for a 203-unit development (i.e., the approximate number of units in the as-of-right alternative) is 3.53%, which is significantly below financeable levels. Even at 500 units, the yield is below the 6% threshold [($3,230 x 12 x 500) ÷ $336,263,208 = 5.76%], but it is close enough such that, given the Proponent's belief in the market, the Project should ultimately be financeable. In today's sensitive environment, the other scenarios shown in the table would not be financeable.

Table 1-2 Economic Feasibility Analysis for the Proposed Project

	203 units	*400 units*	*450 units*	*500 units*
Revenue (per unit)				
Average Rental Rate	$3,350	$3,350	$3,350	$3,350
Parking Revenue	$711	$711	$711	$711
Misc. Revenue	$172	$172	$172	$172
Occupancy	95%	95%	95%	95%
Operating Expenses (per unit)	$9,500	$9,500	$9,500	$9,500
NOI (per unit)	**$3,230**	**$3,230**	**$3,230**	**$3,230**
Construction Costs				
Land Costs	$51,656,000	$51,656,000	$51,656,000	$51,656,000
Soft Costs				
Design/Engineering/Legal	$8,934,000	$8,934,000	$8,934,000	$8,934,000
Permit and Fees	$18,180,000	$18,180,000	$18,180,000	$18,180,000
Marketing	$1,850,000	$1,850,000	$1,850,000	$1,850,000
Contingency	$750,000	$750,000	$750,000	$750,000
Overhead/Miscellaneous	$8,300,000	$8,300,000	$8,300,000	$8,300,000
Hard Costs				
Residential Building	$60,900,000	$120,000,000	$135,000,000	$150,000,000
Upgrades/Miscellaneous	$6,200,000	$6,200,000	$6,200,000	$6,200,000
Garage	$40,214,160	$44,571,800	$45,677,800	$46,783,800
Sitework	$5,200,000	$5,200,000	$5,200,000	$5,200,000
Escalation	$2,812,854	$4,399,295	$4,801,945	$5,100,000
Contingency	$5,625,708	$8,798,590	$9,603,890	$10,409,190
Financing	$12,376,558	$19,356,898	$21,128,558	$22,900,218
Total Development Costs	**$222,999,280**	**$298,196,583**	**$317,282,193**	**$336,263,208**
Annualized NOI	$7,868,280	$15,504,000	$17,442,000	$19,380,000
Yield*	***3.53%***	***5.20%***	***5.50%***	***5.76%***

* Yield = Annualized NOI / Total Development Costs

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Garden Garage Redevelopment DPIR Boston, Massachusetts

Epsilon Associates Inc

Figure 1-1
USGS Locus Map



Garden Garage Redevelopment DPIR Boston, Massachusetts

ELKUS | MANFREDI ARCHITECTS

Figure 1-2
Aerial Photograph | Project Locus



Garden Garage Redevelopment DPIR Boston, Massachusetts

ELKUS | MANFREDI ARCHITECTS

Figure 1-3

Proposed Site Plan

Section 2.0

Project Description

2.0 PROJECT DESCRIPTION

2.1 Existing Site

The Garden Garage Project will be located on approximately three acres of land at Longfellow Place in Boston's West End. The Project site is bordered by Martha Road, Lomasney Way, and the MBTA Green Line portal to the north, the O'Neill Federal Building and 150 Staniford Street to the East, Longfellow Place to the south, Hawthorne Place to the southwest, Thoreau Path to the west, and 55 and 65 Martha Road to the northwest. Figure 1-1 and Figure 1-2 in Attachment A show the location of the Project site, and Figure 2-1 shows the Project within the context of the existing neighborhood.

The West End is primarily a residential community (see Figure 2-2). It is a collection of high- and mid-rise residential buildings organized around a pedestrian network and green spaces with connections to the Charles River waterfront and the surrounding vehicular street grid (see Figures 2-3 and 2-4). The Project will enhance pedestrian access to the West End and increase the amount of open space. The Project area has excellent access to mass transit and vehicular transportation systems (see Section 3.0).

Figures 2-5 through 2-14 are photographs of existing conditions in the area surrounding the Project site.

2.2 Proposed Development Program

2.2.1 Building Program and Site Design

The Project will replace the existing 650-space Garden Garage on Lomasney Way with two major buildings with heights of approximately 240 and 310 feet (excluding mechanical penthouses) and an 850-space parking structure that will extend approximately 50 feet below grade. Figures 2-15, 2-16, and 2-17 offer perspective views of these two residential buildings from Nashua Street, the Zakim Bridge, and Thoreau Path, respectively. A proposed site plan is provided as Figure 1-3. Figure 2-18 compares the proposed site development to existing conditions. The Project design is a direct response to the existing urban context of the site in terms of pedestrian routes, visual connections, and the layout of buildings and open spaces (see Figure 2-19). Figure 2-20 illustrates the proposed Project in the context of surrounding neighborhoods.

Redevelopment of the site will involve demolition of the existing garage and a small, vacant one-story wooden structure formerly used as the Boston Children's School Annex (the two building footprints shown on the "Existing Site Development" portion of Figure 2-3). The Project will provide a total of approximately 975,000 square feet of development, which will include approximately 563,000 square feet of residential space (500 units), 18,500 square feet of common area and amenity space for residents, approximately 3,000 square feet of ground-floor retail space, and approximately 390,000 square feet for parking and

mechanicals. The 21-story West Tower will contain approximately 190 residential units, and the 28-story East Tower will have approximately 310 residential units. The Project will meet the Mayor's applicable inclusionary housing goals by setting aside up to 15 percent of the units on the Project site as affordable units.

Loading operations and trash bays will be located within the existing Longfellow Place service area with access from Lomasney Way (see below and Section 3.1.3 for a discussion of parking).

Redevelopment of the Garden Garage site includes site and landscape improvements. A primary objective of the site design is to improve connectivity to and through the development to link North Station and surrounding neighborhoods with the West End (see Figure 2-19). In addition, new outdoor gathering spaces for residents will replace or enhance existing underutilized or outdated open spaces (see Figure 2-3). These private spaces will be associated with pedestrian pathways designed to connect to Thoreau Path while still providing clear delineation between public and private spaces. Plantings, paving, and site furnishings will be selected to support and encourage pedestrian connectivity with the surrounding neighborhood.

The following describes the approximate unit mix for the Project:

- 109 studio, one bath apartments;
- 242 one-bedroom, one bath apartments;
- 137 two-bedroom, two bath apartments; and
- 12 three-bedroom, two bath apartments.

As indicated in this list, the Project design includes 12 three-bedroom units, which will be marketed as such. However, to preserve the Project's economic viability given the historic difficulties in marketing three-bedroom units in Boston, the Proponent must reserve the right to divide any of the three-bedroom units into two separate one-bedroom units if the marketability of the larger units proves untenable. If any of the three-bedroom units are eventually divided, the gross square footage of the Project will remain unchanged, the number of bedrooms will decrease (thus reducing estimated water consumption and wastewater flows), and the total number of units will increase by a maximum of twelve (i.e., to a maximum total of 512 units).

Primary pedestrian access to the building lobbies will be from Lomasney Way; a secondary residential entry will be provided in each building from Thoreau Path. The ground levels of each building will primarily consist of lobbies, retail space, and auxiliary areas for mail and trash (see Figure 2-21). Residential units and associated amenities will begin on Floor 2,

which is level with Thoreau Path (see Figure 2-22). A typical floor plan for floors three through eight is provided as Figure 2-23, while a typical upper-floor plan is provided as Figure 2-24. Figure 2-25 shows a mechanical penthouse plan.

Access to the parking structure will be from within the proposed towers as well as from a new two-lane curb cut on Martha Road and a reduced curb cut on Lomasney Way; the existing Lomasney Way curb cut will be reduced to only two lanes from the five existing lanes (see Section 3.0). Floor plans for the parking levels are provided as Figures 2-26 through 2-28.

Site preparation will involve the demolition of the 97-foot-high (eight-story equivalent) pre-cast concrete parking garage and a one-story wood frame building, shown in Figure 2-18.

The urban design goals of the Project are described in detail in Section 3.0.

2.2.2 On-Site Parking

The Project will replace the existing 650-space garage with a new 850-space underground parking garage for residential, employee, and public use, resulting in a net increase of 200 spaces. The proposed four-level, below-grade parking garage will be located below both towers.

The Project will continue to provide up to 50 spaces to residents of the Amy Lowell Apartments per an existing lease agreement.

Section 3.3.2.5 provides additional details related to parking.

2.2.3 Approximate Dimensions

Table 2-1 presents the approximate dimensions of Project components.

Figures 2-21 through 2-28 show proposed floor plans. Two section-views are illustrated in Figure 2-29 and Figure 2-30. Elevations of the proposed buildings are provided in Figures 2-31 through 2-34. Birdseye perspectives of the Project are illustrated in Figures 2-35 and 2-36.

Due to the proposed two-tower design, the Project will decrease existing views from some perspectives while opening up views from other perspectives. In general, the Project will open or expand more views than it will impinge upon. Graphic depictions of eye-level views from a number of perspectives are provided as Figures 2-37 through 2-58.[1]

[1] An existing eye-level view of the Zakim Bridge is provided as Figure 2-58 for comparison.

Table 2-1 Approximate Project Dimensions

Project Element	*Dimension*
Project Site	3.02 acres (131,600 square feet)
Building Footprint (at grade)	32,760 square feet (total) East Tower: 20,900 square feet West Tower: 11,860 square feet
Residential Space	563,000 square feet
Common Area/Amenities	18,500 square feet
Retail	3,000 square feet
Parking/Mechanical Areas	390,000 square feet / 850 spaces
Building Height	
East Tower	28 stories/310 feet
West Tower	21 stories/240 feet
Open Space *(see note)*	2.12 acres (90,453 square feet)
Floor Area Ratio for Planned Development Area of which Project site is a part	4.41

Note: Open space includes planting areas, pedestrian walkways, sidewalks, and recreation areas.

2.2.4 Pedestrian Access

Pedestrian access to the site will be provided through a hierarchy of walkways. The primary walkway connecting Lomasney Way to Thoreau Path will vastly improve circulation between North Station and Massachusetts General Hospital (MGH). Secondary walkways will provide pedestrian access to the cross-connections between Thoreau Path and the adjacent properties as well as to entrances, gathering nodes, and outdoor activity spaces (see Figure 2-19). Paths will connect seamlessly to Thoreau Path's existing system of walkways such that the overall appearance of the open space is unified.

Universal access requirements will be met to and from all public open spaces with the site.

2.2.5 Project Phasing

The Proponent expects to construct the entire Project in a single development phase. Given the volatile economic circumstances, however, it is possible that Project construction may be divided into two separate phases: the first phase would include construction of one tower and the entire parking garage; the second phase would include construction of the second tower, to be completed as market conditions allow. Regardless of whether the Project is divided into phases, the Proponent will provide the promised proportion of affordable units (i.e., 15% of the units built in the particular phase), and the improvements to the pedestrian environment will not be delayed.

2.3 Project Alternatives

The Proponent has assessed the No Build alternative in addition to an as-of-right alternative that is based on zoning requirements. These alternatives are discussed below.

2.3.1 No-Build

The No-Build alternative would maintain the existing massing on the site (see Figure 2-60). Under this alternative, the structure would continue to function as a parking garage and the site layout would be unaltered. However, to allow for continued operations of the Garden Garage, the Proponent would need to invest an estimated $7-10 million in garage rehabilitation over the next two years. Not only would this rehabilitation work be disruptive during the construction period, but with such a significant investment in rehabilitation these sunk costs would establish no incentive to significantly redevelop the Project site for a period of approximately 50 years. As such, the No Build alternative would forego the numerous public benefits now offered by the proposed Project and would delay any additional benefits from the site for approximately five decades.

2.3.2 As-of-Right

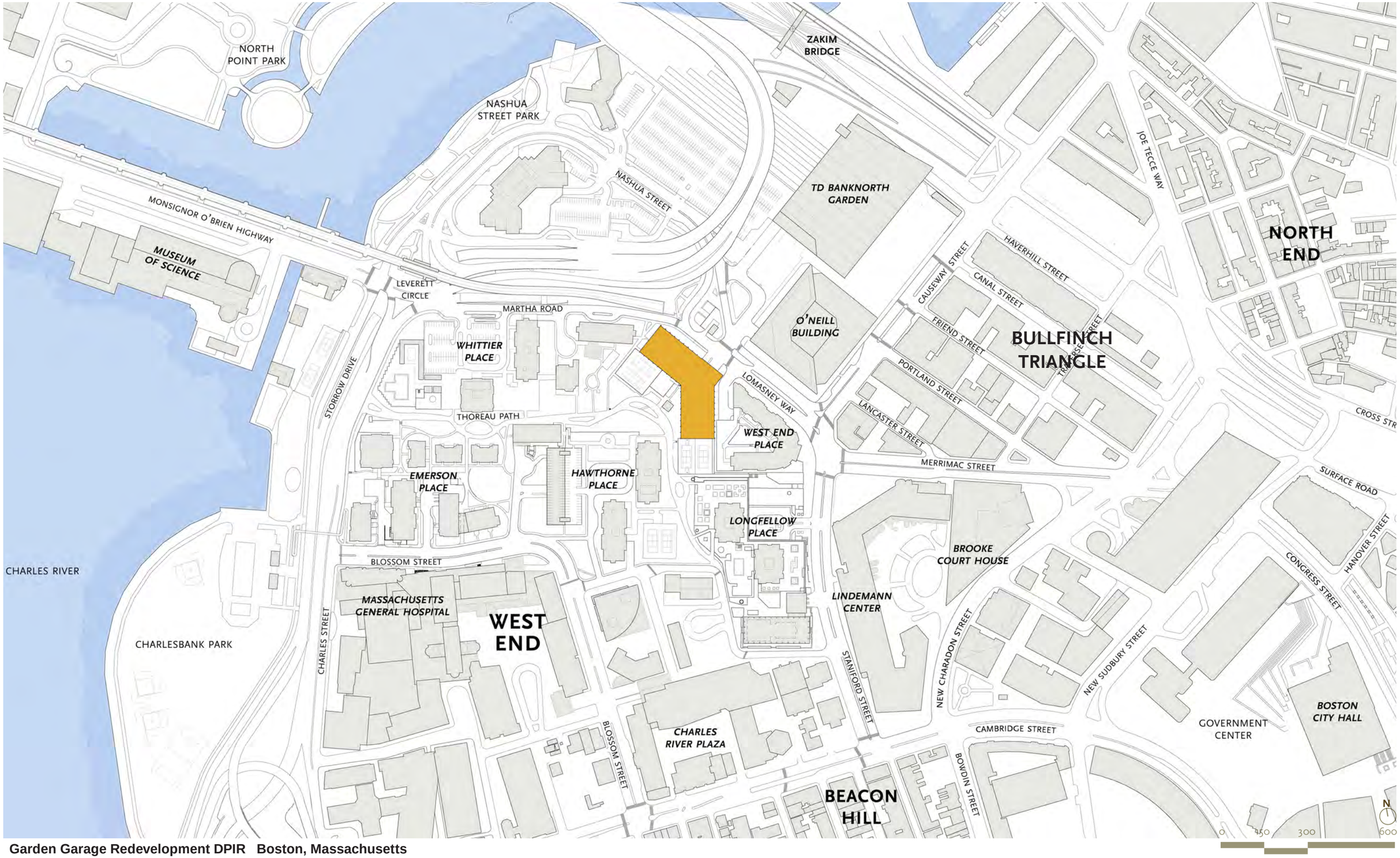
The Proponent has been asked to discuss what type of project could be built without zoning relief. Given the multiple layers of zoning in place at the site, as-of-right zoning is complicated to determine. Since the Project is located within an approved PDA, the Proponent assumes that as-of-right zoning would allow for replacement of the volume of the existing garage as allowed in the PDA Development Plan. Therefore, the as-of-right alternative would assume the maximum above-grade building area (less mechanical space) would be equal to the above-grade area of the existing Garden Garage, the height of the building from Lomasney Way to the roof would not exceed 155 feet (i.e., the as-of-right height limit for non-PDA projects going through Article 80 Large Project Review), and the parking ratio would be 0.6 cars per unit (plus 650 existing spaces which would be replaced; see below). Massing for the as-of-right alternative is illustrated in Figure 2-61.

A project of this size would contain no more than 203 units; consequently, the number of affordable units, holding the ratio at 15 percent, would be only 31. Further, under this alternative, there would not be an increase in the area of open space, nor would the Proponent have the resources to make substantial improvements to existing open space, beyond reconstructing landscaping damaged during construction. In addition, the existing pedestrian route through the parking garage, connecting North Station to the West End, would be lost. In contrast to the as-of-right alternative, the conceptual massing for the proposed Project design provides for ample open space, a diverse network of pedestrian pathways, and a site layout that encourages connectivity between different neighborhoods (see Figure 2-62).

The as-of-right scheme as described above would provide for the construction of 203 new apartment units and 772 parking spaces. The parking is calculated as follows:

- 650 spaces as replacement for the existing garage spaces that will be lost; and
- 122 additional spaces to support the new apartment units (203 apartments x a parking ratio of 0.6).

The cost of demolishing the existing garage and replacing 772 parking spaces below-grade is so expensive that the revenue generated by 203 rental units is not enough to cover the garage construction costs. The yield on this scenario is 3.53%, well below the threshold required by Equity Residential for new apartment development.

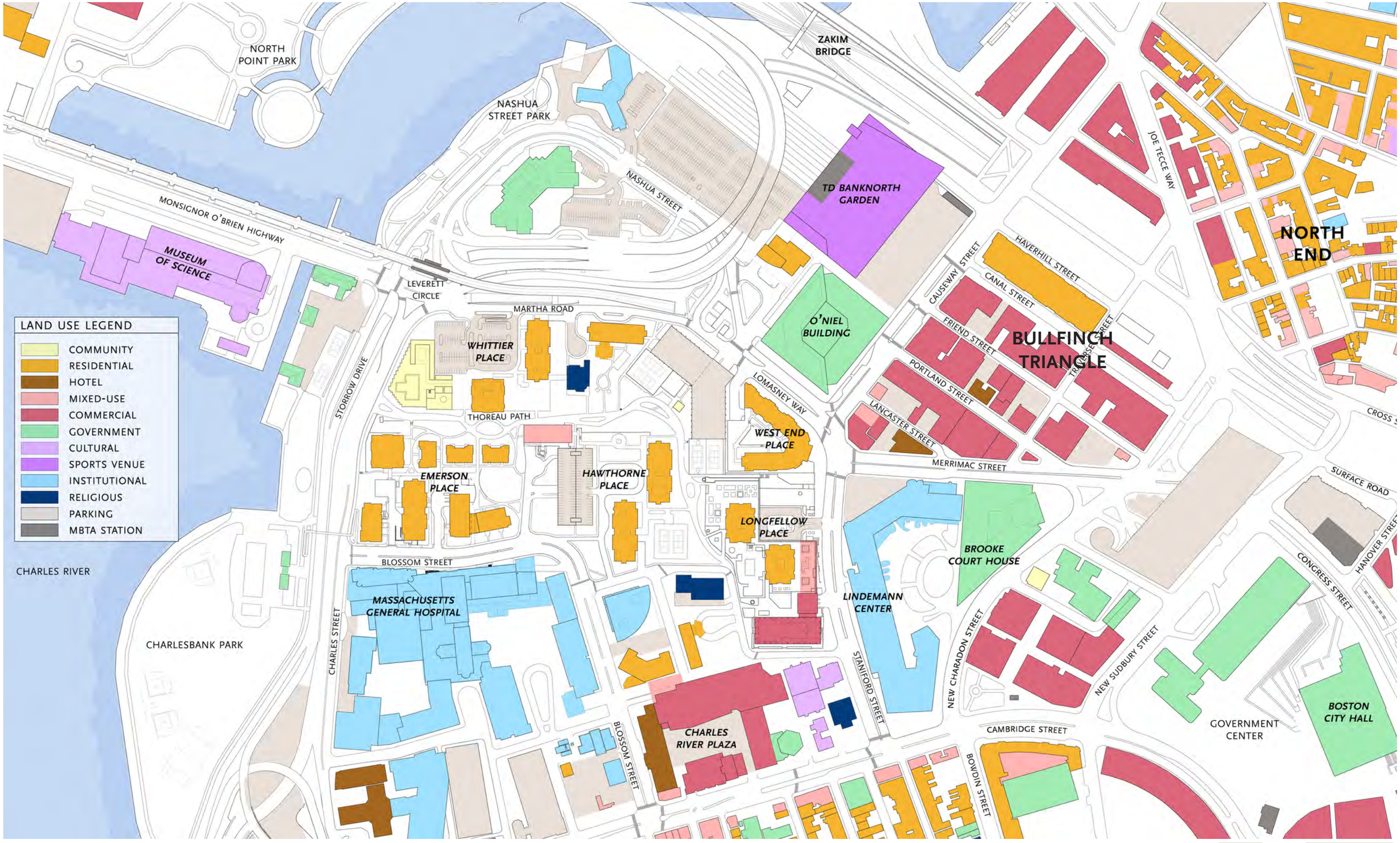


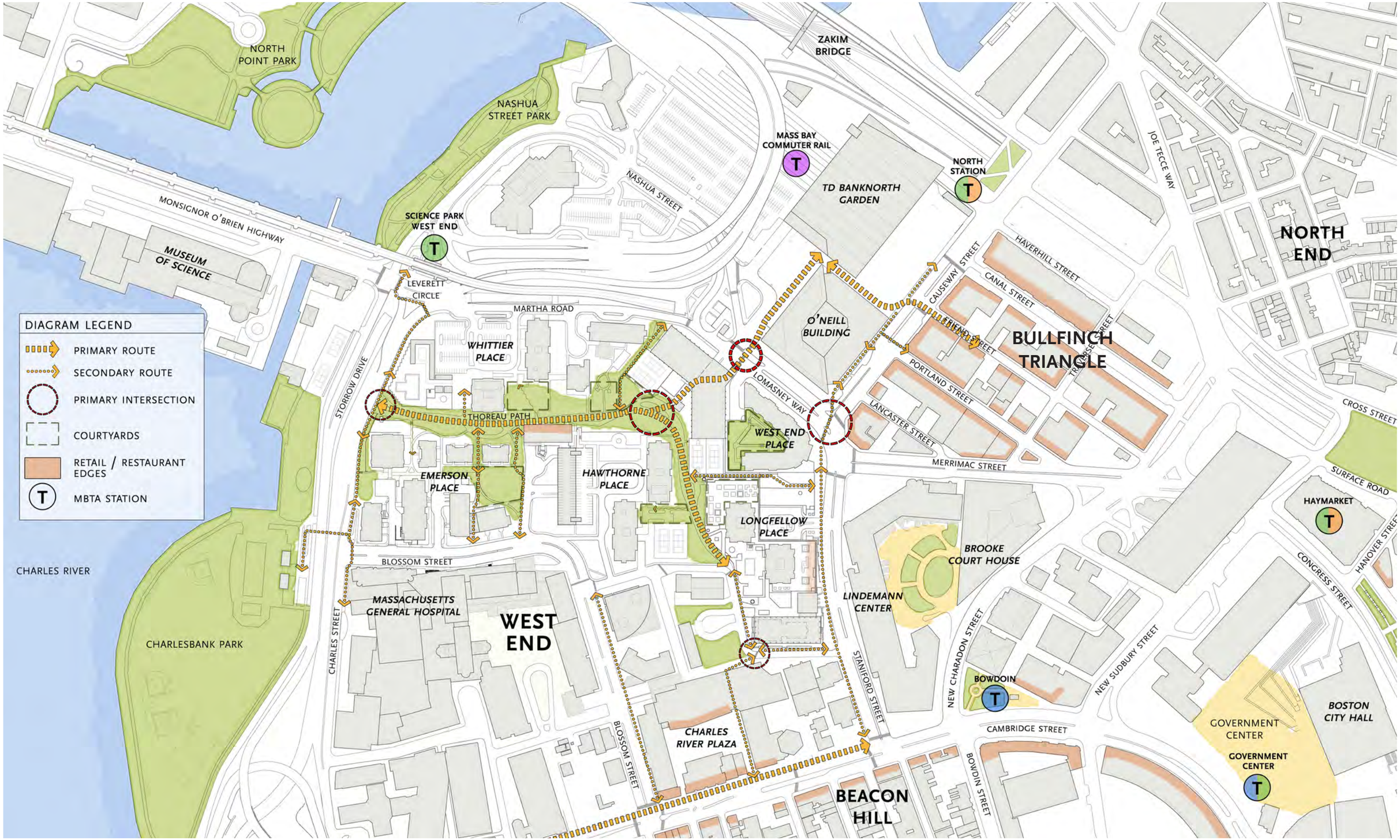
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Figure 2-1

Existing Neighborhood Context Plan


NORTH POINT PARK
NASHUA STREET PARK
NASHUA STREET
ZAKIM BRIDGE
JOE TECCE WAY
TD BANKNORTH GARDEN
NORTH END
MONSIGNOR O'BRIEN HIGHWAY
MUSEUM OF SCIENCE
LEVERETT CIRCLE
MARTHA ROAD
WHITTIER PLACE
O'NIEL BUILDING
CAUSEWAY STREET
HAVERHILL STREET
CANAL STREET
FRIEND STREET
TRAVERSE STREET
BULLFINCH TRIANGLE
PORTLAND STREET
LANCASTER STREET
MERRIMAC STREET
LOMASNEY WAY
WEST END PLACE
STORROW DRIVE
THOREAU PATH
EMERSON PLACE
HAWTHORNE PLACE
LONGFELLOW PLACE
SURFACE ROAD
HANOVER STREET
CONGRESS STREET
BROOKE COURT HOUSE
LINDEMANN CENTER
NEW CHARADON STREET
NEW SUDBURY STREET
BOSTON CITY HALL
GOVERNMENT CENTER
CAMBRIDGE STREET
BOWDIN STREET
STANIFORD STREET
BLOSSOM STREET
CHARLES STREET
MASSACHUSETTS GENERAL HOSPITAL
CHARLES RIVER PLAZA
CHARLESBANK PARK
CHARLES RIVER
LAND USE LEGEND
COMMUNITY
RESIDENTIAL
HOTEL
MIXED-USE
COMMERCIAL
GOVERNMENT
CULTURAL
SPORTS VENUE
INSTITUTIONAL
RELIGIOUS
PARKING
MBTA STATION



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Figure 2-3

Existing Pedestrian Network

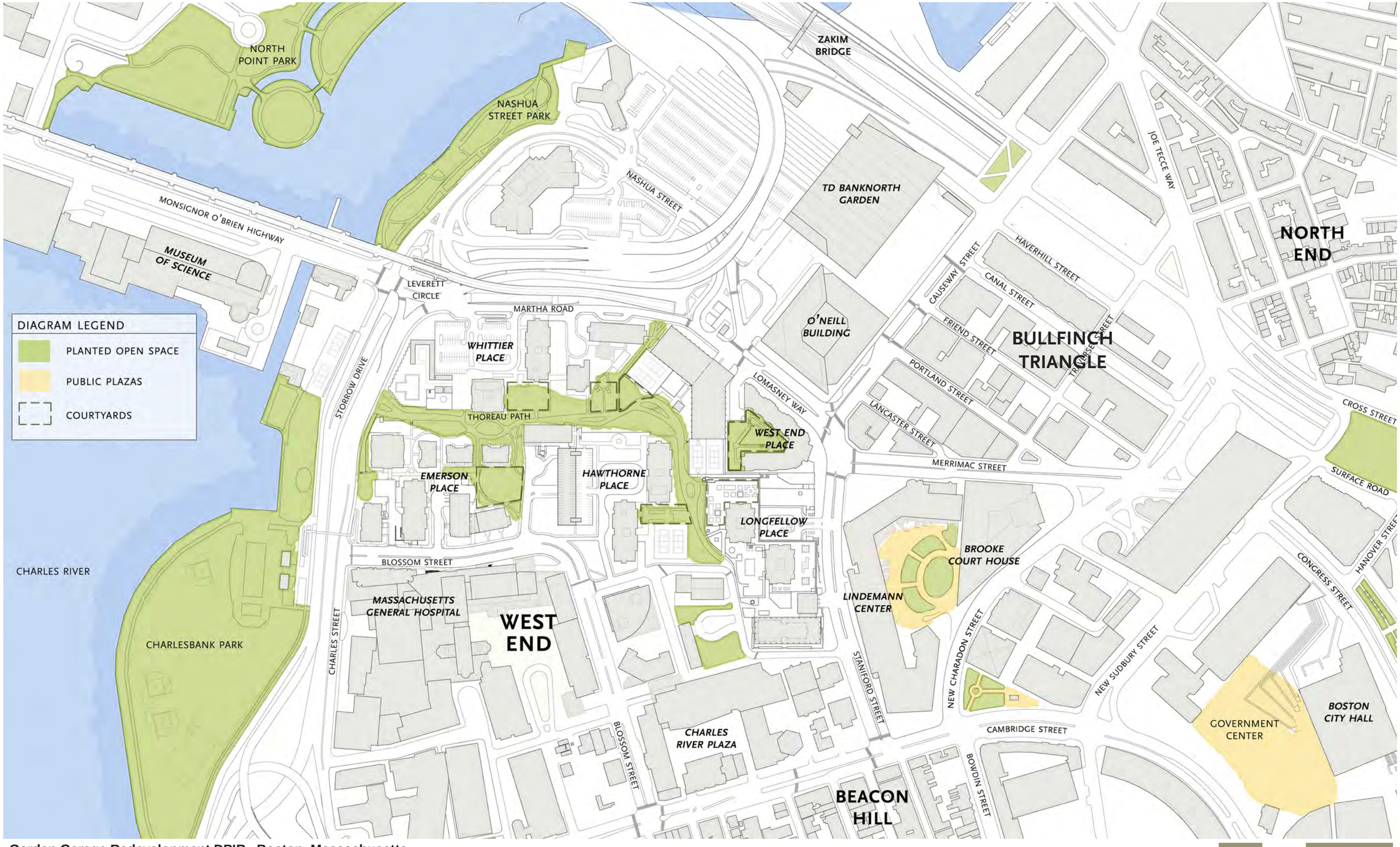

DIAGRAM LEGEND
PLANTED OPEN SPACE
PUBLIC PLAZAS
COURTYARDS
NORTH POINT PARK
NASHUA STREET PARK
ZAKIM BRIDGE
MONSIGNOR O'BRIEN HIGHWAY
NASHUA STREET
TD BANKNORTH GARDEN
JOE TECCE WAY
NORTH END
MUSEUM OF SCIENCE
LEVERETT CIRCLE
MARTHA ROAD
WHITTIER PLACE
O'NEILL BUILDING
CAUSEWAY STREET
HAVERHILL STREET
CANAL STREET
FRIEND STREET
BULLFINCH TRIANGLE
TRAVERSE STREET
STORROW DRIVE
LOMASNEY WAY
PORTLAND STREET
LANCASTER STREET
CROSS STREET
THOREAU PATH
WEST END PLACE
MERRIMAC STREET
SURFACE ROAD
EMERSON PLACE
HAWTHORNE PLACE
LONGFELLOW PLACE
HANOVER STREET
CONGRESS STREET
BROOKE COURT HOUSE
CHARLES RIVER
BLOSSOM STREET
MASSACHUSETTS GENERAL HOSPITAL
LINDEMANN CENTER
WEST END
CHARLESBANK PARK
CHARLES STREET
STANIFORD STREET
NEW CHARADON STREET
NEW SUDBURY STREET
BOSTON CITY HALL
GOVERNMENT CENTER
CAMBRIDGE STREET
CHARLES RIVER PLAZA
BOWDOIN STREET
BEACON HILL



Figure 2-5
Birdseye view looking Northeast



Figure 2-6

Lomasney Way looking West



Figure 2-7
TD Garden looking Southwest



Figure 2-8

Neighborhood context / Lomasney Way looking east







Figure 2-10

View of Longfellow Place loading area entrance



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Figure 2-11
Neighborhood context / Amy Lowell Apartments



Figure 2-12

Neighborhood context / Martha Road - Lomasney Way Intersection



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Figure 2-13

Neighborhood context / Leverett Connector



Figure 2-14
Thoreau Path looking north



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Figure 2-15
Perspective View from Nashua Street



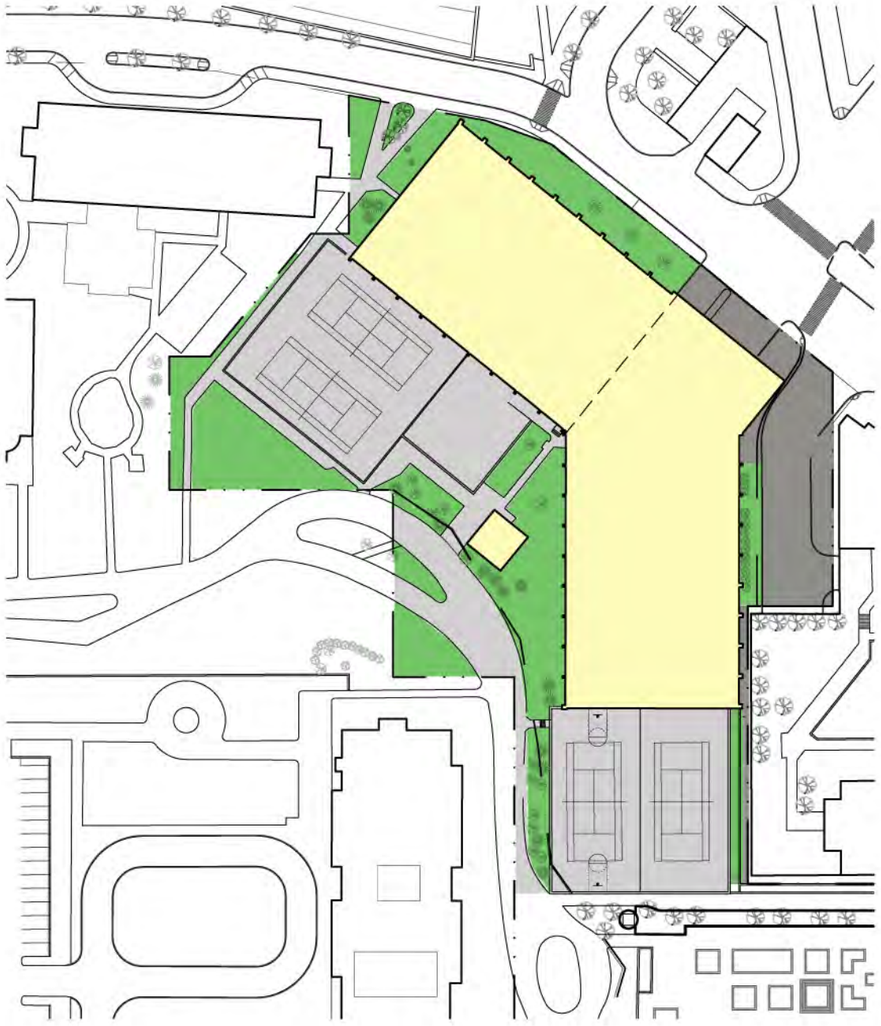
Garden Garage Redevelopment DPIR Boston, Massachusetts

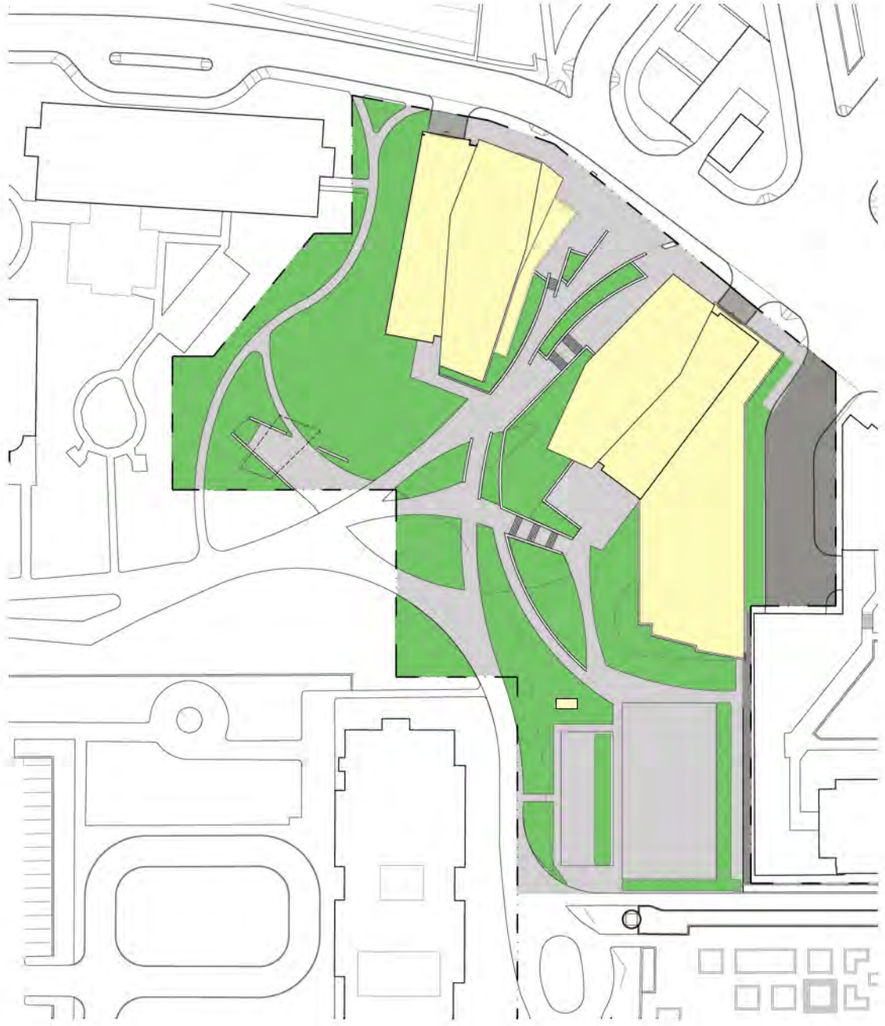
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Figure 2-16
Perspective View from Zakim Bridge



Figure 2-17
Perspective View from Thoreau Path





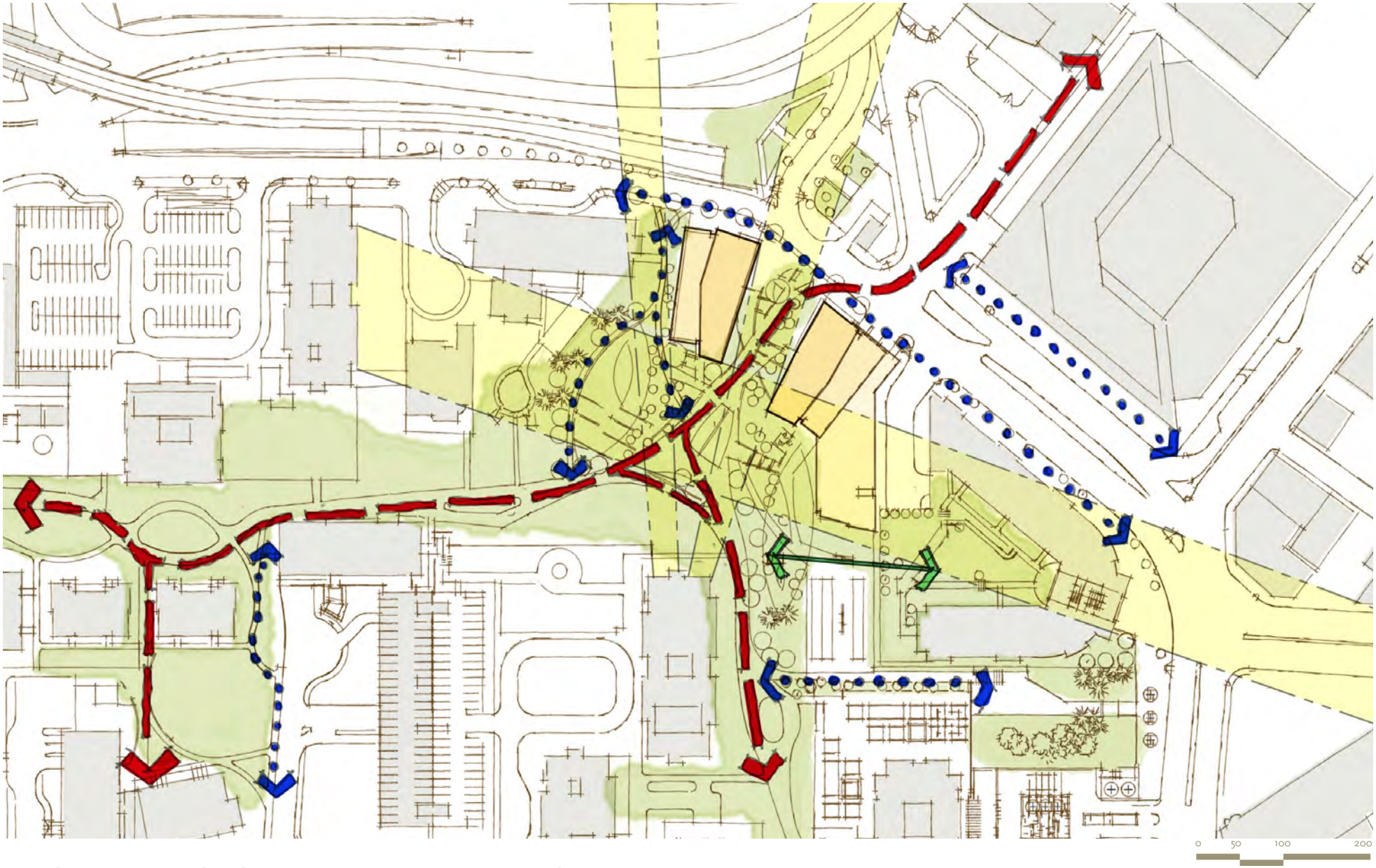
BUILDING FOOTPRINTS	50,150 SQUARE FEET	32,760 SQUARE FEET	-17,390 SQUARE FEET
PLANTING AREA	27,248 SQUARE FEET	51,370 SQUARE FEET	+24,122 SQUARE FEET
WALKWAYS /HARDSCAPE	43,616 SQUARE FEET	41,083 SQUARE FEET	-2,533 SQUARE FEET
DRIVEWAY	10,586 SQUARE FEET	6,477 SQUARE FEET	-4,109 SQUARE FEET
SITE AREA	131,600 SQUARE FEET	131,600 SQUARE FEET	

REDUCES THE OVERALL BUILDING FOOTPRINT ON THE SITE AND PROVIDES 21,589 SQUARE FEET (0.5 ACRES) OF NEW USEABLE OPEN SPACE ON THE SITE.

USEABLE OPEN SPACE INCLUDES: PLANTING AREAS, WALKWAYS, AND HARDSCAPE.

N

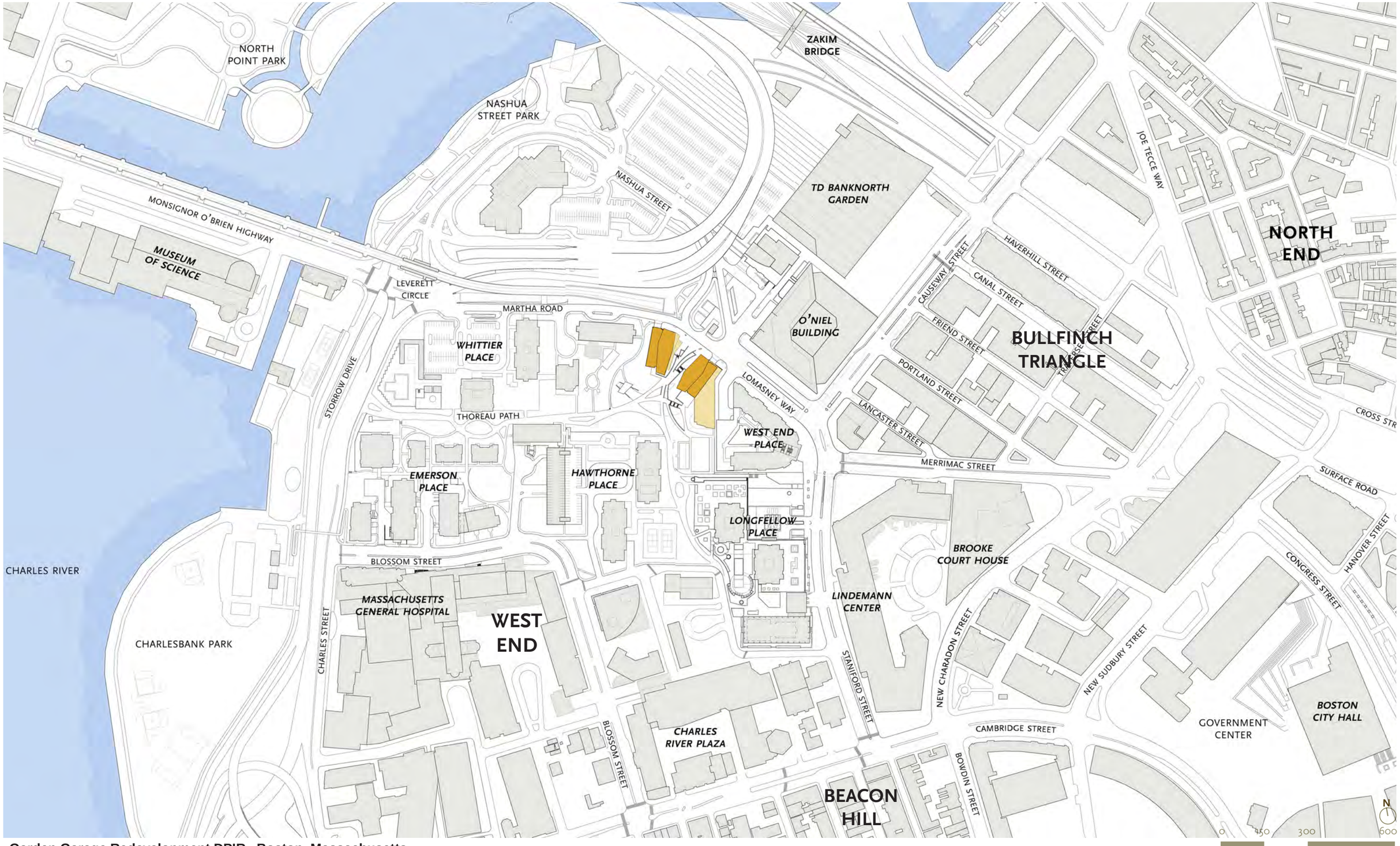
0 50 100 200



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Figure 2-19
Urban Design Diagram - Response to Context

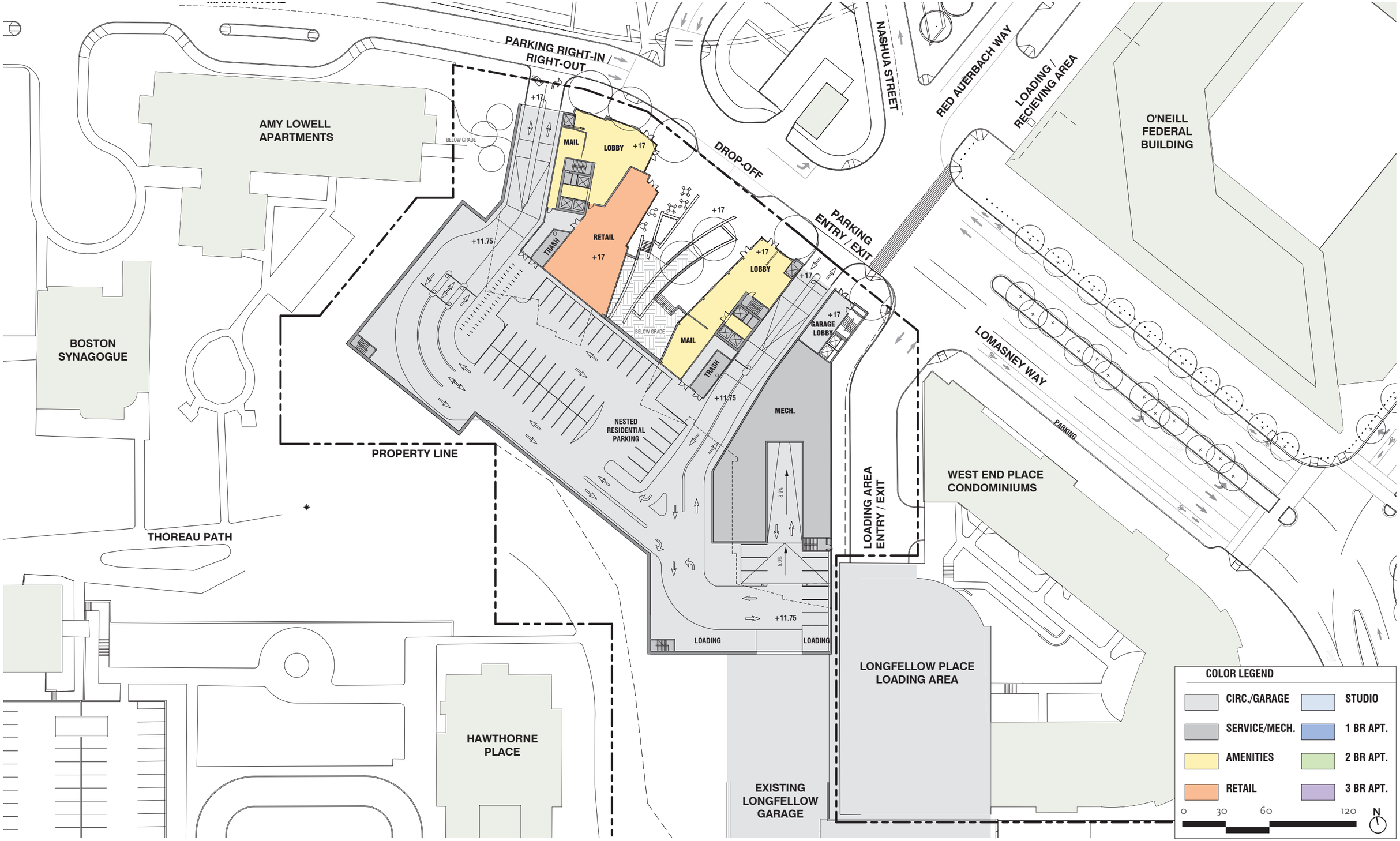


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Figure 2-20

Proposed Neighborhood Context Plan

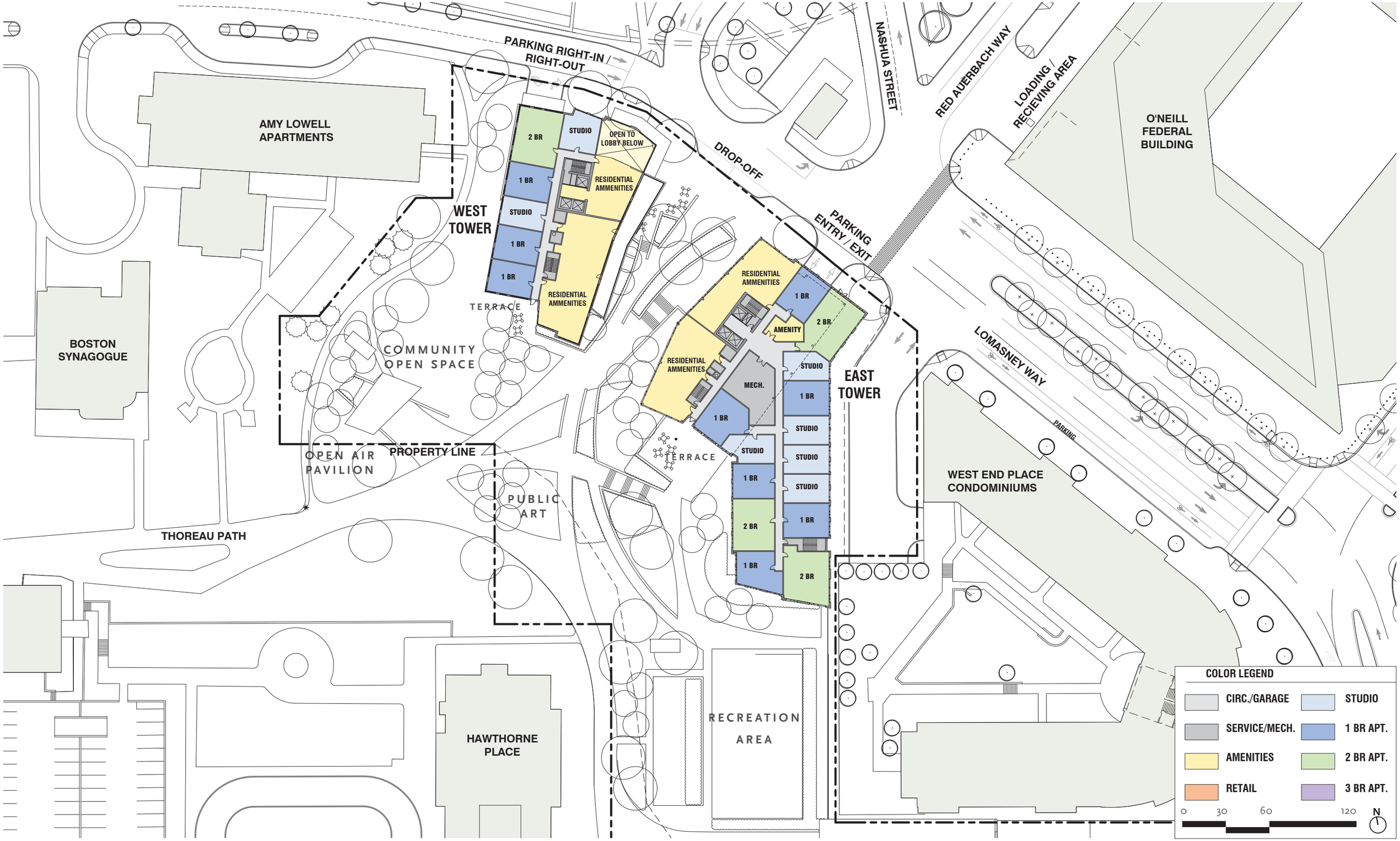


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Figure 2-21

Floor Plan - Street Level

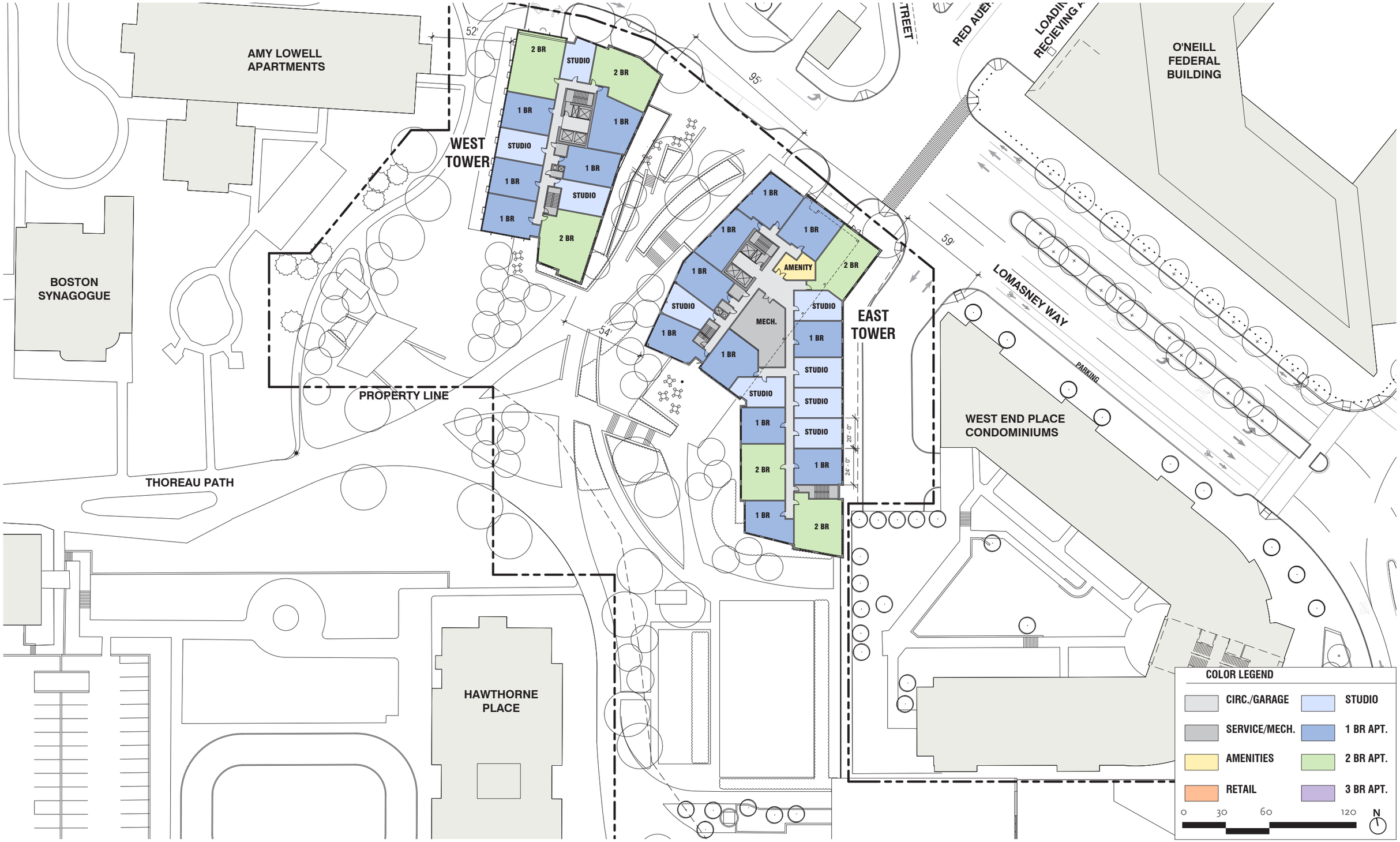


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Figure 2-22

Floor Plan - Thoreau Path Level

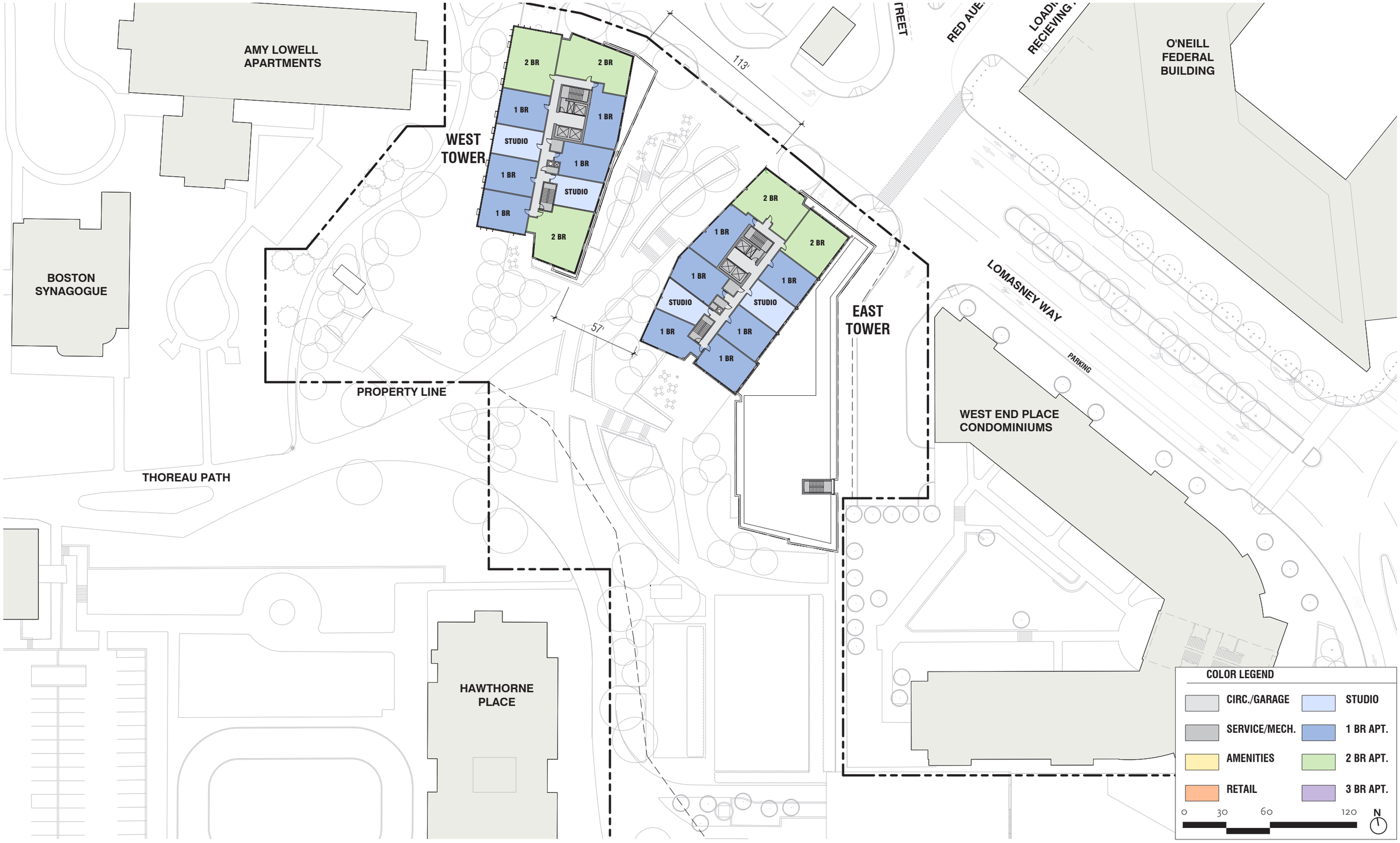


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Figure 2-23

Floor Plan - Typical Floors Three to Eight

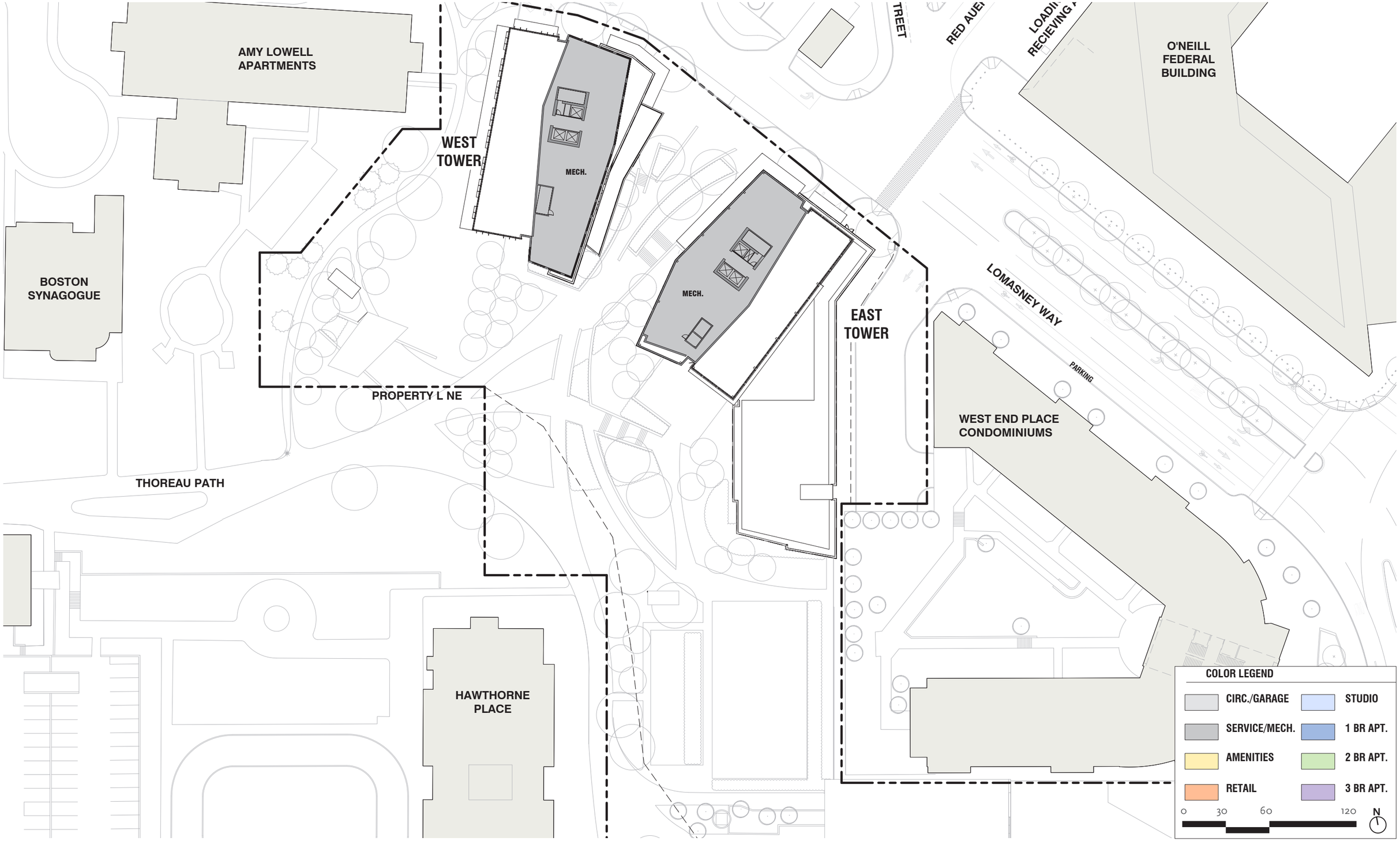


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Figure 2-24

Floor Plan - Typical Upper Floors

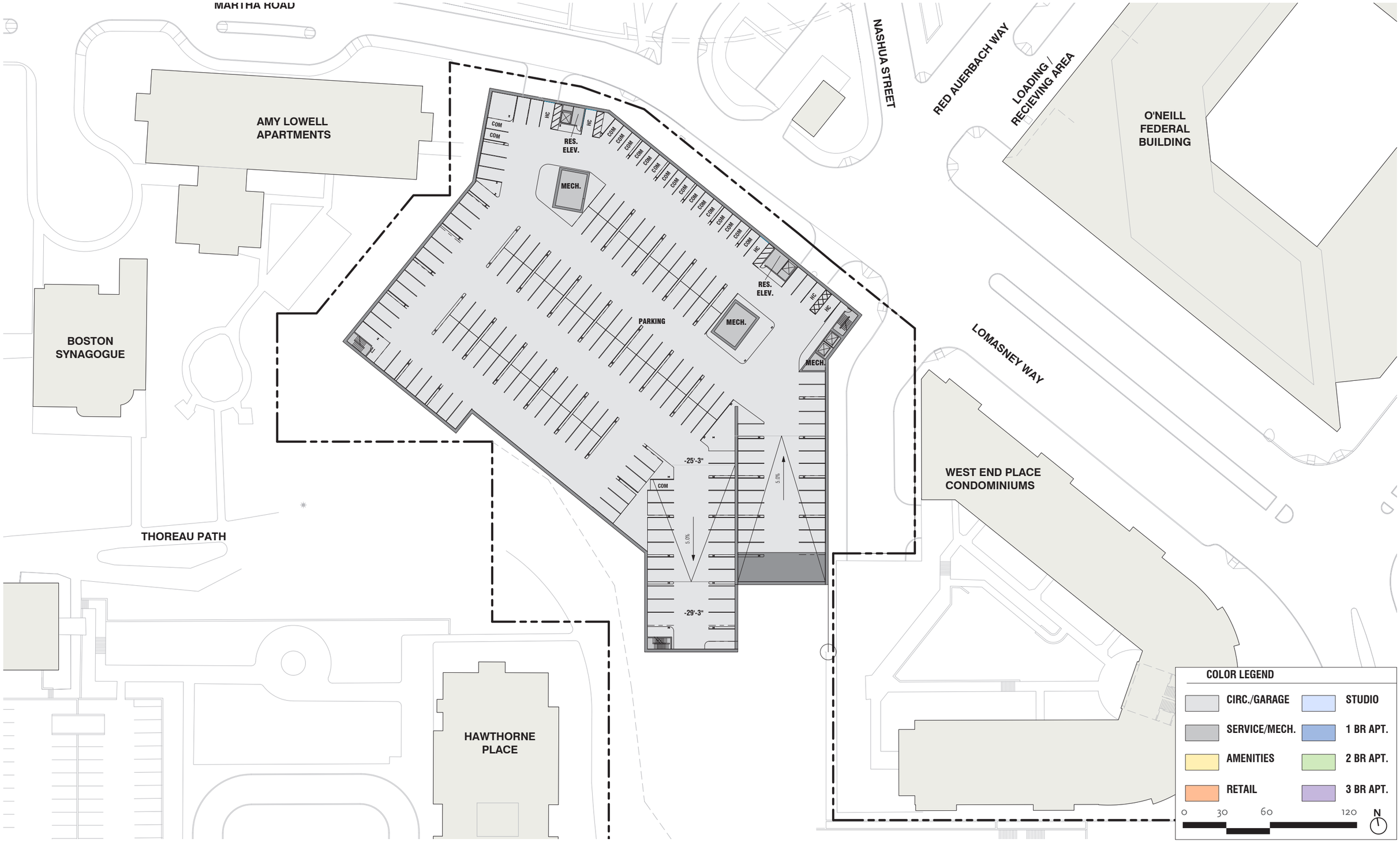


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Figure 2-25

Floor Plan - Mechanical Penthouse

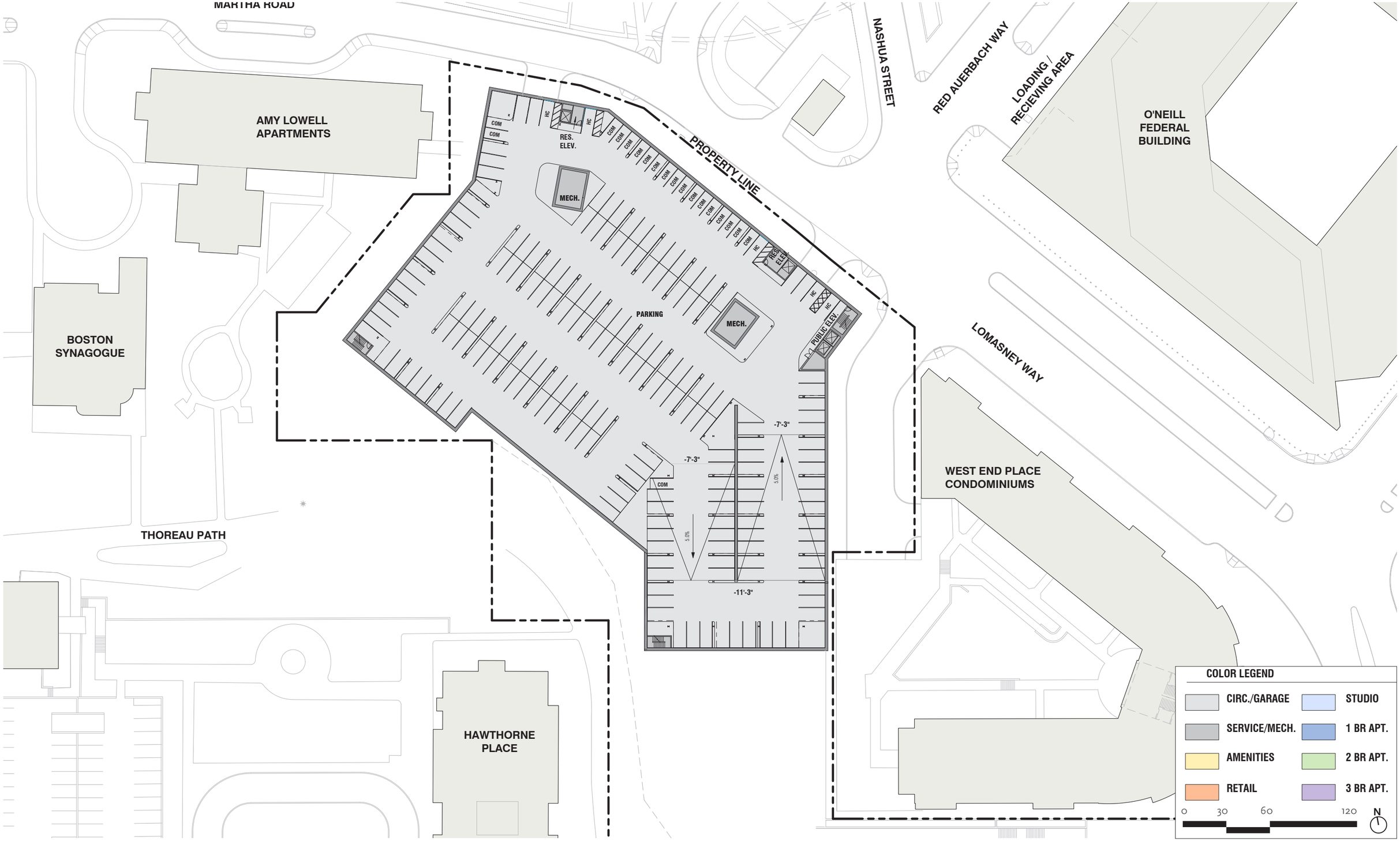


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Figure 2-26

Floor Plan - Parking Level Four

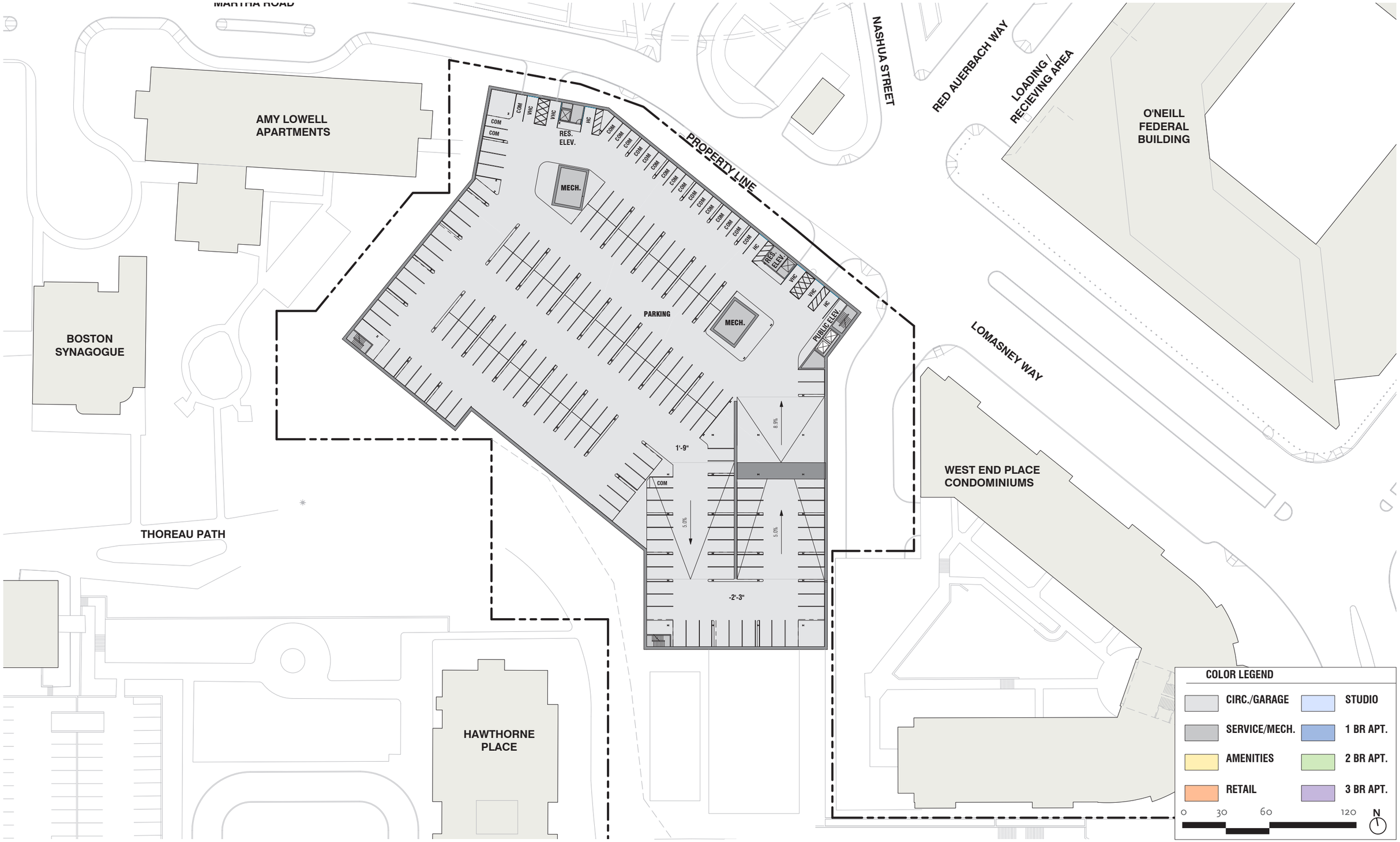


Garden Garage Redevelopment DPIR Boston, Massachusetts

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Figure 2-27

Floor Plan - Typical Parking Level

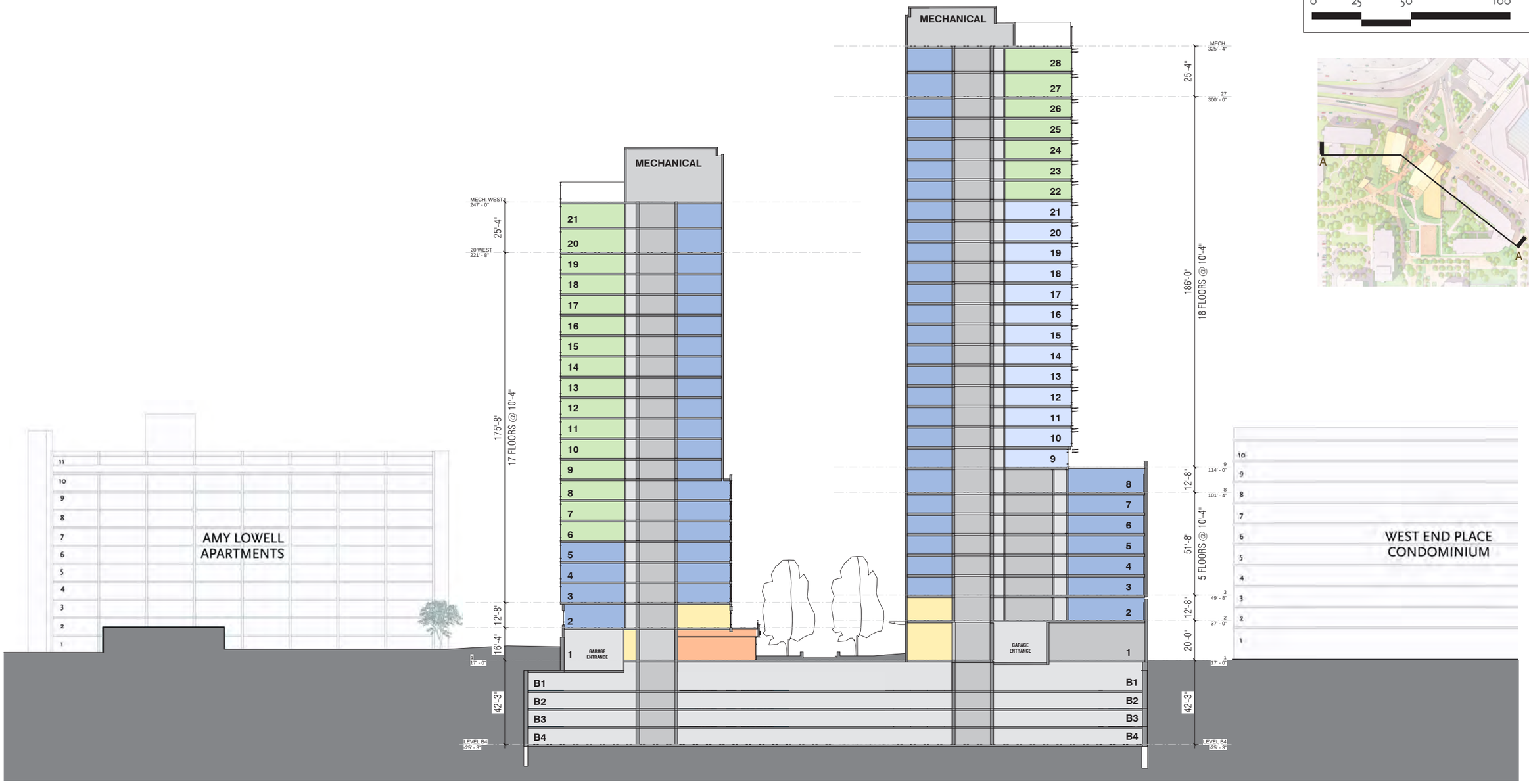


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Figure 2-28

Floor Plan - Parking Level One



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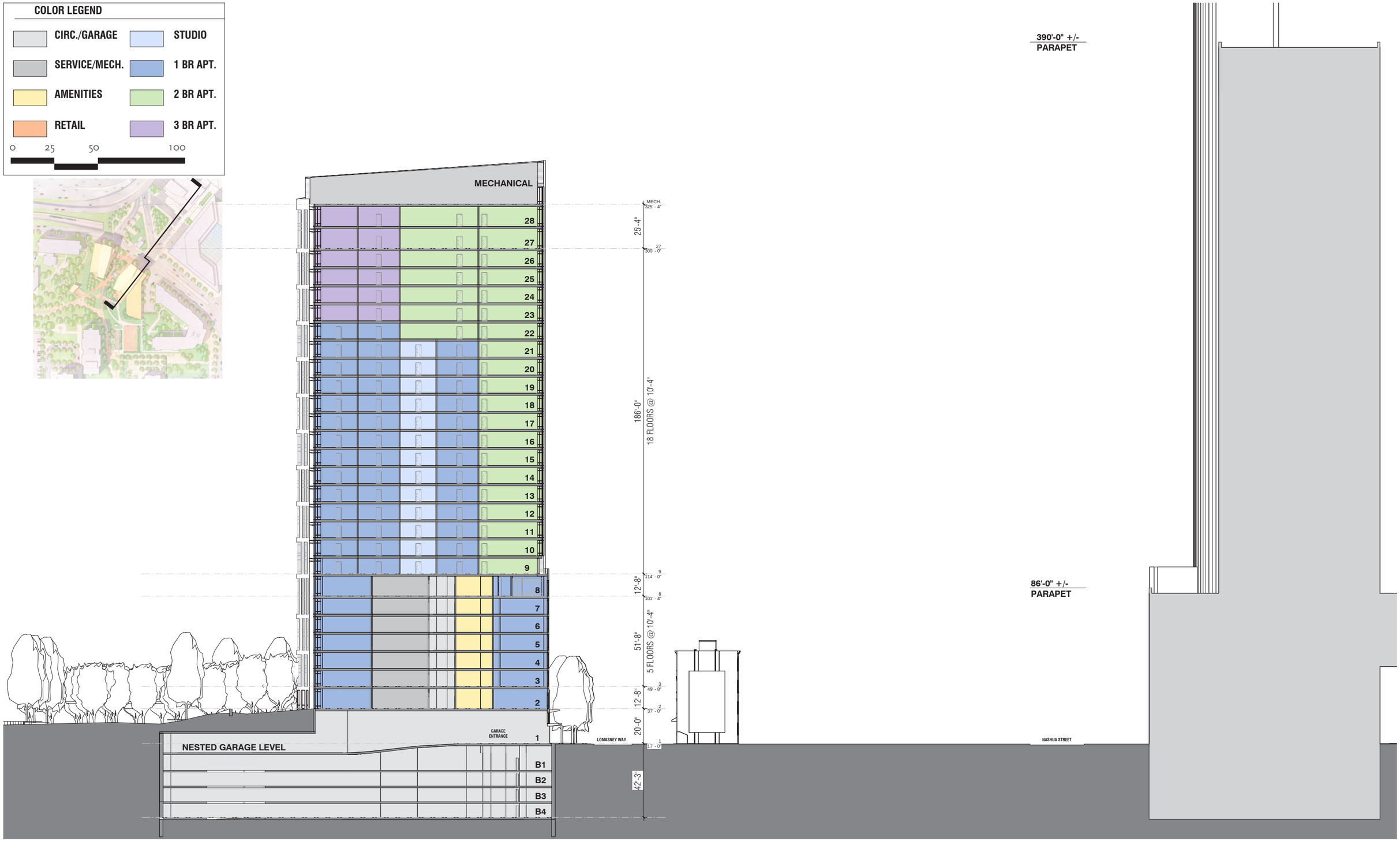
Figure 2-29

Building Section A-A

COLOR LEGEND

CIRC./GARAGE	STUDIO
SERVICE/MECH.	1 BR APT.
AMENITIES	2 BR APT.
RETAIL	3 BR APT.

0 25 50 100



Garden Garage Redevelopment DPIR Boston, Massachusetts

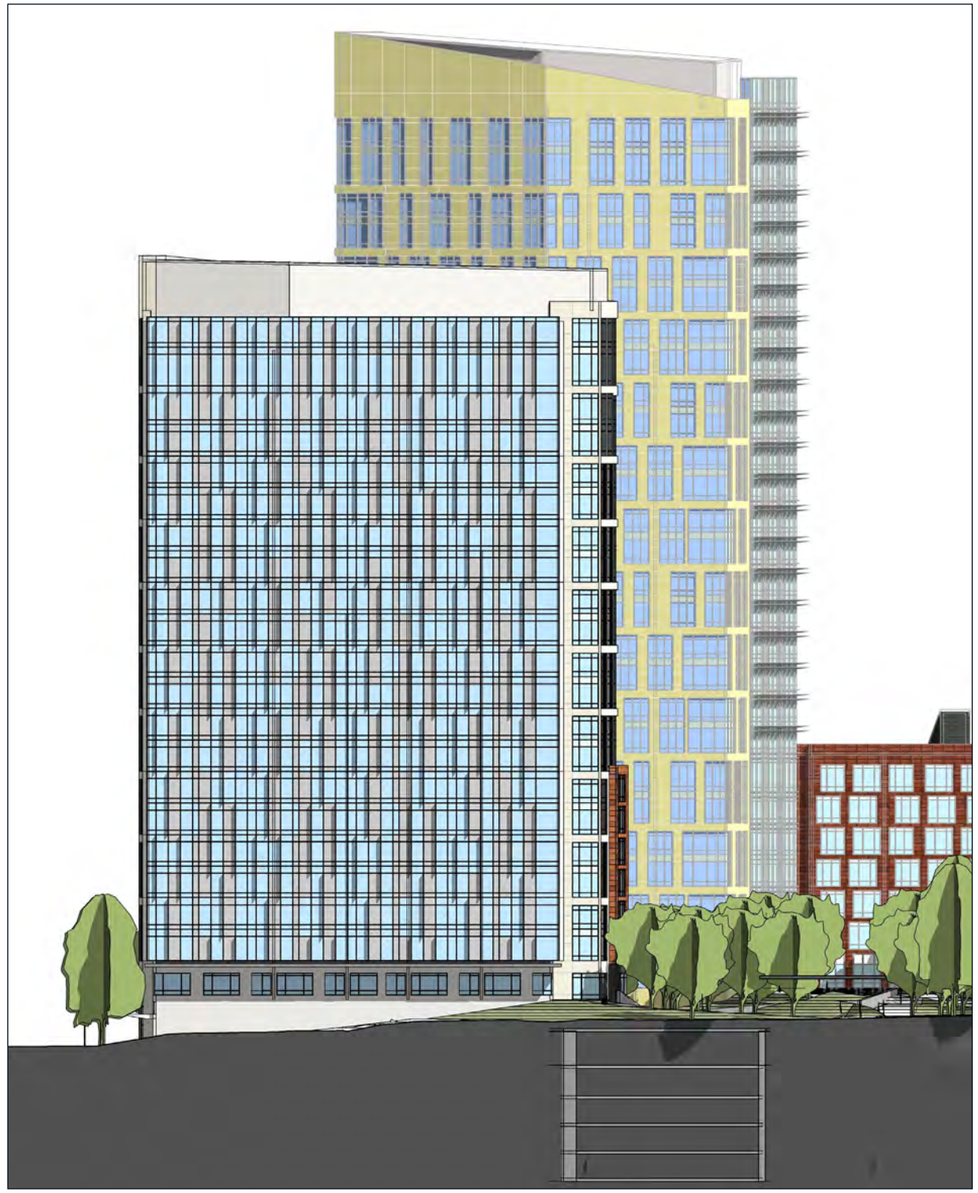
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Figure 2-30

Building Section B-B



SOUTH ELEVATION



WEST ELEVATION

0 25 50 100

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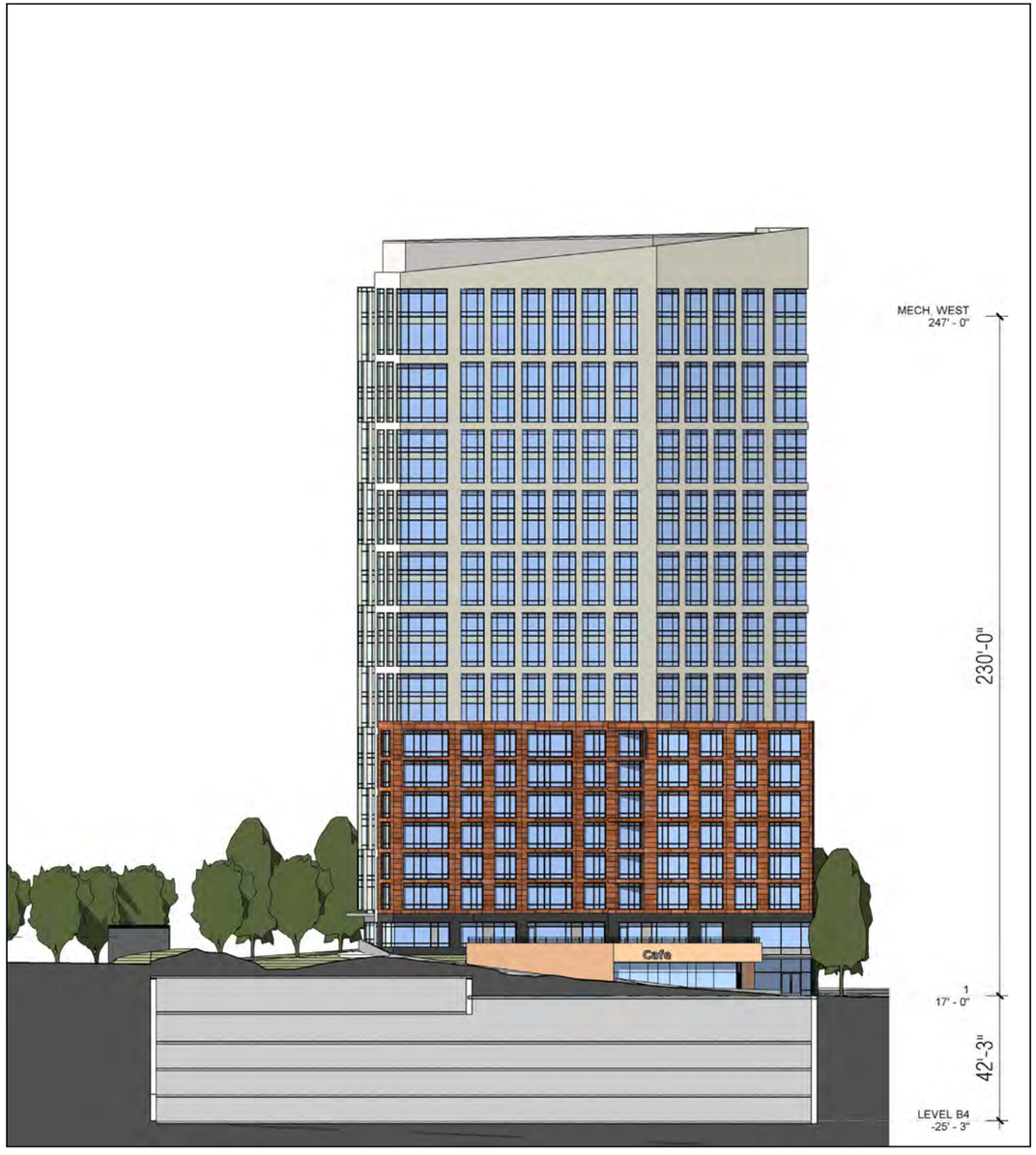
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Figure 2-31

West Tower Building Elevations 1



NORTH ELEVATION



EAST ELEVATION

0 25 50 100



NORTH ELEVATION



EAST ELEVATION

0 25 50 100

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Figure 2-33

East Tower Building Elevations 1



SOUTH ELEVATION



WEST ELEVATION

0 25 50 100

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Figure 2-34

East Tower Building Elevations 2



FROM THE NORTH

FROM THE WEST



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Figure 2-35

Bird's Eye Perspectives 1



FROM THE EAST

FROM THE SOUTH

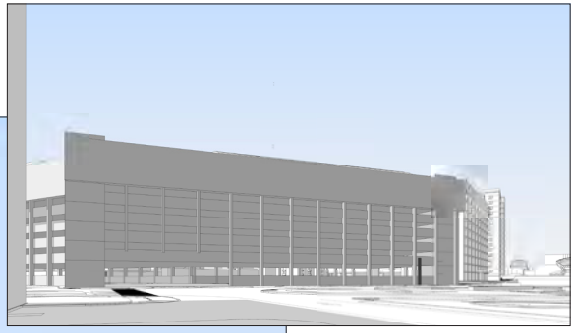


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Figure 2-36

Bird's Eye Perspectives 2



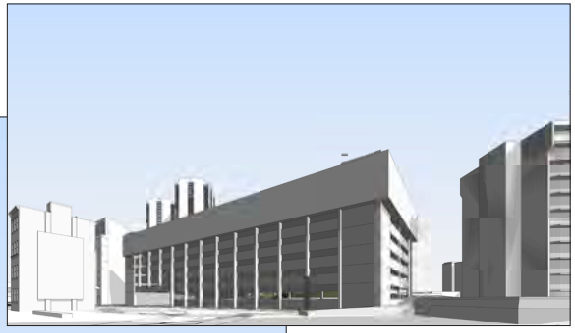
EXISTING VIEW



PROPOSED VIEW

*BUILDING IN NASHUA STREET PARK NOT SHOWN FOR CLARITY

Figure 2-37
Eye Level View from Red Auerbach Way



EXISTING VIEW

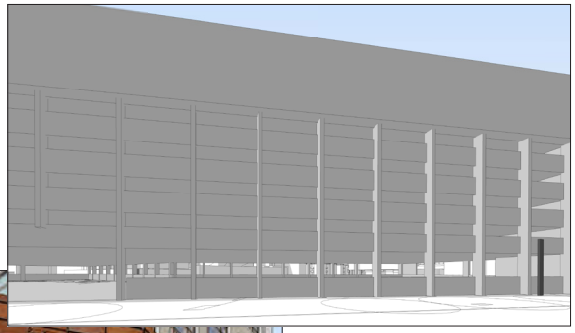


PROPOSED VIEW

Garden Garage Redevelopment DPIR Boston, Massachusetts

ELKUS | MANFREDI ARCHITECTS

Figure 2-38
Eye Level View from Nashua Street



EXISTING VIEW



PROPOSED VIEW

Garden Garage Redevelopment DPIR Boston, Massachusetts

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Figure 2-39
Eye Level View from Lomasney Way



EXISTING VIEW

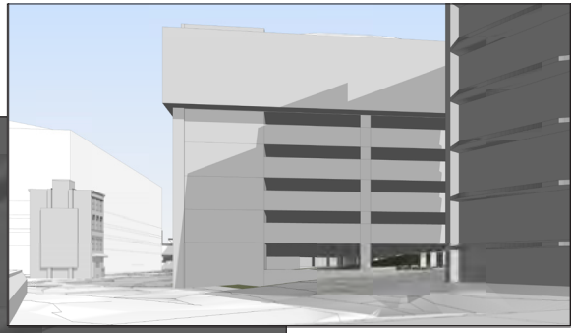


PROPOSED VIEW

Garden Garage Redevelopment DPIR Boston, Massachusetts

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Figure 2-40
Eye Level View from Thoreau Path



EXISTING VIEW

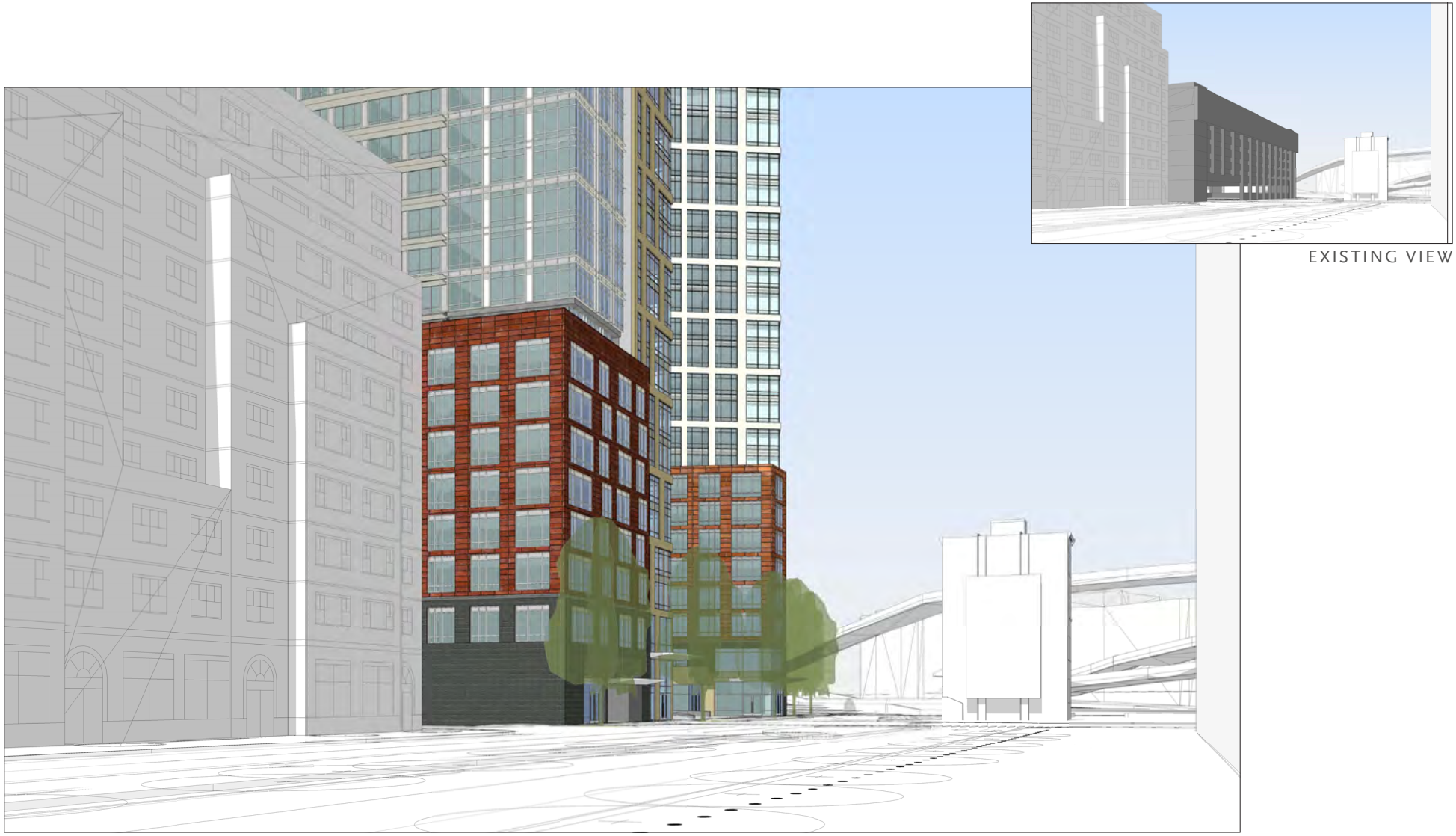


PROPOSED VIEW

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Figure 2-41
Eye Level View from Martha Road



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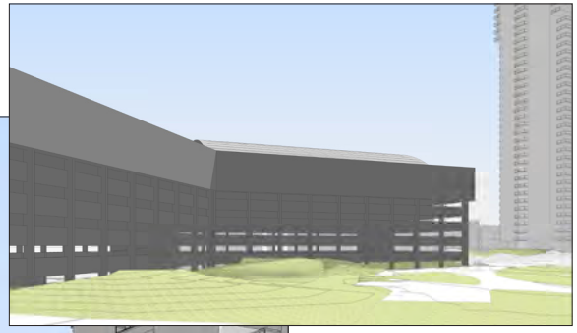
Figure 2-42
Eye Level View from Causeway St and Lomasney Way



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Figure 2-43
Eye Level View from West End Place



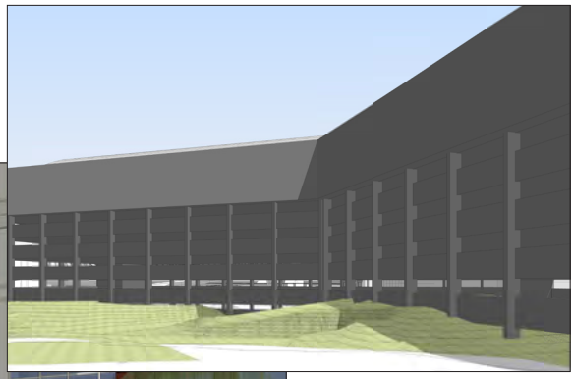
EXISTING VIEW



PROPOSED VIEW

Figure 2-44

Eye Level View from Amy Lowell Apartments



EXISTING VIEW



PROPOSED VIEW

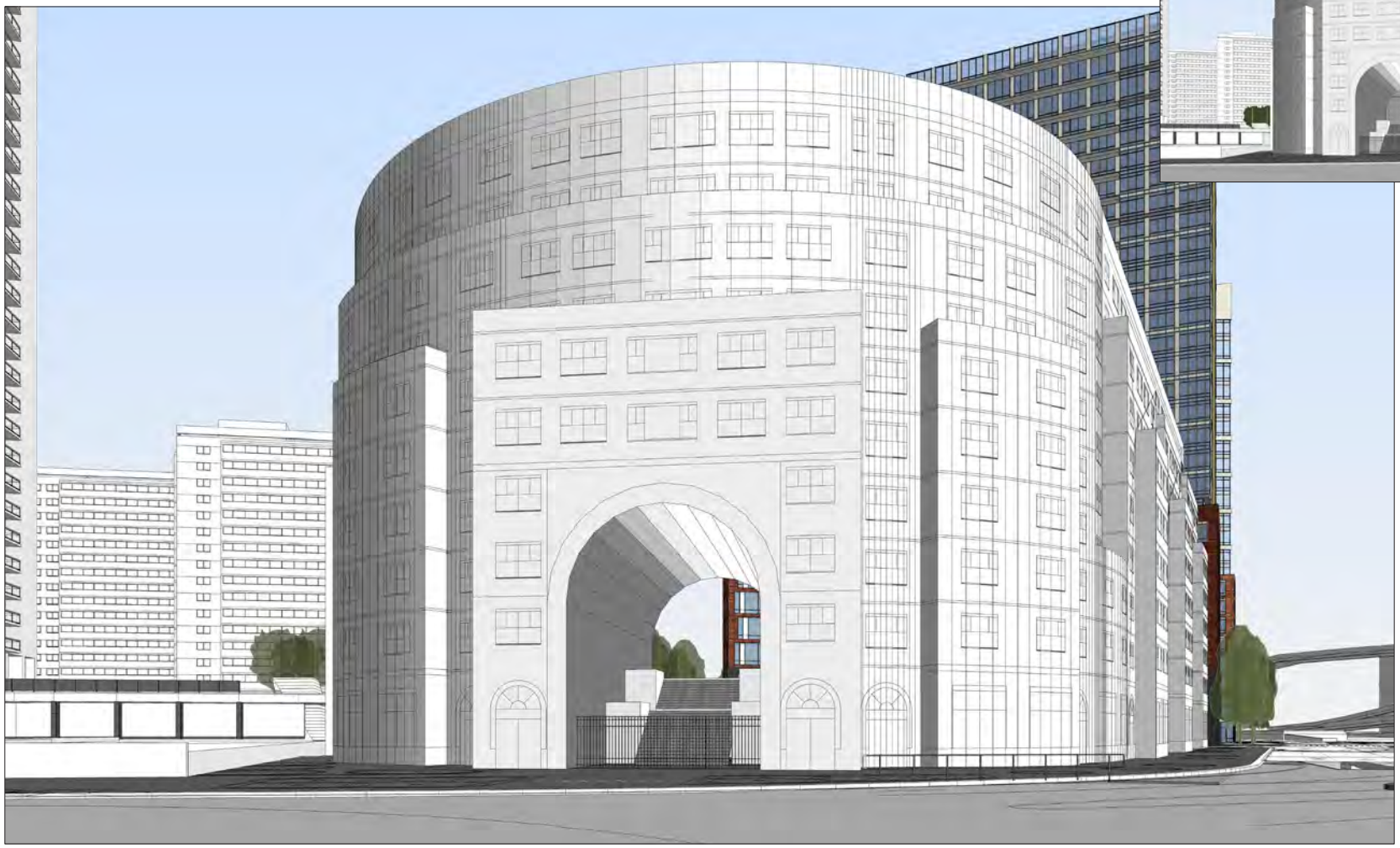
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Figure 2-45
Eye Level View from Hawthorne Place



EXISTING VIEW



PROPOSED VIEW

Garden Garage Redevelopment DPIR Boston, Massachusetts

ELKUS | MANFREDI ARCHITECTS

Figure 2-46
Eye Level View through West End Place

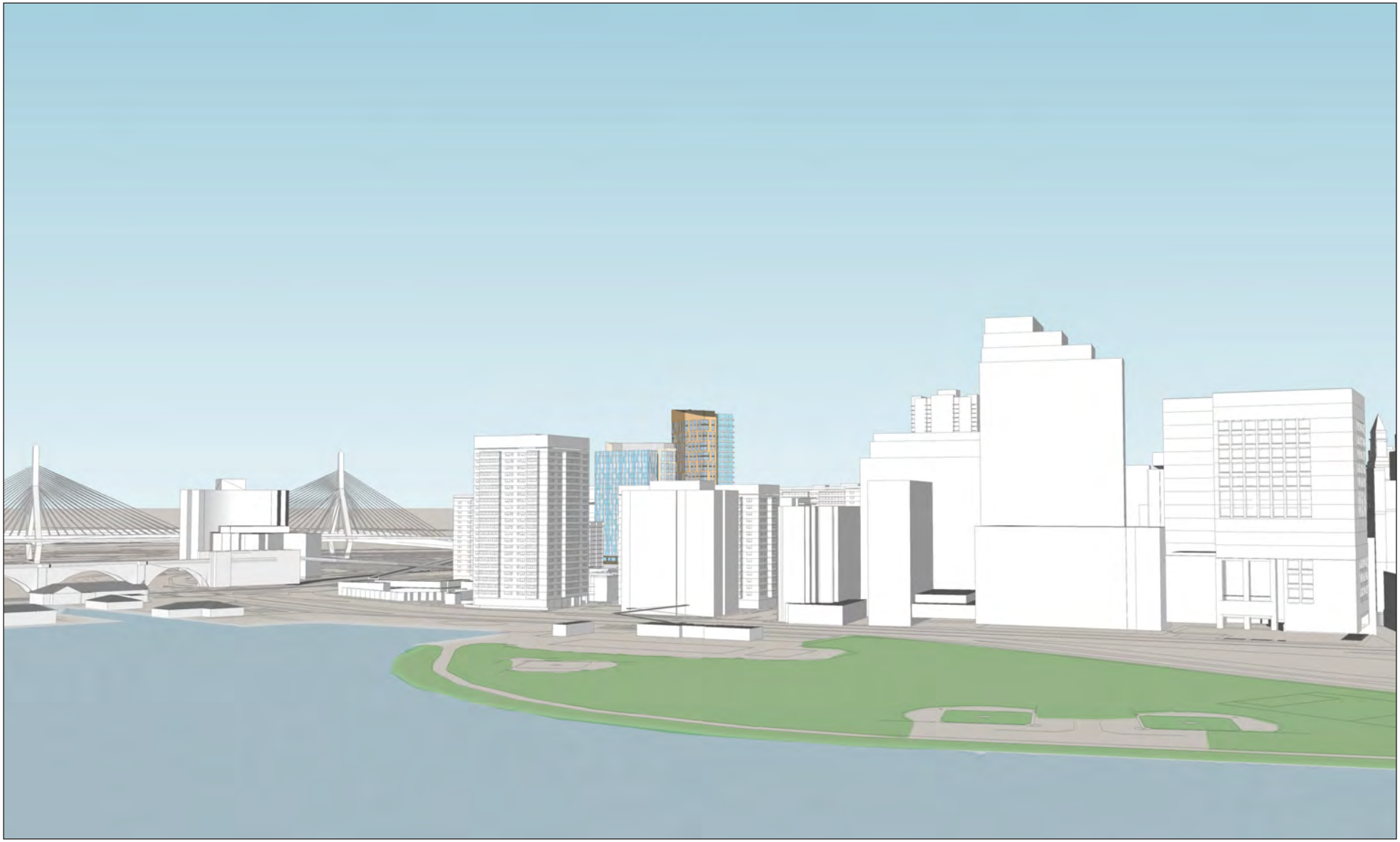


Figure 2-47
Skyline View from the Charles River



Figure 2-48
Eye Level View from the Museum of Science

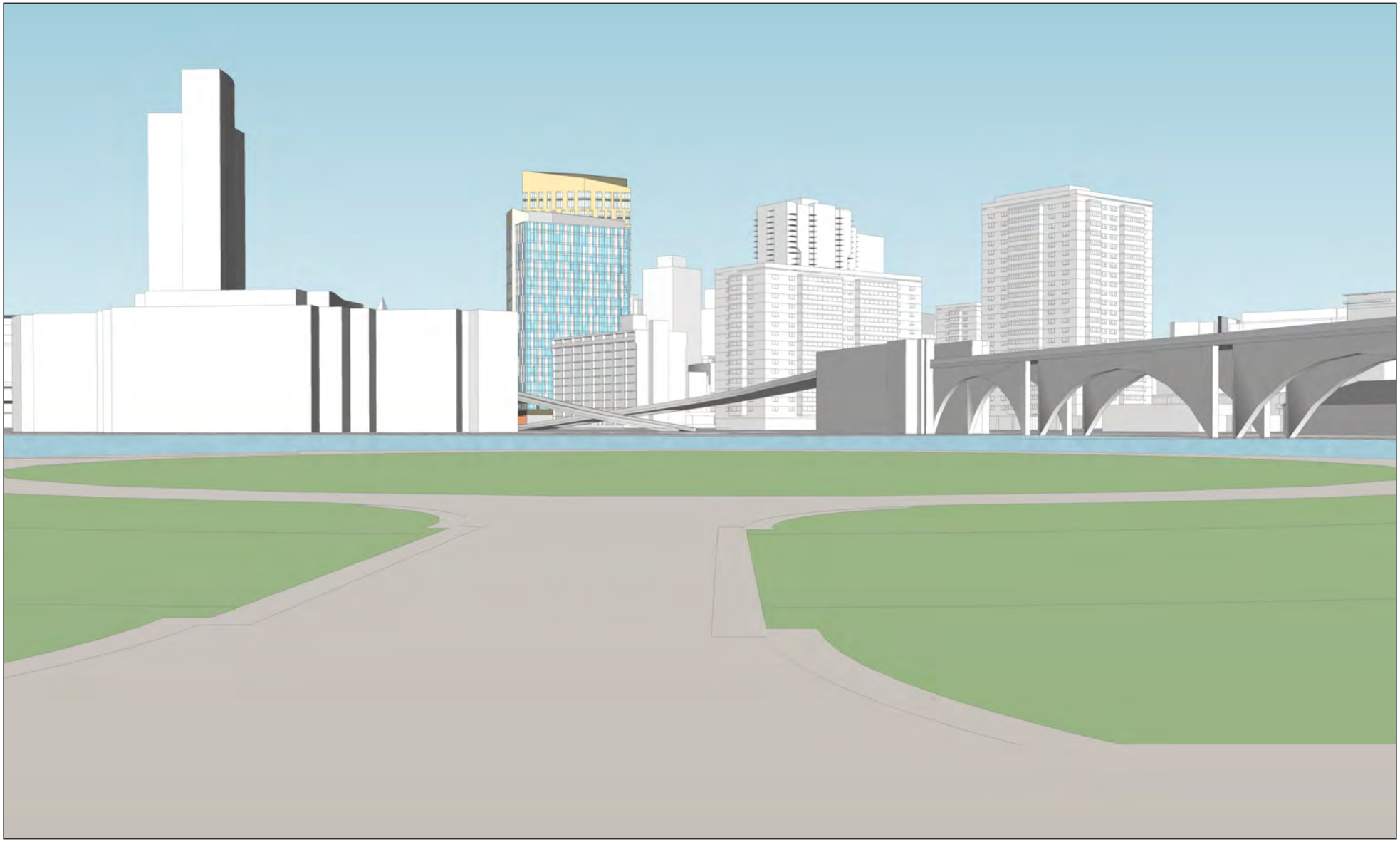


Figure 2-49
Eye Level View from North Point Park

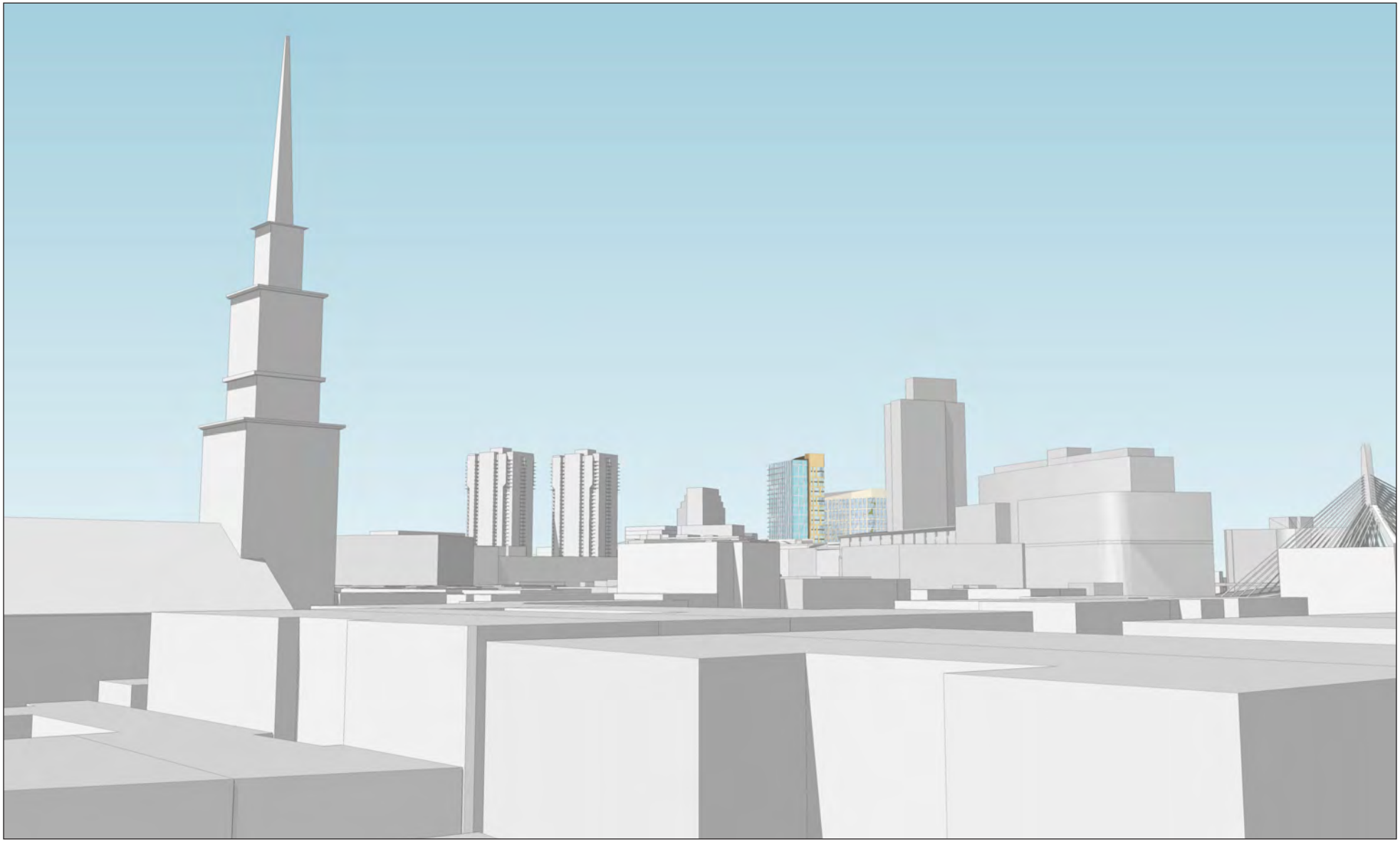


Figure 2-50
Skyline View from the North End

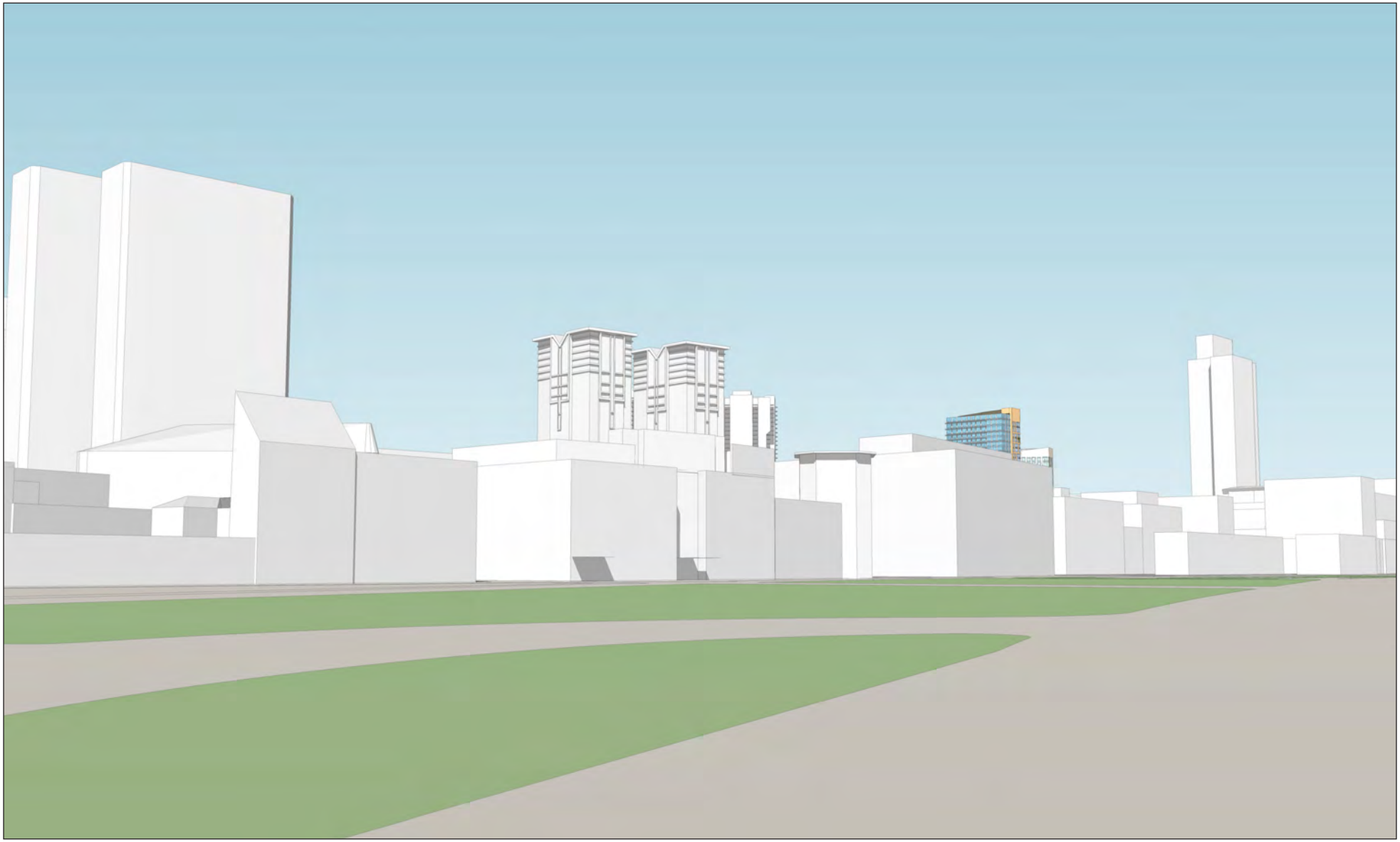


Figure 2-51
Eye Level View from Rose Kennedy Greenway



NORTH-SOUTH NEIGHBORHOOD SECTION LOOKING EAST



EAST-WEST NEIGHBORHOOD SECTION LOOKING NORTH

0 80 160 320

Garden Garage Redevelopment DPIR Boston, Massachusetts

ELKUS | MANFREDI ARCHITECTS

Figure 2-52
Neighborhood Sections



Figure 2-53
Eye Level View from Boston Commons



Figure 2-54
Skyline View from Beacon Hill

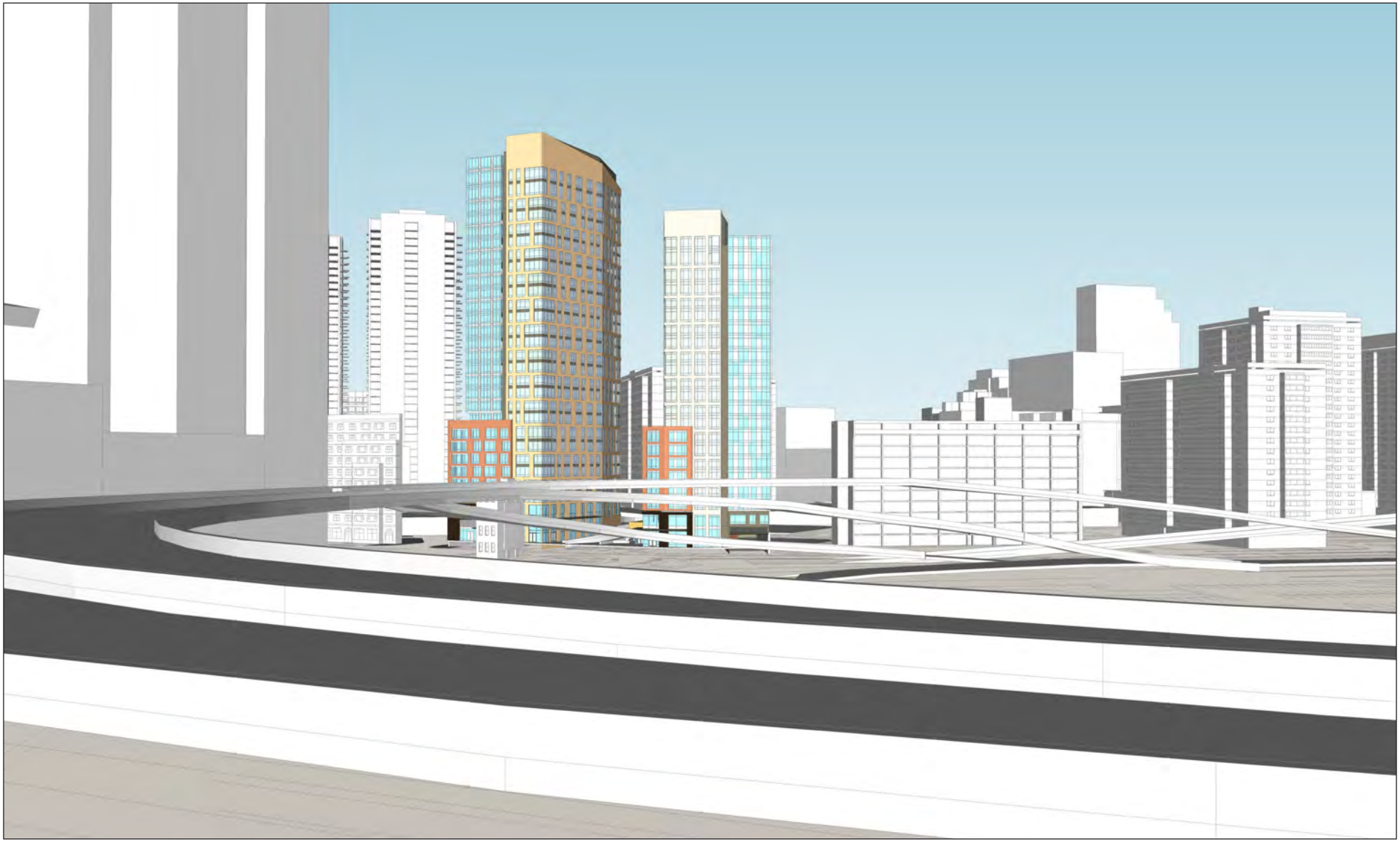


Figure 2-55
Eye Level View from the Zakim Bridge

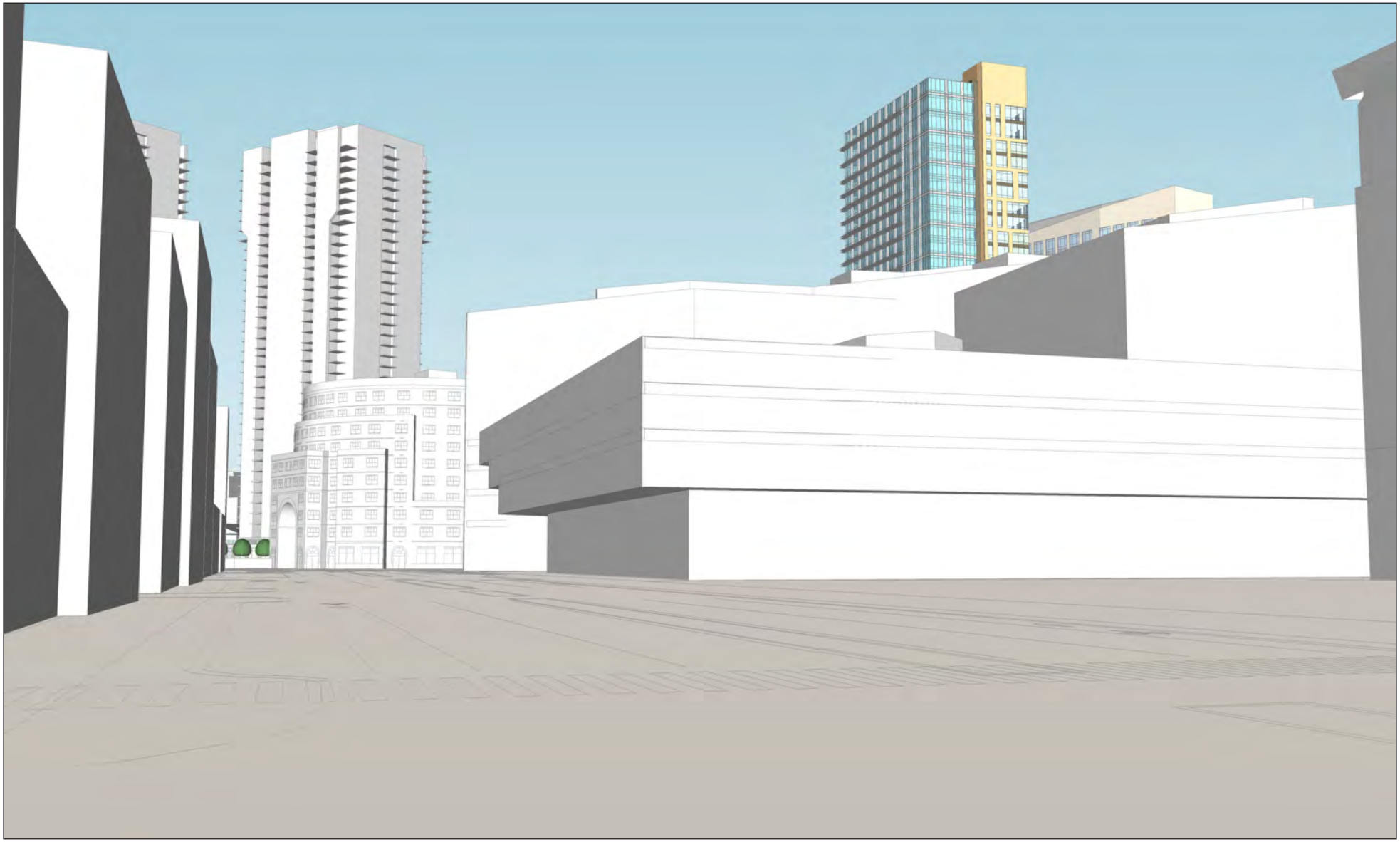


Figure 2-56
Eye Level View from Causeway Street

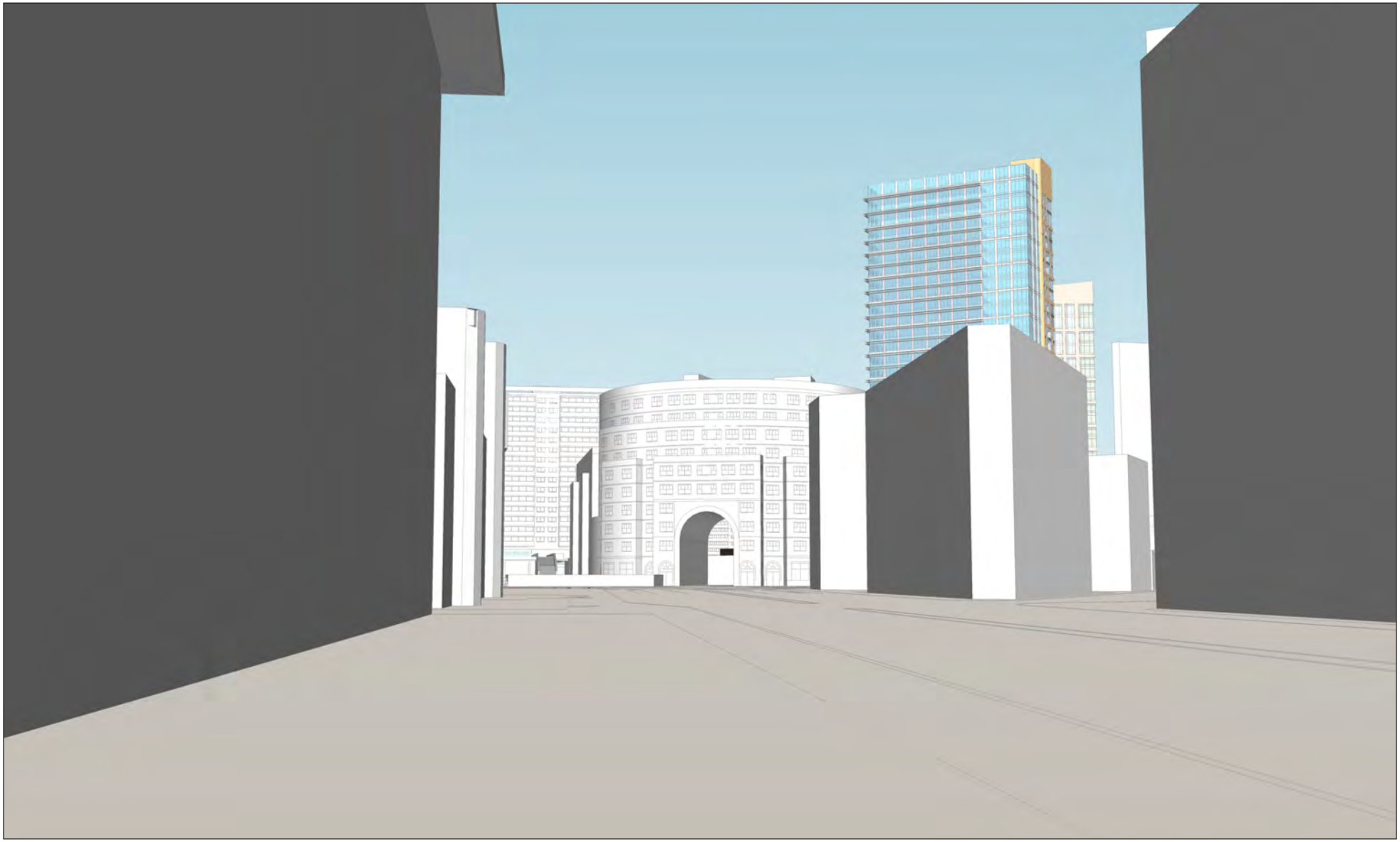


Figure 2-57
Eye Level View from Merrimac Street



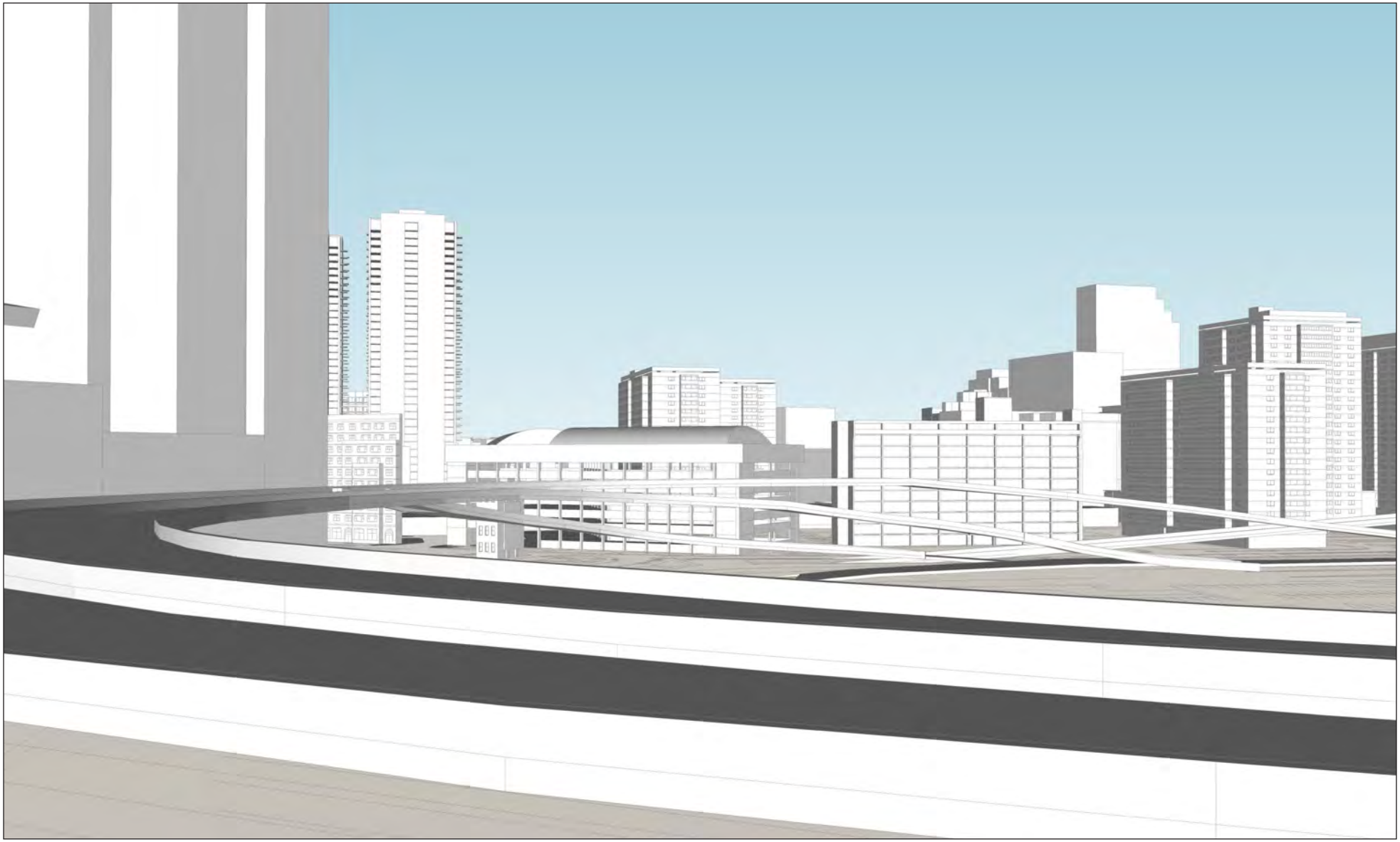
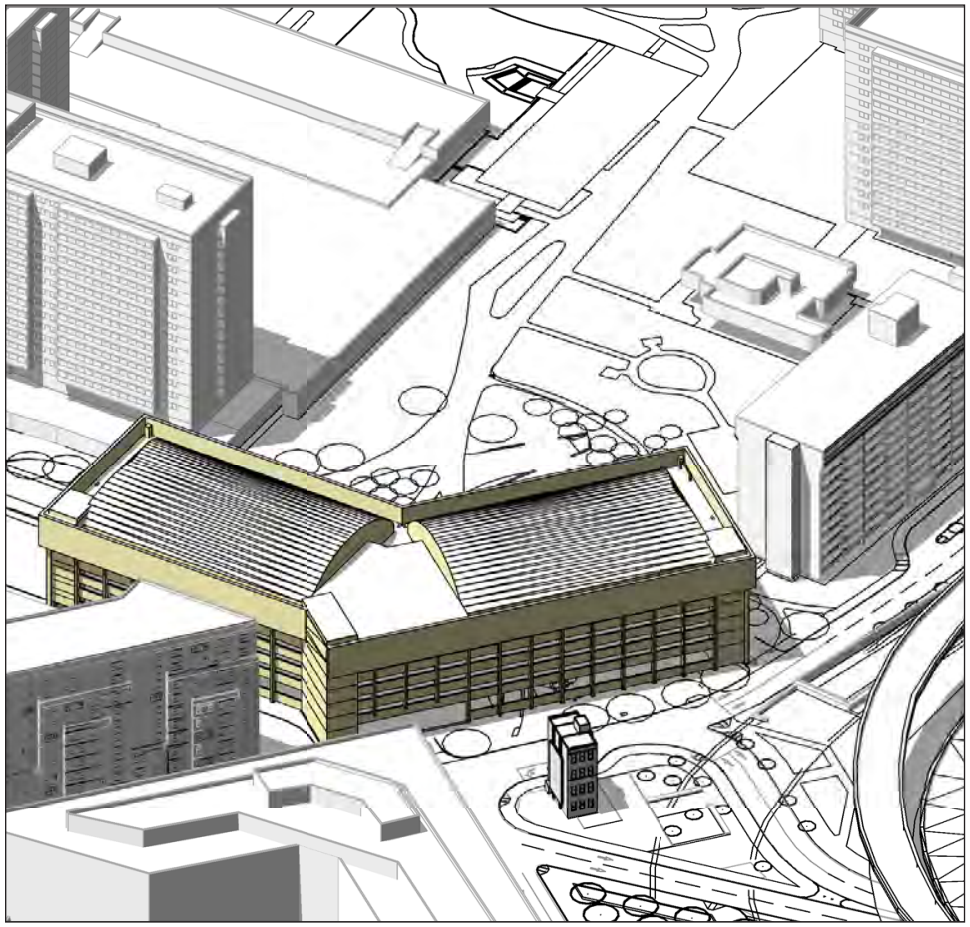
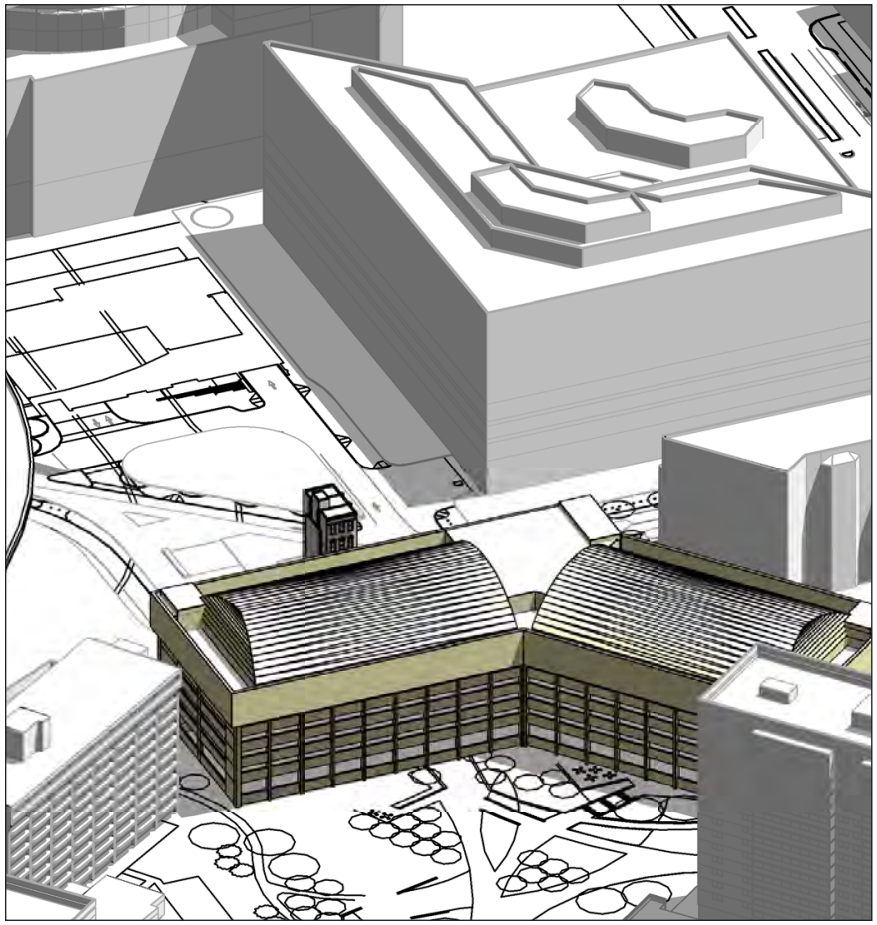


Figure 2-59
Existing Eye Level View from the Zakim Bridge



EXISTING MASSING FROM THE NORTH

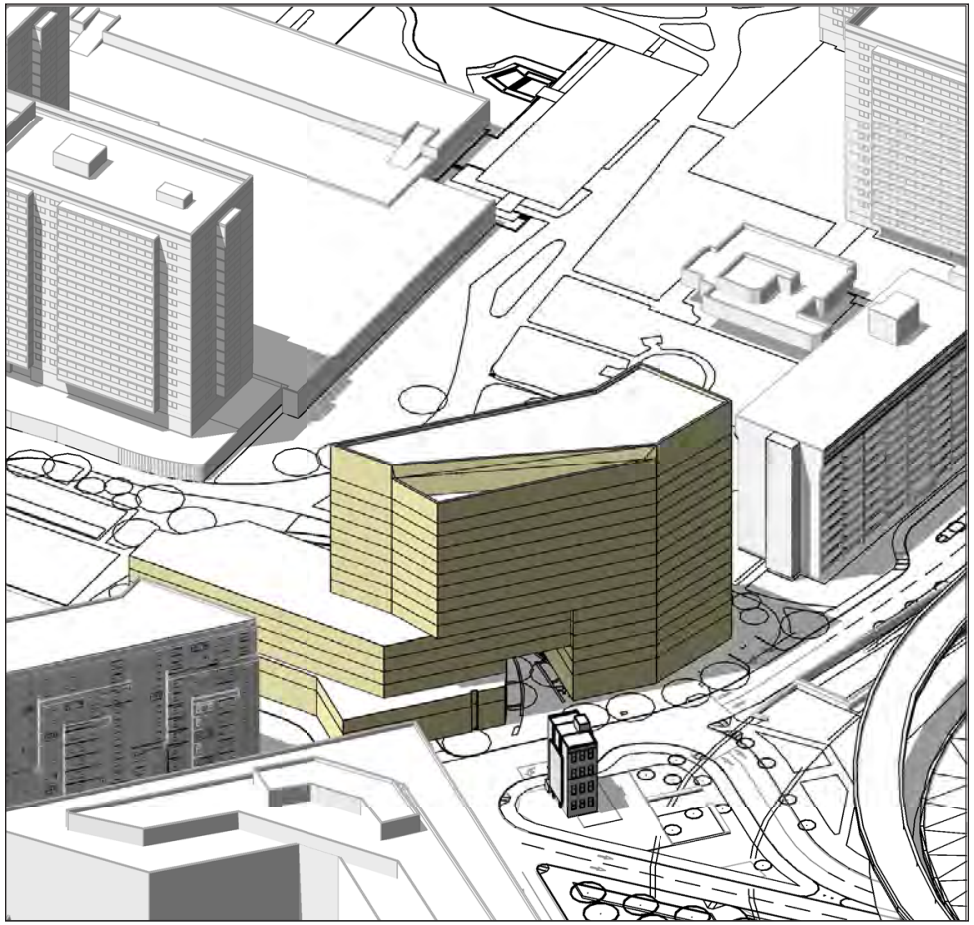


EXISTING MASSING FROM THE WEST

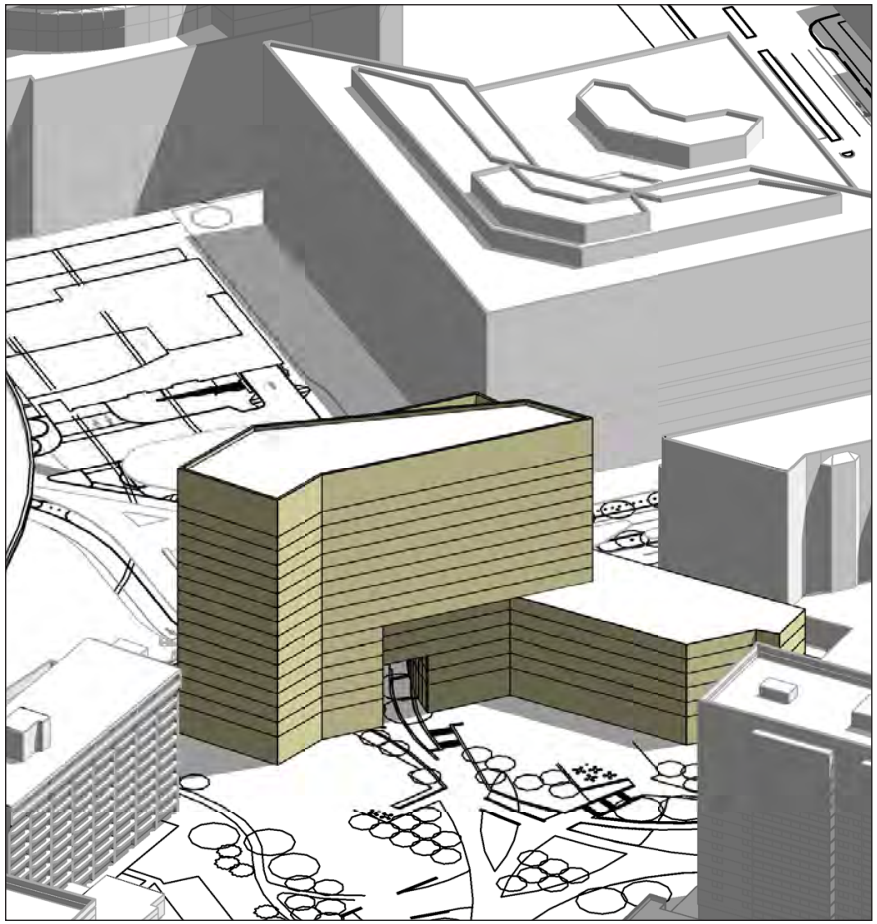
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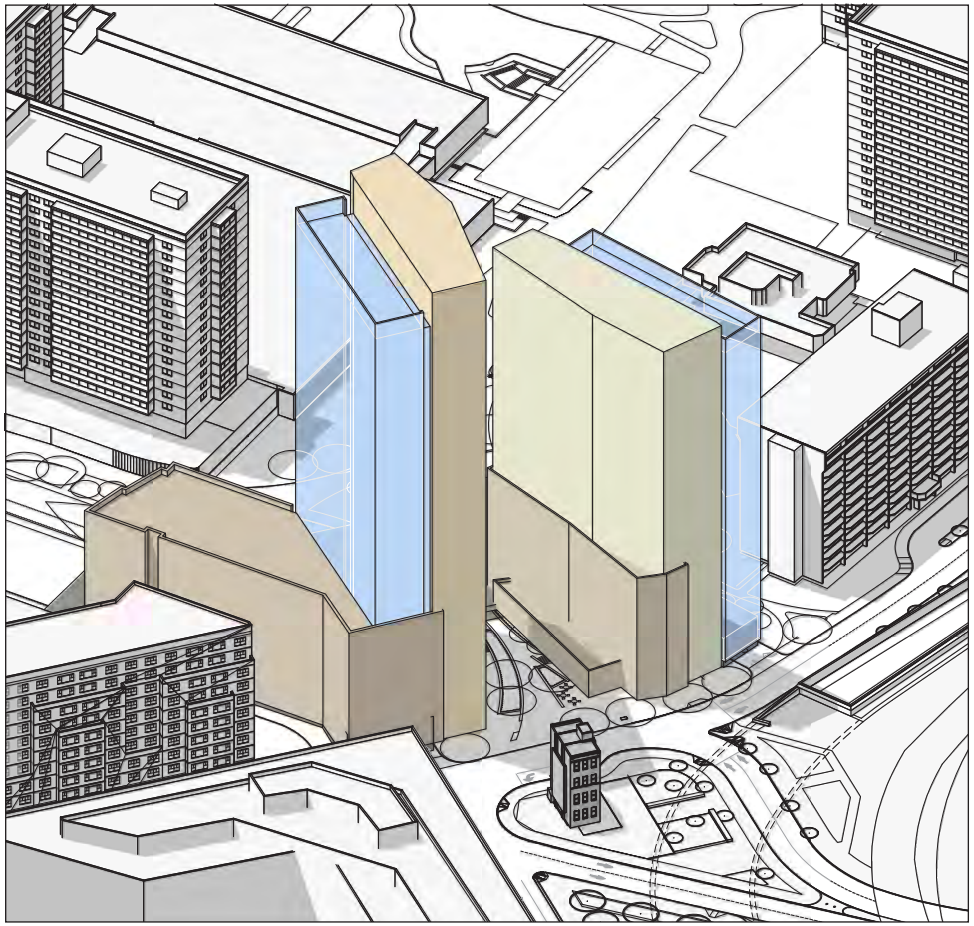
Figure 2-60
Existing Massing



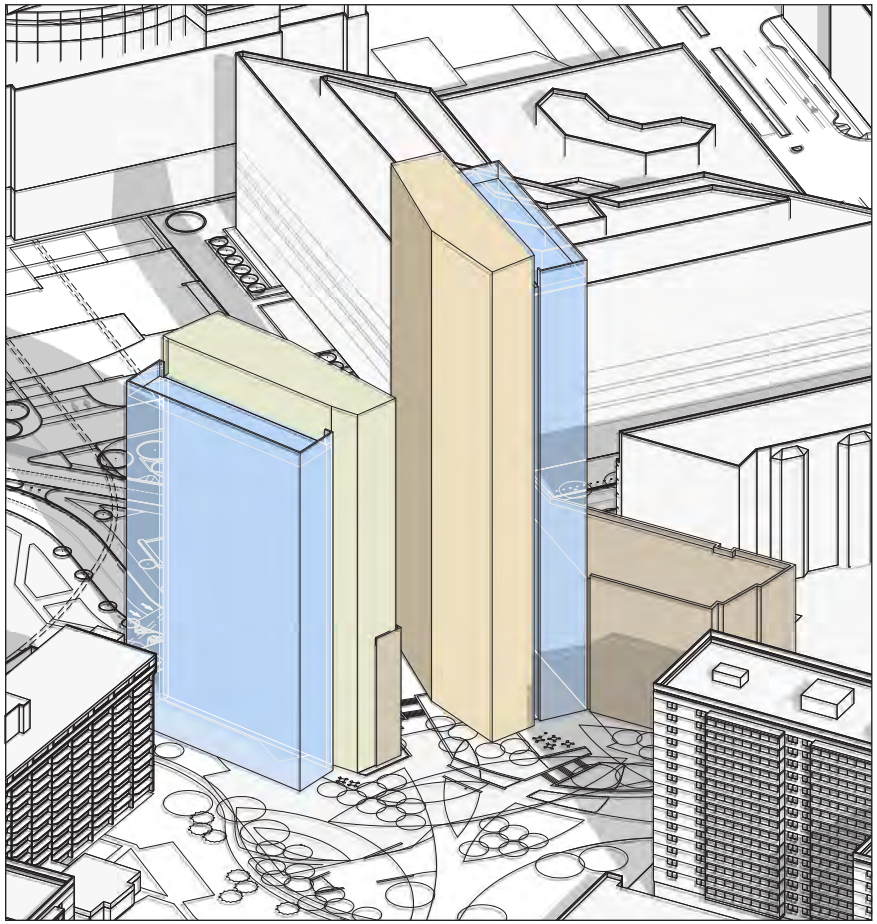
AS-OF-RIGHT MASSING FROM THE NORTH



AS-OF-RIGHT MASSING FROM THE WEST



PROPOSED MASSING FROM THE EAST



PROPOSED MASSING FROM THE WEST

Garden Garage Redevelopment DPIR Boston, Massachusetts

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Figure 2-62
Proposed Conceptual Massing

Section 3.0

Transportation

3.0 TRANSPORTATION

3.1 Introduction

In accordance with the Scoping Determination issued by the BRA pursuant to Article 80 of the Boston Zoning Code, this section of the DPIR addresses the following: roadway, pedestrian, and bicycle conditions; transportation issues; parking and loading; pedestrian and bicycle circulation; proposed mitigation; and transportation goals for the proposed Garden Garage Project.

3.1.1 Project Description

As described in Section 2.0, the Project site is located on Martha Road and Lomasney Way on approximately three acres of land at Longfellow Place in Boston's West End (see Figure 3-1). As the basis for transportation analysis, the proposed Project will create two new buildings on the site of the existing above-ground Garden Garage:

- the West Tower will consist of approximately 190 residential apartment units and approximately 3,000 square feet of ground-floor retail; and
- the East Tower will consist of approximately 310 residential apartment units.

In addition, the existing 650-space garage will be replaced with an 850-space underground parking structure, resulting in a net increase of 200 new spaces. As with the existing garage, the proposed garage will be available to the general public and area residents, employers, and merchants. By long-standing agreement, rights to lease up to 50 spaces will be preserved for the adjacent Amy Lowell Apartments.

Vehicular access to the garage will be provided via four entrance and exit games (versus five today), including two on Lomasney Way and two on Martha Road. The proposed driveway on Lomasney Way will be positioned in generally the same location as the existing driveway; however, the existing driveway will be reduced in width, which will substantially reduce the distance pedestrians will need to cross the driveway and thus improve pedestrian conditions in front of the site. A second driveway on Martha Road will be located approximately 100 feet west of Nashua Street and will provide only for right-turns in and right-turns out. Provisions for two driveways will help diffuse site-related traffic and reduce the impact on pedestrian and vehicular circulation in the area. The Project will also maintain the existing vehicular connection with the Longfellow Garage, such that traffic circulation during events and other high-demand periods will be dispersed between the proposed garage and the existing Longfellow Garage.

The Project will also provide an enhanced pedestrian connection between North Station and the West End through the site via a new landscaped pathway.

3.1.2 Methodology

At the request of the BRA and the Boston Transportation Department (BTD), and in accordance with BTD *Transportation Access Plan Guidelines* (2001) and the specific scope of work issued by BTD, the study team conducted a transportation analysis for the proposed Project. The analysis is summarized in the following sections:

- Section 3.2 contains an inventory of existing transportation conditions including intersection operations, parking, transit, bicycle and pedestrian circulation, sidewalk conditions, loading, and site conditions.

- Section 3.3 evaluates future transportation conditions and assesses potential traffic impacts associated with the development and other neighboring projects. Long-term impacts are evaluated for the year 2016, based on a five-year horizon from the 2011 base year. Expected roadway, parking, transit, pedestrian, and loading capacities and deficiencies are identified. This section includes the following scenarios:

    - the No-Build Scenario (2016) includes general background growth and additional vehicular traffic associated with specific proposed or planned developments and roadway changes in the vicinity of the site; and

    - the Build Scenario (2016) includes specific travel demand forecasts for the Project and identifies appropriate measures to mitigate Project-related impacts identified in the previous phase including Transportation Demand Management (TDM) measures.

- Section 3.4 evaluates short-term traffic and parking impacts associated with construction activities.

3.1.3 Study Area

The study area for this Project, as designated by the BTD, is generally bounded by Nashua Street to the north, Cambridge Street to the south, North Washington Street and New Chardon Street to the east, and Storrow Drive to the west. As shown in Figure 3-2, the study area encompasses the following 12 intersections:

1. Charles River Dam Road/Storrow Drive/Nashua Street at Leverett Circle (signalized);

2. Charles River Dam Road/Charles Street/Martha Road/Nashua Street/I-93 NB Off-Ramp at Leverett Circle (signalized);

3. Nashua Street/Martha Road/Lomasney Way (signalized);

4. Staniford Street/Merrimac Street/Lomasney Way/Causeway Street at Lowell Square (signalized);

5. Cambridge Street/Staniford Street/Temple Street (signalized);

6. Merrimac Street/New Chardon Street (signalized);

7. New Chardon Street/Government Center Garage Driveway (signalized);

8. Lomasney Way/Nashua Street/Red Auerbach Way/Garden Garage Driveway (unsignalized);

9. Lomasney Way/West End Place Driveway (unsignalized);

10. Nashua Street/Red Auerbach Way (unsignalized);

11. Causeway Street/Beverly Street (unsignalized); and

12. Causeway Street/Beverly Street Extension (unsignalized).

3.2 Existing Transportation Conditions

3.2.1 Existing Roadway Conditions

The study area includes the following roadways, which are classified according to the Massachusetts Executive Office of Transportation Office of Transportation Planning (EOT-OTP) functional classifications:

Charles River Dam Road, also known as Monsignor O'Brien Highway, is a principal arterial that runs east-west through the study area and provides a connection between McGrath Highway in Cambridge and the Interstate 93 (I-93) ramps, Storrow Drive, Martha Road, and Nashua Street in Boston. Charles River Dam Road is three lanes in each direction, and no on-street parking is permitted.

Storrow Drive, a principal arterial, provides connection between Soldiers Field Road and Charles River Dam Road. Storrow Drive varies between two and three lanes in each direction. Storrow Drive connects various locations throughout Boston with I-93, Interstate 90 (I-90), and points west.

Nashua Street is an urban principal arterial that provides connection between Storrow Drive, Charles River Dam Road, and I-93. Nashua Street is generally two lanes in each direction; however, the northwest-bound direction expands to three lanes northwest of the Spaulding Rehabilitation Hospital. There is generally no parking along Nashua Street, but there are some handicapped-only spots in the northwest-bound direction. A paved median generally separates the two directions of traffic on Nashua Street.

Charles Street is a principal arterial. Within the study area, it runs one-way in the northeast direction, parallel to Storrow Drive, from Charles Circle to Charles River Dam Road. On-street parking along Charles Street is generally not permitted, but there are some designated handicapped parking areas. There is a sidewalk on the eastern side of Charles Street, and a raised barrier on the northern side separating Charles Street from Storrow Drive. In the area immediately parallel to Charles Street, Storrow Drive is also known as Embankment Road.

Martha Road is an urban minor arterial that runs one-way southeast from Nashua Street to Lomasney Way. Martha Road consists of two travel lanes and parking is prohibited on both sides of the roadway.

Lomasney Way is an urban principal arterial that runs north-south through the study area between Nashua Street and Causeway Street. It provides two lanes of travel in the northbound direction and three lanes of travel in the southbound direction separated by a raised median. No parking is allowed on either side of the roadway, and sidewalks are provided on both sides.

Staniford Street, an urban principal arterial, is an extension of Causeway Street, running north–south and connecting to Cambridge Street. Staniford Street generally consists of two travel lanes in each direction, separated by a raised median. Sidewalks and metered parking are provided on both sides of the roadway. A raised median runs down the center of Staniford Street.

Merrimac Street, an urban minor arterial, runs southeast–northwest from New Chardon Street to Causeway Street and Staniford Street. Merrimac Street has two travel lanes in each direction separated by a raised median. North of the intersection with Lancaster Street, parking is provided on both sides of the roadway. Sidewalks are provided on both sides of Merrimac Street.

Causeway Street is an urban minor arterial that runs east–west from North Washington Street to Merrimac Street. It generally provides two travel lanes in each direction, although portions (in particular, the approaches to Lowell Square and Keany Square) consist of three lanes. West of Canal Street, a portion of Causeway Street includes a ten-foot raised median. Most of the median structures west of Canal Street, including those on the north side of Lowell Square, are remnants of the Massachusetts Bay Transportation Authority's (MBTA's) formerly-elevated Green Line and were placed to protect support structures. The locations of these medians associated with the former Green Line structures do not support efficient traffic organization or pedestrian safety and convenience. The roadway width of Causeway Street varies from approximately 57 feet to approximately 85 feet.

Curb use along Causeway Street is predominantly related to public transportation and consists of taxi stands, MBTA bus stops, and shuttle bus stops. A small portion of the south side of Causeway Street between Friend Street and Portland Street is restricted to commercial loading. The north side between Portland Street and Lomasney Way is

designated for police vehicle parking. Along the remainder of Causeway Street, curb regulations prohibit vehicle stopping. Continuous sidewalks are provided along both sides of Causeway Street, although some are in poor condition. The TD Garden arena and the MBTA North Station complex are also located along Causeway Street. The "core section" of Causeway Street, between Haverhill Street and Portland Street, exhibits heavy pedestrian crossings to and from North Station during peak commuter periods and before and after events at the TD Garden arena.

The City of Boston is in the process of redesigning Causeway Street from Merrimac Street to North Washington Street as part of its "Crossroads Initiative," the goal of which is to improve streets crossing the Rose Kennedy Greenway and the depressed Central Artery corridor.

Cambridge Street is an urban principal arterial that runs east-west from Charles Circle to Tremont Street. Cambridge Street is generally two lanes in each direction separated by a raised median. Sidewalks and metered parking are provided along both sides of the street.

Temple Street is a local street that runs from one-way northbound from Derne Street to Cambridge Street. The street consists of a single travel lane and has sidewalks along each side. Parking is prohibited along both sides of this roadway. During rush hours, the Suffolk University police department sometimes blocks this roadway to prevent cut-through traffic.

New Chardon Street is an urban principal arterial that runs northeast–southwest between Cambridge Street and the intersection of Congress Street and Merrimac Street. New Chardon Street consists of two lanes in each direction. On-street metered parking is generally provided. On weekdays, a portion of the parking spaces along the south side of the roadway, opposite the Brooke Courthouse, are restricted during peak hours.

Red Auerbach Way, also known as Cotting Street, is a two-way road providing connection between Lomasney Way and Nashua Street. The road provides vehicular access to the North Station Garage, the MBTA North Station operations lot, the loading dock for the TD Garden, and parking and loading for the Thomas P. O'Neill Federal Building located at 10 Causeway Street. Red Auerbach Way also serves as an active stop location for the EZRide Shuttle bus service. Jersey barriers are positioned along the eastern and southern sides of the roadway to protect the TD Garden and O'Neill Federal Building, respectively. Sidewalks are generally provided on both sides of Red Auerbach Way, and provide important pedestrian connections to North Station.

Beverly Street is a roadway not yet classified in the Massachusetts Department of Transportation (MassDOT) road inventory that runs northwest-southeast, perpendicular to Causeway Street. The main portion of Beverly Street begins at New Chardon Street and ends at Causeway Street. Beverly Street is a three-lane, one-way roadway running in the southeast direction, with parallel parking provided on the right side of the roadway.

Beverly Street Extension is a roadway not yet classified in the MassDOT road inventory that runs northwest-southeast perpendicular to Causeway Street. Offset slightly north from Beverly Street, Beverly Street Extension is a dead end that allows access to several adjacent buildings. The Extension is a two-way roadway with one lane in each direction. Sidewalks are not provided.

3.2.2 Existing Intersection Conditions

3.2.2.1 Signalized Intersections

This section describes the characteristics of the signalized intersections in the study area.

Charles River Dam Road/Storrow Drive/Nashua Street at Leverett Circle is a signalized intersection with four approaches. The Charles River Dam Road eastbound approach is divided into two 11-foot through-lanes and one 12-foot exclusive right-turn lane that provides access to Storrow Drive. The westbound approach consists of two 10-foot through-lanes. Pedestrian sidewalks are provided on all approaches. Crosswalks with handicap ramps are provided across each approach. Nashua Street southbound consists of one 11-foot shared left-turn lane, one 11-foot through-lane, and a 14-foot channelized right-turn lane. The north-westbound approach on Storrow Drive consists of two 12-foot left-turn-only lanes that direct traffic to Charles River Dam Road. Parking is prohibited in the vicinity of the intersection.

Charles River Dam Road/Charles Street/Martha Road/Nashua Street/I-93 Northbound Off-Ramp at Leverett Circle is a signalized intersection with four approaches and is located approximately 100 feet east of the intersection of Charles River Dam Road/Storrow Drive/Nashua Street at Leverett Circle. The Charles River Dam Road eastbound approach consists of one 12-foot left-turn lane providing access to the I-93/Route 1 northbound and I-93 southbound on-ramps, and one 12-foot shared left-turn/through-lane providing access to the I-93/Route 1 on-ramp and Martha Road. The Charles Street northbound approach consists of three 12-foot lanes: two of these lanes lead traffic to I-93/Route 1 on-ramps and the third lane is a through/right-turn lane providing access to Martha Road and I-93. The Nashua Street southbound approach consists of two 12-foot lanes providing access to the I-93/Route 1 ramps and Martha Road. The southwest-bound approach is the off-ramp for I-93 Northbound and consists of one 11-foot lane that is directed through the intersection.

In the vicinity of the intersection, sidewalks are provided along the eastern side of Charles Street. Crosswalks and pedestrian ramps are provided across Charles Street only.

At the time of this study, the southbound left-turn approach of Nashua Street taking traffic to Martha Road was closed during the morning peak period to facilitate construction being performed to modernize the MBTA Green Line Science Park Station/West End Station. The temporary closures will conclude with completion of the work which is anticipated in November 2011.

Nashua Street/Martha Road/Lomasney Way is a signalized T-intersection with two approaches. The Nashua Street westbound approach consists of two 12-foot left-turn lanes. The Martha Road southbound approach consists of two 12-foot through-lanes. Sidewalks are present along all approaches to this intersection with the exception of Martha Road, where a sidewalk is only present on the south side. Crosswalks with handicapped ramps are provided across the Martha Road southbound approach and Nashua Street westbound approach. On-street parking is prohibited in the vicinity of the intersection.

Staniford Street/Merrimac Street/Lomasney Way at Lowell Square is a signalized, four-leg intersection with Merrimac Street offset approximately 100 feet south of Lomasney Way, resulting in skewed intersection geometry. Medians separate vehicular traffic on all four approaches. The median structures on the east and north sides of Lowell Square are remnants of the MBTA's former elevated Green Line and were placed to protect the support structures. The locations of these medians do not support efficient traffic organization or pedestrian safety and convenience.

The Causeway Street westbound approach consists of three lanes: a 10-foot shared left-turn/through-lane serving Merrimac Street and Staniford Street, a 10-foot through-lane, and a 14-foot channelized right-turn-only lane separated by a median and used by vehicles destined for Lomasney Way northbound. Causeway Street eastbound exiting Lowell Square has two travel lanes. In the vicinity of the intersection, no stopping is allowed on the south side of Causeway Street. A small portion of the Causeway Street north curb is reserved for police vehicles.

The Lomasney Way southbound approach consists of three travel lanes: a 12-foot exclusive left-turn lane to Causeway Street, a 12-foot through-lane serving Merrimac Street and Staniford Street, and a 12-foot shared through/right-turn lane heading to Merrimac and Staniford Street. No stopping is allowed in either direction on Lomasney Way.

The Staniford Street eastbound approach comprises three 10-foot travel lanes: a left-turn lane that serves only Lomasney Way northbound, a left-turn/through-lane accessing both Lomasney Way and Causeway Street, and a right-turn lane to Merrimac Street. No stopping is allowed along Staniford Street eastbound at Lowell Square. Handicapped-accessible and metered parking is provided along the westbound lanes.

The Merrimac Street northbound approach to Lowell Square consists of three lanes: a 12-foot left-turn lane to Staniford Street, an 11-foot multi-purpose lane servicing only Lomasney Way northbound, and a 10-foot through/right-turn lane servicing both Lomasney Way and Causeway Street. On-street parking is prohibited in the vicinity of the northbound Merrimac Street approach. On weekdays from 8:00 a.m. to 6:00 p.m., two-hour parking is allowed along the west side of Merrimac Street.

All approaches at this intersection feature crosswalks, pedestrian indications, and wheelchair ramps, but pedestrian movement across Lowell Square is not direct or convenient. Ramps and sidewalks are in fair to poor condition and are constructed of cement concrete. Crosswalks, stop lines, and center lines are generally in good condition. Existing signage is in good condition.

Cambridge Street/Staniford Street/Temple Street is a signalized intersection with four approaches. The Cambridge Street eastbound approach consists of a 10-foot left-turn lane and two 11-foot through-lanes. The left-turn lane has a storage length of 140 feet. The eastbound approach also has a nine-foot parallel parking lane, but no parking is permitted in this lane west of Ridgeway Lane. The Cambridge Street westbound approach consists of two 11-foot through-lanes, and one 10-foot exclusive right-turn lane. After the intersection, there is seven-foot parking lane on the southern side of the road that consists of a mix of metered spaces and commercial drop-off zones. The Cambridge Street east- and westbound approaches are separated by a 10-foot-wide brick/landscaped median.

The Staniford Street southbound approach consists of a 10-foot left-turn lane and an 11-foot right-turn lane. The Staniford Street travel lanes are separated by a six-foot-wide brick median.

The Temple Street southbound approach consists of a 12-foot right-turn-only lane. Parking is prohibited on both sides of Temple Street.

Crosswalks and pedestrian indicators are provided across all of the approaches of this intersection with the exception of Temple Street, which has a raised brick crossing. Crosswalks are 10 feet wide and vary in length from 24 to 65 feet. Crossings across Cambridge Street and Staniford Street approaches are divided by median refuges.

Merrimac Street/New Chardon Street is an oblique four-way intersection. New Chardon Street approaches the intersection from the east and west, while Merrimac Street forms the northbound and southbound approaches.

The New Chardon Street eastbound approach of consists of a 12-foot left-turn/through-lane and a 12-foot through/right-turn lane. New Chardon Street westbound consists of a 10-foot exclusive left-turn lane that is sometimes used for U-turns, a 12-foot left-turn/through-lane and a 12-foot through/right-turn lane. Merrimac Street northbound consists of a 10-foot exclusive left-turn lane, sometimes used for U-turns, two 10-foot through-lanes, and a 16-foot channelized right-turn lane. Merrimac Street southbound consists of an 11-foot left-turn/U-turn lane, two 11-foot through-lanes, and a channelized right-turn lane.

Sidewalks are available along all approaches. Crosswalks and pedestrian ramps are provided across each approach, including across the right-turn slip lanes on Merrimac Street. Median refuges are also provided on the Merrimac Street crossings and at the New Chardon westbound approach. Parking is prohibited in the vicinity of the intersection.

New Chardon Street/Government Center Garage Driveway is a signalized intersection with three approaches under the same controller as the adjacent intersection of Merrimac Street and New Chardon Street. The New Chardon Street eastbound approach consists of two 12-foot through-lanes. Likewise, the New Chardon Street westbound approach comprises two 12-foot through-lanes. The Government Center Garage northbound egress consists of an 11-foot shared left-turn/right-turn lane. A crosswalk with handicapped ramps is provided at the Government Center Garage Driveway approach. On-street parking is prohibited in the vicinity of the intersection.

3.2.2.2 Unsignalized Intersections

This section summarizes the conditions of the four unsignalized intersections in the study area.

Lomasney Way/Nashua Street/Red Auerbach Way/Garden Garage Driveway is a five-leg, unsignalized intersection with four approaches. Lomasney Way runs north-south through the intersection and is intersected by Red Auerbach Way from the east and the Garden Garage Driveway from the west. Nashua Street intersects Lomasney Way from the northeast at an approximately 45-degree angle and carries traffic one-way north-eastbound, away from the intersection. All of the intersection approaches operate under stop control with the exception of Lomasney Way southbound, which operates as a free movement with the exception of the left-turn lane that is provided with a stop line pavement marking; however, no stop sign is provided.

The Garden Garage Driveway eastbound approach operates under stop control. During non-event days, two of the five access points are dedicated for exit only; on event days, up to three lanes may be used for exiting vehicles after events. The Red Auerbach Way westbound approach operates under stop control and consists of a 16-foot shared left-turn/through/right-turn lane. The Lomasney Way northbound approach operates under stop control and consists of a 12-foot exclusive left-turn lane, sometimes use for U-turns, a 12-foot soft-right-turn lane, and a 12-foot soft-right-turn/hard-right-turn lane. The Lomasney Way southbound approach is a free movement and consists of a 12-foot left-turn lane, a 12-foot soft-right-turn lane, and a 12 foot shared soft-right-turn/hard-right-turn lane.

Crosswalks and pedestrian ramps are provided across Lomasney Way and between the medians along Lomasney Way. On-street parking is prohibited in the vicinity of the intersection; however, the study team observed that vehicles generally park on-street on Red Auerbach Way and pick-up/drop-off activity generally occurs along both sides of Lomasney Way to the east of the Project site.

Lomasney Way/West End Place Driveway is an unsignalized T-intersection with two approaches. The West End Place Driveway eastbound approach operates under stop control and consists of one 12-foot right-turn-only lane. The Lomasney Way southbound approach consists of one 12-foot through-lane and one 12-foot shared through/right-turn lane.

Nashua Street/Red Auerbach Way is an unsignalized T-intersection with two approaches. Nashua Street northbound consists of a 12-foot through-lane and a 12-foot shared through/right-turn lane. On Red Auerbach Way, the northwest-bound approach operates under stop control and consists of a 16-foot right-turn lane. Crosswalks and pedestrian ramps are provided at the approach from Red Auerbach Way. Parking is prohibited in the vicinity of the intersection.

Causeway Street/Beverly Street is an unsignalized, offset intersection with three approaches. Causeway Street eastbound consists of a 12-foot left-turn/through-lane and two 12-foot through-lanes. The Causeway Street westbound approach consists of an 11-foot through-lane and an 11-foot through/right-turn lane. Beverly Street southbound consists of a shared 10-foot left-turn/right-turn lane. A crosswalk with handicapped ramps is provided across the Beverly Street approach. Sidewalks are provided along all approaches. Parking is prohibited in the vicinity of the intersection.

Causeway Street/Beverly Street Extension is an unsignalized intersection with three approaches. Causeway Street eastbound consists of an 11-foot shared left-turn/through-lane and two 11-foot through-lanes. Causeway Street westbound consists of an 11-foot through-lane and an 11-foot shared through/right-turn lane. Beverly Street Extension southbound is stop controlled and consists of a 10-foot right-turn-only lane. During field observations, the study team noted that the Beverly Street Extension southbound approach is striped with a right-turn-only pavement marking; however, no signage prohibiting left-turns is provided. According to the traffic counts at this location, 15 vehicles made the left-turn during the morning peak hour and eight vehicles turned left during the evening peak hour. A crosswalk with handicapped ramps is provided across the Beverly Street Extension approach. Sidewalks are provided along all approaches. Parking is prohibited in the vicinity of the intersection.

3.2.3 Existing Traffic Conditions

Turning movement counts were based on data collected during weekday morning (7:30 a.m. – 9:30 a.m.) and evening (4:00 p.m. – 6:00 p.m.) peak periods in June 2011. Based on these counts, the weekday peak hours were identified as 8:15-9:15 a.m. and 5:00-6:00 p.m. Figures 3-3 and 3-4 show the existing peak-hour turning volumes for the study area intersections. Complete traffic count data are provided in Attachment C.

To develop a baseline understanding of the traffic generated by the existing Garden Garage, the study team reviewed hourly gate data from 2007-2009 and peak hour turning movement counts taken in June 2011. Daily, a.m. peak-hour, and p.m. peak-hour vehicle trips associated with the existing garage are summarized in Table 3-1.

Table 3-1 Existing Garden Garage Vehicle Trip Generation

Period/Direction		*Garden Garage (650 spaces) **
Daily	In	800
	Out	800
	Total	1,600
a.m. Peak Hour	In	103
	Out	8
	Total	111
p.m. Peak Hour	In	7
	Out	132
	Total	139

*Daily trips based on garage gate data from 2007-2009; peak hour trips based on driveway counts conducted in June, 2011.

As shown in Table 3-1, the existing garage currently generates 1,600 daily vehicle trips (800 trips in and 800 trips out), with 111 vehicle trips (103 trips in and 8 trips out) during the a.m. peak hour and 139 vehicle trips (7 trips in and 132 trips out) during the p.m. peak hour. These vehicle trips are currently using the adjacent roadway network and are reflected in the peak hour traffic volumes.

3.2.3.1 Existing Traffic Operations

Traffic operations are determined through an analysis of intersection delay, yielding a Level of Service (LOS). The study team analyzed LOS and delay at the intersections using Synchro 6 software developed by Trafficware. Synchro is based on the traffic operational analysis methodology of the Transportation Research Board's 2000 *Highway Capacity Manual* (HCM). HCM 2000 methods determine the LOS, delay (in seconds), volume-to-capacity (v/c) ratio, and 95th percentile queue length (in feet) based on intersection geometry, traffic control, lane usage, and available traffic data for each intersection. Field observations were performed to establish intersection geometry (i.e., number of turning lanes, lane length, and lane width). Signal timing and phasing used in this analysis were obtained from BTD and through field observations conducted by the study team.

LOS designations, derived from the HCM, are based on the average delay per vehicle for all vehicles entering an intersection, as shown in Table 3-2. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst condition, with significant traffic delay. LOS D or better is typically considered acceptable in an urban area.

Table 3-2 Intersection Level of Service Criteria (HCM Excerpt)

Level of Service	*Average Stopped Delay (seconds/vehicle)*	
	Signalized Intersection	*Unsignalized Intersection*
A	$\leq$10	$\leq$10
B	>10 and $\leq$20	>10 and $\leq$15
C	>20 and $\leq$35	>15 and $\leq$25
D	>35 and $\leq$55	>25 and $\leq$35
E	>55 and $\leq$80	>35 and $\leq$50
F	>80	>50

Source: *2000 Highway Capacity Manual,* Transportation Research Board.

The ***v/c ratio*** is a measure of congestion at an intersection approach. A v/c ratio greater than 1 indicates that the intersection approach exceeds capacity.

The ***95th percentile queue length*** represents the farthest extent of the vehicle queue in feet (to the last stopped vehicle) upstream from the stop line during 95% of all signal cycles.

To evaluate existing intersection operations, the study team calibrated the capacity analysis based on field observations of actual queues and delays. Uncalibrated, the analysis may show exaggerated delays and queues. Tables 3-3 and 3-4 summarize the existing morning and evening intersection LOS, delay, v/c ratio, and 95th percentile queue length analysis results for the Project study area. Detailed Synchro reports are provided in Attachment C.

Table 3-3 Existing Conditions (2011) Capacity Analysis Summary, a.m. Peak Hour

Intersection	*LOS*	*Delay (sec)*	*V/C*	*95th Percentile Queue (ft)*
Signalized Intersections				
Charles River Dam Road/ Storrow Drive/Nashua Street at Leverett Circle	**F**	**>80.0**	**—**	**—**
Charles EB thru|thru	E	68.2	0.97	#368
Charles EB right	C	32.0	0.90	#335
Charles WB thru|thru	A	5.5	0.42	m0
Nashua SB left/thru|thru	F	>80.0	0.75	m372
Nashua SB right	E	60.6	0.60	m212
Charles NWB left | left	D	50.4	0.78	195
Charles River Dam Road/Charles Street/Martha Road/Nashua Street/I-93 Off-Ramp at Leverett Circle	**D**	**48.1**	**—**	**—**
Charles River Dam EB left	C	31.7	0.85	m48
Charles River Dam EB left/thru	C	26.5	0.84	m47
Charles NB right | right | right/hard right	C	25.0	0.89	495
Nashua SB hard left*	N/A	N/A	N/A	N/A
Nashua SB left*	N/A	N/A	N/A	N/A
I-93 SWB left right	F	>80.0	>1.0	#554
Nashua Street/Martha Road/Lomasney Way	**A**	**7.0**	**—**	**—**
Nashua WB left | left	A	4.8	0.33	37
Martha SB thru | thru	A	8.4	0.38	m74
Staniford Street/Merrimac Street/Lomasney Way at Lowell Square	**E**	**65.0**	**—**	**—**
Staniford EB left	E	73.8	0.64	#70
Staniford EB left/thru	E	71.0	0.90	#252
Staniford EB right	A	4.4	0.37	40
Causeway WB left/thru | thru	F	>80.0	>1.0	#269
Causeway WB right	C	28.2	0.59	264
Merrimac NB left	D	47.0	0.63	134
Merrimac NB thru	C	30.5	0.33	105
Merrimac NB right	C	30.0	0.26	57
Lomasney SB left	F	>80.0	>1.00	#353
Lomasney SB thru | thru/right	C	33.5	0.66	224
Cambridge Street/Staniford Street/Temple Street	**D**	**35.9**	**—**	**—**
Cambridge EB U-turn/left	D	44.0	0.74	#253
Cambridge EB thru | thru	C	23.6	0.43	196
Cambridge WB U-turn/thru | thru	C	23.3	0.54	217
Cambridge WB right	A	1.7	0.24	19
Temple NB right	D	43.3	0.13	15
Staniford SB U-turn/left	D	54.3	0.84	228
Staniford SB right	E	78.2	0.97	#334

# = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is max. after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.
* Approach temporarily closed during the a.m. peak period due to construction at Science Park/West End Station.

Table 3-3 Existing Conditions (2011) Capacity Analysis Summary, a.m. Peak Hour (Continued)

Intersection	*LOS*	*Delay (sec)*	*V/C*	*95th Percentile Queue (ft)*
Signalized Intersections (continued)				
Merrimac Street/New Chardon Street	**E**	**78.8**	**—**	**—**
New Chardon EB left/thru	D	36.8	0.80	#219
New Chardon EB right/hard right**	E	69.2	0.79	#33
New Chardon WB U-turn/hard left/left	D	51.2	0.79	#271
New Chardon WB thru | thru/right	D	39.1	0.79	#187
Merrimac NB U-turn/hard left/left	F	>80.0	>1.0	#519
Merrimac NB thru | thru/right	B	17.7	0.39	m60
Merrimac NB right	A	5.6	0.17	m21
Merrimac SB left/thru | thru | thru/right	D	45.6	0.59	159
Merrimac SB thru | thru/right	F	>80.0	>1.0	#198
New Chardon Street/Government Garage Driveway	**C**	**25.7**	**—**	**—**
New Chardon EB thru | thru	D	40.9	0.44	99
New Chardon WB thru| thru	B	22.0	0.34	m40
Garage NB left/right	B	17.8	0.18	7
Unsignalized Intersections				
Lomasney Way/Martha Road/Red Auerbach Way/Garden Garage Driveway	N/A	N/A	N/A	N/A
Lomasney Way/West End Place				
West End EB left/right	B	11.4	0.03	2
Lomasney SB thru | thru/right	A	0.0	0.33	0
Nashua Street/Red Auerbach Way				
Nashua NB thru | thru	A	0.0	0.23	0
Red Auerbach NWB right	B	11.6	0.07	5
Causeway Street/Beverly Street				
Causeway Street EB thru | thru | thru/right	A	0.0	0.13	0
Causeway Street WB left/thru | thru	A	2.2	0.30	5
Causeway Street/Beverly Street Extension				
Causeway EB left/thru | thru | thru	A	0.7	0.10	4
Causeway WB thru | thru/right	A	0.0	0.31	0
Beverly Ext SB left/right	E	39.5	0.39	43

# = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is max. after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.
**Operates as a de facto right during the a.m. peak period.

Table 3-4 Existing Conditions (2011) Capacity Analysis Summary, p.m. Peak Hour

Intersection	*LOS*	*Delay (sec)*	*V/C*	*95th Percentile Queue (ft)*
Signalized Intersections				
Charles River Dam Road/ Storrow Drive/Nashua Street at Leverett Circle	**E**	**75.4**	**—**	**—**
Charles EB thru|thru	E	56.3	0.94	#385
Charles EB right	B	12.9	0.68	148
Charles WB thru|thru	A	3.1	0.38	m0
Nashua SB left/thru|thru	F	>80.0	0.74	m290
Nashua SB right	E	62.8	0.66	m193
Charles NWB left | left	D	47.6	0.73	184
Charles River Dam Road/Charles Street/Martha Road/Nashua Street/I-93 Off-Ramp at Leverett Circle	**E**	**67.6**	**—**	**—**
Charles River Dam EB left	B	13.9	0.77	m22
Charles River Dam EB left/thru	B	13.3	0.76	m21
Charles NB right | right | right/hard right	F	>80.0	>1.0	#635
Nashua SB hard left	E	69.7	0.67	m161
Nashua SB left	E	69.6	0.67	136
I-93 SWB left right	F	>80.0	>1.0	#524
Nashua Street/Martha Road/Lomasney Way	**A**	**3.9**	**—**	**—**
Nashua WB left | left	A	0.7	0.20	5
Martha SB thru | thru	A	5.5	0.32	m48
Staniford Street/Merrimac Street/Lomasney Way at Lowell Square	**F**	**>80**	**—**	**—**
Staniford EB left	F	>80.0	>1.0	#145
Staniford EB left/thru	F	>80.0	>1.0	#577
Staniford EB right	A	4.3	0.49	49
Causeway WB left/thru | thru	F	>80.0	>1.0	#271
Causeway WB right	D	46.5	0.70	276
Merrimac NB left	D	50.5	0.57	114
Merrimac NB thru	D	37.6	0.44	159
Merrimac NB right	D	35.3	0.25	62
Lomasney SB left	E	76.4	0.90	#228
Lomasney SB thru | thru/right	D	42.6	0.77	#317
Cambridge Street/Staniford Street/Temple Street	**D**	**39.3**	**—**	**—**
Cambridge EB U-turn/left	F	>80.0	0.99	#422
Cambridge EB thru | thru	C	23.0	0.34	200
Cambridge WB U-turn/thru | thru	C	22.8	0.51	221
Cambridge WB right	A	3.6	0.30	36
Temple NB right	D	46.0	0.05	4
Staniford SB U-turn/left	E	61.8	0.87	#364
Staniford SB right	E	59.0	0.82	#287

# = 95th percentile volume exceeds capacity; queue may be longer; queue shown is max. after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.

Table 3-4 Existing Conditions (2011) Capacity Analysis Summary, p.m. Peak Hour (continued)

Intersection	*LOS*	*Delay (sec)*	*V/C*	*95th Percentile Queue (ft)*
Signalized Intersections				
Merrimac Street/New Chardon Street	**E**	**63.0**	**—**	**—**
New Chardon EB left/thru | thru/right/hard right	F	>80.0	>1.0	m#201
New Chardon WB U-turn/hard left/left	E	75.5	0.75	#206
New Chardon WB thru | thru/right	E	71.4	0.77	167
Merrimac NB U-turn/hard left/left	C	32.2	0.79	m#296
Merrimac NB thru | thru/right	B	17.0	0.32	m52
Merrimac NB right	B	17.5	0.29	m141
Merrimac SB left/thru | thru | thru/right	E	67.5	0.88	#293
Merrimac SB thru | thru/right	D	52.1	0.72	151
New Chardon Street/Government Garage Driveway	F	>80.0	—	—
New Chardon EB thru | thru	F	>80.0	0.96	#224
New Chardon WB thru| thru	A	6.5	0.31	46
Garage NB left/right	F	>80.0	0.25	46
Unsignalized Intersections				
Lomasney Way/Martha Road/Red Auerbach Way/Garden Garage Driveway	N/A	N/A	N/A	N/A
Lomasney Way/West End Place				
West End EB left/right	B	11.1	0.01	1
Lomasney SB thru | thru/right	A	0.0	0.31	0
Nashua Street/Red Auerbach Way				
Nashua NB thru | thru	A	0.0	0.31	0
Red Auerbach NWB right	B	12.5	0.08	6
Causeway Street/Beverly Street				
Causeway Street EB thru | thru | thru/right	A	0.0	0.16	0
Causeway Street WB left/thru | thru	A	2.0	0.31	4
Causeway Street/Beverly Street Extension				
Causeway EB left/thru | thru | thru	A	2.1	0.12	3
Causeway WB thru | thru/right	A	0.0	0.31	0
Beverly Ext SB left/right	C	22.0	0.23	22

# = 95th percentile volume exceeds capacity; queue may be longer; queue shown is max. after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.

The signalized intersections in the study area generally operate as would be expected in a densely developed area, with many intersections operating at LOS E or lower during the a.m. and p.m. peak hours. During the a.m. peak hour, four signalized intersections operate at LOS D or better: Charles Street/Martha Road/Nashua Street/I-93 Off-Ramp at Leverett Circle; Nashua Street/Martha Road/Lomasney Way; Cambridge Street/Staniford Street/Temple Street; and New Chardon Street/Government Center Garage Driveway. During the p.m. peak hour, two signalized intersections operate at LOS D or better: Nashua Street/Martha Road/Lomasney Way and Cambridge Street/Staniford Street/Temple Street. The unsignalized intersections all generally operate well during both peak periods.

The following discussion addresses the overall intersections and approaches that operate below LOS D under Existing Conditions:

Signalized Intersections

Charles River Dam Road/Storrow Drive/Nashua Street at Leverett Circle. This intersection operates at an overall LOS F during the a.m. peak hour and at an overall LOS E during the p.m. peak hour. During both peak periods, the Charles Street eastbound through lanes operate at LOS E; the Nashua Street southbound shared left-turn/through | through-lanes operate at LOS F; and the Nashua Street southbound right-turn lane operates at LOS E.

Charles River Dam Road/Charles Street/Nashua Street/I-93 Off-ramp at Leverett Circle. In the a.m. peak hour, this intersection operates at LOS D or better, likely due to the temporary closure of the Nashua Street southbound approach that results in a simpler intersection operation. All intersection approaches operate at LOS D or better with the exception of the I-93 south-westbound left-turn lane, which operates at LOS F.

During the p.m. peak hour, the intersection operates at an overall LOS E. The study team noted that the I-93 southbound on-ramps generally back up through the intersection. The Charles Street northbound right | right | right/hard-right approach operates at LOS F; the Nashua Street southbound hard-left and left-turn approaches operate at LOS E; and the I-93 south-westbound left-turn lane operates at LOS F.

Staniford Street/Merrimac Square/Lomasney Way at Lowell Square. The intersection operates at an overall LOS E during the a.m. peak hour and at an overall LOS F during the p.m. peak hour. The Staniford Street eastbound left-turn and left-turn/through-lanes operate at LOS E during the a.m. peak hour and at LOS F during the p.m. peak hour; the Causeway Street westbound left-turn | through | through approach operates at LOS F during both peak hours; and the Lomasney Way southbound through | through/right-turn approach operates at LOS F and LOS E during the a.m. and p.m. peak hours, respectively.

Cambridge Street/Staniford Street/Temple Street. While this intersection performs at an acceptable LOS D during both peak hours, the Staniford Street southbound right-turn lane operates at LOS E during the a.m. peak hour. During the p.m. peak hour, the Cambridge Street eastbound U-turn/left-turn lane operates at LOS F and the Staniford Street southbound approaches operate at LOS E.

Merrimac Street/New Chardon Street. The intersection operates at an overall LOS E during both peak periods. During the a.m. peak, the New Chardon Street eastbound right-turn/hard-right-turn lane operates at LOS E; the Merrimac Street northbound U-turn/hard-left/left-turn lane operates at LOS F; and the Merrimac Street southbound through | through/right-turn approach operates at LOS F.

During p.m. peak hour, the New Chardon Street westbound approaches and the Merrimac Street southbound through | through/right-turn approaches all operate at LOS E. The New Chardon Street eastbound left-turn/through | through/right/hard-right approach operates at LOS F.

Unsignalized Intersections

Lomasney Way/Martha Road/Red Auerbach Way/Garden Garage Driveway. Due to the awkward intersection geometry, Synchro was unable to calculate a delay or LOS at this location. Field observations made by the study team during both the peak and off-peak periods indicate that the intersection generally operates at a good level of service during the peak periods; however, the large size of the intersection combined with the numerous intersection approaches and rather high pedestrian volumes often contribute to driver confusion. During events at the Garden, the intersection generally operates under police officer control. Prior to an event at the Garden, the study team noted lengthy queues along Lomasney Way southbound and Nashua Street south-westbound primarily as a result of vehicles waiting to enter the North Station Garage.

Causeway Street/Beverly Street Extension. During the a.m. peak hour, the Beverly Street Extension southbound approach operates at LOS E; however, this level of operation is typical for a stop-controlled minor street intersecting an arterial roadway.

3.2.4 Existing Parking

3.2.4.1 On-street Parking

On-street parking in the vicinity of the Project is generally prohibited, with "No Stopping" regulations posted along Lomasney Way, Martha Road, Nashua Street, and Red Auerbach Way.

However, during field observations the study team observed that approximately six to eight vehicles associated with the Thomas P. O'Neill Federal Building typically park on-street along each side of Red Auerbach Way adjacent to the federal building, in an area currently signed as "No Stopping". Red Auerbach Way is also used as an active stop location for the EZRide Shuttle bus.

In addition, the study team observed that vehicles (private and taxi) often pick-up and drop-off passengers along both sides of Lomasney Way throughout the day.

3.2.4.2 Off-Street Parking

On-Site Parking

The existing Garden Garage has a total of 650 parking spaces. Up to 50 of the 650 spaces are committed under a lease to Amy Lowell Apartments; as of July 2011, six spaces were in use by Amy Lowell Apartments residents.

Off-Site Parking

Approximately 5,223 off-street public parking spaces, including the Garden Garage, are located in garages and surface lots within approximately a quarter-mile of the Project site. These parking facilities and their capacities are identified in Table 3-5 and illustrated in Figure 3-5.

Table 3-5 Off-Street Public Parking in Lots and Garages within a Quarter-Mile of the Site

Map #	*Facility*	*Public Capacity (spaces)**
A	Charles River Plaza Surface Lot	104
B	Charles River Plaza Garage	780
C	Government Center Garage	1,912
D	26-28 Lancaster Street Lot	25
E	Stanhope Lot	47
F	101 Merrimac Garage	70
G	204 Friend Street	46
H	P & P Parking	87
I	TD Garden (North Station) Garage	1,214
J	J & O Parking	54
K	Chardon Realty Lot	26
L	226-234 Causeway Lot	5
M	Pinstripe Parking	143
N	Asteria Garage	160
O	Garden Garage	410
P	Longfellow Garage (Public Level)	140
	Total Public Spaces	**5,223**

*Based on parking space inventory conducted by Howard/Stein-Hudson Associates, Inc. in 2009.

3.2.5 Public Transportation

The Project site is located within convenient walking distance to a wide variety of public transportation alternatives. Public transportation in the study area is shown on Figure 3-6 and summarized in Table 3-6.

Table 3-6 MBTA Transit Service within a Quarter-Mile Walk of the Site

Transit Service/Route	*Description*	*Rush-hour Headway (in minutes)**
	Rapid Transit Routes	
Green Line	Lechmere–Heath Street Cleveland Circle–North Station	5 6/7
Orange Line	Forest Hills–Oak Grove	5
Blue Line	Bowdoin-Wonderland	3/4
	Local Bus Routes	
4	North Station–World Trade Center	16**
	Commuter Rail	
Fitchburg Line	Fitchburg–North Station	44
Lowell Line	Lowell–North Station	25
Haverhill Line	Haverhill–North Station	21
Newburyport/ Rockport Line	Newburyport/Rockport–North Station	19

* Headway is the scheduled time between trains or buses, as applicable.
**The number 4 bus does not operate on weekends.
Source: www.mbta.com accessed, August 2011

MBTA Green and Orange Line rapid transit services are located within one-quarter mile (five minute walk) of the Project site, with both Orange and Green Line service at North Station and Green Line Service at Science Park. As of June 2011, Green Line Service between North Station and Lechmere has been temporarily suspended and replaced with a shuttle bus. The suspension will allow for the modernization of Science Park/West End Station to make the station handicapped-accessible. The shuttle bus will remain in effect through the end of construction, expected in November 2011.

North Station provides commuter rail service to the north on the Fitchburg, Lowell, Haverhill, and Newburyport/Rockport Commuter Lines. In addition, the EZRide Shuttle bus provides commuters with connections between North Station and destinations in Cambridge, including Cambridgeport, the Massachusetts Institute of Technology (MIT) northwest campus, Kendall Square, and Lechmere. The EZRide shuttle bus runs approximately every 20 to 30 minutes between 6:20 a.m. and 10:46 p.m., Monday through Friday, and stops adjacent to the North Station entrance on Red Auerbach Way.

Local MBTA bus route #4 is located within one-quarter mile of the site, providing connections between North Station, South Station, and the South Boston Waterfront. The route # 4 does not run on weekends.

Within approximately one-half mile of the site (ten to fifteen minute walk), are Charles/MGH Station on the MBTA Red Line, Bowdoin Station on the Blue Line, and Haymarket Station, which provides connection to MBTA Green and Orange lines and local/regional bus services.

City Water Taxi service can be obtained at Lovejoy Wharf, located approximately one-third of a mile from the project site. City provides service to a range of waterside destinations in Boston including the Seaport, Fort Point Channel, Rowes Wharf, Logan Airport, and the Charlestown Navy Yard. Water taxi service does not run on a set schedule.

3.2.6 Existing Bicycle Conditions

3.2.6.1 Off-Street Bicycle Accommodations

The Charles River basin is served by a 17-mile-long bicycle path which runs along both the Boston and Cambridge sides of the river; this path network is located less than one-half mile from the Project site. According to the *2010 Bike Routes of Boston Map,* the pathway is known as the "Charles River Bike Path" on the Boston side, and the Paul Dudley White Path in Cambridge. The network is classified as suitable for "beginner" cyclists according to the *2010 Bike Routes of Boston Map*. Cyclists can access the path from the Project site via Nashua Street, classified as appropriate for "intermediate" cyclists, or Staniford and Cambridge Streets, classified as appropriate for "advanced" cyclists. This path is generally shared-use with some sections dedicated specifically to bicycles.

The Thoreau Path, a shared-use pathway for cyclists and pedestrians, is classified as suitable for "beginner" cyclists. The path originates from Staniford Street and William Cardinal O'Connell Way, and ends at Charles Street. Thoreau Path provides access to the West End Apartments and playgrounds, tennis courts, and other recreational areas. The Thoreau and Charles River Basin paths are shown in Figure 3-7.

3.2.6.2 On-Street Bicycle Accommodations

The main roads around the Project site (i.e., Nashua Street, Cambridge Street, Staniford Street, and Causeway Street) are all either classified as appropriate for "advanced" or "intermediate" riders by the *2010 Bike Routes of Boston Map*.

Nearby, the North End and Beacon Hill offer streets with lower traffic volumes and speeds; however, major roads such as Cambridge Street or Causeway Street generally need to be traversed to access these locations.

3.2.6.3 Bicycle Parking

No bicycle racks were observed at the Project site during field observations, however, there are several bicycle racks located nearby. The locations of these racks are shown on Figure 3-7. There are five bicycle racks outside the south entrance to North Station, with a total

estimated capacity of 40 bicycles. During field observations in July and August 2011, there were between 30 and 35 bicycles locked to these racks. Inside the North Station Garage, there is space for about 30 bicycles to be locked; when observed, 13 bicycles were locked there. There is a bicycle rack outside the federal office building at 10 Causeway Street that has an estimated capacity for 12 bicycles. Only one bicycle was locked to this rack during a field observation. There are also bicycle racks on Canal Street, Cambridge Street, Staniford Street, and Blossom Street that each hold two bicycles. During field observations, the study team generally observed at least one bicycle in each of the racks throughout the day. Bicycles were also observed locked to poles, parking meters, and street signs in various areas around the Project site, particularly on Cambridge Street and Canal Street.

In the vicinity of MGH, there are some spaces reserved for bicycle parking. MGH employees have access to a bicycle cage that has a capacity of approximately 150 bicycles. The cage was observed to be about 90 percent full during a weekday afternoon field visit. Two nearby parking garages, the Parkman Street Garage and the Fruit Street Garage, also provide bicycle storage just outside of the structures. The Parkman Street Garage had 22 bicycles locked to railings just outside the entrance to the garage during an afternoon field visit. The Fruit Street Garage has a bicycle rack just outside the entrance to the garage, with an estimated capacity of 12 bicycles. This rack had eight bicycles locked to it when observed. There are also some bicycle racks along Blossom Street that can hold two bicycles. Many bicycles also are locked to street signs, parking meters, and trees on Blossom Street.

There are also bicycle racks in some locations adjacent to the West End Apartments. At 50 Staniford Street, an office building, there are bicycle racks that can hold approximately 25 bicycles; when observed, 13 bicycles were locked at these racks. At the entrance to the West End Place Garage (which has a driveway adjacent to the Project site), there is a bicycle rack that can hold six bicycles; two were locked there when observed. The Longfellow Garage, located on Staniford Street, has three large bicycle racks that can hold a total of about 70 bicycles. These racks were about 95 percent full when observed in the field during a weekday afternoon.

3.2.6.4 Hubway Bicycle Sharing Program

In July 2011, the City of Boston launched Hubway, a bicycle sharing program. Hubway hosts 600 bicycles at 61 different locations across the city. As part of this program, cyclists are able to rent a bicycle from one location and return it to any other station, facilitating point-to-point travel within the City. Two Hubway stations are located in the Project vicinity: one outside the north entrance of North Station has space for 35 Hubway bicycles, while another at the corner of Lomasney Way and Causeway Street has space for 15 Hubway bicycles. These bicycle facilities are available to the public all year except during the winter. Hubway sites within the Project area are shown on Figure 3-7.

3.2.6.5 Current Bicycle Use

In general, bicycle use on study area roadways is moderate. Bicycle counts obtained in June 2011 for all study area intersections revealed that 77 bicycles traveled through the Lomasney Way/Martha Road/Red Auerbach Way/Garden Garage Driveway intersection adjacent to the Project site during the a.m. peak hour. During the p.m. peak hour, 89 bicycles traversed this intersection.

Generally speaking, the highest bicycle volumes were seen at those intersections between the Project site and the O'Brien Highway/Nashua Street/Storrow Drive Westbound On-ramp intersection, where there is easy access to the network of cycling paths serving the Charles River Basin. For additional detail, see Figures 3-8 and 3-9.

3.2.7 Existing Pedestrian Conditions

The Project site is conveniently located within close walking distance to downtown hospitals, other area businesses, and North Station. Walk trips through the study area are facilitated by the availability of numerous pedestrian pathways including Thoreau Path, the Charles River Path, and the Rose Kennedy Greenway. In addition, sidewalks are generally provided along one or both sides of almost all roadways within the study area. The majority of intersections also have crosswalks with handicap accessible ramps provided at one or more approaches. Crosswalks at signalized intersections are protected by a pedestrian phase signal. For more on pedestrian accommodations see Sections 3.2.1, 3.2.2 and 3.2.7.2.

3.2.7.1 Existing Pedestrian Volumes

Pedestrian counts were conducted at all study area intersections as part of the traffic counts taken in June 2011. Existing weekday a.m. and p.m. peak-hour pedestrian volumes appear in Figures 3-10 and 3-11.

Pedestrian activity at the intersection adjacent to the site, Lomasney Way/Martha Road/Red Auerbach Way/Garden Garage Driveway, is moderate with 268 pedestrians traversing the intersection during the a.m. peak hour and 421 during the p.m. peak hour; much of this activity is oriented between North Station and the residential and institutional uses in the West End (e.g., West End Apartments, MGH) via Thoreau Path. Other study area intersections have substantially higher volumes. Cambridge Street/Staniford Street/Temple Street, for example, is crossed by nearly 1,700 pedestrians in the a.m. peak-hour and approximately 1,300 in the p.m. peak-hour.

3.2.7.2 Existing Sidewalk Conditions

Sidewalks throughout the study area are generally in good condition, as described below:

- *Lomasney Way* – Sidewalks are in in good condition and provided on both sides of Lomasney Way. The eastern sidewalk is composed of brick and is approximately 18 feet wide. Along the curb line are tree pits, street lamps, and decorative stone bollards, which reduce the effective width of the sidewalk to 14 feet. The western sidewalk is made of concrete with decorative brick inserts. This sidewalk varies between 20 and 24 feet in width with tree pits running down its center.

- *Staniford Street* – Sidewalks are provided on both sides of Staniford Street and are generally in good condition. The southern sidewalk is concrete, eight feet wide, and connects to plaza space around the Erich Lindeman Mental Health Center. Streetlamps and parking meters are placed along the curb line. Several driveways into the Lindeman Center cut across the southern sidewalk. The northern sidewalk varies between brick and concrete and between 10 and 17 feet wide. At the frequent tree pits along this sidewalk, the effective width is reduced to six feet. This sidewalk also connects to plaza space around the buildings of Longfellow Place. A large driveway for the Longfellow Place Garage cuts across the northern sidewalk just south of O'Connell Street.

- *Red Auerbach Way* – Red Auerbach Way serves as an important pedestrian connection between the West End and North Station. An approximately eight-foot-wide concrete sidewalk is provided along the north side of the road and is in good condition. An asphalt sidewalk in fair condition is provided along the south side of the road. This sidewalk is crossed by the driveways to the O'Neill Federal Building loading dock. Concrete barriers are set at the back of this sidewalk. There are no streetlamps, tree pits, or other street furniture on either sidewalk.

- *Nashua Street* – Concrete sidewalks in good condition are provided on both sides of Nashua Street. The western sidewalk varies from approximately 10 to 14 feet in width. The presence of tree pits reduces the effective width to between four and 11 feet. The eastern sidewalk is 10 to 13 feet wide. At tree pits, the effective width is reduced to approximately five feet. Driveways to the Spaulding Rehabilitation Center surface parking lots and the underground garage serving the TD Garden cross this sidewalk.

- *Martha Road* – An approximately eight-foot-wide concrete sidewalk is provided along the south side of this roadway; however, the presence of many street lamps reduces the effective width to approximately five feet. There is no sidewalk on the north side of Martha Road.

- *Merrimac Street* – Sidewalks are provided along both sides of Merrimac Street and are generally in good condition. The eastern sidewalk is a mix of brick and concrete and is approximately 12 feet wide; however, the presence of tree pits reduces the effective width of the sidewalk to seven feet. The western sidewalk is a mix of concrete and cobblestone and is approximately 18 feet wide; however, the presence of tree pits reduces the effective width of the sidewalk to 13 feet. Both sidewalks have many street lamps and signage along the curb line.

- *Thoreau Path* – This pedestrian pathway provides access to Longfellow Place, West End Place, Hawthorne Place, Whittier Place, and Emerson Place and connects from Staniford Street in the east to Storrow Drive in the west. Less than one-tenth of a mile south from where Thoreau Path meets Storrow Drive, pedestrians can access a footbridge over Storrow Drive. This bridge provides access to the Charles River Path. Thoreau Path is a mix of concrete and brick. Trees, lighting, and benches line both sides of the walkway, which is between eight and 20 feet in width.

3.2.8 Existing Loading and Service

The Project site currently consists of a public parking garage, and loading and service activity is minimal.

3.3 Evaluation of Long-term Impacts

This section describes and evaluates the 2016 No-Build and Build Conditions.

3.3.1 No-Build Conditions

3.3.1.1 Background Traffic Growth

No-Build traffic conditions are independent of the proposed Project and include all existing traffic and any new traffic resulting from both general background growth and any identified development projects in the area.

Two procedures are used to determine background traffic growth. The first is to apply a general growth rate to account for changes in demographics, auto usage, and ownership. Based on an assessment of historic traffic volume data in the area, it was determined that traffic volumes have generally remained unchanged in recent years. However, to provide a conservative estimate, this analysis assumes a general background growth rate of one-half percent per year, consistent with other recent projects in the downtown area.

The second procedure for determining background traffic growth is to estimate traffic generated by planned new major developments and anticipated roadway changes. Additional traffic generated by the following projects, depicted in Figure 3-12, was included in this background analysis:

121-127 Portland Street – Also known as the Forecaster Building, this BRA board-approved project seeks to add two floors to an existing six-story building. The project calls for approximately 54 loft dwelling units and 42 parking spaces. Trips generated by project were distributed to the study area intersections.

*Lovejoy Wharf –*This BRA board-approved project, also known as the Hoffman Building, is located at 160 North Washington Street and calls for the reuse of an existing structure of 336,335 square feet. The project is expected to include ground floor retail, 250 dwelling units, and restoration of the 40,000-square-foot on-site wharf. Trips generated by project were distributed to the study area intersections.

Massachusetts General Hospital Institutional Master Plan Building for the 3rd Century – MGH is constructing a new ambulatory care building on the site of several former hospital buildings. One phase of the project, the Yawkey Outpatient Center, is already complete and includes a 725-space parking garage. Both the garage and Yawkey Center are operational. A second 150-bed addition, permitted through the Institutional Master Plan, is under construction and is expected to be fully occupied by 2012. No new parking is to be built as part of the second phase. Trips generated by project were distributed to the study area intersections.

MGH Museum and History Center – This project, located at 37 North Grove Street, is under construction and is expected to be finished by the end of 2011. It will include 8,000 square feet of museum space on two floors with a rooftop garden. Trips generated by this project within the study area are reflected within the general background growth rate.

Nashua Street Residences – this BRA board-approved project includes the development of a 368-unit residential tower with above-grade parking. Trips generated by project were distributed to the study area intersections.

One Canal Street – This BRA board-approved project calls for approximately 280 units of residential apartment and 15,000 square feet of retail. Delivery of this project is currently projected between 2012 and 2013. Trips generated by this project were distributed to the study area intersections.

Redevelopment of the Government Center Garage – The redevelopment of Government Center Garage is in the early planning stages. Located at One Congress Street between New Sudbury Street and New Chardon Street, the site encompasses the blocks bounded by New Chardon Street, Surface Road, New Sudbury Street, and Bowker Street. Redevelopment of the site will involve a phased demolition of most of the existing garage and construction of new residential, hotel, retail, and office space. The Project will eliminate the existing building structure that spans over Congress Street and the Haymarket bus facility, thereby creating two distinct development parcels (west parcel and east parcel). The study team estimated the potential vehicle trip generation associated with this project and distributed the trips to the study area intersections.

Simpson Housing – This BRA board-approved project located on Beverly Street proposes construction of 284 residential units above 14,910 square feet of ground floor retail, with 142 parking spaces on-site. Trips generated by project were distributed to the study area intersections.

Suffolk University - 20 Somerset Street – This project involves the demolition of the former Metropolitan District Commission Building and its replacement with an eight-story, 112,000-square-foot building that will include classrooms, studios for art students, and gallery space. Construction began in 2010 and is expected to be complete by 2013. Trips generated by this project within the study area are reflected within the general background growth rate.

The Merano – This project, located between Beverly Street and Medford Street, involves the construction of a new, mixed-use project including 209,000 square feet of office space, a 110-room Marriot Town Place for long-term stays, a 170-room Courtyard Marriot for short stays, and 227 parking spaces on-site. Trips generated by project were distributed to the study area intersections.

3.3.1.2 Background Transportation Improvements and Planning Initiatives

Craigie Dam and Craigie Drawbridge Project – MassDOT Highway Division is in the final stages of the Craigie Dam and Craigie Drawbridge Project. The project has included major repairs to the Craigie Dam and replacement of the 1962 Craigie Drawbridge, itself a replacement for an even older span. The drawbridge and dam carry the Monsignor William O'Brien Highway over the Charles River between Boston and Cambridge. As a result of the replacement project, bicycle and pedestrian accommodations on the bridge and dam have been improved. Sidewalks have been widened to be more welcoming to inexperienced cyclists or families cycling with young children. More confident commuter cyclists can ride in the street along five-foot bike lanes. Automobiles will cross the bridge in new, ten-foot travel lanes.

Longfellow Bridge Rehabilitation Project – MassDOT Highway Division is also at work on the Longfellow Bridge, which connects Charles Circle in Boston with Kendall Square in Cambridge. This bridge carries a high volume of motor vehicles, cyclists, and the MBTA Red Line. The early action phase of this rehabilitation project is currently underway and is expected to conclude by January 2012. The final rehabilitation phase is expected to run from summer 2012 to early 2016 and will address the span's current structural deficiencies and bring it into compliance with modern standards. Structural steel elements supporting the bridge deck will be replaced and sidewalks modified to meet Americans with Disabilities Act (ADA) guidelines.

Crossroads Initiative – The BRA's Crossroads Initiative has selected a handful of streets that, with the creation of the Rose Kennedy Greenway, have the potential to form vital connections between districts such as the West End and the North End, as well as South Boston and Chinatown. Improving this network of streets and the Greenway will also create new ways of looking at and understanding the City, thus generating new opportunities for City gateways at the water's edge, at South Bay, North Station, South Station, and Long Wharf.

Causeway Street, the gateway to downtown Boston from the north of the City, has a critical place among the Crossroads. As the northernmost of the Crossroads and the primary connection between Beacon Hill and the West End to Boston's waterfront, Causeway Street presents an opportunity to re-knit these neighborhoods through the historic Bulfinch Triangle. Because significant development is planned for both sides of Causeway Street, the design will respond to this historic architectural fabric and street pattern of the Triangle to the south as well as the more contemporary expressions on the northern side of the street. The design will complement both sides of the street while unifying the whole as a gateway from the Charles River crossings including the Leonard P. Zakim Bunker Hill Memorial Bridge.

The Garden Garage design team has been coordinating with the BRA's Causeway Street design team to ensure that the new garage access and egress arrangements are compatible with the Causeway Street plans.

3.3.1.3 No-Build Traffic Operations

The 2016 No-Build analysis uses the methodology described for Existing Conditions. No-Build traffic volumes are shown in Figures 3-13 and 3-14. The resulting intersection operations analyses results are shown in Tables 3-7 and 3-8. Complete Synchro reports are provided in Attachment C.

Table 3-7 No-Build Conditions (2016) Capacity Analysis Summary, a.m. Peak Hour

Intersection	*LOS*	*Delay (sec)*	*V/C*	*95th Percentile Queue (ft)*
Signalized Intersections				
Charles River Dam Road/ Storrow Drive/Nashua Street at Leverett Circle	**F**	**>80.0**	**—**	**—**
Charles EB thru|thru	E	78.2	1.00	#384
Charles EB right	D	35.9	0.92	#359
Charles WB thru|thru	A	6.6	0.43	m0
Nashua SB left/thru|thru	F	>80.0	0.72	m337
Nashua SB right	E	68.5	0.61	m204
Charles NWB left | left	D	51.4	0.80	#204
Charles Street/Marth Road/Nashua Street/I-93 Off-Ramp at Leverett Circle	**F**	**<80.0**	**—**	**—**
Charles River Dam EB left	D	38.3	0.88	m37
Charles River Dam EB left/thru	C	32.2	0.86	m36
Charles NB right | right | right/hard right	F	>80.0	>1.0	#780
Nashua SB hard left	C	21.4	0.36	m49
Nashua SB left	C	21.5	0.35	23
I-93 SWB left right	F	>80.0	>1.0	#571
Nashua Street/Martha Road/Lomasney Way	**A**	**8.3**	**—**	**—**
Nashua WB left | left	A	6.9	0.39	47
Martha SB thru | thru	A	9.4	0.40	m91
Staniford Street/Merrimac Street/Lomasney Way at Lowell Square	**E**	**56.4**	**—**	**—**
Staniford EB left	D	46.4	0.20	66
Staniford EB left/thru	F	>80.0	>1.0	#356
Staniford EB right	B	12.4	0.58	70
Causeway WB left/thru | thru	D	40.3	0.69	253
Causeway WB right	E	63.5	0.86	279
Merrimac NB left	E	56.1	0.60	178
Merrimac NB thru/right	F	>80.0	0.97	#297
Lomasney SB left	D	45.5	0.65	309
Lomasney SB thru/right	D	42.7	0.60	320
Lomasney SB right	D	44.8	0.62	288
Cambridge Street/Staniford Street/Temple Street	**D**	**42.5**	**—**	**—**
Cambridge EB U-turn/left	D	45.9	0.76	#269
Cambridge EB thru | thru	C	24.8	0.46	203
Cambridge WB U-turn/thru | thru	C	23.7	0.54	221
Cambridge WB right	A	1.7	0.25	20
Temple NB right	D	43.3	0.13	15
Staniford SB U-turn/left	E	56.1	0.87	#259
Staniford SB right	F	>80.0	>1.0	#393

# = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is max. after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.
* Operates as a de facto right during the a.m. peak period.
Cell shading indicates a decrease in LOS from Existing Conditions.

Table 3-7 No-Build Conditions (2016) Capacity Analysis Summary, a.m. Peak Hour (Continued)

Intersection	*LOS*	*Delay (sec)*	*V/C*	*95th Percentile Queue (ft)*
Signalized Intersections (continued)				
Merrimac Street/New Chardon Street	**F**	**>80.0**	**—**	**—**
New Chardon EB left/thru	F	>80.0	0.99	#310
New Chardon EB right/hard right*	E	61.9	>1.0	#73
New Chardon WB U-turn/hard left/left	E	57.0	0.82	#286
New Chardon WB thru | thru/right	D	45.4	0.82	#216
Merrimac NB U-turn/hard left/left	F	>80.0	>1.0	#567
Merrimac NB thru | thru/right	B	18.3	0.42	m63
Merrimac NB right	A	5.8	0.17	m21
Merrimac SB left/thru | thru | thru/right	D	46.3	0.60	164
Merrimac SB thru | thru/right	F	>80.0	>1.0	#217
New Chardon Street/Government Garage Driveway	**D**	**40.4**	**—**	**—**
New Chardon EB thru | thru	D	41.8	0.44	104
New Chardon WB thru| thru	D	43.1	0.35	m40
Garage NB left/right	C	21.4	0.44	5
Unsignalized Intersections				
Lomasney Way/Martha Road/Red Auerbach Way/Garden Garage Driveway	N/A	N/A	N/A	N/A
Lomasney Way/West End Place				
West End EB left/right	B	11.6	0.03	2
Lomasney SB thru | thru/right	A	0.0	0.35	0
Nashua Street/Red Auerbach Way				
Nashua NB thru | thru/right	A	0.0	0.25	0
Red Auerbach NWB right	B	12.4	0.13	11
Causeway Street/Beverly Street				
Causeway EB thru | thru/right	A	0.0	0.22	0
Causeway WB left/thru | thru	A	3.1	0.32	8
Causeway Street/Beverly Street Extension				
Causeway EB left/thru | thru	A	1.5	0.17	9
Causeway WB thru | thru/right	A	0.0	0.32	0
Beverly Ext SB left/right	F	>50.0	0.76	119

# = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is max. after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.
* Operates as a de facto right during the a.m. peak period.
Cell shading indicates a decrease in LOS from Existing Conditions.

Table 3-8 No-Build Conditions (2016) Capacity Analysis Summary, p.m. Peak Hour

Intersection	*LOS*	*Delay (sec)*	*V/C*	*95th Percentile Queue (ft)*
Signalized Intersections				
Charles River Dam Road/ Storrow Drive/Nashua Street at Leverett Circle	**F**	**>80.0**	**—**	**—**
Charles EB thru|thru	E	62.0	0.96	#402
Charles EB right	B	14.0	0.70	159
Charles WB thru|thru	A	3.5	0.39	m0
Nashua SB left/thru|thru	F	>80.0	0.77	m294
Nashua SB right	E	78.4	0.68	m195
Charles NWB left | left	D	48.3	0.74	188
Charles Street/Martha Road/Nashua Street/I-93 Off-Ramp at Leverett Circle	**F**	**>80.0**	**—**	**—**
Charles River Dam EB left	B	15.9	0.79	m22
Charles River Dam EB left/thru	B	15.1	0.78	m21
Charles NB right | right | right/hard right	F	>80.0	>1.0	#675
Nashua SB hard left	F	>80.0	0.76	m187
Nashua SB left	F	>80.0	0.76	154
I-93 SWB left right	F	>80.0	>1.0	#541
Nashua Street/Martha Road/Lomasney Way	**A**	**4.0**	**—**	**—**
Nashua WB left | left	A	1.4	0.36	0
Martha SB thru | thru	A	5.3	0.23	m76
Staniford Street/Merrimac Street/Lomasney Way at Lowell Square	**E**	**71.7**	**—**	**—**
Staniford EB left	E	63.0	0.68	176
Staniford EB left/thru	F	>80.0	>1.0	#613
Staniford EB right	C	26.8	0.87	#189
Causeway WB left/thru | thru	D	41.1	0.78	#275
Causeway WB right	D	54.9	0.81	310
Merrimac NB left	D	46.6	0.39	131
Merrimac NB thru/right	E	74.4	0.86	#325
Lomasney SB left	D	41.3	0.58	222
Lomasney SB thru/right	D	54.1	0.83	#457
Lomasney SB right	D	40.4	0.54	243
Cambridge Street/Staniford Street/Temple Street	**D**	**43.1**	**—**	**—**
Cambridge EB U-turn/left	F	>80.0	>1.0	#434
Cambridge EB thru | thru	C	24.1	0.43	212
Cambridge WB U-turn/thru | thru	C	24.2	0.56	234
Cambridge WB right	A	3.9	0.31	39
Temple NB right	D	46.0	0.05	4
Staniford SB U-turn/left	E	65.4	0.90	#353
Staniford SB right	E	73.5	0.92	#336

# = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is max. after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.
* Operates as a de facto right during the a.m. peak period.
Cell shading indicates a decrease in LOS from Existing Conditions.

Table 3-8 No-Build Conditions (2016) Capacity Analysis Summary, p.m. Peak Hour (Continued)

Intersection	*LOS*	*Delay (sec)*	*V/C*	*95th Percentile Queue (ft)*
Signalized Intersections (continued)				
Merrimac Street/New Chardon Street	**F**	**>80.0**	**—**	**—**
New Chardon EB left/thru | thru/right/hard right	F	>80.0	>1.0	m#232
New Chardon WB U-turn/hard left/left	F	61.9	0.81	#73
New Chardon WB thru | thru/right	F	>80.0	0.83	179
Merrimac NB U-turn/hard left/left	F	>80.0	>1.0	m#464
Merrimac NB thru | thru/right	B	18.3	0.38	m64
Merrimac NB right	C	21.9	0.36	m182
Merrimac SB left/thru | thru | thru/right	E	69.8	0.89	#304
Merrimac SB thru | thru/right	E	63.7	0.77	162
New Chardon Street/Government Garage Driveway	**F**	**>80.0**	**—**	**—**
New Chardon EB thru | thru	F	>80.0	>1.00	#241
New Chardon WB thru| thru	B	15.1	0.31	m42
Garage NB left/right	F	>80.0	0.42	64
Unsignalized Intersections				
Lomasney Way/Martha Road/Red Auerbach Way/Garden Garage Driveway	N/A	N/A	N/A	N/A
Lomasney Way/West End Place				
West End EB left/right	B	11.4	0.01	1
Lomasney SB thru | thru/right	A	0.0	0.34	0
Nashua Street/Red Auerbach Way				
Nashua NB thru | thru	A	0.0	0.34	0
Red Auerbach NWB right	B	13.3	0.11	9
Causeway Street/Beverly Street				
Causeway Street EB thru | thru/right	A	0.0	0.26	0
Causeway Street WB left/thru | thru	A	3.4	0.33	9
Causeway Street/Beverly Street Extension				
Causeway EB left/thru | thru	A	5.0	.21	12
Causeway WB thru | thru/right	A	0.0	0.32	0
Beverly Ext SB left/right	D	34.9	0.50	64

# = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is max. after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.
* Operates as a de facto right during the a.m. peak period.
Cell shading indicates a decrease in LOS from Existing Conditions.

Under No-Build Conditions, several of the intersections and individual approaches will experience a worsening in LOS when compared to Existing Conditions. The decrease in LOS is generally attributed to the conservative one-half percent per year background growth rate as well as the increase in vehicle trips associated with planned area development projects. In addition, it should be noted that operations at some intersection approaches will improve as the result of traffic signal improvements to study area intersections (e.g., Causeway Street Reconstruction).

The following intersections or individual intersection approaches, are expected to experience a decrease in LOS under No Build Conditions:

Charles River Dam Road/Storrow Drive/Nashua Street at Leverett Circle – During the a.m. peak hour, the Charles River Dam Road eastbound right-turn lane will worsen from LOS C to LOS D as a result of an increase in delay of less than four seconds (just one second over the threshold). During the p.m. peak hour, the overall intersection operations will worsen from LOS E to LOS F as a result of an increase in delay of approximately 10 seconds (five seconds over the threshold), although all intersection approaches will continue to operate at the same LOS.

Charles River Dam Road/Martha Road/Nashua Street/I-93 Off-Ramp at Leverett Circle – During the a.m. peak hour the overall intersection operations will worsen from LOS D to LOS F. The change in LOS is attributed to the re-opening of the Nashua Street southbound approach, which is currently closed during the a.m. peak period to facilitate construction at Science Park/West End Station; traffic volumes at this approach were re-distributed for the No Build Conditions analysis using historic traffic count data. All intersection approaches will continue to operate at the same LOS during the a.m. peak hour with the exception of the Charles River Dam Road eastbound left-turn approach, which will worsen from LOS C to LOS D, and the Charles Street northbound approach, which will worsen from LOS C to LOS F. During the p.m. peak hour, the overall intersection operations will worsen from LOS E to LOS F; however, all individual approaches will continue to operate at the same LOS.

Staniford Street/Merrimac Street/Lomasney Way at Lowell Square – During the a.m. peak hour the Staniford Street eastbound left-turn/through-lane will worsen from LOS E to LOS F, and the Merrimac Street northbound through/right-turn lane will worsen from LOS D to LOS E. During the p.m. peak hour, the Staniford Street eastbound left-turn/through-lane will worsen from LOS A to LOS C.

The Merrimac Street northbound through/right-turn lane will worsen from LOS C to LOS F during the a.m. peak hour and from LOS D to LOS E during the p.m. peak hour; this change in LOS is a result of the approach being reduced from two lanes under existing conditions to one shared lane under No Build Conditions as part of the Causeway Street Reconstruction Project. It should be noted that planned reconstruction of this intersection will result in an overall improvement to operating conditions during both peak periods.

Staniford Street/Temple Street – During the a.m. peak hour, the Staniford Street southbound U-turn/left-turn lane will worsen from LOS D to LOS E, and the Staniford Street southbound right-turn lane will worsen from LOS E to LOS F. During the p.m. peak hour, all intersection approaches will continue to operate at the same LOS.

Merrimac Street/New Chardon Street – The overall intersection LOS is expected to decrease from LOS E to LOS F during both peak periods. During the a.m. peak hour, the New Chardon Street eastbound left-turn/through-lane and the U-turn/hard-left/left-turn lane will each worsen from LOS D to LOS F. During the p.m. peak hour, the New Chardon Street westbound approaches will all worsen from LOS E to LOS F; the Merrimac Street northbound U-turn/hard-left/left-turn lane will worsen from LOS C to LOS F; the Merrimac Street northbound right-turn lane will worsen from LOS B to LOS C; and the Merrimac Street southbound through | through/right-turn approach will worsen from LOS D to LOS E.

New Chardon Street/Government Center Garage Driveway – The overall intersection LOS is expected to decrease from LOS C to LOS D during the a.m. peak hour. The New Chardon Street westbound approach will worsen from LOS B to LOS D during the a.m. peak hour and from LOS A to LOS B during the p.m. peak hour. The Government Center Garage Driveway northbound approach will worsen from LOS B to LSO C during the a.m. peak hour.

Causeway Street/Beverly Street Extension – The stop controlled Beverly Street Extension southbound approach is expected to decrease in LOS from LOS E to LOS F during the a.m. peak hour and from Los C to LOS D during the p.m. peak hour.

3.3.1.4 No-Build Conditions Public Transportation

Green Line Accessibility Improvements

As of July 2011, Green Line service between North Station and Lechmere has been suspended and replaced with a shuttle bus. The temporary shut-down of rail service will allow the MBTA to upgrade the Science Park/West End Station to offer handicapped accessible elevators. Service to Lechmere is currently expected to be restored by December 2011. In terms of the Garden Garage Project, improved accessibility at Science Park/West End Station will benefit Project residents.

Green Line Extension to Somerville and Medford

The Green Line Extension project is an initiative of the MassDOT and MBTA that will extend the existing MBTA Green Line service from a relocated Lechmere Station in East Cambridge to Union Square in Somerville and College Avenue in Medford. This project will greatly improve public transit service in some of the most densely-populated municipalities of the Commonwealth. The proposed Garden Garage Project will benefit from improved transit service on the Green Line at North Station and Science Park/West End Station.

At the time of this study, the Green Line Extension project has been delayed by three years based on the decision by the MBTA to obtain the majority of the required right-of-ways prior to the start of construction. According to a *Boston Globe* article on August 2, 2011, this will delay the opening of the extension to at least 2018.

Urban Ring

The Urban Ring (Phase 2) is a proposed bus rapid transit corridor serving a circumferential area outside downtown Boston. A Revised Draft Environmental Impact Report/Draft Environmental Impact Statement (RDEIR/DEIS) was filed in November 2008. This report identifies a locally preferred alternative (LPA) serving East Boston, Logan Airport, Charlestown, Longwood Medical Area, Mission Hill, the Dudley Square/Upham's Corner neighborhoods of Roxbury, the University of Massachusetts campus at Columbia Point, and the Seaport/Convention Center area. This route will offer many commuters an alternate route to destinations surrounding the city without having to make connections downtown. In terms of the Garden Garage Project, these circumferential transit improvements will reduce peak loads on the Green and Orange Lines as well as the rest of the central subway system.

As of January 2010, MassDOT suspended further environmental review on the Urban Ring project based in a large part on funding constraints. MassDOT has continued planning, civic engagement, and implementation of early action steps along the proposed route such as implementation of improved bus service along "high value" segments of the corridor. Another key step undertaken by the agency is ensuring that key areas of the proposed route are protected from development that would hinder the ultimate implementation of the full project.

2009 MBTA Service Plan Update

The MBTA reviews usage and route performance every two years and develops a plan to reallocate or improve service. At the time of this study, the most recent available documentation is the 2009 update of the 2008 service delivery plan. The 2009 update was approved in June 2010. This document does not expand significantly on what was available in 2008.

In 2008, two major changes to bus routes serving the Project area were proposed. The first of these was the elimination of route #6, a peak-hour service which ran between Haymarket Station and South Station via the North End. The second major change was the extension of route #4 to provide a one-seat ride between the North Station area and the Boston Marine Industrial Park in South Boston. Both of these changes have been implemented as of the time of this study. The 2008 service delivery plan does not outline major future service changes for the Project area.

3.3.2 Build Scenario

The Project includes construction of 500 residential apartment units, 3,000 square feet of retail space, and replacement of the current 650-space garage with an 850-space underground garage (an increase of 200 spaces) to serve Project residents, employees, and the general public. For site plan, see Figure 3-15.

3.3.2.1 Site Access and Circulation

Vehicular access to the new garage will be provided via four entrance and exit gates (versus five today), including two on Lomasney Way and two on Martha Road. The proposed driveway on Lomasney Way will be positioned in generally the same location as the existing driveway; however, the existing driveway will be reduced in width, which will substantially reduce the pedestrians crossing distance and thus improve pedestrian conditions in front of the site. A second driveway on Martha Road will be located approximately 100 feet west of Nashua Street and will provide for only right-turns in and right-turns out. Provision of the second driveway will help diffuse vehicular volume along Lomasney Way and reduce the potential for conflicts between pedestrians and vehicles. In addition, the Project will maintain the existing vehicular connection with the Longfellow Garage, such that circulation during events and other high-demand periods will be dispersed between the proposed garage and the Longfellow Garage.

The Project also includes a short-term pick-up/drop-off area adjacent to the site along Lomasney Way to accommodate up to three vehicles (e.g., taxis). This zone will help ensure smooth and unobstructed traffic flow along Lomasney Way southbound adjacent to the site.

The Garden Garage design team has been coordinating efforts with the BRA's Causeway Street design team to ensure that the new garage access and egress arrangements are compatible with the Causeway Street plans and do not preclude future improvements to Nashua Street, Martha Road, and Lomasney Way adjacent to the Project site. The Project team is working collaboratively with BTD and BRA to investigate potential circulation alternatives and open space improvements in this area as part of an ongoing planning effort.

Primary pedestrian access to the proposed residential lobbies will be provided from Lomasney Way. Secondary pedestrian connections will also link the buildings with Thoreau Path via the new landscaped walkway that is proposed between the two new buildings. The Project will significantly improve the pedestrian environment with the new walkway, new sidewalks, handicapped-accessible ramps, street trees, bicycle racks, and the creation of public open spaces.

The design of the new driveways and sidewalk/pathway improvements will be coordinated with the appropriate City agencies, including BRA, BTD, and the Public Works Department (PWD). Final design will be codified in the Transportation Access Plan Agreement (TAPA) and approved by the Public Improvement Commission (PIC), as necessary.

3.2.2.2 Trip Generation and Mode Split

The trip generation for the Project uses were derived from the Institute of Transportation Engineers' (ITE) publication *Trip Generation* (8th edition, 2008) using average trip rates and fitted curve equations for comparable land use codes (LUC). The following ITE LUCs were used to develop the Project-generated trips:

Land Use Code 222 – High Rise Apartment. High-rise apartments are multi-family housing units located in a residential building that has more than 10 floors and often has multiple elevators. Calculation of the number of trips was based on the number of dwelling units using ITE's fitted curve equations for daily, a.m. peak hour, and p.m. peak hour weekday trips.

Land Use Code 820 – Shopping Center. A shopping center is an integrated group of retail establishments developed, owned, and operated as a single entity. The composition of a shopping center is based on market area in terms of size, location, and type of retailer. While the proposed retail use is expected to accommodate only one or two small ground-floor retail uses totaling just 3,000 square feet, this LUC was chosen to provide a conservative estimate. Calculation of the number of trips was based on the proposed square footage using ITE's fitted curve equations for daily, a.m. peak hour, and p.m. peak hour weekday trips.

The ITE fitted curve equations produce vehicle trip estimates, which are then converted to person trips based on average national vehicle occupancy rates (VOR) from the *2001 National Household Travel Survey* published by the Federal Highway Administration (FHWA). Using BTD's mode split data for Area 1, a BTD-designated zone that encompasses the Project site, the total person trips for each time period are then reallocated to walk/bike, transit, and vehicle trips. The vehicle–person trips are then converted back to vehicle trips using local and national VORs from the U.S. Census for the residential use and the 2001 National Household Travel Survey for the retail use.

The mode split data for Area 1 and local VOR's are summarized by land use and time of day in Table 3-9.

Table 3-9 Mode Split Assumptions

Land Use		*Walk/Bike Share*[1]	*Transit Share*[1]	*Auto Share*[1]	*Local Vehicle Occupancy Rate*[2]
Daily					
Residential	In	65%	14%	21%	1.1
	Out	65%	14%	21%	1.1
Retail	In	54%	31%	15%	1.8
	Out	54%	31%	15%	1.8
A.M. Peak Hour					
Residential	In	68%	15%	17%	1.1
	Out	70%	13%	17%	1.1
Retail	In	57%	16%	27%	1.8
	Out	60%	13%	27%	1.8
P.M. Peak Hour					
Residential	In	70%	13%	17%	1.1
	Out	68%	15%	17%	1.1
Retail	In	60%	13%	27%	1.8
	Out	57%	16%	27%	1.8

1. Source: Boston Transportation Department, Area 1 for residential and retail uses.
2. Source: U.S. Census Tract #203 and *2001 National Household Travel Survey,* FHWA.

As expected, given the Project site's convenient location to the downtown, area institutions and businesses, and a wide variety of public transit alternatives, between 73% and 85% (see Table 3-9) of all trips in this area of the City are made by non-auto modes of transportation (i.e., walk, bike, and transit).

Based on the land use trip rates and mode split assumptions described above, Table 3-10 summarizes the resulting adjusted Project-generated vehicle trips. Detailed trip generation calculations are provided in Attachment C.

Table 3-10 Project Trip Generation

Land Use	*Direction*	*Walk/Bike Trips*[1]	*Transit Trips*[1]	*Auto Trips*[1]
		Daily		
Residential (500 units)	In	826	178	243
	Out	826	178	243
	Total	**1,652**	**356**	**486**
Retail (3,000 sf)	In	63	18	20
	Out	63	18	20
	Total	**126**	**36**	**40**
Combined	In	889	196	263
	Out	889	196	263
	Total	*1,778*	*392*	*526*
		A.M. Peak Hour		
Residential (500 units)	In	31	7	7
	Out	94	17	21
	Subtotal	**125**	**24**	**28**
Retail (3,000 sf)	In	13	4	3
	Out	8	2	2
	Subtotal	**21**	**6**	**5**
Combined	In	44	11	10
	Out	102	19	23
	Total	*146*	*30*	*33*
		P.M. Peak Hour		
Residential (500 units)	In	88	16	19
	Out	54	12	13
	Subtotal	**142**	**28**	**32**
Retail (3,000 sf)	In	32	7	8
	Out	37	9	8
	Subtotal	**69**	**16**	**16**
Combined	In	120	23	27
	Out	91	21	21
	Total	*211*	*44*	*48*

1. Based on ITE LUC – 222 High Rise Apartment for 500 units of residential and ITE LUC – 820 Shopping Center for 3,000 sf of retail.

The new residential use is expected to generate approximately 526 vehicle trips (263 trips in and 263 trips out) on a daily basis. In the a.m. peak hour, the Project will generate approximately 33 new vehicle trips (10 new vehicle trips in and 23 new vehicle trips out); in the p.m. peak hour, the Project will generate 48 new vehicle trips (27 new vehicle trips

in and 21 new vehicle trips out). The increase in traffic associated with the Project corresponds to approximately only one new vehicle trip every two minutes during the a.m. peak hour and less than one new vehicle trip per minute during the p.m. peak hour, which is a negligible increase on area roadways.

These vehicle trips will be in addition to the existing vehicle trips currently generated by the 650-space parking garage, which is analyzed under the Existing and No-Build Conditions and will be retained as part of the Project. The combined vehicles trips generated by the uses on-site used in the Build intersection analyses are summarized in Table 3-11.

Table 3-11 Combined Site-Generated Traffic Volumes

Period/Direction		*Existing Garage*[1]	*New Project Trips*[2]	*Combined Vehicle Trips*
Daily	In	800	263	1,063
	Out	800	263	1,063
	Total	**1,600**	**526**	**2,126**
a.m. Peak Hour	In	103	10	113
	Out	8	23	31
	Total	**111**	**33**	**144**
p.m. Peak Hour	In	7	27	34
	Out	132	21	153
	Total	**139**	**48**	**187**

1. Daily trips based on garage gate data from 2007-2009; peak hour trips based on driveway counts conducted in June, 2011
2. Based on ITE LUC – 222 High Rise Apartment for 500 units of residential and ITE LUC – 820 Shopping Center for 3,000 sf of retail..

As shown, the combined vehicle trips, which will be distributed between the two proposed driveways, are relatively modest, with fewer than 160 total vehicles traveling in the peak direction during the peak hours, which equates to less than 3 vehicle trips per minute.

3.3.2.3 Project Trip Distribution

The vehicular trip distribution is based on BTD guidelines using origin–destination characteristics for Area 1. The vehicle trip distribution shown in Table 3-12 indicates that the majority of traffic (approximately 80%) will use the regional highway system to access the site. Figures 3-16 and 3-17 present expected local vehicle trip distribution to and from the site, respectively. As indicated by these graphics, access to regional highways from the site is excellent as the area has had significant roadway infrastructure improvements with the recent completion of the Central-Artery/Tunnel project.

Table 3-12 Project Vehicle Trip Distribution

Direction/Origin–Destination	*% Entering/Exiting Traffic*
Regional Traffic	
To/from North I-93 Route 1 (via I-93)	25%
To/from South I-93 Route 1A	25%
To/from West I-90 (via I-93) Storrow Drive	25%
To/from East Route 1A (via Sumner/Callahan Tunnels)	5%
Subtotal Regional	**80%**
Local Traffic	
To/from North Cambridge/Charlestown/Somerville	10%
To/from South Downtown	5%
To/from East North End/South Boston	3%
To/from West Back Bay	2%
Subtotal Local	**20%**

3.3.2.4 Build Traffic Operations

Build traffic volumes under the existing circulation plan for the area are shown on Figures 3-18 and 3-19. The resulting traffic operations in the 2016 Build year are presented in Tables 3-13 and 3-14. Capacity analysis reports are provided in Attachment C.

Table 3-13 Build Conditions (2016) Capacity Analysis Summary, a.m. Peak Hour

Intersection	*LOS*	*Delay (sec)*	*V/C*	*95th Percentile Queue (ft)*
Signalized Intersections				
Charles River Dam Road/ Storrow Drive/Nashua Street at Leverett Circle	**F**	**>80.0**	**—**	**—**
Charles EB thru|thru	E	78.2	1.00	#384
Charles EB right	D	35.9	0.92	#359
Charles WB thru|thru	A	6.6	0.43	m0
Nashua SB left/thru|thru	F	>80.0	0.73	m340
Nashua SB right	E	70.6	0.62	m206
Charles NWB left | left	D	51.4	0.80	#204
Charles Street/Marth Road/Nashua Street/I-93 Off-Ramp at Leverett Circle	**F**	**<80.0**	**—**	**—**
Charles River Dam EB left	D	38.3	0.88	m37
Charles River Dam EB left/thru	C	32.2	0.86	m36
Charles NB right | right | right/hard right	F	>80.0	>1.0	#788
Nashua SB hard left	C	22.3	0.39	m57
Nashua SB left	C	22.4	0.39	26
I-93 SWB left right	F	>80.0	>1.0	#571
Nashua Street/Martha Road/Lomasney Way	**A**	**8.1**	**—**	**—**
Nashua WB left | left	A	6.5	0.40	46
Martha SB thru | thru	A	9.3	0.39	m88
Staniford Street/Merrimac Street/Lomasney Way at Lowell Square	**E**	**56.4**	**—**	**—**
Staniford EB left	D	46.4	0.21	66
Staniford EB left/thru	F	>80.0	>1.0	#356
Staniford EB right	B	12.4	0.59	70
Causeway WB left/thru | thru	D	40.3	0.63	253
Causeway WB right	E	63.5	0.82	279
Merrimac NB left	E	56.1	0.58	178
Merrimac NB thru/right	F	>80.0	0.97	#297
Lomasney SB left	D	45.6	0.70	310
Lomasney SB thru/right	D	42.9	0.65	323
Lomasney SB right	D	44.9	0.67	288
Cambridge Street/Staniford Street/Temple Street	**D**	**42.7**	**—**	**—**
Cambridge EB U-turn/left	D	45.9	0.76	#269
Cambridge EB thru | thru	C	24.2	0.46	203
Cambridge WB U-turn/thru | thru	C	23.7	0.54	221
Cambridge WB right	A	1.7	0.25	20
Temple NB right	D	43.3	0.13	7
Staniford SB U-turn/left	E	56.1	0.87	#259
Staniford SB right	F	>80.0	>1.0	#393

# = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is max. after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.

Table 3-13 Build Conditions (2016) Capacity Analysis Summary, a.m. Peak Hour (Continued)

Intersection	*LOS*	*Delay (sec)*	*V/C*	*95th Percentile Queue (ft)*
Signalized Intersections (continued)				
Merrimac Street/New Chardon Street	**F**	**>80.0**	**—**	**—**
New Chardon EB left/thru	F	>80.0	0.99	#310
New Chardon EB right/hard right*	E	61.9	0.78	#73
New Chardon WB U-turn/hard left/left	E	57.0	0.82	#286
New Chardon WB thru | thru/right	D	45.4	0.82	#216
Merrimac NB U-turn/hard left/left	F	>80.0	>1.0	#567
Merrimac NB thru | thru/right	B	18.3	0.42	m63
Merrimac NB right	A	5.8	0.17	m21
Merrimac SB left/thru | thru | thru/right	D	46.6	0.61	166
Merrimac SB thru | thru/right	F	>80.0	>1.0	#217
New Chardon Street/Government Garage Driveway	**D**	**40.1**	**—**	**—**
New Chardon EB thru | thru	D	40.6	0.44	104
New Chardon WB thru| thru	D	43.1	0.35	m40
Garage NB left/right	C	21.4	0.44	5
Unsignalized Intersections				
Lomasney Way/Martha Road/Red Auerbach Way/Garden Garage Driveway	N/A	N/A	N/A	N/A
Lomasney Way/West End Place				
West End EB left/right	B	11.7	0.17	2
Lomasney SB thru | thru/right	A	0.0	0.35	0
Nashua Street/Red Auerbach Way				
Nashua NB thru | thru/right	A	0.0	0.26	0
Red Auerbach NWB right	B	12.6	0.13	12
Causeway Street/Beverly Street				
Causeway Street EB thru | thru/right	A	0.0	0.22	0
Causeway Street WB left/thru | thru	A	3.1	0.32	8
Causeway Street/Beverly Street Extension				
Causeway EB left/thru | thru	A	4.6	0.17	9
Causeway WB thru | thru/right	A	0.0	0.32	0
Beverly Ext SB left/right	F	>50.0	0.76	119
Martha Road/Garage Driveway				
Garage EB right	B	10.7	0.02	1
Martha Road SB thru | thru/right	A	0.0	0.27	0

# = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is max. after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.
* Operates as a de facto right during the a.m. peak period.

Table 3-14 Build Conditions (2016) Capacity Analysis Summary, p.m. Peak Hour

Intersection	*LOS*	*Delay (sec)*	*V/C*	*95th Percentile Queue (ft)*
Signalized Intersections				
Charles River Dam Road/ Storrow Drive/Nashua Street at Leverett Circle	**F**	**>80.0**	**—**	**—**
Charles EB thru|thru	E	62.3	0.96	#403
Charles EB right	B	14.0	0.70	159
Charles WB thru|thru	A	3.5	0.39	m0
Nashua SB left/thru|thru	F	>80.0	0.77	m295
Nashua SB right	E	79.5	0.68	m196
Charles NWB left | left	D	48.3	0.74	188
Charles Street/Martha Road/Nashua Street/I-93 Off-Ramp at Leverett Circle	**F**	**>80.0**	**—**	**—**
Charles River Dam EB left	B	16.1	0.79	m22
Charles River Dam EB left/thru	B	15.1	0.78	m21
Charles NB right | right | right/hard right	F	>80.0	>1.0	#679
Nashua SB hard left	F	>80.0	0.78	m192
Nashua SB left	F	>80.0	0.78	158
I-93 SWB left right	F	>80.0	>1.0	#541
Nashua Street/Martha Road/Lomasney Way	**A**	**4.9**	**—**	**—**
Nashua WB left | left	A	4.3	0.41	26
Martha SB thru | thru	A	5.2	0.25	m83
Staniford Street/Merrimac Street/Lomasney Way at Lowell Square	**E**	**71.8**	**—**	**—**
Staniford EB left	E	63.2	0.68	177
Staniford EB left/thru	F	>80.0	>1.0	#613
Staniford EB right	C	26.8	0.87	#189
Causeway WB left/thru | thru	D	41.4	0.78	#275
Causeway WB right	D	54.9	0.81	311
Merrimac NB left	D	46.6	0.39	131
Merrimac NB thru/right	E	74.8	0.87	#327
Lomasney SB left	D	41.3	0.58	224
Lomasney SB thru/right	D	54.3	0.83	#465
Lomasney SB right	D	40.5	0.54	245
Cambridge Street/Staniford Street/Temple Street	**D**	**42.7**	**—**	**—**
Cambridge EB U-turn/left	F	>80.0	>1.0	#435
Cambridge EB thru | thru	C	24.2	0.46	203
Cambridge WB U-turn/thru | thru	C	24.2	0.56	234
Cambridge WB right	A	3.9	0.31	39
Temple NB right	D	46.0	0.05	4
Staniford SB U-turn/left	E	65.4	0.90	#353
Staniford SB right	E	74.7	0.93	#339

= 95th percentile volume exceeds capacity; queue may be longer. Queue shown is max. after 2 cycles.

m = Volume for 95th percentile queue is metered by upstream signal.

Table 3-14 Build Conditions (2016) Capacity Analysis Summary, p.m. Peak Hour (Continued)

Intersection	*LOS*	*Delay (sec)*	*V/C*	*95th Percentile Queue (ft)*
Signalized Intersections (continued)				
Merrimac Street/New Chardon Street	**F**	**>80.0**	**—**	**—**
New Chardon EB left/thru | thru/right/hard right	F	>80.0	>1.0	m#232
New Chardon WB U-turn/hard left/left	F	>80.0	0.81	#230
New Chardon WB thru | thru/right	F	>80.0	0.83	179
Merrimac NB U-turn/hard left/left	F	>80.0	>1.0	m#464
Merrimac NB thru | thru/right	B	18.3	0.38	m64
Merrimac NB right	C	21.9	0.36	m184
Merrimac SB left/thru | thru | thru/right	E	70.1	0.89	#307
Merrimac SB thru | thru/right	E	64.8	0.77	163
New Chardon Street/Government Garage Driveway	**F**	**>80.0**	**—**	**—**
New Chardon EB thru | thru	F	>80.0	>1.00	#241
New Chardon WB thru| thru	B	15.1	0.31	m42
Garage NB left/right	F	>80.0	0.42	64
Unsignalized Intersections				
Lomasney Way/Martha Road/Red Auerbach Way/Garden Garage Driveway	N/A	N/A	N/A	N/A
Lomasney Way/West End Place				
West End EB left/right	B	11.4	0.20	1
Lomasney SB thru | thru/right	A	0.0	0.34	0
Nashua Street/Red Auerbach Way				
Nashua NB thru | thru	A	0.0	0.35	0
Red Auerbach NWB right	B	13.4	0.11	9
Causeway Street/Beverly Street				
Causeway Street EB thru | thru/right	A	0.0	0.22	0
Causeway Street WB left/thru | thru	A	3.3	0.33	9
Causeway Street/Beverly Street Extension				
Causeway EB left/thru | thru	A	5.0	0.14	12
Causeway WB thru | thru/right	A	0.0	0.32	0
Beverly Ext SB left/right	D	35.0	0.50	64
Martha Road/Garage Driveway				
Garage EB right	B	10.8	0.10	8
Martha Road SB thru | thru/right	A	0.0	0.25	0

# = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is max. after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.

Given the Project's transit-oriented and residential nature, and its proximity to the regional highway system, the anticipated transportation impacts associated with the proposed redevelopment are negligible. Under Build Conditions, all of the study area intersections and individual intersection approaches will continue to operate at the same LOS.

3.3.2.5 Parking

The Project will replace the existing 650-space garage with a new 850-space underground parking garage for residential, employee, and public use, resulting in a net increase of 200 spaces.

The 200 new parking spaces for the 500 residential units correspond to a parking ratio of 0.4 spaces per unit. The proposed parking supply is consistent with BTD guidelines for this neighborhood of Boston (0.5 to 1.0 spaces per residential unit as a *maximum*), and is appropriate given the Project's convenient location to a wide range of public transportation alternatives and proximity to the downtown, hospitals, and other area business.

The Project will continue to provide up to 50 spaces to residents of Amy Lowell Apartments per an existing lease agreement.

The Proponent will work with BTD and the Boston Environment Department to size and manage the Project garage.

3.3.2.6 Public Transportation

As shown in Table 3-10 above, the Project will generate 356 total daily transit trips to and from the site. In the a.m. peak hour, 17 transit riders will leave the site and 7 will come home; in the p.m. peak hour, 16 riders will come home and 12 will leave. Given the proximity of the site to Orange Line, Green Line, Red Line, Blue Line, commuter rail, and local and regional bus services, the trips will be distributed over a wide range of MBTA services, which should adequately accommodate the Project-generated trips.

3.3.2.7 Pedestrian Operations

As shown in Table 3-10 above, the Project is expected to generate 1,652 daily pedestrian trips (including both bicycle and walk trips) and an additional 356 daily transit trips that require a walk to or from the site. This will result in an additional 2,008 pedestrian trips per day. Approximately 125 pedestrian trips in and out of the site will occur during the a.m. peak hour, and 142 pedestrian trips in and out will occur during the p.m. peak hour; there will also be 24 and 28 transit trips during the a.m. and p.m. peak hours, respectively. This will average approximately two to three pedestrian and transit rider trips per minute during both the a.m. and the p.m. peak hours.

3.3.2.8 Loading and Service Accommodations

All trash, loading, and move-in/move-out activities will occur on-site within the existing Longfellow Place service area, which is located beneath the West End Place courtyard. Access to the service area is currently provided on Lomasney Way via the driveway between the Project site and West End Place.

Deliveries for the proposed residential and retail uses will generally be made via small vehicles such as passenger cars, vans, and SU-30s (i.e., box trucks). Many of these service and delivery trips will be shared with other residential buildings in the area, reducing the total number of new trips generated. The expected loading and service vehicle demands of the Project are presented in Table 3-15.

Table 3-15 Expected Loading and Service Activity

Land Use	*Typical Vehicle & Size*	*Number of Deliveries*	*Typical Delivery Periods*
Residential[1] (500 units, 551,000 sf)	Car/Van to SU-30 and Trash	20 – 24 per day	7:00 a.m. – 7:00 p.m.
Retail[2] (3,000 sf)	Car/Van to SU-30 and Trash	1 – 2 per day	7:00 a.m. – 5:00 p.m.
Total	—	**21 – 26 per day**	—

1. 0.04 trucks trips per day/1,000 sf of Residential per HSH survey at Tremont-on-the-Common.
2. 0.20 trucks trips per day/1,000 sf of Office per NCHRP Synthesis 298, Truck Trip Generation Data.

As shown in Table 3-15, the Project is expected to be serviced by about 20 to 24 loading and/or service vehicles per day, which corresponds to only one to two additional vehicles per hour using the loading and service driveway.

Recycling, trash collection, and loading will occur on-site, during off-peak hours, and within the designated loading zone (i.e., not within the driveway) whenever possible. Permanent "No Idling" signs will be posted in the loading and parking areas. A Transportation Coordinator will be appointed by the Proponent to manage loading activity and coordinate move-in/move-out activities among building residents and with management of the adjacent West End Place residences. A detailed loading and service plan will be developed and agreed upon as part of the TAPA process with BTD.

3.3.2.9 Transportation Mitigation Measures

Facilitated by the Project's transit-oriented nature and proximity to the downtown, hospitals, and area businesses, between 73% and 85% (see Table 3-10) of all trips generated by the Project will be made by non-auto modes of transportation (i.e., walk, bike, and transit).

The Project is expected to result in an increase of only 33 new vehicle trips (10 new vehicle trips in and 23 new vehicle trips out) during the a.m. peak hour and 48 new vehicle trips (27 new vehicle trips in and 21 new vehicle trips out) during the p.m. peak hour. The increase in traffic associated with the Project corresponds to approximately only one new vehicle trip every two minutes during the a.m. peak hour and less than one new vehicle trip per minute during the p.m. peak hour, which is a negligible increase on area roadways.

A summary comparison of the LOS for the Existing, No-Build, and Build Conditions is presented in Tables 3-16 and 3-17. As shown in the tables, under Build Conditions all of the study area intersections and individual intersection approaches will continue to operate at the same LOS as under Existing Conditions. While the Project's impact on the adjacent roadway network is minimal, the Project proposes the following mitigation measures:

1. *Evaluation of Potential Nashua Street/Lomasney Way/Martha Road Circulation and Open Space Alternatives* – The Project team will continue to work collaboratively with BTD and BRA to investigate potential circulation alternatives and open space improvements along Nashua Street, Lomasney Way, and Martha Road adjacent to the Project site;

2. *Enhanced Pedestrian Pathways* – The Project will provide an enhanced pedestrian connection between Thoreau Path and Lomasney Way via a new landscaped pedestrian pathway through the Project site. The new pathway will also improve the pedestrian connection between North Station and the West End;

3. *Driveway Improvements* – Reducing the width of the existing Garden Garage curb cut from five lanes to only two lanes will reduce the distance pedestrians must cross along the Lomasney Way sidewalk adjacent to the site and will simplify operations at the intersection of Lomasney Way/Nashua Street/Red Auerbach Way/Garden Garage Driveway;

4. *Sidewalk Improvements* – The Project includes reconstruction of the sidewalks and accessible curb ramps adjacent to the site along Lomasney Way and Martha Road according to City standards;

5. *Bicycle Parking* – The Project includes on-site bicycle storage racks that will be available to the public and accessible via the new pedestrian pathway; and

6. *Electric Vehicle Charging Stations* – The Proponent proposes to provide electric vehicle charging stations that will be available to public users of the new garage (see Section 3.3.2.10, TDM, for additional details).

Table 3-16 Comparison of Capacity Analysis Summary, a.m. Peak Hour

Intersection	*Existing (2011)*	*No-Build (2016)*	*Build (2016)*
Signalized Intersections			
Charles River Dam Road/Storrow Drive/Nashua Street at Leverett Circle	**F**	**F**	**F**
Charles EB thru|thru	E	E	E
Charles EB right	C	D	D
Charles WB thru|thru	A	A	A
Nashua SB left/thru|thru	F	F	F
Nashua SB right	E	E	E
Charles NWB left | left	D	D	D
Charles River Dam Road/Charles Street/Martha Road/Nashua Street/I-93 Off-Ramp at Leverett Circle	**D**	**F**	**F**
Charles River Dam EB left	C	D	D
Charles River Dam EB left/thru	C	C	C
Charles NB right | right | right/hard right	C	F	F
Nashua SB hard left	—	C	C
Nashua SB left	—	C	C
I-93 SWB left right	F	F	F
Nashua Street/Martha Road/Lomasney Way	**A**	**A**	**A**
Nashua WB left | left	A	A	A
Martha SB thru | thru	A	A	A
Staniford Street/Merrimac Street/Lomasney Way at Lowell Square	**E**	**E**	**E**
Staniford EB left	E	D	D
Staniford EB left/thru	E	F	F
Staniford EB right	A	B	B
Causeway WB left/thru | thru	F	D	D
Causeway WB right	C	E	E
Merrimac NB left	D	E	E
Merrimac NB thru	C	—	—
Merrimac NB right	C	—	—
Merrimac NB thru/right	—	F	F
Lomasney SB left	F	D	D
Lomasney SB thru| thru/right	C	—	—
Lomasney SB thru/right	—	D	D
Lomasney SB right	—	D	D
Cambridge Street/Staniford Street/Temple Street	**D**	**D**	**D**
Cambridge EB U-turn/left	D	D	D
Cambridge EB thru | thru	C	C	C
Cambridge WB U-turn/thru | thru	C	C	C
Cambridge WB right	A	A	A
Temple NB right	D	D	D
Staniford SB U-turn/left	D	E	E
Staniford SB right	E	F	F

Shading indicates a decrease in LOS from the previous condition.
* Operates as a de facto right during the a.m. peak period.

Table 3-16 Comparison of Capacity Analysis Summary, a.m. Peak Hour (continued)

Intersection	*Existing (2011)*	*No-Build (2016)*	*Build (2016)*
Signalized Intersections (continued)			
Merrimac Street/New Chardon Street	**E**	**F**	**F**
New Chardon EB left/thru	D	F	F
New Chardon EB right/hard right	E	E	E
New Chardon WB U-turn/hard left/left	D	E	E
New Chardon WB thru | thru/right	D	D	D
Merrimac NB U-turn/hard left/left	F	F	F
Merrimac NB thru | thru/right	B	B	B
Merrimac NB right	A	A	A
Merrimac SB left/thru | thru | thru/right	D	D	D
Merrimac SB thru | thru/right	F	F	F
New Chardon Street/Government Center Garage Driveway	**C**	**D**	**D**
New Chardon EB thru | thru	D	D	D
New Chardon WB thru| thru	B	D	D
Garage NB left/right	B	C	C
Unsignalized Intersections			
Lomasney Way/Martha Road/Red Auerbach Way/Garden Garage Driveway	N/A	N/A	N/A
Lomasney Way/West End Place			
West End EB left/right	B	B	B
Lomasney SB thru | thru/right	A	A	A
Nashua Street/Red Auerbach Way			
Nashua NB thru | thru/right	A	A	A
Red Auerbach NWB right	B	B	B
Causeway Street/Beverly Street			
Causeway EB thru | thru/right	A	A	A
Causeway WB left/thru | thru	A	A	A
Causeway Street/Beverly Street Extension			
Causeway EB left/thru | thru	A	A	A
Causeway WB thru | thru/right	A	A	A
Beverly Ext SB left/right	E	F	F
Martha Road/Garage Driveway			
Garage EB right	—	—	B
Martha Road SB thru | thru/right	—	—	A

Shading indicates a decrease in LOS from the previous condition.
* Operates as a de facto right during the a.m. peak period.

Table 3-17 Comparison of Capacity Analysis Summary, p.m. Peak Hour

Intersection	*Existing (2011)*	*No-Build (2016)*	*Build (2016)*
Signalized Intersections			
Charles River Dam Road/Storrow Drive/Nashua Street at Leverett Circle	**E**	**F**	**F**
Charles EB thru|thru	E	E	E
Charles EB right	B	B	B
Charles WB thru|thru	A	A	A
Nashua SB left/thru|thru	F	F	F
Nashua SB right	E	E	E
Charles NWB left | left	D	D	D
Charles River Dam Road/Charles Street/Martha Road/Nashua Street/I-93 Off-Ramp at Leverett Circle	**E**	**F**	**F**
Charles River Dam EB left	B	B	B
Charles River Dam EB left/thru	B	B	B
Charles NB right | right | right/hard right	F	F	F
Nashua SB hard left	E	F	F
Nashua SB left	E	F	F
I-93 SWB left right	F	F	F
Nashua Street/Martha Road/Lomasney Way	**A**	**A**	**A**
Nashua WB left | left	A	A	A
Martha SB thru | thru	A	A	A
Staniford Street/Merrimac Street/Lomasney Way at Lowell Square	**F**	**E**	**E**
Staniford EB left	F	E	E
Staniford EB left/thru	F	F	F
Staniford EB right	A	C	C
Causeway WB left/thru | thru	F	D	D
Causeway WB right	D	D	D
Merrimac NB left	D	D	D
Merrimac NB thru/right	D	E	E
Lomasney SB left	D	D	D
Lomasney SB thru/right	E	D	D
Lomasney SB right	D	D	D
Cambridge Street/Staniford Street/Temple Street	**D**	**D**	**D**
Cambridge EB U-turn/left	F	F	F
Cambridge EB thru | thru	C	C	C
Cambridge WB U-turn/thru | thru	C	C	C
Cambridge WB right	A	A	A
Temple NB right	D	D	D
Staniford SB U-turn/left	E	E	E
Staniford SB right	E	E	E

Shading indicates a decrease in LOS from the previous condition.

Table 3-17 Comparison of Capacity Analysis Summary, p.m. Peak Hour (continued)

Intersection	*Existing (2011)*	*No-Build (2016)*	*Build (2016)*
Signalized Intersections			
Merrimac Street/New Chardon Street	**E**	**F**	**F**
New Chardon EB left/thru | thru/right/hard right	F	F	F
New Chardon WB U-turn/hard left/left	E	F	F
New Chardon WB thru | thru/right	E	F	F
Merrimac NB U-turn/hard left/left	C	F	F
Merrimac NB thru | thru/right	B	B	B
Merrimac NB right	B	C	C
Merrimac SB left/thru | thru | thru/right	E	E	E
Merrimac SB thru | thru/right	D	E	E
New Chardon Street/Government Center Garage Driveway	**F**	**F**	F
New Chardon EB thru | thru	F	F	F
New Chardon WB thru| thru	A	B	B
Garage NB left/right	F	F	F
Unsignalized Intersections			
Lomasney Way/Martha Road/Red Auerbach Way/Garden Garage Driveway	N/A	N/A	N/A
Lomasney Way/West End Place			
West End EB left/right	B	B	B
Lomasney SB thru | thru/right	A	A	A
Nashua Street/Red Auerbach Way			
Nashua NB thru | thru/right	A	A	A
Red Auerbach NWB right	B	B	B
Causeway Street/Beverly Street			
Causeway EB thru | thru/right	A	A	A
Causeway WB left/thru | thru	A	A	A
Causeway Street/Beverly Street Extension			
Causeway EB left/thru | thru	A	A	A
Causeway WB thru | thru/right	A	A	A
Beverly Ext SB left/right	C	D	D
Martha Road/Garage Driveway			
Garage EB right	—	—	B
Martha Road SB thru | thru/right	—	—	A

Shading indicates a decrease in LOS from the previous condition.

3.3.2.10 Transportation Demand Management

The Proponent is committed to implementing TDM measures to reduce dependence on autos. TDM will be facilitated by the nature of the Project and its proximity to public transit. The Proponent is committed to implementing a TDM program that supports the City's efforts to reduce dependency on the automobile by encouraging travelers to use alternatives to driving alone, especially during peak periods. The Proponent is prepared to take advantage of the site's excellent pedestrian and transit access in marketing to future residents. On-site management will provide transit information (schedules, maps, fare information) in the building lobbies for residents and guests. On-site management will also work with residents as they move in to raise awareness of non-automobile transportation alternatives.

Additional TDM measures may include, but are not limited to, the following:

- ***Transportation Coordinator.*** The Proponent will designate a transportation coordinator to oversee transportation issues including parking, service, loading, and move-in/move-out. The transportation coordinator will work with residents as they move in to raise awareness of public transportation alternatives.

- ***Tenant and Resident Orientation Packet.*** Provision to new tenants of information about the many TDM programs available.

- ***Web Site.*** Public transportation information for residents and visitors will be included on the Project website.

- ***Preferential Parking for Fuel Efficient Vehicles.*** The Proponent will dedicate up to 5% of all parking spaces (up to 43 spaces) to low-emitting and fuel-efficient vehicles, as requested by BTD.

- ***Electric Vehicle Charging Stations.*** The Project includes a provision for electric vehicle charging stations. The Proponent currently has a national agreement with an electric vehicle charging station provider and will work with them and the City to identify an appropriate number of stations. It is anticipated that charging stations will be added incrementally as demand warrants.

- ***Bicycle Storage.*** Secure bicycle parking will be provided for residents, employees, and visitors to promote biking as a transportation alternative.

- ***Shared Bicycles.*** The Project site is located within close walking distance to two Hubway shared bicycle stations and will promote use of these stations by among Project residents, visitors, and workers.

- *Shared Car Service.* The Proponent currently provides approximately nine shared-car spaces for Zipcar, including approximately three vehicles at Asteria Garage and about six vehicles at the Longfellow Garage. Also convenient to the site are 17 additional Zipcars, including three vehicles at Whittier Place, two vehicles in the MGH Fruit Street Garage, six vehicles at Cambridge Street/Blossom Street, and six vehicles at the Cambridge Street Gas Station. As demand warrants, the Proponent will continue to coordinate with Zipcar to determine the feasibility of locating additional shared-car spaces on the site.

TDM program elements will be codified in the TAPA.

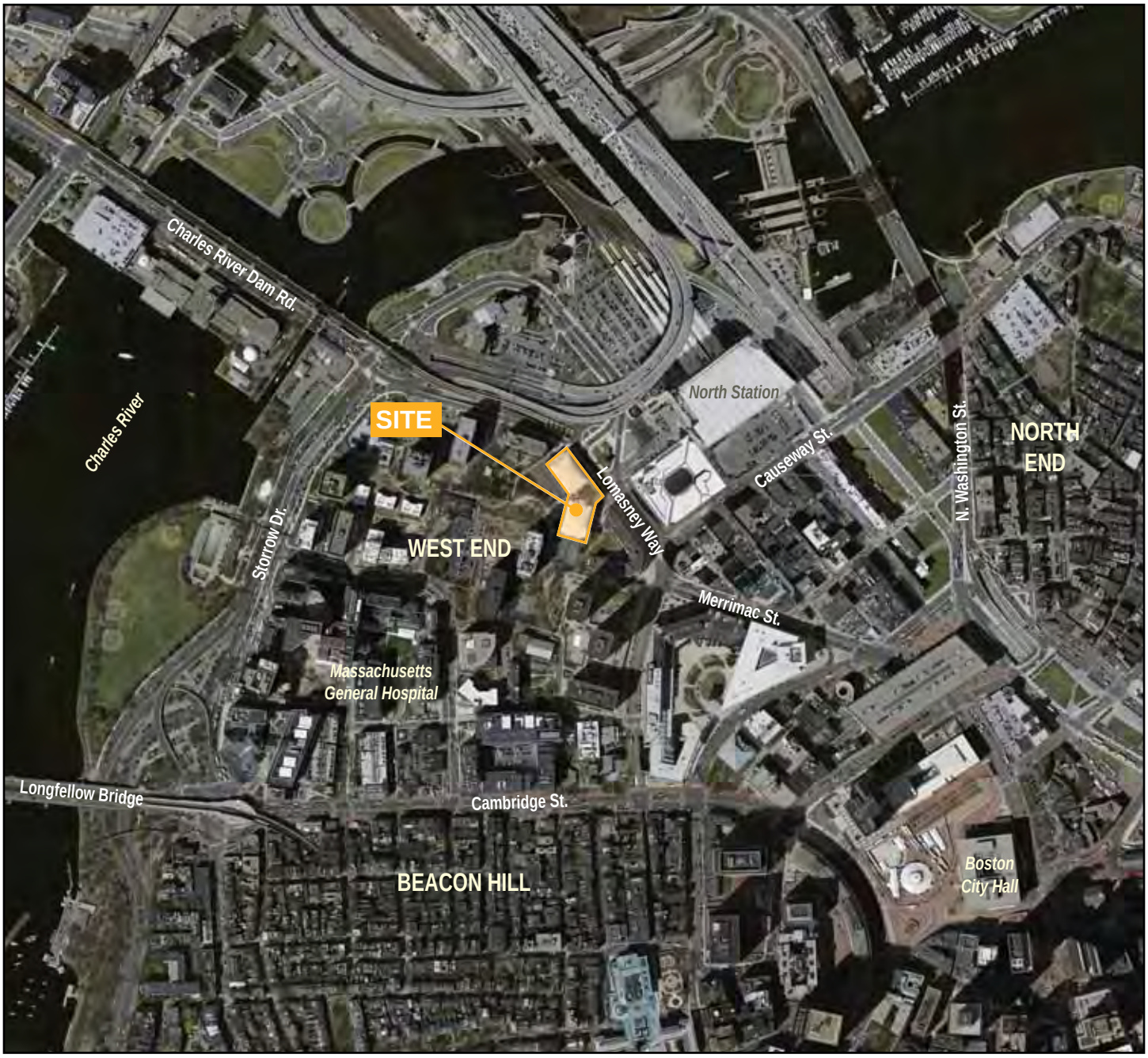
3.4 Evaluation of Short-term Construction and Parking Impacts

Most construction activities will be accommodated within current Project site boundaries. Details of the overall construction schedule, working hours, number of construction workers, worker transportation and parking, number of construction vehicles, and routes will be addressed in detail in a Construction Management Plan (CMP) to be filed with BTD in accordance with the City's transportation maintenance plan requirements.

To minimize transportation impacts during the construction period, the following measures will be incorporated into the CMP:

- On-site construction worker parking will be limited, and worker carpooling will be encouraged;
- A subsidy for MBTA passes will be considered for full-time employees;
- A truck routing plan will be developed to minimize impacts on adjacent roadways; and
- Secure spaces will be provided on-site for workers' supplies and tools so they do not have to be brought to the site each day.

The most significant impact of construction will be the temporary loss of the existing 650-space garage. The Proponent plans to accommodate the current monthly users of the garage through self-parking and valet parking, if necessary, at the Longfellow Garage, the Asteria Garage, and the Vesta Garage. Other public parking, including event parking, can be accommodated out of unused capacity at Longfellow, Asteria, and Vesta garages, as well as at the Government Center Garage and North Station Garage. An information campaign will be conducted one month prior to garage demolition to identify replacement options for current garage users.

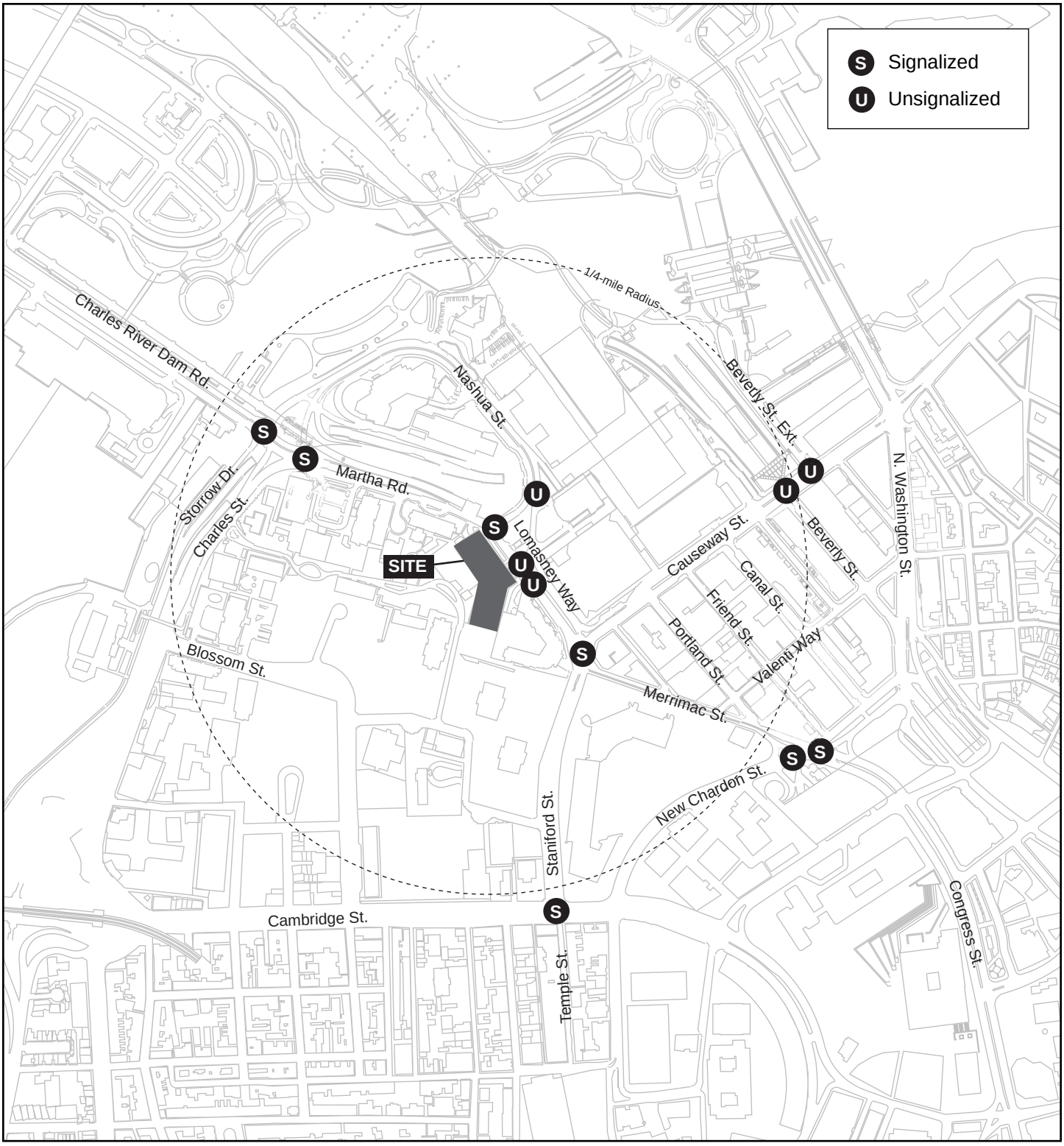


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Figure 3-1
Locus Map



Not to scale.

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Figure 3-2
Study Area Intersections



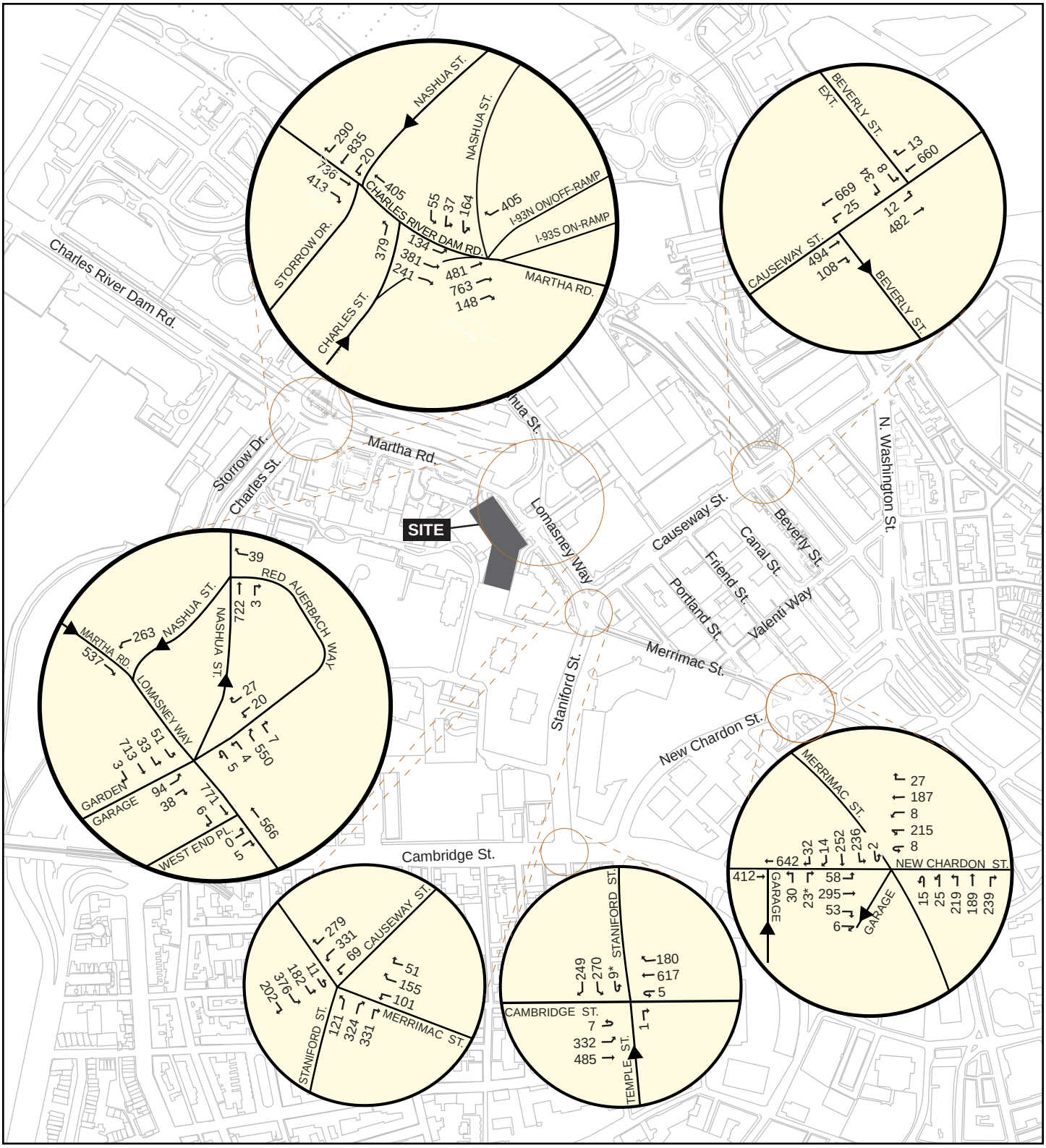
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* Prohibited Movement
** Approach Closed Due to Construction

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Figure 3-3
Existing Conditions (2011) Turning Movement Volumes, a.m. Peak Hour (8:15-9:15 a.m.)



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Figure 3-4

Existing Conditions (2011) Turning Movement Volumes, p.m. Peak Hour (5:00-6:00 p.m.)

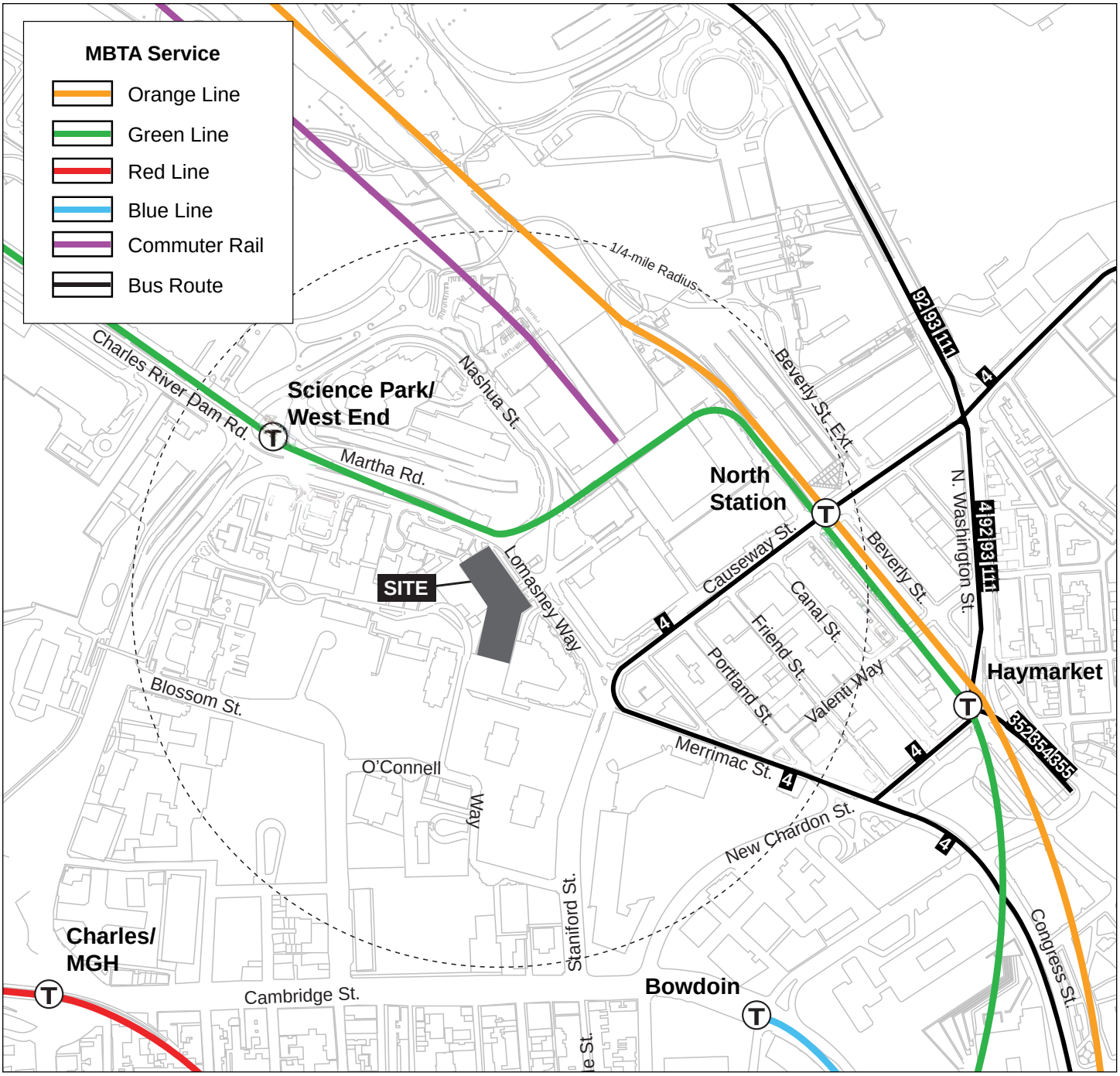


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Figure 3-5
Off-Street Public Parking Lots/Garages
within a 1/4-mile of the Site

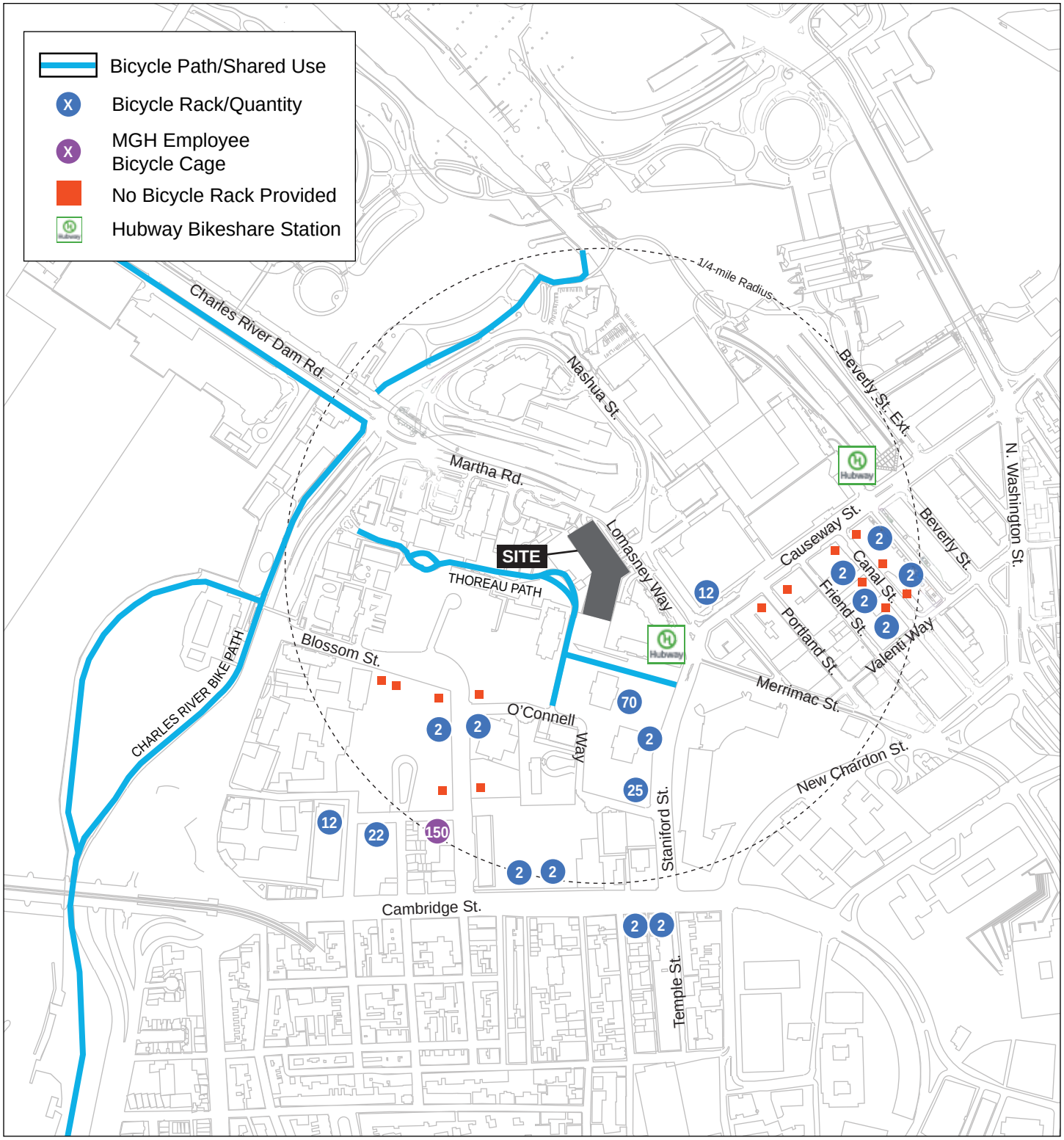


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Figure 3-6
Public Transportation in the Study Area

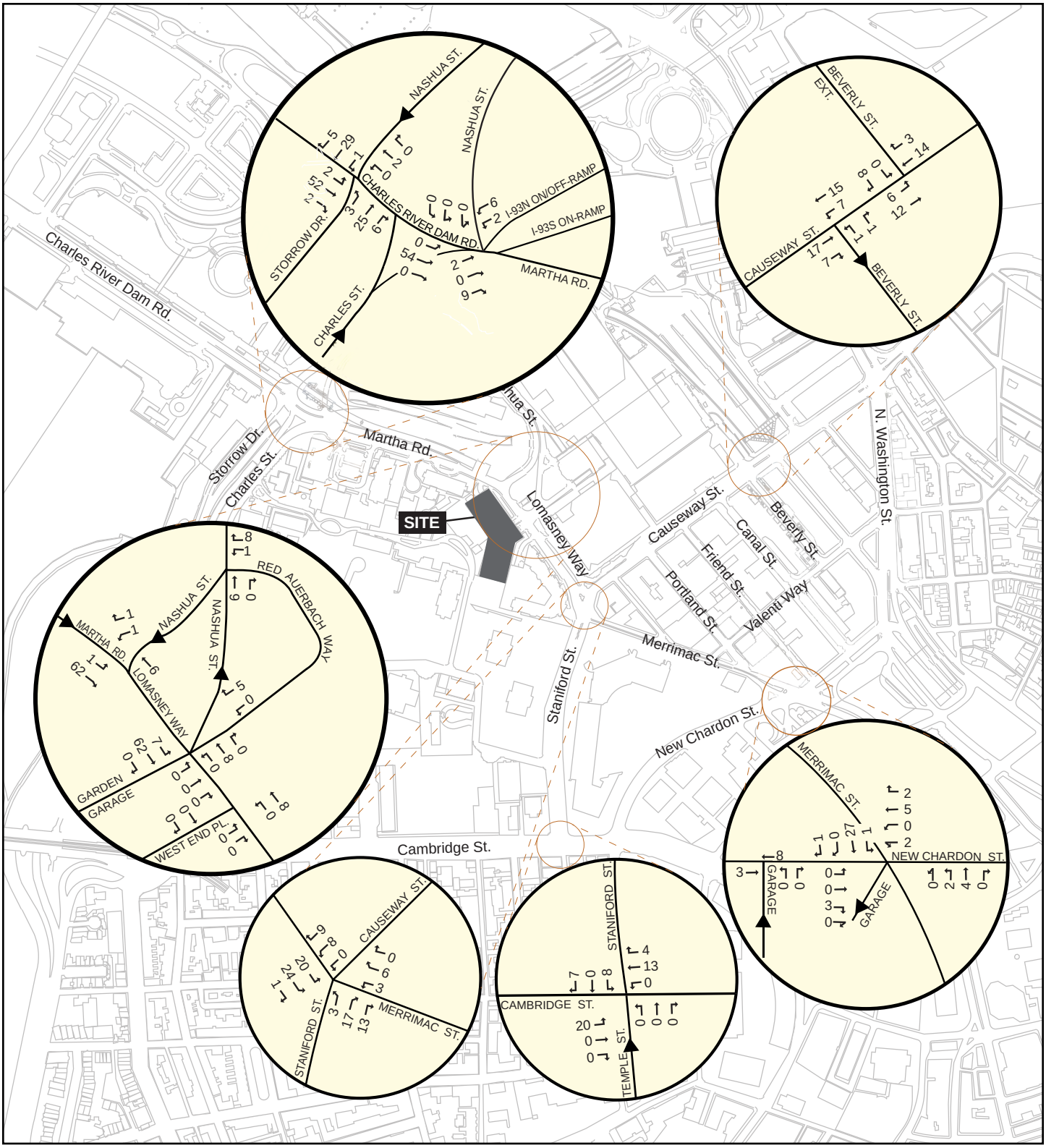


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Figure 3-7
Bicycle Accommodations in the Study Area

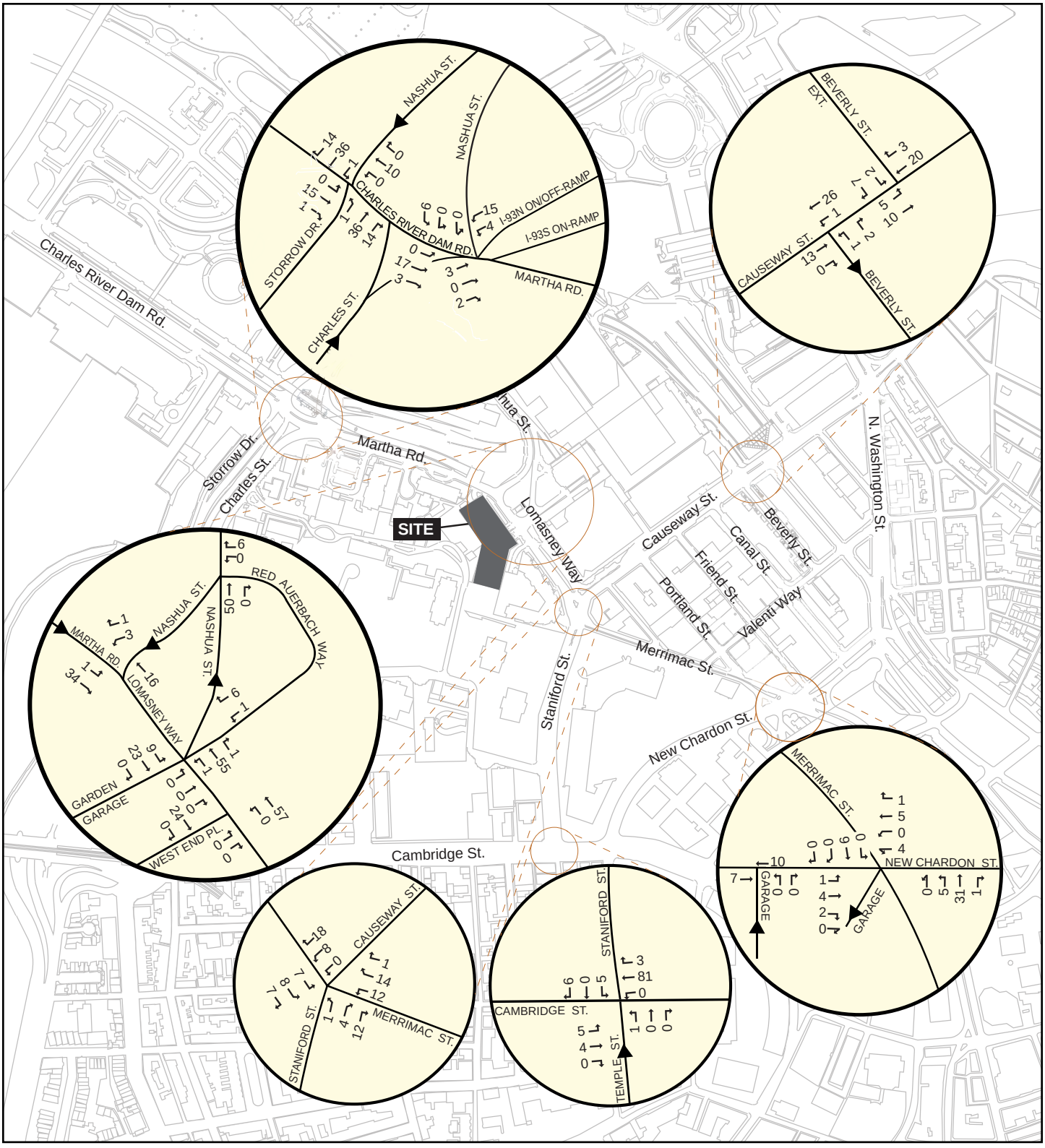


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Figure 3-8
Existing Conditions (2011) Bicycle Volumes, a.m. Peak Hour

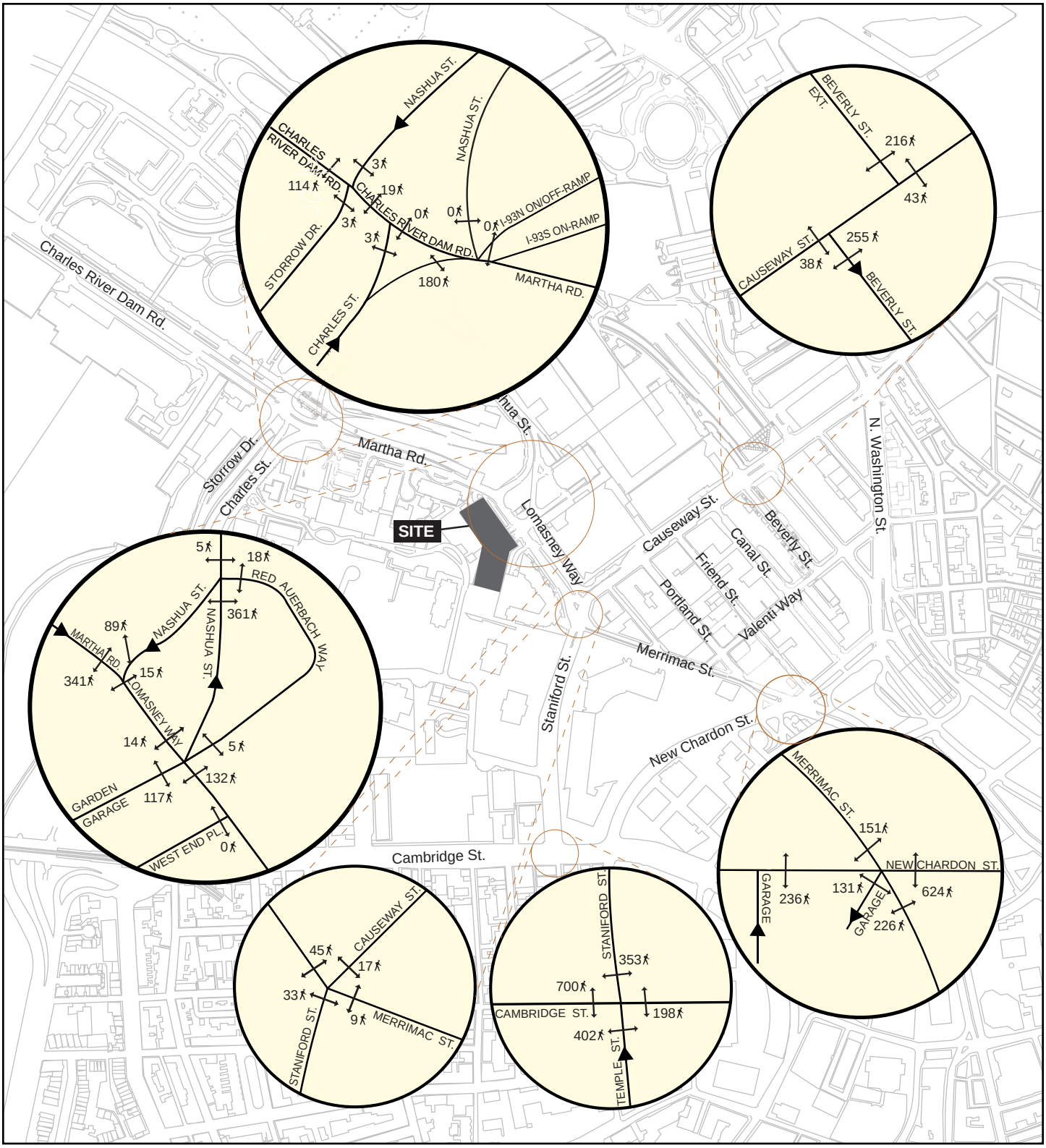


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Figure 3-9
Existing Conditions (2011) Bicycle Volumes, p.m. Peak Hour

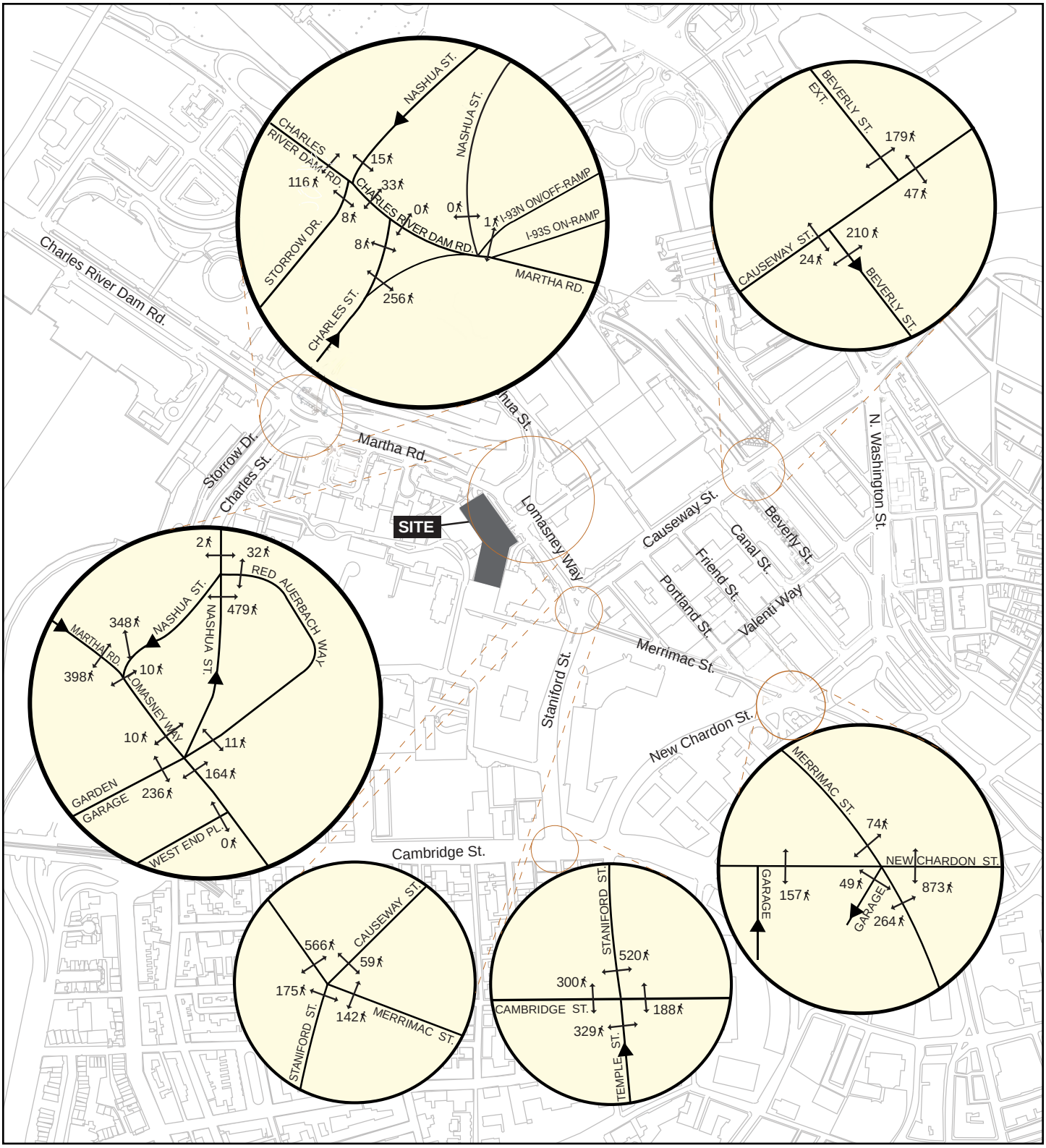


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Figure 3-10
Existing Conditions (2011) Pedestrian Volumes, a.m. Peak Hour

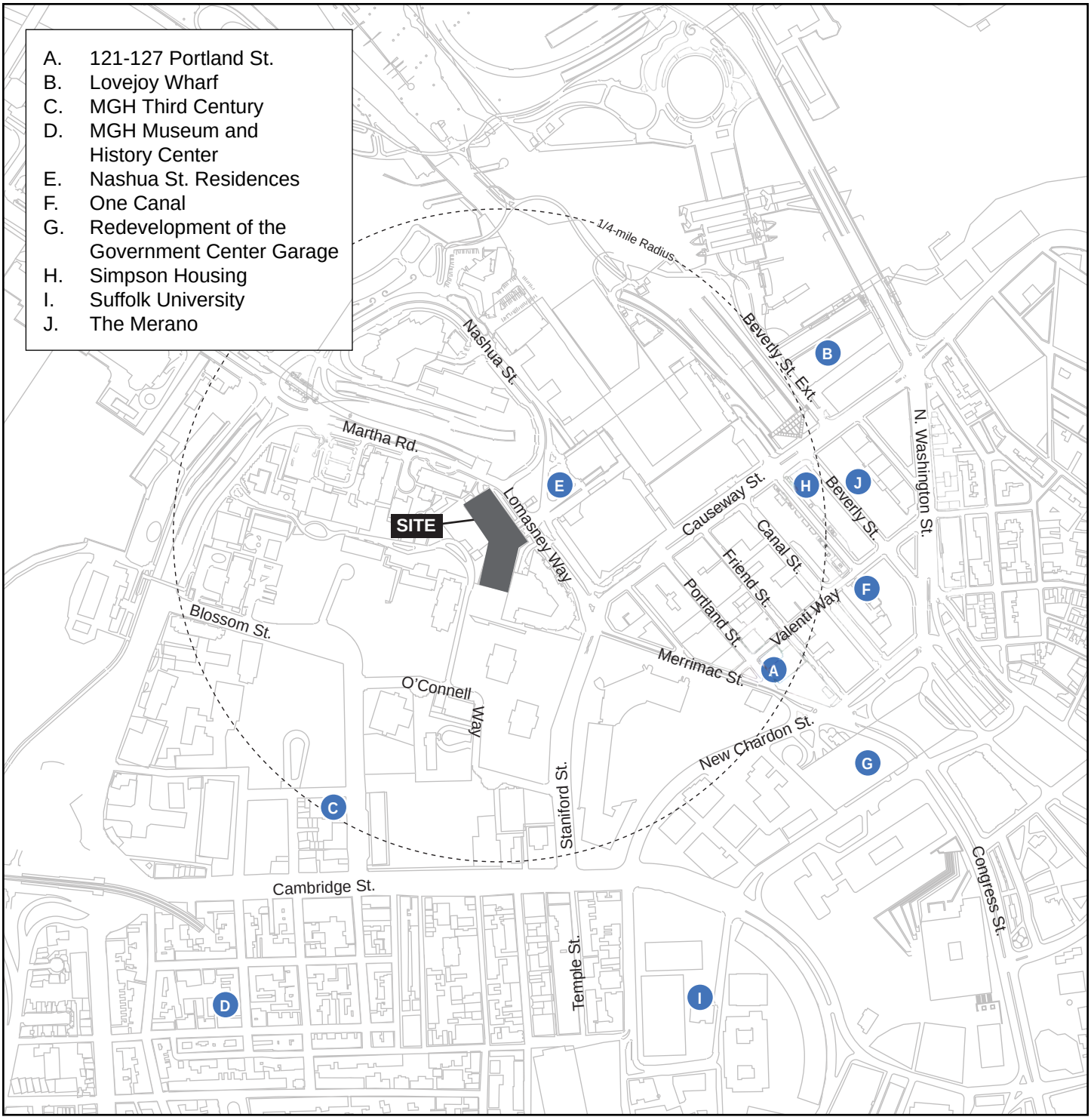


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Figure 3-11
Existing Conditions (2011) Pedestrian Volumes, p.m. Peak Hour

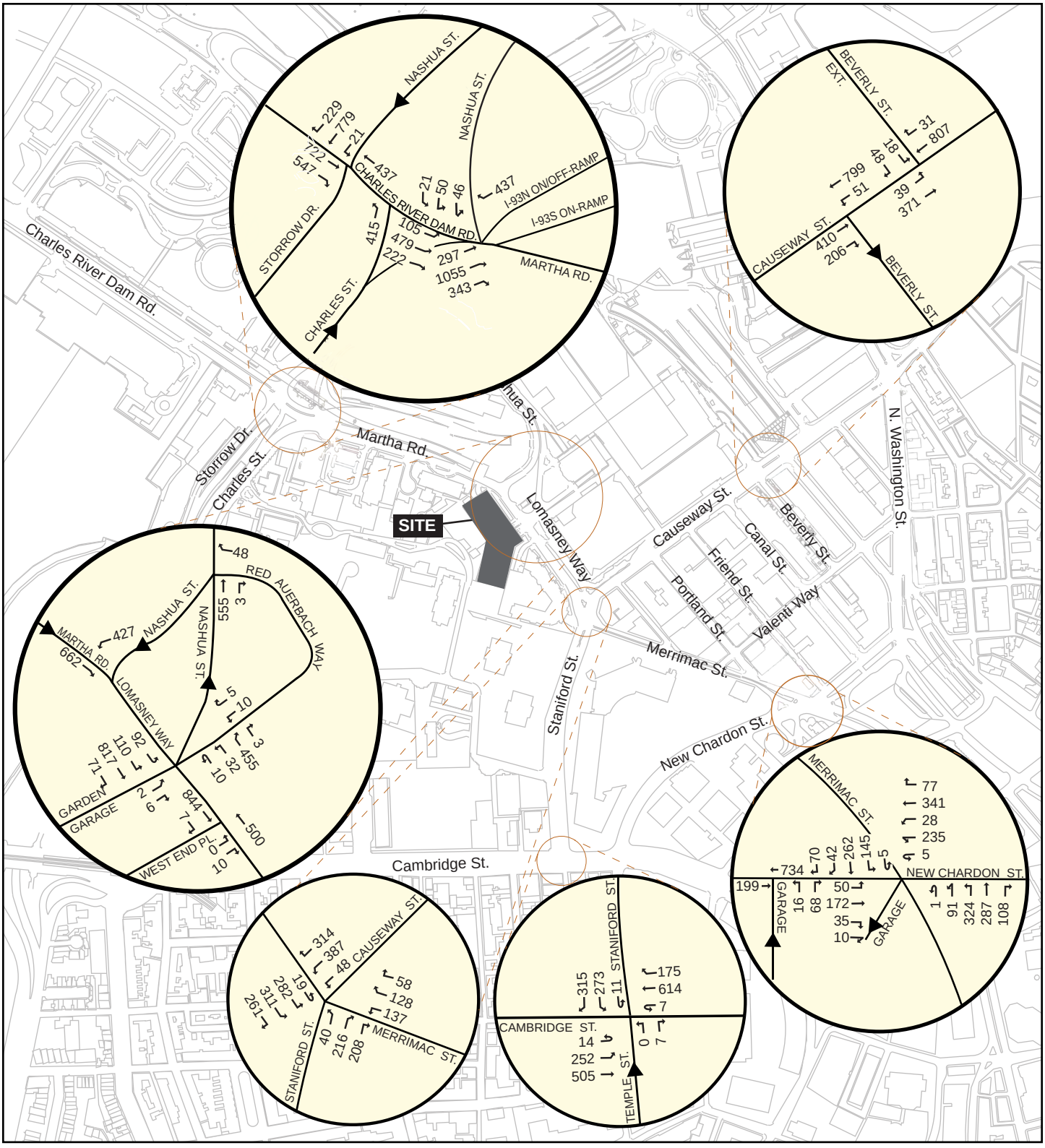


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Figure 3-12
Area Projects

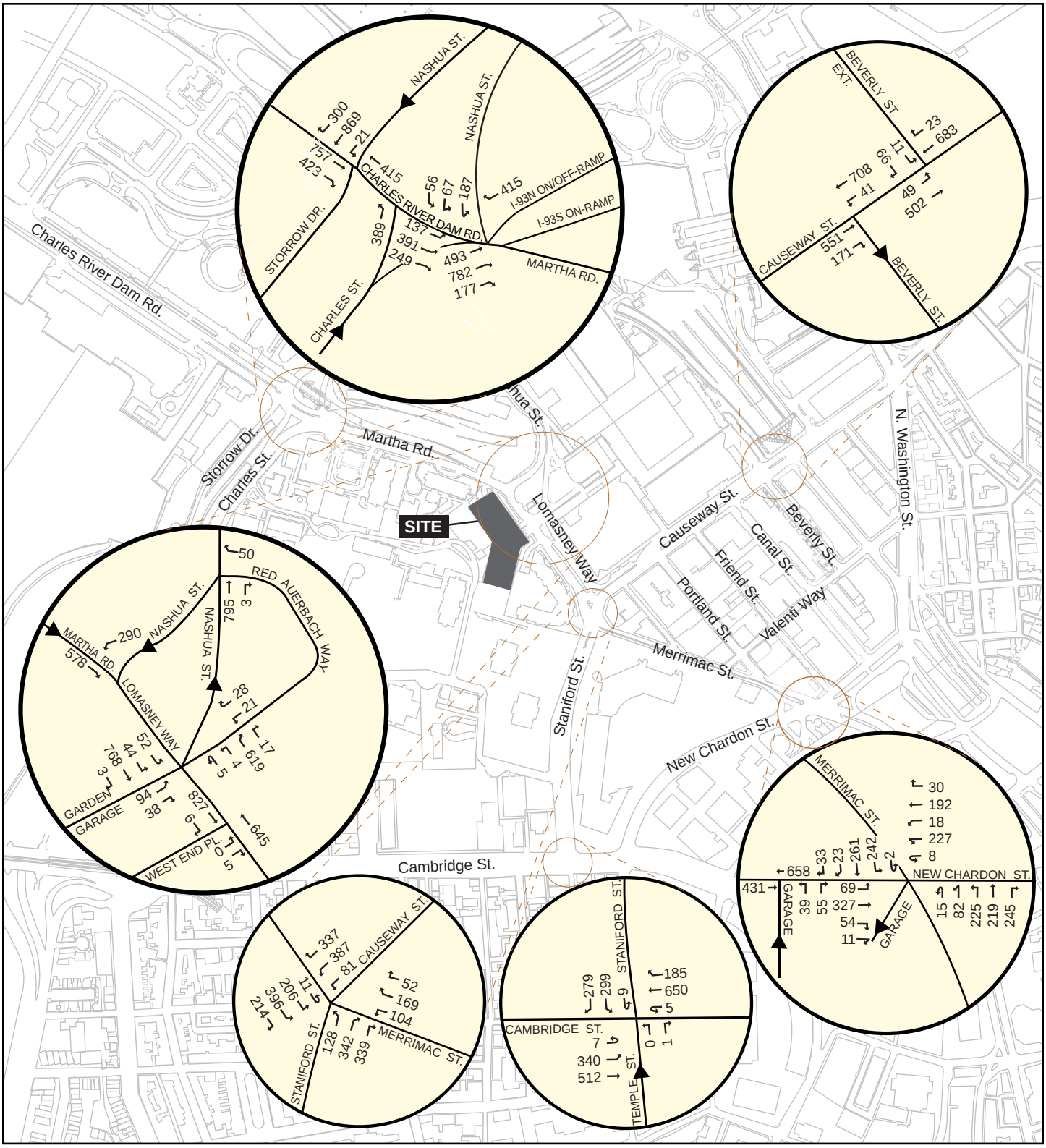


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Figure 3-13
No-Build Conditions (2016) Turning Movement Volumes, a.m. Peak Hour

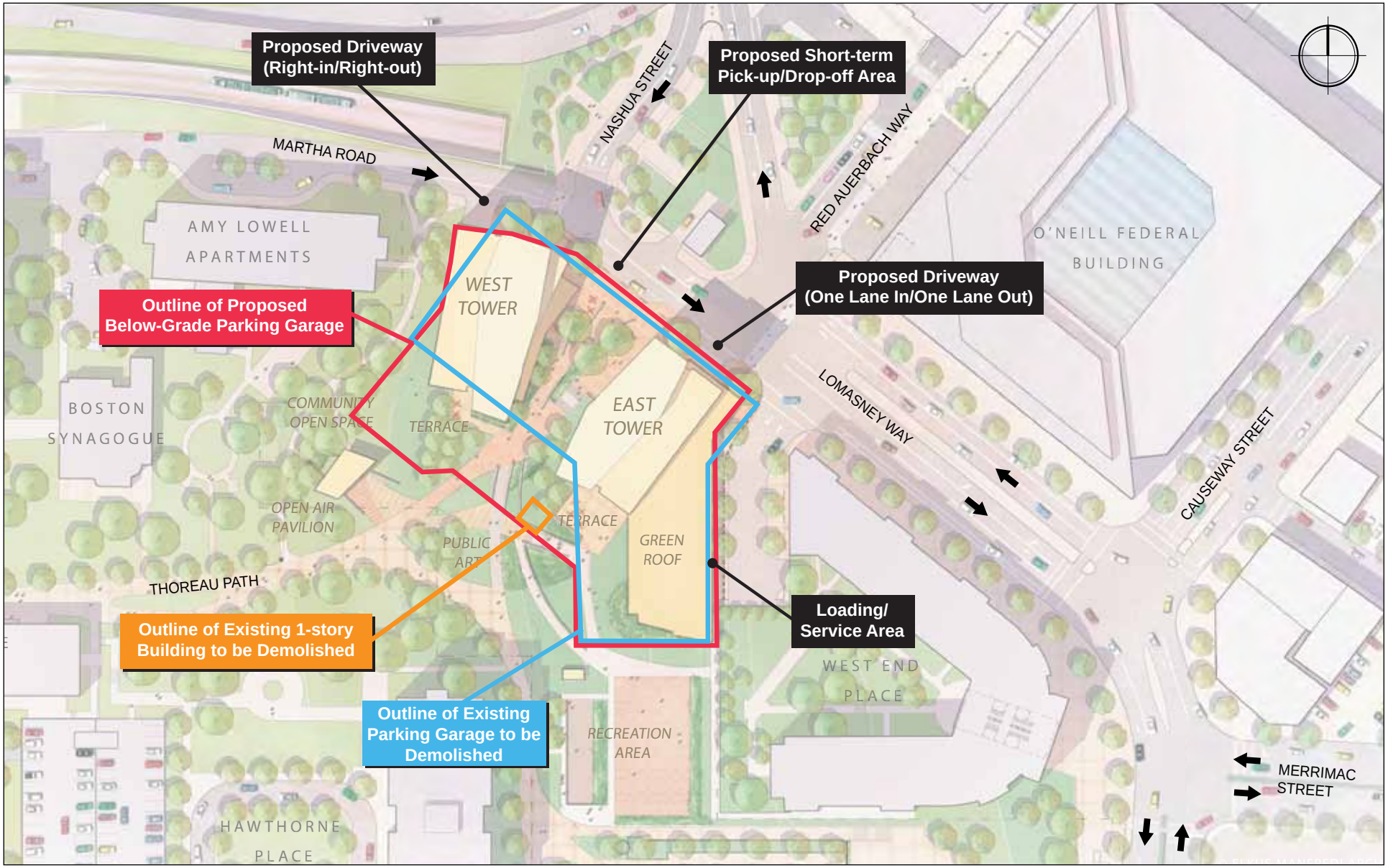


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Figure 3-14
No-Build Conditions (2016) Turning Movement Volumes, p.m. Peak Hour

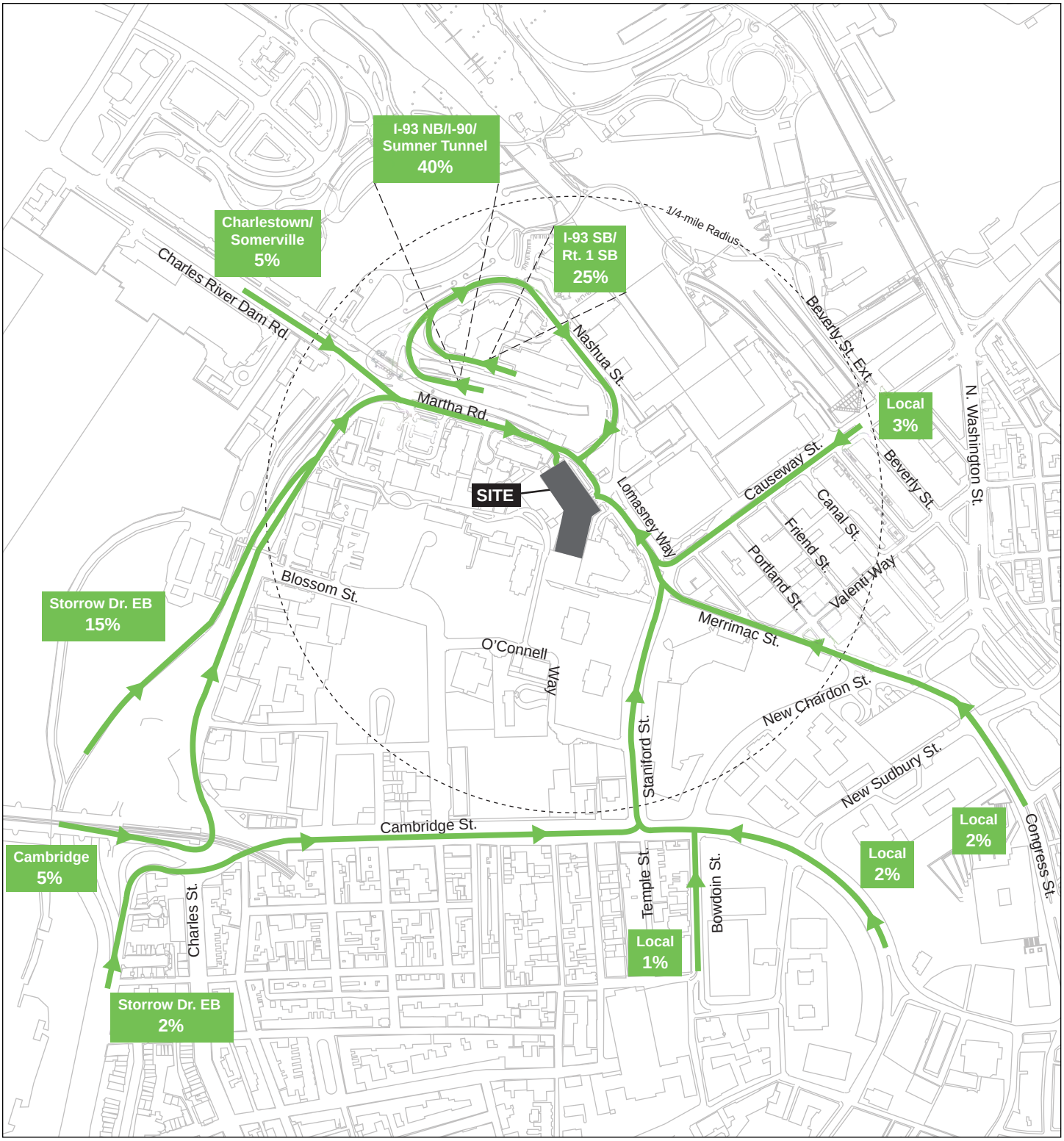


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Figure 3-15
Site Plan

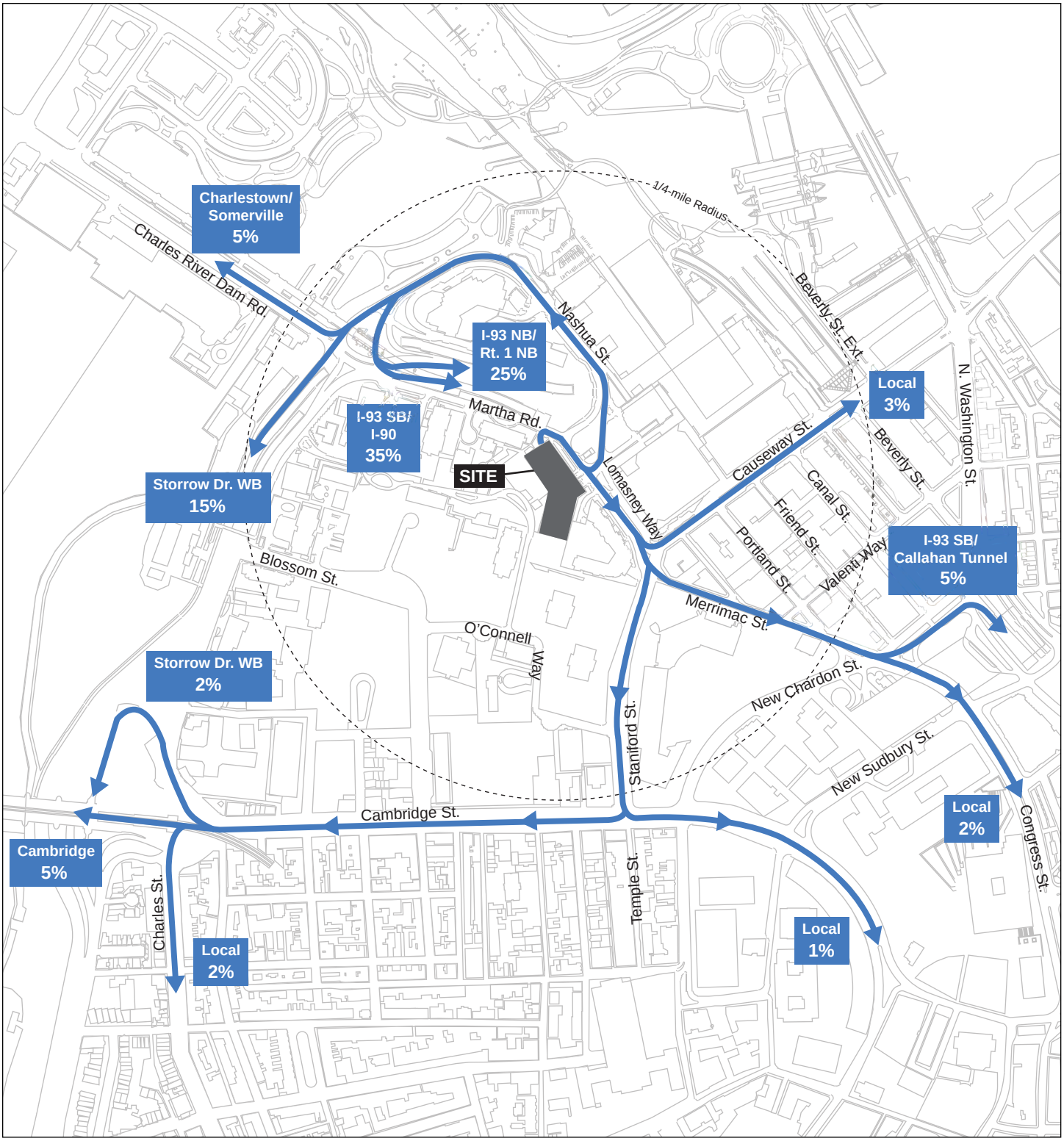


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Figure 3-16
Vehicular Trip Distribution: Entering

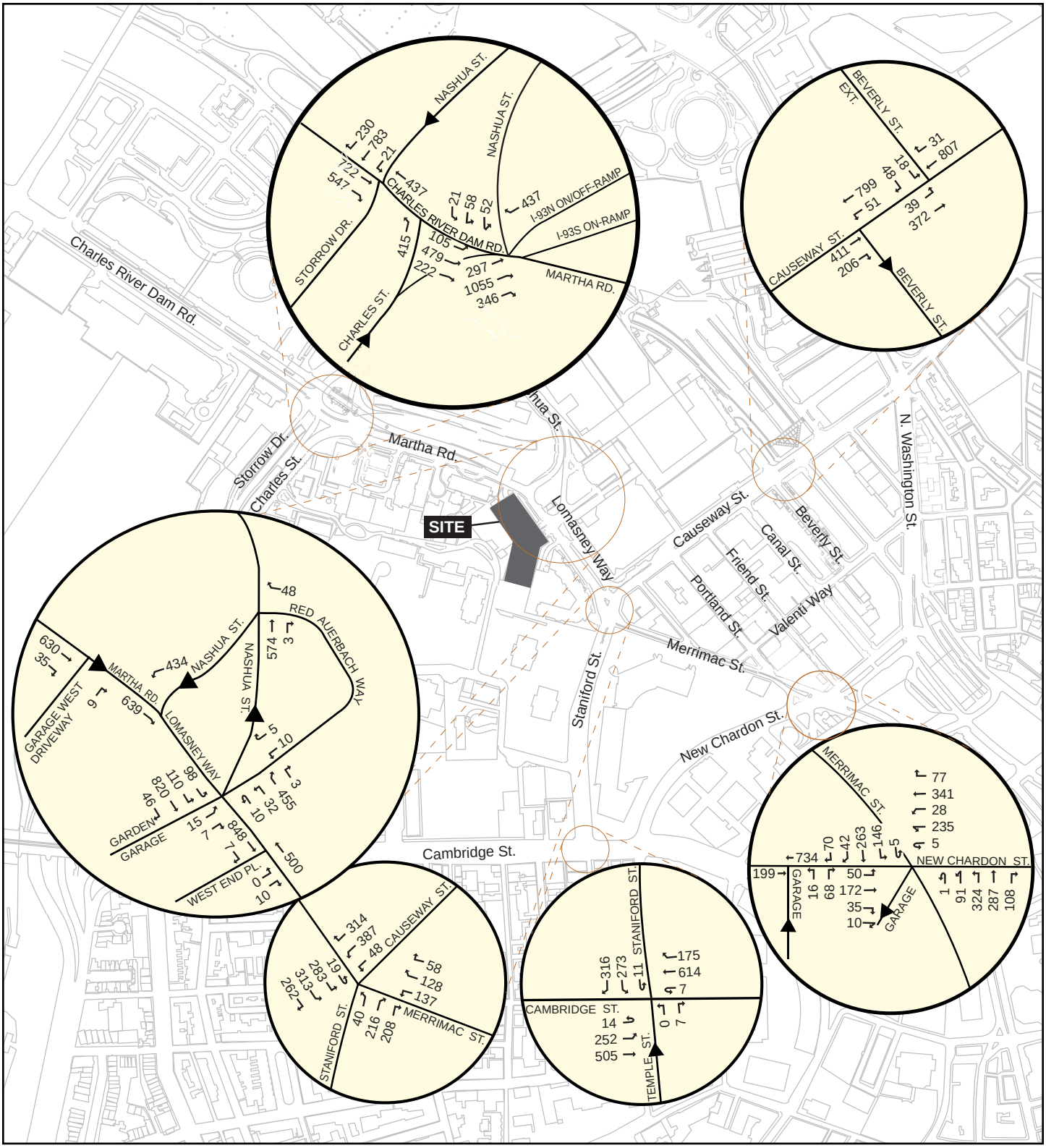


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Figure 3-17
Vehicular Trip Distribution: Exiting

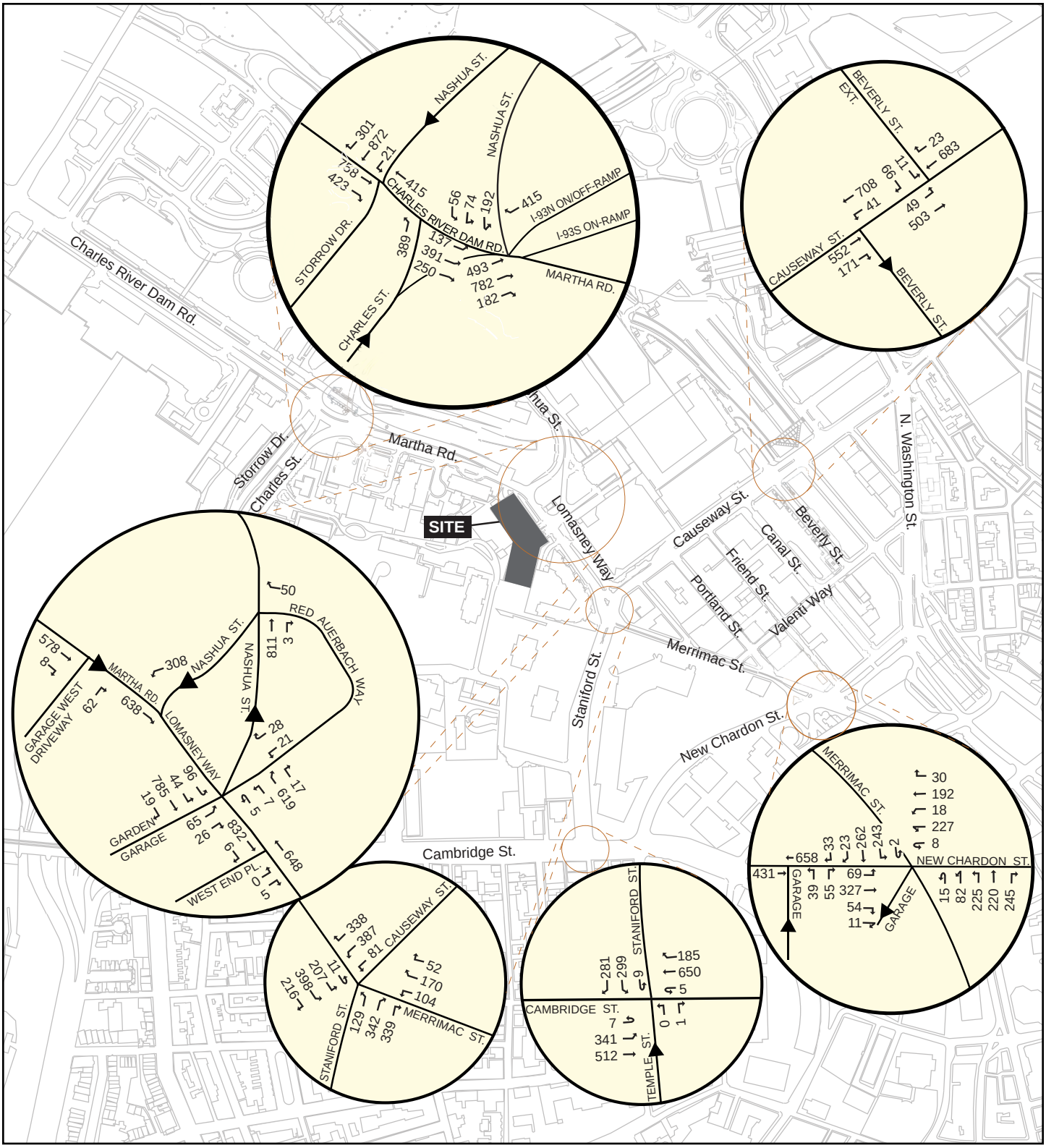


Not to scale.

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Figure 3-18
Build Conditions (2016) Turning Movement Volumes, a.m. Peak Hour



Not to scale.

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Figure 3-19
Build Conditions (2016) Turning Movement Volumes, p.m. Peak Hour

Section 4.0

Environmental Protection Component

4.0 ENVIRONMENTAL PROTECTION COMPONENT

Article 80 of the Boston Zoning Code specifies that the BRA may require in its Scoping Determination that the applicant conduct studies to determine the direct or indirect impact to the environment reasonably attributable to a project. In accordance with the BRA Scope for the PNF, this section addresses various environmental considerations. Where the potential for direct or indirect impacts exists, design measures are incorporated to mitigate the impacts, to the extent economically feasible.

4.1 Wind

The East and West Towers are proposed to be 310 and 240 feet tall, respectively, which are comparable to the heights of the adjacent residential high-rise residential buildings at Emerson Place, Whittier Place, and Longfellow Place. To assess potential wind-related impacts from the Project, RWDI Inc., an international expert in the field of wind modeling, conducted wind tunnel modeling for the Project.

4.1.1 Introduction

The pedestrian wind study was conducted to assess the effects of the proposed Project on local wind conditions in pedestrian areas around the study site and provide recommendations for reducing adverse effects. A copy of the report's tabular results is included as Attachment B.

The study involved wind simulations on a 1:400 scale model of the proposed buildings and existing 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. The criteria recommended by the BRA were used in this study.

4.1.2 Background

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 blowing of dust and other loose material in a moderate breeze, to severe difficulty with walking due to the wind forces on the pedestrian.

4.1.3 Methodology

Information concerning the site and surroundings was derived from site photographs, information on surrounding buildings and terrain, and site plans and elevations of the proposed development provided by the design team. The following three building configurations were simulated:

- No Build: includes all existing site and approved surrounding buildings;
- Alternate (As-of-Right) Massing: includes the as-of-right building massing and all existing and approved surroundings; and
- Build: includes the proposed Garden Garage development and coniferous trees as well as all existing and approved surroundings.

As shown in Figures 4-1 through 4-3, the wind tunnel model included the proposed development and all relevant surrounding buildings within a 1,500-foot radius of the study 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 94 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 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. To predict full-scale wind conditions, the results were then combined with long-term meteorological data recorded during the years 1945 to 1998 at Boston's Logan International Airport. The analysis was performed separately for each of the four seasons and for the entire year.

Figures 4-4 through 4-6 present "wind roses" summarizing the annual and seasonal wind climates in the Boston area based on data from Logan Airport. The left-hand wind roses in Figures 4-4 and 4-5 are based on all observed wind readings for the given season, and the

right-hand wind roses are based on strong winds for one percent of the time. The upper wind roses in Figure 4-4, for example, summarize the spring (i.e., 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. In the case of strong winds, however, the most common wind direction is northeast and west.

On an annual basis (Figure 4-6), the most common wind directions are those between southwest and northwest. Winds from the east and east-southeast are also relatively common. In the case of strong winds, northeast and west-northwest are the dominant wind directions.

This study involved advanced measurement and analysis techniques to predict wind conditions at the study site. 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 levels used in this Pedestrian Wind Study represent an average for the total population. Also, unforeseen changes in the Project area, such as the construction or removal of buildings, can affect the conditions experienced at the site. 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.

4.1.4 Pedestrian Wind Comfort Criteria

The BRA has adopted two standards for assessing the relative wind comfort of pedestrians. First, the wind design guidance criterion states that an effective gust velocity (i.e., hourly mean wind speed +1.5 times the root-mean-square wind speed) of 31 miles per hour (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.[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, presented in Table 4-1, are expressed in terms of benchmarks for the one-hour mean wind speed exceeded 1 percent of the time (i.e., the 99-percentile mean wind speed).

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[1] Melbourne, W.H., 1978, "Criteria for Environmental Wind Conditions", Journal of Industrial Aerodynamics, 3 (1978) 241-249.

Table 4-1 BRA Mean Wind Criteria*

Criterion	*Wind Speed (mph)*
Dangerous	> 27
Uncomfortable for Walking	> 19 and ≤ 27
Comfortable for Walking	> 15 and ≤ 19
Comfortable for Standing	> 12 and ≤ 15
Comfortable for Sitting	< 12

* 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. However, without mitigation measures, this wind climate is likely to be frequently uncomfortable for more passive activities such as sitting.

4.1.5 Results

The table provided in Attachment B presents the mean and effective gust wind speeds for the three building configurations for each season and annually. Figures 4-7 through 4-9 depict the wind comfort conditions at each wind measurement location based on the annual winds. Results for the No Build and as-of-right massing configurations provide baseline wind conditions on the Project site and surrounding area, while results for the Build (i.e., proposed) configuration demonstrate the potential wind effects of the Project, which are the focus of the discussion below.

The following summary of pedestrian wind comfort is based on the annual winds for each configuration tested, except where noted. Typically, summer and fall winds tend to be more comfortable than the annual winds, while the winter and spring winds are less comfortable than the annual winds.

4.1.5.1 On-Site Areas (Locations 1 through 35)

No Build Configuration

Several sensors (Locations 1, 6, 10, 11, 12, 15-20, 32, and 33) were either on the podium of the proposed development or covered by the existing garage and, therefore, wind data was not available for these locations.

In general, the existing wind conditions on the Project site were comfortable for sitting or standing on an annual basis (see Figure 4-7). Slightly higher wind speeds, comfortable for walking, were measured in the gap between the existing garage and the Amy Lowell Apartments. No uncomfortable wind conditions were detected at any test location in any season on the Project site.

The effective gust criterion was also met seasonally and annually at all test locations.

As-of-Right Massing Configuration

Sensors 16 through 18 were on the podium of the proposed building, and Sensor 19 was covered by the alternative as-of-right massing; therefore, no wind results were available for these four locations.

With the as-of-right massing in place, increased wind activity relative to No Build conditions was evident. The increased winds included uncomfortable wind conditions on an annual basis at the northeast corner of the alternative massing (Locations 3 and 5 in Figure 4-8), in the passage beneath the building (Location 20), and in the gap area west of the building (Locations 27 and 28). This condition was primarily caused by prevailing winds from the west, northwest, and northeast being deflected down by the building massing and accelerating at the ground level.

The effective gust criterion was met seasonally and annually at all locations except for a single location in the gap area west of the building (Location 28) during the spring and winter seasons.

Build (Proposed) Configuration

With the proposed development, which includes canopies and coniferous landscaping in place, the on-site wind conditions were predicted to be comfortable for sitting in the southern area of the site, which will be sheltered by buildings and landscaping (see Figure 4-9). On-site wind conditions were predicted to be comfortable for walking in the more exposed northern area of the site, which will include the open plaza.

On the podium of the East Tower, the annual wind conditions were comfortable for standing at Locations 16 and 18 and for walking at Location 17 (see Figure 4-9). Lower wind speeds, comfortable for sitting and standing, were predicted in the summer when the outdoor area will typically be in use. These wind conditions are considered appropriate.

On an annual basis, uncomfortable wind conditions were recorded at three locations. These locations included the northeast corner of the East Tower (Location 5) and two sensor locations between the proposed towers (Locations 32 and 33). Seasonal wind data are listed in Attachment B, and recommendations on potential wind mitigation for these areas are discussed in Section 4.1.6.

The effective gust criterion was met seasonally and annually at all locations, with the only exceptions being at two locations (Locations 5 and 32) in the winter season.

4.1.5.2 Off-Site Areas (Locations 36 through 94)

No Build Configuration

On an annual basis, the existing wind conditions were comfortable for walking, standing, or sitting at most test locations. Local flow accelerations and uncomfortable wind conditions were measured in areas between the existing Amy Lowell Apartments (Locations 51, 52, and 54 in Figure 4-7) and around the O'Neill Federal Building (Locations 72, 76, 78, 79, and 81). The mean wind speed at Location 76 was also rated as dangerous in the winter.

The effective gust criterion was not met annually at several locations (Locations 52, 54, 76, and 79 in Figure 4-7).

As-of-Right Massing Configuration

Similar wind conditions were detected off-site for the as-of-right massing configuration, with uncomfortable wind speeds (Locations 51, 52, 54, 72, 73, 76, 78, 79, and 87) and unacceptable gust speeds (Locations 54, 76, 78, and 79) occurring annually (see Figure 4-8). The mean wind speed at Location 76 remained as dangerous as under existing conditions in the winter season.

Build (Proposed) Configuration

With the proposed coniferous landscaping in the open areas west and south of the proposed Project, the wind conditions for the proposed build configuration were found to be similar or slightly improved from those recorded at off-site locations under No Build and as-of-right conditions. As shown in Figure 4-9, the number of off-site uncomfortable locations under proposed conditions was reduced to seven (Locations 51, 52, 54, 72, 76, 78, and 79), compared to eight for the No Build configuration and nine for the as-of-right configuration on an annual basis. In addition, the number of locations with unacceptable gust speeds on an annual basis was reduced to three (Locations 76, 78, and 79) under proposed conditions, compared to four for both the No Build and as-of-right configurations.

As under No Build and as-of-right conditions, the wind speeds at a single off-site location (Location 76) remained dangerous in winter, indicating that wind conditions at that location were not affected by the proposed Project.

4.1.6 Wind Analysis Conclusions and Mitigation Measures

The results provided above indicate uncomfortable wind conditions would occur in limited locations on the site, and that the proposed Project would not negatively affect existing wind conditions at any off-site areas; in fact, the proposed Project would slightly improve some off-site wind conditions. As part of its report, RWDI included a set of recommended mitigation measures for consideration:

- For the uncomfortable wind conditions at Location 5, the proposed eight-foot canopy along the north façade of the East Tower should be extended east to wrap around the northeast corner of the building. Alternatively, an arcade may be designed along the north façade of the East Tower to provide a calmer route for pedestrians on windy days.

- Locations 32 and 33, located at the south end of the gap between the proposed towers, were also uncomfortable due to winds from the northeast and west accelerating through a combination of downwashing and channeling effects. Potential mitigation measures may include large canopies or trellises above the area as well as coniferous landscaping and wind screens on the north and south sides of the area.

The Proponent will continue to work with RWDI on designing and implementing appropriate mitigation measures.

4.2 Shadow

The Proponent conducted a shadow impact analysis in accordance with the Scoping Determination issued by the BRA. The analysis evaluated shadow conditions at three times of day (9:00 a.m., 12:00 noon, and 3:00 p.m.) during the vernal equinox (March 21), summer solstice (June 21), October 21, and winter solstice (December 21). In addition, shadow conditions were analyzed at 6:00 pm on the vernal equinox and summer solstice. Shadows were determined using the Boston altitude and azimuth data provided in Table 4-2.

The shadow impact analysis includes net new shadow as well as existing shadow. The incremental impact of new shadow cast by the proposed Project is shown in dark gray in Figures 4-10 through 4-23, while existing shadows are shown in medium gray. In addition to altering the patterns of shadow in the area, the Project will also result in areas of new daylight that are currently in the shadow cast by the existing garage structure; these areas of new daylight are shown in light tan on Figures 4-10 through 4-23.

Also in accordance with the BRA scope, the shadow impact analysis includes a spatial assessment of areas where new shadow will last for a duration equal to an hour or greater; in response to the scope, this duration assessment was conducted for March 21, June 21, and October 21. Areas where new sunlight will last for a duration equal to an hour or greater are also included in this assessment (see Figures 4-24, 4-25, and 4-26).

The shadow analysis focuses on public open spaces, major pedestrian areas, sidewalks, and plazas in the Project vicinity.

Table 4-2 Azimuth and Altitude Data

Date	*Solar Time*	*Local Time*	*Solar Position*	
			Altitude	*Azimuth*
March 21	9:08	9:00 a.m. EST	33.0	54.3 E/S
	12:08	12:00 p.m. EST	48.0	3.1 W/S
	15:08	3:00 p.m. EST	30.5	58.2 W/S
June 21	8:13	9:00 a.m. EDT	39.9	86.5 E/S
	11:13	12:00 p.m. EDT	68.8	30.6 E/S
	14:13	3:00 p.m. EDT	56.5	66.3 W/S
	17:13	6:00 p.m. EDT	23.9	100.7 W/S
October 21	8:31	9:00 a.m. EDT	18.7	55.0 E/S
	11:31	12:00 p.m. EDT	36.5	8.9 E/S
	14:31	3:00 p.m. EDT	26.6	42.3 W/S
December 21	9:17	9:00 a.m. EST	14.2	38.0 E/S
	12:17	12:00 p.m. EST	24.1	4.4 W/S
	15:17	3:00 p.m. EST	10.0	44.9 W/S

4.2.1 Vernal Equinox (March 21)

At 9:00 a.m. on the vernal equinox, new shadow from the Project will extend in a westerly direction onto the Amy Lowell Apartments and a portion of Martha Road (see Figure 4-10). Some new shadow will be cast on the open space just south of the Amy Lowell Apartments. At this same time, the Project will result in new sunlight reaching Thoreau Path, a portion of the proposed pedestrian pathways, and outdoor recreational areas.

At 12:00 noon, the Project will cast new shadow across the roadways located north of the Project site (see Figure 4-11). New sunlight will reach the open space proposed on the southwest side of the East Tower.

At 3:00 p.m., new shadow from the proposed Project will extend northeast across Nashua Street and toward, but not reaching, the TD Banknorth Garden (see Figure 4-12). New sunlight will be cast across the middle of the Project site, between the two towers, and will extend across Lomasney Way.

The sun sets at approximately 6:00 p.m. during the vernal equinox, and therefore the entire area will be in existing shadow and the Project will not result in any new shadow (see Figure 4-13).

As shown on Figure 4-24, areas of new shadow that will last for a duration of one hour or greater will include the eastern portion of the roof of Amy Lowell Apartments and narrow bands across the roadway network north of the site and extending to the northwestern edge of the roof of the Thomas P. O'Neill Federal Building. Areas of new sunlight that will last for one to four hours are located at the southern and central portions of the Project site.

4.2.2 Summer Solstice (June 21)

At 9:00 a.m. on the summer solstice, new shadow from the Project will extend westward over the open spaces west of the West Tower and south of the Amy Lowell Apartments (see Figure 4-14). New shadow will also fall over the eastern third of the roof of the Amy Lowell Apartments. New sunlight will reach a portion of Thoreau Path and some of the proposed pedestrian walkways on the southern portion of the Project site.

At 12:00 noon, the Project will cast new shadow across Martha Road and Lomasney Way (see Figure 4-15). New sunlight will reach the proposed open spaces south and west of the East Tower and small spaces around the West Tower.

At 3:00 p.m., new shadows from the Project will extend over the southern portion of Nashua Street and will reach the western corner of the O'Neill Building (see Figure 4-16). New sunlight will reach open space to the south and west of the East Tower and a small area between the two towers and a space located just west of the West Tower.

At 6:00 p.m., shadows will extend eastward from the proposed Project but will fall mostly within areas of existing shadow (see Figure 4-17). Small areas of new shadow will fall on the O'Neill Building as well as the area between Lancaster Street and Portland Street, east of Causeway Street. A small wedge of new shadow will fall on the northern tip of the roof of West End Place. A sliver of new sunlight will reach the proposed open space south of the East Tower.

On June 21, areas of new shadow extending for approximately one hour in duration will cover a portion of Thoreau Path in the early morning (that is, before 9:00 a.m.). Small areas of new shadow lasting greater than one hour will also extend over the roadways north of the site and including the southern portion of the roof of the Thomas P. O'Neill Federal Building (see Figure 4-25). Areas of new sunlight lasting up to four hours in duration will be located at the southern and central portions of the Project site, including the proposed pedestrian network and outdoor recreational spaces.

4.2.3 October 21

At 9:00 a.m., shadows will extend toward the northwest, and the Project will cast new shadow onto the eastern half of the roof of Amy Lowell Apartments as well as the I-93 ramps (see Figure 4-18). New sunlight will reach Thoreau Path and a significant portion of the proposed pedestrian pathways on the southwest portion of the Project site.

At 12:00 noon, new shadow extending north from the Project will fall onto the I-93 ramps and the area located north of Lomasney Way (see Figure 4-19). New sunlight will fall between the Amy Lowell Apartments and the West Tower and on the proposed open space located south and west of the East Tower.

At 3:00 p.m., shadows will extend to the northeast, and the Project will cast new shadow across the MBTA Commuter Rail and adjacent parking lot (see Figure 4-20). New sunlight will extend between the two proposed Towers and across Lomasney Way and Nashua Street.

On October 21, areas of new shadow that will last greater than one hour in duration will primarily be limited to the roadway network north of the Project site, and will also include the eastern portion of the roof of the Amy Lowell Apartments (see Figure 4-26). Areas of new sunlight lasting for an hour or more will be located on a portion of Thoreau Path and will also include the areas southwest of the East Tower, between the two towers, and west of the West Tower.

4.2.4 Winter Solstice (December 21)

At 9:00 a.m., the Project will cast new shadow to the northwest across the eastern half of the roof of the Amy Lowell Apartments (see Figure 4-21). New shadow will also fall on a sliver of Nashua Street Park and the adjacent roadways, including the I-93 ramps. New sunlight will reach the bend in Thoreau Path and will extend across the open space located south of the Amy Lowell Apartments.

At 12:00 noon, new shadow from the Project will fall on the I-93 ramps as well as a portion of the parking lot adjacent to the MBTA Commuter Rail (see Figure 4-22). New sunlight will reach the open space proposed to the west of the East Tower.

At 3:00 p.m., the Project will cast new shadow in the I-93 ramps (see Figure 4-23). New sunlight will extend between the proposed towers and across Lomasney Way and Nashua Street.

4.2.5 Conclusions

Shadows resulting from the Project are generally limited to the roadway network located north and northwest of the Project site that consists of Martha Road, Lomasney Way, Nashua Street, and the I-93 ramps. The Project will not cast new shadow onto any historic resources.

Generally speaking, new shadow will fall on a portion of the Amy Lowell Apartments in the morning, but no new shadow will reach Whittier Place; some of this new morning shadow will extend over the open space located south of the Amy Lowell Apartments as well. However, the Project will not cast new shadow onto Thoreau Path; on the contrary, the Project will allow new sunlight to reach Thoreau Path in the morning hours. In addition, new sunlight will reach a significant portion of the proposed pedestrian pathways and recreational spaces in the morning and midday hours. Although some new shadows will be cast on existing and proposed public spaces, during most of the times when these areas will be used there will be a mix of sunny and shaded open spaces available.

4.3 Daylight

The purpose of the daylight analysis is to estimate the extent to which a proposed project will affect the amount of daylight reaching the streets and sidewalks in the immediate vicinity of the project site. As required in the Scoping Determination, the daylight analysis for the Project considers the existing, proposed, and as-of-right daylight conditions.

4.3.1 Methodology

The daylight analysis was performed using the Boston Redevelopment Authority Daylight Analysis (BRADA) computer program. This program measures the percentage of sky-dome 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 centered silhouette view of the building is taken at ground level from the middle of adjacent city streets or open spaces. 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. Due to constraints of the BRADA program, the building may be simplified or the building

may be divided into sections in some cases. The BRADA program calculates the percentage of daylight that will be obstructed on a scale of 0% to 100% based on the width of the view, distance between the viewpoint and the building, and the massing and setbacks incorporated into the building design; the lower the number, the lower the percentage of obstructed daylight from a given viewpoint.

The BRA has requested that the analysis treat the following elements as controls for data comparison:

- Existing condition;
- Proposed condition;
- As-of-right condition; and
- The Context of the Area.

The daylight analysis examined daylight obstruction from three locations for the existing, proposed and as-of-right conditions: Viewpoint 1 (Martha Road), Viewpoint 2 (Thoreau Path), and Viewpoint 3 (path on west side of the site). In addition, the daylight obstruction was examined from between the two proposed buildings looking east and west at each (Viewpoints 4 and 5). The study also considered area context points to provide a basis of comparison to existing conditions in the immediate vicinity of the Project site. The area context viewpoints were taken from the path on the west side of the Project site looking at the Amy Lowell Apartments (AC1), Thoreau Path looking west at Hawthorne Place (AC2), and Lomasney Way looking south at the West End Place Condominiums (AC3). A fourth viewpoint at Emerson Place was analyzed for reference to other buildings in the surrounding area. The viewpoints are illustrated on Figure 4-27.

4.3.2 Daylight Analysis Results

Results for each viewpoint under each condition are described in Table 4-3. Figures 4-28 through 4-32 illustrate the BRADA results for each analysis.

Table 4-3 Viewpoint Locations

Viewpoint Locations		*Existing Conditions*	*As-of-Right*	*Proposed Conditions*
Viewpoint 1	Martha Road looking south at the site	57.1%	62.6%	21.0%
Viewpoint 2	Thoreau Path looking north at the site	30.7%	41.9%	23.3%
Viewpoint 3	Path on the west side of the site looking east	75.5%	71.3%	89.0%
Viewpoint 4	Between the proposed buildings looking west			77.2%
Viewpoint 5	Between the proposed buildings looking east			58.9%
AC1	Looking west at the Amy Lowell Apartments	70.5%		
AC2	Looking west at Hawthorne Place	80.5%		
AC3	Lomasney Way looking south at the West End Place Condominiums	67.5%		

4.3.2.1 Viewpoint 1

Viewpoint 1 was taken from the center of Martha Road looking south at the Project site. The daylight obstruction value is 57.1% for the existing condition and 62.6% for the as-of-right condition. The daylight obstruction value for the proposed condition is 21.0%. This value is lower than for the existing and as-of-right conditions because of the gap between the two buildings that minimizes the impact on the sky-dome.

4.3.2.2 Viewpoint 2

Viewpoint 2 was taken from the center of Thoreau Path looking north at the Project site. The path is a significant distance from the existing and proposed buildings, minimizing the Project impact on the sky-dome. The daylight obstruction values for the existing and as-of-right conditions are 30.7% and 41.9%, respectively. Similar to Viewpoint 1, the gap between the two proposed buildings minimizes the Project's impact on the sky-dome; the daylight obstruction value for the proposed condition is 23.3%.

4.3.2.3 Viewpoint 3

Viewpoint 3 was taken from the center of the path on the west side of the Project site. The existing and as-of-right daylight obstruction values for the Project site are 75.5% and 71.3%, respectively. The massing of the proposed building is larger than the existing and as-of-right building and the distance to the path is similar, therefore the daylight obstruction value is higher (89.0%). This daylight obstruction value is higher than for the other viewpoints studied, but is conceivably similar to daylight obstruction values in other locations in the vicinity with tall buildings with little space in between, such as Emerson Place (which has a daylight obstruction value of 86.0%).

4.3.2.4 Viewpoints 4 and 5

Viewpoints 4 and 5 were taken from the space between the proposed buildings looking at each building. The daylight obstruction values for these two points, 77.2% and 58.9%, are similar or lower than daylight obstruction values in the immediate vicinity. These daylight obstruction values are also similar to those found in urban areas.

4.3.2.5 Area Context Viewpoints

The area surrounding the Project site has a mixture of building heights up to approximately 380 feet (see Figure 4-33). Three viewpoints in the immediate vicinity were analyzed to find the approximate range of daylight obstruction values adjacent to the Project site: AC1, looking west at the Amy Lowell Apartments; AC2, looking west at Hawthorne Place; and AC3, Lomasney Way looking south at the West End Place Condominiums. The daylight obstruction values for these locations ranged from 67.5% to 80.5%. One location at Emerson Place was analyzed for reference to the surrounding area outside of the Project's immediate vicinity. The daylight obstruction value for this location was 86.0%.

4.3.3 Conclusions

The daylight analysis conducted for the Project describes existing, proposed, and as-of-right daylight obstruction conditions at the Project site, as well as daylight obstruction values in the immediate vicinity. The Project site currently includes a parking garage. Surrounding the Project site is Thoreau Path and buildings with heights up to approximately 380 feet. The Project will result in similar daylight obstruction values as the existing and as-of-right conditions. The existing building is located close to the street and does not have variation in its massing. An as-of-right building would have variation in its massing and be taller than the existing garage but would have a smaller footprint (see Section 2.3.2). The two-tower design of the proposed Project creates a large gap in the middle of the site to view the sky, minimizing the impact on the sky-dome from the north and south. The daylight obstruction values of the proposed Project are also similar to those found in the immediate vicinity. Viewpoints that look at the building from the east and west have higher daylight obstruction values due to the height and mass of the new buildings. However, the daylight obstruction values from these viewpoints will generally be similar to those found in the immediately surrounding area. The viewpoint looking east at the project from the narrow space between the project site and the Amy Lowell Apartments will have the highest daylight obstruction value. However, this value is similar to the daylight obstruction value at Emerson Place, and is only a little higher than daylight obstruction values found in the immediate vicinity of the Project site.

4.4 Solar Glare

Non-reflective glass will be included in the Project design to avoid adverse impacts from spot glare. Steps will be taken in final design to mitigate areas where reflected sunlight and glare have the potential to impact vehicular traffic or pedestrian areas.

4.5 Air Quality

The BRA requires that project-induced impacts to ambient air quality be addressed. An air quality analysis was conducted to determine the impact of pollutant emissions from combustion and mobile source emissions generated by the Project.

4.5.1 Analysis Requirements and Methodology

For projects that meet certain thresholds, a mesoscale analysis is performed to determine whether and to what extent the projects will increase the amount of ozone precursors in the area, as well as to determine if the projects are consistent with the Massachusetts State Implementation Plan (SIP). A microscale analysis is performed for projects that meet certain thresholds to evaluate the potential air quality impacts of carbon monoxide (CO) due to traffic flow around the project area. In addition, for stationary sources (i.e., combustion stacks and garage vents), EPA-approved air dispersion models are used to estimate project-generated ambient concentrations of nitrogen oxides (NOx), particulate matter (PM-10 and PM-2.5), and sulfur dioxide (SO_2) in addition to CO.

The impacts are added to monitored background values and compared to the federal National Ambient Air Quality Standards (NAAQS). The standards were developed by EPA to protect human health against adverse health effects with a margin of safety.

The methodology was developed in accordance with the latest MassDEP modeling policies and federal modeling guidelines.[2] Results from the air quality analysis show that CO, NOx, PM-10, PM-2.5, and SO_2 concentrations at all receptors studied are well under NAAQS thresholds.

Modeling assumptions and backup data for results presented in this section are provided in the Air Quality Appendix (see Attachment C).

4.5.2 Mesoscale Analysis

A mesoscale analysis is required to ensure that the proposed Project will not adversely impact the existing SIP, which tracks how the state intends to maintain compliance with NAAQS or plans for reductions in emissions to attain compliance in the future. The

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[2] 40 CFR 51 Appendix W, Guideline on Air Quality Models, 70 FR 68228, Nov. 9, 2005

analysis predicts the change in regional ozone precursor emissions (i.e., oxides of nitrogen, [NOx] and volatile organic compounds [VOC]) generated by Project-generated vehicular traffic).

The BRA requires a mesoscale analysis when a project will generate more than 10,000 vehicle trips per day. The analysis compares the future build condition to the no-build condition and, if emissions are greater for the build condition, evaluates reasonable and feasible mitigation measures. Methods and parameters for the mesoscale analysis follow those approved by MassDEP.

Since the proposed Project does not generate more than 10,000 trips per day, a mesoscale analysis was not required (see Section 3.0, Traffic Component, for a discussion of Project trip generation).

4.5.3 Microscale Analysis

For projects in Boston, the BRA requires an analysis to determine the effect of project-generated traffic on air quality. Thus, the Proponent is required to analyze local effects of the potential increase in traffic on ambient air quality near specific roadway intersections. This microscale analysis is required at intersections where (1) Project traffic would impact intersections or roadway links currently operating at 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) the Project will generate 3,000 or more new average daily trips on roadways providing access to a single location.[3] The microscale analysis involves modeling 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.

Since the proposed Project does not result in negative roadway LOS impacts, nor does the Project generate the volume of vehicle traffic exceeding the applicable thresholds to trigger a microscale analysis, one was not required.

4.5.4 Stationary Source Analysis

At BRA's discretion, a stationary source analysis may be required to ensure that the proposed Project will not adversely impact air quality in the area. The stationary sources that may contribute to impacts are typically combustion sources such as heating boilers, emergency generators, cooling towers, and garage vents.

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[3] BRA, Development Review Guidelines, 2006.

AERMOD Modeling Methodology

The most recent version of the EPA's AERMOD refined dispersion model (Version 11103) was selected to predict concentrations from the stationary sources related to the Project. AERMOD is the EPA's preferred model for regulatory applications. AERMOD uses the most current algorithms available for steady state dispersion modeling.

The ISC-AERMOD View graphical user interface (GUI) Version 7.1.0, 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 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;
- 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:

- *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; in other words, it sets the concentration values to zero for that hour, and calculates the short term averages according to 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 Project site. A population estimate of 617,000 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 three miles (4.6 km) east of the Project site at an elevation of 15 feet (4.6 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 site. Five years (2005-2009) 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 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 61x61 network of 3,721 receptors 25-meter spacing 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 2.25 square kilometers.

Terrain data were obtained from the USGS National Map Seamless Server (www.seamless.usgs.gov) according to guidance set forth by EPA.[4] Source, building, and receptor elevations were processed using the AERMAP processor by way of the Lakes AERMOD View interface. Figures 4-34 and 4-35 present the source and receptor locations, as well as the buildings used in the GEP stack height/downwash analysis described below.

[4] U.S. EPA, AERMOD Implementation Guide, March 19, 2009.

Stationary Sources

Stationary sources of air pollution are typically units that combust fuel. In this case, these sources consist of heating units, electrical generating units, etc.

The design is for one tower to have a total of 10 MMBTU/hour heating /hot water while the second tower is to have a total of 6 MMBTU/hour of heating/hot water. It is assumed (based on preliminary roof drawings that show each tower with three boiler flues) that the total heating is divided equally between the three flues per tower. All units will be natural gas-fired and located in a mechanical area on the roof of the building. The units are expected to be exhausted through individual stacks.

The boilers will be within the requirements of 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 ten 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.

All boilers are expected to be below the ERP limits of 10 MMBTU/hour. Therefore, registration with MassDEP will not be required.

Current design plans are for one 500-kilowatt emergency generator to be installed on each of the towers, and a 750-kilowatt generator for the underground garage. The units will provide life safety and standby emergency power. The tower units will be diesel-fired and located in a mechanical area on the roof of the building. The garage generator will also be diesel-fired and located in a mechanical room in the garage. Each generator is assumed to be designed such that its exhaust stack extends at least ten feet above the individual building roof height.

Typically, the generator 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 generators' maximum rating capacities are greater than the ERP limit of 37 kW, all three will be subject to the ERP. Per the ERP, the generators' owner will limit operation of the generators 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. The generator is assumed to operate 300 of 8,760 hours per year in the modeling for annual averaging times.

The design is for two dual-cell cooling towers, one on each tower, capable of providing approximately 500 and 850 tons of cooling, respectively, to be installed on the towers to be constructed. These units will remove the excess heat generated by the building's mechanical equipment. All units will be located on the roofs of the buildings.

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.

An 850-space underground parking garage with mechanical ventilation will be part of the proposed Project. Carbon monoxide monitors are typically installed within enclosed areas containing idling vehicles to ensure that levels of CO do not exceed health standards. Monitors will be used to control abatement ventilation when necessary.

Emissions from the garage were calculated using MOBILE6.2 and an estimate of the total number of vehicles and driving distance within the garage.

To provide a conservative assumption for emissions from the garage, an emission rate from MOBILE6.2 of 10 miles per hour was conservatively assumed for the year 2013. The higher of the summer or winter factors were used, depending on pollutant. In addition, emission factors were weighted such that only factors for light duty gasoline and diesel vehicles and motorcycle classes (MOBILE6.2 designations LDGV, LDGT, LDDV, and MC) were used for garage emissions.

High velocity air intake louvers and the garage entry will supply make-up air for the garage's ventilation systems. Based on mechanical estimates, a total ventilation air requirement of 1.5 cubic feet per square foot of garage space was used. Two vents are expected to be exiting vertically at sidewalk grade and are assumed to be 50 square feet each in area.

Detailed calculations, assumptions, and exhaust parameters for all stationary sources are presented in Attachment C.

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. Facility grade is approximately at mean sea level. The EPA 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, garage vents, the cooling towers, and the emergency generator stacks.

The proposed boiler stacks, the cooling towers, garage vents, 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.

Background Concentrations

To estimate background pollutant levels representative of the area, the most recent air quality monitor data reported by MassDEP in its Annual Air Quality Reports was obtained for 2007 to 2009. 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 PM-10 standard is not to be exceeded more than once per year on average over three years. To attain the 24-hour PM-2.5 standard, the three-year average of the 98th percentile of 24-hour concentrations must not exceed 35 $\mu g/m^3$. For annual PM-2.5 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 98th 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 monitors are located at 1 City Square, 174 North Street, and Kenmore Square, all in Boston. It should be noted that monitors record different pollutants and the closest monitor for each pollutant was selected. A summary of the background air quality concentrations are presented in Table 4-4.

Table 4-4 Observed Ambient Air Quality Concentrations and Selected Background Levels

Pollutant	Averaging Time	2007	2008	2009	Background Concentration ($\mu g/m^3$)	Location
SO_2	1 hour	75.4	65.0	69.9	75.4	Kenmore Sq., Boston
	3 hour	62.4	49.4	N/A	62.4	Kenmore Sq., Boston
	24 hour	46.8	23.4	21.8	46.8	Kenmore Sq., Boston
	Annual	10.4	6.5	6.2	10.4	Kenmore Sq., Boston
PM-10	24 hour	44.0	44.0	32.0	44	One City Sq., Boston
	Annual	18.5	17.9	15.1	18.5	One City Sq., Boston
PM-2.5	24 hour (1)	23.2	22.0	24.5	23.2	174 North St., Boston
	Annual (2)	10.7	9.8	9.1	9.88	174 North St., Boston
NO_2	1 hour	133.5	112.8	120.3	122.2	Kenmore Sq., Boston
	Annual	41.4	37.8	35.9	41.36	Kenmore Sq., Boston
CO	1 hour	1938.0	1596.0	2166.0	2166	Kenmore Sq., Boston
	8 hour	1482.0	1254.0	1710.0	1710	Kenmore Sq., Boston

From MassDEP Annual Data Summaries. Maximum values.
SO_2, NO_2, and CO reported in PPM. Converted to $\mu g/m^3$ using the following conversions:
1 ppm SO_2 = 2600 $\mu g/m^3$ SO_2
1 ppm NO_2 = 1880 $\mu g/m^3$ NO_2
1 ppm CO = 1140 $\mu g/m^3$ CO
(1) Background is the three year average of the 98th percentile 24-hour values.
(2) Background is the three year average of the annual values.

Results

In addition to the microscale analysis, a cumulative impact analysis was also conducted for comparison to the NAAQS for SO_2, NOx, PM-10, and PM-2.5. This analysis addresses emissions from the Project's heating boilers, emergency generators, cooling towers, and the loading dock vent.

Worst case maximum predicted impacts from these source groups were added to monitored background values obtained from MassDEP and compared to the NAAQS.

Table 4-5 presents the cumulative modeling results for the stationary sources plus monitored background values. The total impacts when combined with background are below the NAAQS for all pollutants and averaging periods. The concentration closest to its applicable standard is one-hour NO_2 (168.4 $\mu g/m^3$ and 90% of NAAQS). However, of the total, background comprises 122.2 $\mu g/m^3$ or 65% of the NAAQS. The Project impact is relatively minor, totaling approximately one-third of ambient background NO_2.

Conclusions

Using conservative estimates, maximum cumulative impacts from the heating boilers, garage vents, cooling towers, and emergency generators plus monitored background values are also below the NAAQS thresholds for SO_2, CO, NO_2, PM-10, and PM-2.5.

Table 4-5 Summary of NAAQS Stationary Source Modeling Analysis

Pollutant	Averaging Time	Maximum Modeled Conc. ($\mu g/m^3$)	Year	Background Concentration ($\mu g/m^3$)	Total Conc. ($\mu g/m^3$)	Standard ($\mu g/m^3$)	% Of Standard
SO_2	1-hour (1)	1.21	2005-09	75.4	76.6	195	39%
	3-hour (2)	1.65	2006	62.4	64.1	1300	5%
	24-hour (2)	0.31	2006	46.8	47.1	365	13%
	Annual (3)	0.02	2007	10.4	10.4	80	13%
PM-10	24-hour (4)	1.89	2009	44	45.9	150	31%
	Annual (3)	0.31	2007	18.5	18.8	50	38%
PM-2.5	24-hour (5)	1.96	2005-09	23.2	25.2	35	72%
	Annual (6)	0.49	2005-09	9.88	10.4	15	69%
NO_2	1-hour (7)	46.21	2005-09	122.2	168.4	188	90%
	Annual (3)	3.08	2007	41.36	44.4	100	44%
CO	1-hour (2)	6591.30	2008	2166	8757.3	40000	22%
	8-hour (2)	2256.21	2006	1710	3966.2	10000	40%

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.

4.6 Stormwater/Water Quality

Given that the Project will not increase the amount of impervious area on the Project site, post-construction stormwater run-off rates will not exceed existing rates. Furthermore, by upgrading garage stormwater collection systems from existing conditions, the Project will significantly improve the quality of stormwater runoff. Stormwater collected from the loading dock and lower levels of the garage will be collected and directed through MWRA-compliant gas, sand, and oil interceptors. Stormwater collected from parking areas and

ramps receiving direct rainfall will be directed though water quality structures (e.g., a Stormceptor or similar) before discharging to the municipal system. Catch basins will include deep sumps and hoods for additional oil and sediment removal.

The Project will also include a stormwater management system to address the phosphorus content of stormwater runoff within the Charles River Watershed. The Proponent is considering a stormwater recharge system consisting of perforated pipe and crushed stone to remove phosphorus from runoff. The Proponent will coordinate with the Boston Water and Sewer Commission (BWSC) to determine the appropriate level and method of phosphorus removal.

4.7 Groundwater

Based on monitoring wells measured around the Project site in June 2009, groundwater was encountered at depths from approximately 5 to 20 feet below the ground surface (between elevations 6 and 10 feet Boston City Base [BCB] datum). Groundwater levels near the site could be influenced by leakage into and out of sewers, storm drains, water utilities, and other below-grade structures as well as environmental factors such as precipitation, season, and temperature.

4.7.1 Temporary Groundwater Drawdown

Temporary construction dewatering will be required during construction of the below-grade structure in order to complete the construction in-the-dry. The excavation support system and permanent foundation walls will be watertight and extend into the underlying low-permeability soils (e.g., marine clay, glacial till, or bedrock) to create a groundwater cutoff. This will allow groundwater levels outside of the excavation to be maintained at pre-construction levels. Groundwater levels outside the excavation will be monitored during construction and corrective actions will be taken, if necessary, to maintain the groundwater levels outside of the excavation to be protective of adjacent structures.

4.7.2 Long-Term Groundwater Levels

The permanent foundation walls will create a groundwater cutoff, and low-permeability soils are expected to be encountered at subgrade for the lowest level. The lowest floor slab will have an underdrain system to relieve hydrostatic up-lift pressures. Based on soil conditions, the flow for the underdrain system will be low and during the design process the possibility of recharging discharge from the underdrain system into the upper aquifer will be evaluated. The proposed construction does not present a long-term risk to the shallow groundwater table.

4.8 Operational Solid and Hazardous Wastes

Solid waste generated by residents will be collected and disposed of off-site by a licensed contractor. The Proponent will implement an aggressive recycling program throughout the Project, and residents will be encouraged to recycle. Recycled materials are expected to include newspaper, cardboard, cans, and bottles.

With the exception of household hazardous wastes typical of residential developments (e.g., cleaning fluids and paint), the Project will not involve the generation, use, transportation, storage, release, or disposal of potentially hazardous materials.

4.9 Noise

This noise analysis includes a noise-monitoring program to determine existing background levels and an estimate of future sound levels when the Project is in operation. The scope of the analysis is consistent with BRA requirements for noise studies.

Baseline noise levels were measured in the vicinity of the proposed buildings and were compared to predicted noise levels based on reference sound data provided by the Proponent. These predicted noise levels were compared to the City of Boston Zoning District Noise Standards and the Massachusetts Department of Environmental Protection (MassDEP) Noise Policy. The analysis indicates that predicted noise levels from Project mechanical equipment with appropriate noise mitigation will comply with the City of Boston Noise Zoning requirements, and will remain at or below existing measured baseline noise levels in the area at most locations.

4.9.1 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 measurement terminology used in this analysis.

The logarithmic decibel scale is used to accommodate the wide range of sound intensities found in the environment. A property of the decibel scale is that the sound pressure levels of two distinct sounds are not directly 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 (to 53 dB), not a doubling to 100 dB. In other words, 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 decibels is 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 quieter source does not contribute significantly to the overall sound level which remains the same as that of the louder source. For example, a source of sound at 60 dB plus another source of sound at 47 dB is simply 60 dB.

The sound level meter used to measure noise is a standardized instrument.[5] 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 (there are also B- and C-weighting networks), which most closely approximates how the human ear responds to sound at various frequencies and is the accepted scale used for community sound level measurements. A-weighted sound levels emphasize the middle frequencies (i.e., middle-pitched, around 1,000 Hertz sounds), and de-emphasize lower and higher frequency sounds. A-weighted sound levels are reported in decibels designated as "dBA."

Because the sounds in our environment vary with time, they cannot be described with a single number. Two methods are used for describing variable sounds: exceedance levels and the equivalent level. Both of these methods are derived from a large number of moment-to-moment A-weighted sound level measurements. Exceedance levels are values from the cumulative amplitude distribution of all of the sound levels observed during a measurement period. Exceedance levels are designated L_n, where n can have a value of 0 to 100 percent. Several sound level metrics that are commonly reported in community noise studies are described below.

- L_{90} is the sound level in dBA exceeded 90 percent of the time during the measurement period. The L_{90} is close to the lowest sound level observed. It is essentially the residual sound level, which is the sound level observed when there are no obvious nearby intermittent noise sources.
- L_{50} is the median sound level: the sound level in dBA exceeded 50 percent of the time during the measurement period.
- L_{10} is the sound level in dBA exceeded only 10 percent of the time. It is close to the maximum level observed during the measurement period. The L_{10} is sometimes called the intrusive sound level because it is caused by occasional louder noises such as those from passing motor vehicles.
- L_{max} is the maximum instantaneous sound level observed over a given period.

L_{eq}, the equivalent level, 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. The equivalent level is designated L_{eq} and is also A-weighted. The equivalent level represents the time average of the fluctuating sound pressure, but because sound is represented on a logarithmic scale and the averaging is done with linear mean square sound pressure values, the L_{eq} is mostly determined by occasional loud noises.

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5 *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.

By using various noise metrics it is possible to separate prevailing, steady sounds (the L_{90}) from occasional, louder sounds (L_{10}) in the noise environment or combined average levels (L_{eq}). This analysis of sounds expected from the Project treats all noises as though they will be steady and continuous and hence the L_{90} exceedance level was used.

4.9.2 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 noise level survey and the modeled noise 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 completed proposed buildings and was considered in this noise study. Table 4-6 includes the Zoning District Standards.

In addition, MassDEP regulates community noise under its Noise Policy: DAQC policy 90-001. The MassDEP policy limits source sound levels to a 10-dBA increase in the ambient measured noise level (L_{90}) at the Project property line and at the nearest residences. The policy further prohibits pure tone conditions, when any octave band center frequency sound pressure level exceeds the two adjacent center frequency sound pressure levels by three decibels or more.

Table 4-6 City of Boston Zoning District Noise Standards, Maximum Allowable Sound Pressure Levels

Octave Band Center Frequency (Hz)	*Residential Zoning District*		*Residential-Industrial Zoning District*		*Business Zoning District*	*Industrial Zoning District*
	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 pressure of 20 micropascals.
- Daytime refers to the period between 7:00 a.m. and 6:00 p.m. daily except Sunday.

4.9.3 Baseline Noise Environment (Existing Conditions)

An ambient noise level survey was conducted to characterize the existing "baseline" acoustical environment in the vicinity of the Project. Existing noise sources include: vehicular traffic (including trucks) on the local roadways; pedestrian traffic; nearby mechanical equipment located in and on surrounding buildings; and the general din of the city.

4.9.3.1 Noise Measurement Locations

The selection of the sound monitoring locations was based upon a review of the current land uses in the Project area. Four noise-monitoring locations were selected as representative in obtaining a sampling of the ambient baseline noise environment. The measurement locations are depicted in Figure 4-34 and are described below:

- Location M1 is along Martha Road between the Garden Garage and the Amy Lowell Apartments building;
- Location M2 is along the service road adjacent to the West End Condominiums and the Garden Garage;
- Location M3 is along the eastern sidewalk of the cul-de-sac on Blossom Court; and
- Location M4 is along WM. Cardinal O'Connell Way on the sidewalk in front of St. Joseph's Rectory.

4.9.3.2 Noise Measurement Methodology

Sound level measurements were taken for 20 minutes per location during the daytime (1:00 p.m. to 3:00 p.m.) on July 5, 2011, and during nighttime hours (12:00 a.m. to 2:30 a.m.) on July 6, 2011. 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.

The sound levels were measured at publicly-accessible locations at a height of approximately 1.5 meters above the ground. The measurements were made under low wind conditions, and roadway surfaces were dry. 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, including wind speed, temperature, and humidity, as well as 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 Project.

4.9.3.3 Measurement Equipment

A Nor140 Sound Analyzer equipped with a Nor1209 Type 1 Preamplifier, a Nor1225 ½" free-field microphone and the manufacturer's 2 ½" foam windscreen were used to collect broadband and 1/1 octave band ambient sound pressure level data. The Norsonic instrumentation meets the "Type 1 - Precision" requirements set forth in American National Standards Institute (ANSI) S1.4 for acoustical measuring devices. The meter, equipped with an internal octave band filter set along with data logging capabilities, processed one sample per second using the "fast" response setting.

Statistical levels were calculated from the sound levels collected during each 20-minute measurement period. Octave band levels for this study correspond to the same data set processed for the broadband levels. The measurement equipment was calibrated in the field before and after the survey with a Norsonic 1251 acoustical calibrator which meets the standards of IEC 942 Class 1L and ANSI S1.40-1997.

4.9.3.4 Baseline Ambient Noise Levels

The existing ambient noise environment consists primarily of vehicular traffic on nearby roadways, building HVAC systems, and pedestrian activity. Baseline noise monitoring results are presented in Table 4-7, and summarized below.

- The daytime residual background (L_{90}) measurements ranged from 57 to 61 dBA;
- The nighttime residual background (L_{90}) measurements ranged from 54 to 60 dBA;
- The daytime equivalent level (L_{eq}) measurements ranged from 58 to 65 dBA; and
- The nighttime equivalent level (L_{eq}) measurements ranged from 60 to 65 dBA.

Table 4-7 Baseline Ambient Noise Measurements

							Octave Band Center Frequency (Hz)								
Location and Period	*Start*	L_{10}	L_{50}	L_{90}	L_{eq}	L_{max}	*32*	*63*	*125*	*250*	*500*	*1000*	*2000*	*4000*	*8000*
	Time	*(dBA)*	*(dBA)*	*(dBA)*	*(dBA)*	*(dBA)*	L_{90} *(dB)*	L_{90} *(dB)*	L_{90} *(dB)*	L_{90} *(dB)*	L_{90} *(dB)*	L_{90} *(dB)*	L_{90} *(dB)*	L_{90} *(dB)*	L_{90} *(dB)*
M1	13:40	65	63	61	63	78	68	67	64	59	57	58	51	42	30
M2	13:12	65	60	58	62	78	64	64	62	57	55	54	48	40	27
M3	14:08	59	58	57	58	65	65	65	62	56	54	52	46	40	28
M4	14:34	69	62	59	65	82	63	67	67	60	56	53	47	38	28
M1	1:10	64	59	57	61	75	60	63	61	57	54	53	46	37	27
M2	1:55	66	62	60	64	79	60	64	61	60	58	54	49	42	33
M3	0:46	70	55	54	65	80	61	63	61	55	52	49	42	34	26
M4	0:21	58	57	57	60	80	61	62	64	58	55	51	44	37	26

Notes:
1. Daytime weather: Temperature = 88˚ F, Relative Humidity = 30%, sunny skies, variable winds 0-8 miles per hour.
   Nighttime weather: Temperature = 78˚ F, Relative Humidity = 60%, clear skies, light winds 0-4.5 miles per hour.
2. All road surfaces were dry during measurements.
3. All sampling periods were exactly 20 minutes in duration.
4. Daytime measurements were collected on July 5, 2011.
   Nighttime measurements were collected on July 6, 2011.

4.9.4 Overview of Potential Project Noise Sources

The major sources of sound exterior to the proposed buildings will be cooling towers, water pumps, exhaust fans, and energy recovery units (ERUs), as well as emergency generators, when operated. A list of the major mechanical equipment proposed for the Project is presented in Table 4-8 and its projected noise emissions, as provided by the client on August 16, 2011, which includes broadband-only (dBA) sound power levels.

Secondary noise sources including electrical transformers and fuel pumps are expected to have much lower sound levels (10 dBA or more) than the other, larger pieces of equipment and are not considered in this analysis. It is also understood that the fuel pumps will be located in the basement and are not expected to contribute significantly to the overall exterior sound level. In addition, the rooftop stair/elevator pressurization fans and the smoke-proof enclosure fans are designated for emergency use only and are not considered a continuous source of mechanical noise.

The cooling towers, ERUs, and exhaust fans will be located on the roofs of the proposed towers at an approximate elevation of 230 feet for the West Tower and 308 feet for the East Tower. Much of the remaining mechanical equipment for the building will be housed within louvered mechanical penthouses, including the boilers and water pumps. Additional ERU's and exhaust fans will be located on the lower roof (Level 8) of the East tower. Noise from exhaust and supply garage ventilation fans located on each basement level will exit at-grade through three dedicated areaways.

One 500 kW emergency diesel generator will be located on the roof of each tower in a dedicated weather-proof enclosure, exhausted vertically. A single 750 kW emergency diesel generator will be located in the Level 1 Mechanical Room of the East Tower, exhausted vertically through the Level 8 roof. It is assumed that all three emergency 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.

Mitigation will be applied to multiple sources as needed, to ensure compliance with the noise regulations. Roof space adjacent to the mechanical penthouses will have 8- to 12-foot-tall screening walls which will provide some mitigation for the rooftop sources. In addition, the lower rooftop spaces of the East Tower will have a 3-foot-tall parapet wall. The rooftop emergency generator noise will be controlled using critical-grade exhaust silencers and weather-proof enclosures. The garage emergency generator will be placed within a separate sound attenuating enclosure. Acoustical louvers will be installed along the outside wall of the Level 1 Mechanical Room (East Tower) to mitigate the sound associated with the 750 kW generator. A summary of the noise mitigation measures proposed for the Project is presented in Section 4.9.5.

Table 4-8 Reference Equipment Sound Power Levels – Per Unit

Noise Source	*Sound Power Level* *dBA*	*No.*	*Location*[1]
Boilers	**60**	3	West Penthouse (x1), East Penthouse (x2)
Cooling Towers[1]	**99**	2	West Roof (x1), East Roof (x1)
Condenser and Hot Water Pumps	**65**	6	West Penthouse (x3), East Penthouse (x3)
Bathroom/Dryer Exhaust Fans	**50**	20	West Roof (x10), E High Roof (x6), East Low Roof (x4)
Energy Recovery Units[2]	**60**	4	West Roof (x2), East High Roof (x1), East Low Roof (x1)
Trash/Recycle Room Exhaust Fans	**50**	2	West Roof (x1), East Roof (x1)
Garage Supply Fans	**109**	4	One on each of the four garage levels
Garage Exhaust Fans	**109**	8	Two on each of the garage levels
Emergency Generators – Tower[3]	**113**	2	West Roof (x1), East Roof (x1)
Emergency Generator - Garage (Mechanical)[4]	**123**	1	East Level 1 Mechanical Room
Emergency Generator - Garage (Exhaust)[4]	**121**	1	East Level 8 Roof

Notes:

1. Baltimore Aircoil Company (BAC) Series 1500 Two-Cell Cooling Tower (1650 USGPM) with 15 HP fan or similar
2. PremiSys PS Series Energy Recovery Ventilators with Optional Heating & Cooling (10,000 CFM) or similar
3. Caterpillar C15DE6X 500kW Emergency Diesel Generator with WP Canopy (Residential) or similar
4. Caterpillar C27DE33 800kW Emergency Diesel Generator, Open Mechanical and Exhaust or similar

4.9.4.1 Modeling Methodology

Anticipated noise impacts associated with the Project were predicted at the nearest noise-sensitive receptors surrounding the Project using the CadnaA noise calculation software. This software uses the ISO 9613-2 industrial noise calculation methodology. CadnaA allows for octave band calculation of noise from multiple noise sources, as well as for computation of diffraction around building edges and multiple reflections off parallel buildings and solid ground areas. In this manner, all significant noise sources and geometric propagation effects are accounted for in the noise modeling. Given broad-band reference sound power levels only, it was assumed for this analysis that all sound energy occupied the 500 Hz band.

As a conservative assumption, no credit was taken for attenuation due to the louvered penthouse walls or ceilings in the final analysis since it was determined that the driving sources, namely the garage exhaust/supply areaways, cooling towers, and generators are located outside the penthouse.

4.9.4.2 Future Sound Level of Project

An initial analysis considered all of the mechanical equipment without the emergency generator 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 conditions during brief, routine, daytime testing of the generators when ambient levels are higher. The results with and without the emergency generators are shown in Tables 4-9 and 4-10, respectively, for receptors located 1.5 meters above-grade. Figure 4-34 shows the locations of each modeled receptor as well as the monitoring locations selected for background measurements.

Predicted mechanical equipment noise levels from the Project at each receptor location, taking into account attenuation due to distance, structures, and noise control measures listed in Section 4.9.5, are all below the MassDEP criteria of 10 dBA over the quietest nighttime sound levels. The predicted Project-generated exterior sound levels with appropriate mitigation measures are expected to remain below 59 dBA with emergency generators running and 46 dBA without, within the most stringent 60 dBA daytime and 50 dBA nighttime residential zoning limits, respectively, for the City of Boston at all nearby sensitive receptors. It should be noted that the existing nighttime ambient background levels already exceed 50 dBA at all four locations studied.

Due to the fact that broadband-only reference sound power levels were provided by the client, an octave-band analysis was unable to be performed for comparison with City of Boston octave-band limits or the MassDEP "pure-tone" criteria. However, during the final equipment selection process, models will be chosen to ensure that the Project fully complies with the City of Boston octave-band noise limits and that it does not create any "pure tones" when combined with existing background levels.

Table 4-9 Comparison of Future Predicted Daytime Sound Levels with Existing Background – with Emergency Generators

Modeling Location	*Representative Background Location*	*Project Only Sound Level (dBA)*	*L_{90} Background (dBA)*	*Total: Project + L_{90} Background (dBA)*	*Increase Over Background (dBA)[1]*	*Meets MassDEP Noise Policy?*
1	M1	50	61	61	0	YES
2	M3	49	57	57	1	YES
3	M2	59	58	61	3	YES
4	M3	50	57	58	1	YES
5	M3	47	57	57	0	YES
6	M1	50	61	61	0	YES
7	M3	48	57	57	1	YES
8	M3	48	57	57	1	YES
9	M3	47	57	57	0	YES
10	M4	46	59	59	0	YES
11	M3	47	57	57	0	YES
12	M2	47	58	59	0	YES
13	M3	43	57	57	0	YES
14	M3	47	57	57	0	YES
15	M3	51	57	58	1	YES
16	M3	45	57	57	0	YES
17	M4	43	59	59	0	YES
18	M2	47	58	59	0	YES
19	M2	51	58	59	1	YES
20	M3	57	57	60	3	YES
21	M3	48	57	57	1	YES
22	M3	50	57	57	1	YES

1. Calculation performed using data rounded to nearest whole decibel

Note: 60 dBA City of Boston Residential Broadband Limit for Daytime Hours (Project Only)

Table 4-10 Comparison of Future Predicted Nighttime Sound Levels with Existing Background – No Emergency Generators

Modeling Location	*Representative Background Location*	*Project Only Sound Level (dBA)*	*L_{90} Background (dBA)*	*Total: Project + L_{90} Background (dBA)*	*Increase Over Background (dBA)[1]*	*Meets MassDEP Noise Policy?*
1	M1	46	57	57	0	YES
2	M3	46	54	55	1	YES
3	M2	29	60	60	0	YES
4	M3	32	54	54	0	YES
5	M3	43	54	54	0	YES
6	M1	45	57	57	0	YES
7	M3	41	54	54	0	YES
8	M3	43	54	54	0	YES
9	M3	33	54	54	0	YES
10	M4	37	57	57	0	YES
11	M3	32	54	54	0	YES
12	M2	31	60	60	0	YES
13	M3	38	54	54	0	YES
14	M3	35	54	54	0	YES
15	M3	33	54	54	0	YES
16	M3	33	54	54	0	YES
17	M4	30	57	57	0	YES
18	M2	32	60	60	0	YES
19	M2	30	60	60	0	YES
20	M3	32	54	54	0	YES
21	M3	35	54	54	0	YES
22	M3	38	54	54	0	YES

1. Calculation performed using data rounded to nearest whole decibel

Note: 50 dBA City of Boston Residential Broadband Limit for Nighttime Hours (Project Only).

4.9.5 Conclusions and Noise Mitigation

The proposed Project, with appropriate mitigation, will not introduce significant outdoor mechanical equipment noise into the surrounding community. To ensure compliance with applicable noise regulations, the following mitigation efforts are recommended:

- approximately 25 dBA of noise reduction for the 750 kW emergency generator exhaust through the use of an appropriate exhaust muffler
- approximately 30 dBA of noise reduction for the 750 kW emergency generator mechanical noise through acoustical louvers, a separate sound attenuating enclosure within the 1st floor mechanical space, or both.
- approximately 35 dBA of noise reduction for each of the three garage exhaust/supply areaways through the use of HVAC duct silencers.
- Daytime-only testing of the emergency generators

Predicted mechanical equipment noise levels from the Project at each receptor location, taking into account attenuation due to distance, structures, and noise control measures, will be equal to or below the most stringent City of Boston Noise Zoning residential broadband requirements, and will comply with all MassDEP A-weighted noise limits. It should be noted that the existing ambient background levels immediately surrounding the Project already exceed 50 dBA without any contribution from the Project. The results in Tables 4-9 and 4-10 show no noticeable increase in sound level above existing levels and indicate that the proposed Project can operate without significant impact on the existing acoustical environment.

At this time, the mechanical equipment and noise controls are conceptual in nature. During the final design phase of the Project, mechanical equipment and noise controls will be specified and designed to meet not only the nighttime 50 dBA residential broadband limit but also the corresponding octave band limits. Additional mitigation may include acoustical louvers, screening walls, or equipment enclosures, as needed.

4.10 Geotechnical and Construction Materials Management

This section describes existing site conditions, subsurface soils, and proposed below-grade construction, monitoring, and mitigation methods. Groundwater conditions at the site are described in Section 4.7.

4.10.1 Existing Site Conditions

The Project site is an approximately three-acre area currently occupied by the Garden Garage, an above-grade concrete parking garage which is supported on a combination of spread footings and concrete-filled steel pipe piles. The existing garage provides five levels of parking, but at 97 feet high has a height equivalent to an eight-story building. The existing parking garage on the Project site is connected to a sub-surface parking garage at 5

Longfellow Place, which is located below tennis and basketball courts that exist at grade south of the Project site. A single-story wood frame building, which serves as an annex to the Boston Children's School, is also located on the Project site.

Surface elevations on the Project site range from approximately 17 feet BCB at the northern margin along Lomasney Way and Martha Road to 25-30 feet BCB on the southern margin along Thoreau Path. The ground surface along the south side of the existing garage is at an elevation of approximately 12 feet. Numerous underground utilities are located adjacent to the Project site in Lomasney Way, Martha Road, and Thoreau Path. A steam line is also located beneath the sidewalk that runs between the existing garage and 65 Martha Road. The MBTA Green Line subway portal is located approximately 35 feet away from the northern corner of the existing garage.

4.10.2 Proposed Foundation Construction

The foundation support system for the proposed below-grade structure and two towers has not been fully developed. The temporary excavation support system and permanent foundation walls will be designed to be watertight and resist full hydrostatic and soil lateral pressures to control groundwater seepage and ground movements to avoid impacts to adjacent structures. Although a wall type has not been selected, it will likely consist of a reinforced concrete slurry wall that will extend below the bottom of the excavation into the underlying low-permeability soils (e.g., marine clay, glacial till, or bedrock) to create a groundwater cutoff. Bedrock is expected to be encountered during excavation in the southern portion of the proposed structure. Based on the available subsurface information, the weathered bedrock may be rippible using an excavator with an appropriate bucket. The competent bedrock may require controlled blasting or hoe-ramming. Blasting will be conducted in accordance with Massachusetts Board of Fire Prevention Regulations 527 CMR 13. A blasting design plan will be developed as required by the regulations (527 CMR 13.09.1L) and based on the site analysis (527 CMR 13.09.1K) that will be protective of the adjacent buildings and sensitive receptors.

Based on the depth of the excavation and available subsurface conditions information, it is anticipated that the majority of the proposed structures will be supported by spread footings bearing on the glacial till or bedrock. In the northern portion of the Project site, the suitable bearing strata are expected to be too far below the lowest level for spread footings. As such, this portion of the Project may be supported on a mat foundation or a deep foundation bearing in the underlying glacial till or bedrock. The foundation system selected to support the proposed structure will depend on column loads, column spacing, and soil conditions at that location.

4.10.2.1 Excavated Materials Management

The excavation depths will extend up to approximately 50 feet below the existing ground surface. Excavation will involve removal and disposal of urban fill, natural soil deposits, and bedrock. Based on preliminary analytical laboratory results, the existing urban soils may require special handling for off-site disposal. The underlying natural soils and bedrock soils may not require special management and disposal, based on available data. Soil management will be conducted in compliance with local, state, and federal regulations and with the Massachusetts Contingency Plan (310 CMR 40.0000). Prior to excavation, the onsite soils will be pre-characterized for off-site disposal and a soil management plan will be developed.

4.10.3 Subsurface Soil and Bedrock Conditions

Based on available data, the subsurface conditions on the Project site generally consist of a layer of urban fill that overlies marine deposits, glacial till, and bedrock. Urban fill encountered below the surface treatment ranges in thicknesses from approximately 5 to 15 feet. The fill typically consists of sand with varying amounts of silt and gravel with minor amounts of organic material, asphalt, ash, wood, brick, metal, and concrete.

Marine deposits varying from sands to silty clay have been encountered below the urban fill. These deposits generally range in thickness from approximately 22 to 50 feet, and increase in thickness toward the north. A layer of silts and sands with minor amounts of organics and shells that is consistent with a former intertidal zone underlies urban fill in the eastern portion of the Project site and is generally 6 to 9 feet thick, where encountered. Glacial till approximately 3 to 10 feet thick is generally present below the marine deposits. Depending on the specific location within the Project site, bedrock is present at a depth of approximately 18 to 64 feet (elevation -6.5 to -39 feet BCB).

4.10.4 Seismic Considerations

The Project will be designed for seismic loading in accordance with the Massachusetts State Building Code and the International Building Code (IBC). There are no known geologic features at the site that would require special seismic considerations for this Project.

4.10.5 Potential Impacts and Mitigation Measures

Potential impacts to adjacent facilities due to foundation construction include impacts to area groundwater levels (address in Section 4.7), noise (addressed in Section 4.9), ground vibrations, and ground movement due to excavation and rock removal. The foundation design and construction will be completed to limit adverse impacts to adjacent facilities, as discussed herein.

4.10.5.1 Ground Movement

During construction of the below-grade structure, the excavation support system will want to move into the excavation as soil against the wall tries to move horizontally, inducing both vertical and horizontal ground deformations outside of the excavation. In general, the potential for ground surface settlement is most carefully evaluated within 20 feet of the wall. The temporary excavation bracing system will be designed to restrain wall movements and limit soil movements to established criteria outside the excavation to prevent damage to adjacent utilities, structures, and MBTA Green line portal. If necessary, adjacent foundations could be modified (e.g., underpinned) before commencing excavation to prevent potential damaging movement. During excavation, the excavation support system, adjacent structures, and ground surface will be monitored for movement so that corrective measures can be taken, if necessary, to prevent potentially damaging movements.

4.10.5.2 Mitigation Measures and Monitoring

Provisions will be incorporated into design and construction procedures to limit potential adverse impacts to adjacent structures and utilities. Mitigation measures may include the following:

- The design team will conduct studies, prepare designs and specifications, and review contractor's submittals for conformance to the Project contract documents with specific attention to protection of nearby structures and facilities.

- Performance criteria will be established for the lateral earth support systems with respect to movements, noise, and ground vibrations. The construction sequence of the below-grade portion will be controlled by specific requirements in the Project specifications. The contractor will be required to modify construction methods and take necessary steps during the work to protect nearby buildings and other facilities.

- Geotechnical instrumentation will be installed and monitored during the below-grade portion of work to observe the performance of the excavation, adjacent buildings and structures, and area groundwater levels. Groundwater observation wells will be monitored before and during construction. When construction begins, observation wells will be monitored for the duration of below-grade construction.

4.11 Construction Impacts

This section discusses potential construction-related impacts. As described herein, construction management and scheduling will minimize impacts on the surrounding environment by planning for construction worker commuting and parking, routing plans and scheduling for trucking and deliveries, protecting existing utilities, maintaining fire safety access, and controlling noise and dust.

4.11.1 Construction Schedule and Coordination

The proximity of city streets and abutting residential properties to the site will require careful scheduling of material removal and delivery, as well as evaluation of the existing use of the Project site. Planning with the City and neighborhood will be essential to the successful Project construction.

4.11.2 Public Safety and Construction Staging

Appropriate construction techniques will be employed to ensure public safety and protect nearby residences and businesses. These techniques may include, as necessary, barricades, walkways, painted lines, and signage. Throughout Project construction, a secure perimeter will be maintained to protect the public from construction activities.

4.11.3 Construction Air Quality

Short-term air quality impacts from fugitive dust may be expected during the early stages of construction. Plans for controlling fugitive dust during construction include mechanical street sweeping, wetting portions of the Project site during periods of high wind, and careful removal of debris by covered trucks. The construction contract will provide for a number of strictly enforced measures to be used by contractors to reduce potential emissions and minimize impacts. These measures are expected to include:

- Use of wetting agents where needed on a scheduled basis;
- Use of covered trucks;
- Minimize exposed storage of debris on-site;
- Monitor construction practices to minimize unnecessary transfers and mechanical disturbances of loose materials;
- Store aggregate materials away from the areas of greatest pedestrian activity, where and when possible;
- Establish a tire cleaning area at the exit gate to prevent dirt from reaching the street; and
- Clean streets and sidewalks regularly to minimize dust accumulations.

4.11.4 Construction Noise

Noise will be generated during the construction period, although construction activities will be conducted generally during daytime hours to minimize impacts. Construction-period noise impacts will be minimized through the use of mufflers on heavy equipment (as

appropriate), construction hour restrictions, and other noise mitigation measures. Construction work will comply with the requirements of the City of Boston Noise Ordinance. Mitigation measures are expected to include:

- Use of appropriate mufflers on equipment, with proper maintenance of intake and exhaust mufflers;
- Use of muffling enclosures on continuously-operating equipment (e.g., air compressors and welding generators);
- Use of the most quiet construction operations, techniques, and equipment, where feasible;
- Scheduling equipment operations to keep average noise levels low, synchronize noisiest operations with times of highest ambient noise levels, and maintain relatively uniform noise levels;
- Turn off idling equipment; and
- Use shielding or distance to separate noisy equipment from sensitive receptors.

4.11.5 Vibration Control

Blasting will be conducted in accordance with Massachusetts Board of Fire Prevention Regulations 527 CMR 13. As required by the regulations, a preconstruction survey of adjacent structures within 250 feet of the site will be conducted. Vibration criteria will be developed as required by the regulations that are protective of adjacent structures, and vibrations will be monitored during construction.

The anticipated foundation system (i.e., slurry wall, deep foundation) is considered a low-impact method with regard to vibrations.

4.11.6 Construction-Period Transportation Issues

A CMP will be submitted to the BTD for review and approval prior to issuance of a building permit. The CMP will define truck routes which will help in minimizing the impact of trucks on local streets. A police detail will be provided to maintain access to adjacent properties and to direct pedestrian and vehicle flow.

4.11.7 Construction-Period Groundwater Impacts

The excavation support system will be designed to be watertight and create a groundwater cutoff to avoid impacts to groundwater levels outside of the excavation (see Section 4.7). Groundwater levels will be monitored during construction as described in Section 4.10.5.3.

4.11.8 Protection of Utilities

The Proponent will require the contractor to provide measures required by federal, state, and municipal laws, regulations, and ordinances for the protection of surrounding utilities and structures during construction operations. The Proponent will coordinate construction operations with the BWSC and private utility companies to ensure that construction operations comply with applicable standards and regulations to protect existing utilities. The MBTA tunnel is within the Project's zone of influence. The excavation support system will be designed to limit ground movements at the Green Line portal to avoid impacts to the tunnel. The allowable movement criteria will be developed during the design process. During excavation, ground movements will be monitored and corrective actions taken if ground movements exceed established criteria.

4.11.9 Construction Waste Management

The Proponent will reuse or recycle demolition and construction materials to the greatest extent feasible. Construction procedures will allow for the segregation, reuse, and recycling of materials. Materials that cannot be reused or recycled will be transported in covered trucks by a contract hauler to a licensed facility.

4.11.10 Rodent Control

A rodent extermination certificate will be filed with the building permit application to the City. In compliance with City requirements, rodent inspection monitoring and treatment will be carried out before, during, and at the completion of construction. Rodent extermination prior to work start-up will consist of treatment throughout the Project area, including building interiors. During construction, regular service visits will be made to maintain effective rodent control levels.

Operation of the Project will focus on a high quality of maintenance. Although the details have not yet been finalized, the Proponent will develop a safe, cost-effective, and ecologically sound pest management program.

4.12 Sustainable Design

The Project's location within the mature environment of the West End allows new development to occur with minimum impact on existing infrastructure. Due to the Project's proximity to mass transit (i.e., commuter rail, MBTA rapid service, and bus) as well as vehicular access to highways, the Project supports the objectives of smart growth (i.e., new development at existing nodes of excellent transportation facilities).

Energy conservation and other sustainable design measures will be integral parts of the proposed Project. The buildings will employ energy and water efficient features for mechanical, electrical, architectural, and structural systems, assemblies, and materials

where possible. Sustainable design elements relating to building energy management systems, lighting, recycling, conservation measures, local building materials, and clean construction vehicles will be included, as practicable.

The City of Boston requires sustainable design in new development projects. Article 37 of the Boston Zoning Code requires that projects be designed as certifiable under the U.S. Green Business Council (USGBC) Leadership in Energy and Environmental Design (LEED) program based on the most appropriate LEED building rating system. The Project will comply with this Article 37 requirement for "LEED Certifiable" status. Figure 4-37 is a LEED for New Construction (LEED-NC) 2009 checklist that identifies the green design goals for this Project. For each credit identified as a "yes" on the checklist, the following narrative provides a brief description of the implementation measures to the extent that they are defined at this stage of design.

The LEED-NC 2009 version was launched in April and was updated to include a total of 110 possible points. When the Proponent filed the PNF on January 7, 2011, the goal was to achieve enough points for the Certified level, which has a minimum of 40 points. The Proponent is committed to designing and constructing a LEED-certifiable Project under the LEED-NC system.

The following narrative discusses the LEED-NC 2009 credits applicable to the Project.

4.12.1 Sustainable Sites

Sustainable Sites, Prerequisite 1, Construction Activity Pollution Prevention:
The Project will include a full erosion and sedimentation control program. This program will include a Stormwater Pollution Prevention Plan (SWPPP) that describes how to protect the existing stormwater collection system during construction.

Sustainable Sites, Credit 1.0, Site Selection:
The Project meets all of the criteria for site selection: the Project site is not prime farmland, was previously developed, does not have endangered species habitat, is not within 100 feet of a wetland, and is not a public park.

Sustainable Sites, Credit 2.0, Development Density & Community Connectivity:
The Project is located in Boston's West End, which is a dense urban area with a mix of residential and commercial uses. The Project will pursue the compliance path for Option 2, Community Connectivity. Within a one-half-mile radius of the Project's main entrance, there are several residential developments including the West End Residences, Whittier Place, Hawthorn Place, Amy Lowell Apartments, West End Place, and the Avenir. Within the same radius, there are also many basic services with pedestrian access, including banks, convenience grocery stores, day care centers, cleaners, parks, pharmacies, a post office, restaurants, fitness centers, and a museum.

Sustainable Sites, Credit 4.1, Alternative Transportation - Public Transportation Access:
The Project is located within one-half-mile walking distance of public transportation. There are subway stations within the radius that provide access to the Red Line, Green Line, Blue Line, Orange Line, and commuter rail line. There are also at least 21 bus stops, one commuter rail station (North Station), and five rapid transit stations (North Station, Science Park, Charles MGH, Bowdoin, and Government Center) within this one-half-mile radius. The proximity of the Project to several forms of public transportation fulfills the LEED credit requirements and helps avoid pollution from automobile usage.

Sustainable Sites, Credit 4.4, Alternative Transportation - Parking Capacity:
The Project includes approximately 850 parking spaces that will be provided in a structured garage on four below-ground levels. This parking will serve 500 residential units, existing commercials uses, existing lease commitments (e.g., Amy Lowell Apartments), and the general public; Section 3.0 contains a more detailed discussion of parking. The proposed ratio for new residential parking spaces is 0.4 spaces per unit, which is below the local zoning requirements for new residential parking.

Sustainable Sites, Credit 7.2, Heat Island Effect - Roof:
Roofing material will be selected to meet the LEED credit guidelines for a solar reflectance index (SRI) equal to or greater than 78 for a low-sloped roof.

4.12.2 Water Efficiency

Water Efficiency, Prerequisite 1, Water Use Reduction 20 Percent:
The Project will specify plumbing fixtures that will achieve a minimum 20-percent reduction in water use compared to the baseline for the building.

Water Efficiency, Credit 1, Water Efficient Landscaping:
It is not anticipated that landscaping will require irrigation.

4.12.3 Energy and Atmosphere

Energy & Atmosphere, Prerequisite 1, Fundamental Commissioning of the Building Energy Systems:
Building systems will be commissioned in accordance with the USGBC LEED requirements. The commissioning services provided will include the Owner's Project Requirements (OPR) and Basis of Design (BOD) documents, development of a commissioning plan, incorporation of a commissioning specification section into the construction documents, and verification through startup observation and functional testing that the installed systems are operating in accordance with the OPR, BOD, and construction documents. The aforementioned services will apply to the following commissioned systems: heating, ventilation, and air conditioning (HVAC); lighting controls; and domestic hot water systems.

Energy & Atmosphere, Prerequisite 2, Minimum Energy Performance:
The Project design will comply with the ASHRAE 90.1-2007 Energy Standard per the newest version of LEED 2009.

Energy & Atmosphere, Prerequisite 3, Fundamental Refrigerant Management:
The Project will specify equipment and systems with no chlorofluorocarbon (CFC)-based refrigerants.

Energy & Atmosphere, Credit 1, Optimize Energy Performance:
The Project will be designed with the goal of exceeding the ASHRAE 90.1-2007 Energy Standard by 20 percent. This will be demonstrated with a whole-building energy model.

Energy & Atmosphere, Credit 3, Enhanced Commissioning:
In addition to the commissioning practices that will be implemented under the Prerequisite, all requirements for enhanced commissioning per the USGBC LEED requirements will be followed. An independent third-party commissioning agent will perform the services.

Energy & Atmosphere, Credit 4, Enhanced Refrigerant Management:
Refrigerants for the HVAC equipment will be selected based on their capacity to minimize the impacts of ozone depletion and global warming.

4.12.4 Materials and Resources

Materials & Resources, Prerequisite 1, Storage and Collection of Recyclables:
Recycling areas that serve the entire building will be provided for paper, corrugated cardboard, glass, plastics, and metals.

Materials & Resources, Credit 2, Construction Waste Management:
The Proponent will implement a Construction Waste Management Plan to ensure that a minimal amount of waste debris is disposed of in landfills and to pursue the goal of recycling or salvaging at least 75 percent of Project-generated construction waste.

Materials & Resources, Credit 4.1, Recycled Content:
The Project will specify materials and products with recycled content. For credit compliance, the goal will be to specify materials with recycled content so that the sum of postconsumer recycled content plus one-half of the pre-consumer content constitutes at least 10 percent, based on cost, of the total value of materials in the Project.

Materials & Resources, Credit 4.2, Regional Materials:
The Project will specify materials and products that have been extracted, harvested, recovered, or manufactured within 500 miles of the Project site. The goal will be to achieve 10 percent, based on cost, of the total materials value.

4.12.5 Indoor Environmental Quality

Indoor Environmental Quality, Prerequisite 1, Minimum IAQ Performance:
The Project will be designed to comply with the ASHRAE 62.1-2007 Ventilation Standard per the newest version of LEED 2009.

Indoor Environmental Quality, Prerequisite 2, Environmental Tobacco Smoke Control:
As a residential project, to comply with this Prerequisite, the Project will implement at least one of the following options:

- Prohibit smoking in all common areas of the building;
- Locate any exterior designated smoking areas, including balconies where smoking is permitted, at least 25 feet from entries, outdoor air intakes and operable windows opening to common areas;
- Prohibit on-property smoking within 25 feet of entries, outdoor air intakes, and operable windows and provide signage to allow smoking in designated areas, prohibit smoking in designated areas, or prohibit smoking on the entire property;
- Weather-strip all exterior doors and operable windows in the residential units to minimize leakage from outdoors;
- Minimize uncontrolled pathways for environmental tobacco smoke transfer (ETS) between individual residential units by sealing penetrations in walls, ceilings and floors in the residential units and by sealing vertical chases adjacent to the units;
- Weather-strip all doors in the residential units leading to common hallways to minimize air leakage into the hallway;
- Demonstrate acceptable sealing of residential units by a blower door test conducted in accordance with ANSI/ ASTM-E779-03, Standard Test Method for Determining Air Leakage Rate by Fan Pressurization; and
- Use the progressive sampling methodology defined in Chapter 4 (Compliance through Quality Construction) of the Residential Manual for Compliance with California's 2001 Energy Efficiency Standards[6]. Residential units must demonstrate less than 1.25 square inches of leakage area per 100 square feet of enclosure area (i.e., sum of all wall, ceiling and floor areas).

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6 http://www.energy.ca.gov/title24/residential_manual

Indoor Environmental Quality, Credit 3.1, Construction IAQ Management Plan – During Construction:

The Project will implement a Construction Indoor Air Quality Management Plan (CIAQMP) per the USGBC requirements to improve the indoor air quality during construction.

Indoor Environmental Quality, Credit 4.1, Low-Emitting Materials – Adhesives & Sealants:

The Project will specify adhesives and sealants that comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168 and Green Seal Standard. The VOC limits stated in these standards will not be exceeded for any of the adhesives and sealants used on the interior of the building envelope.

Indoor Environmental Quality, Credit 4.2, Low-Emitting Materials – Paints & Coatings:

The Project will specify that all paints and coatings applied inside the building envelope will comply with the Green Seal Standard GS-11 for paints and primers, Green Seal Standard GS-03 for anti-corrosive paints, and the SCAQMD Rule #1113 for wood finishes, stains, and sealers.

Indoor Environmental Quality, Credit 4.3, Low-Emitting Materials – Flooring Systems:

The Project will specify that all flooring systems must comply with the appropriate standard for carpet, carpet cushion, carpet adhesive, hard surface flooring, floor sealers, stains and finishes, tile setting adhesives, and grout.

Indoor Environmental Quality, Credit 6.1, Controllability of Systems - Lighting:

The Project will provide individual lighting controls for 90 percent of the building occupants as well as lighting controls for all shared multi-occupant spaces.

Indoor Environmental Quality, Credit 6.2, Controllability of Systems – Thermal Comfort:

The Project will provide individual thermal comfort controls for at least 50 percent of the building occupants as well as thermal comfort controls for all shared multi-occupant spaces.

Indoor Environmental Quality, Credit 8.1, Daylight & Views – Daylight for 75 Percent of Spaces:

The Project, which is predominantly a residential building, will be designed to maximize interior daylighting in regularly occupied spaces with the goal of achieving daylight illuminating levels between 25 and 500 foot candles in 75 percent of the regularly occupied spaces.

Indoor Environmental Quality, Credit 8.2, Daylight & Views - Views for 90 Percent of Spaces:

The Project will be designed so that building occupants in 90 percent of the regularly occupied areas will have a direct line of sight to the outdoors.

4.12.6 Innovation and Design Process

Innovation In Design, Credits 1.1-1.5:
The Proponent intends to achieve one Innovation credit. As credits under other LEED rating systems can be pursued as Innovation credits, the Project will pursue the LEED-CI Credit for installing a minimum of 70 percent of the equipment and appliances as EnergyStar-Certified.

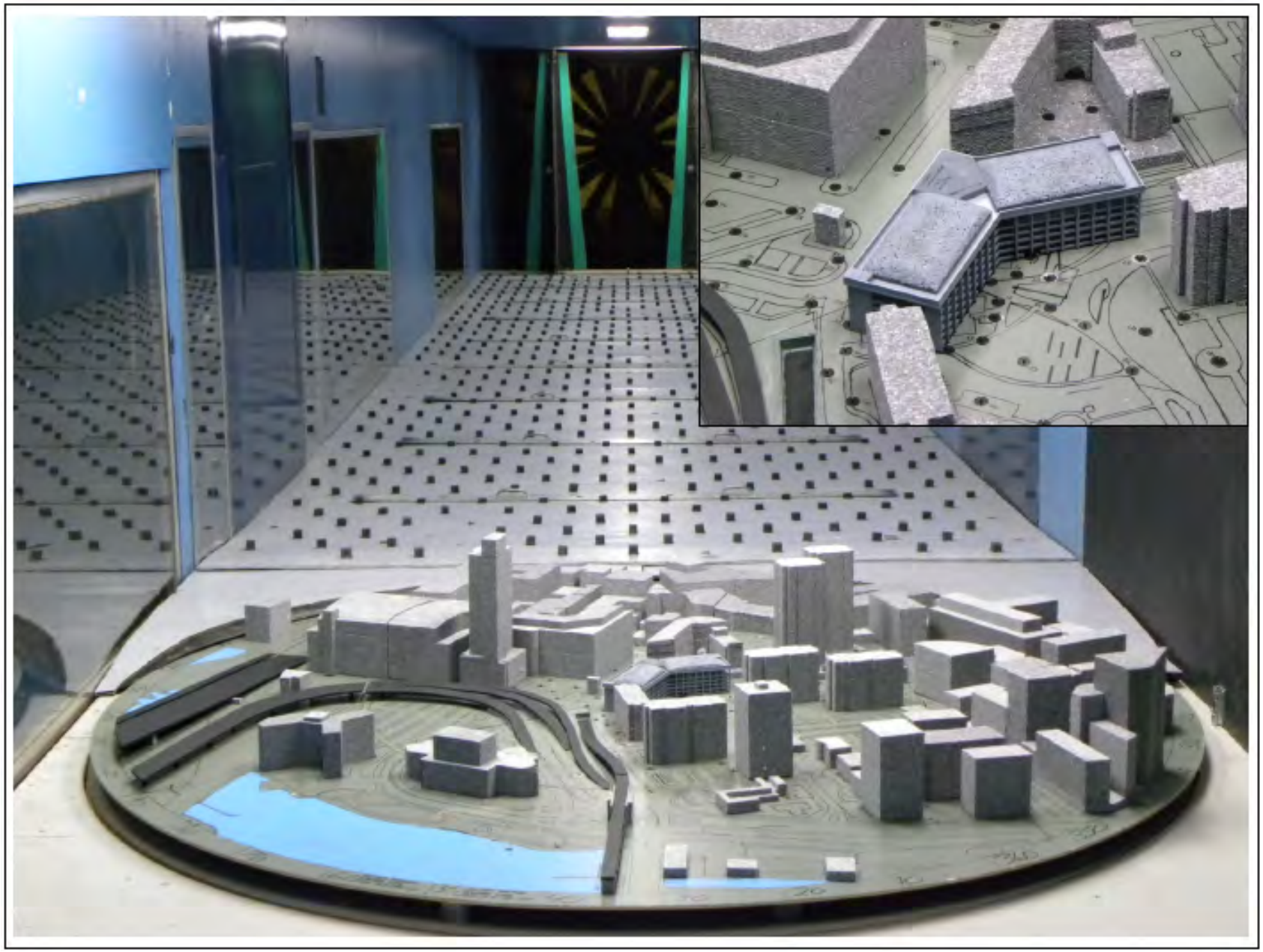
Innovation In Design, Credit 2.0, LEED Accredited Professional:
The Project team includes at least one LEED Accredited Professional (AP).

4.12.7 Regional Priority Credits

Regional Priority, Credits 1.1-1.4:
The following are the Regional Priority Credits for Boston:

- Sustainable Sites Credit 3: Brownfield Redevelopment;
- Sustainable Sites Credit 6.1: Stormwater Design – Quantity Control;
- Sustainable Sites Credit 7.1: Heat Island Effect – Non-roof;
- Sustainable Sites Credit 7.2: Heat Island Effect – Roof;
- Energy and Atmosphere Credit 2: On-Site Renewable Energy, 1 percent; and
- Materials and Resources Credit 1.1: Building Reuse – Maintain Existing Walls, Floors and Roof, 75 percent.

The Project will pursue at least two Regional Priority Credits, including Sustainable Sites Credit 7.1 (Heat Island Effect – Non-roof), and Sustainable Sites Credit 7.2 (Heat Island Effect – Roof).

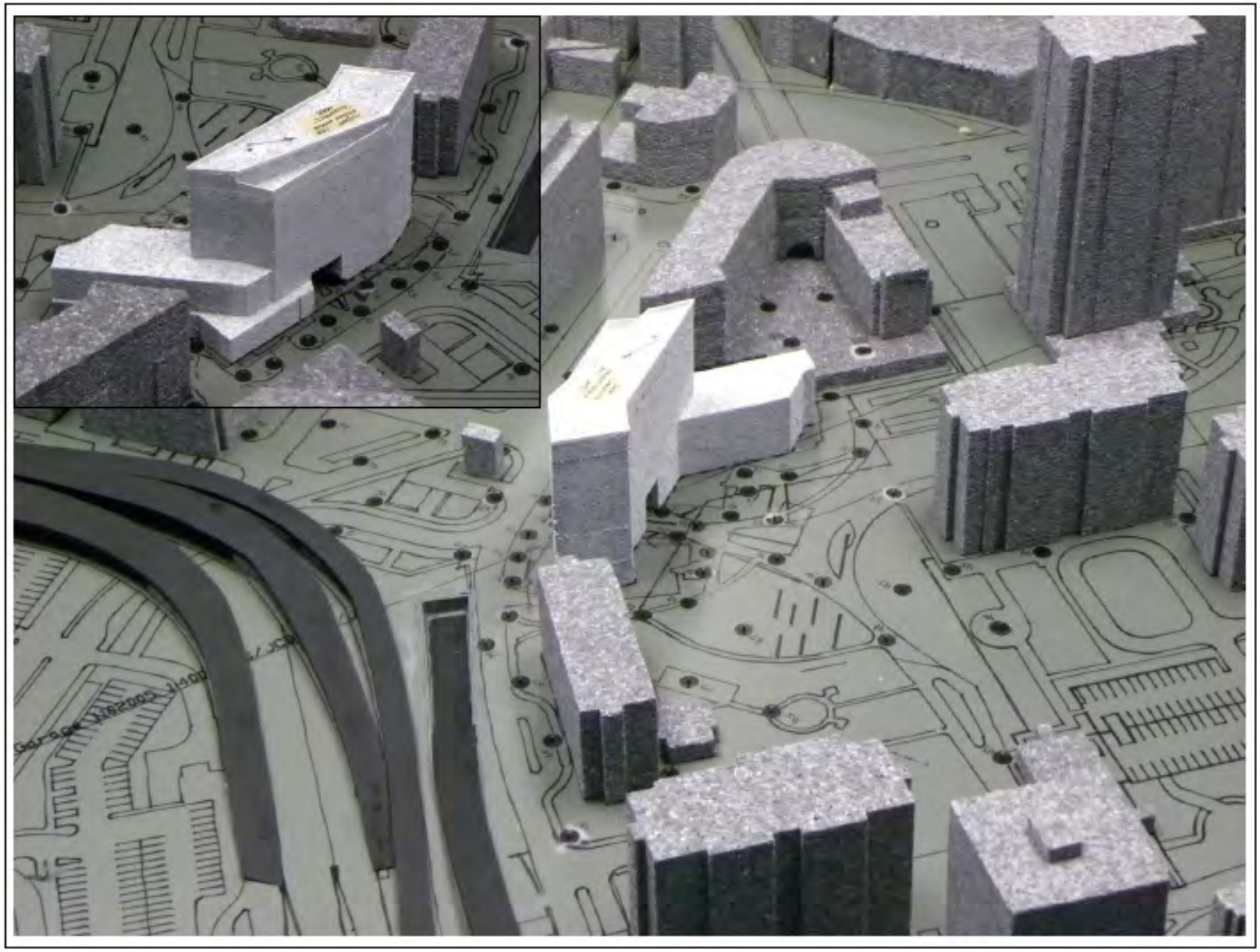


Garden Garage Redevelopment DPIR Boston, Massachusetts

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Figure 4-1

Wind Tunnel Study Model – No Build



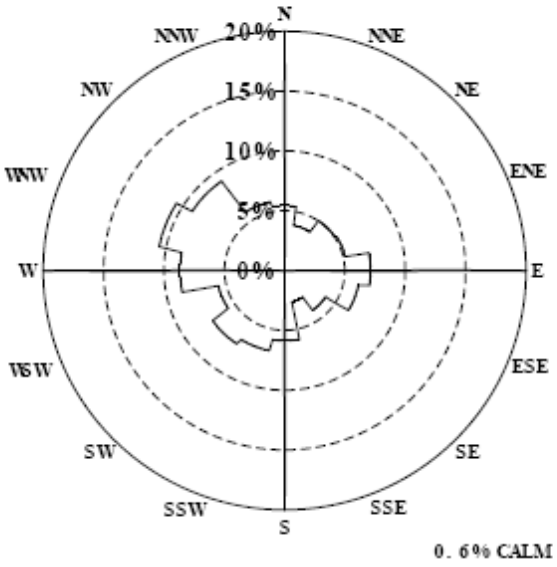
Garden Garage Redevelopment DPIR Boston, Massachusetts

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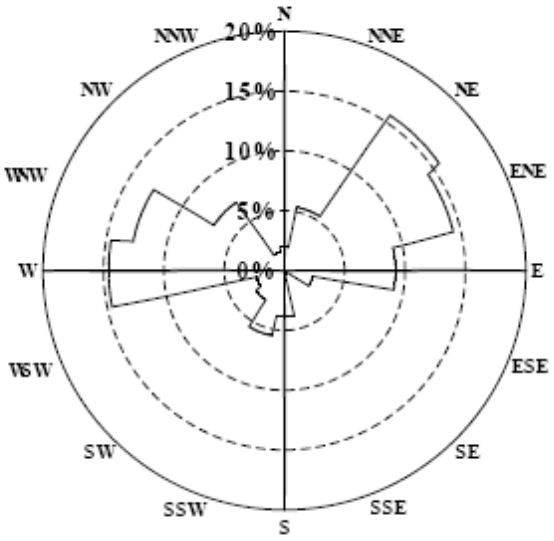
Figure 4-2

Wind Tunnel Study Model – As-of-Right Alternative Massing

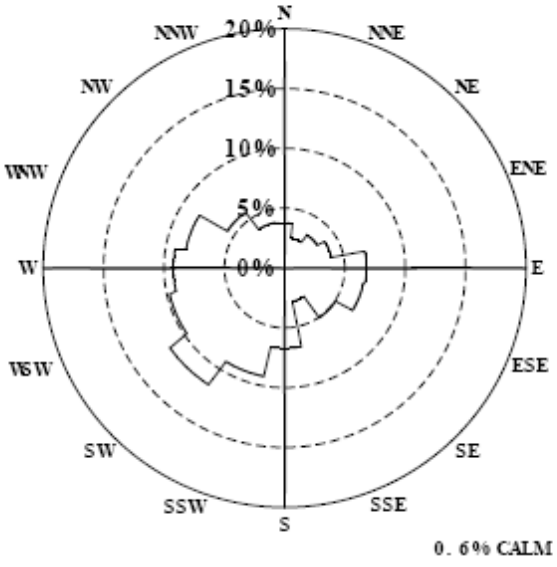




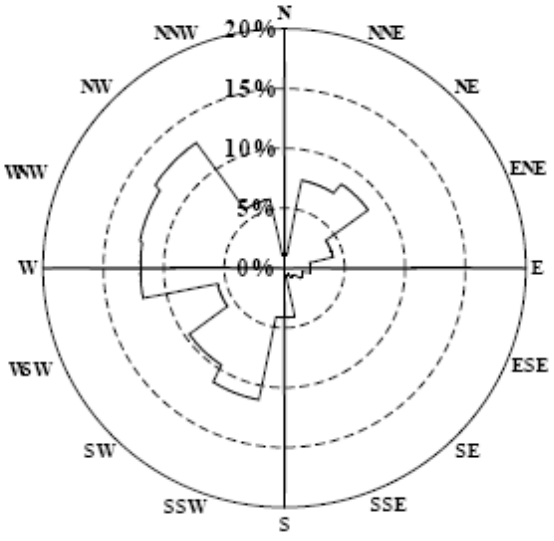
ALL SPRING WINDS



STRONG SPRING WINDS

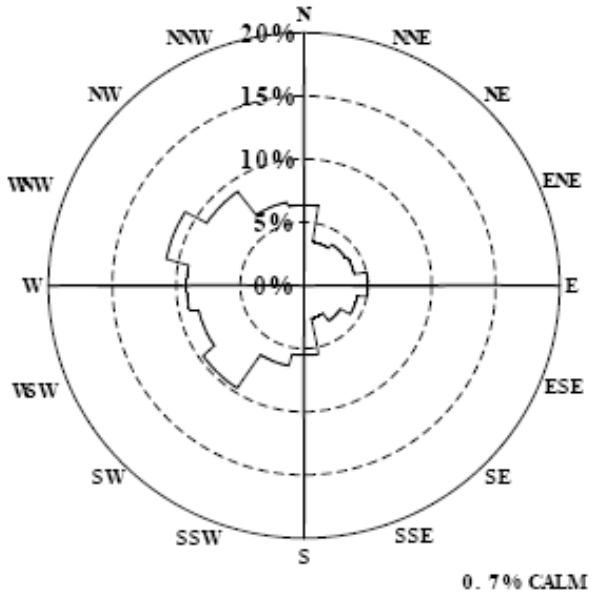


ALL SUMMER WINDS

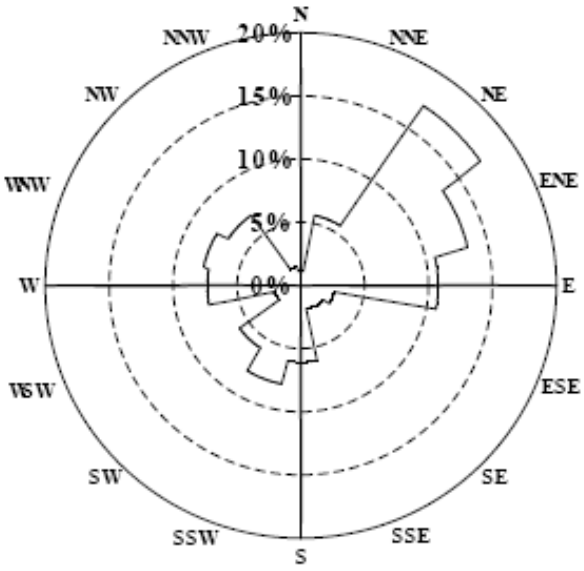


STRONG SUMMER WINDS

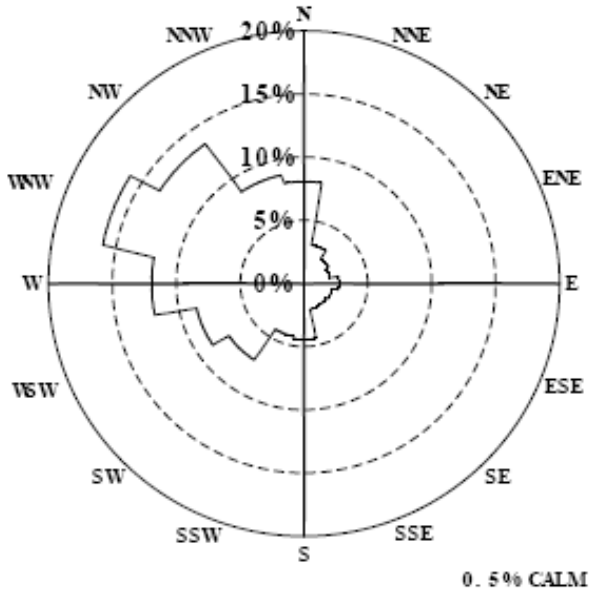
Boston-Logan International Airport, Massachusetts (1945-1998)



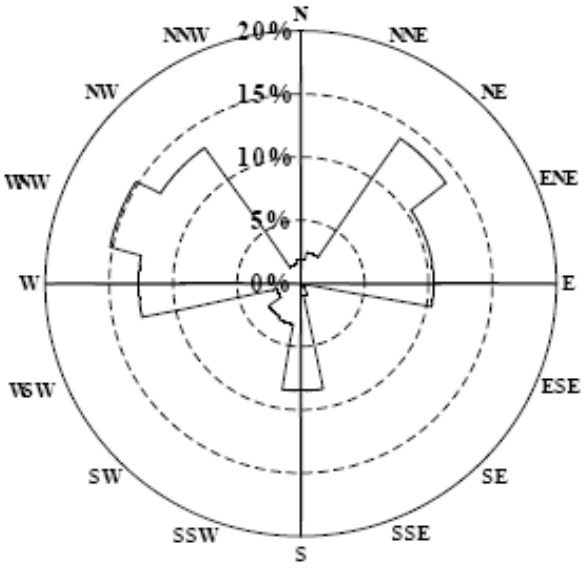
ALL FALL WINDS



STRONG FALL WINDS

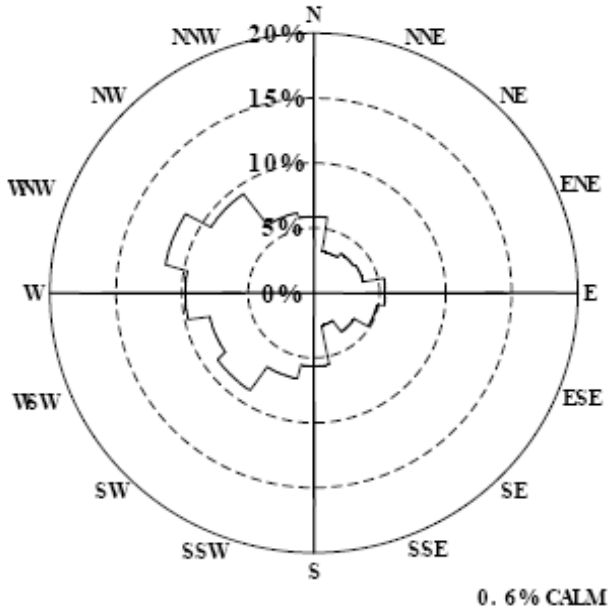


ALL WINTER WINDS

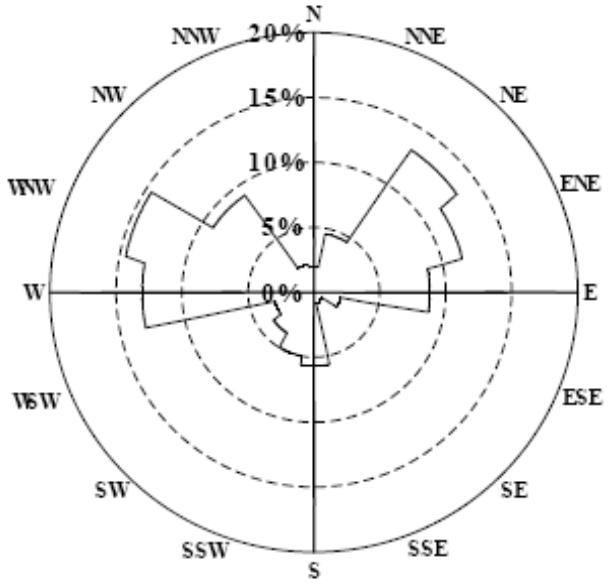


STRONG WINTER WINDS

Boston-Logan International Airport, Massachusetts (1945-1998)

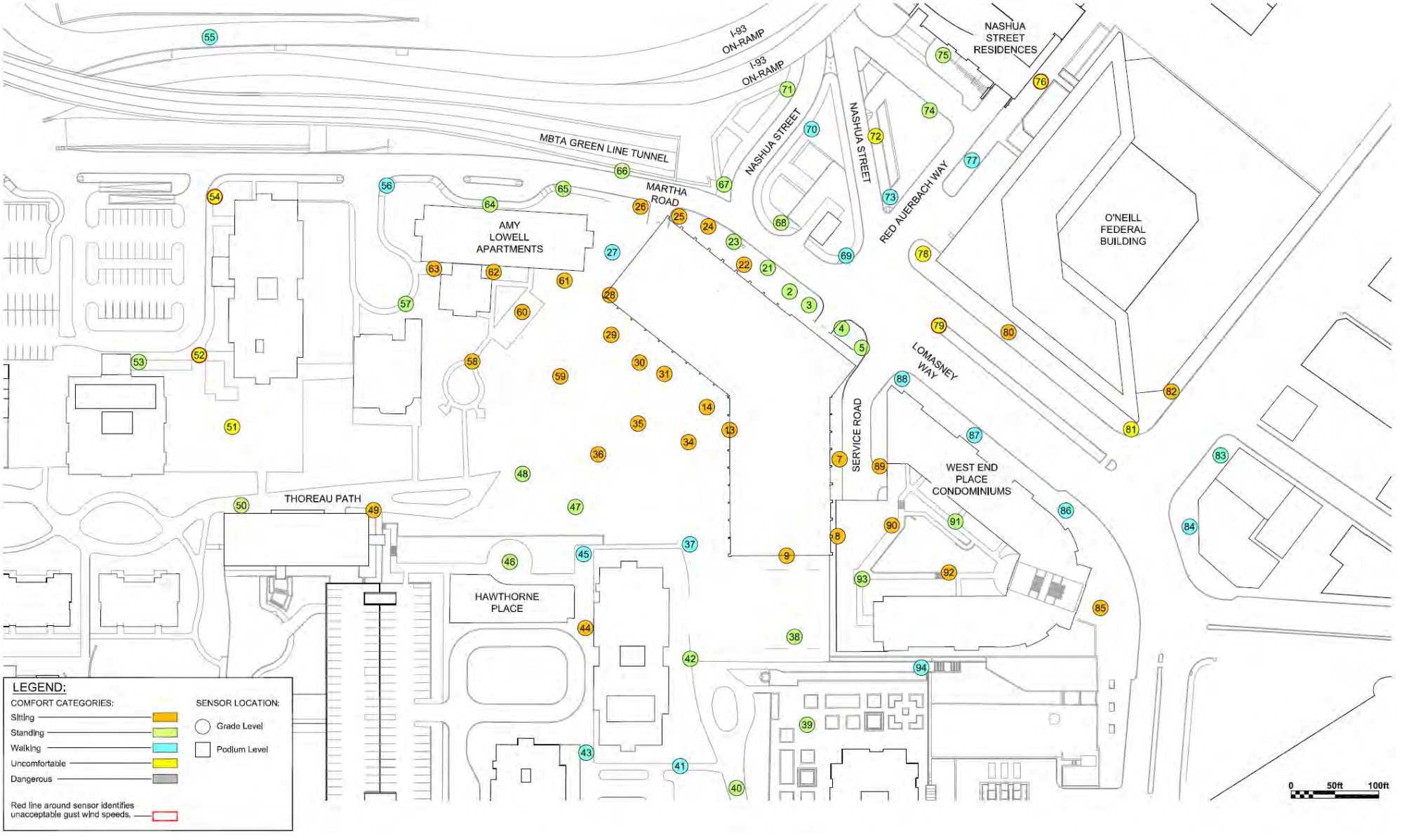


ALL ANNUAL WINDS



STRONG ANNUAL WINDS

Boston-Logan International Airport, Massachusetts (1945-1998)

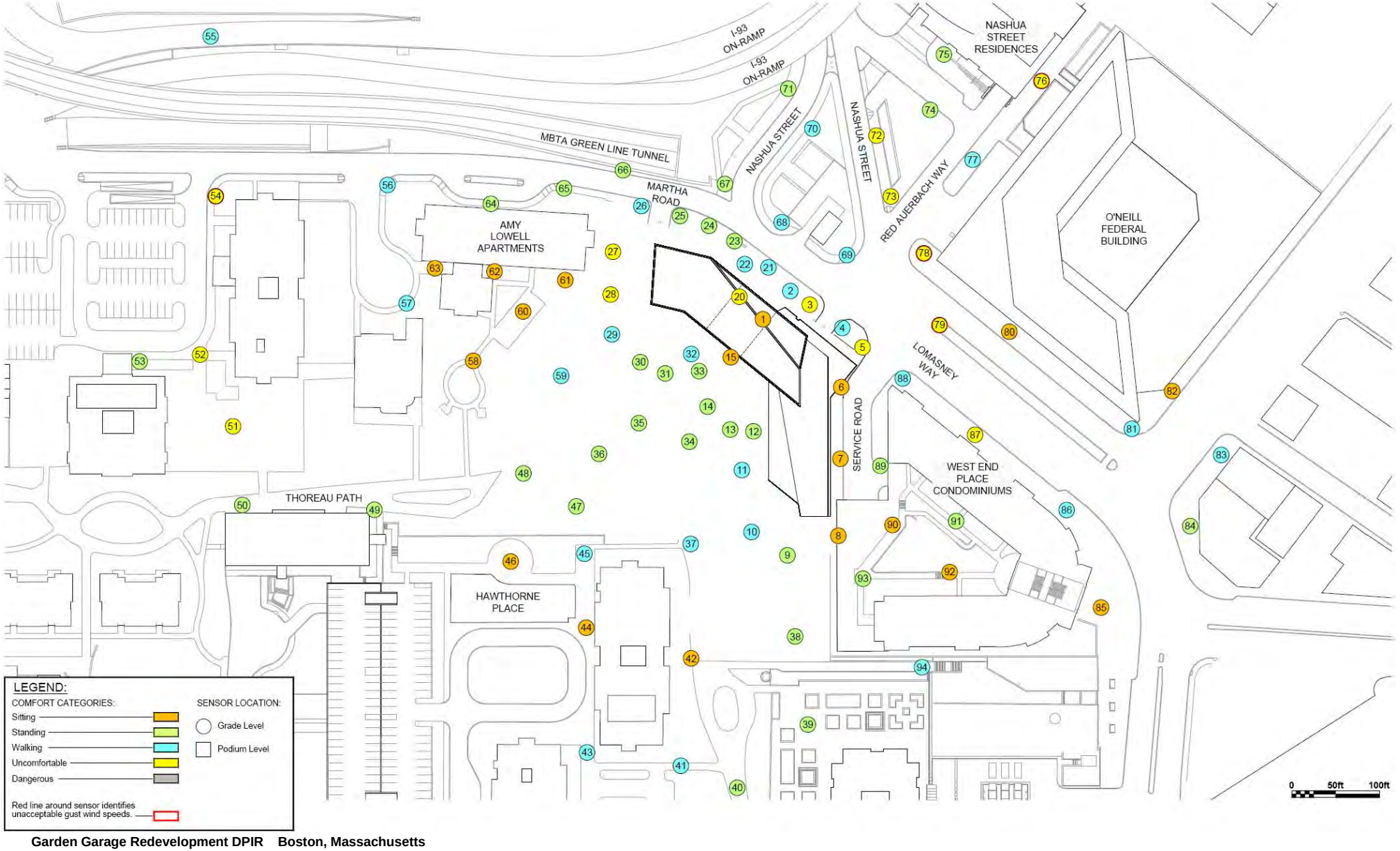


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Figure 4-7

Pedestrian Wind Conditions – No Build (Annual)

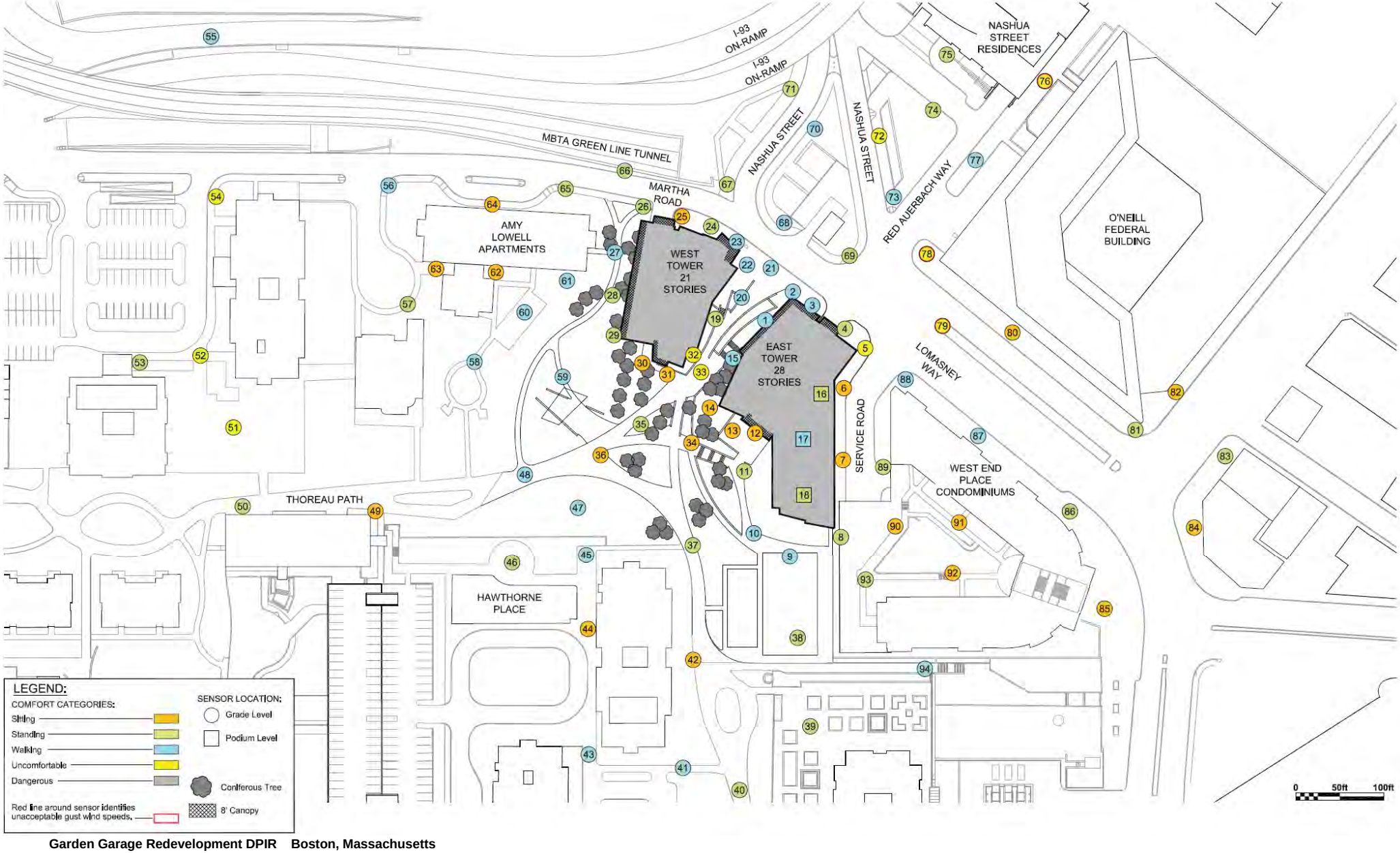


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Figure 4-8

Pedestrian Wind Conditions – As-of-Right Alternative (Annual)

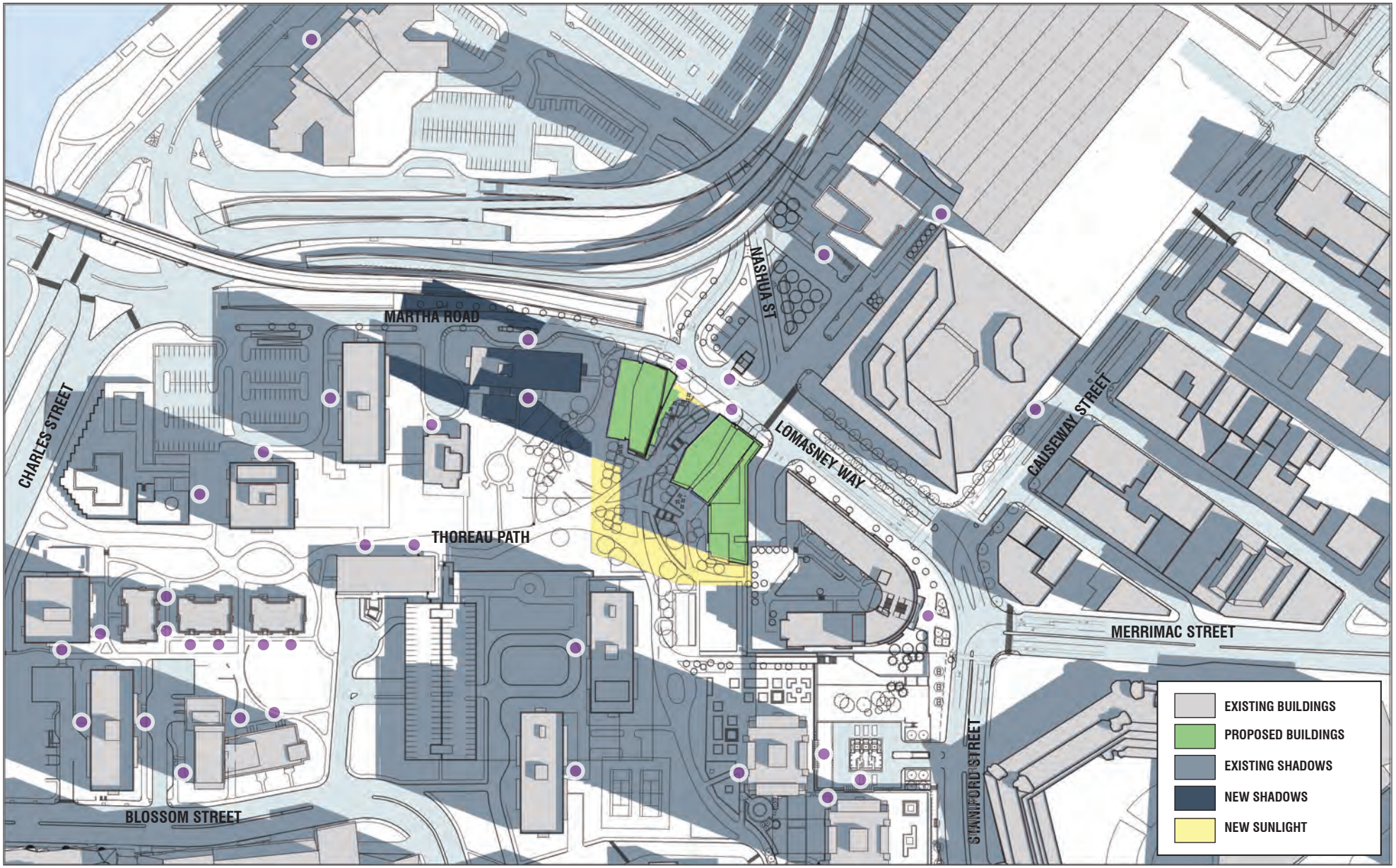


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Figure 4-9

Pedestrian Wind Conditions – Build (Proposed) Conditions (Annual)

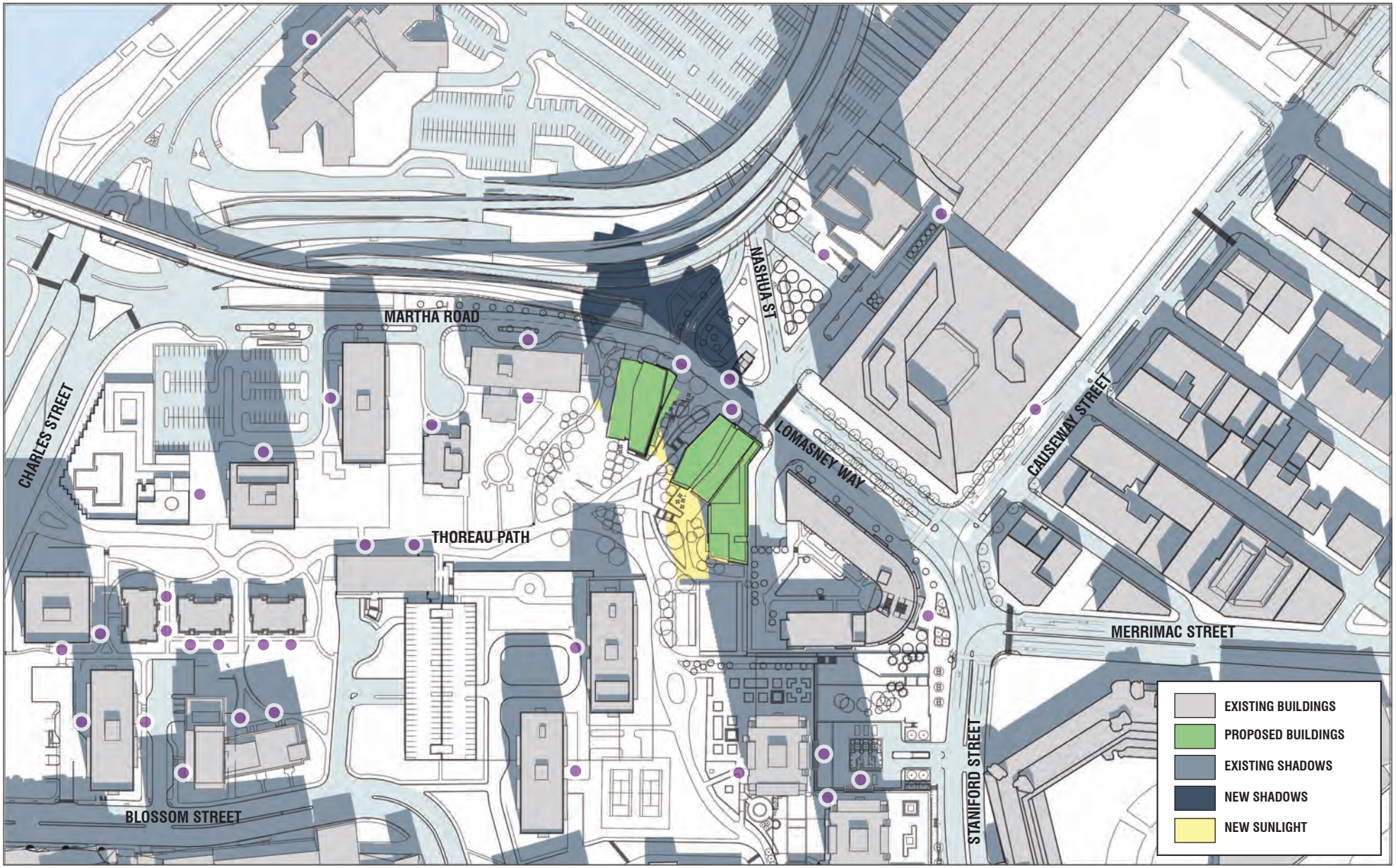


Garden Garage Redevelopment DPIR Boston, Massachusetts

ELKUS | MANFREDI ARCHITECTS

Figure 4-10

March 21, 9:00 am | Shadow Study

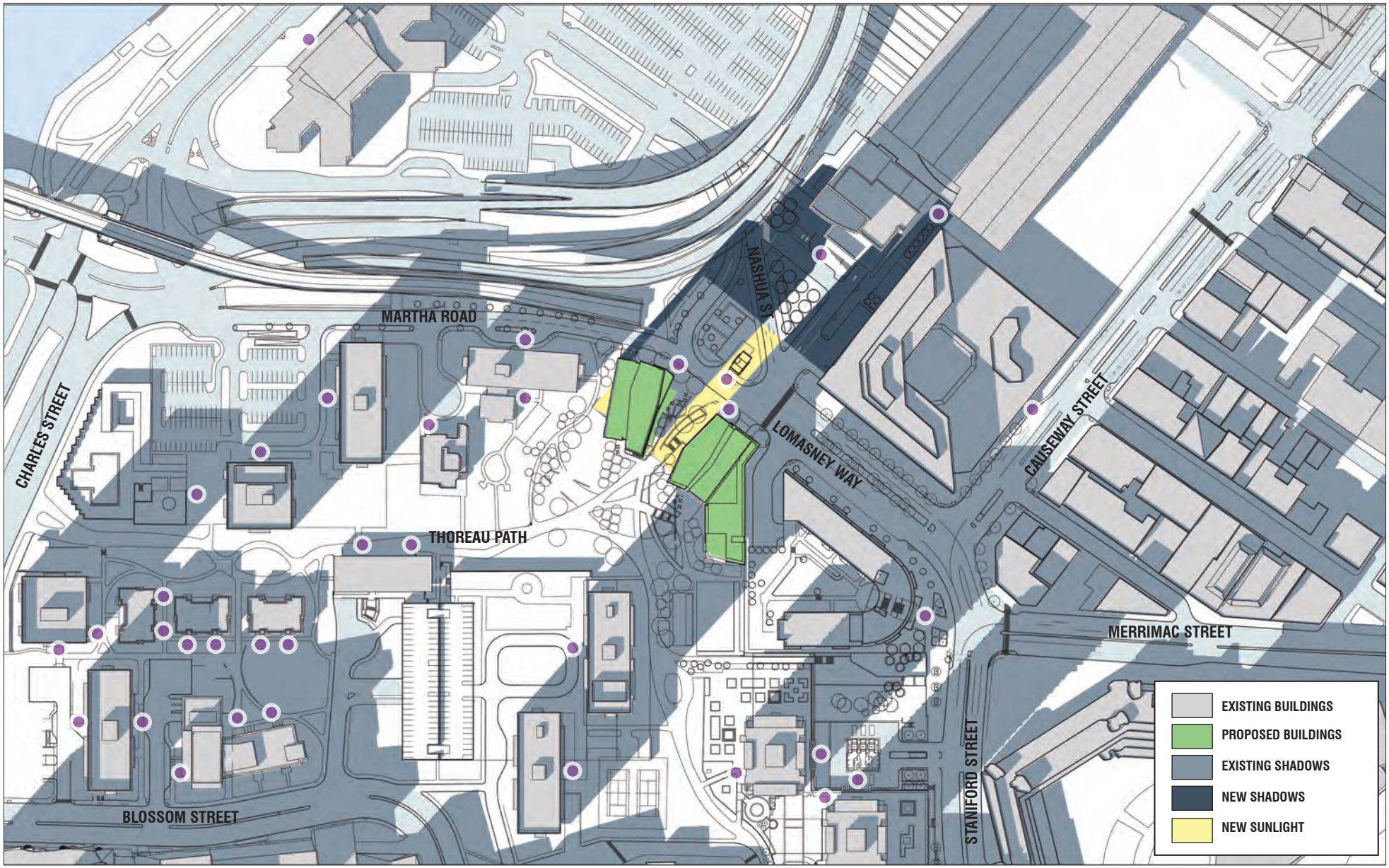


Garden Garage Redevelopment DPIR Boston, Massachusetts

ELKUS | MANFREDI ARCHITECTS

Figure 4-11

March 21, 12:00 pm | Shadow Study



Garden Garage Redevelopment DPIR Boston, Massachusetts

ELKUS | MANFREDI ARCHITECTS

Figure 4-12

March 21, 3:00 pm | Shadow Study



● MAIN BUILDING ENTRANCE

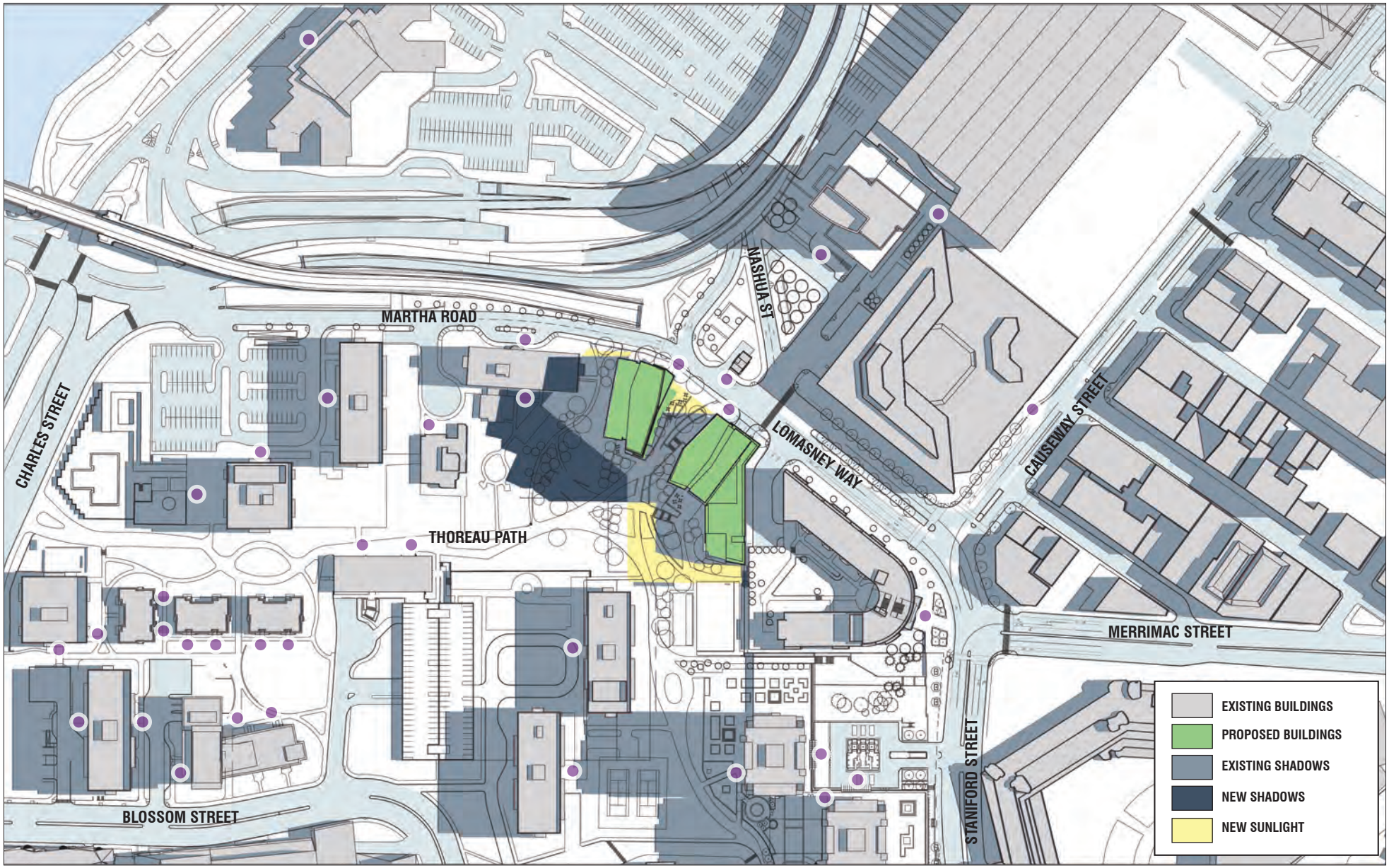
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Garden Garage Redevelopment DPIR Boston, Massachusetts

ELKUS | MANFREDI ARCHITECTS

Figure 4-13

March 21, 6:00 pm | Shadow Study

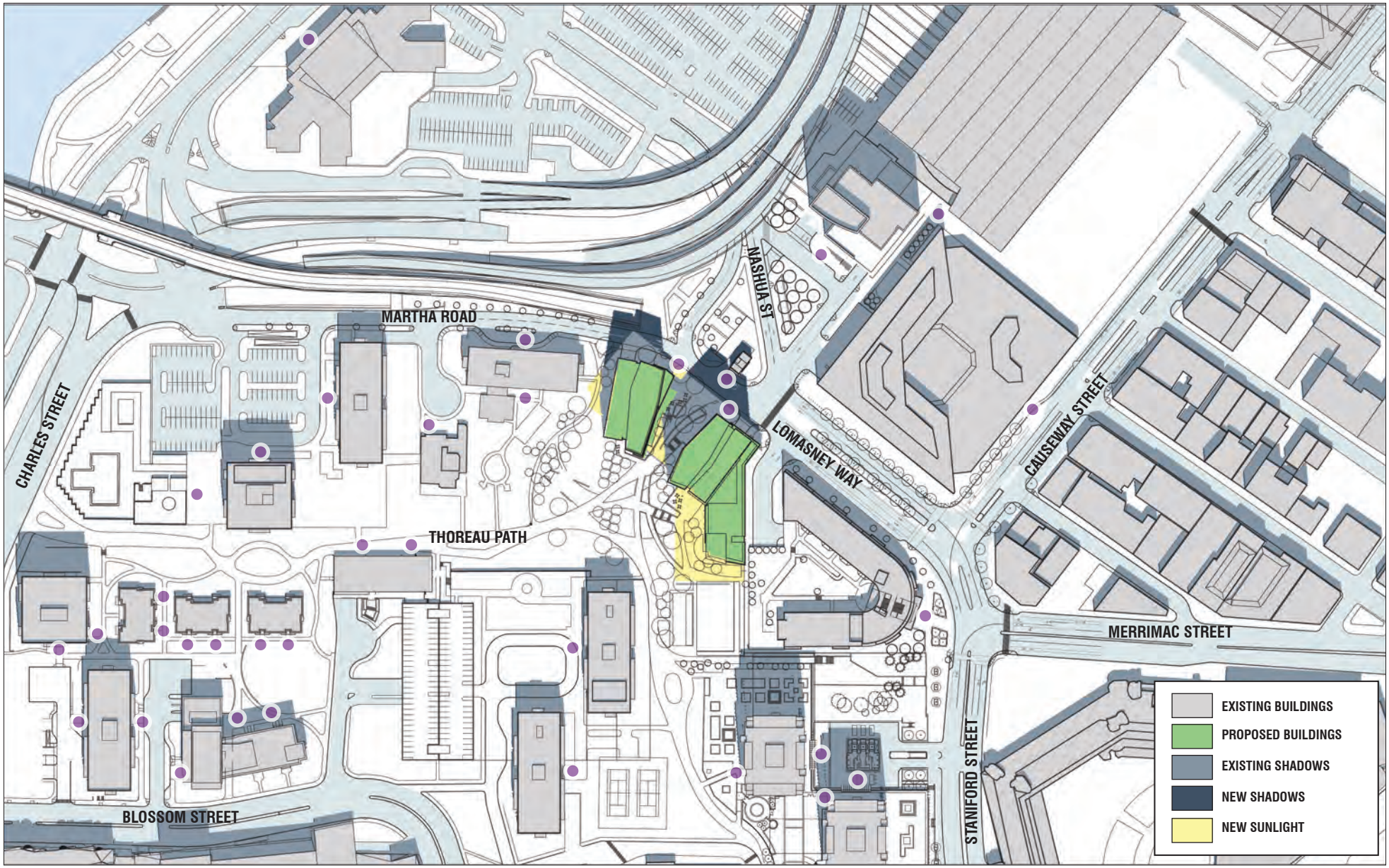


Garden Garage Redevelopment DPIR Boston, Massachusetts

ELKUS | MANFREDI ARCHITECTS

Figure 4-14

June 21, 9:00 am | Shadow Study

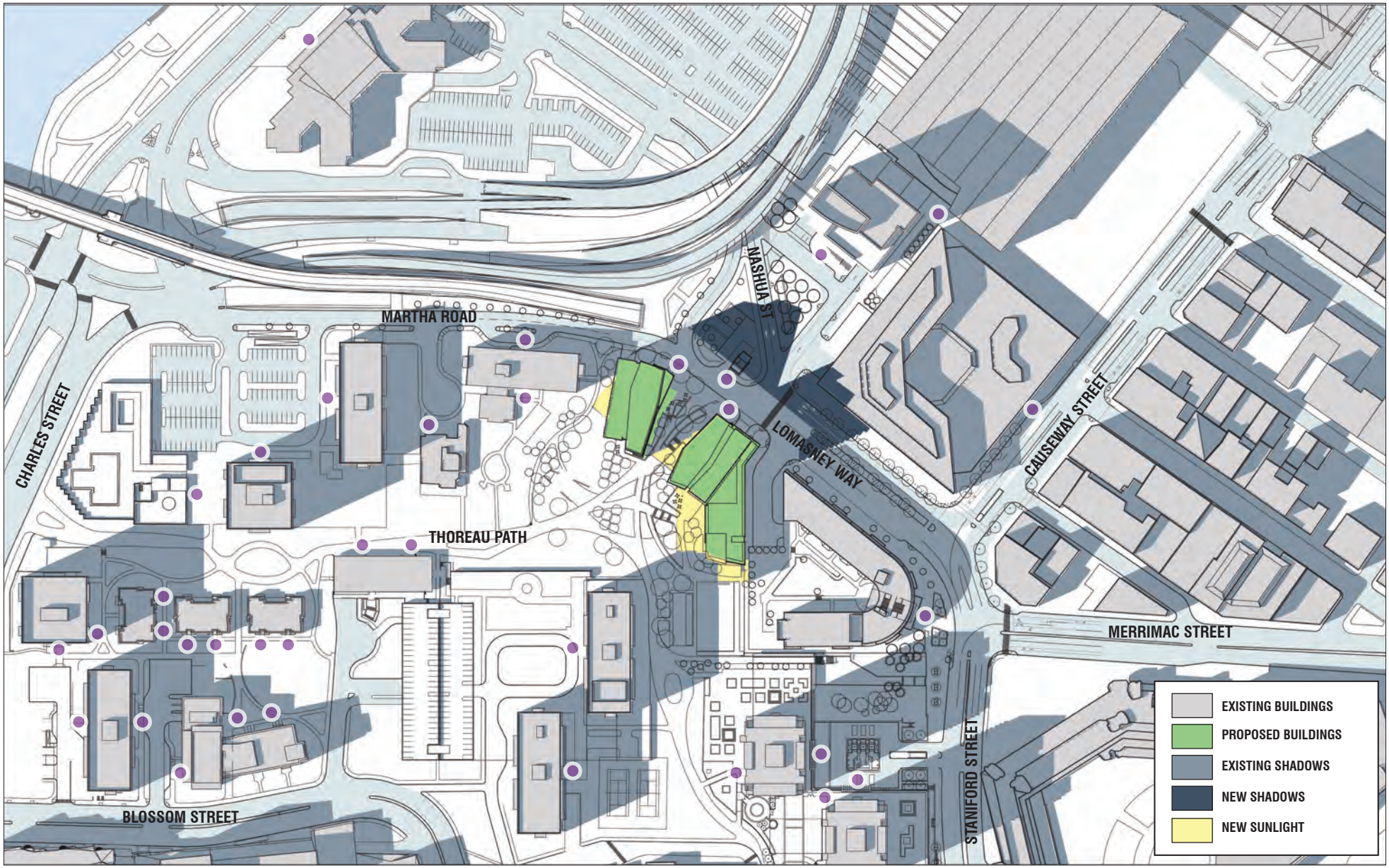


Garden Garage Redevelopment DPIR Boston, Massachusetts

ELKUS | MANFREDI ARCHITECTS

Figure 4-15

June 21, 12:00 pm | Shadow Study



● MAIN BUILDING ENTRANCE

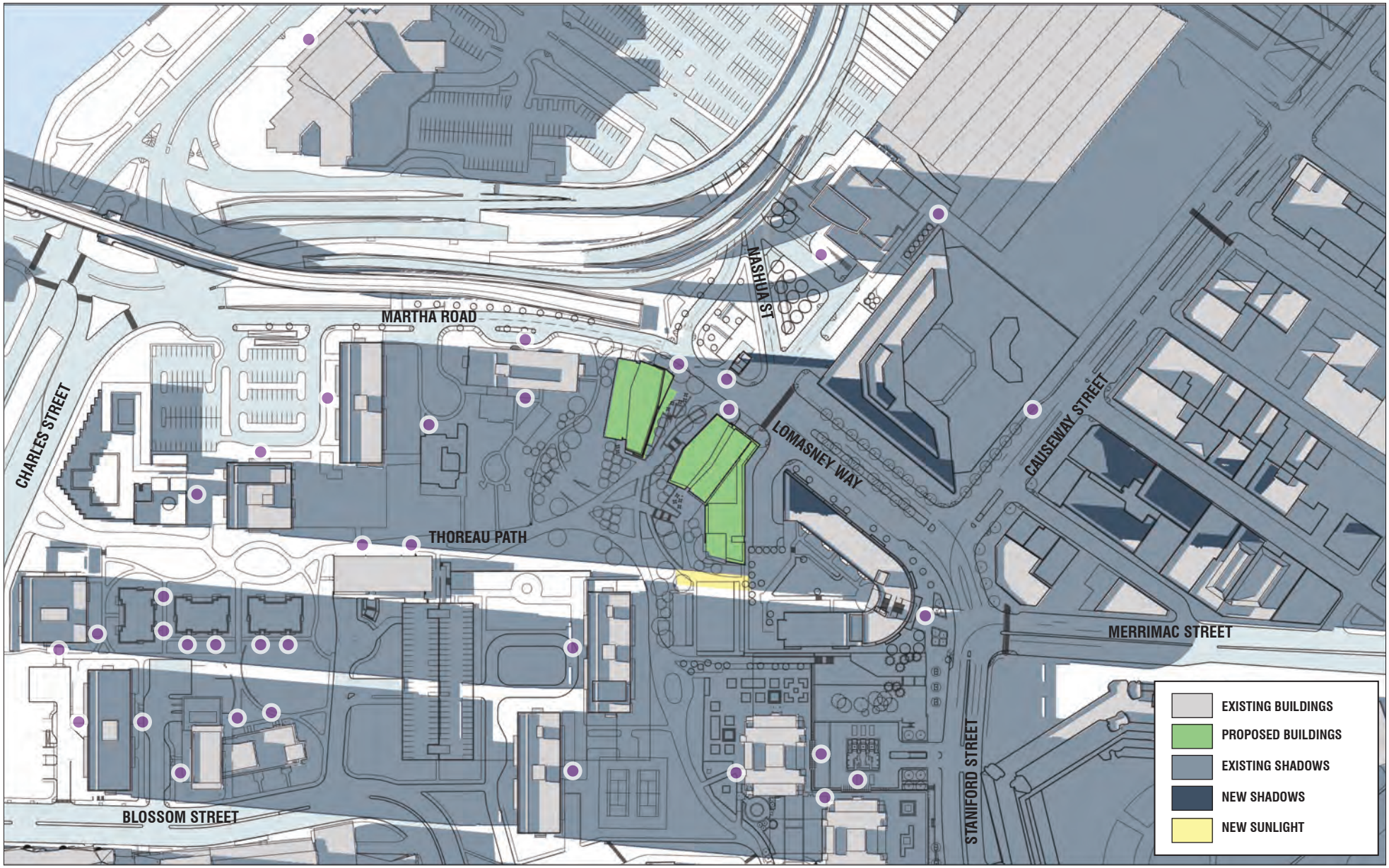
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Garden Garage Redevelopment DPIR Boston, Massachusetts

ELKUS | MANFREDI ARCHITECTS

Figure 4-16

June 21, 3:00 pm | Shadow Study

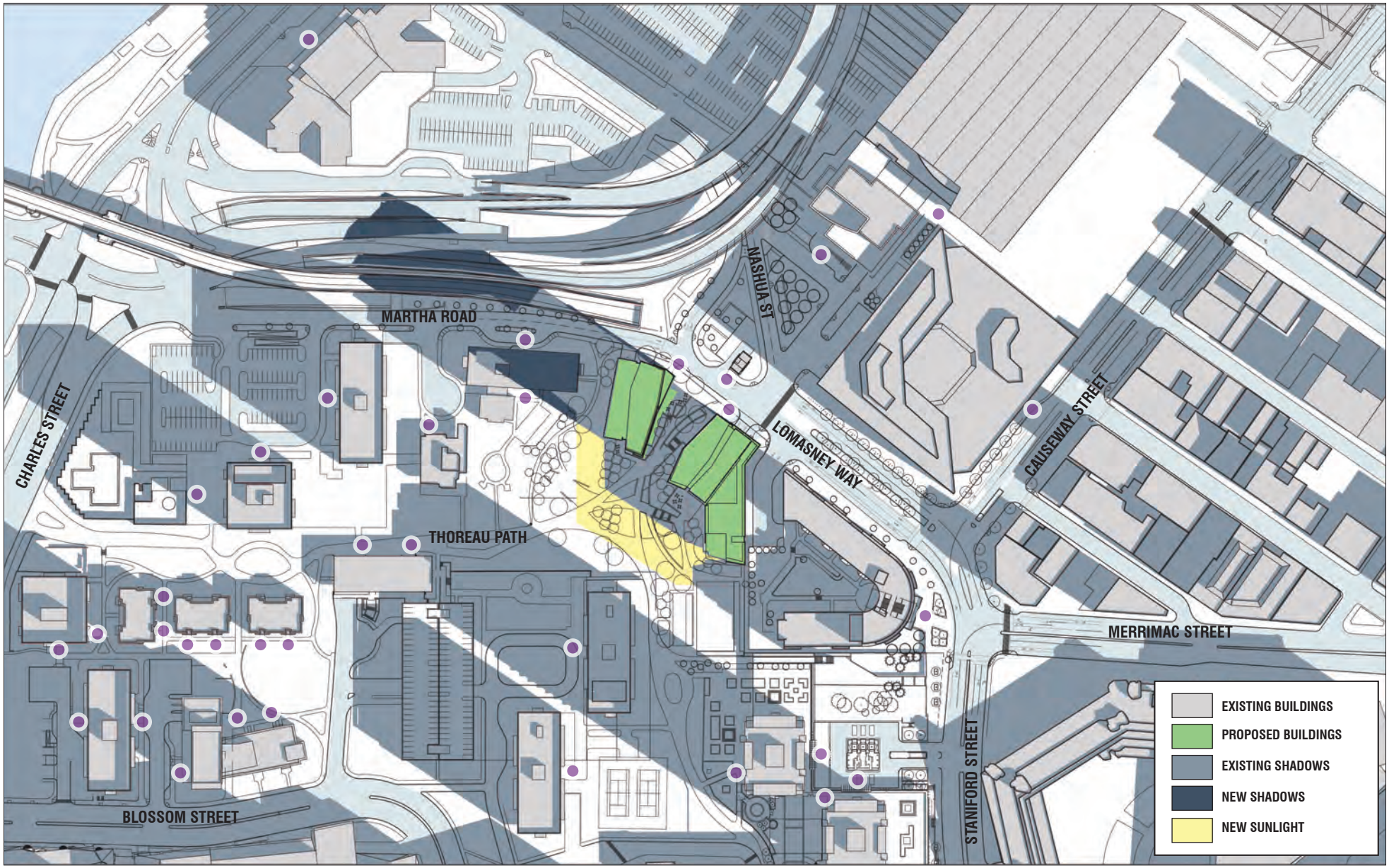


Garden Garage Redevelopment DPIR Boston, Massachusetts

ELKUS | MANFREDI ARCHITECTS

Figure 4-17

June 21, 6:00 pm | Shadow Study

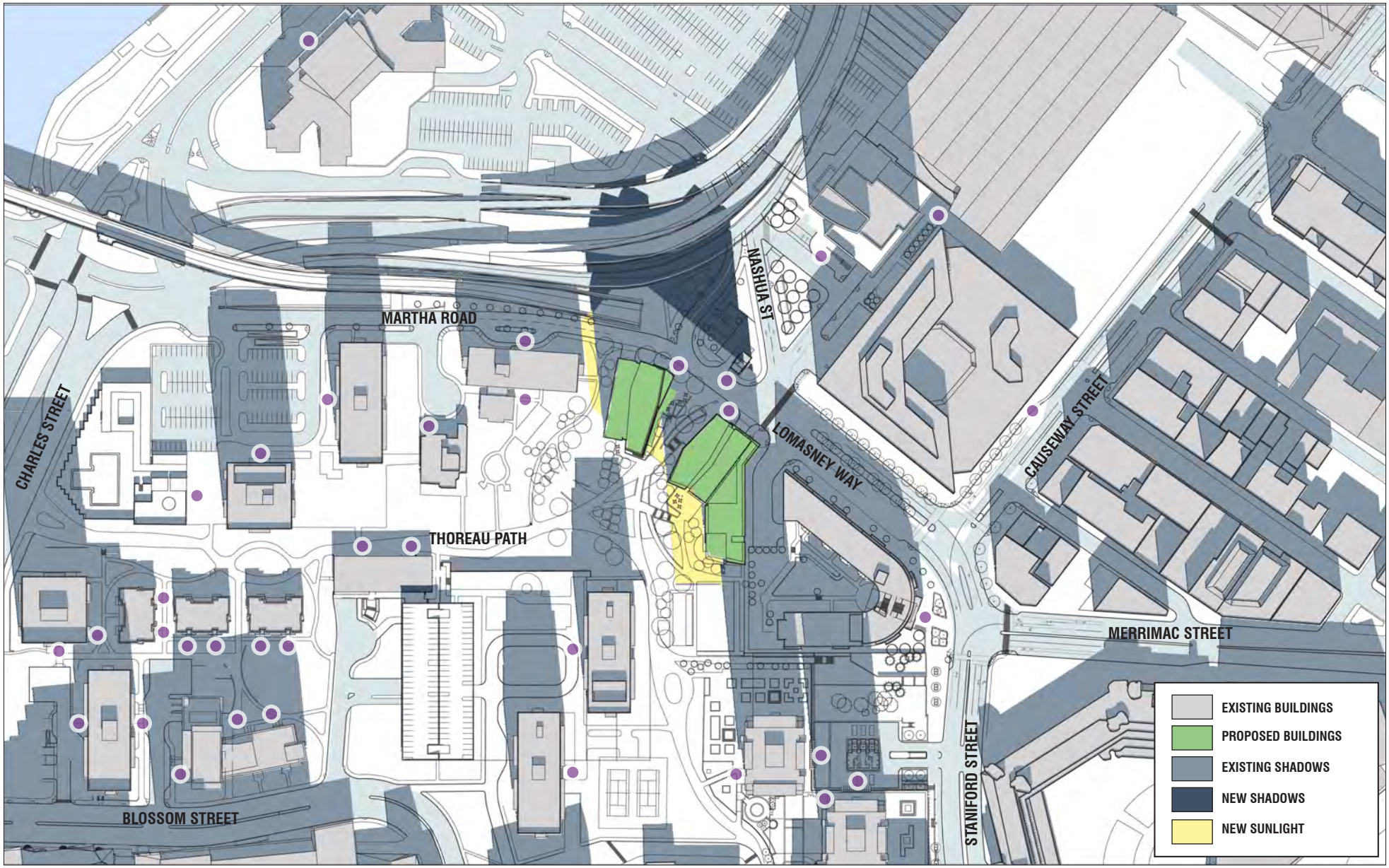


Garden Garage Redevelopment DPIR Boston, Massachusetts

ELKUS | MANFREDI ARCHITECTS

Figure 4-18

October 21, 9:00 am | Shadow Study



● MAIN BUILDING ENTRANCE

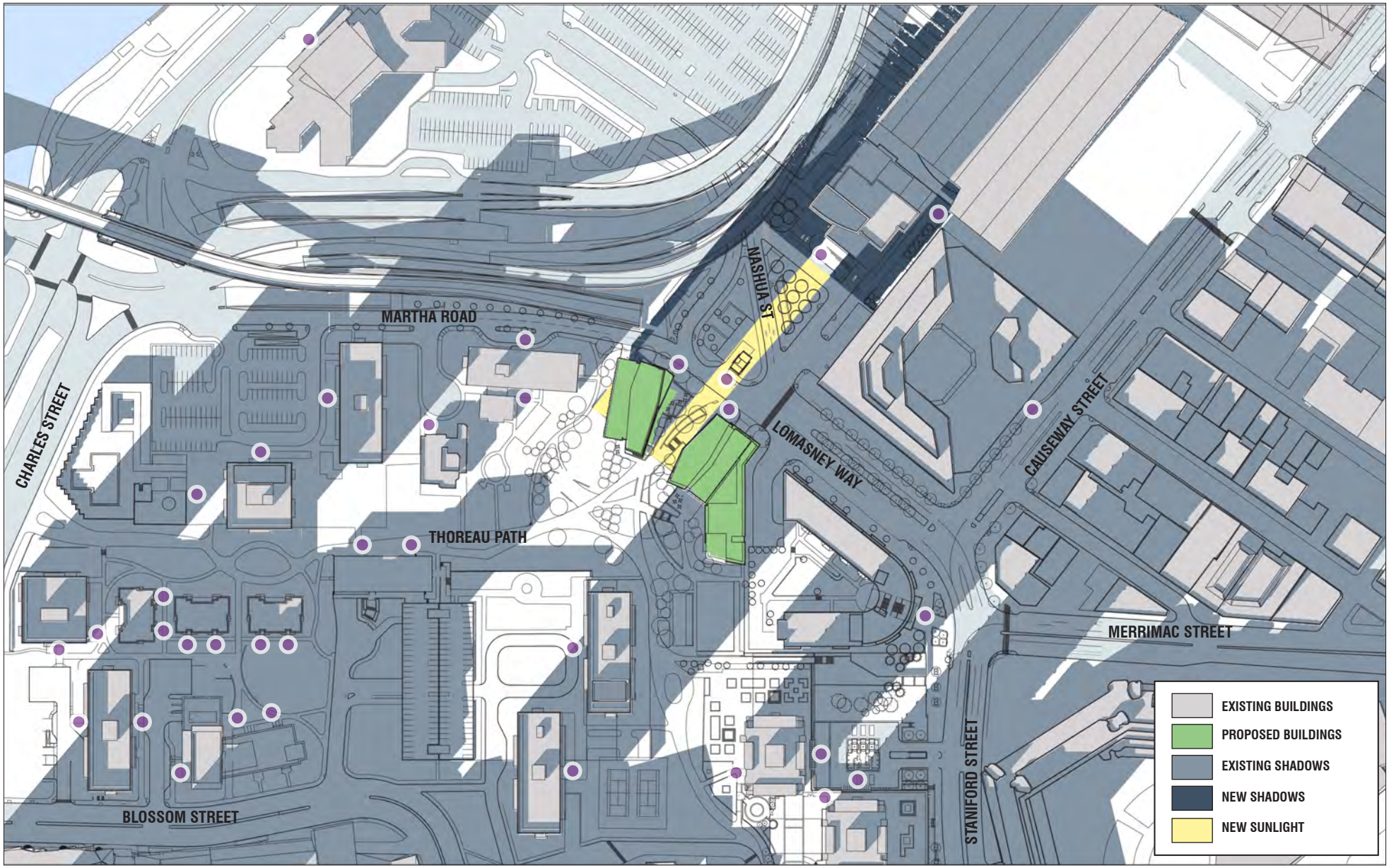
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Garden Garage Redevelopment DPIR Boston, Massachusetts

ELKUS | MANFREDI ARCHITECTS

Figure 4-19

October 21, 12:00 pm | Shadow Study



MAIN BUILDING ENTRANCE

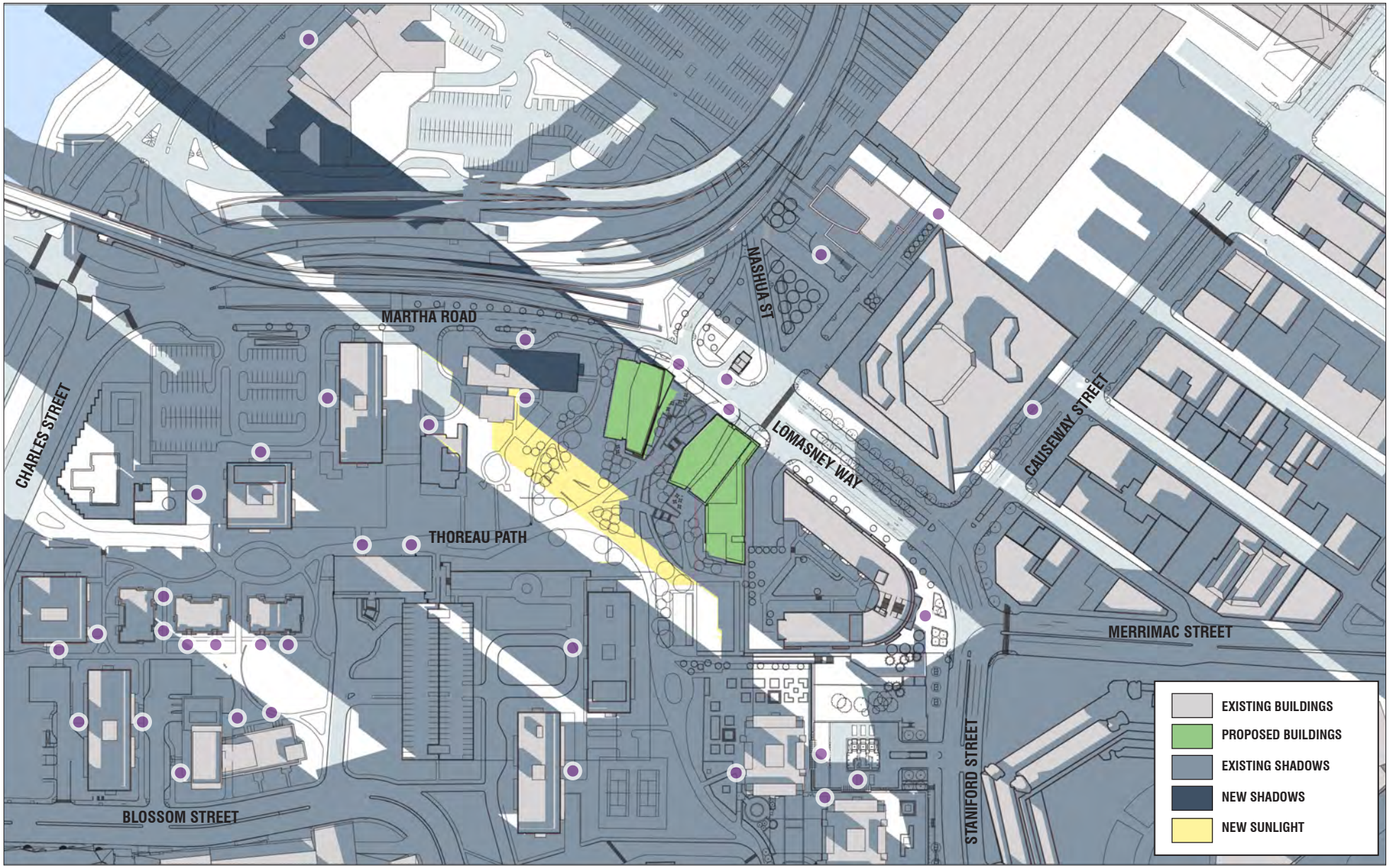
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Garden Garage Redevelopment DPIR Boston, Massachusetts

ELKUS | MANFREDI ARCHITECTS

Figure 4-20

October 21, 3:00 pm | Shadow Study



● MAIN BUILDING ENTRANCE

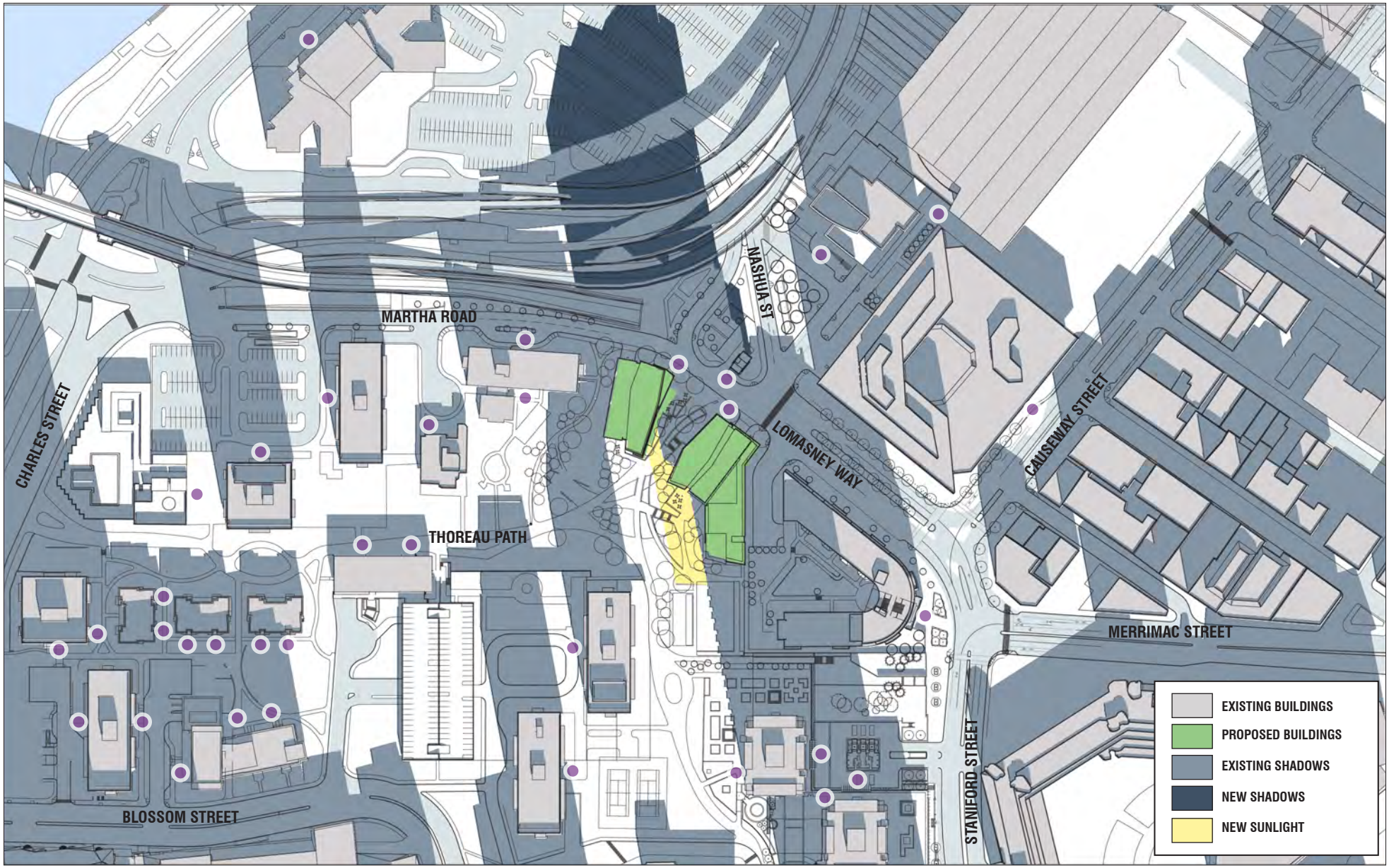
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Garden Garage Redevelopment DPIR Boston, Massachusetts

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Figure 4-21

December 21, 9:00 am | Shadow Study

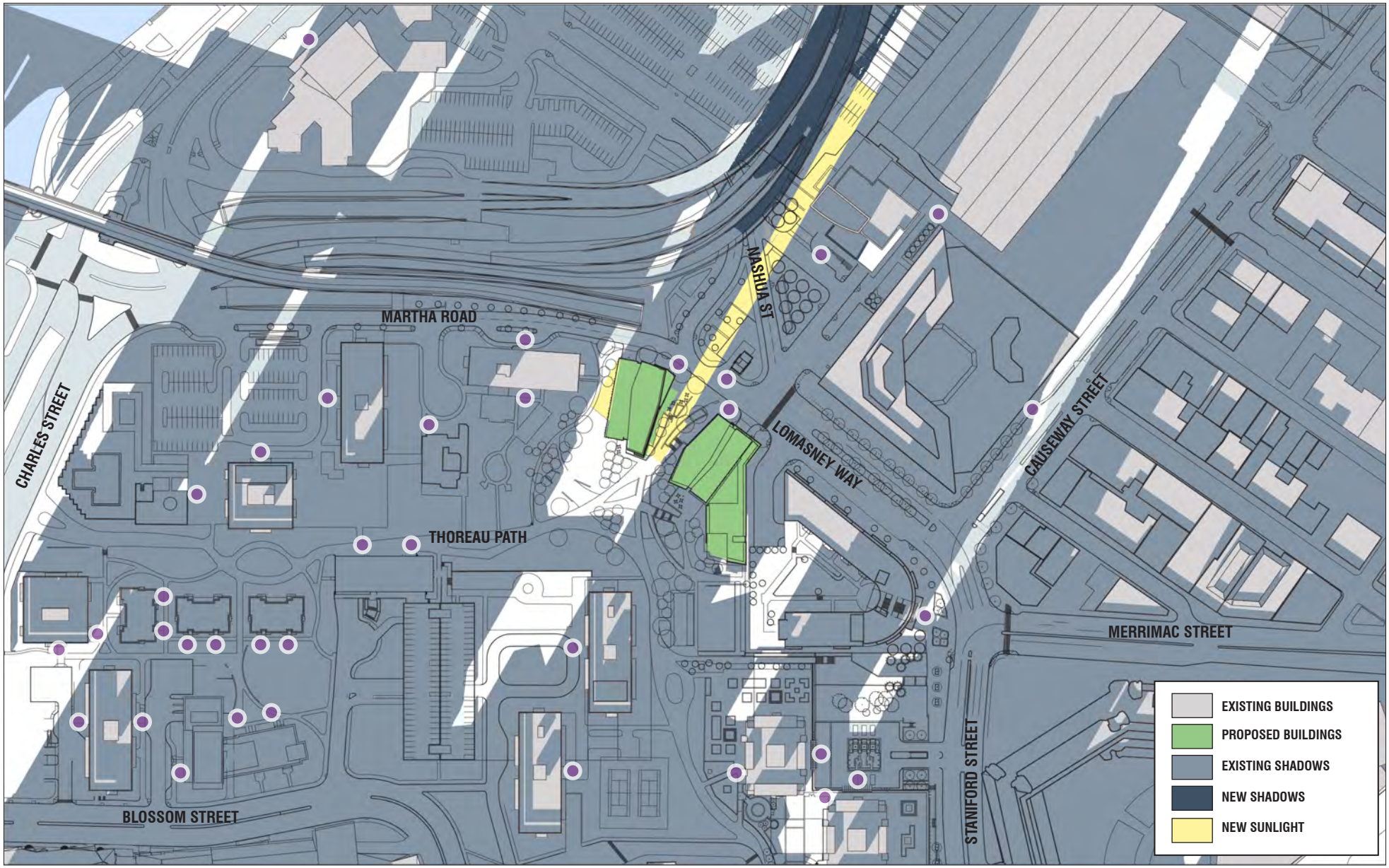


Garden Garage Redevelopment DPIR Boston, Massachusetts

ELKUS | MANFREDI ARCHITECTS

Figure 4-22

December 21, 12:00 pm | Shadow Study



MAIN BUILDING ENTRANCE

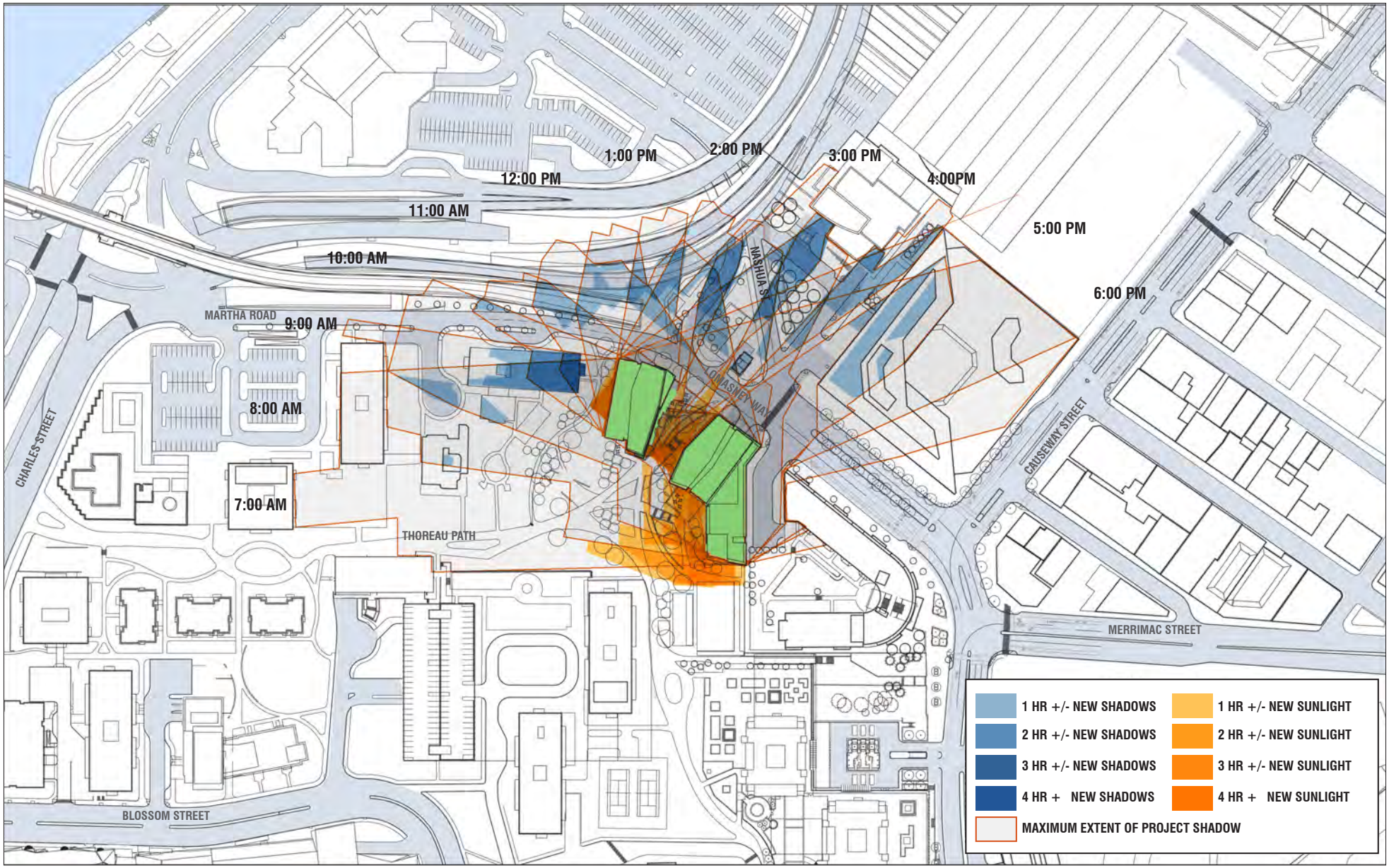
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Garden Garage Redevelopment DPIR Boston, Massachusetts

ELKUS | MANFREDI ARCHITECTS

Figure 4-23

December 21, 3:00 pm | Shadow Study

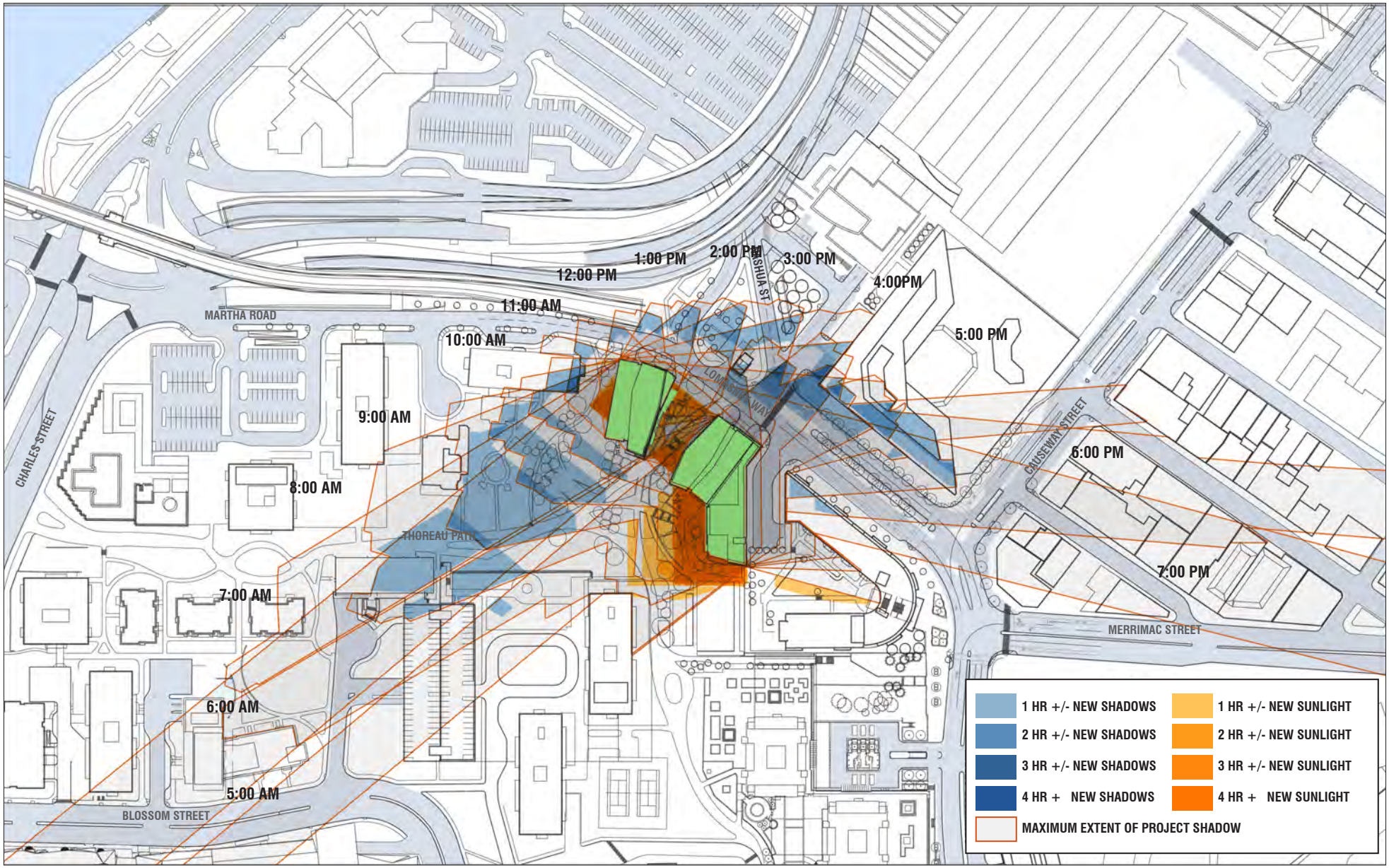


Garden Garage Redevelopment DPIR Boston, Massachusetts

ELKUS | MANFREDI ARCHITECTS

Figure 4-24

March 21, 7:00 am - 6:00 pm | Shadow Overlap Study

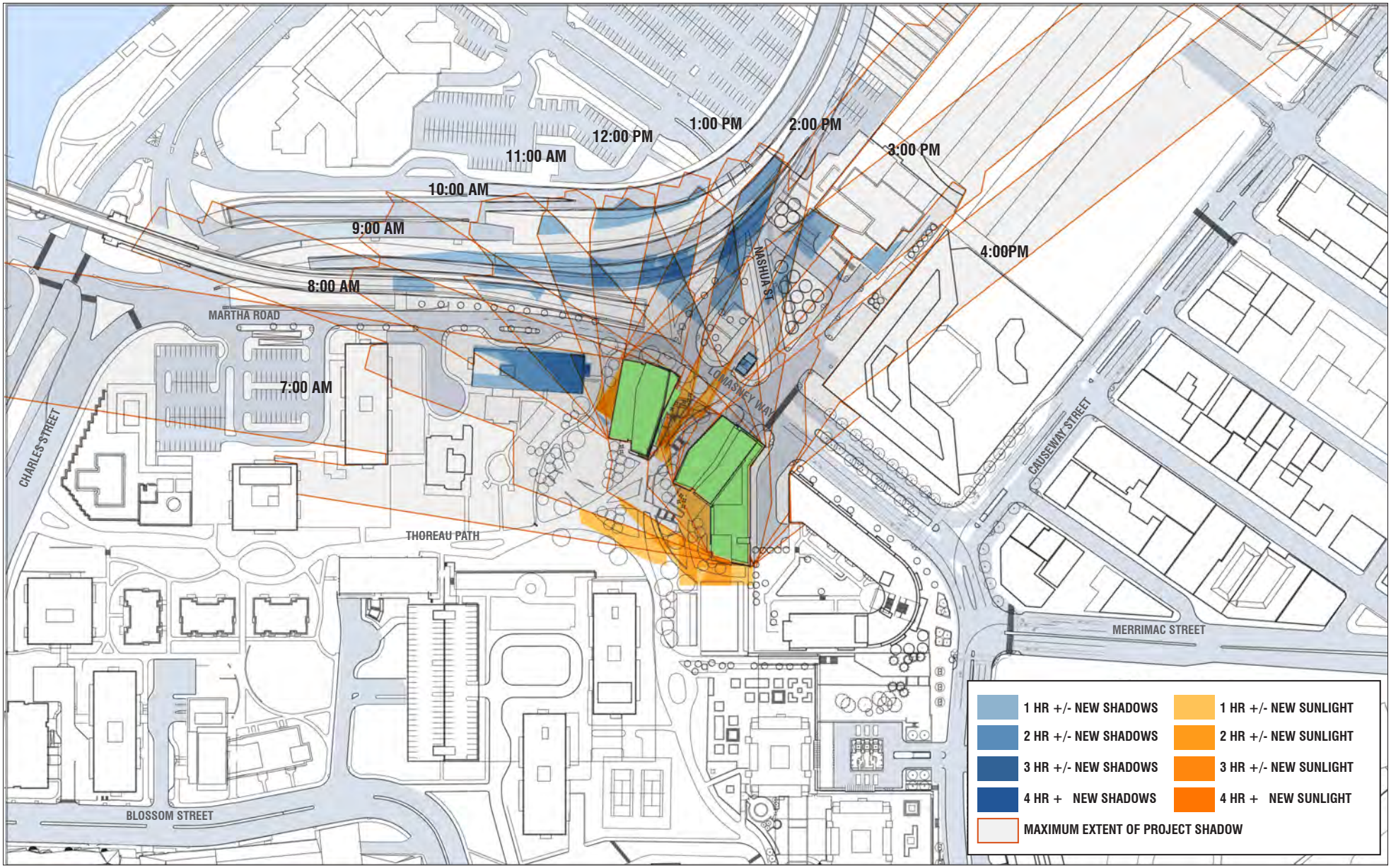


Garden Garage Redevelopment DPIR Boston, Massachusetts

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Figure 4-25

June 21, 5:00 am - 7:00 pm | Shadow Overlap Study

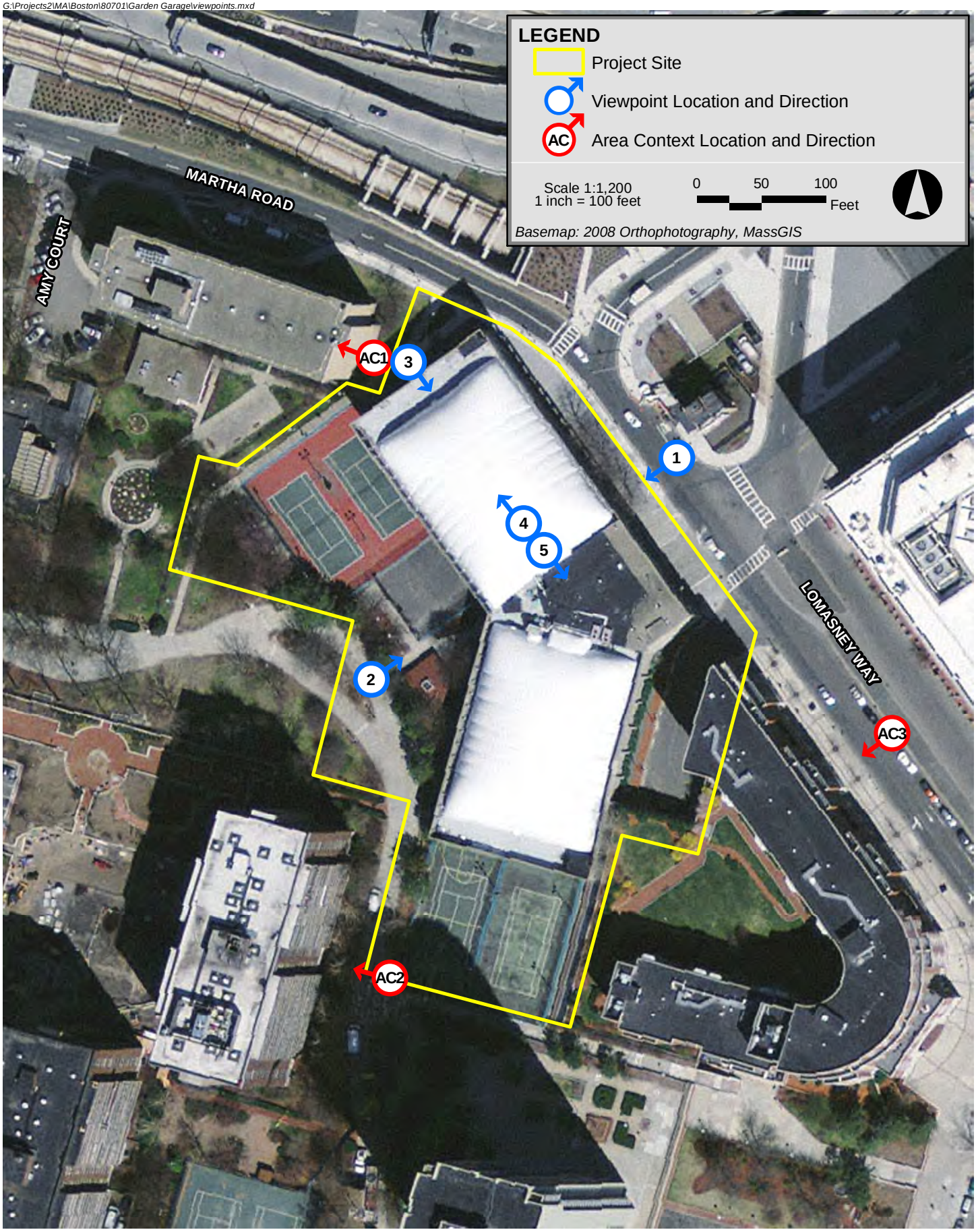


Garden Garage Redevelopment DPIR Boston, Massachusetts

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Figure 4-26

October 21, 7:00 am - 4:00 pm | Shadow Overlap Study



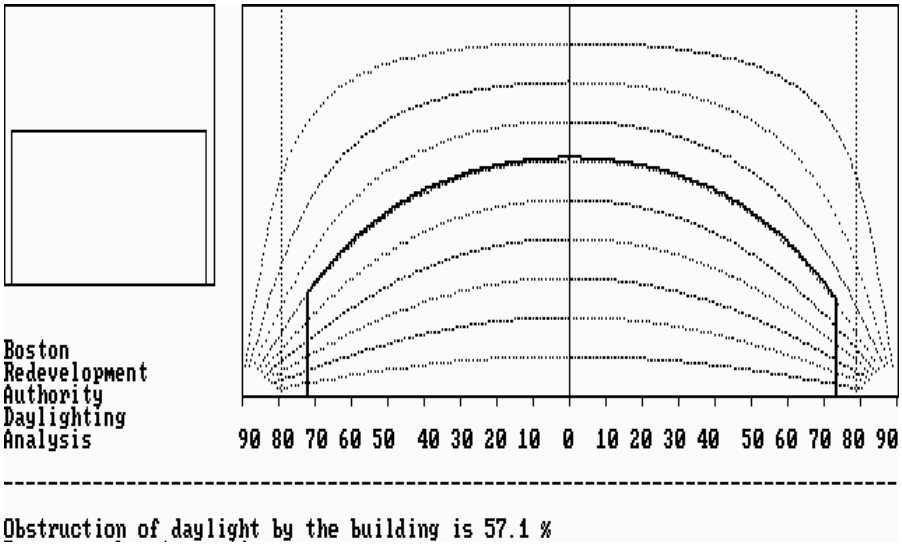
Garden Garage Redevelopment DPIR Boston, MA

Epsilon Associates Inc.

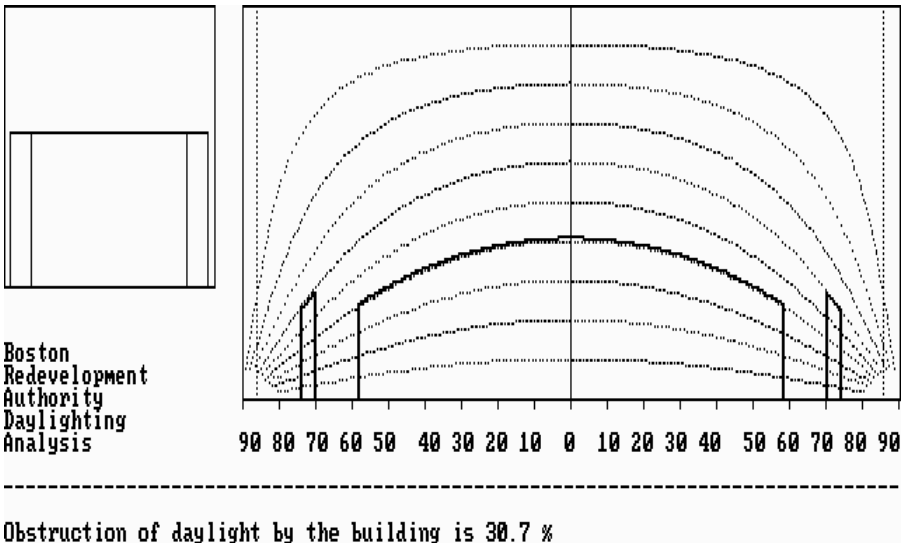
Figure 4-27

Daylight Analysis Viewpoint Locations

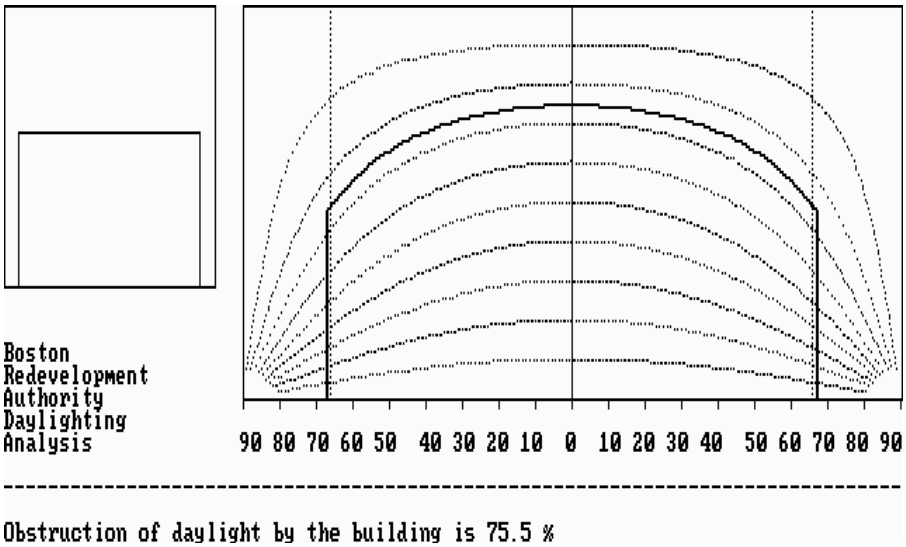
Viewpoint 1: Martha Road Looking South at the Site



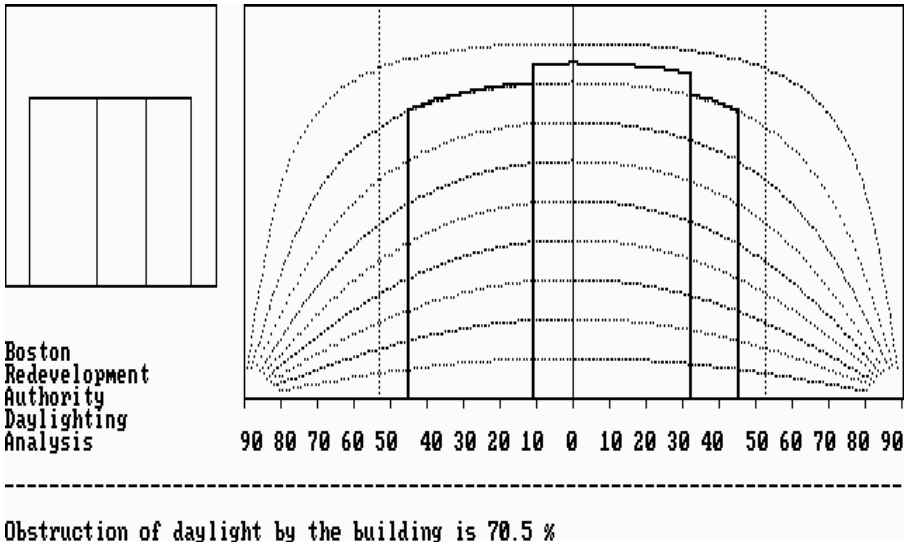
Viewpoint 2: Thoreau Path Looking North at the Site



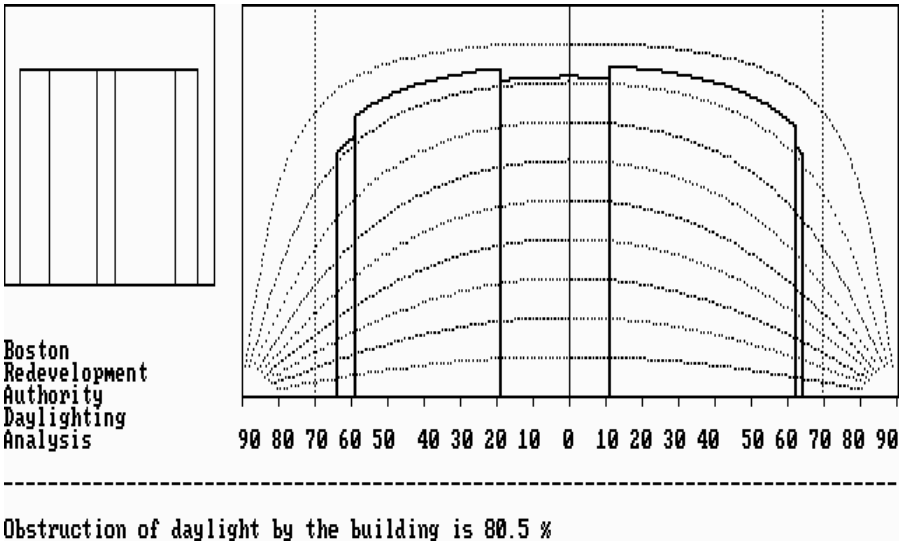
Viewpoint 3: Path on the West Side of the Site Looking East



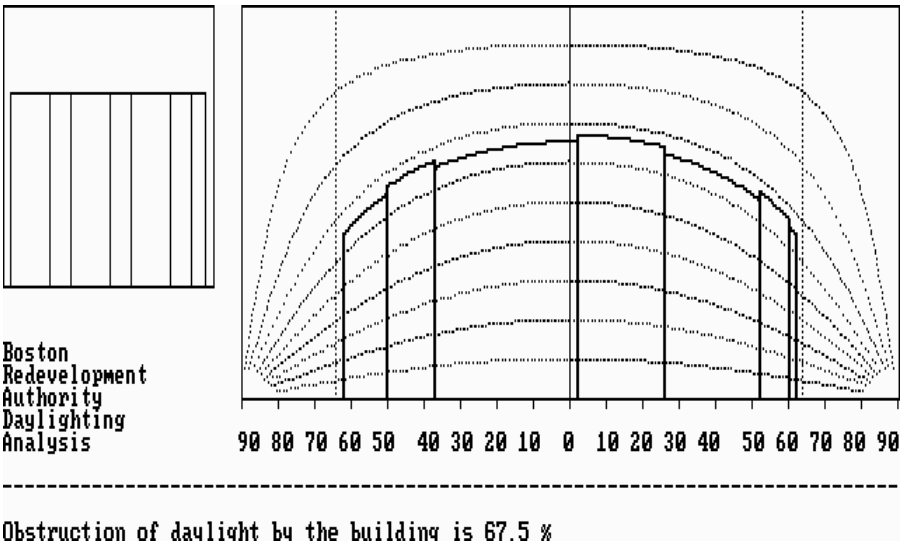
Area Context 1: Looking West at the Amy Lowell Apartments



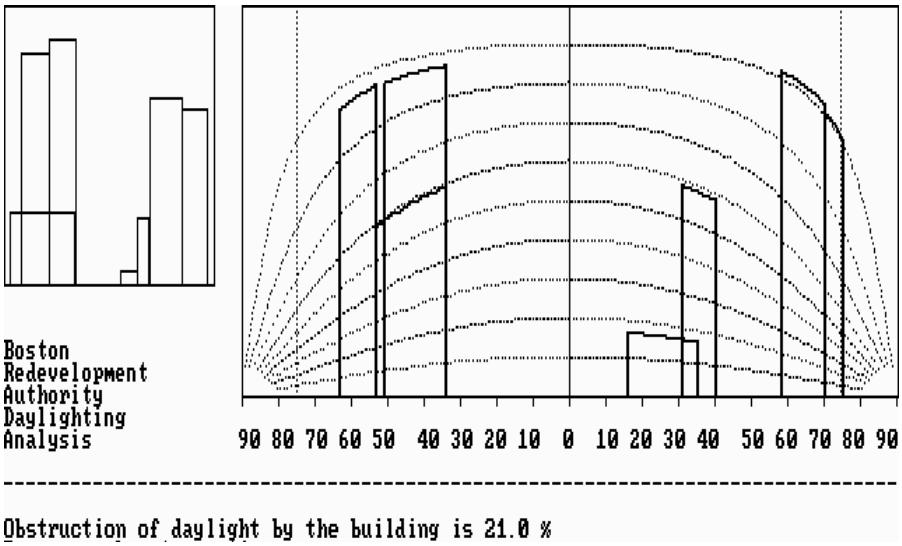
Area Context 2: Looking West at Hawthorne Place



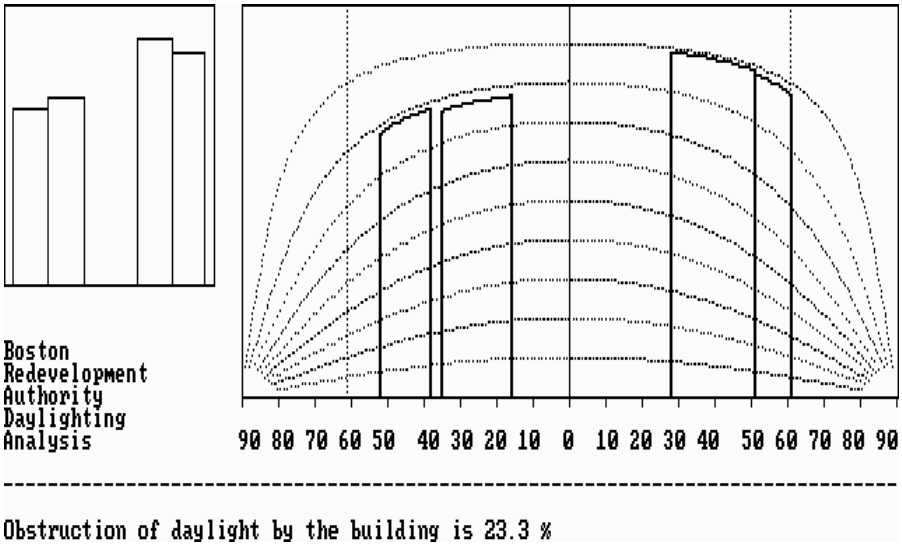
Area Context 3: Lomasney Way Looking South at the West End Place Condominiums



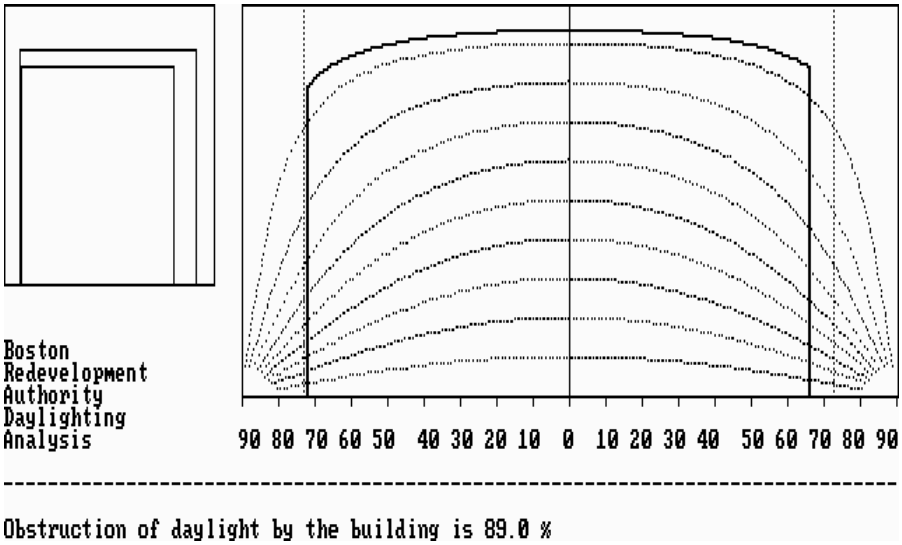
Viewpoint 1: Martha Road Looking South at the Site



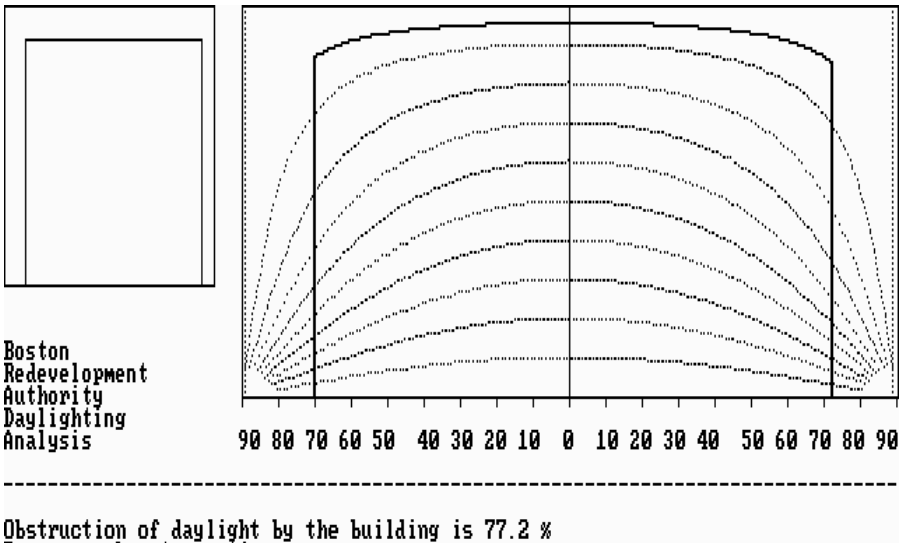
Viewpoint 2: Thoreau Path Looking North at the Site



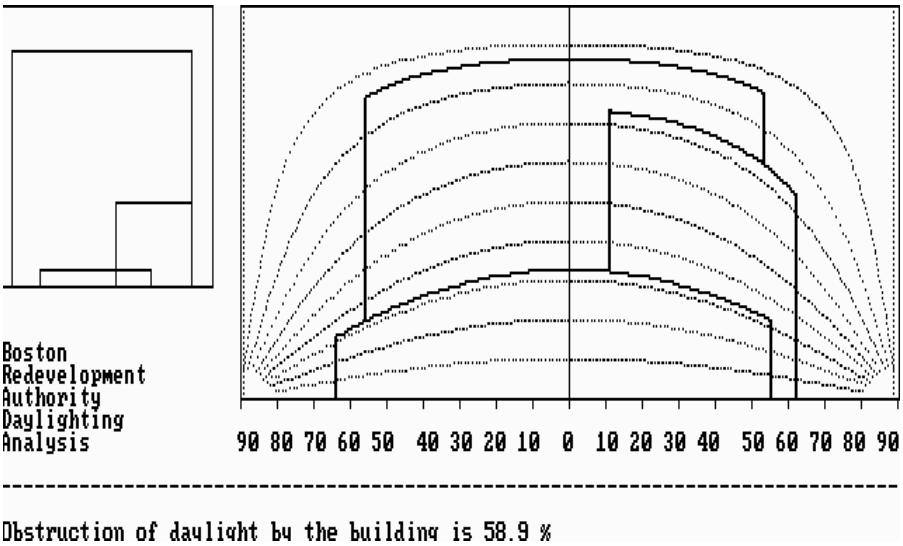
Viewpoint 3: Path on the West Side of the Site Looking East



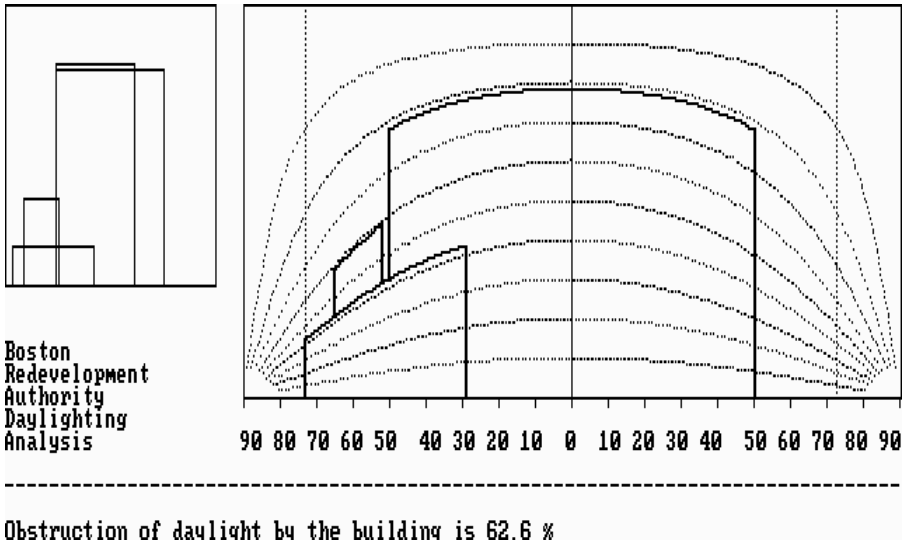
Viewpoint 4: Between the Proposed Buildings Looking West



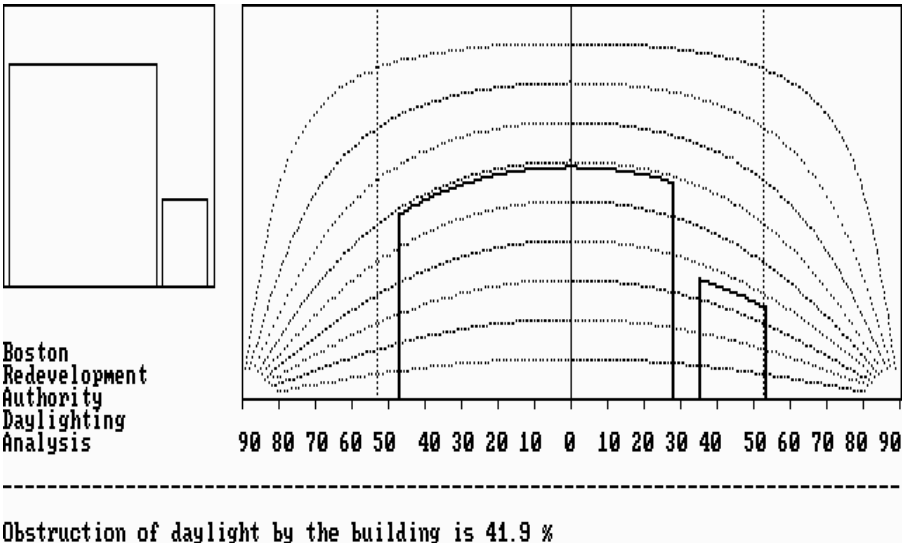
Viewpoint 5: Between the Proposed Buildings Looking East



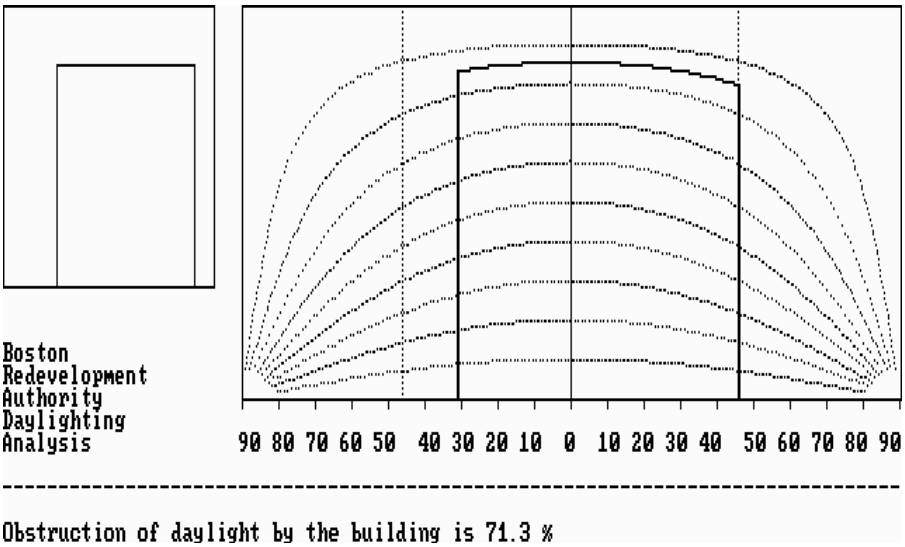
Viewpoint 1: Martha Road Looking South at the Site

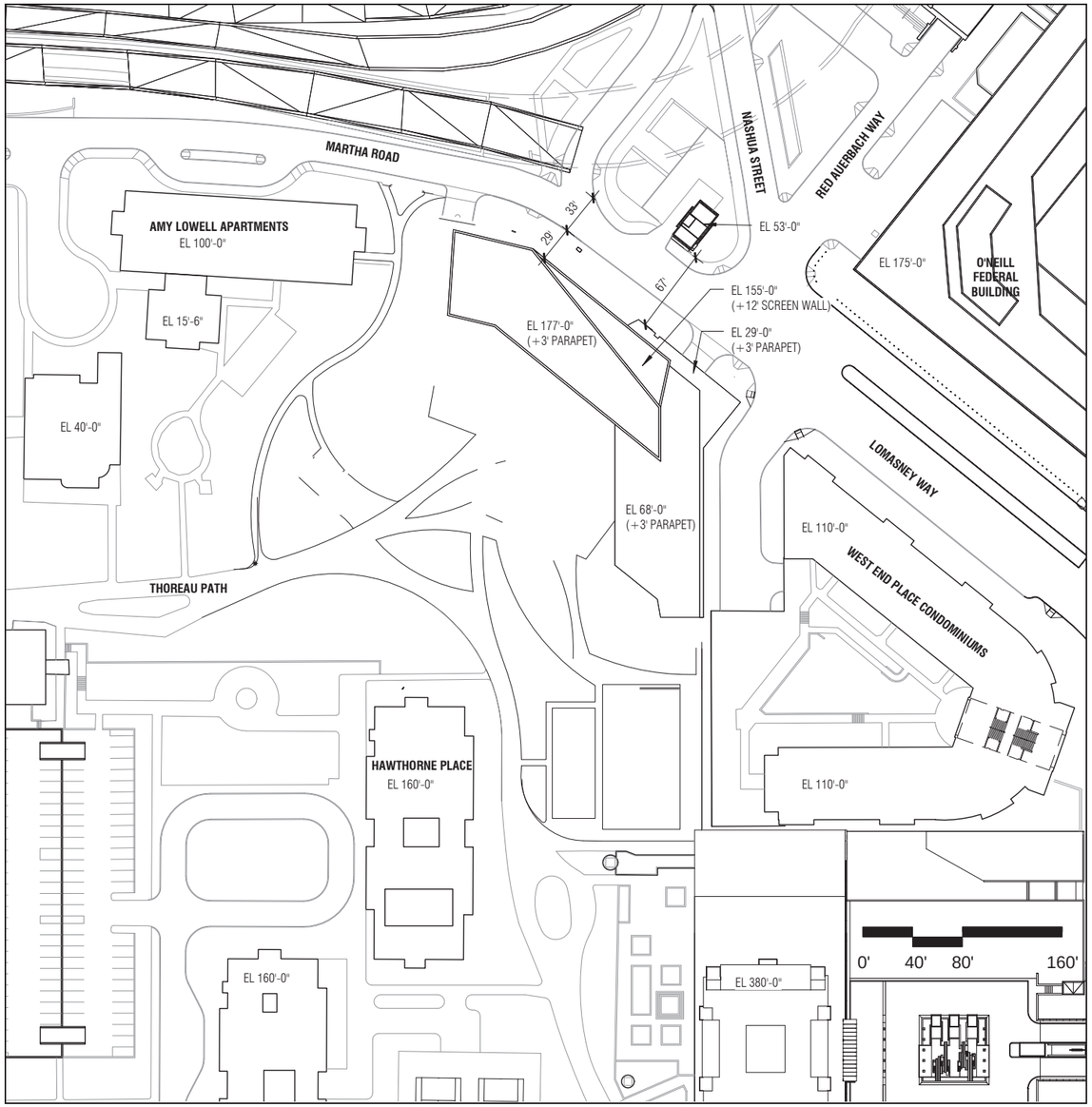


Viewpoint 2: Thoreau Path Looking North at the Site



Viewpoint 3: Path on the West Side of the Site Looking East





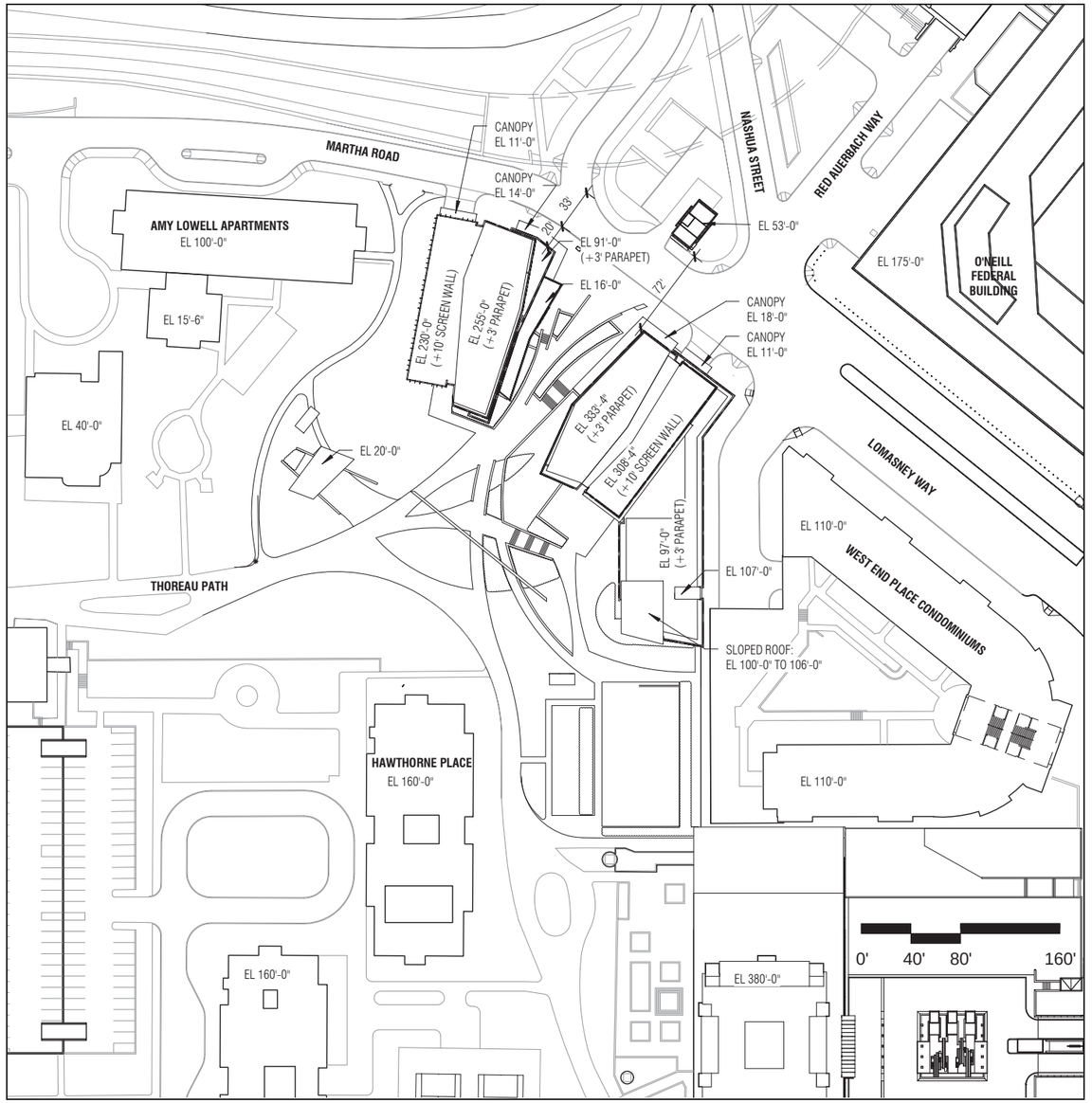
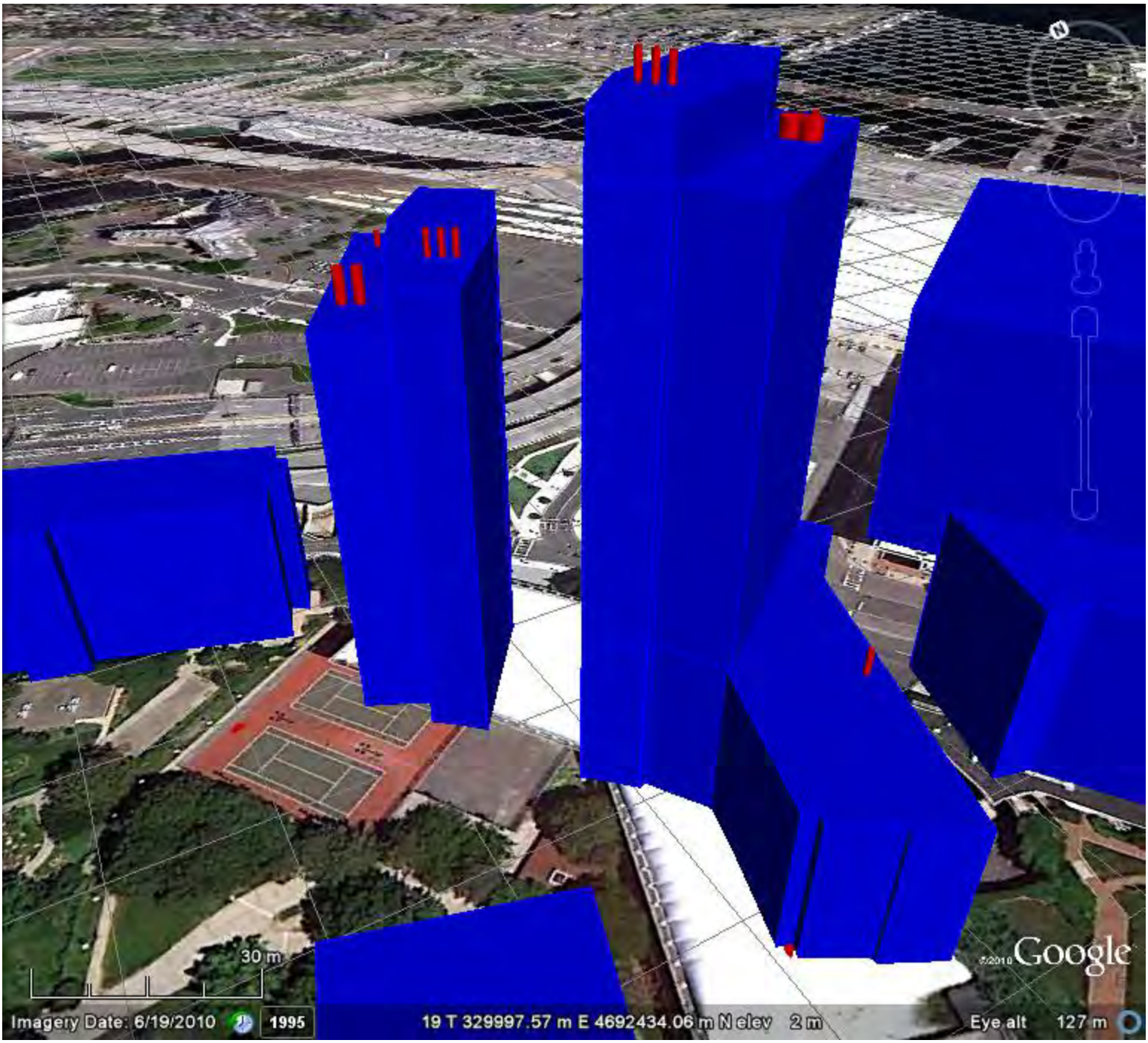


Figure 4-33

Proposed Building Heights and Roof Plans


N
360 m
Google
Imagery Date: 6/19/2010
1995
19 T 329950.07 m E 4692349.16 m N elev 6 m
Eye alt 1.55 km


30 m
Imagery Date: 6/19/2010
1995
19 T 329997.57 m E 4692434.06 m N elev 2 m
Eye alt 127 m
Google

G:\Projects2\MA\Boston\80701\Garden Garage\Noise\modeling_locations.mxd



Garden Garage Redevelopment DPIR Boston, MA

Epsilon Associates Inc.

Figure 4-36

Sound Level Monitoring and Modeling Locations

LEED 2009 for New Construction and Major Renovation

Project Checklist

Project Name: Garden Garage Redevelopment, Boston MA

Date: August 2011

Sustainable Sites — Possible Points: 26

Y	N	?			
Y			Prereq 1	Construction Activity Pollution Prevention	
1			Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
1			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
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
		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

Water Efficiency — Possible Points: 10

Y			Prereq 1	Water Use Reduction—20% Reduction	
2		1	Credit 1	Water Efficient Landscaping	2 to 4
	2		Credit 2	Innovative Wastewater Technologies	2
3			Credit 3	Water Use Reduction	2 to 4

Energy and Atmosphere — Possible Points: 35

Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
8		4	Credit 1	Optimize Energy Performance	1 to 19
		1	Credit 2	On-Site Renewable Energy	1 to 7
2			Credit 3	Enhanced Commissioning	2
2			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			Prereq 1	Storage and Collection of Recyclables	
	3		Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
	1		Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
2			Credit 2	Construction Waste Management	1 to 2
		1	Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	N	?			
			Credit 4	Recycled Content	1 to 2
1		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			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

1			Credit 1.1	Innovation in Design: 100% Below Grade Parking	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

			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

48	10	26		Total	

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

Section 5.0

Urban Design

5.0 URBAN DESIGN

The West End is a distinct Boston neighborhood with a unique history, identity, and character. The neighborhood was largely rebuilt in the 1960s when high-rise residential, office, and research buildings replaced a dense fabric of four- to six-story masonry buildings in relatively small blocks. The West End today represents a well-known example of an urban design strategy that can be characterized as "towers-in-the-park" – a hallmark of mid-20th century modernism. This entire precinct is planned around a meandering pedestrian network and green spaces with connections to the Charles River waterfront and the surrounding neighborhoods. This urban green space is cherished by the residents of the West End.

5.1 Existing Urban Fabric

The character of the West End is largely described by the principal use functions, which include health care and research, housing for a diverse population, a park, and recreation. Ancillary functions include retail, office, worship, parking structures, and transportation. The existing 1960's residential buildings, as seen in Figures 2-5 and 2-11, are a collection of modern high-rise structures with distinct building heights of 16 stories/160 feet, 24 stories/240 feet, and 38 stories/380 feet. Over the past decade the residential character has been enhanced with the additions of the West End Place Condominiums, an 11-story residential building, and five new residential buildings (ranging from 3 to 14 stories) at the West End Apartments to complement the existing towers. Clearly, one of the most important principles of urban design in this neighborhood is to respect and enhance the established character of the residential area and to recognize its historic relevance.

The Project site presents a unique opportunity to re-energize the Nashua Street area and to reconnect the West End to the Bulfinch Triangle and North End neighborhoods. The existing Garden Garage, with its austere brutalist façade, creates a physical barrier between the West End and the surrounding neighborhoods. Demolishing the Garden Garage and constructing a new residential development will provide the opportunity to create strong pedestrian connections and will visually link the West End to the adjoining neighborhoods and North Station.

5.2 Proposed Design

The Project's program includes 500 residential units and 850 parking spaces. The 500 residential units will be split between two slender residential towers: the West Tower and the East Tower. The 21-story West Tower will be approximately 240 feet tall and will provide 190 residential units. The 28-story East Tower will be approximately 310 feet tall and will provide 310 residential units.

The main residential lobbies for both towers will be accessed directly from Lomasney Way. The building design also incorporates secondary residential entrances oriented toward Thoreau Path to allow direct access to the established pedestrian network and open space.

The two towers will be linked with a below-grade parking structure which will provide public, residential exempt, and non-residential exempt parking spaces. Vehicular access to the garage will be provided on Lomasney Way and Martha Road. The proposed driveway on Lomasney Way will be positioned in generally the same location as the existing driveway; however, the driveway will be narrowed to two lanes (compared to five lanes existing), which will substantially reduce the crossing distance for pedestrians and thus improve pedestrian conditions in front of the site. The driveway on Martha Road will be located approximately 100 feet west of Nashua Street and will provide only for right-turns in and right-turns out. The garage has also been planned with a below-grade connection to the existing Longfellow Place Garage to provide additional exiting capacity during events.

5.2.1 Urban Design Principles

The design of the Project embodies several key urban design principles specific to the West End and the Project site, which include:

- Development that recognizes, respects, and reinforces the scale and character of the existing residential neighborhood;
- Improved pedestrian access into, through, and around the site;
- Creation of an active, pedestrian-friendly edge along Lomasney Way; and
- Creation of new urban open space.

5.2.2 Massing, Form, and Response to the Urban Context

The proposed development is designed and sited to respect and complement the established arrangement of buildings and open space, and to strengthen the cohesive residential quality of the West End. The Project is composed of two "wedge"-shaped towers with carefully considered building massing, which is derived in direct response to both the urban design principles outlined above and site-specific conditions. The arrangement of the two towers on the site recognizes the adjacent buildings, Lomasney Way, and Thoreau Path as important elements of the neighborhood. Maximizing the space between the two wedge-shaped towers, as well as adjacent buildings, allows light to penetrate the site. The strategy of placing the parking below grade reduces the overall building footprint on the site and responds to a long-standing community desire to provide new landscaped open space and enhance the pedestrian realm.

The height and massing of the two towers complement the scale and character of surrounding buildings. The West Tower, approximately 240 feet tall, is similar to the scale of the twin residential buildings at Emerson and Whittier Place, which are also approximately 240 feet tall. The primary massing of the East Tower is a slender tower approximately 310 feet tall, which is smaller than but relates to the twin Longfellow Place Towers; the height of the East Tower adds a new element to the district skyline that is

distinct from the regular shape of the 1960's-era towers. The designs for both towers incorporate a secondary massing which is eight stories in height and responds to the dual scale of the neighborhood. The secondary massing on the West Tower adds scale and definition to the new plaza created between the towers. The secondary massing on the East Tower extends south from Lomasney Way, and complements the scale of the West End Place Condominiums and the pedestrian scale of Thoreau Path. The length of the East Tower secondary massing is pulled back from the southern edge of the existing garage, thereby expanding the breadth of Thoreau Path by visually linking the elevated courtyard at West End Place to the existing open space network.

The narrow ends of the wedge-shaped towers are deliberately turned into the site to provide wider view corridors from neighboring residential buildings and Thoreau Path, visually connecting the West End to other neighborhoods and providing a sense of connection to the city as a whole (see Figures 2-15 and 2-19). The height and density of the two-tower massing is appropriately concentrated on the northern edge of the site, against the bustling Leverett Connector ramps and North Station; this shields the enclave-like open space from the noise of the city and minimizes the potential impacts to adjacent buildings. Locating the tower massing to the north also helps minimize the impact to established east-west view corridors from adjacent buildings.

The two towers will frame and define a new pedestrian plaza envisioned as a threshold from the City to Thoreau Path, and vice versa. The proposed shape and form of the towers have been influenced by several factors: the reshaped East Tower responds more directly to pedestrian movement through the site, the lower massing added to the West Tower provides a scaling element and acts as a visual cue to pedestrians, and the one-story retail massing will provide an opportunity to activate the plaza and the pedestrian edge along Martha Road and Lomasney Way. The orientation and angling of the inner facades open the new plaza outward toward the city beyond while maintaining a sense of enclosure toward the West End.

5.2.3 Façade Design Fenestration, and Building Materials

The facades of the two proposed towers use a similar palette of building materials, but express individual personalities. The façade design features a contemporary expression of 21st century residential design that is intended to enrich and complement the character of the neighborhood. To present an elegant, slender design to the neighborhood and Nashua Street area, and to emphasize a vertical proportion, each tower is divided into two primary materials and forms. These two vertical forms will gracefully slide past one another, one an architectural precast concrete frame and the other a contemporary glass curtain wall.

The architectural precast forms are designed to extend from grade up to the mechanical penthouse, and will frame and define the new pedestrian connection between the towers. Window openings on both towers are grouped to reinforce the vertical proportions, but the rhythms of the window openings are expressed differently in the two towers to add diversity

and texture to the urban wall. The color of the precast and shaped mechanical penthouses will further differentiate the towers and provide more distinct building forms in the skyline, marking the West End as an important place in the city.

The two glass curtainwall forms are turned outward towards the city, each expressing a unique identity based on their orientation: the south- and west-facing curtainwall facades of the West Tower incorporate vertical fins and metal panels for sun shading, adding pattern and a finer grain; the east-facing curtainwall façade of the East Tower uses a series of horizontal brise soleil for sun shading, producing a strong horizontal expression.

The lower massing on each tower will be clad in stone near the ground to provide a more distinctive base and a scaling element within the pedestrian realm. The upper floors will be clad with a rain screen panel system that will create a visual transition to the precast panels of the towers above. The horizontal fenestration pattern of the lower massing will be sympathetic to the character of the neighboring context. The size of the window openings, particularly the windows looking onto the raised courtyard at West End Place, will be carefully considered.

5.2.4 Site Design

The Project site offers many opportunities for dramatic views and movement due to the significant grade change between Lomasney Way and Thoreau Path. The primary goal of the site design is to improve and enhance the pedestrian circulation between the heart of the West End and the surrounding neighborhood.

To enhance the experience of rising into the site from Lomasney Way, sculpted landforms have been introduced to the design. These forms will also serve to provide subtle definition for open space and will direct pedestrian circulation through the site. The largest of the proposed landforms will allow the below-grade parking deck to be completely buried, enhancing the overall visual experience and increasing the useable open space on the site.

New open spaces formed by the proposed landforms include intimate seating pockets, gathering terraces and overlooks to Thoreau Path as well as a larger community gathering space. A new open-air pavilion is included in the community space to provide a place for seating and shade as well as a center for functions and events. In addition, certain open space adjacent to the major view corridors of Thoreau Path will offer opportunities for public art.

The landforms will be simple rolling lawns accented with flowering trees for seasonal interest and specimen canopy trees to provide shade and pedestrian scale to the open space. Shrubs will be used minimally to offer screening and privacy where needed, and low perennials and groundcovers will be planted in shallow soils on structures (e.g., green roofs).

The primary pedestrian circulation between the two towers will occur on walks sloping at under five percent as well as intermittent stairs that will create terraced overlooks. Low seat walls will be incorporated to direct circulation and absorb changes in grade where needed. The views and physical connections to and from Thoreau Path will account for the primary and secondary desire lines. Differing walk widths and surface materials will define the hierarchy of importance.

Views from adjacent properties have been considered in the overall Project design. A new visual connection from West End Place to Thoreau Path has been provided by holding the building back and creating new open space. A future walkway connection within this open space is possible if desired by the residents of West End Place. The pedestrian connections to and from North Station will also be physically and visually strengthened by splitting the parking and service entrances into two smaller locations. This will allow the open space between the two towers to shift south along Lomasney Way, thereby creating a more welcoming opening when approaching from North Station.

Section 6.0

Historic Resources

6.0 HISTORIC RESOURCES

This section identifies historic resources in the vicinity of the Project and summarizes potential Project-related impacts to identified resources. A review of the State and National Registers of Historic Places and the survey files of the Massachusetts Historical Commission (MHC) and Boston Landmarks Commission (BLC), as well as a field review of the areas in the vicinity of the Project, were undertaken to identify historic resources.

6.1 Historic Resources within the Project Site

The Project site encompasses two buildings: the existing 650-space Garden Garage on Lomasney Way, and a small, vacant one-story wooden structure formerly used as the Boston Children's School Annex. Neither of the buildings is included in the State or National Register of Historic Places or the *Inventory of Historic and Archaeological Assets of the Commonwealth* (Inventory) maintained by the MHC.

6.2 Historic Resources in the Vicinity of the Project Site

Multiple properties listed on the State and National Registers of Historic Places or included in the Inventory are located in the immediate vicinity of the Project. Table 6-1 includes the names and addresses of properties listed in the State and National Registers of Historic Places and properties included in the Inventory that are within a one-quarter-mile radius of the Project. Figure 6-1 shows the locations of these properties and is keyed to the Map Numbers listed in Table 6-1.

Table 6-1 Historic Resources in the Vicinity of the Project

Map No.	*Historic Resource*	*Address*
State and National Register Listed Properties		
A	Suffolk County Jail (aka Charles Street Jail)	215 Charles Street
B	MHC – Bulfinch Building and Ether Dome (National Historic Landmarks)	Fruit Street
C	Longfellow Bridge (contributing structure in the Charles River Basin Historic District)	Cambridge Street and the Charles River
D	Charles River Basin Historic District	Both banks of the Charles River from the Eliot Bridge to Charles River dam
E	Beacon Hill Historic District (Local Historic District and a National Historic Landmark)	Roughly bounded by Beacon Street, Embankment Road, Storrow Drive, and Cambridge and Bowdoin Streets
F	First Harrison Gray Otis House (National Historic Landmark)	141 Cambridge Street
G	Old West Church (National Historic Landmark)	131 Cambridge Street
H	Bulfinch Triangle Historic District	Canal, Causeway, Friend, Lancaster, Lowell Square, Merrimack, Portland and Traverse Streets
I	Sears Crescent & Sears Block	38-68 and 70-72 Cornhill

Table 6-1 Historic Resources in the Vicinity of the Project (Continued)

Map No.	*Historic Resource*	*Address*
State and National Register Listed Properties		
J	Suffolk County Courthouse	Pemberton Square
K	North Terminal Garage	600 Commercial Street
L	Copp's Hill Burial Ground	Snowhill Street
M	Copp's Hill Terrace	Snowhill Street
N	Town Hill Historic District	Rutherford Avenue, Main, Washington Street, Warren, Pleasant and Thompson Streets, Central Place
O	City Square Historic and Archaeological Site (LL, SR)	City Square
Inventory of Historic and Archaeological Resources of the Commonwealth Properties		
1	Charles Street/MGH Red Line Station, constructed 1931-32 (determined by MHC and BLC to be a contributing element within the Charles River Basin Historic District)	Charles Street and Cambridge Street
2	Resident Physician's House (1892)	Cambridge Street and North Grove Street
3	West End Tenement House (1910)	23-25 Anderson Street
4	Ruth Sleeper Hall (Arthur H. Vinal, architect; 1884-85)	24 Blossom Street
5	West End Settlement House (1929)	16-18 Blossom Street
6	St. Joseph's Church (Alexander Paris, architect; 1823-24)	68 William Cardinal O'Connell Way
7	Holiday Inn	5 Blossom Street
8	Charles River Plaza	161-209 Cambridge Street
9	Exxon Gas Station	239 Cambridge Street
10	North Anderson Street Park	245 Cambridge Street
11	Apartment/retail building	309-311 Cambridge Street
12	Apartment/retail building	313 Cambridge Street
13	Boston Edison Electric Illumination Company Electric Substation	317-325 Cambridge Street
14	Lindemann Center	15-25 Staniford Street
15	Jewish Family and Children's Service	31 New Chardon Street
16	Royal Glove Insurance Co.	25 New Chardon Street
17	Bulfinch Building	15 New Chardon Street
18	Overseers of the Public Welfare Building	43 Hawkins Street, 31 Bowker Street, 41 New Chardon Street
19	Boston Edison Substation	29-33 Hawkins Street
20	R.K.O. General	40 Hawkins Street
21	New England Telephone	6 Bowdoin Square
22	One Bulfinch Place	One Bulfinch Place
23	JFK Federal Building	15 Cambridge Street
24	Boston City Hall	One City Hall Square
25	Government Center MBTA Station	Cambridge Street/City Hall Sq.
26	Center Plaza	1,2,3 Center Plaza, Cambridge St
27	Leverett Saltonstall Building	100 Cambridge Street
28	Suffolk County Courthouse (Addition)	Pemberton Square
29	Metropolitan District Commission	20 Somerset Street

Table 6-1 Historic Resources in the Vicinity of the Project (Continued)

Map No.	*Historic Resource*	*Address*
Inventory of Historic and Archaeological Resources of the Commonwealth Properties		
30	McCormack Building	One Ashburton Place
31	Causeway/North Washington Street Area	Causeway and North Washington Streets
32	North End Area	Roughly waterfront to North Washington to Central Artery to Clinton Street to Atlantic Ave
33	Charles River Railroad Drawbridge #1	Charles River at North Station

6.3 Archaeological Resources

There are no known archaeological resources listed in the State and National Registers of Historic Places or included in the Inventory within the Project site. In addition, the Project site is a previously-developed area, and therefore it is unlikely that the Project will affect archaeological resources.

6.4 Coordination of Historic Resource Reviews

6.4.1 Boston Landmarks Commission Article 80 Review

This DPIR continues the BLC's review of the Project under the City's Article 80 Review process. Direct and indirect impacts to historic resources including visual, wind, and shadow are addressed herein.

6.4.2 Boston Landmarks Commission Article 85 Review

The proposed demolition of the two existing buildings on the Project site (the Garden Garage at Lomasney Way and the former Boston Children's School Annex) will be subject to review by the BLC under Article 85 of the Boston Zoning Code. An Article 85 Application for each building will be submitted to the BLC.

6.4.3 Massachusetts Historical Commission State Register Review

The MHC has review authority over projects requiring state funding, licensing, permitting, and/or approvals that may have direct or indirect impacts to properties listed in the State Register of Historic Places (M.G.L. Chapter 9, Sections 26-27C, as amended by Chapter 254 of the Acts of 1988). The State Register Review process was initiated through the filing of an ENF in June 2011. The MHC received a copy of the ENF and subsequently did not provide any comments on the document. The MEPA certificate, issued on July 22, 2011, found that no further MEPA review is required and that the project may proceed to state permitting. This concludes the MHC's review of the project under the State Register Review process.

6.5 Potential Project Impacts

The proposed Project will have no direct impacts to historic resources. Indirect impacts to historic resources, including visual, shadow, and wind impacts were considered. Urban design and potential shadow and wind impacts are discussed in detail in Sections 5.0, 4.2, and 4.1, respectively. The Urban Design section also provides a description of the materials and characteristics of the proposed building. Project impacts specific to historic resources are summarized below.

6.5.1 Urban Design and Visual Impacts

The proposed Project site is located within Boston's West End, a neighborhood characterized by high-rise residential, office, and research buildings. Following the urban renewal projects of the mid-twentieth century that demolished many nineteenth century low-rise masonry rowhouses, the neighborhood was redeveloped around an extensive pedestrian network with green spaces and connections to the Charles River waterfront and surrounding neighborhoods.

The existing Garden Garage, with its austere façade, creates a physical barrier between the West End and the surrounding neighborhoods, including the Bulfinch Triangle and North End. Demolishing the garage and constructing a new residential development will provide the opportunity to create strong pedestrian connections and will visually link the West End to adjoining neighborhoods.

The Project design recognizes, respects, and reinforces the scale and character of the existing neighborhood and emphasizes the pedestrian experience with improved access into, through, and around the site, creating an active, pedestrian-friendly edge along Lomasney Way and a new urban open space within the parcel.

The siting, design, and materials of the Project have been planned to enhance the pedestrian realm as well as nearby historic neighborhoods. The height and massing of the proposed towers are consistent with surrounding high-rise buildings (see Section 5.0). The designs for both towers incorporate a secondary massing which is eight stories in height and responds to the dual scale of the neighborhood. The secondary massing on the West Tower adds scale and definition to the new plaza created between the towers. The secondary massing on the East Tower extends south from Lomasney Way, and complements the scale of the West End Place Condominiums and the pedestrian scale of Thoreau Path. The length of the East Tower secondary massing is pulled back from the southern edge of the existing garage, thereby expanding the breadth of Thoreau Path by visually linking the elevated courtyard at West End Place to the existing open space network.

The two "wedge"-shaped towers allow light to penetrate the site and are deliberately turned into the site to provide wider view corridors from neighboring residential buildings and Thoreau Path, visually connecting the West End to other neighborhoods and providing a sense of connection to the city as a whole.

The lower floors of the proposed buildings will be clad in stone to provide a distinctive base and a scaling element within the pedestrian realm. The upper floors of the lower massing will be clad with a terracotta rain screen system. The horizontal fenestration pattern of the lower massing will be sympathetic to the character of the neighboring context. The facades of the two towers will have a similar palette of building materials intended to enrich and complement the character of the neighborhood, one an architectural precast concrete frame and the other a contemporary glass curtain wall.

A detailed description of the existing urban fabric and proposed design is provided in Section 5.0 (Urban Design). In addition, mock-ups of the Project as viewed from several surrounding locations, including Beacon Hill, Boston Common, the Charles River, the North End, and surrounding streets are depicted in Figures 2-37 to 2-58.

6.5.2 Shadow Impacts

The Proponent conducted a shadow impact analysis in accordance with the Scoping Determination issued by the BRA. The methodology and results are described in detail in Section 4.2, and results are depicted in Figures 4-1 through 4-17. Shadows resulting from the Project are generally limited to the roadway network located north and northwest of the Project site that consists of Martha Road, Lomasney Way, Nashua Street, and the I-93 ramps. The results of the shadow study indicate that the Project will not cast new shadow onto historic resources.

6.5.3 Wind Impacts

The Proponent conducted a pedestrian wind study in accordance with the Scoping Determination issued by the BRA. The methodology and results of the wind analysis are presented in Section 4.1, and a copy of the report's tabular results is included as Attachment B. The analysis determined that with the proposed landscaping in the open areas west and south of the proposed Project, the wind conditions for the proposed Project configuration were found to be similar or slightly improved from those recorded at off-site locations, including in the vicinity of historic resources, under existing and as-of-right conditions. As detailed in the analysis, the number of off-site uncomfortable locations under existing conditions is eight, while the number of locations for the as-of-right configuration is nine and for the proposed Project is seven. For unacceptable wind gust speeds, the number of off-site locations under the existing condition and as-of-right configurations is four, while the number of locations for the proposed Project is three. In summary, the proposed Project will not introduce additional uncomfortable wind locations or unacceptable wind gusts, as compared to the existing condition and the as-of-right configurations.

6.6 Cornerstone

The Project will include a dated cornerstone within the proposed new construction to identify the date of construction.

G:\Projects2\MA\Boston\80701\Garden Garage\historic_resources.mxd



Garden Garage Redevelopment DPIR Boston, Massachusetts

Epsilon Associates Inc

Figure 6-1
Historic Resources

Section 7.0

Infrastructure Systems

7.0 INFRASTRUCTURE SYSTEMS

The following sections describe the capacity of the existing water, sewage, and drainage utility infrastructure surrounding the Project site and explain how these systems will service the Project.

The Proponent will coordinate the design of the proposed water, drainage, and sewer connections with the BWSC. The appropriate permits and approvals will be acquired prior to construction. Utility connections will be designed to minimize adverse effects within the surrounding area, including existing business operations. Based on the analysis herein, there is adequate drainage and sewage capacity in the area to accommodate the Project. Results of pending BWSC flow tests will determine if there is sufficient water supply in the existing infrastructure to accommodate the Project.

Sections below also describe the Project's needs for electricity and natural gas to fuel its heating, cooling, and ventilation systems. Emergency power and fire prevention and control are also discussed.

7.1 Water

7.1.1 Existing Conditions

Under existing conditions, the Project site has both domestic and fire service connections; the existing BWSC water system is shown on Figure 7-1. Water is delivered through interconnected network water distribution systems designated as Southern Low Service (SL) and Southern High Service (SH): SL systems are generally used to meet domestic water needs and street hydrant demand; SH systems are generally used as the main supply to the low-pressure service system and supply water for building fire protection systems. The SL and SH systems are integrally connected to form loops that allow major water demands to be fed from more than one direction. Looping allows each distribution system to function at optimum efficiency and provides a measure of safety and redundancy in the event of a water main break.

Adjacent to the Project site is a 16-inch SL water main in Lomasney Way and a 12-inch SH water main in Thoreau Path. The existing garage is serviced by 6-inch fire and 4-inch domestic water connections from the 16-inch main in Lomasney Way. The Boston Children's School Annex building is serviced from the 12-inch main in Thoreau Path.

Two existing hydrants are located near the northeast and southeast corners of the existing parking garage on the northeast side of Lomasney Way; an additional hydrant is located in Thoreau Path, across from the Boston Children's School Annex building. Nitsch Engineering has requested hydrant flow test results from the BWSC for hydrants H38, H36, H48, H46, and H44 in Thoreau Path and Lomasney Way, and has received results for H38 in Thoreau Path (provided in Table 7-1).

Table 7-1 Existing Hydrant Flow Data

Static Hydrant	*Flow Hydrant*	*Static Pressure*	*Residual Pressure*	*Total Flow (GPM)*	*Flow at 20 psi (GPM)*	*Flow at 10 psi (GPM)*
H38	H58	104 psi	90 psi	2,496	6,568	6,980

7.1.2 Anticipated Water Consumption

The Project's average potable water demand is estimated as 110% of the sewage generation, or 79,981 GPD.

7.1.3 Water Conservation Measures

The proposed buildings will be equipped with low-flow water fixtures to promote efficient water use.

7.1.4 Water System Connections

The Proponent anticipates that water system connections will be made to the SL system for domestic water and the SH system for fire protection. Since SL and SH systems are not available in the same location on the Project site, the Proponent may request approval to connect both the fire and domestic services to the same system. Water connections will be reviewed and coordinated with the BWSC to determine the most appropriate connections. Existing water connections not used by the Project will be cut and capped at the main.

7.2 Sewage and Stormwater

7.2.1 Existing Conditions

The existing sewer and drainage system infrastructure that services the Project site and surrounding area is owned and operated by the BWSC; the existing BWSC sewer system is shown on Figure 7-1. A 32-inch x 60-inch combined sewer exists within Lomasney Way, and this combined sewer connects to a 48-inch combined sewer in Martha Road known as the West Side Interceptor. An existing 12- to 15-inch drain line and an existing 10-inch sewer line in Thoreau Path connect to a 30-inch combined sewer in Charles Street, which runs north up Charles Street and connects to the MWRA system across the Charles River.

The BWSC has recently performed sewer separation in the Project area. As part of the Bulfinch Triangle sewer separation, the 72-inch by 90-inch combined sewer to the east of the site behind the Thomas P. O'Neill Federal Building has been converted into a storm drain. The BWSC has requested the Proponent to direct Project flows into this storm drain.

The existing garage on the Project site is connected to the combined sewer in Lomasney Way/Martha Road. Stormwater from the areas south and west of the existing garage drain to a storm drain in Thoreau Path. Sewer from the Boston Children's School Annex is connected to the sewer main in Thoreau Path.

7.2.2 Sewage Generation

Existing and proposed sewage generation rates are provided in Tables 7-2 and 7-3, respectively. These rates were estimated using Massachusetts State Environmental Code (Title 5) 310 CMR 15.203. Based on these estimates, the Project is expected to increase the total effluent sewage discharge from the Project site by 71,310 gallons per day (GPD). Since the proposed effluent discharge rate exceeds 50,000 GPD, the Proponent anticipates that a MassDEP Sewer Connection Permit will be required.

Table 7-2 Existing Sewage Generation

Use	*Area (square feet)*	*Units*	*Sewage Generation Rate (GPD)*	*Total (GPD)*
Parking Garage			None	0
Athletic Club		60 lockers	20 per locker	1,200
Boston Children's School Annex (Daycare)	812	20 persons	10 per person	200
TOTAL				**1,400**

Table 7-3 Proposed Sewage Generation

Use	*Area (square feet)*	*Units*	*Sewage Generation Rate (GPD)*	*Total (GPD)*
Proposed Residences		661 bedrooms[1]	110 per bedroom	72,710
Garage	360,000		None	0
TOTAL				**72,710**

[1] 109 studio, 242 one-bedroom, 137 two-bedroom, and 12 three-bedroom units.

7.2.3 Sanitary Sewer System Capacity Analysis

The Proponent has analyzed the existing sanitary sewer and combined sewer mains in Lomasney Way, Martha Road, and Thoreau Path to determine whether they are of sufficient capacity to accommodate the Project (see Table 7-4). Pipe diameters and inverts were

obtained from the Existing Conditions Plan prepared by Nitsch Engineering (dated February 20, 2009) as well as from electronic wastewater system maps purchased from the BWSC. Flow capacity was analyzed using Manning's equation.

Based on available information, the combined sewer mains in Lomasney Way and Martha Road have no slope; a slope of 0.001 feet/foot was used to approximate the hydraulic capacity of these mains for purposes of performing the calculations in Table 7-4. Results indicate the minimum hydraulic capacity of the systems is located along the 10-inch sewer main within Thoreau Path, which has a capacity of 1.22 million gallons per day (MGD). Based on the proposed peak flow estimate, the Project will not significantly burden the existing sewage system.

Table 7-4 Sewer Hydraulic Capacity Analysis

Street	*Size (inch)*	*Slope*	*Manning's Roughness Coefficient (n)*	*Existing Capacity (MGD)*	*Existing Capacity (GPM)*	*Proposed Peak Flow to Main (GPM)*
Thoreau Path	10	0.006	0.012	1.22	842	50
Lomasney Way	32"x60"	0.001*	0.012	25.22	17,513	0
Martha Road	48	0.001*	0.012	31.80	22,087	0

* A minimum slope of 0.001 feet/foot was assumed for calculation.

7.2.4 Sewer/Stormwater Connections

In accordance with BWSC requirements, the Project's sewage and stormwater flows will be maintained separately and will be connected to the appropriate respective mains. As requested by BWSC, stormwater flows will be directed to the 72-inch by 90-inch storm drain located east of the Project site behind the O'Neill Federal Building. Sewer flows from the site will be directed into the sewer main in Thoreau Path or the combined sewer in Lomasney Way, as directed by the BWSC.

7.2.5 Infiltration and Inflow

MassDEP may require the Project to assist in the reduction of infiltration and inflow (I/I) into the BWSC infrastructure. MassDEP typically uses a minimum ratio of 4:1 (4 gallons of I/I to be removed for each gallon of proposed wastewater). The BWSC will require the Project to develop an I/I plan consistent with MassDEP and MWRA policies.

7.2.6 Sewer and Stormwater Mitigation

To minimize sewage generation, the Project will meet applicable code requirements for the installation of low-flow fixtures.

In terms of stormwater, given that the Project will not increase the amount of impervious area on the Project site, post-construction stormwater run-off rates will not exceed existing rates. Furthermore, by upgrading garage stormwater collection systems, the Project will significantly improve the quality of stormwater runoff. Stormwater collected from the loading dock and lower levels of the garage will be collected and directed through MWRA-compliant gas, sand, and oil interceptors. Stormwater collected from parking areas and ramps receiving direct rainfall will be directed though water quality structures (e.g., Stormceptor or similar) before discharging to the municipal system. All catch basins will include deep sumps and hoods for additional oil and sediment removal.

The Project will also include a stormwater management system to address the phosphorus content of stormwater runoff within the Charles River Watershed. The Proponent is considering a stormwater recharge system consisting of perforated pipe and crushed stone to remove phosphorus from runoff. The Proponent will coordinate with the BWSC to determine the appropriate level and method of phosphorus removal.

7.3 Energy Requirements and Service

The Project site is serviceable from electric, telephone, cable, and gas services located within Lomasney Way and Thoreau Path. An 8-inch gas main exists in Thoreau Path, and a 12-inch gas main exists in Lomasney Way. Proposed utility connections will be coordinated with the appropriate utility providers.

7.3.1 Electrical Requirements

NSTAR will provide the electric energy for the proposed Project. The total connected load for the proposed buildings will be calculated to include mechanical systems and residential energy usage. The load is expected to be approximately 9 to 11 watts per square foot. As engineering and design for the Project progress, the design team will meet with the electric power provider to discuss the appropriate provision of electrical services.

7.3.2 Natural Gas Requirements

Natural gas will be used for the Project's heating and domestic water. The Project's total heating and domestic water is estimated at 16.0 million British thermal units (BTU per hours) (see Section 7.3.3). As engineering and design for the Project progress, the design team will meet with the gas provider to discuss the appropriate provision of gas services.

7.3.3 Heating and Cooling Requirements

The proposed buildings will be heated and cooled via a water source heat pump system; Table 7-5 quantifies the Project's heating and cooling requirements.

Table 7-5 Heating and Cooling Requirements.

Building	*Heating/Domestic Water Requirements (BTU in millions)*	*Cooling Tower Requirements (tons)*
West Tower	10	550
East Tower	6	850
Total	**16**	**1,400**

7.3.3.1 Condenser Water System

The Project will include an open condenser water system with a two-cell cooling tower (two towers, 850 tons, 550 tons) piped to a plate and frame heat exchanger to separate the open and closed condenser water loop. The closed condenser water loop will serve the stacked heat pumps. In addition, the condenser water loop will provide the heating requirements for the corridor supply ventilation/heating units.

The condenser water loop will be maintained between 60°F and 90°F. Gas-fired boilers will provide heat to the condenser loop during the winter months.

7.3.3.2 Pumps

Pumps for the Project will consist of the following:

- Condenser Water (Tower): two horizontal split case (HP ca);
- Condenser Water (House): two horizontal split case (HP ca) Tower/House Standby and one (1) horizontal split case (HP ca); and
- Heating: two end suction (HP ca).

Water source heat pumps will be provided as follows:

- Studio and one-bedroom units: one stacked heat pump;
- Two-bedroom units: two stacked heat pumps; and
- Three-bedroom units: three stacked heat pumps.

The heat pumps will be provided with three-speed fans. The total number of heat pumps is yet to be determined. A supply and return grill will be provided for each heat pump within each unit.

7.3.3.3 Miscellaneous HVAC Systems

Bathrooms and Clothes Dryer Exhaust

Exhaust discharge will be routed vertically to the building roofs via common stacked duct risers. Multiple exhaust risers will be connected to horizontal duct mains, which will then connect to rooftop fans. Gas-fired DX rooftop variable-speed ERUs will be incorporated for the bathroom exhaust.

Corridors, common and amenity areas

The corridor and common areas for each floor, such as storage rooms and lobbies, will be heated and cooled by gas-fired DX cooling ERUs with 100% outside air to provide corridor ventilation. The ERUs will incorporate the apartment bathroom exhaust as described above, and will transfer the "energy" or temperature from the exhaust air across a heat exchanger within the ERU to the supply air. Vertical ductwork shall extend through the buildings and supply air at each floor. Terminal air distribution for the corridors on each floor shall be accomplished with sidewall supply registers.

Miscellaneous Heating and Ventilation Systems

Vestibules, entryways, and stairwells will be heated with electric cabinet unit heaters. Heaters will be wall- or ceiling-mounted, depending on the architectural configuration of the space.

The elevator machine room, mechanical spaces, plumbing rooms, and telephone and data rooms will be heated with electric unit heaters with integral thermostats where necessary, and will be exhausted with fans located on the roof.

Trash/Recycle rooms shall be exhausted with a minimum of 15 air changes per hour. Ductwork will extend to roof-mounted fans.

7.3.4 High Rise Requirements

Each stair tower shall require a smoke-proof enclosure, and each smoke-proof enclosure will be provided with a high exhaust and low supply extending to fans on the roof. Combination fire/smoke dampers will be installed at each branch supply and exhaust duct to the enclosure, and will be interlocked with the fire alarm system.

Each stairwell will be pressurized. Ductwork will extend in an adjacent shaft and provide air at each level. Pressurization supply fans will be mounted on the roofs, and fans will be provided with Variable Frequency Drives (VFDs).

7.3.5 Fuel Oil Transfer System

A complete diesel fuel oil transfer system will be provided, including a double-walled tank in the basement and double-walled distribution piping to the roof-mounted generators complete with a Boston Fire Department (BFD)-compliant monitoring system.

7.3.6 Controls

A new energy management system will be provided that will, at a minimum, monitor and alarm the following equipment:

- Cooling towers;
- Heat exchangers;
- Pumps;
- Air handling units;
- Exhaust fans;
- Fuel oil pumps;
- Boilers; and
- Heat pumps.

7.3.7 Garage Ventilation

Garage ventilation will be provided by supply and exhaust fans; sound attenuators will be added to all air handlers and garage fans. Fans will be sized to provide a ventilation rate of 1.5 cubic feet per minute per square foot. The system will be arranged to operate automatically upon detection of a concentration of carbon monoxide of 25 parts per million (ppm) by approved automatic detection devices.

7.3.8 Emergency power

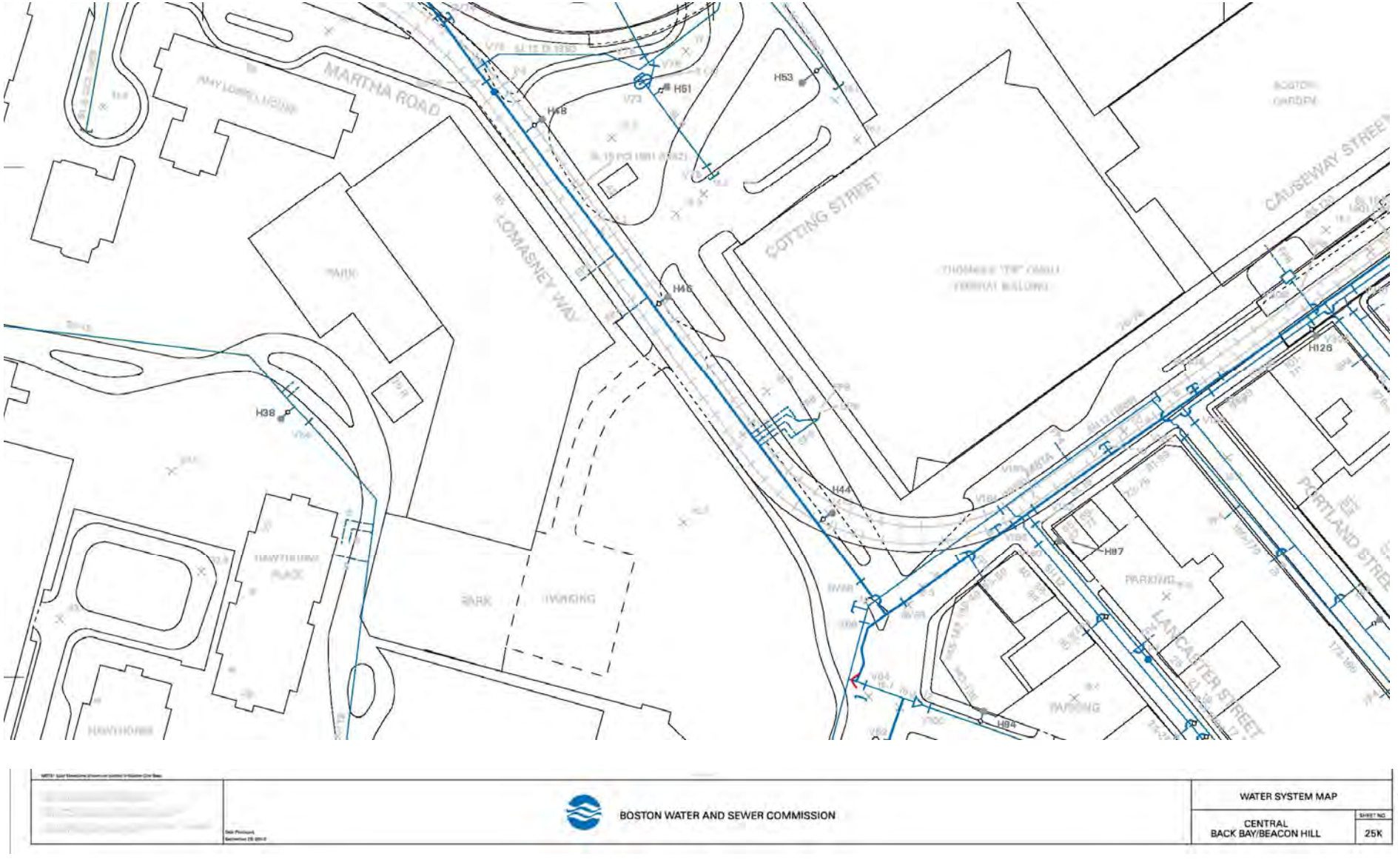
Emergency power will be provided for each tower via rooftop-mounted 500 kW diesel-powering generators. The garage will have a 750 kW diesel-powered generator. The generators will serve the emergency and standby power requirements for the respective structures.

The following equipment will require emergency power:

- Stairwell pressurization fans;
- Vestibule supply and exhaust fans;
- Emergency electric room; and
- Fire pump room exhaust.

7.3.9 Fire prevention and control

The Project's transformer vault will be constructed in accordance with utility company requirements. To ensure a fire-safe design and to reduce potential impacts from a vault fire on the remainder of the proposed buildings, it is anticipated that the vault will include three-hour-rated construction, smoke evacuations, silicone-filled transformers, and smoke detection infrastructure.


MARTHA ROAD
LOMASNEY WAY
COTTING STREET
CAUSEWAY STREET
PORTLAND STREET
LANCASTER STREET
H38
H48
H51
H53
H46
H44
H126
H87
H94
PARK
PARKING
BOSTON WATER AND SEWER COMMISSION
WATER SYSTEM MAP
CENTRAL
BACK BAY/BEACON HILL
SHEET NO.
25K

Section 8.0

Response to Comments

8.0 RESPONSE TO COMMENTS

The DPIR is structured in response to the BRA Scoping Determination from the PNF. A copy of the Scoping Determination is included in this section.

This section responds to comment letters from government agencies, private organizations, and individuals received on the PNF submitted on January 7, 2011. Each letter has been assigned an abbreviation, listed below in Table 8-1. The comment letters are reprinted in this section, and specific comments within each letter are noted in the margin with this abbreviation and a sequential numbering. Following the letter is a listing of the comments accompanied by a response to each. Since approximately 190 letters from the general public were received in reference to the PNF, the "public comments" portion of this section identifies each major theme or topic from those letters to enable a practical response.

Table 8-1 Scoping Determination and Comment Letters

Commenter	*Abbreviation*
Boston Redevelopment Authority Scoping Determination	BRA
Boston Environment Department	BED
Boston Transportation Department	BTD
Boston Water and Sewer Commission	BWSC
Boston Planning Department	PLAN
Boston Groundwater Trust	BGT
Boston Fire Department	BFD
Michael P. Ross, Boston City Council	ROSS
Representative Martha M. Walz	WALZ
Downtown North Association (IAG)	DNA
Hawthorne Place Board of Trustees (IAG)	HP
Amy Lowell Apartments	ALA
Jane Forrestall (IAG)	FORRESTALL
Kathleen Ryan (IAG)	RYAN
West End Civic Association	WECA
Public Comments	PUBLIC

BOSTON REDEVELOPMENT AUTHORITY
SCOPING DETERMINATION

FOR

THE GARDEN GARAGE - BOSTON, PROJECT NOTIFICATION FORM

PREAMBLE

Equity Residential (the "Developer" or "Proponent" or "Equity") submitted to Boston Redevelopment Authority ("BRA") a Project Notification Form ("PNF") under Article 80 of the Boston Zoning Code on January 7, 2011 and noticed in the *Boston Herald* on the same day, calling for approximately 958,000 square feet of total development, 551,000 square feet of residential use, 22,000 square feet of amenity space for residents and 385,000 square feet for parking and mechanicals. The above square footage anticipates approximately five hundred (500) rental apartment units with parking for eight hundred and fifty (850) vehicles (the "Proposed Project"). Written comments constitute an integral part of the Scoping Determination and should be responded to in the Draft Project Impact Report (the "DPIR").

Specific concerns below are highlighted for additional emphasis and consideration:

- Density Many of the comments received highlight concerns regarding the total number of units and parking spaces proposed and question whether the project's scale and size can be reduced. The existing garage arguably does not contribute in any meaningful way to the urban fabric of the city and the streetscape of the West End and Bulfinch Triangle. Feedback received during this initial review process indicates an interest in demolishing the garage and constructing a below grade parking structure with residential units above, in a building that is no taller than the existing structure. While the Proposed Project's height is not out of scale with the West End's "Towers in the garden" approach, Equity must make the case that the density as proposed is necessary to make the project feasible. The number of parking spaces needs to be justified and shared parking should be explored. If parking were to be reduced could the number of units be reduced and still maintain viability? Justification for a project of this size with respect to economic feasibility should be included in the DPIR.

- Construction Impacts Should approvals be granted after review of the DPIR, the BRA will seek to ensure that the construction of the Proposed

Project occurs with absolutely minimal disruption to the residents of the surrounding neighborhood. The Developer will be required to submit a Construction Management Plan to the Transportation Department to ensure that proper measures are put in place to mitigate any and all potential negative impacts, especially for the closest abutters at 150 Staniford Street and 65 Martha Road.

- Open Space The current proposal for the Garden Garage suggests eight hundred and fifty (850) parking spaces, five hundred (500) units of housing and a bocce court. It should be noted that no comments were received suggesting the proposed bocce court was a negative impact on the community. However, many comments suggested a changing environment. The current proposal suggests the removal of *Basketball City*, three (3) outdoor tennis courts and an additional tennis/basketball court. If approved, children and adults who desire active recreation would need to cross over Storrow Drive to get to the Esplanade, walk down Causeway Street to Langone Park, or traverse through Beacon Hill to the Boston Common. The PNF calls for 53,598 square feet of "planting area". With a total Project Site of 3.02 acres (131,600 square feet) and a building footprint of 31,675 square feet, that leaves 99,925 square feet of area for additional programming. The BRA strongly encourages the Developer to explore the potential for providing significant additional open space for local residents, families and children.

- Diverse Housing Stock Out of the proposed five hundred (500) units, twenty percent (100 units) are proposed as studio units; fifty percent (250 units) are proposed as one (1) bedroom units; and thirty percent (150 units) are proposed as two (2) bedroom units. The BRA strongly suggests that the Developer incorporate a percentage of three bedroom units in order to provide housing opportunities for growing families. The Developer should also include a breakdown of the various unit types in Equity's fifteen hundred (1500) unit West End portfolio. As of March 24, 2011, the Equity website shows nine (9) units available for rent in the West End, including two (2) studios starting at $1,705; three (3) one bedroom units starting at $2,050; three (3) two (2) bedroom units starting at $2,600; and one (1) three (3) bedroom available at $4,850.

- Parking Spaces for Abutter Please clarify the issue of parking spaces allotted for the abutting property at 65 Martha Road. The PNF states that there are currently fourteen (14) spaces and the abutter claims there are fifty (50) spaces.

- No Build / As of Right / Single Structure For the purpose of meaningful analysis, the Developer should include in the DPIR a no build option, an as of

right option and an option where the construction of the current proposal is housed in a single structure at the lowest height possible.

- Gym, Racquetball, Squash, Restaurant, Yoga, Community Space? The Developer should explore the possibility of including amenities for residents of the West End to use on a daily basis. Mitigating the proposal with positive benefits will allow the Proposed Project to be enjoyed not only by its residents but by those who already reside in the area.

- View Corridors If constructed as proposed, some existing view corridors will be impacted. The BRA requests that the Developer further analyze these impacts so that appropriate mitigation can be explored.

- Pedestrian Level Uses Currently, there is a high volume of pedestrian foot-traffic that traverses around and through the existing garage during the morning and evening commute from North Station to the medical area at the southeastern portion of the West End. With the potential for new residents in addition to existing residents of the neighborhood, and there is a real opportunity for successful ground level uses. Active ground floor uses are strongly encouraged to enhance the public realm.

- Green Equity should strive to achieve the highest level of LEED certification possible. The Developer should encourage alternate modes of transportation by providing safe and secure bike storage, scooter parking and other facilities for residents and patrons to the site.

- Educational Facility Mayor Thomas M. Menino has asked the City of Boston and the BRA to collaborate and evaluate the demand for a new school that would serve the neighborhoods adjacent to the Proposed Project. The BRA and the City of Boston are analyzing projected population growth and trends to better understand and determine the demand and need for a new school in this area of downtown. It is anticipated that at a later date a specific program for the school will be determined based on analysis and input from BPS and the findings from the demographics and demand for a downtown school. Since the Proponent has a vested interested in the neighborhood we request a strong partnership moving forward. The BRA requests continued dialogue with Equity to help achieve the goal of a new educational facility in the general vicinity of the Proposed Project.

- Public Art. Special attention should be paid to public art, both indoor and outdoor. The Proposed Project presents an opportunity to connect interior and exterior space, and it would be helpful if the Proponent consulted with

local artists during the design period to allow for an integrated aesthetic effect. The Mayor's Office of Arts, Tourism and Special Events should also be consulted.

- Garage Entrances and Exits As the Proponent continues to analyze the parking program for the residential building and the public garage, there should be specific and careful analysis paid to the prospective traffic volumes for each, particularly during the a.m. and p.m. peak and TD Garden Event peaks, to ensure that the proposed garage entrance will provide sufficient capacity. Further, the width of the entrance/exit where currently designed should be minimized to improve the safety and comfort of pedestrians using this high-volume route between North Station and the West End. Further, the proponent should work to ensure that the appearance of Garage entrances on the East Tower façade are also mitigated when not in operation including consideration of a series of operable garage doors that could be deployed most of the time, but which could be opened, with adjustable lane directions, to allow for continuous access or egress during TD Garden Events as needed. Should the traffic analyses and the proponent's own analysis of unit marketability determine that there is a need to examine secondary points of access and egress for tenants and/or the public utilizing the garage, the designers should explore a second entrance/exit ramp within the footprint of the West Tower, along Martha Road. This second entrance may also have the benefit of taking a significant portion of vehicle trips off of the Causeway/Lomasney and Nashua Street routes, and allow garage patrons to approach the site more easily from Leverett Circle, Storrow Drive eastbound and the McGrath/O'Brien Highway or Craigie Dam Bridge. In addition, all garage entrance gating and automated or staffed exit and payment systems should be designed, to the extent possible, in a lower level of the garage to allow for queuing to occur off of the street.

- Improvements to circulation, access and open spaces along Nashua Street, Martha Road and Lomasney Way As the project fronts on both the West End at Thoreau Path and North Station at Nashua Street and Lomasney Way, the proponent should explore open space improvements to the Nashua Street corridor, consistent with the Crossroads Initiative, and which accommodate multiple modes of traffic including safer pedestrian crossings, bicycle accommodations, simplified vehicular access and routing. There is also the potential to improve and, potentially, expand the existing open spaces adjacent to the project site but which are currently disconnected by multiple roadways and that suffer from lack of ongoing and consistent maintenance and underutilization. The proponent should coordinate their traffic analyses with the potential to improve the signalization and intersection design in this area, while also ensuring that vehicle and truck access to the adjacent West

End buildings, the O'Neill Federal Building, TD Garden, and the MBTA Garage are not compromised, but rather that the entire area operation is improved and made safer for pedestrians, bicycles and motorists.

SUBMISSION REQUIREMENTS

FOR

THE GARDEN GARAGE, PROPOSAL CONSISTING OF APPROXIMATELY 958,000 SQUARE FEET OF DEVELOPMENT, 551,000 SQUARE FEET OF RESIDENTIAL, 22,000 SQUARE FEET OF AMENITY SPACE FOR RESIDENTS AND 385,000 SQUARE FEET OF PARKING AND MECHANCIALS - DRAFT PROJECT IMPACT REPORT

The Boston Redevelopment Authority ("BRA") is issuing this Scoping Determination ("Scope") pursuant to Section 80B-5 of the Boston Zoning Code (the "Code"), in response to a Project Notification Form ("PNF") which Equity Residential (the "Developer" or "Proponent" or "Equity") submitted on January 7, 2011 suggesting approximately 958,000 square feet of total development, 551,000 square feet of residential use, 22,000 square feet of amenity space for residents and 385,000 square feet for parking and mechanicals. The above square footage anticipates approximately five hundred (500) rental apartment units with parking for eight hundred and fifty (850) vehicles (the "Proposed Project"). Notice of the receipt by the BRA of the PNF was published in the *Boston Herald* on January 7, 2011 initiating the public comment period that initially was scheduled to end on February 25, 2011 but at the request of the Impact Advisory Group ("IAG"), local elected officials and members of the community it was extended to March 11, 2011. Pursuant to Section 80A-2 of the Code, the Notice and the PNF were sent to all public agencies of the City and other interested individuals and parties. Written comments in response to the Notice and the PNF that were received by the BRA prior to the end of the public comment period are included in the Appendices of this Scope. The Scope requests information that the BRA requires for its review of the Proposed Project in connection with the following:

(a) Certification of Compliance of the Proposed Project pursuant to Article 80, Section 80B-6 of the Code; and

(b) Preliminary Adequacy Determination pursuant to Article 80, Section 80B-5.4(c) of the Code; and

The BRA is reviewing the Proposed Project pursuant to Article 80, Section 80B, Large Project Review, which sets out comprehensive procedures for project review and requires the BRA to examine the urban design, transportation, environmental, and other impacts of proposed projects. The Developer is required to prepare and submit to the BRA a Draft Project Impact Report ("DPIR") that meets the requirements of the Scope by detailing the Proposed Project's expected impacts and proposing measures to mitigate, limit, or minimize such impacts. The DPIR shall contain the information necessary to meet the specifications of Section 80B-3 (Scope of Review; Content of Reports) and Section 80B-4 (Standards for Large Project Review Approval) as required by the Scope.

Subsequent to the end of the seventy-five (75) day public comment period for the DPIR, the BRA will issue a Preliminary Adequacy Determination ("PAD") that indicates the additional steps necessary for the Proponent to complete in order to satisfy the requirements of the Scope and all applicable sections of Article 80 of the Code. If the BRA finds that the PNF/DPIR adequately describe the Proposed Project's 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 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 Article 80 of the Code. Section 80B-6 requires the Director of the BRA to issue a Certification of Compliance before the Commissioner of Inspectional Services can issue any building permit for the Proposed Project.

I. PROPOSED PROJECT DESCRIPTON

The project, as proposed, will be located on approximately three (3) acres of land at Longfellow Place in Boston's West End. The site is bordered by Martha Road, Lomasney Way and the MBTA Green Line portal to the north, the O'Neill Federal Building and 150 Staniford Street to the east, Longfellow Place to the south, Hawthorne Place to the southwest, Thoreau Path to the west and 55 and 65 Martha Road to the north west (the "Project Site").

The project suggests replacing the existing Garden Garage parking structure with two (2) residential buildings and a below-grade parking structure. The North Tower, a twenty-one (21) story high-rise apartment building, will contain approximately one hundred and ninety (190) residential units. The South Tower, a twenty-eight (28) story high-rise apartment, will contain approximately three hundred and ten (310) units. The four (4) level, below grade parking garage will be located below both towers and will provide parking for

approximately eight hundred and fifty (850) cars. Primary pedestrian access to the building lobbies will be from Lomasney Way; a secondary residential entry will be provided from Thoreau Path. Access to the parking structure will be from within the proposed towers as well as from the existing curb cut on Lomasney Way. Site preparation will involve the demolition of the ninety-seven (97) foot high precise concrete parking garage and a one story wood frame building, collectively (the "Proposed Project").

II. DEVELOPMENT REVIEW REQUIREMENTS - ARTICLE 80

SUBMISSION REQUIREMENTS

In addition to full-size scale drawings, seventy-seven (77) copies of a bound report containing all submission materials reduced to size 8-1/2" x 11", except where otherwise specified, are required and one (1) CD with all materials. The report should be printed on both sides of the page. In addition, an adequate number of copies must be available for community review. A copy of this Scope should be included in the report submitted for review.

A. GENERAL INFORMATION

1. Applicant Information
   - a. Development Team — BRA 1
     - (1) Names
       - (a) Developer (including description of development entity and type of corporation)
       - (b) Attorney
       - (c) Project consultants and architect
     - (2) Business address and telephone number for each
     - (3) Designated contact for each
   - b. Legal Information — BRA 2
     - (1) Legal judgments or actions pending concerning the Proposed Project
     - (2) History of tax arrears on property owned in Boston by the Applicant
     - (3) Evidence of site control over the project area, including current ownership and purchase options of all parcels in the Proposed Project, all restrictive covenants and contractual restrictions affecting the proponent's right or ability to accomplish the

Proposed Project, and the nature of the agreements for securing parcels not owned by the Applicant.

(4) Nature and extent of any and all public easements into, through, or surrounding the site.

2. Project Area

a. An area map identifying the location of the Proposed Project **BRA 3**

b. Description of metes and bounds of project area or certified survey of project area **BRA 4**

3. Public Benefits

a. Anticipated employment levels including the following: **BRA 5**

(1) Estimated number of construction jobs

(2) Estimated number of permanent jobs

The Proponent is expected to provide a workforce development plan and needs assessment for the Proposed Project. The Proponent should describe the efforts it will undertake to ensure that an appropriate share of new jobs and construction jobs will be filled by Boston residents.

b. Current activities and programs which benefit adjacent neighborhoods of Boston and the city at large, such as: child care programs, scholarships, internships, elderly services, education and job training programs, etc. **BRA 6**

c. Other public benefits, if any, to be provided. **BRA 7**

4. Regulatory Controls and Permits

a. Existing zoning requirements, zoning computation forms, and any anticipated requests for zoning relief should be explained. **BRA 8**

b. Anticipated permits required from other local, state, and federal entities with a proposed application schedule should be noted. **BRA 9**

c. A statement on the applicability of the Massachusetts Environmental Policy Act (MEPA) should be provided. If the Proposed Project is 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. **BRA 10**

5. Community Groups

a. Names and addresses of project area owners, abutters, and any community or business groups which, in the opinion of the applicant, may be substantially interested in or affected by the Proposed Project. **BRA 11**

b. A list of meetings held and proposed with interested parties, including public agencies, abutters, and community and business groups. **BRA 12**

B. PROJECT DESCRIPTION AND ALTERNATIVES

1. Project Description

The DPIR shall contain a full description of the Proposed Project and its components, including its 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 Project. Appropriate site and building plans to illustrate clearly the Proposed Project shall be required. **BRA 13**

2. Project Alternatives

A description of alternatives to the Proposed Project that were considered shall be presented and the primary differences among the alternatives, particularly as they may affect environmental conditions, shall be discussed. In addition, any alternative development studies requested by the Boston Landmarks Commission should be discussed. **BRA 14**

C. TRANSPORTATION COMPONENT

Please refer the comments and information requested by the Boston Transportation Department ("BTD") included in **Appendix 1.**

D. ENVIRONMENTAL PROTECTION COMPONENT

Please refer to the comments and information requested by the Boston Environment Department ("BED") included in **Appendix 1.** In addition, the Proponent is requested to provide information on the following:

- The Proponent should consider and document how it would use the Leadership in Energy and Environmental Design (LEED) standards. Integrating green building components into the planning and design of new projects improves energy efficiency and promotes responsible and sustainable building practices. BRA 15

E. URBAN DESIGN COMPONENT

Equity Residential proposes the redevelopment of the Garden Garage at 35 Lomasney Way at a corner of Boston's West End neighborhood. The site has been occupied by a 710-car garage (of which 410 spaces are public) since the new West End was redeveloped in the 60's. Basketball City occupies the tent structures on the top. The garage currently also allows (for those who know the route) pedestrian pass-through from Lomasney Way to Thoreau Path through interior passages and a stair. The Proposed Project calls for demolition of the existing structure and construction of about 500 residential units in two towers (21 and 28 stories) with an underground garage of up to 850 spaces (140 net new; 410 remain public) and a public open space connection from Lomasney Way and the Nashua Street area to Thoreau Path. Retail and/or public uses along both Martha Road/Lomasney Way and (to a lesser degree) the open connector area could animate this new open connection, with retail placed on Martha Road. A significant portion of the connecting open space is essentially a roof garden atop a portion of the garage; roof gardens on upper portions of the buildings themselves have not yet been planned. Total proposed open space of all kinds is over 2 acres. The architects, as on the other Equity Residential projects in the neighborhood (improvements to Longfellow Place; the Emerson Place Project), are Elkus/Manfredi Architects. The Garage is a component of the Charles River Park Apartments, now called the West End Apartments, which contain the Longfellow Towers.

The Project has been designed to achieve the density required to balance the cost of demolition of the existing garage while being consistent with the scale of structures in the West End neighborhood and providing a strong open connection into the neighborhood by connecting with the pedestrian Thoreau Path. Working with the BRA, the Proponent has split the mass of the residential towers and varied their height while being sensitive in terms of massing placement to view corridors from some of the existing residential buildings. To a certain degree, the heights (up to 310') and the density conform to the original 'towers in a park setting' planning intent (minus the surface parking) for this area. The Project as now proposed is phase-able. Boston Landmarks approval of the demolition via Article 85 will be required. BRA 16

DAYLIGHT COMPONENT

A daylight analysis for both build and no-build conditions shall be conducted by measuring the percentage of skydome that is obstructed by the Proposed Project building(s) and evaluating the net change in obstruction. If alternative massing studies are requested or result as part of the Article 80 development review process, daylight analysis of such alternatives shall also be conducted for comparison. The study should treat three elements as controls for data comparisons: existing conditions, the 'as-of-right' (defined in this case as the applicable general area zoning), and context examples. The areas of interest include Martha Road/Lomasney Way, Thoreau Path, and the proposed new entry path. Daylight analyses should be taken for each major building facade fronting these public ways. The midpoint of each public accessway or roadway (discuss Thoreau Path with BRA staff) should be taken as the study point. The BRADA program must be used for this analysis. **BRA 17**

If a Proponent wishes to substitute a more contemporary computer program for the 1985 BRADA program, its equivalency must first be demonstrated to the satisfaction of BRA staff before it is utilized for inclusion in the DPIR, and it must be commonly available to Boston development team users.

URBAN DESIGN COMPONENT

The BCDC voted to review the Proposed Project on April 5, 2011 and saw a preliminary presentation. The Commissioners present liked the initial concept but wanted a good deal more information on the building, and ground floor relationships, as well as a reasonable and strong pedestrian connection to North Station; the Project was referred to Design Committee. When sufficient progress in preparation of a Preferred Alternative in the DPIR in response to the Scoping Document has been made on the design pursuant to preliminary BCDC, IAG, and BRA staff comments, BCDC Design Committee meetings should be scheduled by contacting David Carlson, Executive Director of the BCDC. Minutes (as of this writing, unofficial) from the Garden Garage portion of the April BCDC meeting are attached. **BRA 18**

It should be noted that we will expect a design which will allow more in-depth comment at the DPIR stage. We reserve the right to comment at that stage toward the submission of an FPIR. In general, we may ask for studies related to any alternatives developed, possibly with certain modifications, as well as comparisons to both existing conditions and an 'as-of-right' alternative.

The Garden Garage Redevelopment Project at its core is the continuation of an Urban Renewal project. The key goals of such are to reinvent and renew the socio-economic and physical fabric of the City for its ultimate betterment...and to conform to the overall Plan for the District. The Garden Garage was intended to provide parking for the workers and residents in and visitors to the area; set adjacent to old infrastructure, it did not recognize a future which now sees that infrastructure refurbished and buried, and acted more as a protective wall, with restricted amenities (various courts) offering a limited use buffer. When revisiting such a Project, the basic concepts, while likely including a continued accommodation of what might be reduced / differentiated mode parking for the area, should also enhance neighborhood connections by making them both physical and inviting but also visual and contextual. The Proposed Project should include public realm improvements that are at least the equal in positive attribute to any factors that might be perceived as negative, while keeping to the extent possible the prior amenities. The following urban design objectives should be addressed in the DPIR submission for all scenarios except as noted. BRA 19

1) The Project shall take into account as strict height limits the FAA limits as defined by the FAA and Massport, should the bounds impact this Project site (this is unlikely in the context of the current proposal). BRA 20

2) Standard alternatives for study include no-build, and an 'as-of-right' build-out...in this case FAR 3.6+ (IPOD District M says 10), with a height of 155' (the layered zoning may make precision difficult). This alternative will conform to the density planned and anticipated in this area under current layered zoning, but not necessarily under the original URP. The Proponent has presumed a process allowing the flexibility in density and height appropriate both to the expense of taking down an economically viable use, and to the uses proposed, as well as the Garden City visualization/ planning concept promulgated for the West End. We therefore assume that the Proposed Project as represented in the DPIR will have taken into account any necessary mitigating factors discovered as a result of further studies by the Proponent. BRA 21

3) The Proposed Project should meet the 'performance standard' of *generally* having a lesser degree of environmental impacts than either the full 'as-of-right' build-out or existing conditions, whichever are most impactful. I.E., criteria such as daylight, shadows, and wind should be *at least* neutral or improved *on average*, recognizing that some elements or points may be worse, but proving that the whole is better as a Project. We will expect in fact that mitigations or positive urban benefits will result from this Project and in balance far outweigh any negative impact. Specific shadow and wind investigations may be requested - a separate category in this memorandum - to determine what the impacts are BRA 22

specifically regarding Thoreau Path. Heights, tower locations and setbacks should be adjusted to minimize any visual impacts determined to be negative.

4) The highest building elements generally should be set back from the adjacent existing pedestrian paths to the extent possible, as well as other buildings, given the site's infrastructure and dimensional constraints. They should also be as varied in height as possible. Where desirable to create an emphasis or entry, the high elements could come straight down to the ground...but only if wind conditions permit such. BRA 23

5) Active ground floor program elements should be enhanced or expanded as a positive element of the Project, with entries focused on the *most public* corridors. A hierarchy of such uses should be considered, with some uses encouraging the use of the new connections. Uses should include the retail and lobby spaces shown but also possible quasi-public, civic, or recreational/fitness spaces. Incorporate bicycle stations into the Project...both public and private. The residential lobbies are the threshold between truly public and private and, unless intended to offer more to the former, should not take up most of the visible ground floor space as currently shown. BRA 24 BRA 25 BRA 26

6) Necessary service and access functions should not occur *directly* on Lomasney Way or Martha Road, or should be minimized. If possible to do so, consider linking the garage with the one serving the Longfellow towers. Since the operating entity is presumptively the same, this might work to mitigate against increased traffic flow at a single access/egress point. BRA 27 BRA 28

7) Treatment of any directly visible portions of the garage should be of a high architectural character with robustly convincing detail. The landscaping should be strong as well, with green/sustainable strategies built in, consideration of upper green roof uses, ample depth of soil for plantings and trees, and a design which allows a clear public path into the area while not making it a pedestrian highway in scale. The Lomasney side should be welcoming and inviting; the Thoreau Path side should be a continuation of the sense of a wooded, more quiet respite that residents imagine and enjoy; the transition should be considered as a threshold from either direction. BRA 29 BRA 30

8) Street edges and new sidewalks created as a result of any version of the Proposed Project must conform to all applicable standards and be appropriately sized to bear pedestrian traffic peaks. Street trees and plantings should be included in site plans. Pedestrian paths in general should be reinforced, with possible multiple pathways through the site. Future pedestrian connections to North Station and the Bulfinch Triangle area must be considered in the pedestrian connections as well as proposed building elements that may give BRA 31

urban cues or more directly provide good and safe connections. Consider physical connections additionally to the West End Place parcel if such are possible.

9) The architectural expression of the tower elements should be clarified. They should be differentiated, and shaped as part of the skyline, but of the same family. Consider the view studies requested in the list of materials later to achieve a massing and orientation which begins to break the scale of the towers and podium element(s) down to that of the appropriate scale-giving datum elements in the area. This effect will be most noticeable from the intermediate range of direct views, including views from within nearby neighborhoods and from both directions along the Martha Road/Merrimac Street and Causeway/New Staniford street corridors. BRA 32

10) The architectural expression of the podium elements should partake of the tower elements to connect the two vertically. Over-differentiation by fragmenting the composition with multiple facade types or rhythms may be too much; simplify the treatment of the architecture. Go beyond the preliminary PNF drawings, but consider other massing solutions or refinements of the current strategy as part of your studies; include material selection proposals that are achievable and enhance the design. Mark this space in the City as an important connection, add a visual playfulness to contextual references, and break the deadening effect of the current Garage's mass. BRA 33

Among others, the refined design included in the DPIR must satisfactorily address all the above parameters. An accurate sense of scale of the Proposed Project in its *full future* context must be achieved. Focus on key distanced views, as well as key intermediate/user viewpoints, to guide the design composition of the Proposed Project. Reinforce all pedestrian pathways; develop a plan which shows the building program and how it supports such activity within the future pedestrian/public access network. BRA 34 Active or civic programming that will engage the public and ideally spill seasonally into the public realm at the ground floor should remain (and should be maximized). To the maximum extent possible, provide publicly accessible *interior or rooftop* spaces. BRA 35 Take note of the fundamental contextual strengths of the site, including its connections to North Station and the MBTA, and incorporate that sense into the overall design approach...tempered by the proposed uses, and the notion of a threshold into a quieter neighborhood zone.

We reserve the right to add additional concerns during the course of the process of combined BRA staff, IAG, and BCDC review which may affect the responses detailed in the DPIR. The following urban design materials for the Proposed Project's schematic design must be submitted for the DPIR.

1. Written description of program elements and space allocation (in square feet) for each element, as well as Project totals. BRA 36
2. Neighborhood plan, elevations and sections at an appropriate scale (1"=100' or larger as determined by the BRA) showing relationships of the proposed project to the neighborhood context: BRA 37
    a. massing
    b. building height
    c. scaling elements
    d. open space
    e major topographic features
    f. pedestrian and vehicular circulation
    g. land use
3. Color, or black and white 8"x10" photographs of the site and neighborhood. BRA 38
4. Sketches and diagrams to clarify design issues and massing options. BRA 39
5. Eye-level perspective (reproducible line or other approved drawings) showing the proposal (including main entries and public areas) in the context of the surrounding area. Views should display a particular emphasis on important viewing areas such as key intersections, pathways, or public parks/attractions. Some of these viewpoints have already been suggested and used in presentations to the public: opposite directions along the Merrimac/Martha Road and Causeway/New Staniford street corridors, from the Science Museum, and Longfellow and Zakim bridges, from adjacent residential neighborhoods (Beacon Hill, West End, North End, and even Bulfinch Triangle) from the Public Garden, from Memorial Drive, from the River, et al. Long-ranged (distanced) views of the proposed project must also be studied to assess the impact on the skyline or other view lines. At least one bird's-eye perspective should also be included; perspectives otherwise should focus on viewpoints that the public will experience. All perspectives should show (in separate comparative sketches) at least both the build and no-build conditions; any alternatives proposed should be compared as well. The BRA should approve the view locations before analysis is begun. View studies should be cognizant of light and shadow, massing and bulk. BRA 40
6. Additional aerial or skyline views of the project, if and as requested. BRA 41
7. Site sections at 1"=20' or larger (or other scale approved by the BRA) showing relationships to adjacent buildings and spaces. BRA 42
8. Site plan(s) at an appropriate scale (1"=20' or larger, or as approved by the BRA) showing: BRA 43
    a. general relationships of proposed and existing adjacent buildings and open spaces
    b. open spaces defined by buildings on adjacent parcels and across streets
    c. general location of pedestrian ways, driveways, parking, service areas, streets, and major landscape features

d. pedestrian, handicapped, vehicular and service access and flow through the parcel and to adjacent areas
e. survey information, such as existing elevations, benchmarks, and utilities
f. phasing possibilities
g. construction limits

9. Massing model (ultimately in basswood) at 1":40'0" for use in the Authority's Downtown Model **BRA 44**

10. Study model at 1" = 16' or 1" = 20' showing preliminary concept of setbacks, cornice lines, fenestration, facade composition, etc. **BRA 45**

11. Drawings at an appropriate scale (e.g., 1":16'0", or as determined by BRA) describing architectural massing, facade design and proposed materials including: **BRA 46**
    a. building and site improvement plans
    b. neighborhood elevations, sections, and/or plans showing the development in the context of the surrounding area
    c. sections showing organization of functions and spaces, and relationships to adjacent spaces and structures
    d. preliminary building plans showing ground floor and typical upper floor(s).
    e. phasing, if any, of the Proposed Project

12. A written and/or graphic description of the building materials and its texture, color, and general fenestration patterns is required for the proposed development. **BRA 47**

13. Electronic files describing the site and Proposed Project at Representation Levels one and two ("Streetscape" and "Massing") as described in the document *Boston "Smart Model": CAD & 3D Model Standard Guidelines.* **BRA 48**

14. Full responses, which may be in the formats listed above, to any urban design-related issues raised in preliminary reviews or specifically included in the BRA scoping determination, preliminary adequacy determination, or other document requesting additional information leading up to BRA Board action, inclusive of material required for Boston Civic Design Commission review. **BRA 49**

15. Proposed schedule for submission of all design or development-related materials. **BRA 50**

16. Diagrammatic sections through the neighborhood (to the extent not covered in item #2 above) cutting north-south and east-west at the scale and distance indicated above. **BRA 51**

17. True-scale three-dimensional graphic representations of the area indicated above either as aerial perspective or isometric views showing all buildings, streets, parks, and natural features. **BRA 52**

SHADOW AND WIND COMMENTS

In addition to the comments and scoping by others, the Proponent is directed to conduct a specific shadow analysis for the specific time range of any new impacts on public green or open spaces....in other words defining rough extent and duration in terms of hours and time of year. Give particular attention to the period from March 21 to October 21. If overall duration is greater than one hour, provide an overlap study which defines any area impacted by shadows for a period greater than one hour. All net new shadows shall be defined as outlined elsewhere either by darker tone or color and shall be clearly shown to their full plan extent, whether on street, park, or rooftop. BRA 53

Regarding wind, all wind tunnel test points shall be approved by BRA staff before conduction of testing. Wind analysis may be requested at points within several blocks of the property (ies) in question; where contiguous to open space, analysis may extend to likely bounds of no impact, possibly as far as 1200' (the Greenway and City Hall Plaza fall into this category). Analysis of results and effective mitigation shall be presented in the DPIR using diagram methodology so that the delta or changes manifested by the project relative to existing or as-of-right conditions...again, whichever provides the higher base impacts...are clearly understood. BRA 54

INFRASTRUCTURE SYSTEMS COMPONENT

An infrastructure impact analysis must be performed. BRA 55

The discussion of Proposed Project impacts on infrastructure systems should be organized system-by-system as suggested below. The applicant's submission must include an evaluation of the Proposed Project's impact on the capacity and adequacy of existing water, sewerage, energy (including gas and steam), and electrical communications (including telephone, fire alarm, computer, cable, etc.) utility systems, and the need reasonably attributable to the proposed project for additional systems facilities.

Any system upgrading or connection requiring a significant public or utility investment, creating a significant disruption in vehicular or pedestrian circulation, or affecting any public or neighborhood park or streetscape improvements, comprises an impact which must be mitigated. The DPIR must describe anticipated impacts in this regard, including specific mitigation measures, and must include nearby Proposed Project (i.e. the four approved Bulfinch Triangle Parcels (NPCs are anticipated on two), Government Center Garage, Nashua Street Residences, Lovejoy Wharf, et al.) build-out figures in the analysis. The standard scope for infrastructure analysis is given below: BRA 56

1. Utility Systems and Water Quality

a. Estimated water consumption and sewage generation from the Proposed Project and the basis for each estimate. Include separate calculations for air conditioning system make-up water — BRA 57

b. Description of the capacity and adequacy of water and sewer systems and an evaluation of the impacts of the Proposed Project on those systems; sewer and storm drain systems should include a tributary flow analysis as part of this description — BRA 58

c. Identification of measures to conserve resources, including any provisions for recycling or 'green' strategies, including green roofs, rain/runoff filtration and re-use, etc. — BRA 59

d. Description of the Proposed Project's impacts on the water quality of Boston Harbor, Charles River, or other water bodies that could be affected by the Project, if applicable — BRA 60

e. Description of mitigation measures to reduce or eliminate impacts on water quality — BRA 61

f. Description of impact of on-site storm drainage on water quality — BRA 62

g. Information on how the Proposed Project will conform to requirements of the Ground Water Trust under Article 32, if applicable, by providing additional recharge opportunities — BRA 63

h. Detail methods of protection proposed for infrastructure conduits and other artifacts, including any MBTA tunnels or structures, and BSWC sewer lines and water mains, during construction — BRA 64

i. Detail the energy source of the interior space heating; how obtained, and, if applicable, plans for reuse of condensate. — BRA 65

Thorough consultation with the planners and engineers of the utilities will be required, and should be referenced in the Infrastructure Component section. — BRA 66

2. Energy Systems

a. Description of energy requirements of the project and evaluation of project impacts on resources and supply — BRA 67

b. Description of measures to conserve energy usage and consideration of the feasibility of including solar energy provisions or other on-site energy provisions, including wind, geothermal, and cogeneration. BRA 68

Additional constraints or information required are described below. Any other system (emergency systems, gas, steam, optic fiber, cable, etc.) impacted by this development should also be described in brief.

The location of transformer and other vaults required for electrical distribution or ventilation must be chosen to minimize disruption to pedestrian paths and public improvements both when operating normally and when being serviced, and must be described. BRA 69 Storm drain and sewage systems should be separated or separations provided for in the design of connections. BRA 70 Consider energy strategies that build upon or network the capacity in the area buildings under the control of the Proponent. BRA 71

Excerpted from the unofficial minutes of the BCDC of April 5, 2011:

David Manfredi (DM) was recused from the next Project, and had been recused earlier on the vote to review. The next item was a presentation of the **Garden Garage Project**. Louis Miller gave some of the background of Equity Residential's presence in the West End, noting the prior project at Emerson Place and the current upgrade of Longfellow Towers (now the West End Apartments). He noted that the idea is to take down the garage and build parking as part of a residential complex. Sam Norod (SN) of Elkus/Manfredi presented the design, showing first the locus and then a series of existing conditions photos, noting that the existing building was 97' high and close to the Amy Lowell, Hawthorne Place, and West End Place buildings. He showed a diagram of the intent, indicating views, openness, and a new green entry very much like what was accomplished by their removing the parking at Emerson Place. SN then noted the heights of the towers, and the lower's relationship to Whittier, etc...the taller one is 310'. The parking takes advantage of the Lomasney Way - Thoreau Path grade change, with landscaped levels going up the 12-foot grade change (up to 17' in a berm). SN then showed typical floors and views, and massing studies in black and white looking at the vertical split to emphasize the slenderness of the two towers. [David Hacin (DH) arrived.] Section diagrams were shown showing the relationship parallel to Lomasney, and then perpendicular, which showed the relationship to Longfellow. SN then showed color views with photo juxtapositions, noting the landscape was an invitation in, and had a 5% slope for accessibility.

Chris of Carol R. Johnson Associates revisited the preliminary site plan. The idea is to address the 12-foot grade separation and sculpt the land forms to provide flow, but also to direct people. They are going up to a maximum of 17' by berming over the garage roof toward the low-rise wing; this maximizes the amount of green space perceived.

(Shows ground-level views, using a 'before' photo first, then a sketch of the 'after' condition; Chris pointed out the advantages of the new views, noting the physical adjacency to West End Place and views of its arch.) Bill Rawn (WR): Can you cross to the arch? Chris: No, there is a separation with a ventilation grille, even though the grade is the same. (Shows another view.) The sense now is of Thoreau Path being protected; we are trying to give a sense of that, with a group of trees forming a 'threshold.' (Show views from along Hawthorne, then Lomasney.) It's all sustainable design. Linda Eastley (LE): Have you looked at sustainable design in the landscape? It looks like there are opportunities; it would be nice to lead into that, like a rain garden. Chris: We have just started looking at the detail. Lynn Wolff (LW): How do you get through the garage now? (SN shows her.) The reason I ask is that the area around Lomasney and North Station is critical. I'm not sure that the walkway is in the best location for that crossing - you should look at that. The projects (including the Nashua Street Residences) should be looked at holistically. Kirk Sykes (KS): How do people move through the site? SN demonstrates the larger movements in and through, noting the ramped landscape they did over the garage at Emerson Place. Chris: The question raised is good - we do want to match the landing locations for the best connection. We were surprised at how many people use it now. The major route (he points it out) does go toward Emerson. Daniel St. Clair (DS): What iterations have you gone through with the City? Kevin Lennon (KL): We started out with a passage through the building and a single tower. We were encouraged by the City to make it more obvious and open, so we split it into two towers/buildings. DS: In terms of that connection...? WR: If you could go back and discuss that. (Chris does, showing how it works, and how it could.) DS: If you build it as shown, the connection won't work forever. After some further discussion, LW suggested they provide more information on the issue. Chris: The Crossroads project stops short of that point. LW: Because it's such a mess.

DS: There are a bunch of projects happening; they could each build a piece of it. There's also the connection to the river. I like the towers, a gateway, making a place. Why not taller, or shorter? Why this strategy? They do feel tall, and would look good, but what is the rationale? To create open space? Something else? KL: Some of the density is to offset the cost of the garage demolition. And both buildings have to be independently viable. We have studied variations in the heights: adding height, eliminating a tower, making a lower massing. But that would ignore the dual character of the area; this massing does that. DH: Are you okay with the towers facing each other? SN: They are canted, from 65' to 90' apart; we're comfortable with that. DH: It looks canyon-like, although I agree with DS - I think this is a handsome Project. Maybe that's something to work on. KS: Reinforce the street edge with the lower stories, and do more above. MD: It's not just the space between; it's that the space on the ground is unresolved. I agree with a lot of the comments; this is a great opportunity. WR: I'll reiterate others' comments...the east tower (with the wing) doesn't come down well. I think we should be asking you to at least postulate how the pedestrian connection can be made. And then the shaping of the tower, adjust it to help set that up. Does that make sense? SN:

It makes a lot of sense. WR: There's no easy solution now. It will take some traffic consultant, working with the City; the BRA has equal responsibility. DS: The garage at North Station is only 25% used now; it will be 100% used. KS: But we want to make sure it's a permanent condition. MD: Other comments?

Bob O'Brien (DNA, IAG): We're very much at the beginning of a process; the BRA feels that way, too. We know that the Equity Residential Emerson project worked out well. There is concern in the community regarding the height, and the environmental impacts of wind, sun, etc. The West End community is unique in the City, something recognized in the West End planning exercise by the BRA. As much as the garage should be removed, some are concerned that the sense of enclosure will be lost, that a major highway is proposed leading into the path. It's on a boundary between a pedestrian, park-like, suburban area and one that is vehicular and urban; it needs two front doors. This needs to be resolved. There is not enough attention to Lomasney, on what happens at ground level. When the space is opened up visually, the reference as a threshold is apropos. But lobbies aren't enough along Lomasney; we need more, a civic presence. Across the street, we have the chance to create a West End Square; now, the circulation is illegible, unworkable, dangerous. If the City, with the MGH master plan and more, looked at the area in total, it could all be resolved. We have to be conscious of the Project's duality - almost schizophrenia - with attention paid to the Charles River Place side, but with a need to focus on the other issues.

Louise Thomas (West End Civic): There's been a lot of talk about open space, but there will be less than exists now. There has been talk about green space, a lot of it along the pathway. The view corridors you have been shown for Hawthorne and Whittier - the park was built so that *every* tower has a view. No one is supposed to go through the garage; they do NOT do so now, but go to the Amy Lowell side. You have to look at the abutters: Amy Lowell is 11 stories, and West End Place is 10 stories. People do cut through from the Station, but they use the crosswalks across the gravel where the light is. With that, the Garden Garage Project was sent to Design Committee; it was suggested that there should be planners from the BRA and transportation folks there.

F. HISTORIC RESOURCES COMPONENT

The Proposed Project site is located near a number of historic properties listed in the National and State Registers of Historic Places. The DPIR shall identify, map, and describe these historic resources and any other historic properties in the vicinity of the Proposed Project's site and shall evaluate the anticipated effects of the Proposed Project on these resources. Particular attention shall be given to the design, scale, height, massing, materials, and other architectural elements of the proposed buildings as these relate to the significant architectural and historic

BRA 72

resources in the proposed project's vicinity. In addition, the visual impacts of the proposed development, especially from Thoreau Path, Bulfinch Triangle, Beacon Hill, and The Esplanade shall be evaluated. The DPIR must also include an assessment of the potential presence of archaeological resources that may be disturbed by the Proposed Project. The Proponents should also respond to the comments of the Boston Environment Department outlined in **Appendix 1.** BRA 73

G. DEVELOPMENT IMPACT PROJECT COMPONENT

If applicable, based on square footage and use the Proposed Project could be subject to and be required to enter into a Development Impact Project ("DIP or Linkage") agreement. A full analysis of square footage should be submitted in the DPIR. See below for a breakdown of payment if required. BRA 74

Housing Linkage:

DIP Uses	??????? square feet
Exclusion:	-100,000
	??????
	x $7.87 /square foot
	$??????????

Jobs Linkage:

DIP Uses	????????? square feet
Exclusion	-100,000
	??????
	x $1.57 /square foot
	$?????????

H. PUBLIC NOTICE

The Proponent 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 Draft Project Impact Report (DPIR) to the BRA as required by Section 80A-2. This Notice shall be published within five (5) days after the receipt of the DPIR by the BRA. Therefore, public comments shall be transmitted to the BRA within seventy-five (75) days of the publication of this Notice. BRA 75

Sample forms of the Public Notices are attached as **Appendix 4.**

Following publication of the Public Notice, the Proponent shall submit to the BRA a copy of the published Notice together with the date of publication.

BRA 01 **Development Team: names, business address, telephone number, and designated contact for (a) developer (including description of development entity and type of corporation); (b) attorney; and (c) Project consultants and architect.**

Section 1.1 identifies the development team and includes the requested contact information.

BRA 02 **Legal Information: (1) legal judgments or actions pending concerning the Proposed Project; (2) history of tax arrears on property owned in Boston by the Applicant; (3) evidence of site control over the project area, including current ownership and purchase options of all parcels in the Proposed Project, all restrictive covenants and contractual restrictions affecting the proponent's right or ability to accomplish the Proposed Project, and the nature of the agreements for securing parcels not owned by the Applicant; and (4) nature and extent of any and all public easements into, through, or surrounding the site.**

The requested legal information is provided in Section 1.2.

BRA 03 **An area map identifying the location of the Proposed Project.**

Figure 1-1 is a USGS Locus Map showing the location of the proposed Project, and Figure 1-2 is an aerial photograph of the Project area.

BRA 04 **Description of metes and bounds of project area or certified survey of project area.**

Section 1.2.3 includes a description of the metes and bounds of the Project area.

BRA 05 **Anticipated employment levels including the following: (1) estimated number of construction jobs; and (2) estimated number of permanent jobs. The Proponent is expected to provide a workforce development plan and needs assessment for the Proposed Project. The Proponent should describe the efforts it will undertake to ensure that an appropriate share of new jobs and construction jobs will be filled by Boston residents.**

The Project is expected to create approximately 450 full-time and part-time construction jobs and 16 full-time permanent positions.

BRA 06 **Current activities and programs which benefit adjacent neighborhoods of Boston and the city at large, such as: child care programs, scholarships, internships, elderly services, education and job training programs, etc.**

The Proponent currently provides for the following activities and programs that benefit the adjacent neighborhoods and city at large:

Free parking for WECA Children's Festival;

Free parking for the WECA Director

Free parking for the annual Christmas tree lighting;

Tennis courts; and

West End streetscape upgrades.

BRA 07 **Other public benefits, if any.**

Section 1.5 discusses the numerous public benefits offered by the Project.

BRA 08 **Existing zoning requirements, zoning computation forms, and any anticipated requests for zoning relief should be explained.**

Section 1.3.2 addresses zoning.

BRA 09 **Anticipated permits required from other local, state, and federal entities with a proposed application schedule should be noted.**

Table 1-1 in Section 1.3 identifies the anticipated permits, reviews, and approvals required for the Project and provides a tentative schedule for those approvals.

BRA 10 **A statement on the applicability of the Massachusetts Environmental Policy Act (MEPA) should be provided. If the proposed Project is 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 [Energy and] Environmental Affairs, and the proposed schedule for coordination with BRA procedure.**

Section 1.3.1 describes the status of the Project's MEPA review.

BRA 11 **Names and addresses of Project area owners, abutters, and any community or business groups which, in the opinion of the Applicant, may be substantially interested in or affected by the Proposed Project.**

As directed by the BRA, copies of this DPIR are being provided to the Hawthorne Place and Whittier Place Condominium Associations, West End Place, and Amy Lowell House. In addition, two copies are being provided to the West End Library.

BRA 12 **A list of meetings held and proposed with interested parties, including public agencies, abutters, and community and business groups.**

Section 1.4 describes community outreach and ongoing consultations with agencies and the community regarding the proposed Project.

BRA 13 **The DPIR shall contain a full description of the Proposed Project and its components, including its 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 Project. Appropriate site and building plans to illustrate clearly the Proposed Project shall be required.**

Section 2.0 contains a full Project description and accompanying figures. Section 5.0 discusses the Project's urban design elements in the context of the surrounding neighborhood.

BRA 14 **A description of alternatives to the Proposed Project that were considered shall be presented and the primary differences among the alternatives, particularly as they may affect environmental conditions, shall be discussed. In addition, any alternative development studies requested by the Boston Landmarks Commission should be discussed.**

Section 2.3 identifies the alternatives considered for the Project which include No Build and as-of-right. The discussion includes an analysis of potential impacts from each of these alternatives.

BRA 15 **The Proponent should consider and document how it would use the Leadership in Energy and Environmental Design (LEED) standards.**

The Proponent is committed to incorporating sustainable design elements into the proposed Project, and has committed to designing and constructing a Project that is certifiable under the LEED-NC system. Figure 4-37 is a LEED-NC 2009 checklist that identifies the green design goals for this Project, and Section 4.12 describes how the Project will address earn credit noted with a "yes" on the checklist.

BRA 16 **Boston Landmarks approval of the demolition [of the existing garage] via Article 85 will be required.**

As described in Section 6.4.2, an Article 85 application will be submitted to the BLC for both the existing garage and the former Boston Children's School Annex.

BRA 17 **A daylight analysis for both build and no-build conditions shall be conducted by measuring the percentage of skydome that is obstructed by the Proposed Project building(s) and evaluating the net change in obstruction. If alternative massing studies are requested or result as part of the Article 80 development review process, daylight analysis of such alternatives shall also be conducted for comparison. The study should treat three elements as controls for data comparisons: existing conditions, the as-of-right (defined in this case as the applicable general area zoning), and context examples. The areas of interest include Martha Road/Lomasney Way, Thoreau Path, and the proposed new entry path. Daylight analyses should be taken for each major building façade fronting these public ways. The midpoint of each public accessway or roadway (discuss Thoreau Path with BRA staff) should be taken as the study point. The BRADA program must be used for this analysis.**

The daylight analysis is provided in Section 4.3.

BRA 18 **When sufficient progress in preparation of a Preferred Alternative in the DPIR in response to the Scoping Document has been made on the design pursuant to preliminary BCDC, IAG, and BRA staff comments, BCDC Design Committee meetings should be scheduled by contacting David Carlson, Executive Director of the BCDC... It should be noted that we will expect a design which will allow more in-depth comment at the DPIR stage.**

The Proponent is committed to working with BRA staff, the Boston Civic Design Commission (BCDC), and the IAG.

BRA 19 **The Proposed Project should include public realm improvements that are at least the equal in positive attribute to any factors that might be perceived as negative, while keeping to the extent possible the prior amenities.**

Section 1.5 discusses the numerous public benefits offered by the Project. The Project will transform the underutilized site by replacing the existing parking garage with a vibrant, active new area of the neighborhood. Acknowledging the importance of the Project site to the West End community, the Project design is intended to complement the surrounding neighborhood and be compatible with community needs. The Project will maintain existing functional elements of the site such as pedestrian connections, and will provide recreational opportunities.

BRA 20 The Project shall take into account as strict height limits the FAA limits as defined by the FAA and Massport, should the bounds impact this Project site (this is unlikely in the context of the current proposal).

The Proponent will apply to the FAA for a Determination of No Hazard to Air Navigation.

BRA 21 Standard alternatives for study include no-build and an as-of-right build-out... in this case FAR 3.6+ (IPOD District M says 10), with a height of 155' (the layered zoning may make precision difficult). This alternative will conform to the density planned and anticipated in this area under current layered zoning, but not necessarily under the original URP. The Proponent has presumed a process allowing the flexibility in density and height appropriate both to the expense of taking down an economically viable use, and to the uses proposed, as well as the Garden City visualization/planning concept promulgated for the West End. We therefore assume that the Proposed Project as represented in the DPIR will have taken into account any necessary mitigating factors discovered as a result of further studies by the Proponent.

Section 2.3.1 describes the No Build alternative, and Section 2.3.2 describes the as-of-right alternative.

BRA 22 The Proposed Project should meet the 'performance standard' of *generally* having a lesser degree of environmental impacts than either the full as-of-right build-out of existing conditions, whichever are most impactful... We will expect in fact that mitigations or positive urban benefits will result from this Project and in balance far outweigh any negative impact.

Please see the response to BRA 19.

BRA 23 The highest building elements generally should be set back from the adjacent pedestrian paths to the extent possible, as well as other buildings, given the site's infrastructure and dimensional constraints. They should also be as varied in height as possible. Where desirable to create an emphasis or entry, the high elements could come straight down to the ground, but only if wind conditions permit such.

Both proposed towers have eight-story massing elements to reduce overall scale and respond to adjacent building heights. A single-story retail space will project into the pedestrian plaza between the towers to further reduce scale. Ground-floor canopies at major entrances and exterior spaces will shelter the public and signal entry.

BRA 24 Active ground floor program elements should be enhanced or expanded as a positive element of the Project, with entries focused on the *most public* corridors. A hierarchy of such uses should be considered, with some uses encouraging the use of the new connections. Uses should include the retail and lobby spaces shown but also possible quasi-public, civic, or recreational/fitness spaces.

The street-level floor plan provided as Figure 2-21 and the Thoreau Path-level floor plan provided as Figure 2-22 show a hierarchy of paths that lead to primary lobby and retail entries near Lomasney Way and secondary semi-public entries facing Thoreau Path. Large canopies and additional glazing will emphasize lobby and retail spaces along Lomasney Way. Secondary entries toward Thoreau Path will have less prominent canopies, less glazing, and fewer screening devices to provide a more private setting.

BRA 25 Incorporate bicycle stations into the Project, both public and private.

The Project will comply with the City of Boston's Bicycle Parking Guidelines; however, a bicycle sharing station is not planned for the Project due to the proximity of the existing bicycle sharing station at the corner of Lomasney Way and Staniford Street.

BRA 26 The residential lobbies are the threshold between truly public and private and, unless intended to offer more to the former, should not take up most of the visible ground floor space as currently shown.

The Proponent has revised the ground floor of the West Tower to incorporate 3,000 square feet of retail along the new threshold between the two towers.

BRA 27 Necessary service and access functions should not occur *directly* on Lomasney Way or Martha Road, or should be minimized.

Building service and loading will occur within the existing Longfellow Place service area, which is located beneath the West End Place Courtyard. Access to the service area will be via the driveway between the Project and West End Place.

BRA 28 If possible to do so, consider linking the garage with the one serving the Longfellow towers. Since the operating entity is presumptively the same, this might work to mitigate against increased traffic flow at a single access/egress point.

Consistent with existing conditions, the proposed garage has also been planned with a below-grade connection to the existing Longfellow Place Garage, providing additional exiting capacity during events.

BRA 29 **Treatment of any directly visible portions of the garage should be of a high architectural character with robustly convincing detail. The landscaping should be strong as well, with green/sustainable strategies built in, consideration of upper green roof uses, ample depth of soil for plantings and trees, and a design which allows a clear public path into the area while not making it a pedestrian highway in scale.**

Visible portions of the proposed garage will be integrated architecturally into the base of each tower (see Figures 2-35 and 2-36). A green roof is currently planned for the eight-story wing of the East Tower. A hierarchy of pedestrian paths is now included in the proposed landscaping, as is a variety of conditions on the Project site including seating areas, plantings, trees of differing heights and character, non-programmed open space, public art, and a multi-surface sport court, as shown on Figure 1-3. The first level of parking will slope down from Lomasney Way, providing ample room for planting above.

BRA 30 **The Lomasney side should be welcoming and inviting; the Thoreau Path side should be a continuation of the sense of a wooded, more quiet respite that residents imagine and enjoy; the transition should be considered as a threshold from either direction.**

The treatment of the ground plane and the canopy of new shade and flowering trees will serve to frame views and offer a pedestrian scale to the open spaces surrounding the new towers.

BRA 31 **Street edges and new sidewalks created as a result of any version of the Proposed Project must conform to all applicable standards and be appropriately sized to bear pedestrian traffic peaks. Street trees and plantings should be included in site plans. Pedestrian paths in general should be reinforced, with possible multiple pathways through the site. Future pedestrian connections to North Station and the Bulfinch Triangle area must be considered in the pedestrian connections as well as proposed building elements that may give urban cues or more directly provide good and safe connections. Consider physical connections additionally to the West End Place parcel if such are possible.**

Sidewalks adjacent to street edges will be designed to accommodate peak flow and will use approved accessible surfacing. Street trees will be incorporated into the streetscape using a continuous treeway system. Pedestrian paths through the site will offer multiple connections and consideration for immediate and future circulation to adjacent properties.

BRA 32 **The architectural expression of the tower elements should be clarified. They should be differentiated, and shaped as part of the skyline, but of the same family. Consider the view studies requested in the list of materials later to achieve a massing and orientation which begins to break the scale of the towers and podium element(s) down to that of the appropriate scale-giving datum elements in the area. This effect will be most noticeable from the intermediate range of direct views, including views from within nearby neighborhoods and from both directions along the Martha Road/Merrimac Street and Causeway/New Staniford Street corridors.**

The proposed towers will each draw from the same palette of materials in different ways to provide a dynamic visual within the Boston skyline while at the same time relating to each other (see Figures 2-35 and 2-36). The towers will differ in color, façade pattern, and height. The design of each tower will be split vertically into distinct halves, with the towers mirroring each other so they can be distinguished from any view in the city.

BRA 33 **The architectural expression of the podium elements should partake of the tower elements to connect the two vertically. Over-differentiation by fragmenting the composition with multiple façade types or rhythms may be too much; simplify the treatment of the architecture. Go beyond the preliminary PNF drawings, but consider other massing solutions or refinements of the current strategy as part of your studies; include material selection proposals that are achievable and enhance the design. Mark this space in the City as an important connection, add a visual playfulness to the contextual references, and break the deadening effect of the current garage's mass.**

The proposed podium elements at the base of each tower will incorporate paneling and glazing systems similar to the towers above. Each element will begin to reduce in scale as well as shift in color and texture as it approaches the ground to better relate to the pedestrian level and adjacent architectural context.

BRA 34 **Reinforce all pedestrian pathways; develop a plan which shows the building program and how it supports such activity within the future pedestrian/public access network.**

Pedestrian paths will support and reinforce the building program as well as the accepted program of the open spaces throughout the site including the creation of a new community open space and pavilion.

BRA 35 **To the maximum extent possible, provide publicly-accessible *interior or rooftop* spaces.**

The Proponent is exploring the possibilities for publicly-accessible spaces consistent with Equity's management and security practices.

BRA 36 **Written description of program elements and space allocation (in square feet) for each element, as well as Project totals.**

Section 2.2 describes Project elements and their dimensions.

BRA 37 **Neighborhood plan, elevations and sections at an appropriate scale (1″=100′ or larger as determined by the BRA) showing relationships of the proposed Project to the neighborhood context: (a) massing; (b) building height; (c) scaling elements; (d) open space; (e) major topographic features; (f) pedestrian and vehicular circulation; and (g) land use.**

The graphic exhibits included in this submittal are formatted for small format printing. Larger scale drawings will be provided to the BRA for review.

BRA 38 **Color, or black and white 8″x10″ photographs of the site and neighborhood.**

Figures 2-5 through 2-14 contain photographs of the Project site and neighborhood.

BRA 39 **Sketches and diagrams to clarify design issues and massing options.**

Refer to Figures 2-37 through 2-58 for a series of close, intermediate, and long-range views that have been studied for the Project.

BRA 40 **Eye-level perspective (reproducible line or other approved drawings) showing the proposal (including main entries and public areas) in the context of the surrounding area. Views should display a particular emphasis on important viewing areas such as key intersections, pathways, or public parks/attractions… All perspectives should show (in separate comparable sketches) at least both the build and no-build conditions; any alternatives proposed should be compared as well. The BRA should approve the view locations before analysis is begun.**

Refer to Figures 2-37 through 2-46, 2-48, 2-49, 2-51, 2-53, and 2-55 through 2-58 for a series of eye-level views depicting the proposed design and No-Build alternative.

BRA 41 **Additional aerial or skyline views of the Project, if and as requested.**

Refer to Figures 2-16, 2-47, 2-50, and 2-54 for aerial and skyline views of the proposed Project.

BRA 42 **Site sections at 1″=20′ or larger (or other scale approved by the BRA) showing relationships to adjacent buildings and spaces.**

Figures 2-29 and 2-30 depict site sections.

BRA 43 **Site plan(s) at an appropriate scale (1″=20′ or larger, or as approved by the BRA) showing: (a) general relationships of proposed and existing adjacent buildings and open spaces; (b) open spaces defined by buildings on adjacent parcels and across streets; (c) general location of pedestrian ways, driveways, parking, service areas, streets, and major landscape features; (d) pedestrian, handicapped, vehicular and service access and flow through the parcel and to adjacent areas; (e) survey information, such as existing elevations, benchmarks, and utilities; (f) phasing possibilities; and (g) construction limits.**

The graphic exhibits included in this submittal are formatted for small format printing. Larger-scale drawings will be provided to the BRA for review.

BRA 44 **Massing model (ultimately in basswood) at 1″:40′0″ for use in the Authority's Downtown Model.**

Upon Project approval, the Proponent will provide a model for the city's Downtown Model.

BRA 45 **Study model at 1″=16′ or 1″=20′ showing preliminary concept of setbacks, cornice lines, fenestration, façade composition, etc.**

At this stage of design, the Proponent will provide sketches that accurately depict the proposed Project.

BRA 46 **Drawings at an appropriate scale (e.g., 1″=16′0″, or as determined by the BRA) describing architectural massing, façade design and proposed materials including: (a) building and site improvement plans; (b) neighborhood elevations, sections, and/or plans showing the development in the context of the surrounding area; (c) sections showing organization of functions and spaces, and relationships to adjacent spaces and structures; (d) preliminary building plans showing ground floor and typical upper floor(s); and (e) phasing, if any, of the proposed Project.**

The graphic exhibits included in this submittal are formatted for small format printing. Larger scale drawings will be provided to the BRA for review.

BRA 47 **A written and/or graphic description of the building materials and its texture, color, and general fenestration patterns is required for the proposed development.**

Section 5.1.3 discusses façade design, fenestration and building materials.

BRA 48 **Electronic files describing the site and proposed Project at Representation Levels one and two ("Streetscape" and "Massing") as described in the document *Boston "Smart Model": CAD & 3D Model Standard Guidelines*.**

Electronic files will be available to the BRA.

BRA 49 **Full responses, which may be in the formats listed above, to any urban design-related issues raised in preliminary reviews or specifically included in the BRA scoping determination, preliminary adequacy determination, or other document requesting additional information leading up to BRA Board action, inclusive of material required for Boston Civic Design Commission review.**

Written and graphic responses to urban design-related issues will be provided throughout the Article 80 approval process.

BRA 50 **Proposed schedule for submission of all design or development-related materials.**

Upon completion of the Article 80 process, and after approval by the BCDC and BRA Board, the Proponent anticipates the following design schedule for the Project:

- Schematic design phase: 6 weeks;
- Design development phase: 12 weeks; and
- Construction document phase: 24 weeks.

The Proponent expects to make submissions to the BRA at the completion of the schematic design and design development phases, as well as at the 75% construction document phase.

BRA 51 **Diagrammatic sections through the neighborhood (to the extent not covered in item #2 above) cutting north-south and east-west at the scale and distance indicated above.**

Figure 2-52 illustrates neighborhood sections including the proposed Project.

BRA 52 **True-scale three-dimensional graphic representations of the area indicated above either as aerial perspective or isometric views showing all buildings, streets, parks, and natural features.**

Figures 2-31 through 2-34 provide aerial perspective views of the proposed Project. Figures 2-60 through 2-62 depict axonometric views of each design alternative.

BRA 53 **In addition to the comments and scoping by others, the Proponent is directed to conduct a specific shadow analysis for the specific time range of any new impacts on public green or open spaces… in other words defining rough extent and duration**

in terms of hours and time of year. Give particular attention to the period from March 21 to October 21. If overall duration is greater than one hour, provide an overlap study which defines any area impacted by shadows for a period greater than one hour. All net new shadows shall be defined as outline elsewhere either by darker tone or color and shall be clearly shown to their full plan extent, whether on street, park, or rooftop.

Section 4.2 contains a shadow analysis that complies with these specifications.

BRA 54 Regarding wind, all wind tunnel test points shall be approved by BRA staff before conduction of testing. Wind analysis may be requested at points within several blocks of the property(ies) in question; where contiguous to open space, analysis may extend to likely bounds of no impact, possibly as far as 1200' (the Greenway and City Hall Plaza fall into this category). Analysis of results and effective mitigation shall be presented in the DPIR using diagram methodology so that the delta or changes manifested by the Project relative to existing or as-of-right conditions, whichever provides the higher base impacts, are clearly understood.

The proposed design uses a combination of horizontal canopies, vertical fins, and coniferous plantings to mitigate potential wind impacts. Wind analysis results for existing conditions, as-of-right, and proposed designs are presented in Section 4.1.

BRA 55 An infrastructure analysis must be performed... The applicant's submission must include an evaluation of the proposed Project's impact on the capacity and adequacy of existing water, sewerage, energy (including gas and steam), and electrical communications (including telephone, fire alarm, computer, cable, etc.) utility systems, and the need reasonably attributable to the proposed Project for additional systems facilities.

Section 7.0 contains an infrastructure analysis of the capacity and adequacy of existing water, sewer, drainage, and other utility systems.

BRA 56 Any system upgrading or connection requiring a significant public or utility investment, creating a significant disruption in vehicular or pedestrian circulation, or affecting any public or neighborhood park or streetscape improvements, comprises an impact which must be mitigated. The DPIR must describe anticipated impacts in this regard, including specific mitigation measures, and must include nearby proposed project (i.e., the four approved Bulfinch Triangle parcels, Government Center Garage, Nashua Street Residences, Lovejoy Wharf, et al.) build-out figures in the analysis.

The proposed water, sewer, and storm drain utilities are not expected to require an investment in existing BWSC utility mains. The condition of existing infrastructure is described in Section 7.0.

BRA 57 **Estimated water consumption and sewage generation from the proposed Project and the basis for each estimate. Include separate calculations for air conditioning system make-up water.**

Estimated water consumption and sewage generation calculations are provided in Sections 7.1 and 7.2. Make-up water is estimated to be 10% of total cooling tower system capacity (see Section 7.3.3).

BRA 58 **Description of the capacity and adequacy of water and sewer systems and an evaluation of the impacts of the proposed Project on those systems; sewer and storm drain systems should include a tributary flow analysis as part of this description.**

The capacity and adequacy of water and sewer systems are described in Sections 7.1 and 7.2.

BRA 59 **Identification of measures to conserve resources, including any provisions for recycling or "green" strategies, including green roofs, rain/runoff filtration and re-use, etc.**

Section 4.6 discusses stormwater and water quality and describes how the Project will improve conditions on the site.

BRA 60 **Description of the proposed Project's impacts on the water quality of Boston Harbor, Charles River, or other water bodies that could be affected by the Project, if applicable.**

Please see Sections 4.6 and 7.2.6 for a discussion pertaining to stormwater quality.

BRA 61 **Description of mitigation measures to reduce or eliminate impacts on water quality.**

Please see Sections 4.6 and 7.2.6 for a discussion pertaining to stormwater quality.

BRA 62 **Description of impact of on-site storm drainage on water quality.**

Please see Sections 4.6 and 7.2.6 for a discussion pertaining to stormwater quality.

BRA 63 **Information on how the proposed Project will conform to requirements of the Ground Water Trust under Article 32, if applicable, by providing additional recharge opportunities.**

The Project is located outside the Groundwater Conservation Overlay District, and is therefore not subject to Article 32.

BRA 64 **Detail methods of protection proposed for infrastructure conduits and other artifacts, including any MBTA tunnels or structures, and BSWC sewer lines and water mains, during construction.**

As described in Section 4.11.8, the Proponent will require the contractor to provide measures required by federal, state, and municipal laws, regulations, and ordinances for the protection of surrounding utilities and structures during construction operations. The Proponent will coordinate construction operations with the BWSC and private utility companies to ensure that construction operations comply with applicable standards and regulations to protect existing utilities.

BRA 65 **Detail the energy source of the interior space heating, how obtained and, if applicable, plans for reuse of condensate.**

Gas-fired boilers will provide heat to the condenser loop during the winter months. The closed condenser water loop will serve the stacked heat pumps year-round.

BRA 66 **Thorough consultation with the planners and engineers of the utilities will be required, and should be referenced in the Infrastructure Component section.**

The Proponent will coordinate with the BWSC during the Site Plan Review process.

BRA 67 **Description of energy requirements of the Project and evaluation of Project impacts on resources and supply.**

The Project's energy requirements and service are discussed in Section 7.3.

BRA 68 **Description of measures to conserve energy usage and consideration of the feasibility of including solar energy provisions or other on-site energy provisions, including wind, geothermal, and cogeneration.**

The proposed design will comply with the Stretch Energy Code of Massachusetts and will qualify for LEED Certification. Section 4.12.3 describes ways in which the Project's energy use will help achieve these goals.

BRA 69 **The location of transformer and other vaults required for electrical distribution or ventilation must be chosen to minimize disruption to pedestrian paths and public improvements both when operating normally and when being serviced, and must be described.**

The transformer and other vaults will be located to minimize operational and maintenance impacts to pedestrian circulation.

BRA 70 **Storm drain and sewage systems should be separated or separations provided for in the design of connections.**

Storm drain and sewer systems will be connected to the system as directed by the BWSC (see Section 7.2.4 for additional details).

BRA 71 **Consider energy strategies that build upon or network the capacity in the area buildings under the control of the Proponent.**

A new energy management system will be provided that will monitor a range of equipment (see Section 7.3.6).

BRA 72 **The DPIR shall identify, map, and describe these historic resources and any other historic properties in the vicinity of the proposed Project's site and shall evaluate the anticipated effects of the proposed Project on these resources. Particular attention shall be given to the design, scale, height, massing, materials, and other architectural elements of the proposed buildings as these relate to the significant architectural and historic resources in the proposed Project's vicinity.**

Section 5.0 addresses urban design and how the Project will be compatible with surrounding architecture and features. Section 6.0 discusses potential Project impacts on historic resources.

BRA 73 **The DPIR must also include an assessment of the potential presence of archaeological resources that may be disturbed by the proposed Project.**

Section 6.0 discusses potential Project impacts on historic and archaeological resources.

BRA 74 **If applicable, based on square footage and use, the proposed Project could be subject to and be required to enter into a Development Impact Project ("DIP or Linkage") agreement. A full analysis of square footage should be submitted in the DPIR.**

Since the Project is primarily residential and has only a small retail component that is well under 100,000 square feet, it does not constitute a Development Impact Project. As described in Section 2.2, the Project will set aside up to 15 percent of the total units on the Project site as affordable units.

BRA 75 **The Proponent 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 DPIR to the BRA as required by Section 80A-2.**

The Public Notice will be published in the Boston Herald.

CITY OF BOSTON
THE ENVIRONMENT DEPARTMENT

Boston City Hall, Room 805 • Boston, MA 02201 • 617/635-3850 • FAX: 617/635-3435

July 15, 2011

Richard K. Sullivan Jr., Secretary
Massachusetts Executive Office of Energy and Environmental Affairs
100 Cambridge Street, 9th Floor
Boston, MA 02114
Attention: Aisling O'Shea, MEPA Office

Re: Garden Garage, 35 Lomasney Way, West End
Environmental Notification Form, EEA #14754

Dear Secretary Sullivan:

The City of Boston Environment Department has reviewed the Environmental Notification Form (ENF) and offers the following comments.

The project site, 3.02 acres in the West End, is bordered by Martha Road, Lomasney Way, the MBTA Green Line portal, the O'Neill Federal Building, 150 Staniford Street, Longfellow Place, Hawthorne Place and Thoreau Path. Approximately half of the project site is landlocked tidelands.

The Proponent, Equity Residential, proposes to demolish two buildings totaling 293,125 square feet – a vacant single-story structure and the 710-space Garden Garage which has a commercial tenant, Basketball City, on the fifth floor. Proposed construction is a four level, 50-foot below grade, 850-space parking garage, a 21-story, 240 foot high (zoning height) West Tower with 200 residential units and a 28-story, 310 foot high (zoning height) East Tower with 500 residential units. The Proponent will meet the Mayor's requirement for a minimum ten percent moderate/middle-income housing requirement by putting aside up to 15 percent of the units as affordable. The ENF does not indicate if the project will be rental apartments or ownership units. Retail uses will be part of the ground floor programming.

The ENF indicates that the project includes site and landscape improvements with a goal to improve connectivity to and through the development to North Station and to Massachusetts General Hospital and the Charles River Esplanade. New or replacement private, outdoor gathering spaces will be created for project residents. Primary pedestrian access between the two towers will be walks sloping at less than five percent and intermittent stairs to create terraced overlooks. The way in which wheelchair/handicapped access to terraced overlooks is not clear; we request clarification and Figures and renderings that show the proposed open space in any upcoming environmental or development review filings. BED 01

Benefits to the public trust rights in tidelands or other associated rights are identified as:

- creation of new open space – the requirement is no less than 1000 square feet of usable space per dwelling unit. The project will have 2.07 acres of open space;
- enhanced pedestrian access – the project includes a hierarchy of walkways, the primary walkway connecting Lomasney Way to Thoreau Path which will provide connections between North Station and Massachusetts General Hospital;
- creation of affordable housing;

- landscape improvements – rolling lawns, flowering trees and canopy trees for shade; and
- street-level activation.

There is a reference in the ENF to the creation of both private and public open space but there are no specifics regarding the distinct areas in each category. As the creation of that space is identified as a benefit to the public trust, it is particularly important that areas for public use and their amenities be clearly described and depicted on landscape and open space plans and renderings in any upcoming environmental or development review filings. **BED 02**

On Earth Day, 2011, Mayor Thomas M. Menino released *A Climate of Progress*, his updated Climate Action Plan. The Plan encompasses the April 2010 consensus report, *Sparking the Climate Revolution*, and the recommendations of Boston's Climate Action Leadership Committee and Community Advisory Committee. The Plan includes a set of wide-ranging recommendations aimed at significantly reducing greenhouse gas (GHG) emissions and preparing for the risks of climate change in Boston. It calls for reducing Boston's GHG emissions by 25 percent by 2020 and incorporating the potential effects of climate change in all planning and review of public and private projects. *A Climate of Progress* can be accessed at cityofboston.gov by opening the Environmental & Energy Services site and clicking on "Climate Action."

The five overarching recommendations of the Leadership Committee are:

- reduce Boston's GHG emissions 25 percent by 2020;
- immediately start incorporating projected effects of climate change — particularly sea-level rise, heat waves, and more intense storms — in all planning and review for municipal and private projects;
- develop a comprehensive public engagement effort, including a public commission and strong partnerships with community organizations;
- use climate action opportunities to advance Boston's green economy and jobs goals; and
- ensure that climate action has clear public and private leadership and sufficient public and private resources.

Achieving the Mayor's goals for reducing the effects of climate change, cultivating a city of green buildings and advancing sustainability in multiple realms will be drivers of economic development and innovation and require committed action from individuals and entities in both the public and private sectors. The following comments and requests address the intertwined challenges and solutions associated with protecting and enhancing human health, ensuring ongoing economic development, creating jobs and developing a vibrant built environment.

Climate action will bring significant economic benefits to Boston. Reducing the effects of climate change, cultivating a city of green buildings and advancing sustainability in multiple realms will be drivers of economic development and innovation and require committed action from individuals and entities in both the public and private sectors. Energy efficiency and behavior change can reduce GHG emissions from buildings, transportation and solid waste and produce net savings of over $2 billion by 2020 through lower energy bills. Demand for energy and climate-related services will create thousands of jobs. And, taking the necessary steps to prepare for climate-related change will ensure that Boston's economic and social infrastructure remains strong.

Climate change is expected to result in sea level and riverine level rise, creating construction and operational challenges for developers and building owners/managers with properties potentially subject to such rise. As a result of the potential for flooding from more intense storms, stormwater management systems may need to be sized for higher precipitation levels than the current design standards. Even when buildings are not compromised during a storm, roadways may flood, making them impassable. So, the potential effects on transportation accessibility must also be assessed. These two aspects of stormwater management speak to the benefits of a broad response and the importance of LEED Building Design and **BED 03**

Construction (BD&C) Credits Sustainable Sites (SS) 6.1, *Stormwater Design: Quantity Control*, and SS 6.2, *Stormwater Design: Quality Control*. We urge the Proponent to seek these credits and to assess the vulnerability of the project to increased flooding and identify risk management measures.

We ask that porous pavement be considered for walkways and also ask that the Proponent help to educate the public and further improve the water quality of local water bodies by agreeing to the permanent installation of plaques that bear the warning "Don't Dump - Drains to Charles River." The plaques are best installed adjacent to all existing, modified and new catch basins. Information on the casting can be obtained from the Operations Division of the BWSC (617-989-7000). BED 04

Climate change is also likely to increase average summer temperatures, the number of days over 90 or 100 degrees, and the number of consecutive high-heat days leading to increased stress on the electrical grid. An assessment of the sufficiency of project systems and green infrastructure (e.g., plantings for shade, green roof) to keep buildings and their occupants safe during heat waves without the use of life-safety/emergency systems (e.g., generators) that may add to ozone pollution levels and increase the heat island effect. Natural ventilation, a benefit under less extreme conditions, will not, on its own, provide the relief necessary during extended, high-heat scenarios. It can play a role in risk management if the ventilation and passive cooling elements are sufficient in combination to result in the necessary level of benefit. Roof gardens with shade trees, other non-roof measures as outlined in LEED credits for Heat Island Non-Roof, green/living walls and innovative design elements that provide passive cooling are some of the options that should be assessed to address the well-being of occupants. When glazing is considered in design, it would be worthwhile to consider double- or triple-skinned curtainwalls with deep sunshades and adjustable ventilation. They would provide a thermal flue for ventilation necessary to keep solar gain out of buildings in the summer while creating a thermal insulation layer to retain heat in the winter. BED 05

This department requests that any additional environmental or development review filings include a climate change assessment and adaptation/mitigation plan. BED 06

There is a Table of Historic Resources identifying 15 properties listed on the State and National Registers and 33 resources listed on the *Inventory of Historic and Archaeological Resources of the Commonwealth.* All are within ½ mile of the project site. A map shows the locations of these resources. There is no discussion of the potential impacts of the project on the resources; BLC staff looks forward to the descriptions of potential impacts of the project in any upcoming environmental or development review filings. Massing drawings and elevations should take visual impacts on historic resources into consideration. Elevations and renderings should show the heights and massing of surrounding buildings; similar elevations and renderings including the proposed project should also be provided. Potential impacts to historic resources such as construction, vibration, groundwater disturbance, wind and shadow should be assessed and discussed in detail. Of particular importance from an historic resources perspective is the potential for shadow to create perpetual damp conditions that can harm historic structures over time. BED 07

As noted in the ENF, the two existing buildings on the site, the Garden Garage at Lomasney Way, and the former Boston Children's School Annex, will be subject to review by the Boston Landmarks Commission (BLC) under Article 85, Demolition Delay. BED 08

The BLC requests that dated cornerstones be incorporated into all new construction. This element will allow those who are attentive to and value the architecture of the City to appreciate the historical context in which structures were conceived. BED 09

In addition to shadow studies, we also look forward to the results of air quality, noise and pedestrian level wind studies. This department will pay particular attention to the effect of the project on parks, plazas, other open space, areas where pedestrians are likely to congregate (in front of historic resources or other tourist destinations, for example), and heavily used pedestrian areas and waiting areas. We ask that mitigation be described and mitigated wind speeds identified if such areas are expected to have conditions inconsistent BED 10

with an existing or planned use or in the uncomfortable for walking or dangerous categories. The shadow study should include analyses for 6:00 p.m. for the Summer Solstice and Autumnal Equinox. Shadow diagrams should include: BED 11

- a north arrow;
- street names;
- the identification of doorways, bus stops, open space and areas where pedestrians are likely to congregate (in front of historic resources or other tourist destinations, for example);
- clear delineation of shadow on both rooftops and facades; and
- clear distinctions between existing shadow and new shadow.

Diagrams should be oriented and scaled consistent with diagrams depicting wind monitoring locations, for both the Build and No Build conditions.

Although no regulatory limits have yet been set on Ultra Fine Particulates (UFP), their effect on human health is not at issue. It is essential that the project buildings and systems be designed to allow for minimum pathways to exposure. Some effective measures include the installation of state-of-the art air conditioning and filtration systems that are effective in trapping UFP (along with measures to maintain these systems), modifying building design features and locating intake vents as far as possible from sources of pollutants, including exhaust vents. BED 12

We support the goal of the U.S. Green Building Council to minimize light trespass from buildings and sites, to reduce sky-glow, increase night sky access, improve nighttime visibility through glare reduction and reduce development impact from lighting on nocturnal environments. We also support the mission and goals of the International Dark-Sky Association to preserve and protect the nighttime environment by reducing light pollution through better lighting practices that provide:

- energy savings resulting in economic benefits;
- superb nighttime ambience and quality of life;
- conservation of ecosystems;
- safeguarding of scientific and educational opportunities, such as astronomy;
- preservation of cultural heritage and inspiration for the arts;
- increased visibility, safety, and security at night by reducing glare; and
- protection of human health.

Exterior lighting fixtures should be low-height, shielded and downward directed. The Web site for the International Dark-Sky British Association at www.darksky.org includes photographs that demonstrate the visual differences between lighting schemes and show that orientation, type of fixture, reduction in the number of fixtures can be used to promote and maintain safety and security while preventing light trespass that can disturb neighbors. At the Web site home page click on "Resources" then "Images" under the Multimedia heading. BED 13

As part of Mayor Menino's overall efforts, the City explored the use of Light Emitting Diodes (LED) lighting for public spaces, sidewalks and roadways through the installation of demonstration projects and has installed approximately 9,000 LED streetlights in Boston neighborhoods. Some benefits of LED lighting are:

- LED street lights cost significantly less to operate and cut energy use and carbon emissions. Energy savings can range from 50 to 80 percent;
- LED fixtures can be "aimed" to minimize light trespass and light pollution;
- light from each LED can be guided with secondary optics to provide far more even illumination using lower light levels than traditional lighting sources. Traditional light sources typically over light the area directly under the pole to ensure that the outer areas surrounding the pole are well lit. LED fixtures are designed to spread the light more evenly eliminating the need for overlighting;

- LEDs can produce enhanced visibility with better color rending; colors seem more natural. They offer whiter light in a range of color temperatures with a higher color rendering index for enhanced visibility;
- the growing number of vendors of quality LED street and general lighting is helping to drive costs down and is addressing the full range of applications;
- LEDs offer long life and high reliability. Quality street lights can last 10 years or more depending upon usage and can therefore offer significant reduction in maintenance costs compared with traditional lights sources that require replacement every 2-3 years; and

We ask that Proponents discuss with the Public Works Department the potential for installing LED streetlights and we request that the Proponent evaluate the use of LEDs for exterior and common area use at the project.

Grow Boston Greener (GBG) is a collaborative effort of the City of Boston and its partners in Boston's Urban Forest Coalition (BUFC) to increase the urban tree canopy cover in the city by planting 100,000 trees by 2020. The planting of these trees will increase Boston's tree canopy cover from 29% to 35% by 2030 as the planted trees mature and will help to mitigate the urban heat island effect, reduce energy consumption through the appropriate placement of trees, improve air quality and improve storm water management through strategic planting. This department strongly supports the planting of shade trees, to the greatest extent possible, as part of all projects and ask that they be used, in part, as an element of the stormwater management plan. Please evaluate species with consideration of the Asian Longhorned Beetle situation. The following resources are useful: BED 14

- ALB Information from the MA Department of Conservation and Recreation http://www.mass.gov/dcr/
- ALB Information from the MA Department of Agricultural Resources http://www.mass.gov/agr/alb.htm
- ALB Information from USDA's Animal and Plant Health Inspection Service http://www.aphis.usda.gov/plant_health/plant_pest_info/asian_lhb/index.shtml
- ALB Information from U.S. Forest Service http://na.fs.fed.us/fhp/alb/

We note that construction sometimes requires the temporary removal of healthy public shade trees. A public hearing is required before removal. Information on the process can be obtained from staff of the Boston Parks and Recreation Department. BED 15

The existing parking garage is permitted for 410 commercial parking spaces and 300 residential/private/exempt spaces for employers and merchants; 14 of the exempt spaces leased to the Amy Lowell Apartments. The Proponent plans to maintain 410 commercial parking spaces and add 140 for the residential/private/exempt uses for a total of 440. This would result in a parking ratio of 0.4 spaces per unit. Application must be made to the Boston Air Pollution Control Commission (APCC) for a change in parking freeze permit. BED 16

The project is expected to generate 486 new daily vehicle trips, all residential, for a total of 2,086 per day. A separate analysis will be conducted to forecast the number of non-residential trips. Daily residential mode splits are expected to be:

- 65 percent walk/bike (1652 trips);
- 21 percent auto (486 trips); and
- 14 percent transit (356 trips).

Minimizing vehicle trips in Boston is a measure necessary to achieve Mayor Menino's GHG reduction goal. As the April 2010 report states, "Reducing Boston's greenhouse gas emissions will involve all segments of the Boston community. Nearly half of the reductions would come from sources largely under the control of individual residents and commuters." The report shows that, in regard to fuel type, 19 percent of GHG are

associated with gasoline use. A 31 percent reduction in GHG from the transportation sector overall and a 29 percent reduction in the use of gasoline will be necessary. Eight percent will have to come from a combination of the following vehicle-miles-traveled reductions: mass transit/parking, car sharing and bike programs.

The following are proposed Transportation Demand Management (TDM) measures for the project:

- encourage travelers to use alternatives to driving alone;
- leverage the excellent accessibility of transit in marketing the development to future residents;
- provide an on-site transportation coordinator;
- provide bicycle parking areas; and
- distribute transit maps to residents, guests and employees.

The ENF is not clear about the nature of the travelers mentioned in the first measure or the means by which single occupant vehicle (SOV) use will be discouraged. More detail should be provided. BED 17

Developing TDM plans can be challenging when an area offers both numerous parking facilities and convenient access to a wide variety of public transit alternatives. And, having a reasonable estimate of the number of employees who will be working at the retail space, in the maintenance and operation of the buildings and for building occupants and the expected number of patrons of the retail space is important.

The Transportation Access Plan Agreement (TAPA) for the project will specify the number of residents' bicycles for which secure storage, protected from the elements must be provided and we understand from the ENF that on-site bicycle parking areas will be available for guests and employees. As an additional measure, we suggest that the management company join the A Better City Transportation Management Association (ABC TMA) and require that retail tenants become members so that employees can take advantage of programs as ride matching, guaranteed ride home and workout to work. We support the posting of public and private transit (including water) schedules and rate information in prominent locations in common areas of the buildings (including employee areas) and suggest that information about car sharing be posted as well. We also recommend that the same information be made available in resident orientation packets and posted on any Web sites associated with the project and its retail tenants. BED 18

There are three Zipcars at Whittier Place and four at the West End Garage at 4 Emerson Place. We suggest that if car share vehicles were located at the project, they may be well used. BED 19

An increasingly common residential TDM measure for condominiums is offering one monthly Massachusetts Bay Transportation Authority (MBTA) Charlie Card for each unit during the first six months after the initial sale of each unit. Such subsidies encourage residents to try the transit system and emphasize that city living at the project can be comfortable and does not always require a vehicle. BED 20

The management and ownership status of the residential/private/exempt parking is not discussed in the ENF. We request the Proponent discuss in any upcoming environmental or development review filings if parking spaces will be sold or leased. BED 21

Should unit owners/tenants not buy/lease a parking space per unit, a plan must be in place to prevent the development of a secondary, commuter parking market using residential spaces. Parking space leases, residential leases, unit deeds, parking space deeds and master deeds should specify that parking spaces cannot be leased to third parties. We would support a caveat that parking spaces not sold or leased to building occupants may be leased only to neighborhood residents who have a valid City-issued parking permit for the West End. BED 22

According to the Massachusetts Department of Environmental Protection (DEP), about 33 percent of mobile source particulate matter (PM) and ten percent of all nitrogen oxide (NO_x) pollution in the northeast is caused by construction vehicles. More than 90 percent of diesel engine particulate emissions are highly respirable and carry toxins deep into the lung, exacerbating human respiratory ailments. The U. S. Environmental Protection Agency (EPA) has proposed classification of diesel exhaust as "highly likely to be carcinogenic in humans." It estimates that diesel engines currently on the road can run for 1,000,000 miles and remain in operation for as long as 20 to 30 years. This amounts to 160 to 240 tons of pollution over the life of each engine.

Oxidation catalysts and catalyzed particulate filters are designed to reduce air quality degradation caused by emissions from heavy- duty, diesel-powered construction equipment. Oxidation catalysts and particulate filters can reduce emissions of particulate matter by at least 20 percent, hydrocarbon emissions by 50 percent and carbon monoxide by 40 percent. Emissions of formaldehyde, benzene, acrolein, 1-3 butadiene, volatile organic compounds (VOC), oxides of nitrogen (NO_x) and other air toxins are also reduced.

Beginning with model year 2007, on-road diesel vehicles are required to comply with strict EPA emissions requirements. Standards for new engines in non-road equipment will be phased in starting with the smallest engines in 2008 until all but the very largest diesel engines meet both NOx and PM standards in 2014. Some of the largest engines, 750+ horsepower, will have one additional year to meet the emissions standards.

We ask that all pre-2007 diesel construction vehicles working on the project be retrofitted using retrofit technologies approved by the United States Environmental Protection Agency (EPA) and that ultra low-sulfur diesel (ULSD) fuel (15 ppm) be used for all off-road diesel equipment. **BED 23**

Thank you for the opportunity to offer comment. We look forward to additional information and to the development's progress.

Sincerely,

Bryan Glascock
Commissioner

cc: Geoffrey Lewis, Senior Project Manager, Boston Redevelopment Authority

BOSTON ENVIRONMENT DEPARTMENT

BED 01 **The way in which wheelchair/handicapped access to terraced overlooks [will be provided] is not clear; we request clarification and figures and renderings that show the proposed open space in any upcoming environmental or development review filings.**

Universal access to public spaces has been illustrated on the site plan and will continue to be provided and maintained as the plan evolves (see Figure 1-3).

BED 02 **There is a reference in the ENF to the creation of both private and public open space but there are no specifics regarding the distinct areas in each category. As the creation of that space is identified as a benefit to the public trust, it is particularly important that areas for public use and their amenities be clearly described and depicted on landscape and open space plans and renderings in any upcoming environmental or development review filings.**

The proposed private and public areas have been clarified on the site plan (see Figures 1-3 and 2-23).

BED 03 **As a result of the potential for flooding from more intense storms [due to climate change], stormwater management systems may need to be sized for higher precipitation levels than the current design standards... The potential effects on transportation accessibility must also be assessed... We urge the Proponent to seek these [LEED Sustainable Sites 6.1, *Stormwater Design: Quantity Control* and SS 6.2 *Stormwater Design: Quality Control*] credits and to assess the vulnerability of the project to increased flooding and identify risk management measures.**

The Project currently includes an overall reduction in impervious area and a stormwater infiltration system which will reduce both the rate and volume of stormwater leaving the site. LEED credits will be considered in the design phase and are also discussed in Section 4.12. Flooding of roadways, to the extent that the roadways become impassible, would be a rare event and likely a short-lived inconvenience. In such a rare event, Project residents, visitors, and employees would continue to be able to take advantage of several non-auto alternatives (e.g., public transit, biking, and walking).

BED 04 **We ask that porous pavement be considered for walkways and also ask that the Proponent help to educate the public and further improve the water quality of local water bodies by agreeing to the permanent installation of plaques that bear the warning "Don't Dump – Drains to the Charles River."**

The Proponent will consider the use of porous pavement as the Project design progresses. As requested, the Proponent will install "Don't Dump" plaques next to the new or modified catch basins within the limit of work.

BED 05 **An assessment of the sufficiency of project systems and green infrastructure (e.g., plantings for shade, green roof) to keep buildings and their occupants safe during heat waves without the use of life-safety/emergency systems (e.g., generators) that may add to ozone pollution levels and increase the heat island effect [should be performed].**

Project roofs will consist of either white surfaces or green vegetation. Highly-glazed curtain wall areas will incorporate deep horizontal or vertical sunshade devices and will meet Stretch Energy Code requirements for increased solar heat gain resistance.

BED 06 **This department requests that any additional environmental or development review filings include a climate change assessment and adaptation/mitigation plan.**

The Project site is not located within the floodplain as delineated by the Federal Emergency Management Agency. Furthermore, the Project site is developed and does not contain wetlands. Since the first occupied level of the proposed Project will be at an elevation of more than 11 feet above mean sea level, there is little to no susceptibility to projected sea-level rise.

The Proponent is considering a green roof for the proposed eight-story massing, which will provide insulation as well as stormwater retention. In accordance with the energy code, windows will be glazed to have a high resistance to heat gain. Similarly, the Proponent is also considering white roofs, which would resist absorbing solar heat, thereby minimizing heat gain. It is anticipated that comfort air conditioning systems will not be connected to the emergency generator power system. In the event of a heat wave and loss of electrical power, windows may be opened manually to allow for air circulation.

BED 07 **Massing drawings and elevations should take visual impacts on historic resources into consideration... Potential impacts to historic resources such as construction, vibration, groundwater disturbance, wind and shadow should be assessed and discussed in detail. Of particular importance from an historic resources perspective is the potential for shadow to create perpetual damp conditions that can harm historic structures over time.**

Section 6.0 discusses the potential Project impacts on historic resources.

BED 08 **[T]he two existing buildings on the site, the Garden Garage at Lomasney Way and the former Boston Children's School Annex, will be subject to review by the Boston Landmarks Commission (BLC) under Article 85, Demolition Delay.**

As described in Section 6.4.2, an Article 85 application will be submitted to the BLC for both the existing garage and the former Boston Children's School Annex.

BED 09 **The BLC requests that dated cornerstones be incorporated into all new construction.**

The Project will include a dated cornerstone within the proposed new construction to identify the date of construction.

BED 10 **In addition to shadow studies, we also look forward to the results of air quality, noise and pedestrian-level wind studies... We ask that mitigation be described and mitigated wind speeds identified if such areas are expected to have conditions inconsistent with an existing or planned use of in the uncomfortable for walking or dangerous categories.**

Wind tunnel analysis results are provided in Section 4.1, and a shadow analysis is included in Section 4.2. An air quality analysis is provided in Section 4.5, and a noise analysis is provided in Section 4.9.

BED 11 **The shadow study should include analyses for 6:00 p.m. for the Summer Solstice and Autumnal Equinox. Shadow diagrams should include: a north arrow; street names; the identification of doorways, bus stops, open space and areas where pedestrians are likely to congregate; clear delineation of shadow on both rooftops and facades; and clear distinctions between existing shadow and new shadow. Diagrams should be oriented and scaled consistent with diagrams depicting wind monitoring locations, for both the Build and No Build conditions.**

Section 4.2 contains the shadow analysis and accompanying figures. Section 4.1 describes the wind study and includes figures showing wind monitoring locations.

BED 12 **It is essential that the project buildings and systems be designed to allow for minimum pathways to [Ultra Fine Particulates] exposure.**

All intake air into the proposed Project will be designed with MERV 6 or greater air filtration to meet ASHRE 62.1-2007. Please see Section 4.12.5, Indoor Environmental Quality, for additional information.

BED 13 **Exterior lighting fixtures should be low-height, shielded and downward-directed... We ask that [the] Proponent discuss with the Public Works Department the potential for installing LED streetlights and we request that the Proponent evaluate the use of LEDs for exterior and common area use at the project.**

Lighting fixtures along public paths will be focused on the path of travel without providing unnecessary illumination to surrounding areas or buildings. LED solutions will be fully explored for exterior applications.

BED 14 **This department strongly supports the planting of shade trees, to the greatest extent possible, as part of all projects and asks that they be used, in part, as an element of the stormwater management plan. Please evaluate species with consideration of the Asian Longhorned Beetle situation.**

Shade trees will be included in the final design to offer shade and scale to outdoor spaces and to frame view corridors. Trees will be selected based on appropriateness for New England and resistance to disease and insects. The Project will include diverse tree species selected based on environmental conditions involving wind, soil, sun, shade, and moisture.

BED 15 **We note that construction sometimes requires the temporary removal of healthy public shade trees. A public hearing is required before removal.**

The Proponent will comply with requirements for removal of public shade trees.

BED 16 **Application must be made to the Boston Air Pollution Control Commission (APCC) for a change in parking freeze permit.**

The Proponent has had preliminary discussions with APCC staff regarding the proposed changes, and will continue to coordinate with APCC to amend the freeze permit, if necessary.

BED 17 **The ENF is not clear about the nature of the travelers [who will be encouraged to use alternatives to driving alone]... or the means by which single-occupant vehicle (SOV) use will be discouraged. More detail should be provided.**

The Proponent will encourage residents and visitors to use non-auto alternatives where possible. The use of non-auto alternatives will be facilitated by the Project's convenient walking distance to a wide variety of public transit alternatives, Hubway bike share locations, and the availability of shared car services in the area (i.e., Zipcar). The Proponent will dedicate a Transportation Coordinator who will work with residents as they move in to raise awareness of non-auto alternatives.

BED 18 **[W]e suggest that the management company join the A Better City Transportation Management Association (ABC TMA) and require that retail tenants become members so that employees can take advantage of programs such as ride matching, guaranteed ride home and workout to work. We support the posting of public and private transit (including water) schedules and rate information in prominent locations in common areas of the buildings (including employee areas) and suggest**

that information about car sharing be posted as well. We also recommend that the same information be made available in resident orientation packets and posted on an Web sites associated with the project and its retail tenants.

The Proponent will consider joining the ABC TMA and is committed to a variety of TDM measures as described in Section 3.3.2.12.

BED 19 We suggest that if car share vehicles were located at the project, they may be well used.

As described in Section 3.3.2.12, the Proponent currently provides approximately nine shared-car spaces for Zipcar, including approximately three vehicles at Asteria Garage and about six vehicles at the Longfellow Garage. Also convenient to the site are 17 additional Zipcars, including three vehicles at Whittier Place, two vehicles in the MGH Fruit Street Garage, six vehicles at Cambridge Street/Blossom Street, and six vehicles at the Cambridge Street Gas Station. As demand warrants, the Proponent will continue to coordinate with Zipcar to determine the feasibility of locating additional shared-car spaces on the site.

BED 20 An increasingly common residential TDM measure for condominiums is offering one monthly MBTA Charlie Card for each unit during the first six months after the initial sale.

TDM measures are described in Section 3.3.2.12 and will be codified in the TAPA.

BED 21 The management and ownership status of the residential/private/exempt parking is not discussed in the ENF. We request the Proponent discuss in any upcoming environmental or development review filings if parking spaces will be sold or leased.

Parking spaces will be leased, not sold; however, the Proponent reserves the right to sell spaces in the future if dictated by market demand.

BED 22 Parking space leases, residential leases, unit deeds, parking space deeds and master deeds should specify that parking spaces cannot be leased to third parties. We would support a caveat that parking spaces not sold or leased to building occupants may be leased only to neighborhood residents who have a valid City-issued parking permit for the West End.

Residential/private/exempt spaces will continue to be made available to third parties per the conditions outlined in APCC permit #81. The Proponent will work with the BED and APCC on amending the APCC freeze permit for the reconstructed garage, if necessary.

BED 23 **We ask that all pre-2007 diesel construction vehicles working on the project be retrofitted using retrofit technologies approved by the [Environmental Protection Agency] EPA and that ultra low-sulfur diesel (ULSD) fuel (15 ppm) be used for all off-road diesel equipment.**

The Proponent will encourage construction contractors to participate in MassDEP's Diesel Retrofit Program.

BOSTON
TRANSPORTATION
DEPARTMENT

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May 19, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
Boston City Hall, 9th Floor
Boston, MA 02201

RE: Garden Garage ("PNF")

Dear Jay:

Thank you for the opportunity to comment on the Garden Garage Project Notification Form dated January 7, 2011. The Project Notification Form is initiating a review of the following proposed Project:

The Garden Garage Project is located on Martha Road and Lomasney Way at Longfellow Place in the West End of Boston. The Project involves replacing the existing Garden Garage with two buildings: the North Tower which will consist of approximately 200 residential units and the South Tower which will consist of approximately 300 residential units. The Project will replace the existing garage with an 850-space below-ground parking structure for residential, employee, and public use. The Proposed Project provides approximately 985,000 square feet of development, of which approximately 551,000 square feet is residential space, 22,000 square feet is common area and amenity space for residents, and approximately 385,000 square feet is for parking and mechanical equipment.

The Boston Transportation Department (BTD) has reviewed the PNF and BTD has identified some concerns in the PNF below which BTD looks forward in resolving with the proponent.

Section 3.1.2 Site Access Vehicular access to the Garden Garage is currently provided from Lomasney Way and the proponent would like to maintain this point of vehicular access. BTD would also like this to be the point of vehicular access but would like to work with the proponent in developing a more efficient traffic circulation plan than the one that currently exists today. BTD would like to explore different traffic options as they relate to Marhta Road, Nashua Street, Red Auerbach Way so that we can enhance all modes of transportation to this extremely busy area of the City. **BTD 01**

Section 3.1.5.1 Project Trip Generation/Trip The proponent should provide a detailed traffic analysis using BTD mode share for Area 1 which should be included in the DPIR Report. BTD is concerned that a number of modes of transportation will be accessing this area and would like to work with the proponent to create alternative traffic patterns than exist today. BTD is particularly interested in the analysis on the amount of traffic that will be generated and managed at the following intersections: **BTD 02**

a) Charles River Dam Road/ Storrow Drive/Nashua Street @ Leverett Circle
b) Charles Street/ Martha Road/Nashua Street @ Leverett Circle
c) Red Auerbach Way/Martha Road
d) Lomasney Way / Martha Road @ Garage Egress
e) Staniford Street/ Merrimac Street/Lomasney Way/Causeway Street @ Lowell Square
f) Merrimac Street/Congress Street/New Chardon Street
g) Staniford Street/Cambridge Street
h) Causeway/ Beverly Street/ North Washington Street

Section 3.1.6 Parking Demand Management

BTD encourages the proponent to take parking management a step further by implementing a "cash out" program for employees that receive parking as part of their compensation packages. Employees that accept the parking cash-out would agree to commute by methods that don't require parking and would receive a cash allowance equal to the employer paid parking subsidy. This would reduce the demand on existing parking and would also reduce congestion on City streets. **BTD 03**

Spaces for CAR Share and Low Emission Vehicles

The Proponent should explore the opportunity to provide for a car-sharing service such as Zipcar. To encourage a reduction in personal automobile use, the proponent should provide spaces for car-share services as well as, carpool, vanpool, shuttle service parking. **BTD 04**

Current trends indicate that electric hybrids will soon be significant percentage of all vehicles on the road. BTD is aggressively promoting the installation of a supporting infrastructure for these vehicles. We request a commitment to dedicate 5% of the total parking capacity fro low-emitting and fuel efficient vehicles, and a commitment to provide dedicated electric vehicle charging stations. **BTD 05**

Bicycle Access

The proponent should describe the existing accommodations for bicycles (including the location and number of bikes racks and bike cages) and any proposed improvements to the accommodations. The site plan should include secure covered bike parking spaces for residents and employees, and covered or open outdoor bike parking spaces for patrons and visitors. The **BTD 06**

Proponent should also consider provision of spaces for bike share facilities, and potential bike share locations. All spaces must be conveniently located near building entrances. BTD is in the process of updating its Bicycle Facilities Policy that addresses the minimum number of spaces required -the draft new policy is attached.

The Proponent will also be responsible in the preparation of a Transportation Access Plan Agreement (TAPA). The TAPA is a formal legal agreement between the project proponent and the BTD. The TAPA formalizes the findings of the Transportation Access Plan, mitigation commitments, elements of access and physical design, and any other responsibilities that agreed to by both the proponent and the BTD. Since the TAPA must incorporate the results of the technical analysis, physical design, and assessment of mitigation requirements, it must be executed after these processes have been completed. However, the TAPA must be executed prior to approval of the project's design through the City of Boston's Public Improvements Commission (PIC). An electronic copy of the basic TAPA form is available from the BTD. It is the proponent's responsibility to complete the TAPA so that it reflects the specific findings and commitments for the project, and to get BTD review and approval of the document. **BTD 07**

BTD looks forward in working with the proponent's from the Garden Garage and the BRA in developing a Draft Impact Report (DIR) that will help minimize traffic impacts and improve transportation conditions in the area.

Sincerely,

William H. Conroy IV
Senior Planner

- Cc: Vineet Gupta, Director of Policy and Planning
- John DeBenedictis, Director of Engineering

Printed on recycled paper

BOSTON TRANSPORTATION DEPARTMENT

BTD 01 **BTD would also like [Lomasney Way] to be the point of vehicular access but would like to work with the Proponent in developing a more efficient traffic circulation plan than the one that currently exists today. BTD would like to explore different traffic options as they relate to Martha Road, Nashua Street, and Red Auerbach Way so that we can enhance all modes of transportation to this extremely busy area of the City.**

The Proponent is investigating the feasibility of potential circulation alternatives and open space improvements in this area with BTD and BRA as part of a separate planning effort.

BTD 02 **The Proponent should provide a detailed traffic analysis using BTD mode share for Area 1 which should be included in the DPIR. BTD is concerned that a number of modes of transportation will be accessing this area and would like to work with the Proponent to create alternative traffic patterns than exist today. BTD is particularly interested in the analysis on the amount of traffic that will be generated and managed at the following intersections: (a) Charles River Dam Road/Storrow Drive/Nashua Street at Leverett Circle; (b) Charles Street/Martha Road/Nashua Street at Leverett Circle; (c) Red Auerbach Way/Martha Road; (d) Lomasney Way/Martha Road at Garage Egress; (e) Staniford Street/Merrimac Street/Lomasney Way/Causeway Street at Lowell Square; (f) Merrimac Street/Congress Street/New Chardon Street; (g) Staniford Street/Cambridge Street; and (h) Causeway/Beverly Street/North Washington Street**

These intersections are included in the DPIR study area and analyzed for existing (2011), 2016 No-Build, and 2016 Build conditions. The Proponent is investigating the feasibility of potential circulation alternatives in this area with BTD and BRA as part of a separate planning effort. It should be noted that the vehicular impacts from the Project are expected to be rather small, since between 73% and 85% of all Project trips in this area of the City are expected to be made by non-auto modes of transportation (i.e., walk, bike, transit).

BTD 03 **BTD encourages the Proponent to take parking management a step further by implementing a "cash out" program for employees that receive parking as part of their compensation packages. Employees that accept the parking cash-out would agree to commute by methods that don't require parking and would receive a cash allowance equal to the employer-paid parking subsidy.**

As this is a predominantly a residential project, very few employee trips will be added.

BTD 04 **The Proponent should explore the opportunity to provide for a car-sharing service such as Zipcar. To encourage a reduction in personal automobile use, the Proponent should provide spaces for car-share services as well as carpool, vanpool, and shuttle service parking.**

The Proponent currently provides approximately nine shared-car spaces for Zipcar, including approximately three vehicles at Asteria Garage and about six vehicles at the Longfellow Garage. Spaces for 17 additional Zipcars are located convenient to the site, including three at Whittier Place, two in the MGH Fruit Street Garage, six at Cambridge Street/Blossom Street, and six at the Cambridge Street Gas Station. As demand warrants, the Proponent will continue to coordinate with Zipcar to determine the feasibility of locating additional shared-car spaces on the site. However, it should also be noted that the Project's transit-oriented nature and its convenient walking distance to the downtown, hospitals, and area businesses will minimize the need for trips by personal automobile.

BTD 05 **We request a commitment to dedicate 5% of the total parking capacity for low-emitting and fuel-efficient vehicles, and a commitment to provide dedicated electric vehicle charging stations.**

The Proponent will dedicate up to 5% of all parking spaces (approximately 43 spaces) for low-emitting and fuel efficient vehicles, as requested by BTD. The Proponent currently has a national agreement with an electric vehicle charging station provider and will work with the provider and the City to identify an appropriate number of stations. It is anticipated that charging stations will be added incrementally as demand warrants.

BTD 06 **The Proponent should describe the existing accommodations for bicycles (including the location and number of bike racks and bike cages) and any proposed improvements to the accommodations. The site plan should include secure covered bike parking spaces for residents and employees, and covered or open outdoor bike parking spaces for patrons and visitors. The Proponent should also consider provision of spaces for bike share facilities, and potential bike share locations.**

No bicycle racks currently exist at the Project site; however, multiple bicycle storage options ranging from small on-street racks to large covered parking areas are available in the area. Nearby bicycle parking includes racks at North Station, in the North Station Garage, and outside the Thomas P. O'Neill Federal Building. These racks together provide accommodations for approximately 87 bicycles.

The recently-implemented Hubway bicycle sharing program also makes bicycles available for point-to-point trips. Nearby Hubway locations include (a) space for 35 bicycles outside the north entrance of North Station, and (b) space for 15 bicycles at the corner of Lomasney Way and Causeway Street. For more information on bicycle accommodations in the Project area, see Section 3.2.6 and Figure 3-7.

To promote biking as a transportation alternative, the Proponent will provide additional secure bicycle parking for residents, employees, and visitors. The Proponent will work with the BTD as part of the TAPA process to identify the most appropriate locations and quantities of bicycle storage.

BTD 07 **The Proponent will also be responsible in the preparation of a Transportation Access Plan Agreement (TAPA). The TAPA is a formal legal agreement between the Project Proponent and the BTD… [T]he TAPA must be executed prior to approval of the Project's design through the City of Boston's Public Improvements Commission (PIC).**

The Proponent will work with BTD on a TAPA at a later stage of the approval process, prior to a PIC submission.

Boston Water and
Sewer Commission

980 Harrison Avenue
Boston, MA 02119
617-989-7000
Fax: 617-989-7718

February 25, 2011

Jay Rourke, Senior Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage, Project Notification Form

Dear Mr. Rourke:

The Boston Water and Sewer Commission (Commission) has reviewed the Garden Garage Project Notification Form (PNF).

The Garden Garage Project is located on approximately three acres of land at Longfellow Place in Boston's West End. The site bordered by Martha Road, Lomasney Way and the MBTA Green Line Portal to the north, the O'Neill Federal Building and 150 Staniford Street to the east, Longfellow Place to the south, Hawthorne Place to the southwest, Thoreau Path to the west, and 55 and 65 Martha Road to the northwest.

The Garden Garage site currently houses an eight-story parking garage, two residential buildings and a below grade parking structure. The proponent proposes to replace these structures with two high rise residential buildings; the North Tower, a 21-story apartment building and the South Tower, a 28-story apartment building. The two towers will contain approximately 500 units. The tower complex will also include an athletic club and a daycare facility. The proponent also proposes to construct a four-level parking garage below the towers to accommodate approximately 850 cars.

The PNF shows that the footprint of the towers will occupy about one third of the site area leaving approximately two thirds of the site for open space. The proponent must investigate methods to reduce the amount of stormwater discharged from the surface of this site. The PNF indicates that the proponent intends to evaluate a stormwater recharge system to reduce

BWSC 01

the amount of stormwater from the site and to reduce the phosphorus levels in stormwater discharges. The proponent should coordinate this effort with the Commission's Engineering Customer Services Department. Generally, the Commission requests that a stormwater recharge system be large enough to control one (1) inch of rainfall over the site.

Drainage collected within the underground garage must be controlled separately. The project will need to route stormwater collected within enclosed parking levels to an oil-water separator before being discharged to the sanitary sewer. **BWSC 02**

The size and location of the oil-water separators as well as the stormwater recharge system will be required on the site plan submitted to the Commission.

The proponent is reminded that the Massachusetts Department of Environmental Protection (DEP) routinely requires proponents of similar projects to assist the agency in its program to reduce infiltration and inflow (I/I). In cooperation with this effort, the Massachusetts Water Resources Authority (MWRA) and its member communities are implementing a coordinated approach to control extraneous flows such as I/I into the wastewater system. In this regard, the DEP has routinely required projects that add a significant amount of new wastewater flows to offset the increase with a reduction in I/I. Typically, the DEP uses a minimum ratio of 4 to 1; 4 gallons of I/I removed for each gallon of proposed wastewater. As a member community, the Commission supports the DEP and the MWRA, and will require the proponent to develop an I/I reduction plan that is consistent with their policy. **BWSC 03**

The Commission has the following general comments regarding the Garden Garage PNF:

General Comments

1. If any new water mains, sewers and storm drains are required, they must be designed and constructed at the proponent's expense. Also, 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. The site plan should include the locations of new, relocated and existing water mains, sewers and drains which serve the site, proposed service connections as well as water meter locations **BWSC 04** **BWSC 05**

2. Prior to construction any existing water or sewer connections that are not reused must be cut and capped according to the Commission's standards. The proponent must complete a Termination Verification Approval Form for the Demolition Permit and submit a completed form to the City of Boston's Inspectional Services Department before the Demolition Permit will be issued. **BWSC 06**

3. The proponent is advised that the discharge of any dewatering drainage to the Commission's drainage system, whether it is temporary or on a permanent basis, requires a Drainage Discharge Permit issued by the Commission. *An NPDES Permit issued by the EPA and/or DEP does not relieve the proponent of the responsibility to obtain authorization from the Commission.* Failure to obtain a Drainage Discharge Permit from **BWSC 07**

the Commission for any dewatering discharge may result in a fine of up to $ 1,000 per day per violation.

4. The proponent must submit a General Service Application and site plan to the Commission for review and approval. The site plan should show the location of all existing and proposed water lines, sewers and storm drains that serve the site. Separate service connections for sanitary flow and storm water will be required. To assure compliance with the Commission's requirements, site plans and General Service Applications should be submitted to the Commission for review when project design is 50 percent complete. **BWSC 08**

5. With the site plan, the proponent must provide detailed and updated estimates for water demand, sanitary sewer flows and stormwater runoff generation for the proposed project. The amount of potable water required for landscape irrigation must be quantified. The proponent must also provide an analysis of the impacts of the proposed project on the Commission's water, sewer and storm drainage systems. **BWSC 09**

6. For any proposed masonry repair and cleaning, the proponent 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, the proponent will be required to provide a detailed description as to how chemical mist and run-off will be contained and treated before being discharged to the sewer/drainage system or disposed of 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. The proponent is advised that the Commission may impose additional conditions and requirements before permitting the discharge of the treated wash water into the sewer/drainage system. **BWSC 10**

Water

7. The proponent is 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. The proponent should contact the Commission's Operations Division for information on and to obtain a Hydrant Permit. **BWSC 11**

8. The proponent should explore opportunities for implementing water conservation measures in addition to those required by the State Plumbing Code. In particular the proponent should consider outdoor landscaping which requires minimal water. If the proponent plans to install in-ground sprinkler systems, the Commission recommends that timers, soil moisture indicators and rainfall sensors be installed. The use of sensor-operated faucets and toilets in common areas of buildings should also be considered. **BWSC 12**

9. The Commission utilizes a Fixed Radio Meter Reading System to obtain water meter readings. If a new water meter is needed for the proposed project, the Commission will provide a Meter Transmitter Unit (MTU) and connect the device to the meter. For information regarding the installation of MTUs, the proponent should contact the Commission's Meter Installation Department. **BWSC 13**

Wastewater and Stormwater

10. The site plan must show in detail how drainage from building roofs and from other impervious areas will be managed. Roof runoff and other stormwater runoff must be conveyed separately from sanitary waste at all times. **BWSC 14**

11. 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 loadings required by the TMDL, phosphorus concentrations in stormwater discharges to 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 development. 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. The proponent must submit to the Commission's Engineering Customer Service Department a detailed stormwater management plan which: **BWSC 15**

    - Identifies 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.

    - Includes 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 the construction.

    - Provides a stormwater management plan in compliance with the DEP standards mentioned above. The plan should include a description of the measures to control pollutants in stormwater after construction is completed.

12. The project proponent will be required to obtain coverage under the EPA's NPDES General Permit for Construction. A copy of the Notice of Intent and the pollution prevention plan prepared pursuant to the Permit should be provided to the Commission, prior to the commencement of construction. **BWSC 16**

    If one acre of land or more is disturbed, then the proponent will be required to obtain an NPDES General Permit for Construction from the Environmental Protection Agency and the Massachusetts Department of Environmental Protection. The proponent is responsible for determining if such a permit is required and for obtaining the permit.

If such a permit is required, then a copy of the permit and any pollution prevention plan prepared pursuant to that permit should be provided to the Commission's Engineering Customer 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 11 above.

13. The Commission requires oil traps on drains within an enclosed parking garage. Discharges from oil traps must be directed to the sanitary sewer and not to a storm drain. The requirements for oil traps are provided in the Commission's Requirements for Site Plans. **BWSC 17**

14. In accordance with the Commission's Sewer Use Regulations, grease traps will be required in any restaurant or commercial kitchen. The proponent is advised to consult with the Commission's Operations Department, prior to preparing plans for a restaurant or commercial kitchen. **BWSC 18**

15. The Commission requests that the proponent install a permanent "Don't Dump, Drains to the Charles River" castings next to any new or modified catch basin installed as part of this project. **BWSC 19**

16. If the proponent seeks to discharge dewatering drainage to the Commission's collection system, they will be required to obtain a Drainage Discharge Permit from the Commission's Engineering Customer Service Department prior to discharge **BWSC 20**

17. The proponent should be aware that the US Environmental Protection Agency issued a draft Remediation General Permit (RGP) for Groundwater Remediation, Contaminated Construction Dewatering, and Miscellaneous Surface Water Discharges. If groundwater contaminated with petroleum products, for example, is encountered, the proponent will be required to apply for a RGP to cover these discharges. **BWSC 21**

18. 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 22**

Thank you for the opportunity to comment on this project.

Yours truly,

John P. Sullivan, P.E.
Chief Engineer

JPS/pwk
c.

M. Zlody, Boston Environment Department
Katie Pedersen, BRA
P. Laroque, BWSC

BOSTON WATER AND SEWER COMMISSION

BWSC 01 **The Proponent must investigate methods to reduce the amount of stormwater discharged from the surface of this site. The PNF indicates that the Proponent intends to evaluate a stormwater recharge system to reduce the amount of stormwater from the site and to reduce the phosphorus levels in stormwater discharges. The Proponent should coordinate this effort with the Commission's Engineering Customer Services Department. Generally, the Commission requests that a stormwater recharge system be large enough to control one inch of rainfall over the site.**

The proposed stormwater recharge system will be coordinated and permitted through the BWSC during the Site Plan Review process.

BWSC 02 **Drainage collected within the underground garage must be controlled separately. The Project will need to route stormwater collected within enclosed parking levels to an oil-water separator before being discharged to the sanitary sewer.**

Stormwater within the underground garage will be collected and treated separately from stormwater on the site, and will be routed through an MWRA-compliant oil-water separator prior to discharge into the sanitary sewer.

BWSC 03 **The Proponent is reminded that the MassDEP routinely requires proponents of similar projects to assist the agency in its program to reduce infiltration and inflow (I/I). In cooperation with this effort, the Massachusetts Water Resources Authority (MWRA) and its member communities are implementing a coordinated approach to control extraneous flows such as I/I into the wastewater system. In this regard, the MassDEP has routinely required projects that add a significant amount of new wastewater flows to offset the increase with a reduction in I/I. Typically, MassDEP uses a minimum ratio of 4 to 1 (4 gallons of I/I removed for each gallon of proposed wastewater). As a member community, the Commission supports the MassDEP and the MWRA, and will require the Proponent to develop an I/I reduction plan that is consistent with their policy.**

The Proponent will work with the BWSC to develop an I/I reduction plan during the Site Plan Review process. As indicated in the Certificate on the ENF issued by the EEA Secretary on July 22, 2011, the Proponent will be required to provide I/I mitigation as part of the MassDEP Sewer Extension Permit process.

BWSC 04 **If any new water mains, sewers, and storm drains are required, they must be designed and constructed at the Proponent's expense. Also, 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.**

New water, sewer, and storm drain connections and site mains will be designed and constructed as part of the Project in accordance with BWSC standards, regulations, and requirements.

BWSC 05 **The site plan should include the locations of new, relocated, and existing water mains, sewers, and drains which serve the site, proposed service connections, as well as water meter locations.**

The site plan developed during the design phase will include the locations of new, relocated, and existing water mains, sewers, and drains which serve the Project site (where applicable) as well as proposed service connections and water meter locations.

BWSC 06 **Prior to construction, any existing water or sewer connections that are not reused must be cut and capped according to the Commission's standards. The Proponent must complete a Termination Verification Approval Form for the Demolition Permit and submit a completed form to the City of Boston's Inspectional Services Department before the Demolition Permit will be issued.**

Abandoned utilities will be cut and capped in accordance with BWSC standards, and the Proponent will file the relevant forms and permits.

BWSC 07 **The Proponent is advised that the discharge of any dewatering drainage to the Commission's drainage system, whether it is temporary or on a permanent basis, requires a Drainage Discharge Permit issued by the Commission.**

The Proponent will obtain the required permits from BWSC prior to discharging to the drainage system. An application for a dewatering discharge permit will be filed for any necessary dewatering during the construction phase.

BWSC 08 **The Proponent must submit a General Service Application and site plan to the Commission for review and approval. The site plan should show the location of all existing and proposed water lines, sewers, and storm drains that serve the site. Separate service connections for sanitary flow and storm water will be required. To assure compliance with the Commission's requirements, site plans and General Service Applications should be submitted to the Commission for review when project design is 50% complete.**

The Project will be submitted to the BWSC for Site Plan Approval in accordance with BWSC standards.

BWSC 09 **With the site plan, the Proponent must provide detailed and updated estimates for water demand, sanitary sewer flows, and stormwater runoff generation for the proposed Project. The amount of potable water required for landscape irrigation must be quantified. The Proponent must also provide an analysis of the impacts of the proposed Project on the Commission's water, sewer, and storm drainage systems.**

The Project will be submitted to the BWSC for Site Plan Approval in accordance with BWSC standards; appropriate infrastructure demands will be included in the submittal. The civil engineer and landscape architect will calculate the quantity of potable water required for landscape irrigation and look at the potential of treating and storing on-site rainwater and runoff in cisterns to minimize the use of potable water for landscape irrigation.

BWSC 10 **For any proposed masonry repair and cleaning, the Proponent 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, the Proponent will be required to provide a detailed description as to how chemical mist and runoff will be contained and treated before being discharged to the sewer/drainage system or disposed of 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.**

Necessary permits will be obtained prior to the start of construction, including a permit for Abrasive Blasting and Chemical cleaning if that method is intended for construction.

BWSC 11 **The Proponent is 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.**

The contractor will obtain applicable construction permits prior to construction.

BWSC 12 **The Proponent should explore opportunities for implementing water conservation measures in addition to those required by the State Plumbing Code. In particular, the Proponent should consider outdoor landscaping that requires minimal water. If the Proponent plans to install in-ground sprinkler systems, the Commission recommends that timers, soil moisture indicators, and rainfall sensors be installed. The use of sensor-operated faucets and toilets in common areas of buildings should also be considered.**

The final design will include an automated irrigation system that uses the latest technology for maximizing efficiencies (e.g., rain sensors, moisture meters).

BWSC 13 **The Commission utilizes a Fixed Radio Meter Reading System to obtain water meter readings. If a new water meter is needed for the proposed Project, the Commission will provide a Meter Transmitter Unit (MTU) and connect the device to the meter.**

The Proponent understands that a BWSC MTU will be connected to the new water meter.

BWSC 14 **The site plan must show in detail how drainage from building roofs and from other impervious areas will be managed. Roof runoff and other stormwater runoff must be conveyed separately from sanitary waste at all times.**

The site plans developed during the design phase will illustrate the proposed stormwater management system for the Project site. Stormwater runoff will be conveyed separately from sanitary waste at all times.

BWSC 15 **The Proponent will be required to submit with the site plan a phosphorus reduction plan [consistent with the Total Maximum Daily Load (TMDL) for nutrients for the Lower Charles River Watershed]. 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. The Proponent must submit to the Commission's Engineering Customer Service Department a detailed stormwater management plan…**

A stormwater management plan will be included in the Site Plan Review process. The stormwater management plan will include a phosphorus reduction plan consistent with the TMDL for the Lower Charles River Watershed.

BWSC 16 **The Project Proponent will be required to obtain coverage under the EPA's [National Pollutant Discharge Elimination System] NPDES General Permit for Construction. A copy of the Notice of Intent and the pollution prevention plan prepared pursuant to the Permit should be provided to the Commission prior to the commencement of construction.**

The Proponent will obtain coverage under EPA's NPDES General Permit for Construction, and a copy of the Notice of Intent and SWPPP will be provided to the BWSC.

BWSC 17 **The Commission requires oil traps on drains within an enclosed parking garage. Discharges from oil traps must be directed to the sanitary sewer and not to a storm drain.**

Stormwater from the parking garage will be directed through an MWRA-compliant oil-water separator and directed into the sanitary sewer.

BWSC 18 **In accordance with the Commission's Sewer Use Regulations, grease traps will be required in any restaurant or commercial kitchen. The Proponent is advised to consult with the Commission's Operations Department prior to preparing plans for a restaurant or commercial kitchen.**

The Project will comply with the BWSC Sewer Use Regulations.

BWSC 19 **The Commission requests that the Proponent install a permanent "Don't Dump, Drains to the Charles River" casting next to any new or modified catch basin installed as part of this Project.**

The Proponent will install "Don't Dump" plaques next to the new or modified catch basins within the limit of work.

BWSC 20 **If the Proponent seeks to discharge dewatering drainage to the Commission's collection system, they will be required to obtain a Drainage Discharge Permit from the Commission's Engineering Customer Service Department prior to discharge.**

The Proponent will obtain the required permits from BWSC prior to discharging to the drainage system.

BWSC 21 **The Proponent should be aware that the EPA issued a draft Remediation General Permit (RGP) for Groundwater Remediation, Contaminated Construction Dewatering, and Miscellaneous Surface Water Discharges. If groundwater contaminated with petroleum products, for example, is encountered, the Proponent will be required to apply for an RGP to cover these discharges.**

The Proponent will evaluate the groundwater quality to determine the appropriate EPA NPDES discharge permit (i.e., Dewatering General Permit or RGP) prior to obtaining the required permits from BWSC.

BWSC 22 **The Commission requires that existing stormwater and sanitary sewer service connections that are to be re-used by the proposed Project be dye-tested to confirm they are connected to the appropriate system.**

The proposed Project includes new stormwater and sewer connections. The new connections will be dye-tested in accordance with BWSC standards.

MEMORANDUM

Date: March 4, 2011

To: Jay Rourke, Project Manager

From: Jonathan Greeley, Project Manager Crossroads Initative/Planner
Lauren Shurtleff, Planner

Re: **Comments on the Project Notification Form for the proposed Garden Garage project**

The following are comments on behalf of the Planning Department related to the Project Notification Form (PNF) for the proposed Garden Garage project. We have reviewed the project with particular attention to its role in the context of the Downtown neighborhoods of the West End and Bulfinch Triangle. When applicable, the comments reference the specific sections of the document.

Proposed Development Program

2.2.1 Building Program and Site Design

- The proposed unit mix is described as 20% studio apartments, 50% one bedroom apartments, and 30% two bedroom apartments. If possible, we would like the proponent to explore the option of introducing a fourth style of unit (preferably three bedroom), which would be able to accommodate families. **PLAN 01**

Urban Design

3.3.1.1 Reconnecting the West End

- As discussed in the PNF, the existing condition acts as a barrier between the West End and the surrounding area. A central goal of the proposed project should be to reconnect the West End to the Bulfinch Triangle and North End while simultaneous activating and re-energizing the Nashua Street area around North Station and the TD Bank Garden. **PLAN 02**
- A new pedestrian connection would be introduced through the site from Lomasney Way to Thoreau Path that currently exists only to those who choose to cut through the existing garage and maneuver through a series of stairs and doorways. We fully support this connection, and we look forward to seeing the design of this connection advanced in the next stage of the process, as its ease of use and universal design will be critical to residents and commuters alike.
- Additionally, the expansion and enhancement of the sidewalk along Lomasney Way will be incredibly important, particularly with regard to the

pedestrian experience in relation to the loading and parking garage entrance and exits.

- All of these improvements should be coordinated with the ongoing design process for the reconstruction of Causeway Street as part of the Crossroads Initiative. **PLAN 03**

3.3.2.2 Massing, Form, and Response to the Urban Context

- As you are aware, the City recently invested a significant amount on the renovation and reconstruction of Thoreau Path. In light of this investment, and because of the Path's importance to residents and commuters alike, the project should work to ensure that the projects residential and commercial entries be oriented towards the Path. We are also encouraged that the proponent seeks to expand the breadth of the Path and look forward to seeing the advancement of this concept. **PLAN 04**

Existing Site Plan/Urban Context – Figure A-3

- This site plan is somewhat misleading, and should be updated to reflect that the existing tennis courts, the former Children's School Annex, and existing basketball courts are included within the project area. **PLAN 05**

Ground Level Impacts – General Comments

- We have some concerns about the lack of detail expressed in the PNF with regard to the ground plane and pedestrian-level design elements of the proposed project. These details are critical and should be addressed in the Draft Project Impact Report (DPIR). **PLAN 06**
- Moreover, we would like to have more information about the type of uses envisioned for the ground-level retail/non-residential space at the base of the proposed buildings. We look forward to seeing advanced schematics in the DPIR. **PLAN 07**

Thank you for the opportunity to comment. We are eager to see these items and other studies expanded in the DPIR.

PLAN 01 **If possible, we would like the Proponent to explore the option of introducing a fourth style of unit (preferably three-bedroom) which would be able to accommodate families.**

As described in Section 2.2, the Project design includes 12 three-bedroom units.

PLAN 02 **A central goal of the proposed Project should be to reconnect the West End to the Bulfinch Triangle and North End while simultaneously activating and reenergizing the Nashua Street area around North Station and the TD Bank Garden.**

Many elements of the proposed Project will help reconnect the West End to the North End and other areas while activating the immediate Project site. These elements include creating a central plaza and pedestrian pathway between the proposed towers that will continue the tree-lined character of Thoreau Path to Nashua Park, locating public and semi-public spaces adjacent to the plaza, and creating a pedestrian-scale retail space within the plaza. The Project will also replace the five-lane garage entrance that currently complicates pedestrian movement with two separate double-lane entrances. Section 5.0, Urban Design, contains additional information about the Project's response to the surrounding neighborhood.

PLAN 03 **All of these [pedestrian] improvements should be coordinated with the ongoing design process for the reconstruction of Causeway Street as part of the Crossroads Initiative.**

The final design will be coordinated with Causeway Street improvements and the Crossroads Initiative. The Project Team is actively working with the city and adjacent landowners to coordinate this effort.

PLAN 04 **[T]he City recently invested a significant amount on the renovation and reconstruction of Thoreau Path. In light of this investment, and because of the Path's importance to residents and commuters alike, the Project should work to ensure that the Project's residential and commercial entries be oriented towards the Path.**

The design is intended to seamlessly blend new circulation paths into Thoreau Path such that connectivity to new and existing residential and commercial entrances are provided, maintained, or enhanced.

PLAN 05 **[The existing site plan] should be updated to reflect that the existing tennis courts, the former Children's School Annex, and existing basketball courts are included within the Project area.**

The "Existing Site Development" portion of Figure 2-18 illustrates that the existing tennis courts, the former Children's School Annex, and the location of the existing basketball courts (on top of the existing Garden Garage) are included in the Project area.

PLAN 06 **We have some concerns about the lack of detail expressed in the PNF with regard to the ground plane and pedestrian-level design elements of the proposed Project. These details are critical and should be addressed in the DPIR.**

At the conceptual level and scale of the plan, high levels of pedestrian detail are challenging. However, the team will further develop and notate the plans such that a better understanding of the elements and uses is provided.

PLAN 07 **We would like to have more information about the type of uses envisioned for the ground-level retail/non-residential space at the base of the proposed buildings.**

The Proponent is considering a number of possible types of retail, including a restaurant, coffee shop, convenience store, book or newspaper shop, cell phone store, and computer store.

Boston
Groundwater Trust

January 31, 2011

Mr. Jay Rourke, Senior Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Subject: Garden Garage

Dear Mr. Rourke:

Thank you for the opportunity to comment on the Project Notification Form for the Garden Garage project. The Boston Groundwater Trust was established to monitor groundwater levels in sections of the City 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.

While the project is not located in the Groundwater Conservation Overlay District established under Article of the Zoning Code, it is only a short distance from the Bulfinch Triangle, an area that is within the GCOD and where there are currently some groundwater elevation low spots. According to the PNF, the garage that will extend below the two towers included in the project will have a bottom floor about 42 feet below the surface. Since, according to the document, surface elevations in the area range from about 17 to 30 feet above Boston City Base, the excavation will extend well below the elevations considered critical for the preservation of wood pile supported foundations. Precautions must be taken in the design and construction of the below grade portion of the project to make sure that it cannot cause reductions in nearby groundwater levels. In addition to waterproofing the structure, these precautions should assure that no path is created that will allow groundwater to drain from the upper trapped aquifer to a lower aquifer and that any underdrains included in the design discharge through a recharge system into the upper aquifer. **BGT 01**

I look forward to working with the proponent and the Authority to assure that the project cannot have a negative impact on nearby groundwater levels.

Very truly yours,

Elliott Laffer
Executive Director

Cc: Kathleen Pedersen, BRA
Maura Zlody, BED

BOSTON GROUNDWATER TRUST

BGT 01 According to the PNF, the garage that will extend below the two towers... will have a bottom floor about 42 feet below the surface. Since, according to the document, surface elevations in the area range from about 17 to 30 feet above Boston City Base, the excavation will extend well below the elevations considered critical for the preservation of wood pile-supported foundations. Precautions must be taken in the design and construction of the below-grade portion of the Project to make sure that it cannot cause reductions in nearby groundwater levels. In addition to waterproofing the structure, these precautions should assure that no path is created that will allow groundwater to drain from the upper trapped aquifer to a lower aquifer and that any underdrains included in the design discharge through a recharge system into the upper aquifer.

The project is not located within the Groundwater Conservation Overlay District, and the adjacent structures are not supported by wood pile foundations. The proposed excavation will extend approximately 35 feet below the groundwater table. The excavation support system and permanent foundation walls will be designed to maintain groundwater levels outside of the excavation. Groundwater levels outside of the excavation will be monitored during construction and corrective actions will be taken, if necessary, to maintain the groundwater levels outside of the excavation to protect adjacent structures. The Proponent will evaluate the possibility of recharging the discharge from the underdrain system into the upper aquifer during the design process.

Boston

Jay Rourke
Senior Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

January 10, 2011

Dear Mr. Rourke:

Regarding the Project Notification Form for the Garden Garage project submitted to the BRA on January 7, 2011 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 01**
2. Impact on availability and accessibility of hydrant locations for new buildings as well as for any existing buildings that might be impacted. **BFD 02**
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 03**
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 04**
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 05**
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 06**

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,

Frank M. Kodzis
Fire Marshal

Cc: Paul Donga, FPE, Plans Unit, BFD

BOSTON FIRE DEPARTMENT

BFD 01 **[Describe] emergency vehicle site access to the new buildings as well as existing buildings that might be affected.**

As building design advances, code consultants will be retained to address BFD standards, which will also be addressed in the PIC and Inspectional Services Department (ISD) review processes.

BFD 02 **[Describe the] impact on availability and accessibility of hydrant locations for new buildings as well as for any existing buildings that might be impacted.**

Existing hydrants are located in Lomasney Way and Thoreau Path, and all existing hydrants are located outside the proposed limit of work for the Project and therefore will be maintained and protected.

BFD 03 **[Describe the] impact on availability and accessibility to Siamese connection locations for new buildings as well as for any existing buildings that might be impacted.**

The Proponent will meet with the BFD to coordinate Siamese connection locations.

BFD 04 **[Describe the] impact that a transformer vault fire or explosion will have on the fire safety of the building, particularly as it relate to the location of the vault.**

Project construction will meet Code and will be fire protected.

BFD 05 **[Describe the] 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).**

Required BFD permits will be obtained by the subcontractors responsible for carrying out work on the Project.

BFD 06 **For projects involving air-supported structures, it is critical [to assess] the impact of the design 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.**

The Project does not involve construction of an air-supported structure.

MICHAEL P. ROSS
BOSTON CITY COUNCIL

March 11, 2011

Jay Rourke
Senior Project Manager
Boston Redevelopment Authority
One City Hall Square, 9th Fl
Boston, MA 02201

Dear Mr. Rourke:

I am writing today to comment on the project proposed by Equity Residential for the Garden Garage site. Although I believe that overall, this project presents a good opportunity to replace the existing Garden Garage with a better use, I have some significant concerns that I expect to see addressed within the scope.

- **Massing and Scale of the Proposed Project**

  From its experience in past developments in this neighborhood, I am surprised that Equity did not have a different initial approach to this project. Similar to this proposal, Equity's Emerson Project, first proposed in 2001, drew similar initial concern particularly with regard to height and mass, and caused Equity to return with an entirely new proposal.

  So too here, the size and scale of the project needs to be reconsidered to be more in line with the surrounding community. While the towers are similar in height to those at Longfellow, they are considerably larger than both the abutting buildings of West End Place and Amy Lowell House. I would ask that Equity return to the community with meaningful alternatives for development. ROSS 01

  I would also encourage Equity to think creatively about their development and explore the feasibility of incorporating the three-story building across Lomasney Way into a scheme for consideration as one of those alternatives. This would allow for a greater disbursement of mass as well as the possibility of additional units. ROSS 02

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- **Need for Family and Affordable Units**

Equity must take into consideration the needs of the neighborhood in the composition of the units in their proposed development. The existing design contemplates no three-bedroom units. One of the biggest issues I hear about from constituents who have growing families is the lack of options for three bedroom units. Many who wish to stay in the neighborhood end up moving further outside of the downtown area when they cannot find an apartment big enough. I would ask that Equity address this continuing problem in their new development with a significant number of larger units to accommodate for families. ROSS 03

I would ask that Equity make their affordability component as meaningfully as possible by applying it to their three-bedroom units. More families have moved to the West End and the need to retain those families is essential for the continuing health of the neighborhood as it continues to grow. Moreover, I encourage Equity to look towards the possibility of retro-fitting existing two-bedroom units in the Longfellow Towers into three-bedroom units in order to house families as soon as possible.

- **Expanded Community Services**

The residents of the West End have fought hard to bring community services and recognition to their neighborhood. I have had the privilege of working alongside them for the last ten years as they have built a museum and a community center that have continued to expand and grow. I encourage Equity to continue to support both of those institutions in their development by exploring the feasibility of adding recreational spaces that are intended to benefit all residents of the West End into their development. ROSS 04

Adding a school to service the West End/Beacon Hill/North End neighborhoods has always been one of my top priorities as an elected official. The lack of any developable area in the downtown neighborhoods, as well as the prohibitive cost of land, renders it all but impossible for the Boston Public Schools to build an elementary school downtown—something that is desperately needed. It is almost unavoidable that the citing of a public school will almost certainly have to be within a new development such as this one. Retaining families in the downtown areas is vital to the health of our city. I would be remiss if I did not request that in their scope Equity Residential look at the possibility of adding space for an elementary school into their development as one of the alternatives. ROSS 05

- **Traffic and Parking Plan**

Equity residential needs to work with the Boston Traffic and Parking Department in order to come up with a complete parking plan as it relates to their proposed development. The existing garage provides an essential service for parking in a relatively unimpactful way for the neighborhood. The five bays allow cars to go ROSS 06

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in and out of the garage with minimal intrusion onto Lomasney Way even during the busiest times. The existing plan only incorporates three bays and I would request that Equity look at modifications that would help to alleviate potential problems that may arise.

Equity has continually cited the need for such a large development in order to justify the economic expense of putting the garage underground. While the cost of burying a garage is undeniable, I would ask that they provide more concrete financial reasoning to residents. ROSS 07

Two other large developments are being discussed in the West End--Mass Eye and Ear Institution and the possibility of the Government Center Garage. Equity residential needs to work with these abutting projects in order to coordinate an effective parking plan and development impacts. ROSS 08

I would also request that the fourteen parking spaces dedicated to Amy Lowell Residents continue to be a part of the plan for development. ROSS 09

- **Need for Effective Retail Space**

Equity should look towards creating a partnership with a restaurateur to come up with a plan for effective restaurant use in their proposed retail space. Bringing in a quality restaurant offering as they put forward plans for the space will be essential if this project progresses. The last thing the West End needs is just another sports bar. ROSS 10

I would request careful consideration of the requests listed above within Equity's scoping determination. I would also want to point out that many in the neighborhood do not wish to see this garage torn down at all and have their lives disrupted for several years by construction. However, I believe that an opportunity exists to enliven the streetscape of the West and bring more residential, affordable and family units to the city. In order to achieve this, Equity has to either rethink the proposed footprint by incorporating a larger development area (including acquiring and developing the small apartment building); or they will need to make significant compromises on their design and work diligently with the neighborhood to address each one of their concerns. If a detailed, thoughtful plan is not presented in response to their extensive concerns I will have to reevaluate my position on this project at that time.

Thank you for the opportunity to comment on the project at this time. Please feel free to contact my office if you have any questions.

Best regards,

Michael P. Ross
Boston City Council

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MICHAEL P. ROSS, BOSTON CITY COUNCIL

ROSS 01 **The size and scale of the Project need to be reconsidered to be more in line with the surrounding community. While the towers are similar in height to those at Longfellow, they are considerably larger than both the abutting buildings of West End Place and Amy Lowell House.**

Urban design is discussed in Section 5.0 and addresses the Project's compatibility with adjacent neighborhoods.

ROSS 02 **I would also encourage Equity to think creatively about their development and explore the feasibility of incorporating the three-story building across Lomasney Way into a scheme for consideration as [an] alternative.**

The Proponent has looked into this possibility. At this time, the property in question is owned by a third party, and it is infeasible to incorporate it into this Project.

ROSS 03 **Equity must take into consideration the needs of the neighborhood in the composition of the units... One of the biggest issues I hear about from constituents who have growing families is the lack of options for three-bedroom units... I would ask that Equity make their affordability component as meaningful as possible by applying it to their three-bedroom units.**

As described in Section 2.2, the Project design includes 12 three-bedroom units. In addition, the Project will set aside up to 15 percent of the total units on the Project site as affordable units.

ROSS 04 **I encourage Equity to continue to support [the museum and community center] in their development by exploring the feasibility of adding recreational spaces that are intended to benefit all residents of the West End.**

The Project will provide numerous public benefits, among them increasing the amount of open space on the site, which will include programmable outdoor spaces such as a pavilion. The Project's public benefits are described in Section 1.5.

ROSS 05 **I would be remiss if I did not request that... Equity Residential look at the possibility of adding space for an elementary school into their development.**

After consultation with the BRA and the City, the Proponent understands that the requirements for a K-8 school in the neighborhood include the following:

(1) Approximately 81,000 to 97,000 square feet of space to house classrooms, offices, and physical education space;

(2) Suitable arrangements for bus drop-off and collection of students; and

(3) Security arrangements given the potential school's proximity to state and government buildings.

These requirements present the Proponent with a number of concerns:

(1) Following input from the community, the BRA, and the BCDC, the proposed buildings have been designed with the smallest footprints possible. The East Tower has an at-grade footprint of 20,900 square feet, while the footprint of the West Tower is 11,860 square feet. Given the sizes of these footprints, the buildings do not offer the contiguous square footage needed for a school.

(2) As shown on the site plan provided as Figure 1-3, the Project currently provides a small pick-up/drop-off area (approximately 60 to 70 feet in length) on Lomasney Way that is designed to accommodate up to three vehicles. The area has been created to support taxi traffic and would be inadequate to meet the needs of a school. Indeed, the Project site has a limited amount of street frontage (approximately 300 feet), making it impossible to accommodate buses (each typically 45 feet in length) and parents dropping off children, especially when taking into account the presence of two intersections adjacent to the site (i.e., Lomasney Way/Martha Road/Nashua Street and Lomasney Way/Martha Road/Red Auerbach Way), the need to provide access to and from the parking garage on site, and the lack of a dedicated parking lane adjacent to the site. In addition, the creation of a larger pick-up/drop-off area would further impact the open space and sidewalk adjacent to the site which will serve as a key pedestrian connection between the West End, Beacon Hill, and North Station.

The presence of a school would increase vehicle trips to the site, thus impacting traffic flow in the area particularly during the morning commuter peak hour and the mid-afternoon.

The Project site layout has been designed to facilitate pedestrian access between the West End, Beacon Hill, MGH, and North Station. One of the goals of the proposed site design is to foster pedestrian connectivity, making it easier for people to travel to and through the site without creating a barrier. In addition, the Project as currently conceptualized is expected to generate 2,008 pedestrian trips per day, meaning hundreds of trips each day by the buildings' residents through the two lobbies. This significant pedestrian traffic could present security concerns for children and parents in a school setting.

ROSS 06 **Equity Residential needs to work with the Boston Traffic and Parking Department in order to come up with a complete parking plan as it relates to their proposed development... The existing plan [for the garage] only incorporates three bays and I would request that Equity look at modifications that would help to alleviate potential problems.**

The proposed plan provides for four lanes of traffic into and out of the garage, including two lanes on Martha Road approximately 100 feet west of Nashua Street and two lanes on Lomasney Way in generally the same location as the existing curb cut. The Proponent will consult with BTD before finalizing a parking plan.

ROSS 07 **Equity has continually cited the need for such a large development in order to justify the economic expense of putting the garage underground. While the cost of burying a garage is undeniable, I would ask that they provide more concrete financial reasoning to residents.**

Please see Section 1.6 for a discussion of financial considerations related to the Project size.

ROSS 08 **Two other large developments are being discussed in the West End – Mass Eye and Ear Institution and the possibility of the Government Center Garage. Equity Residential needs to work with these abutting projects in order to coordinate an effective parking plan and development impacts.**

Through its TAPA and Construction Management Plan, the Proponent will coordinate parking and other issues of interest with these planned future development projects. Section 3.4, Evaluation of Short-term Construction Impacts, provides additional detail.

ROSS 09 **I would also request that the fourteen parking spaces dedicated to Amy Lowell residents continue to be a part of the plan for development.**

The agreement with Amy Lowell Apartments provides for up to 50 spaces to be available on lease. This commitment will be upheld in the new garage. Currently, six spaces in the Garden Garage are associated with the Amy Lowell Apartments.

ROSS 10 **Equity should look towards creating a partnership with a restaurateur to come up with a plan for effective restaurant use in their proposed retail space.**

The Proponent is considering a number of potential uses for the proposed retail space, including a restaurant or coffee shop.

The Commonwealth of Massachusetts
House of Representatives
State House, Boston 02133-1054

MARTHA M. WALZ
8TH SUFFOLK DISTRICT
REPRESENTING
BOSTON AND CAMBRIDGE

Chair,
Committee on Education

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March 11, 2011

Jay Rourke
Senior Project Manager
Boston Redevelopment Authority
One City Hall Square, 9th Floor
Boston, MA 02201

Re: Garden Garage Project

Dear Jay:

I am writing with respect to the scope of review for the proposed redevelopment of the Garden Garage. As you are receiving numerous thoughtful letters from West End residents, I will keep my comments brief.

Based on the comments I have received since the Project Notification Form was filed, there appears to be a strong consensus that the proposed heights of the two buildings are excessive, especially in relation to the adjacent Amy Lowell House and West End Place. As a result, in addition to studying the no build option and the proposed project, I ask that the BRA require the developer to study a project that complies with the current zoning for the site. **WALZ 01**

In addition, I ask that the BRA require the developer to evaluate the feasibility of locating a public elementary school on the site. I need not repeat here the many reasons why such a school is urgently needed in the downtown neighborhoods. **WALZ 02**

To the great disappointment of West End residents, Equity Residential has not built apartments with three bedrooms so that families with more than one or two children can comfortably live in its buildings. I urge in the strongest possible way that housing for families be prioritized and that a substantial number of three bedroom units be required in these buildings. **WALZ 03**

I also urge the BRA to require that all affordable housing be on-site so those of various economic means are able to live in the West End. Ensuring that the neighborhood does not become an enclave of those who can afford luxury apartments and, instead, remains a vibrant community of people from all walks of life is of great value. **WALZ 04**

Traffic from events at the Garden is one of the neighborhood's most significant challenges. Traffic generated by such "special events" would typically not be included in a traffic study. Here, however, I ask the BRA to require that events at the Garden be treated as a normal occurrence since that is, indeed, the reality for the neighborhood. **WALZ 05**

The need to improve Lomasney Way, including by adding active uses along the street, is of considerable importance. Equity Residential should more carefully consider the size and location of any retail locations on the ground floors of the proposed buildings. A retail location that is too small will more likely generate failure than success given the challenging environment on that street. Equity should also consider the feasibility of a restaurant in either or both buildings. **WALZ 06**

If you have any questions, please do not hesitate to contact me at (617) 722-2380 or marty.walz@mahouse.gov. Thank you.

Sincerely,

Martha M. Walz

REPRESENTATIVE MARTHA M. WALZ

WALZ 01 **Based on the comments I have received since the PNF was filed, there appears to be a strong consensus that the proposed heights of the two buildings are excessive, especially in relation to the adjacent Amy Lowell House and West End Place. As a result, in addition to studying the no build option and the proposed Project, I ask that the BRA require the developer to study a Project that complies with the current zoning for the site.**

Please see Section 2.3.2 for a discussion of the as-of-right alternative that complies with current zoning. Section 5.1.2 describes the proposed massing in relation to the surrounding urban context.

WALZ 02 **I ask that the BRA require the developer to evaluate the feasibility of locating a public elementary school on the site.**

Please see the response to ROSS 05.

WALZ 03 **I urge in the strongest possible way that housing for families be prioritized and that a substantial number of three-bedroom units be required in these buildings.**

As described in Section 2.2, the Project design includes 12 three-bedroom units.

WALZ 04 **I also urge the BRA to require that all affordable housing be on-site so those of various economic means are able to live in the West End.**

Up to 15 percent of the units on the Project site will be set aside as affordable units.

WALZ 05 **Traffic from events at the Garden is one of the neighborhood's most significant challenges. Traffic generated by such "special events" would typically not be included in a traffic study. Here, however, I ask the BRA to require that events at the Garden be treated as a normal occurrence since that is, indeed, the reality for the neighborhood.**

Typically, Garden events occur on weekends or evenings when background traffic is lighter and Project traffic will also be lighter. The morning and afternoon peak hours selected for analysis in the scope represent the worst-case scenario for assessing the combination of background and Project traffic.

WALZ 06 **The need to improve Lomasney Way, including by adding active uses along the street, is of considerable importance... Equity should also consider the feasibility of a restaurant in either or both buildings.**

The Proponent agrees that activation of the street is important. As described previously, the Proponent is considering a number of potential uses for the proposed retail space, including a restaurant or coffee shop.

downtown north association

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March 11, 2011

Jay Rourke, Senior Project Manager
Boston Redevelopment Authority
City Hall Plaza
Boston, MA 02201

RE: Downtown North Association (DNA) Comments on the Project Notification Form (PNF) for the Garden Garage Project Submitted by Equity Residential (EqR) on January 7, 2011 and Recommendations Regarding the Proposed Scope of a Draft Project Impact Report (DPIR) to be Prepared Pursuant Thereto

Dear Mr. Rourke,

What follows are the comments on the above-captioned matter of the Downtown North Association, which is also a member of the Impact Advisory Group (IAG) appointed for this project. Our comments are based on a review of the January 9, 2011 PNF filed by Equity Residential (EqR), which was itself based in part on a series of preliminary planning meetings with members of the IAG for the previous EqR project – the West End Apartments at Emerson Place project. They have been further informed by the results of two subsequent community meetings and the first two IAG meetings on the project.

Those sources provide their foundation, but the primary focus of our comments is on the scoping of a project DPIR, which will be prepared with due regard to these and other PNF comments from the community and other interested parties. Based on that scope, we look forward to substantive community and IAG collaborative in preparation of the DPIR that will eventually be submitted by EqR to the BRA. It is our expectation that the significant issues and opportunities that are raised in these and other public comments collective would and should be effectively addressed and resolved in that document and will provide the basis for community support of the worthy goal of residential redevelopment of an above ground parking facility that is becoming increasingly anomalous in our growing West End community.

The more than one hundred DNA member organizations encompass all aspects of the remarkably diverse and continually growing residential, recreational, commercial, institutional and professional community historically known as the West End of Boston. That community comprises the area of Boston from New Sudbury Street to the Charles River, between Beacon Hill and the North End; and it encompasses all of the EqR properties in this area. Equity Residential is also numbered among our valued DNA members since they first Charles River Park more than a decade ago.

These comments are intended to reflect a consensus DNA view, although individual DNA member organizations will undoubtedly be offering their own comments on this major project. Those particularly include the resident organizations that are most be affected, for better or for worse, by the development that is outlined in this PNF.

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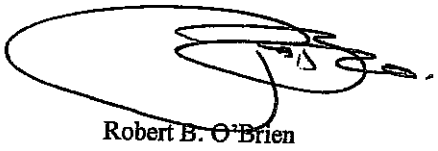
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The comments herein are not intended in any way to replace or obviate any other comments by individual DNA members; and it should be noted that other DNA members are also IAG members. Their comments may well have a somewhat different emphasis and perspective than ours; but we trust that ours will not be substantially incompatible or inconsistent with theirs. In any case, they can and will speak for themselves; and these DNA comments should not necessarily be attributed to them, either directly or indirectly.

Based on the successful experience of the West End Apartments at Emerson Place project, which faced many similar challenges, we are confident that a comparably positive and productive outcome can be achieved in the case of the Garden Garage development. Indeed, if past is prologue, there is good reason the believe the outcome could and should be one that benefits the developer, the community and the city.

Sincerely,



Robert B. O'Brien
Executive Director of the Downtown North Association
And Member of the IAG for the Garden Garage Project

cc: District City Councilor Sal LaMattina and State Representative Marty Walz
Mayor's Office of Neighborhood Services Community Liaison Nicole Leo
John Palmieri, David Carlson, Peter Gori and Jon Greeley of the Boston Redevelopment Authority
Greg White of Equity Residential, David Manfredi of Elkus/Manfredi
Other Members of the IAG for the Garden Garage Project
DNA President Richard Bertman of CBT Architects
Other DNA Officers, Directors and Members

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DOWNTOWN NORTH ASSOCIATION COMMENTS ON THE GARDEN GARAGE PROJECT NOTIFICATION FORM (PNF) AND RELATED RECOMMENDATIONS REGARDING THE SCOPE OF THE DRAFT PROJECT IMPACT REPORT (DPIR)

BACKGROUND: Unlike our neighbors in the North End and Beacon Hill, whose historic neighborhoods remained largely intact for centuries, the physical and social fabric of the West End was almost complete destroyed within living memory in what most now view as a tragic urban planning mistake. The process of West End urban renewal, so-called, was begun in the 1950s; but it is still evolving and incomplete in many important respects. What was put back in the place of the traditional residential and commercial community that had existed until then – one remarkably like what still exists in the North End and Beacon Hill – were elements of a new West End community that is still coming to full fruition:

- Some of the new elements, like Charles River Park, a residential community oriented around a parkland environment that is unique is a downtown urban setting, have proved to be remarkably successful and enduring. The original Charles River Park has grown with the additional of Amy Lowell House, Longfellow Place and West End Place; it has been transformed by the conversion of Hawthorne Place and Whittier Place from apartments to condominiums, with a corresponding growth of families with children; and it was recently enhanced by the addition of the new residences and parkland that resulted from redevelopment of the former Emerson Place garage.

- Others, like Charles River Plaza, provided important new retail resources, but became dated over time and have recently been updated to more contemporary urban design standards.

- Others, like the Garden and Government Center Garages, served a useful purpose but now imposing urban design burdens on the community that have come to exceed their functional benefits. And like the elevated highway and transit viaducts that had long divided and blighted our community, they are now being replaced in the West End and elsewhere in Boston with parking underground and more positive and productive development above grade.

- And still others, like the North Station Planned Development Area, the Bulfinch Triangle and the Nashua Street Quadrant, have yet to be fully and finally completed, a process that is only now getting underway in the wake of the completion of the CAT and MBTA projects that removed the intrusive viaducts in whole or in part.

This larger and longer community context is particularly relevant to the proposed redevelopment of the Garden Garage projects not just because it is part of a positive planning and development process in the West End community, but also because this property is crucially located at the nexus of many of the trends noted above. It, therefore, involves an unusual opportunity and a corresponding responsibility to optimize its impacts on the other sectors that it could and should impact. Indeed, it should be the dual goal of the Garden Garage project both to remedy and improve those elements of West End renewal that do not work successfully and also to preserve and enhance those that do. That means redeveloping the Garden Garage site in a manner that not only preserves the special character of the adjacent residential community, but also expands the quality and success of that experience into the West End as a whole. That is the community standard to which the comments that follow are meant to be directed.

DNA 01

A RECENT AND RELEVANT PRECEDENT: It is worthy of repetition that the recently completed West End Apartments at Emerson Place project provides a recent and relevant precedent and model for the redevelopment of the Garden Garage. That project notably involved the same Equity Residential design and development team that is engaged in the Garden Garage effort; and resulted in replacement of an above-ground parking structure with attractive residential buildings and parkland that reflected and reinforced the urban planning and design principles on which the success of Charles River Park is based.

What is relevant about that project is not just its successful outcome, which virtually everyone in the community acknowledges and applauds, but also the fact that it began in real controversy and contention. That situation was ultimately remedied by a combination of factors: the West End Planning Framework, a BRA community planning process that reaffirmed the exceptional residential character and quality of the Charles River Park community; the involvement of a new project manager, Greg White from Equity Residential, and a new project architect, David Manfredi of Elkus/Manfredi; and the active participation of an interested and informed Impact Advisory Group representing the community.

All of these same elements are also in place for this project; and the successful process that was finally realized for Emerson Place case augurs well for the outcome of the Garden Garage process. Indeed, the IAG for that that previous project was informally reconvened by Equity Residential in order to provide community input and feedback as conceptual plans for the Garden Garage project were formulated. And despite the obvious controversy at this stage of the process, we can have some confidence that an optimal outcome can and will emerge from the Garden Garage planning and permitting process. And that is quite clearly the hope and expectation of the Impact Advisory Group in this case.

SUGGESTIONS FOR THE SCOPING IN THE DPIR: The comments below are influenced by the development context and precedent described above, are informed by a reading of the PNF that was filed for this project on January 7, 2011, and are focused on the scope of the DPIR document that will soon be prepared by the BRA and will then provide a principal basis for the further planning and permitting of this project. They also anticipate a substantive working relationship among the project proponent, the BRA and the IAG in the period after the DPIR scope is determined by the BRA and before the DPIR is actually published by Equity Residential. That was certainly a critical element of the successful process and product that was the West End Apartments at Emerson Place project. Beyond the environmental, traffic and construction issues that are appropriately and necessarily covered in such a document, the following are among the issues and opportunities that DNA would recommend and request be addressed and hopefully resolved in a DPIR for the Garden Garage Project and in the IAG process that precedes it:

- ***An Explanation of the Basic Economic Variables of the Project:*** While it is understood that detailed project financial analysis is not within the purview of an IAG, it is important in the case of the Garden Garage, as it was in the case of the Emerson Place Garage, that the community truly understands the economic factors that require the development density proposed in the PNF. On the assumption that Equity Residential is proposing a 500-unit project that is no bigger than it needs to be, the question is why does it need to be as big as it is. That question can be answered in a manner that does not violate appropriate financial confidentiality, but still provides a realistic sense of the trade-offs inherent in such an analysis. **DNA 02**

❖ ***An Explanation of the Related Issue of Parking Capacity:*** In this regard, it is clear from IAG and other discussions to date that a major variable in the understanding and analysis of the Garden Garage project is the significant cost of both replacing the existing garage parking underground and expanding the existing parking capacity to accommodate the new residential units. Since it is crucial to the analysis, the nature and scope of the required underground parking needs more explanation and evaluation in the DPIR than is provided in the PNF. **DNA 03**

In our view, this issue relates less to the proposed new parking – 200 spaces for 500 apartments seems reasonable -- than it does to the necessity of retaining all of the existing 710-space capacity. To be more specific, the Garden Garage current contains:

- 410 commercial spaces, which are covered by the Downtown Boston parking freeze and are, therefore, assets that cannot be retained or replaced off-site and are especially valuable given their proximity to TD Garden.

- 300 exempt spaces that are currently available for use by area residents – e.g., 14 are reserved for Amy Lowell House, with the balance is available for area businesses and institutions – e.g., Massachusetts General Hospital.

The PNF proposal calls for an additional 140 spaces, for a total underground capacity of 850 spaces, an increase of about 20%. When combined with 60 from the available supply of 300 exempt spaces, 200 parking spaces (24%) would be available for new project residents – a 0.4 parking ratio that is well under BTD limits. As proposed, that leaves 226 spaces (28%) that would then be available for area businesses and institutions; and 410 (48%) spaces that would continue to be available for public parking.

Since parking capacity has such a critical influence on both project revenue and construction costs, it seems appropriate and advisable in this case that a zero-based approach to the required level of parking is in order. Rather than just evaluate the validity of the proposed new spaces for new residents, there should be some demonstration of the economic need for retaining most of the existing parking. This is particularly relevant for the exempt spaces that are available for use by area businesses and institutions since they are apparently not now fully utilized at peak periods; there are daytime spaces available at the MBTA Garage across the street; and in the foreseeable future, institutions like MGH are likely to build their own parking as part of redevelopment of the nearby Nashua Street Quadrant or elsewhere in the community.

A substantial reduction in this parking category alone could reduce the need for an additional level of underground parking; and that in turn may reduce construction costs – albeit offset by related parking revenues – and the corresponding need for some level of increased density. That is not to suggest that this is indeed the case for this parking category or any other; but it is to suggest the value and relevance of a DPIR analysis that addresses those options in a manner that the IAG and the community can better understand and accept, regardless of its conclusions.

❖ ***Building Architecture and Urban Design:*** Understanding that the design and massing of the structures shown in the PNF are only preliminary representations of how the proposed density might best be expressed, what is shown in the PNF does raise questions of building architecture and urban design that have a real and lasting significance from a community perspective and should be more fully and finally addressed in the DPIR. Among those worthy of particular note:

➢ *Building Height:* Given the required density that is projected in the PNF, and probably in any case within reasonable variations thereof, the proposed new buildings reach a significant height of height 310 feet and 240 feet respectively, as shown in the PNF. In terms of existing Charles River Park buildings, the height of the smaller tower is comparable to that of the nearby Whittier and Emerson Places; and the height of the taller tower element is somewhat lower than Longfellow Place on Staniford Street and substantially lower that what is already permitted for the Nashua Street Residences building across the street, which is over 400 feet in height. Both towers are much taller than the adjacent West End Place and Amy Lowell House buildings.

These tower elements with undoubtedly involve significant shadow, wind and view corridor impacts for existing Charles River Park residents in particular, but possibly for other sectors of the West End community as well. In the case of West End Apartments at Emerson Place, such impacts were identified, documented and illustrated from a variety of ground and building perspectives that were understandable to potentially impacted residents, among others. That clearly needs to be done in this case as well. **DNA 04**

Since the Garden Garage itself has adverse view and other environmental impacts, those also need to be taken into account. It is an unattractive structure that will hopefully replace by more interesting and elegant one – and a beautiful structure is clearly a *sine qua non* -- which do not occupy nearly as much of the ground plane. The view corridor analysis should encompass and demonstrate both the positive and negative impacts of the proposed redevelopment as compared to the existing condition; and on that basis, possible changes in building design, height, massing, orientation and materials can be evaluated and implemented, as appropriate. This iterative process has already begun to favorable effect; and hopefully it will continue further in the preparation and presentation of the DPIR itself. **DNA 05**

➢ *Building Massing and Orientation:* Of equal concern with building height are the related issues of building massing and orientation, which have similar environmental and aesthetic effects on the surrounding community – and this too has already begun to be addressed. In this regard, two related issues and opportunities arise in the context of the preliminary design shown in the PNF:

⇒ *The Need for a Sense of Perimeter and Enclosure:* While Charles River Park is certainly open to the public through a perimeter that is physically quite permeable, its sense of place is organized around an interior networks of pathways and parklands that are defined by a real and valued sense of enclosure. While it is an accessible and inviting place of passage and repose for many thousands of non-residents daily, this sense of enclosure conveys the feeling of tranquility and security that defines Charles River Park as a special public place within the larger urban environment. **DNA 06**

For all of its functional and aesthetic deficiencies, the Garden Garage has contributed to that sense of perimeter and enclosure; and based on the preliminary community feedback, there is a real concern that the orientation of the proposed new structures does not – quite the contrary. In effect, the new buildings would replace a wall with a portal – not a bad thing; but the concern is that it does so in a way that could change what was designed to be a pedestrian pathway into what could appear to be a pedestrian thoroughfare. That in turn might very well alter the quality of life and environmental character that has made Charles River Park such a unique downtown community.

Mitigating that potential effect, real and/or perceived, should be an issue and an opportunity that is addressed in the DPIR. That could include changing the orientation of the buildings to create more of a sense of enclosure, improving property landscaping to create a stronger visual sense of perimeter; and encouraging ground-level activities within and outside of the buildings that create a better sense of transition between Charles River Park and the larger community, among other possibilities.

⇒ *The Need for a Clear Address:* As is noted above, and as has been discussed in some of the preliminary planning and IAG meetings for this project, these new buildings are located on the border between two very different districts: Charles River Park and the Nashua Street Quadrant. A project at this crucial site must relate well to the separate and distinct urban design character and quality of both of these districts; in effect, it needs to have two front doors, as we all have agreed. It seems clear, however, that the projected heights of much of the proposed new project are more in keeping with the Nashua Street Quadrant and buildings like the 400+ foot Nashua Street Residences already permitted across the street. That suggests that the main front door of this project should be on its Lomasney Way perimeter, which is also its legal address; and its primary orientation and organization should be in that direction. **DNA 07**

As shown in the PNF, however, that is not the case. Instead of the project having two front doors, in a sense it has none. That reflects an orientation of both buildings perpendicular to, rather than more parallel with, its Lomasney Way frontage. In that configuration, the change in elevation from Lomasney Way to Thoreau Path is simply absorbed into the sidewalk rather that used to create a more legible and intentional transition between these two urban sectors. What may have been lost thereby is an architectural and urban design opportunity to strengthen the sense of enclosure and perimeter that is arguably essential to maintaining the residential quality and character of Charles River Park. **DNA 08**

This matter has already been briefly addressed in the early meetings of the IAG, in which the street-level orientation of at least one of the buildings was changed to create a stronger Lomasney Way presence. If the boundary potential of this site is to be more fully realized, such strategies should be systematically addressed within the scope of the DPIR. Therein lies the possibility that this project could/should be perceived as more a part of the Nashua Street Quadrant than of Charles River Park -- just as the Garden Garage is now perceived and just as Longfellow Place is experienced as more a part of Stanford Street than of Charles River Park, even though it is actually both.

- ***The Related Issue of Retail and other Ground-Level Uses:*** In the context of the architectural and urban design questions raised above, the nature, scope and siting of proposed retail and other ground level uses becomes a critical variable in how the project is perceived and experienced from both Charles River Park and the community at large. Understanding that retail uses in this area – e.g., at the adjacent West End Place – have proven to be less than successful in the recent past, we should not risk the possibility of possible storefront vacancies that could defeat the purpose animating and activating the public interface with the project. On that basis, we would suggest a few planning principles and performance criteria that should be incorporated into the DPIR scope:

  - Whatever retail and restaurant uses are planned for this project need to be predictably successful – i.e., based on reliable expression of serious tenant interest, and preferably lease commitments. **DNA 09**

  - If appropriate and reliable retail tenants are not available, other puhlic or community uses should be planned for the ground level of these buildings, preferably uses that also have a strong and enduring appeal to neighborhood residents. **DNA 10**

  - Such interior building uses should preferably have an exterior dimension that activates and animates the adjacent public spaces around the building. **DNA 11**

  - Such uses would likely differ somewhat for the Thoreau Path and Lomasney Way frontages of the project, but in each case they should be a principal foundation on which the form and function of these two different interfaces are designed and built. **DNA 12**

  - Thought should be given to how the differences in elevation between Lomasney Way and Thoreau Path might best be utilized both to appropriately distinguish and suitably to link these two project perimeters and also to make the connections with the adjacent West End Place and Amy Lowell House as seamless and synergistic, complementary and compatible as possible. **DNA 13**

- ***The Possibility of Building Height as a Community Asset:*** Beyond the many potential community benefits of ground-level uses, the scope of the DPIR should also investigate the possibility that uses above the ground-floor could serve community purposes that would turn the height of the building into a community asset and not just a private amenity. One of the perceived problems with taller buildings is that the benefits of height tend to be reserved for the private enjoyment of the new building occupants, while its burdens are borne by the surrounding community. **DNA 14**

  We should seek in the DPIR ways to better balance the benefits and burdens of height that could at once change both reality and perception. That might include the option that public facilities – e.g., health and fitness centers, office and meeting spaces, community rooms, etc. – that would be otherwise available to Equity Residential and/or project residents could also be available for the shared use of other Charles River Park residents and organizations. It could also include an innovative use of the rooftops of these buildings to create new greenspace or other public amenities that could be available to the community as a whole and take advantage of the likely remarkable views from these new structures.

❖ ***The Mix of Unit Types – Family and/or Affordable:*** The mix of units shown in PNF ranges from studios (20%) to one-bedrooms (50%) to two-bedrooms (30%). This was proposed with the clear understanding that this mix is subject to reconsideration and revision in the DPIR; and that should clearly be within the scope for that document.

The distribution proposed in the PNF has been fairly typical of such developments in the past; but it is becoming increasing less typical of the West End neighborhood as a whole, which now has increasing numbers of families with children. They want to remain in the community, but can only do so if housing is available that meets both the space and the financial needs of their growing families. Among other things – like a new public elementary school -- what is required are larger and more affordable than the rental units than are now available.

The Garden Garage project should be able to meet both of those goals, at least in part, since it can change the unit mix to provide more larger units and because it is already obligated to market 15% of its units as affordable. On that basis, we make the following suggestions for consideration in the scoping of the DPIR, which in some reasonable combination could make for a mix of housing that would seem to be more responsive to the changing needs of the West End community at this time:

- The project proponents should seriously consider a unit mix with more three-bedroom units – at least 5% of the total. Such units could accommodate not only larger families, but also the live-work families, an increasingly common urban occurrence that would be greatly enhanced by the availability of accessible, efficient and connected living spaces. This convertibility would provide some significant degree of marketing flexibility for any larger units. **DNA 15**

- If the project proponents conclude that the market does not exist for at least that number of larger units, they should make that case in the DPIR based on relevant documentation that is understandable and objective.

- To provide an incentive to make as many of the larger units also affordable, the formula for measuring compliance with the project affordability requirement should take unit size into better account. For example, the affordability requirement, at least in part, could be translated from numbers of unit to numbers of square feet. That would likely require a modification of the current affordability formula, at least on a demonstration basis; but without that incentive, the larger units needed by our younger families may be available but not affordable, when they may have to be both. And in that circumstance, some flexibility would be appropriate and advisable.

- If appropriate residential units are already available elsewhere in the Equity Residential West End properties, such units should be eligible to satisfy the project affordability requirement. In the case of larger units, for example, existing three-bedroom units in Longfellow Place could be made both available and affordable sooner rather than later. **DNA 16**

- The affordable unit marketing strategy for this project should also have a workforce-housing dimension. Area employers like our medical, academic and municipal institutions, should be made aware of these affordable housing opportunities and encouraged to reach out to their income-eligible employees to make the availability of affordable units known to them. **DNA 17**

This would be of particular interest to those employers and employees for whom proximity to their workplace is especially important – e.g., hospital shift workers; and it might also be quite timely given some recent difficulties in marketing the affordable units of other projects – including the nearby Avenir -- in a real estate downturn in which all units have become increasingly affordable, for better or for worse.

- ***Educational Modeling Possibilities:*** Given the quality of the design and engineering that will be put into this project, some of its elements could well serve as educational models of state-of-the-art design, engineering and management products and practices. If so, they could well provide practical guidance for other residential development projects, for professional firms and academic institutions in the planning, engineering, design and management fields, and for public and community-based planning and development agencies and organizations. They could also be instructive for residents of the surrounding residential communities in the West End, North End and Beacon Hill in their own homes. Among possible areas of interest:

  - *Universal Design:* This approach to accessibility goes beyond the ADA requirement that some of our new residences need to be designed and built to accommodate the incapacities of those with specific handicaps. Universal design embraces the principle that all residences should be designed and built to the accommodate the incapacities that everyone will surely experience occasionally and eventually; and that doing so can be both cost-effective and virtually invisible.

    One of the foremost proponents of universal design policies and practices and products is located in the Bulfinch Triangle, just around the corner from the Garden Garage. And not coincidentally, the *Institute for Human Centered Design* is also represented on the IAG. One would expect, therefore, that universal design could and should be a strategy that is inherent to the planning, design and development of this project. If it is, we would avoid the need to design and build so-called *handicapped* units that are obviously so, and are correspondingly less attractive and suitable for those who consider themselves to be fully capable at present. **DNA 18**

  - *Energy Efficiency:* Beyond whatever LEED certification to which this project as a whole might aspire, attention to the principles and practices of energy efficiency and conservation could and should be designed and built into the individual residences in this project. And those principles, practices and products can be taught to others and then perhaps replicated in existing housing stock elsewhere in our community. **DNA 19**

  - *Communication Connectedness:* Likewise, if these buildings are designed, built and equipped to incorporate contemporary communications standards and practices, many of which might support or facilitates the goals of universal design as well, there is likewise an opportunity to disseminate and replicate that approach to contemporary living well beyond this project.

The point is that, beyond enhancing the quality, security and convenience of life in the new residences that will be created by this project, elements of exemplary design and construction can also have professional, academic and community benefits as well, if they are planned, implemented and documented as educational opportunities. **DNA 20**

That could include the creation of one or more model apartments that can be used both for marketing as well as demonstration purposes, in potential collaboration with any number of interested parties, all of which could garner favorable media attention for the project and the process.

- ***A Larger Urban Design Challenge:*** One of the potential benefits of the residential redevelopment of the Garden Garage project is the contribution that it can make to the development of the Nashua Street/Martha Road/Lomasney Way intersection as a new and attractive West End urban center. This civic opportunity relates directly to the Nashua Street Quadrant/Charles River Park orientation and address of this project; and it was discussed with specificity and enthusiasm in the preliminary planning meetings for the Garden Garage project. But it received little or no mention in the PNF itself; and it deserves much more attention and consideration in the DPIR.

  With the notable exceptions of the Suffolk County Jail and the old -- and soon-to-be-relocated -- Spaulding Rehabilitation Hospital, the Nashua Street Quadrant has been almost entirely devoted to regional transportation purposes. But in the wake of the CAT and MBTA North Station projects and with the construction of a new arena, that situation changing fast; and the context is being created for another important West End focal point at this critical urban nexus. In addition to the Garden Garage Project itself, this will result from by the combination of the redevelopment strategies that will soon be emerging from the MGH Institutional Master Planning process for the Nashua Street Quadrant, the already permitted Nashua Street Residences, the expected the improvements to the Tip O'Neill Federal Building perimeter, and related plans for the Lomasney Way element of the Causeway Street Crossroads Initiative.

  The potential focal point for this coming revitalization of the Nashua Street Quadrant could be a new nexus of Martha Road, Lomasney Way and Nashua Street organized around a new civic greenspace that would be a appropriate forecourt for it all, not least for the Garden Garage project itself. What could be achieved is an active and attractive new civic space that could at long last make pedestrian and vehicle circulation in and around this area both more safe and more legible. It would also create an interesting new urban place -- a West End Square -- around which the redevelopment of this area could be oriented and organized. **DNA 21**

  Making that developing new context into an actual place would require a level of communication, cooperation and coordination among a series of public agencies, private entities and community organizations that goes well beyond the purview and responsibility of this project and its proponent; but that effort would surely benefit from the kind of informed and timely leadership and inspiration that the Garden Garage development team could provide for its other essential participants. That could begin with include exploring and illustrating these civic and urban design possibilities in the DPIR. That could provide the impetus for a collaborative effort that would be both a catalyst for and the symbol of the revitalization of this visible and important West End district.

- ***Some Other Relevant Community Initiatives:*** In the context of this project, and even more importantly as a valued and resourceful member of the West End community, there are a number of other community improvement initiatives to which Equity Residential and it development team could also make some timely and important contributions. These could include proactive political and professional input and support and perhaps, but not necessarily, financial contributions. **DNA 22**

Among the ongoing neighborhood efforts that could benefit from more active EqR involvement that would benefit the Garden Garage project as well as West End neighborhood as a whole:

- *The Causeway Street Crossroads Initiative:* This BRA effort to redesign and reconstruct the streets, sidewalks and streetscape on and around Causeway Street encompasses a portion of Staniford Street and all of Lomasney Way, which fronts the Garden Garage Project. Its relevance to this project is obvious and immediate.

- *A New Pedestrian Bridge at Leveret Circle:* This longstanding community quest might finally be coming to a successful conclusion pursuant to a recent DOT community meeting on this subject. It involves a critical intersection that directly abuts Equity Residential property and affects pedestrian circulation between the Garden Garage and the Charles River, the Esplanade and the Science Park T Station.

- *A New Public Elementary School for the West End, North End, Beacon Hill and Back Bay:* This community-based effort has the support of the Mayor, the School Superintended and the Boston Redevelopment Authority; but is still in the preliminary stage of site evaluation and selection. Its eventual outcome, however, will have a major impact on the future viability of the West End as a home for families with children, which is a matter directly relevant to the success of this project, to the marketability of all EqR residential properties in our community; and to the desirability and demographics of the West End as a whole.

These community initiatives are likewise beyond the purview of this project and certainly received no attention in the PNF. Nor are they a primary responsibility of Equity Residential. But both the EqR management operation and the Garden Garage development team could together add to these efforts a level of experience and expertise that is otherwise not available to the community in our own pursuits of these goals. And that could make all the difference to the nature, scope, schedule and success of their hopefully mutually beneficial outcomes.

- ***Other DPIR Scope Issues and Opportunities that Not Addressed Herein:*** There are any number of other matters that should be addressed in the DPIR that are not addressed herein. These include such important matters as consistency with prior zoning and planning requirements, the implications of a no-build option, the impact of this project on our existing infrastructure, traffic planning and analysis, and construction management and mitigation. DNA 23

We are confident both that these and other such matters will fall within the scope of the DPIR, as they always do; and that they can and will be better addressed by other community commenters. That includes the very particular issues and opportunities related to the immediately abutting West End Place and Amy Lowell House properties, which will surely he better addressed in the comments from those owners and residents. And in the final analysis we defer to the good judgment of the BRA and other city agencies to assure the kind of comprehensive DPIR scope on the basis of which further planning and permitting can productively proceed.

A CONCLUDING COMMENT ON THE PLANNING PROCESS ITSELF: It is clear from these and other comments on this project that there are a number of outstanding matters that need to be addressed and resolved during the course of the several months projected for the completion of the planning and permitting process on or about the end of this year. Given the success of the effort to address and resolve such problems in the case of the West End Apartments at Emerson Place project, and the fact that many of the veterans of that process are also involved in this effort, we remain confident of an ultimately positive outcome in this case as in that. But that will require the same type of communication and collaboration between the project proponent and the community and the same level of cooperation and support from the BRA that were evident in that case.

And in that regard, it bears repeating that once an appropriate DPIR scope is determined by the BRA with community input and feedback, that among the most important stages of that collaborative effort is the period between the publication of the scope and the publication of the DPIR. It is while the DPIR is being prepared that the best options available to address the issues and opportunities required by the scope can be most effective addressed -- in a collaborative manner before they are finally decided upon. The DPIR that is eventually be published is then likely to be both better understood and more hopefully supported by a community that has been substantively involved in the process that produced it.

The hope and expectation of our community is that we will have the same level of involvement in that element of the process in this case as we did in the case of the West End Apartments; and if so, we look forward to an active, inclusive and participatory process that will produce a project that is both timely and worthy based on the community context in which it has emerged and to which it could and should contribute positively. And we in the community are prepared to put in the time and effort that will allow that to happen.

DOWNTOWN NORTH ASSOCIATION & COMMUNITY

The Downtown North Associotion (DNA) is a not-for-profit coalition, which represents the business, institutional, professional, recreational and residential interests in the mixed-use community historically known as the West End. It is baunded by City Hall Ploza on the south, Charles River on the north, Beacon Hill on the west and the North End on the east. The purpose of the Association is to encourage and contribute to the continued economic, social and physical revitalization and redevelopment of the Downtown North/West community as a whole. The strategies employed to accomplish that mission include collaborative planning and proactive advocacy regarding the full range of issues and opportunities that challenge and confront our neighborhood, emphasizing communication, caardination and cooperation with the public agencies and private organizations that will influence and facilitate a more cohesive and successful community.

The more than one hundred member organizations of the Downtown North Association represent a broad crass-section of the Downtown North/West End community, which encompasses a variety of major districts including:

* *The residential neighborhood that includes the former Charles River Park, West End Place, the Hawthorne Place, Whittier Place and Strada 234 Condominiums, the Amy Lowell House and the Blackstone as well the new Charles River Plaza retail and office complex, Holiday Inn Select, a major professional building an Staniford Street, the West End Library, Old West Church and the Harrison Gray Otis House.*

* *The Bulfinch Triangle, immediately south of Causeway Street, which is hame to most of the retail, bar, restaurant and hotel establishments and professional firms in the area and contains more than five acres of redevelopment parcels to be made available with the demolition of the CAT and Green Line elevated structures.*

* *The North Station Economic Development Area, immediately north of Causeway Street, which includes North Station itself, TD Garden, the Tip O'Neill Federal Building, the Causeway/Strada 234 and Lovejay Wharf buildings, and the southern portal of the Zakim/Bunker Hill Bridge, as well as the major redevelopment parcels on the site of the old Bostan Garden.*

* *The adjacent Nashua Street Quadrant, which includes Spaulding Rehabilitation Hospital, the new Nashua Street Residences Project and the new Nashua Meadaws Park, as well as a number of important new development parcels.*

* *The medical sector, in the Cambridge Street/Charles Street area, which includes Massachusetts General Hospital, Massachusetts Eye & Ear Infirmary, Shiners Burns Hospital far Children and the Scheppens Eye Research Institute, as well as the new Liberty Hotel & Conference Center in the former Charles Street Jail.*

* *The northern portion of Government Center, which includes the new Edward Brooke Suffolk County Courthouse, the Lindemann Center and Hurley State Office Building, Government Center Garage, the Area A-1 Police Statian, the New Chardon Street Post Office, Channel 7, One Bowdoin Place and One Bulfinch Place.*

DOWNTOWN NORTH ASSOCIATION

DNA 01 **It should be the dual goal of the Garden Garage project both to remedy and improve those elements of West End renewal that do not work successfully and also to preserve and enhance those that do. That means redeveloping the Garden Garage site in a manner that not only preserves the special character of the adjacent residential community, but also expands the quality and success of that experience into the West End as a whole.**

The Proponent agrees with this comment, and is certain that the Project will enhance the West End neighborhood. Section 5.0, Urban Design, describes how the Project design responds to the surrounding neighborhood, including the West End.

DNA 02 **On the assumption that Equity Residential is proposing a 500-unit project that is no bigger than it needs to be, the question is why does it need to be as big as it is. That question can be answered in a manner that does not violate appropriate financial confidentiality, but still provides a realistic sense of the trade-offs inherent in such an analysis.**

Please see Section 1.6 for a discussion of financial considerations related to the Project size.

DNA 03 **Since it is crucial to the analysis, the nature and scope of the required underground parking needs more explanation and evaluation in the DPIR than is provided in the PNF. In our view, this issue relates less to the proposed new parking (200 spaces for 500 apartments seems reasonable) than it does to the necessity of retaining all of the existing 710-space capacity.**

While the existing Garden Garage is permitted for 710 spaces, it has a striped capacity of only 650 spaces, which are generally well utilized throughout the year. The Garden Garage currently has lease agreements for over 200 monthly passes with MGH, 274 monthly passes with neighborhood employers, merchants, and residents, and a commitment for up to 50 spaces with the Amy Lowell Apartments, and it serves as a key parking location for events at the TD Garden.

Non-event peak demand typically occurs during midday during weekdays, and reaches an average peak occupancy between 75% and 87%. This is slightly less than the "effective capacity" of the facility, which parking professionals typically consider as 90% occupancy of a public garage and is the point at which additional users of the facility begin to experience frustration and delays searching for available spaces. During events at the TD Garden, the Garden Garage often exceeds the effective capacity (90%) and even reaches the physical capacity (100%). The TD Garden typically has over 150 events in a year. In addition, parking demand for

most events (e.g., Celtics or Bruins games and concerts) coincides with peak residential demand (i.e., after 7:00 p.m.), which eliminates the possibility for parking spaces in the garage to be shared between the two different user groups.

It would be imprudent to reduce the public supply of the garage (i.e., 650 spaces), which serves as an important amenity to employers, merchants, and residents in the area. New parking will be provided for the residential uses at a ratio of 0.4 spaces per unit, consistent with BTD parking guidelines for the area. See Section 3.3.2.5 for more details.

DNA 04 **Tower elements will undoubtedly involve significant shadow, wind, and view corridor impacts for existing Charles River Park residents in particular, but possibly for other sectors of the West End community as well.**

The Proponent has thoroughly assessed potential Project-related impacts involving shadow, wind, and view corridors. Each of these items is discussed in Section 4.0.

DNA 05 **The view corridor analysis should encompass and demonstrate both the positive and negative impacts of the proposed redevelopment as compared to the existing condition; on that basis, possible changes in building design, height, massing, orientation, and materials can be evaluated and implemented.**

Figures 2-37 through 2-59 illustrate eye-level and skyline views of the proposed Project compared to existing views, where applicable.

DNA 06 **While Charles River Park is certainly open to the public through a perimeter that is physically quite permeable, its sense of place is organized around an interior network of pathways and parklands that is defined by a real and valued sense of enclosure... For all of its functional and aesthetic deficiencies, the Garden Garage has contributed to the sense of perimeter and enclosure, and based on the preliminary community feedback, there is real concern that the orientation of the proposed new structures does not.**

The Project's two towers will create a new pedestrian connection from the West End to the city beyond. In addition, the orientation of the towers and the angling of the inner facades will open the new plaza toward the city while maintaining a sense of enclosure toward the West End (see Figures 2-15 and 2-17).

DNA 07 **These new buildings are located on the border between two very different districts: Charles River Park and the Nashua Street Quadrant. A project at this crucial site must relate well to the separate and distinct urban design character and quality of both of these districts; in effect, it needs to have two front doors.**

Please see the response to BRA 24. Section 5.0, Urban Design, describes how the Project design responds to the urban context and surrounding neighborhoods.

DNA 08 **Instead of the Project having two front doors, in a sense it has none. That reflects an orientation of both buildings perpendicular to, rather than more parallel with, its Lomasney Way frontage. In that configuration, the change in elevation from Lomasney Way to Thoreau Path is simply absorbed into the sidewalk rather than used to create a more legible and intentional transition between these two urban sectors.**

The latest site plan does provide a very legible understanding of the transition in grade between Lomasney Way and Thoreau Path. This transition in elevation and the use of landforms, plantings, walks, and walls, will also delineate and differentiate the public feel of Lomasney Way from the park-like feel of Thoreau Path.

DNA 09 **Whatever retail and restaurant uses are planned for this Project need to be predictably successful (i.e., based on reliable expression of serious tenant interest, and preferably lease commitments).**

The Proponent agrees with this statement.

DNA 10 **If appropriate and reliable retail tenants are not available, other public or community uses should be planned for the ground level of these buildings, preferably uses that also have a strong and enduring appeal to neighborhood residents.**

The Proponent anticipates that the retail space will be leased by an entity that will interest both residents and members of the community.

DNA 11 **Such interior building uses should preferably have an exterior dimension that activates and animates the adjacent public spaces around the building.**

The Proponent agrees with this statement.

DNA 12 **Such uses would likely differ somewhat for the Thoreau Path and Lomasney Way frontages of the Project, but in each case they should be a principal foundation on which the form and function of these two different interfaces are designed and built.**

Please see the response to BRA 24 for a description of the differing frontages and entries toward Thoreau Path and Lomasney Way.

DNA 13 **Thought should be given to how the differences in elevation between Lomasney Way and Thoreau Path might best be utilized both to appropriately distinguish and suitably link these two Project perimeters and also to make the connections with the adjacent West End Place and Amy Lowell House as seamless and synergistic, complementary, and compatible as possible.**

As noted above, the transition in elevation and the use of landforms, plantings, walks, and walls, will delineate and differentiate the public feel of Lomasney Way from the park-like feel of Thoreau Path. In addition, the open spaces and paths shown on Figure 1-3 will accommodate future connections from West End Place and Amy Lowell Apartments, should those entities pursue such connections.

DNA 14 **Beyond the many potential community benefits of ground-level uses, the scope of the DPIR should also investigate the possibility that uses above the ground-floor could serve community purposes that would turn the height of the building into a community asset and not just a private amenity.**

The Project will provide numerous public benefits, which are discussed in Section 1.5. Among these benefits, the Project includes 12 three-bedroom units suitable for family housing, and the Proponent is considering a green roof on the eight-story base that would retain stormwater.

DNA 15 **The Project Proponents should seriously consider a unit mix with more three-bedroom units – at least 5% of the total.**

As described in Section 2.2, the Project design includes 12 three-bedroom units.

DNA 16 **If appropriate residential units are already available elsewhere in the Equity Residential West End properties, such units should be eligible to satisfy the Project affordability requirement. In the case of larger units, for example, existing three-bedroom units in Longfellow Place could be made both available and affordable sooner rather than later.**

As described in Section 1.3.3.3, the Project will meet the Mayor's applicable inclusionary housing goals by setting aside up to 15 percent of the units on the Project site as affordable units.

DNA 17 **The affordable unit marking strategy for this Project should also have a workforce-housing dimension. Area employers like our medical, academic, and municipal institutions should be made aware of these affordable housing opportunities and encouraged to reach out to their income-eligible employees to make the availability of affordable units known to them.**

The Project will be developed consistent with the Mayor's housing policies.

DNA 18 **Universal design [the principle that all residences should be designed and built to accommodate the incapacities of those with specific handicaps] could and should be a strategy that is inherent to the planning, design, and development of this Project. If it is, we would avoid the need to design and build so-called *handicapped* units that are obviously so…**

The Project will meet applicable federal and state guidelines.

DNA 19 **Beyond whatever LEED certification to which this Project as a whole might aspire, attention to the principles and practices of energy efficiency and conservation could and should be designed and built into the individual residences in this Project.**

The Project design incorporates good principles and practices of energy efficiency to reduce the burden of high energy use and cost on the individual tenant and the city at large. Please see Section 4.12.3 for a description of the applicable LEED credits related to energy. Please also see the response to BED 06.

DNA 20 **[B]eyond enhancing the quality, security, and convenience of life in the new residences that will be created by this Project, elements of exemplary design and construction can also have professional, academic, and community benefits as well, if they are planned, implemented, and documented as educational opportunities. That could include the creation of one or more model apartments that can be used both for marketing as well as demonstration purposes…**

The Proponent may elect to include a model unit which would be available for viewing.

DNA 21 **The potential focal point for this coming revitalization of the Nashua Street Quadrant could be a new nexus of Martha Road, Lomasney Way, and Nashua Street organized around a new civic greenspace that would be an appropriate forecourt for it all… What could be achieved is an active and attractive new civic space that could at long last make pedestrian and vehicle circulation in and around this area both more safe and more legible… Making that developing new context into an actual place would require a level of communication, cooperation, and coordination among a series of public agencies, private entities, and community organizations that goes well beyond the purview and responsibility of this Project and its Proponent, but that effort would surely benefit from the kind of informed and timely leadership and inspiration that the Garden Garage development team could provide… That could begin with exploring and illustrating these civic and urban design possibilities in the DPIR.**

The design team has prepared initial illustrations that propose revisions to traffic and pedestrian circulation patterns within this connected area to achieve the goals suggested. The team is amenable to working with all parties to ensure that a successful and active civic greenspace can be realized.

DNA 22 **In the context of this Project, and even more importantly as a valued and resourceful member of the West End community, there are a number of other community improvement initiatives to which Equity Residential and its development team could also make some timely and important contributions,**

[including:] the Causeway Street Crossroads Initiative..., a new pedestrian bridge at Leverett Circle..., and a new public elementary school for the West End, North End, Beacon Hill, and Back Bay...

The Project will provide a number of significant public benefits, which are addressed in Section 1.5. Please see the response to ROSS 05 for a discussion related to a new public school.

DNA 23 There are any number of other matters that should be addressed in the DPIR... [including] consistency with prior zoning and planning requirements, the implications of a no-build option, the impact of this Project on our existing infrastructure, traffic planning and analysis, and construction management and mitigation.

Zoning is discussed in Section 1.3.2. Project alternatives, including a No Build option, are discussed in Section 2.3. Infrastructure systems are addressed in Section 7.0. Section 3.0 contains a transportation analysis, while the Transportation Technical Appendix is provided as Attachment C. Potential construction-related impacts are discussed in Section 4.11.

HAWTHORNE PLACE
THE CONDOMINIUM AT CHARLES RIVER PARK

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March 11, 2011

Jay Rourke, Senior Project Manager
Boston Redevelopment Authority
Boston City Hall - 8th Floor
Boston, MA 02201

Dear Mr. Rourke:

On behalf of the Hawthorne Place Board of Trustees, I am herewith submitting our statement of response to the Garden Garage Project proposed by Equity Residential in the Project Notification Form for Large Project Review dated January 7, 2011.

I am a member of the Impact Advisory Group (IAG) for the abovementioned project and also served on the IAG for the previous Equity project known as the Residences at Emerson Place. That planning process ultimately resulted in a development that complemented the existing buildings in the West End, did not overwhelm the park-like setting of the area, and provided welcome open space for all residents. It is our hope that a development at the Garden Garage, if built, could achieve a similar result. Unfortunately, the project as presently proposed is of serious concern to the Hawthorne Place Board of Trustees in terms of the height, density, and massing of the proposed buildings. Rather than complementing the existing neighborhood, this development of 500 Units and 850 parking spaces may well totally overwhelm this very special neighborhood. It is critical that any new development not only complement the neighborhood, but, in fact, enhance it.

Attached are various issues and concerns that must be addressed in the Draft Project Impact Report and in the on-going negotiations with the Impact Advisory Group. Again, it is our hope that the upcoming process will be carried out in the same sprit of cooperation with Equity Residential and the BRA that led to the successful Residences at Emerson Place.

Sincerely yours,

Linda Ellenbogen
Hawthorne Place Board of Trustees

Attachment

GARDEN GARAGE PROJECT

HAWTHORNE PLACE ISSUES/CONCERNS:

1. Project Alternatives: No consideration has been given to alternatives to the height, massing and density of proposed project; HP 01
2. No economic justification has been provided to support the need for 500 residential units and 850 parking spaces; HP 02
3. No street level views of new towers have been provided. Views from side and back of Hawthorne Place appear to be dramatically impacted; HP 03
4. The infrastructure of Charles River Park is now approximately 50 years old. There have been numerous pipe breaks beneath Thoreau Path. It is extremely doubtful that water and sewer lines can support any additional development; HP 04
5. Construction period impacts. Blasting for five levels of underground parking will have detrimental effect on adjacent properties; HP 05
6. There is insufficient temporary relocation parking in the area. Hawthorne Place parking deck is cited under Section 3.3 as having 111 parking spaces. We have 54 privately owned spaces and 50 visitor spaces available for the use of Hawthorne Place visitors and guests only; HP 06
7. Climatic impacts -loss of sunlight and winds from additional towers. Wind impacts on Thoreau Path from the Longfellow Towers are already intolerable; HP 07
8. Additional traffic congestion from development when added to the customary commuter traffic and Garden events. Need to further assess entry/exit on Lomasney Way; HP 08
9. Need for clarification of entry points from Thoreau Path. The PNF contains contradictory statements: Section 2.2 states: "primary pedestrian access to the building lobbies will be from Lomasney Way; a secondary residential entry will be provided from Thoreau Path". Section 3.1 states: "Primary pedestrian access to the residential lobbies will be provided from Thoreau Path, with secondary pedestrian connections onto Lomasney Way". It is imperative that the buildings' access from Thoreau Path be open, well-lighted, and visually appealing. Although creation of street life on Lomasney Way is important, the development must relate to the park to gain community support; HP 09
10. Need for additional open space and recreational amenities open to all on the Thoreau Path side of the development. The Emerson Place development is only 310 units on a far larger footprint than what is being proposed here resulting in more open space to be enjoyed by the neighborhood. HP 10

It is expected that these issues and concerns will be fully addressed in the DPIR and in the on-going Article 80 process.

HAWTHORNE PLACE BOARD OF TRUSTEES

HP 01 **No consideration has been given to alternatives to the height, massing, and density of the proposed Project.**

The Project has undergone numerous design alterations through internal design review. Many of these design changes have resulted from consultations with the BCDC. The resulting design is reflected in this proposal, and is intended to complement the surrounding neighborhoods, enhance open space opportunities on the site, and provide the desired quantity of housing and parking.

HP 02 **No economic justification has been provided to support the need for 500 residential units and 850 parking spaces.**

Please see Section 1.6 for a discussion of financial considerations related to the Project size.

HP 03 **No street-level views of the new towers have been provided. Views from the side and back of Hawthorne Place appear to be dramatically impacted.**

Various views of the proposed Project, several of which are from street level, are provided as Figures 2-37 through 2-58.

HP 04 **The infrastructure of Charles River Park is now approximately 50 years old. There have been numerous pipe breaks beneath Thoreau Path. It is extremely doubtful that water and sewer lines can support any additional development.**

Water and sewer connections will be coordinated with the BWSC during the Site Plan Review process. The Proponent will attempt to direct connections away from Thoreau Path.

HP 05 **Blasting for five levels of underground parking will have detrimental effects on adjacent properties.**

Blasting will be conducted in accordance with Massachusetts Board of Fire Prevention Regulations 527 CMR 13. The Proponent will develop a blasting design plan (527 CMR 13.09.1L) based on the site analysis (527 CMR 13.09.1K) that will be protective of adjacent buildings and sensitive receptors. The blasting plan will be submitted to the BFD. As required by the regulations, the Proponent will also conduct preconstruction surveys of adjacent structures within 250 feet of the site, establish vibration criteria that are protective of adjacent structures, and monitor vibrations during blasting operations.

HP 06 **There is insufficient temporary relocation for parking in the area. Hawthorne Place parking deck is cited under Section 3.3 as having 111 parking spaces. We have 54 privately-owned spaces and 50 visitor spaces available for the use of Hawthorne Place visitors and guests only.**

This comment is noted. Section 3.2.4 contains a detailed parking analysis.

HP 07 **Climatic impacts – loss of sunlight and winds from the additional towers – [are likely]. Wind impacts on Thoreau Path from the Longfellow Towers are already intolerable.**

Section 4.1 describes the Project's potential wind impacts, and the shadow analysis is found in Section 4.2.

HP 08 **Additional traffic congestion from development [will result] when added to the customary commuter traffic and Garden events. [There is a] need to further assess entry/exit on Lomasney Way.**

The Proponent is working with the BRA and BTD to locate the garage entry/exit appropriately, in a location that will minimize potential impacts to surrounding traffic.

HP 09 **[There is a] need for clarification of entry points from Thoreau Path [regarding primary and secondary pedestrian access].**

Figure 2-22 illustrates entry points from Thoreau Path into each proposed building; Figure 2-21 illustrates the primary pedestrian entry points from Lomasney Way. Please see the response to BRA 24 for a description of these entry points.

HP 10 **[There is a] need for additional open space and recreational amenities open to all on the Thoreau Path side of the development.**

One of the Project benefits will be to increase the amount of open space on the site, which will include programmable outdoor spaces such as a pavilion (see Section 1.5).

HK | HallKeen

Amy Lowell Apartments
65 Martha Road
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March 7, 2011

Jay Rourke
Boston Redevelopment Authority
1 City Hall Square #9
Boston, Ma 02114

RE: Garden Garage Project / Response to the P.N.F.

Dear Mr. Rourke:

This letter is to represent the position of the Management of Amy Lowell Apartments with regards to the P.N.F. for the aforementioned project. The opposition we have to the Project/P.N.F. is as follows:

1) Parking Agreement- The P.N.F. submitted on January 7, 2011 states in Section 1.2.2.1 – On Site Parking - "*Of the 300 residential/private/exempt spaces, 14 are committed under a lease to the Amy Lowell Apartments. According to parking occupancy data collected by the Project team in January 2009, the existing Garden Garage is never fully occupied.*" The actual parking agreement/ lease which is in effect until June 31, 2049, states that Fifty (50) residents of Amy Lowell shall be entitled during the term of those agreement to license pursuant to separate written agreements one (1) parking space each, for the parking of a motor vehicle. Thus the P.N.F. is in direct violation of the previous standing parking agreement. ALA 01

2) The Proposed Project Design poses several concerns for the residents of Amy Lowell they are as follows:

   (a)The design opens a direct path into the park which poses a security concern. ALA 02

   (b)The scale of the buildings being twenty and twenty-one stories respectively creates a concern for light pollution and long term permanent changes affecting sunlight and shadowing resulting in increased heating costs. ALA 03

   (c) Traffic Patterns- According to the P.N. F. *As shown in Figure A-7, vehicular access to the proposed garage will be from the existing curb cut along Lomasney Way; access to the*

loading dock will be from the service drive off of Lomasney Way. In one of the public hearings it was stated by Gregory White that the entrance to the proposed garage would be at least two (2) car lanes smaller. This poses a concern for the traffic flow of Lomansey way and Martha Road. In its current design, particularly when there is an event at the garden, traffic comes to a halt and bottle necks. If an additional five-hundred households are added to the community and the traffic that comes along with that addition, as well as the traffic caused by events at the Garden combined with a smaller entrance/exit to the parking structure is a recipe for unnecessary traffic delays and jams. ALA 04

3.) Construction- If approved, the project poses many construction concerns for Amy Lowell Apartments. Including but not limited to negative impact on leasing during construction, the effects of construction noise on our disabled population, access to the building, traffic during construction, aesthetics, and possible damage to the building due to blasting, construction vehicles, blown debris etc. ALA 05

The content of the aforementioned letter represents the concerns/position of the management of Amy Lowell Apartments we look forward to future correspondence and open constructive dialog with the Boston Redevelopment Authority and Equity Residential regarding this project.

Sincerely,

Jannel Satterwhite
Property Manager
Amy Lowell Apartments
HallKeen Management
65 Martha Road
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617-742-0222 - (p)
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Jsatterwhite@hallkeen.com

Cc: Steve Lodi, Regional Manager

AMY LOWELL APARTMENTS

ALA 01 **The PNF… states in Section 1.2.2.1, On Site Parking, *"Of the 300 residential/private/exempt spaces, 14 are committed under a lease to the Amy Lowell Apartments"*… The actual parking agreement/lease, which is in effect until June 31, 2049, states that fifty (50) residents of Amy Lowell shall be entitled during the term of that agreement to license pursuant to separate written agreements 1 parking space each, for the parking of a motor vehicle.**

The agreement with Amy Lowell Apartments provides for up to 50 spaces to be available on lease. This commitment will be upheld in the new garage. Currently, six spaces in the Garden Garage are associated with the Amy Lowell Apartments.

ALA 02 **The design opens a direct path into the park, which poses a security concern.**

The proposed Project will open up the West End and activate the Project site and adjacent spaces. It will also add new residences adjacent to Thoreau Path, increasing visibility and the level of activity which will help alleviate security issues.

ALA 03 **The scale of the buildings… creates a concern for light pollution and long-term permanent changes affecting sunlight and shadowing, resulting in increased heating costs.**

As described in Section 4.2, new shadow from the proposed Project will primarily fall to the north of the site along existing roadways as well as along the rooftops of adjacent buildings in the mornings and evenings. Adjacent residences will not receive any new shadow during the middle of the day, when potential solar heat gain will be possible in the winter months. In addition, by splitting building massing on the site into two towers, the Project will allow new areas of sunlight relative to existing conditions. Sections 4.2 through 4.4 contain shadow and daylight analyses. All lighting fixtures along public paths will be focused on the path of travel without providing unnecessary illumination to surrounding areas or buildings, thus minimizing potential light pollution.

ALA 04 **In one of the public hearings it was stated by Greg White that the entrance to the proposed garage would be at least two car lanes smaller. This poses a concern for the traffic flow of Lomasney Way and Martha Road.**

The garage entry/exit capacity will be designed to accommodate commuter and event peak hour entering and exiting volumes with no queuing impacts on local streets. Section 3.3.2.7 describes the proposed garage design.

ALA 05 **If approved, the Project poses many construction concerns for Amy Lowell Apartments, including but not limited to negative impacts on leasing during construction, the effects of construction noise on our disabled population, access to the building, traffic during construction, aesthetics, and possible damage to the building due to blasting, construction vehicles, blown debris, etc.**

Potential Project-related construction impacts, and the mitigation measures intended to avoid or minimize such impacts, are discussed in Section 4.11. The Proponent will be required by the BTD to develop a detailed CMP that will address construction-period issues. The Proponent will also work with Project abutters on the development of the CMP.

March 10, 2011

SENT VIA EMAIL

Jay Rourke, Senior Project Manager
Boston Redevelopment Authority
One City Hall Plaza
Boston, MA 02210

RE: Equity Residential Garden Garage Project Notification Form Comments

Dear Jay:

I am writing as a resident of West End Place located on Staniford Street and a direct abutter to the proposed Garden Garage project site. West End Place is a mixed-income cooperative condominium with 183 residential units, three commercial suites, the West End Museum, and a 101-car garage that only for West End Place residents and the West End Museum shareholder. I am also a member of the Impact Advisory Group for the subject project.

Although there is general consensus that the current Garden Garage detracts from our much-improved community, there needs to be care taken in the design of its replacement. When the MBTA depressed the Green Line along Lomasney Way, it exposed the unattractive garage that had not been clearly visible for many years. The West End community has worked hard over many years to continuously improve the West End – we need to be sure that our continuing efforts are not jeopardized.

There are several issues with this project as currently proposed that I feel need to be considered in the Scoping Determination:

- **Size of the Proposed Project:** The two towers that are proposed are more than twice the height of the current Garden Garage and West End Place. The height of the proposed towers may reflect the height of the Longfellow Place towers, but they do not fit into the context of Charles River Park as it has evolved, or of the West End. The other properties in the Park, including the Villas and Townhouses that Equity Residential built in their 2005 project, are varied in height and are lower than the Longfellow Towers except for the building that is next to Storrow Drive. Looking at the renderings of the East Tower Elevation (slide 33) as shown at the February 7 public meeting presentation, it clearly shows that the East Tower is out of proportion with West End Place. The proposed height of the East Tower will obscure West End Place, which is an award-winning property for its design. In keeping with the texture of the neighborhood, the new

FORRESTALL 01

buildings in the Bulfinch Triangle are also significantly lower than the two proposed towers. The allowable height for the replacement of the Garden Garage is spelled out in the West End Land Assembly and Redevelopment Plan of 1957 (the Plan) and modified, amended, or revised over the years. This parcel was re-designated for residential and commercial use in 1971 and there is a formula defining height and set-backs for residential parcels in the original Plan. The as-of-right height for this site is 155', but there is a possibility of exception if the buildings have set-backs according to the formula which begins on page 7 of the original Plan. This includes set-backs from other buildings as well as from the street. The intent of these set-backs, according to the original Plan is *"... to assure adequate and healthful sunlight, light and air, as well as proper privacy, to all dwelling units within the Project Area"*. My interpretation of this is that after the building reaches a certain height, any additional height needs to be set back from the building base edge, similar to the designs of the new buildings in the Bulfinch Triangle. These configurations need to be explored by the proponent.

The project site is approximately three acres. Although the proponent suggests that they will increase the amount of open space within the proposed project, much of that space is paved walkway. This proposed walkway appears to be for the convenience of the local institutions, not residents. As the proponent states in their PNF, *"This entire precinct is planned around a meandering pedestrian network and green spaces with connections to the Charles River waterfront and the surrounding neighborhoods. This urban green space is cherished by the residents of the West End."* **FORRESTALL 02**

- **West End Place Easement:** The easement that is between the proposed project and West End Place is labeled as a "service road" and "loading area" in the PNF but in fact it is the only means of access and egress to the West End Place parking garage and trash dumpsters, which are emptied daily during the week. Additionally, the management of Equity Residential uses this easement to service Longfellow Towers. West End Place has a written obligation to maintain this easement. The proponents' use of the current easement as a "service road" during the demolition and construction of the proposed project and beyond will greatly obstruct West End Place residents from using their garage, and it will hinder West End Place management from properly maintaining the easement. Construction/demolition equipment in the easement will be a safety hazard to West End Place residents using the garage and the dog-walk area. Unless the proponent has another "service road" and "service area" for the demolition and construction of the 500 new apartments as proposed in the PNF, West End Place residents might be denied safe and rightful use of the easement. **FORRESTALL 03**

In addition, the easement abuts the current entrance to the Garden Garage which even now causes West End Place residents difficulty when drivers access and egress the Garden Garage before and after events at the TDGarden. Our residents find it very **FORRESTALL 04**

difficult to enter and leave our own parking garage. The proponents plan suggests that there will be fewer lanes for vehicles using the Garden Garage than are currently in use even though there is a proposal for 250 additional cars in the proposed garage. If this lane decrease is permitted, the traffic difficulties on Lomasney Way, Martha Road, Nashua Street and the roads and highways leading to and from them will experience more traffic issues then there are now during times of high use. Also, drivers will be more impatient when they try to leave the garage after events and will cause night time disturbance to residents by honking their horns. Several years ago, we worked with Equity, BTD, BPD and State Police to change traffic patterns around this area after events so vehicles could leave the Garden Garage and MBTA garage more quickly. This alleviated much of the noise factor and traffic gridlock. Having fewer egress lanes from the proposed parking garage will cause these issue to resurface.

- **Passageway from Lomasney Way into the Park and Thoreau Path:** Although I appreciate the desire of the proponent to encourage people to walk between North Station, the Park, and MGH, the focus should be to allow residents of the West End to enjoy the openness created by removing the current solid barrier – the Garden Garage. As attractive as the proposed walkway may appear, narrowing the passageway between the proposed towers could keep the sense of tranquility that is felt within the Park now. Narrowing that space by moving the buildings closer together could also allow for an increase in the width of the area between West End Place and the proposed East Tower which could allow for improved maintenance of the easement. Also, the walkway between the Amy Lowell House and the proposed West Tower could be improved. **FORRESTALL 05**

- **Demolition and Construction:** During demolition and construction, there will be a great deal of noise, dirt, and general disturbance for abutting residents over a long period of time. There needs to be assurance by the proponent that during the week, work will only take place between 7:00AM and 4:00PM. This means that the Construction Management Plan needs to state clearly that no work, set-up, or staging will begin before 7:00AM on or around the site. If the developer finds that work needs to be done after 4:00PM or on weekends or holidays, the property managers of the abutting properties (West End Place, Amy Lowell House, Hawthorne Place, and Whittier Place) need to be informed at least three business days in advance so that they have sufficient time to notify the residents of their properties. There also needs to be strict monitoring of noise, dirt, and traffic during this proposed project. There are approximately 85 children under the age of 18 at West End Place and many senior citizens. Their health, safety, and peaceful enjoyment of their home needs to be of utmost consideration. **FORRESTALL 06**

- **Removal of Current Garage:** Depressing the current parking garage will be beneficial to all concerned, but there will likely need to be some blasting of bedrock and excavating of **FORRESTALL 07**

the land below the current structure to accomplish this. This is a concern since much of the proposed project, according to the plans included in the PNF, is within the historic high water line and is landlocked wetlands (Figure A-8). Moving the earth and/or blasting rock could affect the integrity of nearby structures, specifically West End Place and Amy Lowell House. For this reason, the proponent needs to conduct structural engineering surveys both before the project begins and after the project is complete so that any damage can be documented and rectified by the proponent in a timely manner.

- **Retail Space:** The proponent's plan shows retail space that seems to be an after-thought to satisfy a suggestion of retail within the project. The proposed location of that retail will be of no benefit to the community in its current proposed location. If retail is to be a part of this project, it needs to be more visible by passersby or it will fail. The type of retail business also needs to conform to the current makeup of this part of the West End meaning that it should not be, among other things, a sports bar or be of institutional use unless it is a professional office – there should be no laboratories or research facilities on this site. A café or small restaurant with outdoor seating but no entertainment could be an acceptable use, as could a retail store such as a sundry shop, shoe repair shop, news stand, florist, etc. **FORRESTALL 08**

- **Community Usage:** The community space that is outlined within the proposed buildings is designated for the use of the building residents except for a small outdoor space adjacent to the South Tower. Since this parcel needs to have a recreational benefit for all residents of the West End, it would be encouraging to see some of that internal space open for the use of other West End residents. **FORRESTALL 09**

  In the Cooperation Agreement signed by Greg White in December 2004, it states, the developer will *"Make existing outside tennis courts, behind West End Place and the garage, available to West End residents at no cost for as long as such courts are available"*. Two of those four courts were, in fact, repaired but they were not offered to West End residents. Rather, they were locked and posted as being for the sole use of Equity Residential residents. My expectation is that in this proposed project there will be an accommodation to rectify that part of the 2004 Agreement that was not adhered to. **FORRESTALL 10**

- **Crossroad Initiative:** The project PNF shows wide sidewalk along Lomasney Way in keeping with the width of the sidewalk along West End Place. While this is commendable, the proponent needs to demonstrate how this width, as well as the entire proposed project, will present itself in conjunction with the design for the Causeway Street Crossroads Initiative that is planned for the area along Lomasney Way. The proponent needs to work with the BRA and the community in coordinating this project with the Crossroads Initiative. **FORRESTALL 11**

- **Other local projects:** Within the next year of two, several long-awaited development projects will begin construction in the West End. These include the Nashua Street Residences, three residential/commercial parcels in the Bulfinch Triangle, MEEI, and perhaps MGH to name a few. There needs to be strong communication and coordination between the proponent, the other developers, and residents in regard to the effects these projects could present to the community, especially if they all commence within the same timeframe. **FORRESTALL 12**

I look forward to continuing to work with the Equity Residential team, members of the IAG, and the BRA as this proposed project moves forward to the next step – the Draft Project Impact Report. By working together and looking at many aspects of this project, we will have a project that will greatly improve the site of the current Garden Garage.

Regards,

Jane Forrestall

Jane Forrestall

Cc: Mayor Thomas Menino
Councilor Michael Ross
Representative Marty Walz
Senator Anthony Petruccelli
Nicole Leo, Mayor's Office of Neighborhood Services
Jonathan Greeley, Project Manager, BRA
Lauren Schurtleff, Project Manager, BRA
Peter Gori, Senior Manager, Crossroads Initiatives
Greg White, VP Development, Equity Residential Properties
Members of the West End Place Managing Board
Members of the Impact Advisory Group
Downtown North Association

JANE FORRESTALL

FORRESTALL 01 The two towers that are proposed are more than twice the height of the current Garden Garage and West End Place. The height of the proposed towers may reflect the height of the Longfellow Place towers, but they do not fit into the context of Charles River Park… or of the West End.

Section 5.0, Urban Design, describes how the Project design will respond to the urban context and surrounding neighborhoods.

FORRESTALL 02 Although the Proponent suggests that they will increase the amount of open space within the proposed Project, much of that space is paved walkway. This proposed walkway appears to be for the convenience of the local institutions, not residents.

The Project includes new walkways only to the extent that they will enhance connectivity to entries, open spaces, and other walkways (both existing and proposed). Walkways will vary in width to accommodate pedestrian traffic volumes. Where low pedestrian flow occurs but circulation is required, walks will be design to the minimum width possible to minimize impervious surfaces on the site. As a result, the Project site will contain significantly more open spaces (i.e., pervious surfaces) after Project construction than exist today. These new open spaces will primarily benefit West End residents.

FORRESTALL 03 The easement that is between the proposed Project and West End Place is labeled as a "service road" and "loading area" in the PNF, but in fact it is the only means of access and egress to the West End Place parking garage and trash dumpsters, which are emptied daily during the week. Additionally, the management of Equity Residential uses this easement to service Longfellow Towers. West End Place has a written obligation to maintain this easement. The Proponent's use of the current easement as a "service road" during demolition and construction… will greatly obstruct West End Place residents from using their garage, and it will hinder West End Place management from properly maintaining the easement.

The Proponent will file a CMP with the BTD that will be consistent with the easement.

FORRESTALL 04 Our residents find it very difficult to enter and leave our own parking garage. The Proponent's plan suggests that there will be fewer lanes for vehicles using the Garden Garage than are currently in use even though there is a proposal for 250 additional cars in the proposed garage.

The garage entry/exit capacity will be designed to accommodate commuter and event peak hour entering and exiting volumes with no queuing impacts on local streets. Section 3.3.2.7 describes the proposed garage design.

FORRESTALL 05 As attractive as the proposed walkway may appear, narrowing the passageway between the proposed towers could keep the sense of tranquility that is felt within the Park now. Narrowing that space by moving the buildings closer together could also allow for an increase in the width of the area between West End Place and the proposed East Tower which could allow for improved maintenance of the easement.

The proposed Project includes a wedge-shaped plaza that narrows toward the West End while opening up toward the city beyond.

FORRESTALL 06 During demolition and construction, there will be a great deal of noise, dirt, and general disturbance for abutting residents over a long period of time. There needs to be assurance by the Proponent that during the week, work will only take place between 7:00AM and 4:00PM.

The Project will follow City guidelines related to construction. Please see Section 4.11 for a discussion of construction-related considerations.

FORRESTALL 07 [Blasting and excavating to depress the garage] is a concern since much of the proposed Project, according to the plans included in the PNF, is within the historic high water line and is landlocked wetlands. Moving the earth and/or blasting rock could affect the integrity of nearby structures, specifically West End Place and Amy Lowell House. For this reason, the Proponent needs to conduct structural engineering surveys both before the Project begins and after the Project is complete...

The Amy Lowell Apartments and West End Place are supported on a deep foundation system consisting of pressure-injected footings (PIFs). The Proponent will conduct preconstruction surveys of adjacent structures within 250 feet of the site as required by Massachusetts Board of Fire Prevention Regulations 527 CMR 13. The excavation support system and permanent below-grade structure will be designed to limit both lateral and vertical movements outside of the excavation to protect adjacent structures. The Proponent will establish vibration criteria for blasting that are protective of adjacent structures and will monitor vibrations during blasting operations.

FORRESTALL 08 **The Proponent's plan shows retail space that seems to be an after-thought to satisfy a suggestion of retail within the Project.**

The Project includes a retail space that the Proponent deems is appropriately sized for leasing in the market.

FORRESTALL 09 **The community space that is outlined within the proposed buildings is designated for the use of the building residents except for a small outdoor space adjacent to the South [now the East] Tower. Since this parcel needs to have a recreational benefit for all residents of the West End, it would be encouraging to see some of that internal space open for the use of other West End residents.**

While the Proponent will continue to work with the community and the BRA regarding public benefits, for security reasons it is doubtful that interior space will be made accessible to anyone other than building residents.

FORRESTALL 10 **In the Cooperation Agreement signed by Greg White in December 2004, it states the developer will "make existing outside tennis courts, behind West End Place and the garage, available to West End residents at no cost for as long as such courts are available." Two of those four courts were, in fact, repaired but they were not offered to West End residents. Rather, they were locked and posted as being for the sole use of Equity Residential residents. My expectation is that in this proposed Project there will be an accommodation to rectify that part of the 2004 Agreement that was not adhered to.**

The Proponent will continue to work with the community and the BRA regarding public benefits, including recreation areas.

FORRESTALL 11 **The Project PNF shows wide sidewalk along Lomasney Way in keeping with the width of the sidewalk along West End Place. While this is commendable, the Proponent needs to demonstrate how this width, as well as the entire proposed Project, will present itself in conjunction with the design for the Causeway Street Crossroads Initiative that is planned for the area along Lomasney Way.**

The final site plan solution for Lomasney Way will be developed by working with the city, adjacent land owners, and any Crossroads Initiative recommendations to ensure it is the appropriate width, scale, and quality to seamlessly knit into the overall neighborhood plan and environment.

FORRESTALL 12 Within the next year or two, several long-awaited development projects will begin construction in the West End. These include the Nashua Street Residences, three residential/commercial parcels in the Bulfinch Triangle, MEEI, and perhaps MGH to name a few. There needs to be strong communication and coordination between the Proponent, the other developers, and residents in regard to the effects these projects could present to the community, especially if they commence within the same timeframe.

The Proponent will work with adjacent developers as appropriate.

Kathleen M. Ryan
Two Hawthorne Place, #11J
Boston, MA 02114

March 11, 2011

Jay Rourke, Senior Project Manager
Boston Redevelopment Authority
Boston City Hall - 8th Floor
Boston, MA 02201

Dear Mr. Rourke:

I am submitting my comments regarding the Garden Garage Project proposed by Equity Residential in the Project Notification Form for Large Project Review dated January 7, 2011.

I am a long-time community activist and resident of Hawthorne Place Condominium in the West End as well as a current and founding member of the West End Council, whose membership is composed of the Boards of Trustees of Hawthorne Place and Whittier Place Condominium Associations. In addition to being a member of the Impact Advisory Group (IAG) for the above-mentioned project, I have also served on various IAG's for past neighborhood development projects and was actively involved on behalf of our neighborhood with the previous Equity project known as the Residences at Emerson Place. That planning process ultimately resulted in a development that complemented the existing buildings in the West End, did not overwhelm the park-like setting of the area, and provided welcome open space for all residents. A new development at the Garden Garage site, if built, should achieve a similar result.

The proposed redevelopment of the site offers a wonderful opportunity to:

- Replace an unattractive old parking garage with a new and appealing structure that complements and enhances our open, park-like environment;
- Reinforce the sense of place that makes the West End such a special and unique neighborhood;
- Increase our open space to directly benefit the entire neighborhood while preserving the safety and tranquility of this oasis in the City;
- Create enhanced recreational uses that provide a vibrant and lively venue for both new and current residents to meet and socialize;
- Provide retail uses and services that further vitalize the local streetscape;
- Build attractive housing units suited for families and housing units on-site that are affordable.

However, the project as presently proposed is unacceptable – it is just too big, particularly in terms of height, density, and massing. Rather than complementing the existing neighborhood, this development of 500 units and 850 parking spaces overwhelms it. It is critical that any new development not only complement the neighborhood, but, in fact, enhance it.

The major issues that must be addressed in the Draft Project Impact Report (DPIR) and the ongoing Article 80 process as well as the on-going negotiations with the Impact Advisory Group are as follows:

- **Development Alternatives:** Besides just moving the proposed buildings around the site in different configurations, what are some other creative and attractive ideas that fit the scale of the neighborhood and address the concerns about height, density, massing, views, etc.? It's ironic that the very "sense of place" mentioned so frequently in the PNF is the very thing that will be destroyed as historic views of Boston Harbor, the Custom House Tower, the Zakim Bridge, etc. are blocked by massive, could-be-anywhere towers. And the negative economic impact of blocked views for unit owners is a given – we all know view sells. RYAN 01

- **Economic justification:** What is the economic justification for the number of housing units and the increase in the number of parking spaces? The developer, as a REIT, has a stated business mission to collect rents and maximize ROI for its shareholders. While this is an admirable goal for their shareholders, it does not serve the neighborhood's best interests and needs some compromise; as proposed, the number of 500 units is almost double the number of units built in the prior Equity project on a larger parcel of land. In this transit-oriented neighborhood, we need less, not more, parking, traffic and pollution. If the current number of spaces is to be duplicated underground, a portion of those spaces should be allotted to any new residential units and there should be no increase in the number of spaces built. RYAN 02

- **Enhanced and increased Open Space:** What will Equity do to really enhance and increase open space for our benefit? The PNF says the proposed development will increase the area of open space on the project site and presents this as a neighborhood benefit. However, the open space created in the proposal actually does not benefit the neighborhood – it consists largely of a very wide pathway between two towers that provides easy access to our neighborhood for commuters and others passing through to and from the North Station/Boston Garden/Nashua Street/Bulfinch Triangle/MGH areas. This is of questionable benefit to those who live here and feel safe here but is of certain benefit to those surrounding institutions whose employees/event attendees, etc. now use the current pathways. In particular, as the surrounding areas are further developed by these institutions, they will need and want easier access through the Park. In addition, the current building designs appear to turn their back on the neighborhood by having their primary entrances streetside vs. facing into the neighborhood. This seems to be prevalent when developing in our environs. RYAN 03 RYAN 04

- **Infrastructure:** How does the developer propose to improve our current aged infrastructure to support their project? As mentioned by others, we have had pipe breaks beneath our newly renovated Thoreau Path; streets are of insufficient number and size to support the increased traffic that would result from any new development, especially when considered in conjunction with RYAN 05

other future neighborhood development projects; neighborhood streets and lighting are in dire need of repair and replacement—when Equity was building the Emerson Place Residences, Hawthorne Place Condominium Association asked them if they could continue their new lighting on Blossom Street down to Cardinal O'Connell Way. This would replace five aged lights with hanging wires on the street in front of Hawthorne Place. It would have been a small gesture of good will by a good neighbor, but Equity refused. And this is a small infrastructure issue!

- **Construction Impacts:** What will Equity do this time that is any different than before? We are being asked to endure multiple years of construction impacts and possible damage from blasting for a major project that is overwhelming and that we do not want in its present form. We know from past experience that whatever work times and mitigation are promised are seldom well delivered. Right now, we are enduring a very noisy renovation project at Equity's Longfellow Place. It has been never ending. An important pathway/stairway is blocked for a period far longer than promised and is a major inconvenience. Construction begins early in the morning (7am) and on weekends (Saturdays). And this is a small project! RYAN 06

Again, I look forward to having these concerns addressed in the DPIR. I remain optimistic that the upcoming process will be carried out in the same sprit of cooperation with Equity Residential and the BRA that led to the successful Residences at Emerson Place. Thank you for the opportunity to comment.

Sincerely,

Kathleen M. Ryan

Kathleen M. Ryan
Two Hawthorne Place, #11J
Boston, MA 02114

Cc: Mayor Thomas M. Menino
Councilor Michael P. Ross
Rep. Martha M. Walz
Impact Advisory Group Members
West End Council (Hawthorne and Whittier Condominium Assns)
Downtown North Association
West End Place Board of Directors
West End Civic Association
Amy Lowell House
Beacon Hill Civic Association
Greg White, Equity Residential
Nicole Leo, Mayor's Office of Neighborhood Services
Jonathan Greeley
Lauren Shurtleff
Peter Gori

KATHLEEN RYAN

RYAN 01 **Besides just moving the proposed buildings around the site in different configurations, what are some other creative and attractive ideas that fit the scale of the neighborhood and address the concerns about height, density, massing, views, etc.?**

Section 5.0, Urban Design, describes how the Project design will respond to the urban context and surrounding neighborhoods.

RYAN 02 **What is the economic justification for the number of housing units and the increase in the number of parking spaces?**

Please see Section 1.6 for a discussion of financial considerations related to the Project size.

RYAN 03 **What will Equity do to really enhance and increase open space for our benefit? …[T]he open space created in the proposal actually does not benefit the neighborhood – it consists largely of a very wide pathway between two towers that provides easy access to our neighborhood for commuters and others passing through…**

As described in Section 1.5, the Project will provide numerous public benefits, many of them tied to open space enhancements.

RYAN 04 **The current building designs appear to turn their back on the neighborhood by having their primary entrances streetside vs. facing into the neighborhood.**

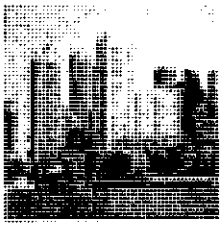
Section 5.0, Urban Design, describes how the Project design will respond to the urban context and surrounding neighborhoods. Please also see the responses to BRA 24 and PLAN 02 for descriptions of how the Project will respond to Thoreau Path and the Nashua Street area.

RYAN 05 **How does the developer propose to improve our current aged infrastructure [e.g., water/sewer pipes, roads, etc.] to support their Project?**

The Project will have a dedicated storm drainage system that will remove stormwater flows from the sewer system. Water and sewer flows will be directed away from the strained pipes in Thoreau Path and towards Lomasney Way. The sidewalks and driveways in the Project area will be designed and improved where necessary to accommodate projected vehicle and pedestrian volumes.

RYAN 06 **We are being asked to endure multiple years of construction impacts and possible damage from blasting for a major project that is overwhelming and that we do not want in its present form.**

Please refer to comments HP 05 and Forrestall 07.



WEST END CIVIC ASSOCIATION

Committed to Enhancing the Quality of Life in Our Community

March 10, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Dear Mr. Rourke,

The West End Civic Association opposes Equity Residential's plan to radically alter the design of Charles River Park. It fails to solve any of the developer's perceived "faults" in the property under review and creates more problems for the existing community and the public at large.

THE WEST END RENEWAL PLAN

The area known as the "West End" has been an established residential neighborhood, with supporting commercial properties, since Colonial times. The razing of this area and its rebuilding as a planned residential area brought into being the current residential community known as Charles River Park.

The post World War II revitalization of European cities destroyed during this conflict gave rise to the idea for razing areas of American cities including the West End and creating a unified plan for a new community within historic Boston. The concept of building housing vertically versus horizontally would permit open green spaces, i.e. parks, providing amenities for the city dweller previously available only to those living in suburbia. Within the plans were areas set aside for the supporting commercial enterprises necessary for a community life. True to all communities, housing was designed to include a wide variety of households and incomes.

Charles River Park is the only urban community within Boston that is planned around a park dating from the 1960's. Like Beacon Hill it must be preserved as a living example of this period. **WECA 01**

Beacon Hill also has been threatened by zealous developers. What a loss to Boston's charm that would have been. One must remember how close the New State House, once considered "out of date", came to being torn down in the late 19th Century. We must guard against the same impulse today, preserving the identity of Charles River Park for not only our generation but for the generations to come.

Charles River Park had borders but no boundaries. Today the only obstacles for entering the Park are the buildings constructed by Equity, high rise buildings on the very edge of their property lines encircling them with iron fences. Previously the public had access to all parts of the Park. The Garden Garage Project adds another physical barrier to the Park, creating more walls of high-rise buildings of no particular merit.

WEST END CIVIC ASSOCIATION
PO Box 6503 – Boston, MA 02114 – 617.720.3992
Marie Cantlon - President E-mail – prosework@aol.com

The plan for a mass of small units, not suitable for families, along with a vague promise for a minimum number of "affordable units" fails to fulfill the mission of the original renewal project, i.e. building a diverse urban community. **WECA 02**

The magnitude of the project will create a physical barrier isolating the Charles River Park Community from the Bulfinch Triangle and Government Center areas abutting it. It will add vehicular and pedestrian congestion to an area already near gridlock. It will remove a substantial amount of the park and its amenities. Bits and pieces of "green space", scattered within the plan, are not the equivalent to the "park space" that would be lost by the planned development.

Sincerely,

Marie Cantlon

Marie Cantlon,
President, West End Civic Association

Cc: Mayor Thomas Menino
City Councilor Michael Ross
City Councilor Salvatore LaMattina
City Councilor President Stephen Murphy
City Councilor At-Large Felix Arroyo
City Councilor At-Large John Connolly
City Councilor At-Large Ayanna Pressley
State Representative Marty Walz

WEST END CIVIC ASSOCIATION

WECA 01 **Charles River Park is the only urban community within Boston that is planned around a park dating from the 1960s. Like Beacon Hill, it must be preserved as a living example of this period.**

The Project is intended to preserve the character of the Charles River Park area and the West End by integrating this character into the proposed design. Section 5.0, Urban Design, describes how the Project design will respond to the urban context and surrounding neighborhoods.

WECA 02 **The plan for a mass of small units, not suitable for families, along with a vague promise for a minimum number of "affordable units" fails to fulfill the mission of the original renewal project, i.e. building a diverse urban community.**

The Project includes 12 three-bedroom units, as well as a commitment to set aside up to 15 percent of the Project's units as affordable housing.

PUBLIC COMMENTS

As described at the beginning of this section, approximately 190 letters from the general public were received at the BRA in reference to the PNF for the proposed Project. These letters included a number of common themes, each of which is referenced and responded to below.

PUBLIC 01 **Please work with the community throughout the planning process for the proposed Project.**

Section 1.4 describes consultations with community groups regarding the Project.

PUBLIC 02 **The size and height of the two towers are out of scale with neighboring buildings in Charles River Park, and will create problems with shadows, wind, and the obstruction of existing views.**

Section 5.0 discusses the urban design components of the Project and describes how the Project is compatible with the surround area. Section 4.0 describes Project-related impacts, including those from shadow, wind, and visual obstruction.

PUBLIC 03 **The scale of the Project is too large, and will have unacceptable impacts in terms of increased population density, traffic, and parking issues.**

The Project's location in the West End, in close proximity to MGH, downtown Boston, and rapid transit helps to reduce auto ownership and auto travel associated with the Project. According to BTD data, automobile trips account for only 21% of daily and 17% of peak hour tripmaking by residents in this district.

PUBLIC 04 **Charles River Park was designed to have open space, and any proposed development plan needs to include more green areas that can be enjoyed by all community residents.**

As described in Section 1.5, one of the principal public benefits from this Project is that it will increase the amount of open space on the Project site. This open space will include programmable outdoor spaces, enhanced pedestrian pathways, and open-type recreational areas.

PUBLIC 05 **The Proponent should provide detailed plans that include all materials and a description of the Project schedule.**

These materials will be provided upon BRA Design Approval.

PUBLIC 06 **The West End does not have Resident Parking, and the Project will exacerbate traffic and parking shortages by increasing population density in the area.**

The Project's location of the West End, in close proximity to MGH, downtown Boston, and rapid transit helps to reduce auto ownership and auto travel associated with the Project. According to BTD data, automobile trips account for only 21% of daily and 17% of peak hour trip-making by residents in this district.

PUBLIC 07 **Construction-period noise, dust, vibration, and traffic will be a burden on nearby residents for a period of years. In addition, an effective system for monitoring and responding to potential structural impacts to nearby buildings and below-grade garages should be developed and implemented prior to construction.**

The Proponent will develop a CMP for BTD approval prior to issuance of a building permit. The CMP will cover all these issues. Details of the overall construction schedule, working hours, number of construction workers, worker transportation and parking, number of construction vehicles, and routes will also be addressed in detail.

PUBLIC 08 **The Proponent should not be allowed to build anything higher than what currently exists on the Garden Garage site.**

Excluding rooftop mechanicals, the East Tower will be approximately 310 feet high and the West Tower will be approximately 240 feet high. As described in Section 1.3.3.2, the maximum height allowed as-of-right in Subdistrict M of the Downtown IPOD is 125 feet; however, a project that undergoes Large Project Review is eligible for an enhanced maximum height of 155 feet. Projects within a PDA are allowed to exceed the height restrictions imposed by underlying zoning in accordance with the development plan. The Proponent will seek an amendment of the PDA Development Plan.

PUBLIC 09 **Air quality impacts from construction activities may pose a health risk.**

Potential air quality impacts from construction activities are discussed in Section 4.11.3.

PUBLIC 10 **At least 5% of the proposed units should be 3-bedroom units designed to provide family-friendly housing.**

As described in Section 2.2, the Project design includes 12 three-bedroom units.

PUBLIC 11 **Since the Project will eliminate the popular Basketball City as well as existing tennis courts and a play area near the Boston Children's School Annex, it should include provisions for new public recreational areas.**

As described in Section 1.5, the Project includes programmable open space such as a pavilion.

PUBLIC 12 **The proposed buildings will create a wall that will act as a barrier to pedestrians.**

The footprint of the proposed Project is actually smaller than that of the existing garage. The Project proposes to create an enhanced pedestrian pathway between the two new buildings, which will foster pedestrian connectivity rather than act as a barrier. The Project will also significantly improve the pedestrian environment with new sidewalks, handicapped-accessible ramps, street trees, bicycle racks, and the creation of public open spaces.

PUBLIC 13 **The amount of parking proposed will cause constant pollution as well as greater traffic, the latter of which will pose problems for emergency vehicles and will exacerbate the already significant traffic problems.**

Only 200 additional parking spaces are proposed in the new garage to support the 500 new residential units. This corresponds to a parking ratio of only 0.4 parking spaces per dwelling unit, well within BTD maximum parking guidelines for the area which allow up to 0.5 to 1.0 spaces per unit. As noted above, according to BTD data only 17% of peak hour trips and 21% of daily trips will be made by auto.

PUBLIC 14 **The Proponent should consider replacing the two-tower design with a single, shorter building that utilizes the entire footprint of the existing garage.**

This suggestion is similar to the as-of-right alternative, which was considered and ultimately rejected (see Section 2.3.2).

PUBLIC 15 **The addition of the two proposed towers will have a confining impact on Charles River Park, which is directly contrary to the existing and historic perceptions of the park.**

Section 5.0, Urban Design, describes how the Project design will respond to the urban context and surrounding neighborhoods.

PUBLIC 16 **How will vehicle exhaust be vented from the parking garage, and what are the expected air quality and noise impacts?**

Air quality is discussed in Section 4.5, and noise impacts are discussed in Section 4.9.

PUBLIC 17 **The introduction of 500 units to this neighborhood is unnecessary when we have close to 1,000 units vacant in the surrounding neighborhoods.**

The Project size is appropriate given that occupancy is running at approximately 95% in the neighborhood.

PUBLIC 18 **The entrance/exit of the garage onto Lomasney Way will further exacerbate traffic congestion... I urge you to relocate the entrance/exit routes of the garage onto Staniford Street and/or O'Connell Way...**

Access and egress for the new garage will be provided on Martha Road approximately 100 feet west of Nashua Street and on Lomasney Way in generally the same location as the current driveway. The design of the new driveways will be coordinated with the appropriate City agencies, including BTD and the PWD. Final roadway design will be codified in the TAPA and approved by the PIC, as necessary.

PUBLIC 19 **The PNF states that deliveries, servicing, and residential move-in/move-out for the proposed buildings will be accomplished within the existing Longfellow Place service area, with access via the existing driveway from Lomasney Way... It is important to note that this existing driveway also provides access to the West End Place residential parking garage, and that a portion of the Longfellow Place service area also functions as a service area for the 183 residents at West End Place. Further study is needed to evaluate the potential traffic and operational impacts of using this single driveway to provide loading/unloading and service access to support an additional 500 residences.**

The design of the new driveways and the use of the Longfellow Place/West End Place service area will be coordinated with the appropriate City agencies, including BTD and the PWD. Final roadway design will be codified in the TAPA and approved by the PIC, as necessary.

PUBLIC 20 **The vehicular access/egress plan for the new garage should seek to minimize the number of entry and exit lanes from the garage, and maximize sight lines for both drivers and pedestrians, in order to provide for a safe and pleasant pedestrian experience along Lomasney Way.**

The proposed reduction in width of the Project driveway on Lomasney Way from five lanes to only two lanes will improve the pedestrian environment by significantly reducing the crossing distance for pedestrian walking along the sidewalk on Lomasney Way adjacent to the site. The design of the new driveways will be coordinated with the appropriate City agencies, including BTD and the PWD. Final roadway design will be codified in the TAPA and approved by the PIC, as necessary.

Ms Carol Robinson
65 Martha Rd Apt 6Q
Boston, MA 02114

Type your name

Address

& phone here ~~)~~ 617-327-~~2014~~

or print on your letterhead or write on your personal stationery

Put Date Here March 7, 2016

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

Please write the letter in your own words. Make it personal, not a form letter.

A short, simple message of opposition can be powerful. Here are some ideas to get you started:

Please work w the community + listen to us.

- *I am strongly opposed to the towers Equity proposes to build.*
- *The Garden Garage Project presented in the PNF is entirely unacceptable to me.*
- *In May of 2009 Mayor Menino promised the residents of the West End that"* **If you want the garage to remain..., we won't build.** *I live here and I don't want the towers.*
- *The West End is becoming overbuilt. It was designed to have open space and that is what makes this area attractive to live in. We don't need any more buildings here.*
- *The buildings Equity proposes do not benefit the West End community and should not be built.*

The mere height of the towers proposed are not in concert with the area and would impose

Say something about yourself: How long have you lived in the West End, state if you belong to any community groups, what do you like about the community, do you own or rent, how do you feel this project will impact you etc. I have lived C&E since 1969 + the West End since 2001 when it was on the road to ruin. Other buildings have been built

You can critique different aspects of the project however this indicates you will accept the project with changes. Some feel it is better to oppose it completely at this point and send Equity back to the drawing board or better yet send them away. They will not go willingly so we need an outpouring of opposition.

Closing, (choose one: Sincerely, Yours truly, Cordially etc.)

As a member of the group for the Redevelopment of the West End and of the PAC for Emerson Place Project, I

Sign your name here Sincerely

Carol L. Robinson

Thank you

- (Please deliver a copy of your letter to the Amy Lowell Office. We will send copies of all the letters to our elected officials)

should listen to your community comments and go back to the drawing board

*After hearing constructive criticisms and giving the proposal another look you could write a more coherent letter at a future date. CLR

Jay, I'll write you a more coherent letter

Stop by and Sign
WEST END CIVIC ASSOCIATION

Petition ~ Opposition to Proposed Equity Development

The West End has seen nothing but construction and destruction in its ongoing history. Charles River Park, its residents, the residents prior, have remained an afterthought in the plans, proposals and construction advanced. We the residents of Charles River Park, the West End, are opposed to Equity's development of the bubble garage .This project is tremendously detrimental to our community, to the residents and to our park. It has been fast tracked for development, meeting only the objectives and needs of those not in the community. This petition is signed by residents opposed to planned development at this site.

Name	Address	Phone/email
Patricia Fortgang	8 Whittier 12G	617-523-5209
Gail Semigran	8 Whittier 10H	
Rita Walsh	8 Whittier 20-G	walshrik@gmail.com
Arthur Snyder Jr.	8 Whittier Pl (4-D)	617-723-8817
BERTA AXELRAD	8 Whittier Pl. -5H	617-494-5560
ALBERT S. AXELRAD	8 WHITTIER PL.- 5H	

Wednesday March 9, Amy Lowell Community Room 1 –3 pm, or Thursday, March 10, Community Center WECA meeting 7 - 9 pm ~ or email us at weca.boston@gmail ~ or call us at 248 –0065

Want to write a letter ~ we can help with that too ~

8 Whittier Pl. 5K

Richard Schwartz
6 Whittier Place, 11J
Boston, MA 02114
617 720-4520

March 11, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re. Garden Garage Project PNF Comments

Dear Mr. Rourke,

I've lived at Whittier Place since 1981. Out my window I see, with fondness, the bubbles enclosing the tops of the two Garden garages. When they covered tennis courts, one of the bubbles would frequently deflate in a big wind storm. Now you want to replace them with high rises.

I really wish you folks would develop the area around the Boston Waterfront, which cries out for more development, rather than continually increasing the population density at Charles River Park.

Sincerely yours,

Richard Schwartz

ARTHUR SNYDER, JR.
3 WHITTIER PL. 14-D
BOSTON, MA. 02114-1414
(617-723-8817)

MARCH 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
BOSTON, MA. 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I strongly oppose the Equity plan to build additional tall towers on the Garden Garage Site of the West End.

As a 15 year condo owner resident of the West End, I love the space, the lack of congestion, and the abundance of sunshine. Thus, I protest the harm and negative effect this Equity Project would have upon the main reasons for my living here — Space, Sun, and a Healthy Life style.

I also trust Mayor Menino's 2009 promise not to allow more tall buildings in the West End if the community did not want this to take place.

My wish, like that of many friends and neighbors, is let's not overbuild in our cherished West End. Enough is enough — please!

Thank you, & hope for your support.

Sincerely,

Arthur Snyder, Jr.

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

- The scope of the plan is too massive and will have a negative impact on the existing community, in terms of increased density, traffic and parking issues.

- The size and height of the towers is out of scale with the neighboring buildings in Charles River Park, and will create problems with shadows, wind tunnels and obstruction of current views.

- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

Susan Rosen
9 Hawthorne Place, #1217
Boston, MA 02114

Pamela R. Chang
6 Whittier Place #14C
Boston, MA 02114

11 March 2011

Mr. Jay Rourke
Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

RE: Garden Garage Project PNF Comments

Dear Mr. Rourke:

I have lived in the West End since 1994. I own a condominium unit and have watched the neighborhood evolve and grow over the years. In general, I have appreciated increased density which has brought activity and additional services to the neighborhood.

I am, however, dismayed by Equity Residential's proposed buildings, the "Garden Garage Project." While I appreciate the value of additional housing in the area, both to Equity and to the neighborhood, I believe firmly that the proposed project must be re-examined. The scale is untoward; height and mass must be planned thoughtfully, with consideration of the neighborhood and an aim to fit in and enhance the neighborhood, not obliterate it.

Roads and access to the buildings also must be taken into account. The Leverett Circle redesign is a failure; traffic regularly backs up on Storrow Drive and Martha Road. Additional residents will only add to the mess. This is a given.

The Garden Garage Project presented in the PNF is unacceptable and should not be built.

Thank you for your attention.

Sincerely,

Pamela R. Chang

March 11, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke:

I am writing to voice my objections to the Equity Residential Tower project.

The West End was destroyed in the late fifties, early sixties to accommodate the building of Charles River Park. It has taken 40-50 years for this neighborhood to rebuild and become a community again. It appears now that the BRA and Equity are seeking to destroy it again.

While I applaud the building of attractive living space where the garage and bubble sit, I object to the height of the buildings. They will block views and sunlight for those of us who live in Whittier Place.

I ask that you work with Equity Residential to accommodate the concerns of our neighborhood and not destroy what has taken 50 years to rebuild.

Sincerely,

Diane Wood

Diane E Wood
8 Whittier Place, 5C, Boston, MA 02114

Margi Patel
8 Whittier Place #19D
Boston, MA 02114

March 9, 2011

Jay Rourke
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke:

I am a West End homeowner and I am opposed to this project.

I have lived here for almost 4 years and find it very convenient. One thing that really bothers me about living here though is the wind. The other day I was walking home on Martha Road and at one point between Amy Lowell & Whittier literally could not walk forward against the wind. I'm concerned that the new towers will increase the wind. It is already so bad that even the slightest increase will be unbearable.

The new towers would have many negative impacts and all far as I can tell no positives for this community.

Sincerely,

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

- The scope of the plan is too massive and will have a negative impact on the existing community, in terms of increased density, traffic and parking issues.

- The size and height of the towers is out of scale with the neighboring buildings in Charles River Park, and will create problems with shadows, wind tunnels and obstruction of current views.

- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

9 Hawthorne Place
Boston, Ma

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke:

I have been a long - term resident of Hawthorne Place in Charles River Park in the West End. I have truly enjoyed my life here in the heart of Boston. The beautiful grounds, trees and flowers have made our community like an oasis in the city.

I am very concerned about the proposed plan by Equity Residential to replace the Garden Garage. The size of the proposed towers are much too big for our community and would create problems with wind tunnels, shadows, traffic congestion and pollution.

In your wisdom, I hope that you will recommend that the BRA demand that Equity submit a new plan that would be smaller in scope and a more appropriate addition to our community. We needed smaller buildings and more green space.

Respectfully,

9 Hawthorne Pl. 4A

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

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- The size and height of the towers is out of scale with the neighboring buildings in Charles River Park, and will create problems with shadows, wind tunnels and obstruction of current views.

- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

Andrea Dee Bagheera
9 Hawthorne Place
Unit 12C
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

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- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

Andrea B Burke

ANDREA BURKE
9 HAWTHORNE PL. 7J
BOSTON 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

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- The size and height of the towers is out of scale with the neighboring buildings in Charles River Park, and will create problems with shadows, wind tunnels and obstruction of current views.

- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

Zahra Sadrai
9 Hawthorne Pl, 16L
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

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- The size and height of the towers is out of scale with the neighboring buildings in Charles River Park, and will create problems with shadows, wind tunnels and obstruction of current views.

- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

Erin Giantomasi

9 Hawthorne, Apt 4F

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

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- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

9 Hawthorne Pl – 10m

March 10, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage PNF

Dear Mr. Rourke:

Any building built on the existing Garden Garage should fit within the existing footprint and be with-in the current height regulations. No variances, no towers, no shadows, no wind tunnels, no more transient apartments.

Thank You.

Very Truly Yours,

MD

Zainab Jafar MD

9 Hawthorne Place
Apt 15-D
Boston, MA 02114

Sandra Wilfand
2 Hawthorne Pl
4c
Boston, MA 02114

March 8, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
1 City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I AM STRONGLY OPPOSED TO THE TOWERS Equity proposes to build.
The Garden Garage Project presented in the PNF is entirely unacceptable to me.
Equity should not be allowed to build anything higher than what currently exists on the Garden Garage Site.
In May/2009, Mayor Menino promised the residents of the West End that he would not allow anyone to build towers in the West End if the community did not want it. I live here and do not want the towers. I want Mayor Menino to honor his promise to this community.

The West End is becoming overbuilt. It was designed to have open space and that is what makes this area attractive to live in. We do not need any more buildings here.
The buildings Equity proposes do not benefit the West End community and should not be built.

I have lived in the West End for more than 30 years and became an owner of property here 20 years ago.

Yours Truly,

Sandra Wilfand

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

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- The size and height of the towers is out of scale with the neighboring buildings in Charles River Park, and will create problems with shadows, wind tunnels and obstruction of current views.

- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

Bonnie Machord, MD
9 Hawthorne #10N
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

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- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

Steven O'Hara
9 Hawthorne Pl #4/E
Boston, Ma. 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

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- The size and height of the towers is out of scale with the neighboring buildings in Charles River Park, and will create problems with shadows, wind tunnels and obstruction of current views.

- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely, Joseph T McGuirk
9 Hawthorne Pl 2H
Boston Ma 02114

Brigitte Kuperwasser MD, MPH
2 Hawthorne Place, Boston, MA 02114

March 8, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I would like to voice my serious concerns regarding the Towers Equity proposal presented to the West-End residents at a recent meeting. The Garden Garage Project as presented in the PNF is entirely unacceptable since the information provided were incomplete, inaccurate and misleading.

The few pictures shown by Equity representatives were neither professional nor believable, and were not indicative that Equity was a reputable corporation. The Equity representatives did not answer any questions regarding strategy development, planning and building materials. In addition, some senior Equity representatives appeared so defensive, even impolite, when such pointed questions were asked.

All of the above turned me, a reasonable and open-minded, 5-year resident of the West-End, against the current Equity project. I would like to restate Mayor Menino's May 2009 promise to the West End residents that he would not allow anyone to build towers in the West End if the community didn't want it.

Unless the Equity corporation becomes more transparent with the various aspects of the project, provides full disclosure of the developmental strategy, full scope of the building construction, including real plans (with various scenarios), real and realistic blue prints, description of all materials, milestones and timelines, I do not want these towers and will work to hold mayor Menino to honor his promise to this community. As an owner of West –End residences, the currently presented project is not acceptable and is an insult to sound business. I am looking forward to hearing more from all parties.

Sincerely,

Brigitte Kuperwasser MD, MPH

bkuperwasser@alum.bu.edu

E. Jennifer Morris
9 Hawthorne Place, Apt. 4E
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express our concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. We have been resident owners at Hawthorne Place for the past nineteen years and we have really enjoyed living in this community.

My apartment overlooks the proposed development site and therefore we have great concerns about any proposed changes. When I first learned that Equity Residential planned to develop the site, I was happy to hear that the Garden Garage would be replaced. Frankly, it has been s terrible eyesore and a source of late night noise and frustration, following many of the evening events at the Garden.

However, after attending informational meetings and reviewing Equity's development plan, I must voice my opposition to the proposed plan.

I find the proposed plan unacceptable for the following reasons:

- The scope of the plan is too massive and will have a negative impact on the existing community, in terms of increased density, traffic and parking issues

- The size and height of the towers is out of scale with the neighboring buildings in the Park, and will create problems with shadowing, wind and obstruction of current views.

- The West End is becoming overbuilt. Charles River Park was designed to have open space and that is what makes living in this area so attractive. Any proposed development plan needs to include more green areas with grass, trees, benches that can be enjoyed by all of the community's residents.

I appreciate the opportunity to share our concerns about Equity Residential's proposed development plan. As this review process continues, we expect that the BRA will fulfill its mission to guide *"the physical, social, and economic change in Boston's neighborhoods and its downtown to shape a more prosperous, sustainable, and beautiful city for* ***all.****"*

Sincerely,

E. Jennifer Morris

Marco R. Oldsman
2 Hawthorne Place, Apt 6B
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

- The scope of the plan is too massive and will have a negative impact on the existing community, in terms of increased density, traffic and parking issues.

- The size and height of the towers is out of scale with the neighboring buildings in Charles River Park, and will create problems with shadows, wind tunnels and obstruction of current views.

- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

Marco R. Oldsman

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

- The scope of the plan is too massive and will have a negative impact on the existing community, in terms of increased density, traffic and parking issues.

- The size and height of the towers is out of scale with the neighboring buildings in Charles River Park, and will create problems with shadows, wind tunnels and obstruction of current views.

- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

E Makeevskaya, EVGENIA MAKEEVSKAYA, #9 HAWTHORNE PL. Apt. 14L

Anthony H Pagliarulo

9 Hawthorne Place Apt 8r

Boston, MA 02114

March 8, 2011

Jay Rourke, Project Manager

Boston Redevelopment Authority

One City Hall Square

Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I would ask you to walk from Pace's to the front of #6 Whittier Place and experience how high buildings, in this area, affect the movement of air, even on a slightly breezy day. On many days during the year the high wind between 6 & 8 Whittier is uncomfortable...on more blustery days it is hurricane-like and down right painful.

I am strongly opposed to the towers Equity proposes to build

If any building is allowed, the height should be limited to that which currently exists on the garage site.

I remember when Mayor Menino promised the residents of the West End that he would not allow towers to be built in the West End if the community objected. . I live here and I object. I want mayor Menino to honor his promise to me and to this community.

I moved into the West End in 1989 and have owned my unit since 1991. I came here because I wanted proximity to downtown and to live within a community...one that has plenty of open space. Open space is what makes this area uniquely attractive. I don't wish to live in a concrete wind canyon.

When The Charles River Park was created, it was mandated by BRA that only changes that were complementary to the neighborhood would be allowed. The buildings Equity proposes today do not benefit nor compliment this West End community.

Sincerely,

Anthony H Pagliarulo

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

- The scope of the plan is too massive and will have a negative impact on the existing community, in terms of increased density, traffic and parking issues.

- The size and height of the towers is out of scale with the neighboring buildings in Charles River Park, and will create problems with shadows, wind tunnels and obstruction of current views.

- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

9 Hawthorne Place - 16A
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

- The scope of the plan is too massive and will have a negative impact on the existing community, in terms of increased density, traffic and parking issues.

- The size and height of the towers is out of scale with the neighboring buildings in Charles River Park, and will create problems with shadows, wind tunnels and obstruction of current views.

- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

9 Hawthorne Pl
6K
Boston MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

- The scope of the plan is too massive and will have a negative impact on the existing community, in terms of increased density, traffic and parking issues.

- The size and height of the towers is out of scale with the neighboring buildings in Charles River Park, and will create problems with shadows, wind tunnels and obstruction of current views.

- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

9 Hawthorne 15C

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project Comments

Dear Mr. Rourke:

Please reject Equity Residential's proposal for developing the Garden Garage.

We do not need any more high-rise buildings. What we need is more green space.

Sincerely,

M. Lynch

9. Hawthorne 9 M.

9 Hawthorne Place, 2L
Boston, MA 02114
March 11, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Dear Mr, Rourke,

As a resident of the nearby Hawthorne Place condominiums I am adamantly opposed to the Garden Garage Project Equity proposes to build at Charles River Park. Their proposed massive presence would negatively impact the environment in which I live. Their very presence would be oppressive. One of the significant appealing aspects of Charles River Park as first designed in the 1950's-60's was the mix of residential and open, park-like space. I own my condo and have lived here since 2000.

At community meetings Equity's spokesmen have been arrogant in their presentation of the company's plans for future development, either ignoring residents' comments or dismissing them as of no relevance to their interests. As our representative with the City of Boston Redevelopment Authority we appeal to you, beseech you, to act not only in our best interests but those of the city government responsible to the quality of its citizen's lives.

Equity's spokesman has made it quite clear that the corporation he represents is only interested in financial gain, and has no commitment to the quality of life of the residents in the area in which it proposes to build.

In May of 2009 Mayor Menino promised the residents of the West End that he would no allow anyone to build towers in the West End if the community didn't want it. I want Mayor Menino to keep his promise. The area already is sufficiently built up. The residential towers on Stanisford Street have altered the scale of buildings and for those of us whose windows look out on them they are an eyesore in the aggressive, brutal presence.

Sincerely yours,

Eleanor W. Gordon

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

- The scope of the plan is too massive and will have a negative impact on the existing community, in terms of increased density, traffic and parking issues.

- The size and height of the towers is out of scale with the neighboring buildings in Charles River Park, and will create problems with shadows, wind tunnels and obstruction of current views.

- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

Grant Tom Kaynes
Apt. 6N
9 Hawthorne

March 9, 2011

Jay Rourke, Project Manager

Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Subject: Garden Garage Project PNF Comments

Dear Mr. Rourke,

This letter is to express deep concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The current proposal of the project will have a very negative impact on the quality of life of all residents of the West End, including me and my fellow neighbors at Hawthorne Place.

Equity's current development plan is unacceptable as proposed for the following reasons:

•The scope of the plan is too massive and will have a negative impact on the existing community, in terms of increased density, traffic and parking issues.

•The West End currently does not have Resident Parking or even sufficient street parking as it is. With the extensive increase in density and traffic, it is only going to make life extremely difficult for the current residents of the West End in many ways.

•The corner by the TD Garden is a very tight area. Building a high rise of that size and height of the towers is out of scale with the neighboring buildings in Charles River Park. This will not only create unnecessary, undesirable traffic conditions for

Martha Road and Staniford St (and all the crossroad) but also make it very noisy. The likelihood of increase wind tunnels is high. And not to forget obstruction of the views and sunlight to the Hawthorne buildings.

•The West End is becoming overbuilt very quickly. Charles River Park was designed to have open space and a very safe community. Any proposed development plan needs to make sure the buildings are not taller or wider than the current structure. It should include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal for development on the Garden Garage site.

Thank you,

Sincerely,

Cecilia D'Souza
9 Hawthorne Place
Boston, MA 02114

Dr. Simona Manasian
9 Hawthorne Place
Boston MA 02114
Phone 617- 367 2920

March 10, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re.: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to you to express my outrage in relationship with the proposed building of two new sky scrapers in close vicinity to my home at 9 Hawthorne Place. I have been living here for 12 years and loved and still love living here. I own my condo in building 9 and do not plan in relocating, since I would not know where to move.
I like the community I lived in for so long and have the social support I could not find anywhere else.
Adding more buildings will destroy my neighborhood and take the view from the 9 Hawthorne Place condos located on the corner and back side.
It is unacceptable to do that, this building is standing since 1964 and the current residents/owners have the right to keep what they had all along, this is, an unobstructed view and a quiet neighborhood.
I am concerned that the area of Hawthorne Place is already overbuilt with the addition of the front standing high-rises, which obstruct the river view and lead to dire condition of circulation by car or by foot.

That being said, I am totally against the building of the two skyscrapers.

Thank you for your support ,

Sincerely,

Simona Manasian

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

- The scope of the plan is too massive and will have a negative impact on the existing community, in terms of increased density, traffic and parking issues.

- The size and height of the towers is out of scale with the neighboring buildings in Charles River Park, and will create problems with shadows, wind tunnels and obstruction of current views.

- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

Cindy Lu
9 Hawthorne Pl. #4H
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

- The scope of the plan is too massive and will have a negative impact on the existing community, in terms of increased density, traffic and parking issues.

- The size and height of the towers is out of scale with the neighboring buildings in Charles River Park, and will create problems with shadows, wind tunnels and obstruction of current views.

- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

Ramez Haddadin

9 Hawthorne Pl. 11J

Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

- The scope of the plan is too massive and will have a negative impact on the existing community, in terms of increased density, traffic and parking issues.

- The size and height of the towers is out of scale with the neighboring buildings in Charles River Park, and will create problems with shadows, wind tunnels and obstruction of current views.

- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

Murat Kalaycioglu
9 Hawthorne Pl #15N

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project Comments

Dear Mr. Rourke:

Just say NO to Equity Residential's proposal for developing the Garden Garage.

The plan is totally unacceptable!!

Sincerely,

Catharine Arnston
9 Hawthorne Place #6R
Boston MA 02114

Carol M. Niemira
6 Whittier Place, #14 M
Boston, MA 02114
(617) 367-6582

March 9, 2011

Mr. Jay Rourke
Project Manager
BRA
One City Hall Square
Boston, MA 02201-1007

Re. Equity Residential Garden Garage PNF

I was privileged to be at the meeting in the West End Museum at which Mayor Tom Menino pledged that nothing would be built to replace the Garden Garage taller than the structures currently there.

I am holding this mayor and his Redevelopment Authority to that promise. The high-rise towers proposed by Equity Residential are totally unacceptable.

The West End has long been neglected by our current Mayor, who has a good deal of catching up to do to invest the same amount of attention to us that he has done for residents of other communities. He can start right here. Equity Residential was a chief contributor to the Democratic National Convention held here in Boston. That must be held absolutely IRRELEVANT when the BRA considers how to do right by the residents of the West End.

As a 16-year resident of the West End and a member of the West End Civic Association for nearly that long, I fought to change Equity's West End Apartments plan to something that would benefit the community. I only partially succeeded. Now they're BAAACK.

The buildings proposed by Equity Resident will not be an asset to the community and must not be allowed to be built.

Most sincerely,

Caroline ("Carol") Niemira

Jonathan Li
6 Whittier Place #7J
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

Thank you for giving us, the residents of the West End, the opportunity to give you some feedback on this new proposed project by the Equity Company. I moved to the West End with my family a few years ago after seeing the neighborhood and the wonderful community that lives here.

I am extremely concerned and dismayed after hearing about Equity's plans for this new development. This neighborhood has a lot of character, much of which would be lost with continued development of such gigantic structures.

Prior to moving to Boston we lived in San Francisco, where the character of the neighborhoods and the wishes of the residents were paramount. What makes San Francisco so special also makes Boston such a great place to live. I am afraid that the character and neighborhood feel of the West End is being slowly destroyed by Equity Residential. It saddens me and I truly hope that you will listen to those of us who live here and love this neighborhood.

Sincerely,

Jonathan Li
Elaine Yu
Colin Li (age 1 ½)

Nine Hawthorne Place #16N
Boston, MA 02114
March 10, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

As a resident of Charles River Park for more than 30 years, I am writing to express my deep concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

- The scope of the plan is too massive and will have a negative impact on the existing community, in terms of increased density, traffic and parking issues.

- The size and height of the towers is out of scale with the neighboring buildings in Charles River Park, and will create problems with shadows, wind tunnels and obstruction of current views.

- The West End is quickly becoming overbuilt. Equity Residential just completed multi building construction. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

Lee Rabkin

Lee Rabkin

March 9, 2011
65 MARTHA RD, 9K
BOSTON, MA 02114

Jay Rourke, Project Manager
Boston Redevelopment Authority
one City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Ms Rourke,

I am strongly opposed to the towers Equity proposes to build. First, I would think that ~~a~~many dozens of car owners in the buildings near the current parking lot would be very inconvenienced, even after they found another place to leave their cars.

Next, my neighbor, Jean Wassel, is adamently against this project and I strongly agree with her.

The ~~de~~noise of the destruction of the parking lot and then the construction

Continued

project will probably be unbearable for years to neighboring buildings, such as the 5 Martha Rd Building. Then, when completed our 11-story building would be dwarfed and in shadow forever. Still another reason is the scenic nature of our neighborhood would never be the same; in fact, it will border on being cluttered with all the high rises planned, and possibly even more in the future.

Sincerely,
Donald Lipsitz
Amy Lowell Apts

Mary L. Stone
6 Whittier Place - Unit #6-P
Boston, MA 02114-1443
1-617-523-7386

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing this letter with deep concern for the Garden Garage Project.

I have been a resident of 6 Whittier Place since September, 1981. I have dealt with the noise of the Big Dig and the Emerson Place construction with the new buildings and garage. I am not interested in dealing with more blasting/noise and having what open space we have left removed. I am a condo owner and take pride in my home and surroundings.

The proposed Towers that Equity Residential plans to build are too tall and will invade the privacy of the units facing these towers. These buildings will severely affect the views and limit the natural daylight of the existing condos in the immediate area.

The traffic is another issue that will be affected. Have you thought of what can be done to alleviate that impending situation?

Also, what impact will this have on the existing value of our property if we go to sell our units? I feel this could be very detrimental to the value and the sale.

Please keep in mind that Charles River Park is a special place to live and as a homeowner I value my home and its surroundings.

Sincerely,

Mary L. Stone

6 Whittier Place
Unit 7N
Boston, MA 02114

March 10, 2011

Mr. Jay Rourke
Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Re: Garden Garage Project Comments

Dear Mr. Rourke,

I am writing to express our opposition to the Equity Proposal for new tower development within the West End. Our family has lived in the West End for nearly 30 years, and we have chosen this area of the City for several reasons, which include, most importantly, its natural environment and open space.

The West End was designed to have significant open space, according to the original architect's plans, which were approved by the City of Boston. As you know, substantial new development was recently completed at Emerson Place. Hundreds of new rental units were built, which greatly increased the density of the area. The development of an entirely new building complex will eliminate the precious and unique open areas that are special to the West End.

The towers, which Equity now proposes, will not benefit the West End. They will add unnecessary additional housing to an area that was designed with the environment and appropriate density in mind. Let us not forget the seemingly endless construction that the West End has endured during the past 15 or more years. This proposed project will continue this relentless development, which will reap no social, architectural, or planning advantages.

In closing, we believe that the time for comment and opposition is essential to any true planning process. Thank you for your consideration in this matter.

Sincerely,

Roy Sherman

Dear Mr. Rourke,

Here in the West End, we have put up with a lot of construction. Our Mayor promised to support our opposition to residential towers. I call on him to honor his promise.

If he wants development, let's start with:

- a West-End School
- 3-bedroom apartments

John Nelson
Whittier Place
02116

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

3.9.11

RE: Garden Garage Project PNF Comments

Dear Mr. Rourke:

I live I, as an owner, at 9 HAWTHORNE PLACE for over 20 odd years. As a member of the West End community I adamantly oppose the towers Equity proposes to erect.

The West End is becoming over built and the open space that once made this area attractive to me and other residents will not longer exist if Equity is permitted to build at the proposed site.

Tom Menino promised us that he would not allow towers to be built in my area of the West End community voiced their opposition. I strongly voice my opposition and I expect the Mayor to honor his promise that he made in May 2009.

This project will affect the lifestyle the all residents of the West End have become accustomed to, not positively, but negatively.

Mr Rourke, as a resident, homeowner and voter of the West End in the City of Boston, I do not want you to give Equity approval to build on this site. Thank you so much —

Yours truly,

Joe Glauckets
9 HAWTHORNE Place Unit 4C
Boston, MA 02114

Mary R. Renacco
65 Martha Rd #104
Boston, ma 02119
617-227-2775

March 10, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Sq.
Boston, ma 02201-1007

Re: Harden Garage - Project PNF Comments

Dear Mr Rourke,

I have been a resident of the Mary Lowell ~~House~~ House for 18 yrs I am against this whole Project I could go on + on But that's it

Yours Truly
Mary Renacco

Wendy S. Appel
Six Whittier Place · Boston, Massachusetts 02114

March 7, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

RE: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am strongly opposed to the towers Equity proposes to build. Equity should not be allowed to build anything higher than what currently exists on the Garden Garage Site.

In May of 2009, Mayor Menino promised the residents of the West End that he would not allow anyone to build towers in the West End if the community didn't want it.

I have lived here for over 35 years and I don't want the towers. I want the Mayor to honor his promise to the community.

The West End is becoming overbuilt. It was designed to have open space.

I shudder to think of the major traffic jams & tie-ups if this project is allowed to proceed. We do not need anymore buildings here.

Thank you for your consideration to the residents of the West End Views.

Most Sincerely,

Wendy Appel

Jane Breschard Wilson

2.8.2011

6 Whittier Place
8 N
02114

Dear Mr. Rourke -

As a Charles River Park resident for nine years (and Boston resident for nineteen) I wish to go on record opposing any more development in our barraged community.

Equity's development does not improve the West End. Please stop listening only to developers and politicians and heed your taxpayers.

Sincerely,
Jane B. Wilson

8 March 2011

Elizabeth Rowland
(as Mamma Rd #40
Boston, MA 02114

To: Judy Rourke, PM
GPAP
One City Hall Sq.
Boston, MA 02201-1007

Re: Garden Cottage Project - West End

Dear Mr. Rourke,

I am extremely opposed to the Equity plan to build two towers next to Amy Lowell Park. The "Park" is a Sanctuary for many of our older years. ALL that would be Destroyed if Equity is allowed to build. Plus, I have COPD & Emphysema and would be forced to move because of the environmental contraints. Tom Menino assured me & others ... it would NOT be built!

Please, Please, tell them to build elsewhere. Don't destroy my home!

Cordially,

E. [illegible]

March 7, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Equity Garden Garage Project

Dear Mr. Rourke,

I am a Hawthorne Place homeowner. I attended the public meeting and have looked at the plans. The Garden Garage towers don't belong here. They will only benefit the bottom line at Equity residential and will hurt the abutters.

Please reject the entire proposal and require Equity to work within the existing height limits.

Sincerely,

Americo Bevilacqua
9 Hawthorne Pl 9H
Boston, MA 02114

Domingo Cintron
65 Martha Rd.
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I moved to the West End in October 2010.

I went to the community meetings, listened to Equity's presentations and read all the BRA documents about this project. I can't support any aspect of this proposed development.

The BRA's goals for the West End were to create an urban community whose centerpiece is a park creating a green space offering sanctuary and amenities for all to enjoy. This project is contrary to these goals and out of place here.

I don't want Equity to build on this site.

Respectfully,



March 9, 2011

Joy Rourke, Project Manager
Boston Redevelopment Authority
Once City Hall Square
Boston, MA 02201-1007

RE: Bubble Garage Project

Dear Mr. Rourke:

Having lived in Charles River Park for over 30 years, and being a senior citizen, I am utmost concerned about the health effects of more construction. We have already been inundated with the Big Dig, Strada, Equity Residences at Emerson Place, Equity reconstruction at Longfellow, Craigie Bridge, Science Park and Nashua Park constructions.

Martha Road is severely congested as it is; how many more times must we endure road blockage and traffic gridlock? Recently, it took me a half an hour to get from Whittier Place garage to Cambridge Street en route to a medical appointment; we could not even go around by paulding Rehab due to the traffic.

Many West End residents, young and old, have developed respiratory ailments as a result of all this.

This proposed project is another blatant example of big business forcing its way into a thriving community in which they do not even live.

Would the Mayor want this for his own family? No!

Nothing you can say is in our favor or will enhance the living conditions of our residents. We want the Mayor to be held accountable for his 2009 promise not to build any new developments in the West End.

Enough is Enough!

Respectfully,

M. Clifford Young

Marian MacLennan
65 Martha Rd. Apt. 6M
Boston, MA 02114

March 9, 2011

Jay Rourke
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Re: Garden Garage Project

Dear Mr. Rourke:

Mayor Menino promised there would be no new towers built in the West End if the residents did not want them.

I am a resident of Amy Lowell Apartments and I ask that the Mayor keep his promise. I don't want these huge towers changing the character of my neighborhood.

I am 90 years old, I survived the big dig and I would like to survive a bit longer without the noise and dirt which would affect my building.

Sincerely,

Marian MacLennan

Polly Fletcher &
Robert Mayo

6 Whittier Place – Unit 16 H
Boston, MA 02114
617.670.1983

March 10, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

It has come to our attention that a PNF has been filed for a high rise building project in our West End Neighborhood. In May of 2009 Mayor Menino promised the residents of the West End that he would not allow anyone to build additional towers in our neighborhood if we didn't want it. I am writing to tell you we don't want this project in our West End neighborhood. I want Mayor Menino to honor his promise to this community and block this project from any further development.

We chose to invest and purchase a condo here because of the open, green space it afforded. This area can't support another group of high rise buildings without compromising our quality of life, freedom to fresh air and exposure to natural sun light. We have lived here for 14 years and enjoy the open landscape without feeling overcrowded. This is one of the only places in Boston where you aren't suffocated by congested high rise buildings looming over you. Red tail hawks are frequent visitors and we take pleasure in having them here. We have enough humanity to environment ratio.

In addition, when we are supposed to be "GREEN" conscious this project leaves a huge footprint on the environment putting more strain on water & energy resources, waste removal and air pollution. This plan diminishes the quality living all the way around. Please leave our neighborhood alone and do not allow this project to move forward.

Respectfully,

Polly Fletcher & Robert Mayo
Owners

33 Blossom Street #911
Boston, MA 02114
February 25, 2011

Mr. Jay Rourke
Boston Redevelopment Authority
1 City Hall Square
Boston, MA 02201-2043

Dear Mr. Rourke,

I am concerned about the proposed development at the site of the Garden Garage. The current proposal is much too large and would negatively affect the neighborhood. If the developer cannot make changes that would be agreeable to the neighbors, we can live with the garage as is.

Sincerely,

Stephanie Messina

Stephanie Messina

Cc:
Mayor Menino
Rep. Walz
Counselor Ross
Counselor Connolly
WECA

Alice M. Leslie
6 Whittier Place, Unit 15H
Boston, MA 02114
(617) 742-8166

3/10/11

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke:

I am writing to convey my opposition to the proposal by Equity to build towers on the site of the Garden garage. My understanding is that in 2009, Mayor Menino promised the West End residents that he would not allow construction of towers in our community if the residents opposed such a plan. Well, I am one of the many, many residents who are strongly opposed to this proposal and our expectation is that the Mayor will stay true to his word. I have not heard of any West End resident who is in favor of this building plan.

I have lived in Whittier Place since 1997. I moved here from the North End – a charming place with the façade of a neighborhood, but it really is not a neighborhood. No one was more surprised than I when I realized I had found a welcoming, safe, supportive community in the West End. I believe the area has reached its capacity to maintain its essence. More towers will ruin, not enhance, our community and it will be Boston's version of New York's Bronx. No one I know wants this.

Mayor Menino --- do your job and keep your word.

Sincerely,

Alice M. Leslie

Eileen M. Shaevel
Donald A. Weiner
8 Whittier Place, Apt. 20E
Boston, MA 02114
March 11, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke:

We understand that Equity wishes to build two very large buildings over the bubble garage in the West End, known as The Garden Garage Project. We are writing to express our strong opposition to this Project.

We have been residents of Charles River Park for 14 years, initially renting and then becoming owners 11 years ago. Among the benefits of living in this part of the city is the openness that exists due to the careful placing and height of buildings in and around the Park. If Equity is allowed to build two huge towers, it would destroy the feeling of open space, which is why people want to live here.

To overshadow the Park and obstruct views with more large towers does not benefit the community, but rather detracts from it while decreasing our property values. Two years ago Mayor Menino promised the residents of our neighborhood that he would not allow anyone to build towers in the West End if the community did not want it. We do not want it. We want Mayor Menino to follow through on his promise and keep our community free of large towers.

We strongly urge that you not approve Equity's plans. Thank you for your consideration.

Sincerely,

Eileen M. Shaevel

Donald A. Weiner

March 10, 2011

Mr. Jay Rourke, Project Manager
Boston ReDevelopment Authority
One City Hall Square
Boston, Ma 02201-1007

Re: Garden Garage Project PNE Comments

Dear Mr. Rourke;

I have Been a Resident And Condo Owner of the Charles River Park West End Area for 44 years, and I am strongly opposed to the Tower Equity Proposes to Build.

I want Mayor Menino to Honor his promise to the Community that he Made in 2009.

The west end is a great place to Live. I feel that the area would Be too Congested, and un Comfortable place to Live.

Very Truly Yours,
Florence L Clarke

Florence L. Clarke
6 Whittier Pl. Apt 10J
Boston Ma 02114

Xu Yu
6 Whittier Place #16J
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I have lived in the West End with my family for 5 years. We work nearby at MGH.

We chose to buy this particular condo because of the bright east facing morning sunshine. We really enjoy the light and it is the most important component for us to be happy living here.

The high rise buildings proposed for the garage location will block our view and most importantly our morning sunshine. This would be extremely disappointing to my family and would cause us to move out of the West End.

I urge you to stop the proposal and protect the environment we enjoy.

Dr. Xu Yu
Assistant Professor of Medicine
Massachusetts General Hospital

Peter E. Gabel

Six Whittier Place Unit 3R Boston, MA 02114 617.742.0203

March 9, 2011

Jay Rourke
Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

RE: Garden Garage Project PNF Comments

Dear Mr. Rourke:

Equity Residential's plan to build two towers in the West End neighborhood is unacceptable. I do not want to be 'walled' in by the 'canyon' effect these towers will create sitting right next to two Longfellow towers. They will block morning sunshine and seriously compromise existing open space, both land and sky.

Also, based on comments made by Mayor Menino at a West End community meeting in May of 2009, he promised the residents of the West End that he would not allow anyone one to build towers in the West End if the community didn't want it.

I've been a resident at 6 Whittier Place since 1992 and do not endorse this plan to have more rental units built in a family friendly, owner-based neighborhood. We need more ownership opportunities built for people who have an investment in the community, rather than more apartments for transient residents who have no incentive to look out for neighborhood interests.

Cordially,

Peter E. Gabel

Annette DeRosa
65 Martha Rd. Apartment 3P
Boston, MA 02114

March 8, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Comments

Dear Mr. Rourke,

I live at the Amy Lowell apartments and I do not want the towers to be built.

In May of 2009, Mayor Menino stated to the West End community that if the community did not want the towers built, they would not be built. I do not want this project built.

Sincerely,

Annette DeRosa

March 9, 2011

Mr. Paul Kennedy
6 Whittier Pl. Apt. 6H
Boston, MA 02114

Joy Rourke, Project Manager
Boston Redevelopment Authority
Once City Hall Square
Boston, MA 02201-1007

RE: Bubble Garage Project

Dear Jay:

In May of 2009, Mayor Menino promised the residents of the West End that he would not allow anyone to build residential towers if the residents objected to it. The West End neighborhood does not want this project, nor do we want compromise!

The occupants of Charles River Park are greatly concerned about the pollution from 850 parking spaces. Equity has not addressed this concern.

Another concern is less than one acre will house this massive project, block our sunlight, our green spaces, and cast large shadows.

We at Charles River Park have lived through the Big Dig, the removal of the overhead elevated, and the recent sprawling Equity housing complex adjacent to us.

Now, Equity wants to hem us in with this huge, greedy, don't-give-a-damn attitude for the residents of the West End, not to mention the noise and health hazards this will create for the duration of said project.

Sincerely, Paul K. Kennedy

Paul K. Kennedy

Elaine F. Garneau
6 Whittier Place, Unit 7H
Boston, MA 02114

March 11, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke:

I have been a resident of Whittier Place in the West End for thirty-five years. I am a unit owner in a well-maintained, well-managed building where I have always felt safe and part of a lovely neighborhood.

The Equity Residential Garden Garage project is not merely unwise or unwanted. The projected towers and the resulting congestion will overwhelm the area's resources and pose a real danger to this community. If the West End had been meant for such development, the *original* redevelopment project would already have filled the land with towers. At that time, it seems that persons with more thoughtful concern for the area prevented that from happening.

Since the approval and building of the towers on Equity Residential's Emerson Place property, we have experienced more traffic, more utility breaks and problems, and more crime. If Equity is allowed to build two more towers in an already stressed-to-the-limit area, we will be in very deep trouble here in the West End. What has been one of nicest neighborhoods in Boston will quickly become an urban blight of high-rise towers crammed onto every square inch of land.

I am completely opposed to this entire project. In honesty I do not want my property values to decline because of two towers in my back yard. But also in honesty, this area's resources cannot support these additional residences and the accompanying congestion. This is not speculation – we are already experiencing it from the last Equity project. I remember Mayor Menino's promise to us: new towers would *not* be built in the West End if the community was in opposition. I personally don't know anyone who is in favor of this project.

We desperately need your help – please consider all the implications and make a decision to stop this project and protect a valuable Boston neighborhood and its residents. Thank you.

Sincerely,

Elaine F. Garneau

11 J

6 Whitfield
Boston 02116

Jay Rourke

Project Manager

When I first moved to Boston in 1969 the tallest building was the customs tower. I hate to think something could be built so tall I would not be able to see the custom tower surrounded though it is with tall building now.

I want nothing built where the garage is taller than that garage this does not benefit the West end community and should not be built

I have been part of this community since 1982 & lived here permanently since 1988. We own our apar

-ment (11) and intend
to stay here

If in May 2009
Mayor Menino promised
the residents of the
West End that he
would not allow anyone
to build tower in
the West End, if the
community did not want
it. I live here and
I don't want towers
I want Mayor Menino
to honor his promise
to this community.

Sincerely,

Ellen L Sutton
aka Linda Sutton

March 8, 2011

Jay Rourke
BRA
1 City Hall Square
Boston, MA 02201

Re: Equity PNF Comments

Dear Mr. Rourke:

I support a no build policy in the West End.

The Garden Garage Towers are not needed and will hurt the neighborhood.

Sincerely,

Patricia Sheehan
9 Hawthorne Pl
Apt. 11-E
Boston MA
02114

Carlos A. Caicedo
6 Whittier Place #9N
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Comments

Dear Mr. Rourke,

I have been a Whittier Place homeowner since 1985.

I oppose the building of the Garden Garage project because of the increase in traffic, congestion and pollution.
Mayor Menino promised in 2009 that no more construction would occur in the West End if we did not want it.

The buildings do not add any benefit to our community

As a voter thank you for considering my comments.

Sincerely,

Carlos A. Caicedo

Ethelanne Trent

8 Whittier Place
Apartment 21H
Boston, MA 02114

Home (617) 227-1408
Office (617) 345-6700

March 9, 2011

Mr. Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Re: Garden Garage Project

Dear Mr. Rourke:

As a tenant and subsequent owner of the above unit for forty-six years, I would like to submit my strong objections to the proposed construction of buildings to replace the Garden Garage on Staniford Street.

Our community has worked diligently to maintain the original concept of the Authority to establish an open space in the City. The Honorable Thomas Menino promised that he would not allow new towers to be built without our approval. Well, I do not approve and ask that no further building in this area be considered.

Respectfully submitted,

Ethelanne Trent

Joan Molloy
65 Martha Rd.
Apartment #7K
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I've been enjoying this neighborhood since I moved here 2 ½ years ago.

When I heard of the proposed plan I was somewhat shocked. Even to a newcomer it seems totally unwise to pack in 2 more residential towers where the garages are now.

The intersection at Causeway & Staniford is already extremely active and a bit hazardous to pedestrians. Adding so many more residents to this area can only make it worse.

Mayor Menino promised, in 2009, that we wouldn't be forced to have more development in this part of the neighborhood. I think that agreement should be upheld.

Sincerely,

Joan Molloy

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

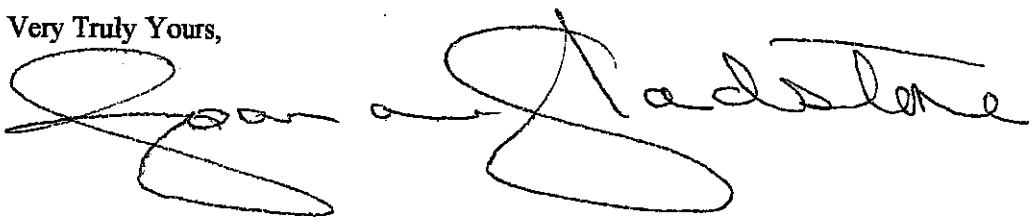
Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I request you reject the proposal submitted by Equity Residential.

The West End is fine the way it is. Please don't allow any more large buildings to be built in my neighborhood.

Very Truly Yours,



March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am writing to express my concern about Equity Residential 's proposed plan to build on the site of the Garden Garage. The proposed project will have a negative impact on the quality of life of all residents of the West End, including my fellow neighbors at Hawthorne Place.

Equity's development plan is unacceptable as proposed for the following reasons:

- The scope of the plan is too massive and will have a negative impact on the existing community, in terms of increased density, traffic and parking issues.

- The size and height of the towers is out of scale with the neighboring buildings in Charles River Park, and will create problems with shadows, wind tunnels and obstruction of current views.

- The West End is becoming overbuilt. Charles River Park was designed to have open space. Any proposed development plan needs to include more green areas with grass, trees and benches that can be enjoyed by all of the community's residents.

Please reject the current Equity proposal.

Sincerely,

Wendy Mueller

Audrey and John Tedeman
2 Hawthorne Place, 5D
Boston, MA 02114
617-227-2309

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Dear Mr. Rourke,

As an owner of 3 condos at 2 Hawthorne Place since 2003 and renters at 4 Longfellow since 1995, we strongly oppose the towers Equity proposes to build. Audrey is an employee of MGH working and living in this community is quite important to us. We have a view of the Zakim Bridge and would not like to see that inhibited by any building higher than what currently exists on the Garden Garage site. The towers will decrease the light and open space we currently are so fortunate to have living in the city.

In May 2009 Mayor Menino promised the residents of the West End that he would not allow anyone to build towers in the West End if the community didn't want it. We live here and we don't want the towers. We want Mayor Menino to honor his promise to this community.

This is a great community with people of all ages but we oppose any congestion and overpopulation this project will create in parking, shopping, and traffic.

We hope you will take our comments, along with other residents in this community, seriously and with much consideration.

Sincerely,
Audrey and John Tedeman

March 9, 2011

Joy Rourke, Project Manager
Boston Redevelopment Authority
Once City Hall Square
Boston, MA 02201-1007

RE: Bubble Garage Project

Dear Jay:

I have lived in the West End all of my 79 years; this is home to me. Having grown up in the West End, I personally experienced the destruction of our previous neighborhood. I have no desire to relive that experience, nor do I wish to live anywhere else. I have been a resident of Charles River Park for 31 years.

I strongly oppose the towers that Equity proposes to build. This development will jeopardize the land, air and light that we currently enjoy in our neighborhood. The scope of the project is simply too big, too massive, and too dense for the area. We have a wonderful community as it is now, and it is my opinion that this proposed development will adversely affect the quality of life in our neighborhood.

Sincerely,

Helen Georgaqui

Sylvia Bartfield
65 Martha Road #8L
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I have lived at Amy Lowell apartments for over 30 years.

I am 85 years old and am worried about noise and disruption from construction. The big dig was enough.

The new buildings are too tall I don't want them here.

Sincerely,

Sylvia Bartfield

Mathias Lichterfeld
6 Whittier Place #16J
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I own a condominium at 6 Whittier Place and have been living here with my wife and daughter for 5 years. I work as a physician at MGH and truly enjoy the downtown location and proximity to my workplace.

Our condo is located on the 16th floor and gets great morning sunshine. This is a very enjoyable part of living here.

We have heard about the plans to build high rise construction right in front of our windows. This would significantly impair our view and light.

We understand that developers would like to use this neighborhood for addition investments and their commercial interests but I believe that the interest of the people who already live here have to be more strongly considered.

I believe that new construction as currently planned would significantly decrease the quality of life in the neighborhood and make it less enjoyable for us to live here. I have heard the Mayor made a previous promise to this neighborhood that future construction will only be built if there is a widespread consensus among the local residents. At this stage I believe there is a lot of opposition and the proposal should be rejected.

I ask you to take these considerations seriously and ask you to stop this project in the best interests of the current residents of the West End.

Sincerely,

Dr. Mathias Lichterfeld, M.D., Ph.D.

Monica Callender
6 Whittier Place #5P
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Comments

Dear Mr. Rourke,

I have been a Whittier Place homeowner since 1991.

Equity Residential should be held to current zoning and should not be allowed to build higher than the current garden garage.

I am also concerned about losing open space and views.

Thank you for considering my comments.

Sincerely,

Monica Callender

Lynne Young
8 Whittier Place # 20C&D
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I have been a Whittier Place resident for 30+ years!

The proposed towers will in every way be detrimental to our lives and neighborhood and negatively affect everyone's quality of life here in The Park.

Quoting the Mayor, "If we do not want these towers they won't be built". He should respect all of our feelings and keep his promise.

Over the years the BRA has impacted our neighborhood without any regard for our concerns. I urge the BRA to do as the Mayor promised and reject this entire proposal.

Sincerely,

Lynne Young

Michael V. Brogna
8 Whittier Place #8F
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

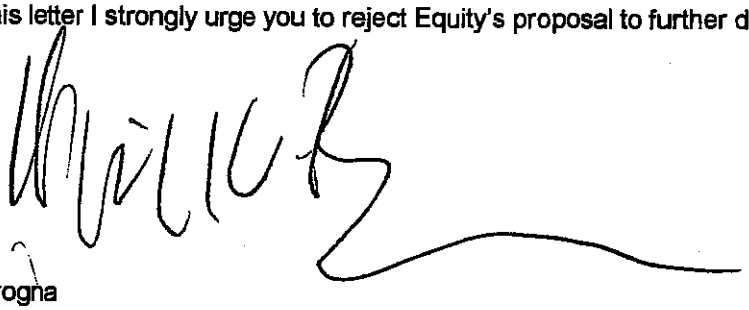
Dear Mr. Rourke,

I have been a resident and unit owner for 10+ years.

- I'm strongly opposed to the construction of the proposed Equity Towers.
- The West End is clearly getting over-built and was fundamentally designed to maximize open space.

By drafting this letter I strongly urge you to reject Equity's proposal to further develop our West End. Community.

Regards,



Michael V. Brogna

Alice Gazarian
9 Hawthorne Place #3J
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I moved here because it was a park and I felt like I was in the suburbs. I don't want the park being turned into a high rise jungle. I like the feeling the way it is now.

There will be too much traffic and it is already bad. We can't handle any more.

No new buildings, period. I don't want them.

Sincerely,

Alice Gazarian

Mrs. Amelia Thomas
65 Martha Rd. #6L
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I was born in Boston and have lived here my whole life. I am an Amy Lowell Resident.

I feel the Garden Towers don't belong here, and also hurt all the abutters.

Please reject the entire proposal.

Sincerely, Mrs. Amelia Thomas

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke:

I am writing to express my concern about the proposed development of the Garden Garage by Equity Residential.

The proposal is outrageous!

It is much too big and should not be allowed to be built.

Please send Equity back to the drawing board!!

Sincerely,

Pat Cody
#9 Hawthorne Pl
Boston MA 02114

March 9, 2011

Jay Rourke Project Manager
BRA
One City Hall Square
Boston MA 02201-1007

Dear Mr. Rourke,

Any building built on the existing Garden Garage should fit within the existing ~~footprint~~ footprints and be within the current height regulations. No variances, no towers, no shadows, no wind tunnels, no more transient apartments.

Thank you.

Deborah B. Brown
6 Whittier Pl 17A
Boston MA 02114

Pat Lomuscio
65 Martha Road. #2M
Boston, MA 02114

March 8, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Comments

Dear Mr. Rourke,

I've lived at Amy Lowell apartments for 23 years. I've attended many BRA meetings and I do not like what I heard about the towers.

My apartments is at the far end of the building very close to the proposed towers. I'm concerned about my health. Dust and noise will be detrimental. I am not well and have allergies and a heart condition.

These new buildings do not benefit the current residents of the West End. The elderly people will be even more impacted. I strongly oppose the towers.

The Mayor promised the West End he would not allow new buildings if we didn't want them. He is a man of his word and I am counting on him to stop this outrageous project.

Sincerely,

Pat Lomuscio

Carolyn Walker
65 Martha Road
Boston,MA 02114

March 8, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

In 2009 the Mayor promised there would be no new towers in the West End. I do not want the towers and neither do my neighbors. Please keep the mayor's promise.

Sincerely,

Carolyn Walker

Mary Bramante
65 Martha Rd. Apt. #6E
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Comments

Dear Mr. Rourke,

I have lived at Amy Lowell apartments for 24 years.

The West End is fine the way it is and doesn't need any more buildings.

Sincerely Yours,

Mary Bramante

R. Shirley Burton
65 Martha Road 7B
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Comments

Dear Mr. Rourke,

I strongly oppose the towers that Equity proposes to build.

I have lived in Charles River Park for 18 years and during that time I have experienced construction for 13 years. 10 years with the Big Dig and 3 years with the West End Residences.

These towers will not only block the light on my apartment, but I also fear that this construction might do harm to the Amy Lowell building.

I implore the Mayor to stand by his promise that "If you want the garage to remain... then we won't build".

Sincerely,

R. Shirley Burton

PATRICIA LIBBY
EIGHT WHITTIER PLACE #19A
BOSTON MA 02114
617.670.0922 ~ libbyone@gmail.com

Jay Rourke, Project Manager
BRA
One City Hall Square
Boston MA 02201

Dear Mr. Rourke,

Add my name to the many opposed to Equity's proposal to build new towers in the West End. There is a limit to the density that can be supported in this area - that limit has been reached. We need the open space, not more people and cars.

Listen to the mayor, who has stated that if the West End community does not want the towers, they will not be built.

Yours truly,

Patricia Libby

3/10/2011

Mary Ann Boyle
8 Whittier Place, Suite 23G
Boston, MA 02114
617-742-6063

March 10, 2011

Jay Rourke
Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

RE: Garden Garage Project PNF

Dear Mr. Rourke:

I am writing to say that I am opposed to the proposed construction project at the Garden Garage in the West End.

The West End is too congested with traffic and people now. Additional housing in this area will increase the traffic.

Mayor Menino in 2009 promised the West End residents that he would not allow anyone to build towers without the approval of the community. I am part of the community and I object.

I would think that increasing the traffic within the vicinity of the Garden would concern the BRA. Income from out-of-towners, who are already irritated by the difficulty in parking within walking range of the Garden, would be seriously threatened by increasing the residents in the area.

I have been living in the West End since 1991 and a condo owner since 1996. I am concerned with the quality of life in the West End. The proposed project would decrease the appeal of the West End.

Thank you for your consideration of this letter.

Sincerely,

Mary Ann Boyle

Joanne C. Horgan
6 Whittier Place, Unit 17L
Boston, MA 02114
(617)227-2468

March 9, 2011

Mr. Jay Rourke
Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

RE: ***Garden Garage Project – West End***

Dear Mr. Rourke:

Please accept this letter voicing my total opposition to Equity's proposal for the Garden Garage Project Towers in the West End. It is a thoughtless proposal that will immensely affect the lives and well being of the hundreds of Unit Owners and Residents that are presently living peaceful, joyful lives in the West End enjoying calming green space. These towers will loom over the present buildings causing shadows, shade and depressing darkness taking away much of the sunlight that Unit Owners and Residents presently cherish in surrounding Whittier Place, Hawthorne Place and West End Place buildings. The views many have enjoyed for years will be totally destroyed, rendering a feeling of a closed-in, crowded, overbuilt, trapped-in environment. The West End certainly doesn't need or warrant two more massive structures on such a small footprint. These buildings *(concrete jungle)* will not benefit the West End community in any way, but add more stress and chaos to a now thriving, very livable West End.

As a Unit Owner, I have lived in Whittier Place for the past five years and have enjoyed the magnificent sunlight I experience every morning; everyday for that matter. The view breathes life into my day…all of that will be destroyed by this hideous project going forward.

I beg you to take a much closer look at what Equity's proposal will do and not do to the environment and the surrounding community. To strip these hundreds of Unit Owner/Residents of their homes, their quiet enjoyment just for the sake of squeezing in hundreds more units is unspeakable, in fact, greedy.

To reiterate, I am totally opposed to the Garden Garage Project as presented by Equity. I would appreciate any and all the support you will give to putting a halt to this project. I would appreciate any communication you might have with Mayor Menino in stopping same. As mentioned in years past, Mayor Menino promised the community no more towers would be built.

Let's hope that together we can stop this Garage Proposal from going forward. I appreciate your attention and assistance in this matter.

Very truly yours,

Joanne C. Horgan

Joanne C. Horgan

Alice R. O'Neil
65 Martha Rd.
Boston, MA 02114

March, 8, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project Comments

Dear Mr. Rourke,

I am vehemently opposed to the proposed project. One of the main reasons I moved to Charles River Park in 1972 was because of the aesthetic beauty, spaciousness and community feeling of the area.

Community

Is the mayor reneging on the promise he made to the West End ~~Council~~ in 2009? "If you want the garage to remain, we won't build"!

It is dangerously congested on Martha Road and in the whole area.

I'm concerned for my safety if an emergency vehicle can't get through. Martha Road can't handle the traffic as it is. The new buildings will make the gridlock even worse.

I strongly urge you to reject this proposal.

Yours Truly,

Alice R. O'Neil

Zoe Taylor
9 Hawthorne Place #3N
Boston, MA 02114

March 9, 2011

Jay Rourke
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke:

I just moved from Texas and chose the West End as my new home because I love the open space and the views. There is also a great sense of community here.

I don't feel that additional buildings would benefit this community.

Sincerely,

ZC Taylor

Johnnie Wolfson
8 Whittier Place #12D
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I have lived here for over 30 years and have been a West End homeowner for 25 years. We have endured many construction projects from the Big Dig to the Equity Apartment Project to the Cragie Bridge Project.

- I'm strongly opposed to the towers Equity proposes to build.
- The project presented in the PFN is not acceptable.
- I want the BRA to honor the mayor's no build promise to the West End.
- The West End is a great neighborhood. We don't need more buildings.
- The environmental impact of this project will negatively affect the residents of the West End.

Cordially,

Johnnie Wolfson

MAr 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment ~~Aff~~ Authority
One City Hall Square
Boston MA. 02201-1007

Dear MR Rourke
in MAy of 2009 MAyor MAnino
Promimised the residents of the west end
that ~~he~~ he would ~~keep~~ keep the garage and
not build any towers

Rene Bohn

AMy Lowell 8E

Marlene E. Turra
6 Whittier Place #4H
Boston, MA 02114
617-367-0324

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston MA 02201-1007

RE: Garden Garage Project PNF Comments

Dear Mr. Rourke:

This letter is to inform you that I **strongly oppose** any new buildings being added to our wonderful West End neighborhood.

I moved here in 1991 to a nice, peaceful area and a great community. I decided to buy my unit in 1996. Our medical office was at Zero Emerson Place. Equity built extra buildings by Emerson Place. We had to endure the blasting, noise and inconvenience to our patients with walking and parking.

Now they want to add towers to the nice view I have looking out my home windows. It would cut all the sunlight that I now get. It would not give privacy (that is why I bought this condo). It would give excessive noise and traffic congestion. I do not think the West End needs any more buildings. I do not want to look out my windows into someone elses windows. These buildings **should not be built.**

Mayor Menino promised no more buildings to the West End community. I think he needs to stick by his words. I do not know of anyone wanting these ugly towers to be added to our nice community. We are happy the way it is now.

Sincerely,

Marlene E. Turra

3/9/2011

Angelica Lawissant MD
Gallivan Blvd # 310
Boston MA 02124
781-344-2258
617-407-6499

Tony Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr Rourke,

My name is Angelica Lawissant I am a physician, mother of an 18 month old daughter and a homeowner at Gallivan Place. I have lived in the area for the past 2 years, initially as a renter in Equity buildings and now as a condominium owner for the past 2 years. There has been a lot of construction in this area over this period of time. This area is already dense with high rise buildings and will surely be overcrowded with any new projects.

I truly believe as a homeowner and resident a green space should be the BEST thing about living in this area. A balance of the convenience of city living with the green space incorporated into the design. I strongly oppose any further development in the area and particularly, the Garden Garage project presented in the PNF and the towers Equity is currently proposing. In very simple terms proposed new construction of the community space and [illegible]

Sincerely,

[illegible]

Rourke, Jay

From: tishey noiseux [tisheynoiseux@hotmail.com]
Sent: Thursday, March 10, 2011 5:37 PM
To: Mayor; Rourke, Jay
Cc: Ross, Michael (City Council)
Subject: The Proposed 28 & 24 " Buildling by Equity Development

Gentlemen:

I have owned in Charles River Park for over 14 years. I am very concerned regarding your proposed development of such enormous buildings' that do not belong in this neighbourhood.

Were we foolish to believe Mayor Menino when he made the statement to us the residents of the West End that he would not allow anyone to build towers in this neighbourhood, he stated " If you the community do not want towers in the west end, I will not allow them to be built ".

Mayor Honour your promise please.

What Equity proposes is a monstrosity, it will bring further blight on this area, jokingly called "THE BEST NEIGHBOURHOOD THIS SIDE OF HEAVEN"

This neighbourhood is already clogged with traffic due to garden events and the bad design of the traffic flow off storrow drive, causing havoc & danger to pedestrians & residents trying to enter charles river park, from either storrow drive of leveret circle, not to mention the increased foot traffic that the proposed 500 units and additional parking would bring to this area.

Why bring more distress & destruction to us, a family neighbourhood, the introduction of studios and one bedrooms units will turn this whole area into a transient neighbourhood.

The Proposed towers will cast shadows, cause more wind tunnels, take away views, so devaluating our property, it will also take away open space and recreational areas, bring people on drugs and alcohol in to charles river after concerts.

Why not build family units keep to a similar foot print to the one that now exists stay within the height restrictions for this neighbourhood.

Better still take the development to down town boston where there are existing excavations just waiting for development.

6 Whittier Place
Boston, Mass 02114
1-339-927-7669
Tishey Noiseux

Rourke, Jay

From: Steven Arnold [seawip@yahoo.com]
Sent: Thursday, March 10, 2011 4:12 PM
To: Rourke, Jay
Cc: whittierplace@rcn.com
Subject: Opposition to Garden Garage Project PNF

Steven E. Arnold
8 Whittier Place, Unit 14F
Boston, MA 02114
(617) 670-0868
seawip@yahoo.com

March 10, 2011 E-mailed to jay.rourke.BRA@cityofboston.gov

Mr. Jay Rourke
Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke:

I am writing to express my strong opposition to the Garden Garage Project tower buildings PFF that Equity Residential has proposed to build on the Garden Garage site.

I have been a West End resident for 2 years and recently purchased a condominium at 8 Whittier Place. The West End already is very over populated and congested with buildings and residents, and Equity's Garden Garage Project would seriously detract from and only further congest the West End community.

Mayor Menino promised the West End residents that he would not allow the construction of additional tower buildings in the West End if its community residents were opposed to such construction, and as a West End resident and property owner, I am strongly opposed to the proposed Garden Garage Project tower development.

The proposed towers will obstruct views, congest the open space and limited retail and food stores, as well as unfairly devalue our property. The current over population and congestion already compromises my use and enjoyment of the West End community open space, retail stores, and the Charles River Esplanade areas. The area streets often are clogged with vehicular and pedestrian traffic, especially because of the constant sports and entertainment programs at the TD Bank Garden . Parking space in the West End also is very limited, and the current Garden Garage is necessary for this community, its guests, and visitors to park.

Your assistance with preserving and protecting the West End community and property values by preventing the Garden Garage Project towers from being build is requested and very much appreciated.

Very truly yours,
/s/ Steven E. Arnold
Steven E. Arnold

Jim & Ashton Goodfield
9 Hawthorne Place - Apt.17M
Boston, MA 02114
617-523-3970

March 8, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

My wife has lived in the West End for over 20 years, I have for 13 years and our two school age children have grown up here. We have made a sizeable investment in combining 4 separate apartments in Hawthorne Place to make the West End our long-term home.

We strongly oppose the Garden Garage Project as presented in the PNF for the following reasons:

1. **Building height and mass** – the project as proposed is too high and too large. Equity Residential should not be allowed to build anything higher than what currently exists on the Garden Garage site. I vividly remember in May of 2009, Mayor Menino answered my question posed directly to him during his pre-campaign stop at the West End Museum on height of any proposed development. He said (paraphrased) "that any new construction will not exceed the height of the existing garage and if the developer can't make back their investment, it's too bad" Obviously this was hollow campaign rhetoric that he had no intention of backing up.
2. **Elimination of community recreation facilities** – demolition of the Garden Garage will eliminate Basketball City, which my children and many children and adults from both the West End and surrounding neighborhoods use. In the late 90s a zoning waiver to the original West End plan was granted to trade one type of recreational facility (tennis) for another (basketball). In allowing this proposed Equity development, both the publicly accessible Basketball City goes away, as well as Equity's existing tennis courts and ad hoc play area near the Boston Children's School Annex.
3. **Traffic concerns** - backups on Storrow Drive to access Lomasey Way will be an even worse nightmare than it already is. I drive kids home for carpool back to Whittier Place every day via Storrow Drive. What is now merely awful will become truly horrible. One doesn't need to waste money to conduct a formal traffic study to conclude this.
4. **Equity is not a good neighbor in their construction practices** - the current very noisy pool renovation project is conducted early in the morning (7am) and on weekends (Saturdays). Asking this community's residents to endure 3 more years of dust, noise, and pollution is too much to ask. If there is to be any construction – **which we oppose** – Equity management personnel involved in the project should be required live in apartments abutting their own construction zone for the duration of the project. We've had enough of living in a continuous cycle of Equity construction.

Sincerely,

Jim Goodfield

cc: Michael Ross – City Councilor

Rourke, Jay

From: David MacDonald [partners44444@yahoo.com]
Sent: Friday, March 11, 2011 12:44 AM
To: Rourke, Jay
Cc: weca.boston@gmail.com
Subject: 2 Proposed Buildings

Dear Mr. Rourke:
I am very opposed to the towers Equity plans to build. We simply don't need any more buildings here. The traffic congestion will become unbearable and we simply don't need anymore noise pollution. We enjoy this neighborhood as is.

David MacDonald
An Amy Lowell House resident

Roberta Sigman Jones
8 whittier Place #E
Boston, MA 02114
617-742-1169

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project

Dear Mr. Rourke,

I am vehemently opposed to the Garden Garage Project proposed by Equity residential. I am a 8 whittier Place resident for the past 41 years and a condo owner in the same unit since 1986 when it was first available for ownership. What attracted my husband and me to whittier Place was that it is a part of a community with lots of green space, a park feel, and sky views which give this neighborhood its unique features.

As a member of WECA (West end Civic Assoc) I attended the May 13, 2009 meeting at sponsored at the new west end Museum at which Mayor Menino spoke. I heard the Mayor promise the residents of the West end that he would not allow anyone to build towers in the West end if the community didn't want them. I want Mayor Menino to honor his promise to this community.

Sincerely,

Roberta Sigman Jones

cc: Mayor Menino
John Palmieri, BRA Director
Kairos Shen, BRA chief Planner
Jonathan Greeley
city Councilor Michael P. Ross
State Representative Marty Walz
Whittier Place Condominium Trust
Amy Lowell Management

B.R.A.

Rourke, Jay

From: Mary Karen Rogers [mrogers@suffolk.edu]
Sent: Thursday, March 10, 2011 12:56 PM
To: Rourke, Jay
Cc: whittierplace@rcn.com
Subject: Garden Garage Project PNF Comments

Mary Karen & Kirk T. Rogers
9 Hawthorne Place 15E • Boston MA 02114 • 617-523-5391

March 10, 2011

Jay Rourke, Project Manager

Boston Redevelopment Authority

One City Hall Square

Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,
We have lived in the city of Boston for the past 36 years, first in Back Bay and now in Charles River Park. Each move was plotted with quality of life in mind. The West End is a place that is safe and gives each of us a sense of space and tranquility within this city.

I find it unacceptable that in an instant the neighbor can be up-rooted and redefined without neighborhood consent. If this were Back Bay or Beacon Hill this project would not be going forward. They have invested in those wonderful neighborhoods and it shows because of their watch dog maintenance over the years. We do not want to be an afterthought but a refined neighborhood as well. The West End neighborhood needs more amenities such as an affordable supermarket, an elementary school and upgraded public library, not twin towers proposed by Equity.

Understand, we need to preserve and enhance this vital neighborhood that continues to enrich the families living in Charles River Park.
Equity's twin towers are not the answer for this Boston neighborhood.

Sincerely,
Mary Karen & Kirk Rogers

KAREN GRETHEN
2 Hawthorne Place, 3R
Boston, MA 02114

March 10, 2011

Mr. Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

RE: Garden Garage Project PNF Comments

Dear Mr. Rourke:

I have been a resident and condo owner of the Charles River Park West End area for approximately 15 years, and I am strongly opposed to the towers Equity proposes to build.

I want mayor Menino to honor his promise to this community that he made in May of 2009 when he promised us that he would not allow anyone to build towers in the West End, if we, the community, did not want it. I live here, and I do not want the proposed towers.

The West End is a very attractive and must sought-after area in Boston for people to live here. The proposed Garden Garage Project will damage our garden spot in Boston. Stop this project.

Sincerely,

KAREN GRETHEN
2 Hawthorne Place, 3R
Boston, MA 02114

Rourke, Jay

From: Nancy Hurley [nh1004@hotmail.com]
Sent: Friday, March 11, 2011 9:58 AM
To: Rourke, Jay
Cc: whittierplace@rcn.com
Subject: Garden Garage Project PNF Comments

Importance: High

March 11, 2011

TO:
Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

VIA EMAIL

Dear Mr. Rourke,
I am writing to express my opposition to the Equity Residential plans to build and expand over the footprint of the Garden garage. I am owner and have lived in 9 Hawthorne for the past ten years and I have watched the neighborhood grow especially in population density. I believe the proposed project is way too big and includes way too many residential units as well as too many additional parking spaces. Have you ever tried to pull out of our parking garage in the morning onto Blossom Court? The flow of pedestrian foot traffic along with the trucks and cars that park in a NO STANDING zone makes it dangerous for all. It can take me 15 minutes to get in or out of my neighborhood depending on what's going on at the Garden, the time of day, and the level of foot traffic. In addition, the notion that we in the West End want our neighborhood "opened up" to the North Station neighborhood is absurd. The foot traffic coming from North Station to Mass General ALREADY passes through our land parcels; in fact we have gone out of our way to create additional pathways for MA General employees. I think it is now time for Mass General to accommodate their employees without impacting our neighborhood any further.

A couple of years ago the Mayor visited the West End Council and stated there would be no building higher than the present buildings. I would like to know WHY Equity is even allowed to propose a change to the zoning laws. Where is the Mayor now? and WHO is protecting the residents of Charles River Park? We are a neighborhood and a community, and we deserve to be heard and treated with respect.

Sincerely,

Ann M. Hurley
Unit 5L
9 Hawthorne Place
Boston, MA 02114

Rourke, Jay

From: MAAakjar@aol.com
Sent: Thursday, March 10, 2011 10:45 AM
To: Rourke, Jay
Cc: whittierplace@rcn.com
Subject: Garden Garage Project PNF Comments

To Jay Rourke, Project Manager
Boston Redevelopment Authority

Subject: **Garden Garage Project PNF Comments**

As a unit owner at Nine Hawthorne Place, Boston, I am writing to object to Equity Residential's three proposed buildings planned to replace the Garden Garage.

Two of the proposed buildings -- towers -- are too high and the third literally wraps itself around an existing residential building (West End Place). The buildings present a "wall" for pedestrians and will add to traffic congestion. The buildings also present a walled-in enclosure-barrier to the West End community, as happened at Lafayette Place. The space needs to stay open for all residents of the City of Boston.

Due to density and height, I **OPPOSE** Equity's proposal to replace the Garden Garage. Thank you for your consideration.

Maryann Aakjar
Nine Hawthorne Place, 3-P
Boston, MA 02114-2319
(617) 742-7795

Mach 10, 2011

Rourke, Jay

From: flowersontheave@verizon.net
Sent: Thursday, March 10, 2011 12:22 PM
To: Rourke, Jay
Cc: WHITTIERPLACE@RCN.COM
Subject: Garden Garage Project /Proposed plan by Equity Residential to build at the Bubble Garage

Please be advised that my name is Janice A, Sousa and I am a unit owner at 9 Hawthorne Place, 3G, Boston, Ma.
My unit faces the garage and the basketball courts.I purchased the unit 3 years ago because it is an oasis in the ever noisy and busy City of Boston. It is a pleasure to live in a neighborhood and watch and hear people playing ball in the evening and taking walks in a bucolic environment.

The Mayor indicated that if something was built near my home, it would not be a Tower, and that, perhaps, the height requirement would be limited. A tower would impact light, air quality and the aesthetics of the neighborhood;
this is not acceptable to my quality of living.

I look forward to further discussions with those of us who make the West End our home.

with regards, Janice A. Soua

Zouheir Abou Hamad
8 Whittier Place, Apt. 24E
Boston MA. 02114

March 7, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA, 02201- 1007

Subject : Garden Garage Project, PNF comments

Dear Mr. Rourke

As you see from the above address, I live on the highest floor of 8 whittier Bldg. I paid a very high price to get this floor, as I am 85 years old , and spend most of the days sitting on the balcony enjoying the views, from Zakem bridge, downtown Boston, the Ocean, the Airport , Beacon Hill, till the lower part of Cambridge street.

I heard lately that Equity is intending to build two high rise buildings , replacing the Garage. I strongly oppose this as it blocks my view, and lowers the value of my apartment. and upsets my life.

Why can't Equity build three buildings of 10 floors each. instead of the high rise buildings. Besides I have attended Mayor Meninos' meeting in May 2009, where he promised us not to allow anyone to build high rise buildings in our compound. Will Mayor Menino honor his promise?

I hope you will consider my request, not to allow Equity or others to build high rise buildings in our compound.

Thank You,

Sincerely yours

Zouheir Abou Hamad.

Susan Witkie
6 Whittier place Unit 17N
Boston 02114
617-654-7710
Susan.witkie@ssa .gov

3/6/11

Jay Rourke, Project Manager
BRA
One City Hall Square
Boston 02201

Dear Mr. Rourke,

I have lived at Whittier Place in Boston's West End for 30 years, having moved here to train at MGH in a medical residency in 1982. We have survived disruptions, and experienced benefits. While the density of the population has increased, it has been reasonable—up until now.

I strongly oppose the plan that Equity has to build those monstrous towers in their Garden Garage Project. They are unreasonable, will completely take out sunlight, and will terribly damage the West End community.

Please! Do not allow Equity to build their planned building.

Please do listen to those who live here. All my neighbors are heart-broken at the massive scale that Equity proposes. I hope they are all writing to tell you that they oppose the project.

Thank you for your consideration.

Sincerely,

Susan Witkie

Eric Brotman
6 Whittier place Unit 17M
Boston 02114
617-742-3399

3/6/11

Jay Rourke, Project Manager
BRA
One City Hall Square
Boston 02201

Dear Mr. Rourke,

I am writing this letter to tell you that I strongly oppose Equity's Garden Garage Site project as planned.

I have lived here at Whittier my entire life and have greatly appreciated having the opportunity to enjoy Boston. I have watched my neighborhood grow and change, and have understood the need for increased revenue for the city via increasing taxable properties.

However, the project proposed for the Garage Site is more appropriate for New York City, where there are no open green spaces, and dense, massive buildings that block out the sun and block the neighborhood. Do not do this to Boston.

I hope you will consider the wants of the neighborhood people, as you make decisions that may affect your revenue, but affect every minute of our lives.

Sincerely,

Eric Brotman

March 10, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Plaza
Boston, MA 02201

RE: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I have lived at 9 Hawthorne Place for last 11 years. I also work at MGH. The reason I chose to purchase a condo here was not only the proximity to my job, but because it is one of the last places in the city with some open space and beautiful greenery.

I am opposed to the above indicated, over-sized project. Even though it will not impact my view, it does impact the view of many of my friends and neighbors. The buildings are way too tall!! Currently, I avoid driving in the area of Martha Road when there is either a game or other function at Boston Garden. I can't even imagine what the traffic will be like with more cars, traffic, etc.

I was present at a meeting where Mayor Menino promised the residents of the West End that he would not allow anyone to build towers in the West End if the community was opposed. **I am opposed to this outrageously giant project.**

Sincerely,

Karen M. Spencer
9 Hawthorne Place, Unit 5-O

Rourke, Jay

From: Georg Bernhardt-Miller [gbernhardtmiller@yahoo.com]
Sent: Thursday, March 10, 2011 9:32 AM
To: Rourke, Jay
Subject: Fw:

--- On **Thu, 3/10/11, Georg Bernhardt-Miller** <***gbernhardtmiller@yahoo.com***> wrote:

From: Georg Bernhardt-Miller <gbernhardtmiller@yahoo.com>
Subject:
To: jay.rouke.BRA@cityofboston.gov
Cc: whittierplace@rcn.com
Date: Thursday, March 10, 2011, 9:29 AM

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Dear Mr. Rourke:

I request that it be recorded that I am opposed to the Equity proposal to build two new towers at Charles River Park; and, I hope that Mayor Menino will remain true to his promise that no such towers will be constructed against the wishes of the current residents of the West End.

First, the proposed towers are too high. Any new construction in the area should not exceed the height of the buildings now part of Charles River Park. To construct edifices of the height proposed will cause additional shading -- and more wind-tunnel effect. Obviously, neither of these consequences will enhance the experience of those living in the area.

More to the point, a terrible mistake was made when the "urban redevelopers" bulldozed the old West End and built the current complex known as Charles River Park. Please, take a moment to consider the name; it includes the word *park*. Park suggests open woodland. The one redeeeming quality of Charles River Park is its *open* parkland. If the currently proposed towers are built, a fortress area will replace the skyscape that is visible to all who pass through the area.

Once again, I beg you to reconsider this wothless proposal. If it is approved, it will be another blight on the city -- with the stamp of approval by the BRA.

Sincerely,

Georg Bernhardt-Miller

9 Hawthorne Place #4D
Boston, MA 02114

[Go]

Rourke, Jay

From: William Grealish [kenmore5400@yahoo.com]
Sent: Thursday, March 10, 2011 9:38 AM
To: Rourke, Jay
Cc: whittierplace@rcn.com
Subject: Proposed Equity Towersat Charles River Park

10 March 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Dear Mr. Rourke:

I am writing to plead that the current Equity propsal to build two towers at Charles River Park be denied. The planned towers are not in proportion to the existing buildings at Charles River Park. In addition, the towers will create additional shadows and create an adverse wind-tunnel effect. Since the building will be built on a north/east axis, it would be wise to remember that, in Boston, northeasterly winds are usually the most deleterious.

Further, the area should not become congested with two many obtrusive buildings. One of Charles River Park's most distictive features -- and its greatest asset -- is its open parkland.

Finally, I ask that Mayor Menino uphold his promise to NOT build towers in the West End if its residents are not in favor of such construction. The majority of my neighbors in Charles River Park and I are not in favor of this propsed construction.

Sincerely,

William Grealish
9 Hawthorne Place #4D
Boston, MA 02114
617-367-0188

Suzi and Peter Reynolds
6 Whittier Place #11H
Boston, MA 02114
617-670-1525

3/7/2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

RE: Garden Garage Project PNF Comments

Dear Mr. Rourke,

My husband and I vehemently oppose Equity proposed project to build over the Garden Garage for a number of reasons:

- First and foremost will decimate our view of The Custom House and downtown. This will not only diminish our property value, but will block my very favorite thing about our individual condo. Equity under no circumstances should be allowed to build anything higher than the current existing building.
- The West End is a lovely downtown location with a neighborhood feel – which is why my husband and I chose to buy here 8 years ago. It lost some of that charm when Equity built "The West End Apartments" a couple years ago and will further deteriorate with these new massive structures.
- Mayor Menino made a promise to this community in May 2009 that no large buildings were to be built in the West End if the community was against it. My husband and I passionately oppose these structures and want the mayor and the city of Boston to live up to their promise.

We beg of you to take into account our and our neighbors pleas to stop Equity from building these structures. It will negatively impact many people and the quality of living we treasure. We have all worked very hard to find, buy and maintain this place we love and all call home. Don't let a real estate monster like Equity take that away.

Sincerely,

Suzi and Peter Reynolds

Christine Wennersten
6 Whittier Place, Apt. 4F
Boston, MA 02114-1415
Tel: 617-523-0532

March 7, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am strongly opposed to more Equity Building Projects. Having lived here since 1964 I have experienced the Big Dig, the removal of the Overhead Elevated, the lengthy construction of the West End apartments among many. Some have added to the pleasure of living here. I love the open green spaces and being able to experience nature in our lovely downtown Boston setting.

I own a lower floor apartment at 6 Whittier Place and will have no natural light in the apartment due to the proposed buildings. I do not have any view, but I would like to have the sun shine in once in awhile.

In May of 2009 Mayor Menino promised the residents of the West End that there would not be any new construction, if the neighborhood was opposed to it. We don't need any more buildings here. I hope Mayor Menino will honor his promise to our community.

The buildings Equity proposes do NOT benefit our West End and should NOT be built. We do not need any more buildings here.

Sincerely,

Christine Wennersten

March 7, 2011

Jay Rourke
Boston Redevelopment Authority
One City Hall Plaza
Boston, MA 02201

Dear Sir,

This letter is in response to the Equity plan for development of the Garden Garage.

The plan is totally unacceptable. Equity has just completed a large scale development in Charles River Park that substantially increased local population density and the new project on top of that will convert the area into a forest of high-rises. I moved to 8 Whittier six years ago largely because it offered something of a breathing space in an urban environment. This space is quickly disappearing.

Boston does need more housing but there are so many other appropriate sites nearby (at least three on Washington Street, the government center garage . . .) in areas of far lower residential density. Why force so much development on the West End?

Sincerely yours,

George Lukas
8 Whittier Place, apt 23A
gl@cs.umb.edu

Rourke, Jay

From: pageosborn@rcn.com
Sent: Saturday, March 05, 2011 4:26 PM
To: Rourke, Jay
Cc: whittierplace@rcn.com
Subject: Garden Garage Project PNF Comments

Dear Mr. Rourke:

I have been a resident/owner in the West End for over 25 years. I am deeply upset about Equity's proposed building of towers incorporating the Garden Garage Project. This is entirely unacceptable to me. Equity should not be permitted to build anything higher than what currently exists.

Several years ago Equity came in and proposed and built several buildings between Whittier Place and Massachusetts General Hospital. We are now over- populated and these buildings have resulted in a great increase in traffic in the area.

Now Equity is back with yet another idea of constructing additional high rise buildings. This can only benefit Equity and harm the West End. It will totally bring traffic to a standstill. Regardless of the type of housing, it will result in added disruption, discarded trash, and perhaps crime and nuisance whichthe will be an added expense to us.

It is imperative that the proposed building plans not be permitted in any form whatsoever. Each owner in West End has a vested interest in this area which should be honored. There is absolutely no doubt that it will affect our property values. In May of 2009 Mayor Menino promised the residents of the West End that he would not allow anyone to build towers in the West End if the community did not want it. I live here and violently oppose these towers. It is incumbent upon Mayor Menino to honor his promise to us. Anything else would be an outrageous abandonment of his promise.

Sincerely,

Katherine Page Osborn

Sent VIA Emmail and
regular mail

BOSTON MEDICAL CENTER
EXCEPTIONAL CARE. WITHOUT EXCEPTION.
The primary teaching affiliate of the Boston University School of Medicine.

Boston University School of Medicine

MARK G. SHRIME, M.D.
Head and neck oncologic and reconstructive surgery
ASSISTANT PROFESSOR
Otolaryngology/Head and Neck Surgery
Boston Medical Center
Boston University School of Medicine

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

7 March 2011

Dear Mr. Rourke:

The Garden Garage Project proposed by Equity Residential is completely unacceptable to me.

Three years ago, my wife and I transplanted from New York City to Boston, and we have spent our entire time here in the West End. We rented for a year but loved living in the West End so much that we almost immediately bought our apartment in Whittier Place.

We specifically chose the West End because of its open space, its wide vistas, and its views of the airport, the Charles River, and the Boston skyline. We absolutely love this neighborhood.

Unfortunately, the West End is becoming overbuilt. In May of 2009, Mayor Menino made a pledge to the residents of the West End that towers would not be built here if the community did not want them. I am a part of this community, and I very strongly do not want the towers. While we very much appreciate Equity's contribution to this neighborhood, they should not be allowed to build anything on the Garden Garage site that is higher than what is already there.

Doing so will not only radically alter the landscape of the neighborhood, but it will also devastate the traffic flow (on a one-lane exit from Storrow drive which competes with traffic to I93), the tenor, and most importantly, the character of this neighborhood in which we have made our home.

I am very strongly opposed to the towers that Equity residential proposes.

Thank you.

Sincerely,

Mark G. Shrime, MD

820 Harrison Avenue | FGH Building, 4th Floor | Boston, MA 02118 | T. 617.638.7933 | F. 617.638.7965 | www.bmc.org
mark.shrime@bmc.org

Apt. 8 k
8 Whittier Place
Boston, MA 02114-1410
March 5, 2011

Mr. Jay Rourke
Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

In Re: Garden Garage Project PNF Comments

Dear Mr. Rourke;

As a resident of Charles River Park for the past 37 years, I am opposed to the proposed Garden Garage Project. The project is ill conceived and detrimental to the West End Community and for Boston, as a city people want to live in, to establish and maintain their families' roots.

The alleged reasons for demolishing the existing garage structure can be "cured" by modest changes without destroying the architectural integrity of this iconic building of the 1950's. The Garden Garage is within the contextual motif of the Greater Boston Redevelopment plan.

The quality of a city's life depends on a stable, multi generational, and income population sharing space and amenities. This project's focus is to provide expensive, small apartments designed to serve a young, transient population, people who are not putting down roots in our community. It threatens the very core of our community and its shared green space, the Park.

The Project must not be built.

Sincerely,

Dorothy A. Donovan
DOROTHY A. DONOVAN

Richard M. Kavaler
8 Whittier Place, #15D
Boston, MA 02114

March 6, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke:

I am writing to let you know that I am strongly opposed to the towers that Equity has proposed to build in the West End.

I have lived here for more than 20 years, first as a renter and then as an owner. This is my home and this project will have a serious negative impact on the community and the overall well being of residents, businesses and the area as a whole.

The traffic along Martha Road/Lomasney Way is already quite heavy and noisy, especially when there is an event at the TD Garden. The building of new residences along this road will create much more traffic both during construction and after completion. The construction will take years and cause much noise disturbance and inconvenience for all of us in this area. The West End is wonderful because of its open spaces and beautiful views of the sky. This project will put an end to these. It will take away from what makes this part of Boston such a great place to live.

I would ask that you give serious consideration to whether this project will be of benefit to anyone other than Equity itself.

Very truly yours,

Richard M. Kavaler

Richard M. Kavaler

Apt 8 k
8 Whittier Place
Boston, MA 02114-1410
March 2, 2011

Mr. Jay Rourke
Project Manager
Boston Redevelopment Authority
1 City Hall Square
Boston, MA 02201-2043

In re: Garden Garage Project

Dear Mr. Rourke:

Having attended all the BRA sponsored meetings, listened to Equity's presentations, read all the documents provided by the BRA pertaining to this specific redevelopment project and after reviewing BRA documents relating to the development of the portion of the West End known as Charles River Park, I cannot support any component of this project.

The project fails in all of its stated objectives and does not conform to the BRA's vision, as delineated in its own documents, i.e. the establishment of an urban community whose centerpiece is a park creating a green space offering a sanctuary and amenities for all to enjoy.

In May of 2009 Mayor Menino stated to the West End community that if the community did not want the towers built they would not be built. We do not want this project built. I believe the Mayor is a man of his word.

Sincerely,

Marlene R. Meyer

MARLENE R. MEYER, M.D., J. D., L.L.M.

Theresa Raso
6 Whittier Place 6N
Boston MA, 02114
617-723-8848

March 09, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

I am a resident of 6 Whittier Place and have lived here for 15 years. During this time I have endured the constant blasting of the BIG DIG, The removal of the PEDESTRIAN BRIDGE and the building of the WEST END APARTMENTS. I feel I have lived in a war zone. No community in the city has endured and been exposed to so much upheaval for such a long time without any future benefit to its quality of life.

As a community, our tax base produces per square foot, one of the highest revenues; while receiving no city services, especially the lack of a public school for our children.

It is time for the city **not** to pay homage to its POLITICIANS & DEVELOPERS and to provide its citizens with the quality of life they deserve and pay for.

This development **does not enhance** our community. It is unacceptable and should never be built!!!

Sincerely,
Theresa Raso

Rourke, Jay

From: Sheri Shahriar [sherishahriar@gmail.com]
Sent: Wednesday, March 09, 2011 11:40 AM
To: Rourke, Jay
Cc: whittierplace@rcn.com
Subject: Garden Garage Project PNF comments

Dear Mr. Rourke,

I am **strongly opposed** to the towers **Equity** proposes to build. I have bought my condo in 2008 and I like the feel of open space and don't want to to have two large and ugly buildings blocking the greens and openness,(my condo is facing the garden). Also mayor Menino should **not** allow this project to go through according to his promises, and if these buildings are higher than the Hawthorne places it would effect the value of my property which is not acceptable to me.

Sincerely,
Sheri Shahriar
9 Hawthorne place

Rourke, Jay

From: Lucio Mercurio [lucio.mercurio@gmail.com]
Sent: Wednesday, March 09, 2011 2:39 PM
To: Rourke, Jay
Cc: Lucio Mercurio
Subject: Garden Garage Project PNF Comments

03/09/2011
Jay Rourke,Project Manager
BRA
One City Hall Square
Boston,Ma 02201-1007

Garden Garage Project PNF Comments
Dear Mr.Rourke,
I am very strongly opposed to the towers that Equity proposes to build in place of the "Bubble Garage".
I am a college Professor of Architecture and Interior Design and an homeowner in the West End;both as a resident of the West End and as a professional engaged in the field of Architecture and Design I believe it is outrages that an area such as the this famous as the last residential open and green space in Boston would be totally ruined if Equity is allowed to proceed with their project.We residents of the West End strongly object to such out of scale project which would not only destroy the character of our neighborhood,but would also lower the value of our real estate,increase traffic,both pedestrian and vehicular,would cause an increase in pollution,and would drive a few residents away from this area.
I would also like to remind all parties involved in this decision,that Mayor Menino promised the West End community that no towers would be allowed to be built if the residents did not agree with this kind of development.Mayor Menino must keep his promise as we residents of the West End strongly and with out reservation oppose the proposed project by Equity.
Thank you ,Professor Lucio Mercurio

Joan Stein
2 Hawthorne Place Apt 3B
Boston, MA 02114
617.248.0089
March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

As a 30 year resident of the West End and a condo owner at Hawthorne Place, I vehemently oppose the towers Equity proposes to build. I oppose the constant construction noise, dirt generated by the project and rodents that run rampant.

Equity built several new apartment buildings (West End Apartments) with 310 units in 2008 and it's something I don't want to have to live through again. The noise and dirt generated from this last project were unbearable. I noticed in the PNF Section 3.2.12.2 Construction, assurances are given for the mitigation of construction noise. It's impossible to make construction noise-free and Equity demonstrated this during the construction of the West End Apartments. Mufflers on diesel engines won't accomplish anything and I don't know who Equity thinks they're fooling.

All those new West End Apartment dwellers have already put pressure on the neighborhood resources like Whole Foods and CVS. An increase of 500 more units will stretch the resources even further.

If this new project goes forward, it will destroy the residential quality of this neighborhood and will certainly destroy my quality of life here. In May 2009, Mayor Menino promised the residents of the West End that he would not allow anyone to build towers in the West End if the residents didn't want it. Well, we don't. I'm very disappointed that Mayor Menino would even consider going back on his promise.

Yours truly,

Joan Stein

Rourke, Jay

From: Gary Purdue [gpurdue@rcn.com]
Sent: Wednesday, March 09, 2011 6:30 PM
To: Rourke, Jay
Cc: whittierplace@rcn.com; ivy@ivyboston.com
Subject: Garden Garage Project PNF Comments

Gary and Kimberly Purdue

#5E

9 Hawthorne Place,

Boston, MA 02114

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr Rourke,

My wife and myself started living in Hawthorne Place in 1995. We first rented an apartment and eventually purchased one because we enjoyed the community and the ambience of living in Charles River Park with its park like setting and relatively small buildings that have a decent amount of space between them.

We live in a corner apartment that abuts the Garden Garage and appreciate the view of the Zakim Bridge from a bedroom and the view, from our living room, over the basketball court abutting the Garden Garage, of the Custom House Tower and the city of Boston. Since we live so close to the proposed development, it will have a detrimental impact upon our quality of life.

We have both had the opportunity to live in different cities in the United States of America and Europe and feel that the quality of city living is enhanced by building upon a human scale.

Charles River Park already has the monstrosity that is Longfellow Place, the community does not need another.

Sincerely

Gary and Kimberly Purdue

February 24, 2011

B.R.A.

2011 FEB 25 P 12:41

Jay Rourke
Senior Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Dear Mr. Rourke:

This letter is in response to the proposed Garden Garage Project in the West End. Please accept my apologies in advance if any of what is written within these pages sounds like a repeat of something you have heard from other residents in the area. I hope you will treat it as an individual submission and carefully consider its contents.

Land, air and light are important facets of the atmosphere surrounding Charles River Park. The proposed project will jeopardize the calm and safety of the neighborhood in more ways than one, both during the construction phase, and beyond. It is simply too big, too massive, and too dense for the area in which it is being proposed.

One major objection that I have about this project is the inclusion of affordable housing in the mix. I'd like to voice this concern by way of comparison. Between 2003 and 2007, I lived in a condominium on Upton Street in Boston's South End. The building had three exposures; one of these looked out over an alley that runs between the back of the building and the Villa Victoria housing project. My bedroom looked out onto that housing project. The residents of this development were very disruptive and inconsiderate. There was constant concern amongst the neighbors regarding crime, noise pollution, and general safety. I found myself calling the Boston Police on numerous occasions to report disturbances of the peace. The West End is one of the safest – if not THE safest – neighborhood in the city. To put it politely, affordable housing will invite a certain population that is not consistent with the current demographic make-up of the neighborhood; with this will come the likelihood of an increased crime rate, as well as a safety threat to the whole community. I don't want my neighborhood to be bordering on third world, or, "ghetto" status.

Another negative aspect of the Project concerns the height of the proposed buildings. Two 28-story buildings would certainly cut out the light that flows into the Park. The height of the proposed structures is totally out of scale with the rest of the current residential buildings in the Park, and is in violation of the zoning laws for that area. You're asking to build two 310-foot-high structures, when the maximum height allowed – without a variance – is 125 feet. Two tall buildings relatively close to each other will also create a terrible wind tunnel. The proximity of the current buildings in Charles River Park to one another already creates such a tunnel on windy days; another one would be unwelcome. If you have to build at all, the project should be on the scale of Amy Lowell House and West End Place; one building, long and low, no larger that the existing footprint of the garage, and no taller than the bubbles that sit on top of the existing structure.

A third issue concerns accessibility of emergency vehicles. The amount of parking proposed will cause constant pollution as well as unceasing traffic. This will pose problems for emergency vehicles that may need to gain access to any of the surrounding buildings. God forbid someone should go into cardiac arrest and an ambulance is not able to gain access to their location. Can you imagine the lawsuits that would follow if that individual died as a result?

I have lived in several parts of the city throughout my life. My move to Whittier Place came in January of 2007, and I decided at the time that this is where I wish to spend the rest of my days on this planet. I pay a hefty condo fee each month, and enjoy my view of the Customs House tower and downtown Boston. If your project goes forward in its current format, I will expect one of two things from the BRA and the City of Boston: 1) a tax abatement and /or 2) annual subsidization of my condo fees, once you have built and have blocked my view. Thank you for the opportunity to voice my concerns.

Sincerely,

Meg Mill

Meg Mill
6 Whittier Place, #10E
Boston, MA 02114

cc: Mayor Thomas Menino
Nicole Leo
City Councilor Michael Ross
Representative Marty Walz
Salvatore LaMattina
John Palmieri, BRA Director

FLAVIN ARCHITECTS

March 29, 2011

Architecture

Planning

Interiors

Mr. Jay Rourke
Senior Project Manager
Boston Redevelopment Authority
Boston City Hall
Boston, MA 02201
Jay.rourke.BRA@cityofboston.gov<mailto:Jay.rourke.BRA@cityofboston.gov>

Re: Garden Garage Project

Dear Mr. Rourke

As a business and property owner at 175 Portland and neighbor to the proposed Garden Garage Redevelopment project, I would like to express my strong support.

The addition of this infill housing will help bring vitality to the long neglected Lomasney Way. The open space and path between the towers will provide a beautiful gateway to Thoreau path and a connection between Mass General and the Bulfinch Triangle/North Station district.

The addition of housing will help complement the existing uses of the neighborhood and help achieve the BRA's goal of a live-work-play district.

I strongly urge you approve this project.

Very truly yours,

Colin Flavin AIA
Flavin Architects LLC.
Cc: Mayor Thomas Menino

Z:\Office\Management\Colin\2011_03_29 Equity Letter.docx

175 Portland Street
6th Floor
Boston, MA 02114

T 617-227-8717
F 617-227-8306
www.flavinarchitects.cc

Rourke, Jay

From: Christopher deRham [jcder@rcn.com]
Sent: Tuesday, February 22, 2011 8:30 PM
To: Rourke, Jay
Subject: Garden Garage project

Jay:

I would prefer that this project be CANCELLED, but if it is to happen, I would ask for two things: 1) please reduce the size of the project and 2) please make every attempt to reduce the noise that accompanies both the demolition and construction phases of the project.

Sincerely,

Christopher deRham
9 Hawthorne Place
Apt #15C
Boston MA 02114

Henry Einhorn
150 Staniford Street,
Apt. 617
Boston, MA 02114

Mr. Jay Rourke
Senior Project Manager
Boston Redevelopment Authority
Boston City Hall
Boston, MA 02201

Dear Mr. Rourke:

As a resident of West End Place, I am submitting my concerns with the Garden Garage Project to be located at Martha Road and Lomasney Way in our West End Neighborhood.

Of utmost concern, the height of the proposed towers, particularly the one adjacent to our West End Place building will block out the great majority of the sky for my family and an estimated half of the neighbors in our building. I appreciate that the shadow studies will demonstrate that the proposed buildings' shadows may fall on those across the street on Lomasney Way or Martha Road, but these studies will not take into account the buildings' effects on darkening the courtyard and apartments of West End Place. These negative darkening effects could be significantly alleviated by reducing the height of the two towers.

The developers have indicated that they require all of their 500 plus planned units in order to make the project profitable. I will not address my skepticism of this claim, because I have not been privy to any financial data that might underlie their claim. However, any reduction in the number of apartments (from reducing the height of the two towers) could be alleviated by constructing a single lower building that utilized the entire footprint of the current garage instead of the current proposal that includes a very broad "walkway entrance" into the Park.

The current proposal has a "walkway entrance" into the Charles River Park (the Park) that is only a relatively few feet east of the current entrance which is located between the current garage and the Amy Lowell apartment building that is immediately west of the garage. The provision of a new and significantly wider entrance, between the two proposed towers is entirely unnecessary for pedestrian access to the Park and beyond. Moreover, this duplicative "entrance" adds nothing to the aesthetics of the Park, itself. The aesthetics of the Park are appropriately viewed from the perspective of individuals who are walking, sitting or otherwise engaged within the Park. In this respect, the addition of two new looming towers will necessarily have a confining impact, one that is directly contrary to the feeling that people historically have had while traversing or relaxing in the Park.

In order to retain the aesthetic integrity of the Park, the proposed project should not exceed in height those buildings (Whittier is the tallest) that are adjacent to it in the Park. The Park can be viewed, I believe, as a 20th century counterpart, albeit for a larger and more densely populated Boston, of the urban parks that were the focus of many 19th century neighborhoods, e.g., Chester Square, Blackstone Square, and the more extensive Commonwealth Avenue park. I am not aware of any 20th century effort to develop a comprehensive urban neighborhood comparable to Charles River Park. Just as Boston has rejected efforts that would impinge upon the aesthetics of the Commonwealth Avenue area by adjacent high rise proposals, we should similarly constrain efforts to construct excessively high buildings abutting the Charles River Park.

In this respect, the Longfellow Towers cannot be accepted as precedents for the height of the Garden Garage Project. Longfellow was built in recognition that its neighboring buildings in the Park would be lower buildings removed by up to several hundred feet west or north of the two narrow towers. By contrast, the proposed Garden Garage Project abuts within roughly 20 feet of its immediate neighbors.

As currently presented, there are other problems with the proposed project. These, I believe, have been identified by others including, for example, the addition of almost 200 new parking spaces to a location that currently is a traffic bottleneck during rush hours as well as before and after events at the TD Garden, and the question of properly venting the exhaust of 500 autos trying to leave the enclosed garage area after each TD Garden event (will the exhaust fans be directed towards a neighboring building, and how much additional decibel noise will be created by the exhaust fans?).

I look forward to hearing of the response to these issues.

Sincerely,

Henry Einhorn
(sent by e-mail)

Copies to:
Denton Crews (please forward to Bill)
Jane Forrestal

Mary R. Lesko
9 Hawthorne Place #8-O
Boston, MA 02114
617-227-5510
maryrlesko@yahoo.com

February 23, 2011

Jay Rourke, Sr. Project Manager
Boston Redevelopment Authority
One City Hall Plaza
Boston, MA 02201

Re: Proposed Garden Garage

Dear Mr. Rourke:

I am writing in response to your request for feedback on the Garden Garage proposal from Equity. I am a long term resident worried about the further assault on the density and disruption to my West End neighborhood. Having lived through Equity's previous damage to same, my concerns include:

- **Building Shape and Size** – The buildings should not be any higher than the existing abutting buildings and limited to current zoning requirements.
- **Floor to Area Ratio (FAR)** – I strongly oppose a 50% increase in the FAR. The current zoning FAR of 3 was at one time deemed appropriate for this area and should be maintained.
- **Number and height of building** – As proposed the buildings infringe on the open air and light onto Thoreau Path.
- **Housing Mix** – Do not limit unit size to studios and 1 bedrooms – but allocate at least 5% of the unity to 3 bedrooms to provide for the needs of the city for family friendly housing.
- **Parking** – The increase in parking is offensive. The existing number of parking spaces should be maintained, along with the parking ratio of .60.
- **Resident Amenities** - Mitigate the loss of public recreational amenities with a Community Center. The residents and community are losing Basketball City, the children's Annex, tennis courts, access to electrical outlets and the exercise room at Basketball City. Bocce Court area designated is not enough considering the loss of significant recreational options.
- **North Station Traffic** - I am not in favor of the objective to improve pedestrian access through the site and would rather minimize entrances as traffic does not need to be encouraged to trod through the space.

In summary I feel the project is just too big, too massive and too dense. Thank you for the opportunity to provide feedback to the proposal.

Very truly yours,

Mary Lesko

150 Staniford Street #718
Boston MA 02114
February 11, 2011

Mr. Jay Rourke
Senior Project Manager
Boston Redevelopment Authority
Boston City Hall
Boston MA 02201

Dear Jay,

As a resident at West End Place I laud Equity's Garden Garage Project proposal for an underground mega-garage to accommodate residents, city visitors, workers and patrons for Garden events; but, am very concerned it may acerbate the existing problem of traffic exiting from the garage unto Lomasney Way after a Garden event.

The police make Lomasney one-way toward Staniford so I have to use Martha Street and Lomasney to turn right into the easement for WEP garage. On one occasion I was in the right lane, with the right turn signal flashing, and a frantic police officer was vigorously signaling me to turn left toward Nashua Street.

With the window down I said I live here and want to turn into our garage. He blew a casket! He screamed to turn left and banged his fist on the car's roof. I exercised civil disobedience and turned right. At a latter event a young rookie-type officer directing traffic saw my turn signal and waved me in.

I respectfully suggest Lomasney be used as an entrance and the Longfellow garage entrance/exit as the egress to Staniford; or, using both for entering and exiting.

Sincerely,

Mark

Dr. Mark Adams

Rourke, Jay

From: kmanning10@aol.com
Sent: Tuesday, March 15, 2011 6:50 PM
To: Mayor
Subject: Fwd: GARDEN GARAGE PROJECT: EQUITY RESIDENTIAL
Attachments: P1010021.JPG; P1010022.JPG; P1010025.JPG; P1010067.JPG; P1010068.JPG

Hello:
I originally sent this to Mr. Manino back in October. The project has moved along. Please have Mr. Menino read this himself and look at the views that I paid for in my purchase price and continue to pay a premium for to live here. Please, no new towers. These towers are for *renters*; temporaries; not homeowners, like me and my neighbors who buy, live and pay taxes here in Boston.

Katharine Manning

-----Original Message-----
From: kmanning10 <kmanning10@aol.com>
To: mayor <mayor@cityofboston.gov>
Sent: Tue, Oct 19, 2010 6:56 pm
Subject: GARDEN GARAGE PROJECT: EQUITY RESIDENTIAL

10/19/2010

Dear Mayor Menino:
I'm writing to you to express my deep outrage and concern over the new project being proposed at the site of the Garden Garage by Equity Residential. Mr. Mayor, you promised after the major work Equity was permitted to construct in the West End in 2004 - 2007, that there would be no more buildings going up in the West End. I believed you!

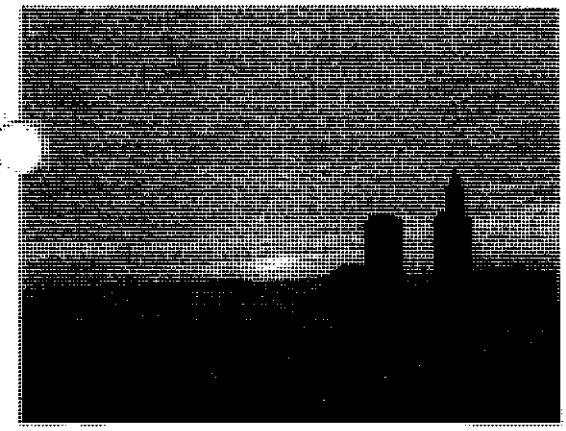
Here we are a few short year's later, and Equity is at it again; proposing two new TOWERS; 24 and 31 stories each. Mr. Menino, I implore you to keep your word and tell them **NO**!

I live at 8 Whittier Place. When I bought my condo in 2007, I purchased it expressly for the special views. I enjoy the sunrise over the Boston harbor each morning, I relax watching the planes take off and land at Logan Airport, I can see the lighthouse flashing in the distance in almost any weather, and can also see the harbor islands. I even remodeled my kitchen after purchase, expressly to capture this view while I'm there. I do not want this taken from me by Equity Residential. I live and work in Boston. I am not a renter, I am a home owner. I am writing to you to assist me in protecting my investment, and my home's valuation, both monetarily and spiritually.

Mayor Menino, I ask that if you not approve Equity Residential's proposed construction of new towers.

Attached are images of my views from my living room and balcony.

Sincerely,
Katharine Manning
8 Whittier Place
Boston, MA



Denise Rollinson MD
6 Whittier Place, 3 J
Boston, MA 02114

Jay Rourke, Project Manager

Boston Redevelpment Authority

One City Hall Square

Boston, MA 02201

3/6/2011

Dear Mr Rourke,

I must protest my adamant opposition to the development of the two new buildings by Equity Residential at Charles River Park. I am an Emergency Medicine physician and I have lived here for 20 years. It is unconscionable for Equity to build two new high rise condo/apartment buildings on this already crowded property.

The new TD North facility was built, without proper enlargement of the roads or appropriate parking places. As a result I can barely leave my parking place to go to work if there is a Celtic or Bruins game or some other event. Does Equity have plans to enlarge the roads, such as Martha's Road, Staniford Street, Cambridge Street and Storrow Drive?

When the West End Place was built, dogs were allowed. I am a dog lover, but not a lover of dogs in the city with irresponsible owners who let their pets defecate and urinate on the property of other people. Every season we pay premium condominium fees to maintain and replace the grass and gardens that enhance the beauty of our property. Whittier Condominium trust does not allow dogs in order to keep the greens and gardens clean. Yet, the folks who live in the West End Place walk their dogs and let them defecate and urinate on the Whittier Place property, at our expense. Does Equity have a plan not to allow pets in these two new buildings? Has Equity even thought about this?

Whittier Place does not allow skate board riders on the property, yet children from the West End Place ride their skate boards around the Whittier Place gardens and greens. There is a sign that no skate boarders are allowed, yet every day, I am almost run over by these teenagers who do not realize the consequences of their actions. This is dangerous behavior, for both the skate boarders not wearing helmets and for the pedestrians sharing the walking paths and patios. Does Equity plan to build a skating park for the teenagers who will inhabit the high rises?

Denise Rollinson MD
6 Whittier Place, 3 J
Boston, MA 02114

Does Equity plan to build more food stores in these condominiums/apartments? If not, does Equity care that the Whole Foods is already overcrowded because of the additional units at CRP and because of the thousands of employees at MGH who shop there? J Pace & Sons is so crowded at lunch time, that it is almost impossible to go there now.

The beautiful gardens and greens that I pay for with my condo fees are infested with people from MGH and West End Place every day. Does Equity plan to build a food court and garden for the residents of their two new high rises? Is this low income housing and are the residents going to pay high condominium fees like we do to maintain the beauty of CRP?

The gym at CRP includes an outdoor pool which gets very crowded in the summer. Does Equity plan to build a pool and gym for its new residents?

We all know that Equity will earn a nice sum of money for allowing this project to proceed. I simply ask you "how would the big bosses of Equity feel if I built a high rise in their very own back yard?" Oh, sorry, those guys live in places like Weston where there are strict building codes.

We have endured the big dig, the development of many other buildings, and quite frankly, we are out of room. We are sick and tired of being manipulated by greedy builders who do not care about enhancing the neighborhood.

Equity needs to build a gym, a pool, provide gardens for their residents, prohibit dogs, build appropriate parking lot, enlarge the roads, have a plan to enhance the CRP community, and include food stores if they proceed with this project.

I am disgusted at the greed and carelessness of Equity. I beg you to reconsider their plans to ruin the CRP development which is truly an oasis in a desert.

Thank you

Sincerely

Denise Rollinson

Denise Rollinson MD

Daniel T. Gallagher & Mimi Fong-Gallagher
8 Whittier Place #7E
Boston, MA 02114
617-227-9641

March 11, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

We are residents and property owners in the West End, and we are writing to express our strong opposition to Equity Residential's plans to build apartment towers on the Garden Garage site.

We have lived in the West End for twelve years, the last ten as home owners at Whittier Place Condominium. We have a 9-year old daughter and, like many of our West End neighbors who have young children, we have chosen to remain in Boston and send our child to the Boston public schools rather than flee to the suburbs, despite the fact that we have the means to move there if we wished. We have stayed in the city in large part because the physical surroundings of the West End/Charles River Park, in particular the lack of overcrowding and congestion, make it a safe and pleasant place to raise a family.

Equity's development plans for the Garden Garage, however, are a step in the wrong direction for this neighborhood. Open space in Charles River Park, already diminished by Equity's prior construction along Blossom Street, will be further depleted by the building of additional apartment towers, and sunlight will be further crowded out by shadows. Not only will this have a negative impact on the value of existing residential properties, it will also negatively affect the quality of life for West End homeowners. If Equity's plans are permitted to go forward unchecked, it is probable that we will choose to leave this neighborhood within the next year.

We are offended by Equity's constant efforts to remake our neighborhood in its image. Just as with its initial plans to develop the Blossom Street garage site, Equity has proposed massive towers for the Garden Garage site that will result in overcrowding of the West End, not to mention years of construction-related noise and pollutants in the neighborhood, and all without any regard for the rights and well-being of the existing property owners and residents in this neighborhood.

Because Equity has proven itself incapable of coming up with a reasonable proposal for the development of the Garden Garage that appropriately takes into account the interests of current West End residents, we are looking to the BRA to impose this discipline upon Equity and send it back to the drawing board. What the West End needs is a moratorium on further development. Barring that, the BRA should not permit the construction of any building that would exceed the height of existing structures on the site being developed.

We trust that the BRA and Mayor Menino will approach Equity's development plans for the West End with the interests and well-being of existing West End homeowners and families in mind.

Yours truly,

Daniel T. Gallagher · M. Fong-Gallagher

March 9, 2011

Sandra Swaile
9 Hawthorne Place-5B
Boston,Mass 02144

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston,Ma 02201-1007

Mr. Rourke;

I am writing to express my concern with the outrageous development plans for the bubble garage in my neighborhood.

140 parking spaces for 500 units is totally unacceptable.
The existing garage is filled to capacity for every event @ the Garden.
And the City intends to remove most of the parking @ the Government Center Garage when this project comes on board again?

I am tired of listening to these 4 car suburban Macmansion developers telling us that every one will take the T. What T ?

I personally am living without a car, but even now having a visitor or service call can create quite a challenge.

Equity's response will be that they need the 500 units to justify the cost of the underground parking.

Then possibly this development should be put on hold for a later time.

Sincerely,

Sandra Swaile

6 Whittier Pl. 9B
Boston, MA 02114
March 9, 2011

Jay Rourke, Project Manager.
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

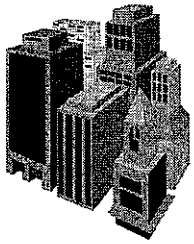
Re: Equity Garden Project

Dear Mr. Rourke,

I am a Whittier Place homeowner, and have lived here for almost thirty years. (the proposed building) will benefit only Equity and will hurt the (abutters) leaving shadows, blocking views and causing congestion and noise. Please reject the entire proposal and require Equity to work within the existing height limits. The Mayor promised us our wishes would prevail. He promised no build.

Sincerely,

Gala M. Lipshutz



from the desk of JOSEPH P. VENTI
9 Hawthorne Place,Apt.5D
Boston, MA 021114
857-891-3181

March 9, 2011

Mr. Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

RE: Equity Garden Garage Project

Dear Mr. Rourke:

Conversely to the many letters that you will be receiving from an organized effort to oppose the Garden Garage project, I would like to support the plans as presented at the last meeting. I do this in that as the plans now stand, I stand to gain a view from my apartment.

However, I would like to urge the BRA to consider to somehow incorporate an elementary school on the proposed site or somewhere close to the West End and Beacon Hill.

Thank you for your patience and the work that you have put into this venture.

Very truly yours,

Joseph P. Venti

Rourke, Jay

From: Catherine Willis [iamcatherine@comcast.net]
Sent: Sunday, March 06, 2011 6:06 PM
To: Rourke, Jay
Subject: Equity's New Development in the West End - Please don't stop the building project

Greetings ~

I am writing to let you know that not all residents of the West End are opposed to Equity Residential's new development in the West End.

I think the new apartments will be the impetus for new (and muchly needed) commercial establishments in the area. Perhaps we'll even also finally get a grocery store (other than the very expensive Whole Foods).

I was at one of the recent public meetings at the Shriners Hospital, and I was embarrassed by the NIMBY mentality of the speakers! I felt that they were just saying anything negative that they could think of in hope that you'll just go away. Please don't think that everyone is of the same mind.

If there was one suggested change in the design, perhaps instead of making an open-air walkway from Lomasney into the greenspace, the design could be changed to mimic the beautiful archway on the West End Apartments building. By building apartments over the archway, this would allow you to lower the height of the buildings and also show that you are listening to the comments of the public. The arch shouldn't be exactly the same as on the West End Apt. building, but with the right design, I think that it would beautiful and very inviting to people who are walking through to the green-space.

By the way, below you will find the email message that the WECA sent to their members.

Thank you.

Catherine Willis
4 Longfellow Place

----- Original Message -----
From: WECA - Boston
Sent: Sunday, March 06, 2011 4:05 PM
Subject: IMPORTANT - LETTER WRITING CAMPAIGN TO OPPOSE EQUITY'S DEVELOPMENT

Rourke, Jay

From: Lily DeForest [lilydeforest@yahoo.com]
Sent: Friday, March 11, 2011 5:10 PM
To: Mayor; Rourke, Jay
Cc: Ross, Michael (City Council)
Subject: Equity Residential Propose West End Garden Project

Gentlemen,

This email is in response to BRA's request for feedback about Equity Residential's proposed development in the West End. I have been a resident of the West End for the last five years and have lived at both Emerson Place and Whittier Place. My comments are below.

The height and footprint is not in keeping with the neighborhood. The proposed 28 and 24 story high rise buildings will dwarf the other West End buildings causing shadows, wind tunnels and cutting off light, air, views and the feeling of open space. We will also loose recreational facilities. I understand that there is a height restriction in this area and that a variance is necessary to build higher than this restriction.

The increase in traffic due to the extra parking spaces leased to the Boston Garden will exasperate the current traffic congestion. Currently all garden events tie up traffic on Martha Road when events are starting and ending. It is not uncommon to sit in traffic for 45 minutes after Garden events just to travel one block. This is of concern to Whittier Place residents as we can only leave via Martha Road because of the poor road design.

The introduction of 500 units to this neighborhood is unnecessary when we have close to 1,000 units vacant in the surrounding neighborhoods. The planned housing mix of one bedroom and studios invites transients only. This neighborhood needs a stable family environment in order grow and flourish.

In summary I support replacement of the garage, but cannot support the creation of two high rise buildings that will only bring in transients, tie up traffic and close in Charles River Park. I support development that would improve the neighborhood. This would be replacing the garage with a building that is at most the height of the current garage with larger units making it available to families. The West End was destroyed in the 1960's and has been neglected ever since. People that live at Charles Rive Park love the neighborhood because of the location, convenience and open spaces. It is a shame that the only development planned is for expensive small units for short-lived visitors to Boston.

Respectfully yours,

Lily DeForest
6 Whittier Place, 12N
Boston, MA 02114

Rourke, Jay

From: Andy Burnes [aburnes@HALLKEEN.com]
Sent: Saturday, March 12, 2011 6:09 AM
To: Rourke, Jay
Cc: gwhite@eqrworld.com; Denton Crews; Mark Hess; Steve Lodi; Jannel Satterwhite
Subject: West End Garage project

Mr. Rourke,

A bit belatedly, I am writing as the Managing Partner of the entity that owns Amy Lowell Apartments and the President of HallKeen Management which owns and manages 6500 units of housing throughout New England.

As you know we are direct abutters of the proposed project on the site of the garage and we have some significant concerns about the proposed project. I have quickly reviewed the public material available on the project and have three main concerns:

1. My current understanding is that Amy Lowell is the direct beneficiary (through an assignment from Community Builders) of a parking agreement with the Rappaport organization that reserved approximately 50 parking spaces for Amy Lowell residents. It is also my understanding that the current plan has only 15 spaces allocated for Amy Lowell. This is a *major* issue for the residents and the owners of Amy Lowell.
2. The overall impact of the construction activities will have significant negative economic and practical impacts. We have experienced smaller, similar construction projects and we expect that we will have higher vacancy in our market rate units and disgruntled elderly residents due to the various temporary negative impacts of the project, especially if the construction management process is not executed with substantial planning, care and follow through by EQR..
3. While we recognize and *welcome* the basic benefits of increasing open space and eliminating the garage in the neighborhood, we have concerns regarding the overall height and density of the project.

We look forward to working with the BRA and EQR as the project moves through the approval process.

Andy Burnes

Ivy A. Turner
7 Whittier Place, Suite 107
Boston, MA 02114

March 11, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Comments

Dear Mr. Rourke,

I attended the public meeting with an open mind and have read the PNF. I was a member of the IAG for the Equity Emerson Place residences and am an abutting property owner.

I have great concerns about the proposed Garden Garage project and urge you to reject it. It is simply too large and is inappropriate for this area.

The West End has recovered from past BRA mistakes and evolved into a highly successful community. Allowing 2 huge New York style skyscrapers to be stuffed in will cause great and irreparable harm to this community. The feeling of open space, parks and ample distance between buildings is how Charles River Park was designed and is what makes living here pleasant. These new buildings will completely change the feeling of space. I urge you to respect the neighborhood qualities that attracted so many people to make this area their home.

The proposed towers will undoubtedly cast shadows which may harm our mature trees and the beautiful gardens the condominium buildings and Amy Lowell residents, have worked so hard to create, and which so many people enjoy. Will Equity pay to replace these if they do not survive?

The new buildings are much too close to Amy Lowell Apartments and are on a street that is already severely congested. Martha Road is often impassable and can't possibly handle increased traffic from more than 500 new residents. The sidewalks are too narrow and are already overburdened. Highway ramps and train tracks limit the size of this road which is the ONLY way out of Whittier Place and Amy Lowell Apartments. I have often spent upwards of 45 minutes trying to drive just 2 blocks from Whittier Place in order to get to Storrow Drive. Emergency vehicles can't get through either creating additional hazards for our residents.

Please say yes to good urban planning, yes to the residents, and no to the developers.

Sincerely,

6 Whittier Place, #14A
Boston, MA 02114
March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Dear Mr. Rourke:

Re: Garden Garage Project, PNF Comments

I have been a resident/property owner at 6 Whittier Place for almost 13 years and anticipate remaining here for the rest of my life. Although I enjoy living here, the traffic is very congested along Martha Road and Lomasney Way when sports and entertainment events are held at the Garden. One of my primary concerns with the Proposed Project is that the entrance/exit of the garage onto Lomasney Way will further exacerbate traffic congestion, especially during critical situations when ambulances, fire engines or other emergency vehicles need to move quickly along this route. I urge you to relocate the entrance/exit routes of the garage onto Staniford Street and/or O'Connell Way to avoid the potentially life-threatening situations and major bottlenecks that will occur under the current plan.

Whittier Place is located in a park-like setting which encourages residents to walk along Thoreau Path to neighborhood stores and downtown Boston. Real estate advertisements have described the neighborhood as "an oasis in the city" surrounded by trees, grass and skylight. The Proposed Project includes two highrise buildings, 21-storey and 28-storey, facing Lomasney Way with the rear of the buildings abutting Thoreau Path. The existing zoning allows building heights up to 125 feet while the Proposed Project will go up to approximately 310 feet. This substantial increase in the height of the structures will be disproportionate to the adjacent buildings and the resulting concrete mass will adversely impact the ambience and residential character of the neighborhood. Therefore, the new structures should be limited to a height of 125 feet. In addition, the proponent should ensure that the buildings and surrounding area are attractive to pedestrians walking along Thoreau Path in keeping with the character of the neighborhood.

The Proposed Project will result in elimination of the Children's Annex, as well as the tennis and basketball courts. The loss of these recreational activities must be mitigated by providing the community with equivalent replacements.

Thank you for your consideraton.

Sincerely yours,

Margaret E. Foley

Margaret E. Foley

Jacqueline Soroko
Six Whittier Place, 9A
Boston, MA 02114
857.350.3997

Jay Rourke, Project Manager
Boston Redevelopment Authority
One CHall Square
Boston, MA 02201-1007

RE: GARDEN GARAGE PROJECT

Dear Mr. Rourke:

I am a resident of Charles River Park and have lived here since 2008, owning since 2009. I previously lived here from 1995 through 2003; clearly when the opportunity came to move again, I chose to return to Charles River Park. There are many factors, as you know, that go into choosing where one wants to live. As a senior, I required a convenient, easy and safe environment; as an active senior, I required access to artistic and recreational activities, the opportunity to walk to work, and Charles River Park's offering of outdoor park-like living.

I fear the construction as planned will remove some of the enjoyment and even value of my home. The proposed size is most definitely not in accordance with existing structures and not in accordance with promises that I understand were made by Mayor Menino in 2009. Besides being an eyesore, the size as planned will affect the 'feel' as well as the actual light of those of us who call this neighborhood home and who walk Thoreau Path on a daily (if not more often) basis. I trust this issue, which is a concern of many who live here, will be considered, and hopefully a building more in unison in size with the current structures will be the result.

I also strongly object to what I understand is the removal of both Basketball City and two tennis courts without the plan to replace them with comparable community recreational facilities. This seems unconscionable to me, particularly given the concept that this is and should remain a FAMILY-friendly neighborhood.

A further concern is the increased traffic pattern the additional residents and parking spaces will present. As it is, there are times you simply cannot merge onto Martha Road from Whittier Place, and it can easily take 10-15 minutes before you can get past the parking garage. Normally, this is an inconvenience, which can be extremely annoying on an ongoing basis, but please keep in mind our proximity to Mass General Hospital and the frequency of ambulances driving this road. Increased traffic equals an increased risk of these ambulances being delayed, sometimes in a life and death situation. I would hope an alternate exit will be considered.

As a resident who plans on living here for the rest of my life and as a taxpayer, I expect my fears and concerns to be very seriously taken into consideration by all who are involved in the decision-making regarding this issue.

I appreciate your time in reading and considering my thoughts.

Very truly yours,

Jacqueline Soroko

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

3-11-11

A. Louissaint JR, MD, PhD
6 Whittier Place - 3N
Boston, MA 02114

Mr. Rourke,

My name is Dr. Abner Louissaint. I am a physician at Massachusetts General Hospital. I've been a condominium unit owner at 6 Whittier for 3 years, and have lived in the Charles River Park for 6 years. One of the reasons that we enjoy living in this community is the open green space for our daughter and family to enjoy. The current construction proposal would introduce a disruption to the community and would significantly decrease the beauty and comfort of the space we all enjoy. I also believe that the construction proposal would significantly decrease property values. I ~~appr~~ would appreciate your consideration of the opinion of members of the community before you proceed with this project. I am strongly opposed to the towers Equity proposes to build.

Sincerely,

Abner Louissaint

RECYCLED U.S. CURRENCY

WHITTIER place
in Boston's West End

March 10, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

The Board of Trustees is writing to you on behalf of the Owners and Residents of Whittier Place to advise you that we find the proposal as presented in the PNF to be entirely out of scale and inappropriate for this location.

There has been huge opposition to this project from our homeowners and residents who are particularly concerned with issues of overcrowding, shadows, loss of views, increased wind, increased traffic and yet again living through an Equity construction project.

We urge you to enforce the current West End zoning and not permit towers at this location.

Yours truly,

Board of Trustees at Whittier Place Condominium

Henry Chace Edward J. Ford William (Kurt) Galatas
Alex Trombetta Ivy A. Turner Jane Wilson Susan Witkie

Six Whittier Place, Boston, MA 02114 • p 617.523.5676 • f 617.523.5214 • whittierplace@rcn.com • www.whittierplace.com

West End Parents Group

westendparentsgroup@gmail.com

westendparentsgroup.blogspot.com

Chiara M. Rhouate
West End Parents Group
8 Whittier Pl 12H
Boston, MA 02114
March 9, 2011

Wednesday, March 09, 2011

Dear Mr. Rourke,

We are residents of the West End. We are tax payers and residents who wish to remain in our neighborhood, and yet there is no public school located in the West End or Beacon Hill, with two walk zone schools, depending on where you are in our neighborhoods. Most families are only in one walk zone area for either the Eliot in the North End, or the Warren Prescott in Charlestown. These schools are not able to fulfill the seats we need for all of the children in our neighborhoods. There were 6 schools in the West End alone before it was torn down to create Charles River Park. A school was supposed to be built, but never was. Keep the promise made then, and build a school in our neighborhoods. We pay our taxes, and deserve a school, so that we can stay where we have chosen to live.

Construction and development continue around us, endlessly, and there are not community benefits to any of these projects. A school could be included in one of these projects, and perhaps help gain some community support for some of the proposed projects.

In the interest of our neighborhoods, the families that live in them, and most importantly the children, we need a public school! Let's keep the families downtown!

Regards,

Chiara Rhouate
Xu Yu
Fiona & Andy Edwards
Carolina Garcia
Patricia Cherin

Kelly Feeley
Mathias Lichterfeld
Lisa Seaver
Santiago Comella
Mustapha Rhouate

Laurie Avery
DeLacy Carlson
Jamy Madeja
Lori Glazier
Martha Maguire

And Many More!!!

Rourke, Jay

From: Ellen Kaplan [whittierplace@rcn.com]
Sent: Friday, March 11, 2011 11:41 AM
To: Rourke, Jay
Subject: FW: Garden Garage Project
Attachments: _Certification_.txt

From: L Nanos [mailto:lnanos@rcn.com]
Sent: Thursday, March 10, 2011 5:09 PM
To: jay.rourke.BRA@cityof.boston.gov
Cc: whittierplace@rcn.com
Subject: Garden Garage Project

Dear Mr. Rourke,

I am a resident of Hawthorne Place in Charles River Park and am writing to express my opposition to Equity Residential's plan for development of the site presently occupied by the Garden Garage. The proposal will negatively impact the quality of life of all West End residents, including myself and my neighbors at Hawthorne Place.

I oppose Equity's development for the following reasons:

1. The plan's scope is quite large and will increase our community's density, traffic and parking issues.

2. The proposed towers are huge - too big and too tall in contrast to the existing buildings in Charles River Park. Their size and height will cause issues with shadow, lack of light, wind tunnels and obstruct the views currently enjoyed by residents of Charles River Park.

3. Charles River Park was planned to have open space, hence the word park in its name. The West End is rapidly becoming overbuilt. Future development proposals should include green areas with grass, trees and benches. This would make the community more attractive and be enjoyed by all of its residents.

I ask you to please reject the current Equity Residential proposal.

Regards,
Linda M. Nanos
Hawthorne Place

Rourke, Jay

From: Alex Stankovic [astankov@ece.tufts.edu]
Sent: Friday, March 11, 2011 12:53 PM
To: Rourke, Jay
Subject: North Station Garage

Dear Mr. Rourke,

I'm writing to express my disagreement with the planned re-development of the garage on Martha Rd. facing North Station ("Basketball City").
The garage is to be replaced with a massive high-rise that would not only dwarf the nearby buildings (including 9 and 2 Hawthorne place where my family of 5 and my mother-in-law live), but also increase the pedestrian and vehicular traffic. At present it is already difficult to navigate the neighborhood, as one can easily check by walking there in the morning, or around 5 pm.

I urge you to re-evaluate and scale down the proposed development, and to bring it line with common sense and with community needs.

With bet regards,
Alex Stankovic
2 Hawthorne Place #16E
9 Hawthorne Place #9D

--

Alex M. Stankovic | A.H. Howell Professor | Tufts University Department of Electrical& Computer Engr. | 161 College Ave.
Medford, MA 02155 | Tel: 617-627-5170 | Fax: 617-627-3220

Robin Assaf
6 Whittier Place, 12A
Boston, MA 02114

March 11, 2011

Jay Rourke
Senior Project Manager
Boston Redevelopment Authority
One City Hall Plaza
Boston, MA 02201

RE: Garden Garage Development
By Equity Residential in Boston's West End

Dear Jay,

This letter is in response to your request for resident's feedback. As you know, the history of the BRA with the West End is a case study in urban renewal that displaced thousands of residents from their homes to create fresh air, light and recreational opportunities for the West End. The people who live here now, cherish these features that were created at great cost and misery to the thousands who lost their community in the 1950's. I've created a list of the parts of the proposal we support, and the part of the proposal we reject.

Issue	Support	Reject
1) The view of open air and light when walking from Whole Foods, and along Thoreau Path	Maintaining new development in the exact same footprint at the same height to preserve the open air and light when walking along Thoreau Path	We reject two buildings and new path concept that change the open air and light to the Thoreau Path Community.
2) The open air and light onto the heart of the Thoreau Path	Maintaining new development at 125 ft. existing height limitations to preserve the objectives sought by the Urban Renewal Plan to increase open air and light.	We reject any increase in height from the current zoning as it is disproportionate to the abutting buildings..
3) Parking	Maintain existing parking number is fine.	Any increase of parking is objectionable.
4) Parking Ratio for housing	Maintain the .60 legal requirement	.We are opposed to the .40 parking ratio
5) Housing units	We support replacing the garage and Basketball City with housing that can fit within that area only.	Taking 2x and 3x the existing space for new housing is inappropriate for this neighborhood and we reject it..

Robin Assaf
6 Whittier Place, 12A
Boston, MA 02114

Issue	Support	Reject
6)Housing Mix	5% of all units to be 3 bedrooms to provide housing for families	Studios and one bedrooms only which is not representative of what the City needs and we want developer to include family friendly units.
7) Loss of Basketball City, the Children's Annex, Tennis Courts, electrical outlets for functions, exercise room at Basketball City	Mitigation in the form of a meaningful contribution to the West End Museum and a Community Center. We have a Museum that rents an office to a Community Center but it is not enough for the social, recreational and education needs of the community.	Loss of public recreational amenities without replacing an equivalent of these amenities is objectionable
8) Bocce Court	Not opposed, but certainly not enough recreational relative to what we are losing.	We are opposed to the loss of significant recreational options without adequate replacement of same.
9) Shape of the buildings	Long and low, within same footprint and height.	Not any higher than existing abutting buildings and permitted by zoning.
10) Floor to Area Ratio (FAR)	Zoning FAR is 3. We want to maintain FAR at 3.	We do not want a 50% increase in the FAR.
11) North Station Traffic	Divert to Staniford Stairway, or Cardinal	Keep entrances minimum
12) 22,000 square feet is common area and amenity space for residents	Support this space used as recreational for the whole community	Do not want another medical office space on Lomasney Way./

Thank you for the opportunity to provide this feedback.

Sincerely,

Robin Assaf
6 Whittier Place, 12A
Boston, MA

Rourke, Jay

From: Maria Collas [maria@moreira.com]
Sent: Friday, March 11, 2011 1:27 PM
To: Rourke, Jay
Subject: Proposed Tall buildings over "Bubble Garage."

Mr.Jay Rourke, Project Manager
Boston Redevelopment Authority

As a very happy and proud owner of Unit 8C condominium at 8 Whittier Place, I am not merely opposed to the invasion of visual space and the proposed architectural imposition over the present innovative spaces occupied by the garages (referred to as "bubble"), I think my sense and sensibility for property investment is being challenged. Buildings in cities may be necessary, attractive and even an asset-- like the much maligned building space which was eventually occupied but redesigned to produce the beautiful pyramid tower that now identifies the skyline as being unmistakably "San Francisco."

It would be a credit to your company and the city of Boston to consider accommodating investment, revenue for the city, prospective purchasers and also create "a thing of beauty which is a joy forever" (John Keats).

Respectfully submitted,
Maria Moreira Collas

Rourke, Jay

From: nancyslynn@comcast.net
Sent: Friday, March 11, 2011 1:36 PM
To: Rourke, Jay
Cc: whittierplace@rcn.com; kmryan1@partners.org
Subject: "Bubble Garage" construction

Good Afternoon

I would like to add my feeling re. the proposed construction. I join others who feel that the buildings proposed would be too massive for the area. The density and height are a problem, and I also feel that the traffic engendered by the number of cars entering and exiting would just add to congestion in an already busy area including Staniford Street, Causeway Street and on to Cambridge Street. It is just not the place for such an expansion of housing. It is my hope that you will reconsider your proposal and take into account the objections that we as neighbors are expressing.

Thank you.

Nancy S. Lynn
2 Hawthorne Place, 11R

Lisa Lynne Cirace
8 Whittier Place
Apt. 17 H, J, G
Boston, Mass. 02114

March 7, 2011

To: Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, Mass. 02201

Dear Mr. Rourke:

I am writing to you to inform the BRA and Mayor Menino that as a 40 year resident/owner of 8 Whittier Place in the West End I am in complete opposition to the proposed Garden Garage Project proposed by Equity Properties.

The West End will be negatively impacted with additional foot traffic, motor vehicle congestion in and out of the area, significant loss of views to existing owners and renters therefore diminishing property values, security concerns and public safety issues, loss of original green space and an overall negative impact to our residential environment.

We have already changed the West End neighborhood with the addition of West End Place and the Equity apartments on Thoreau Path as well as the additional building in front of Storrow Drive. In addition to those buildings we have had to endure all the continued construction for the Mass. General Hospital, Spaulding Rehab, The Registry of Motor Vehicles, The Charles Street Jail, MBTA Science Park Station, MGH MBTA Station, the Liberty Hotel and the reconfiguration of Storrow Drive and Leavrett Circle. All of the above mentioned has certainly changed the complexion of the neighborhood as we know it.

Please understand as a long time owner of Whittier Place I greatly appreciate our neighborhood and all that it has to offer however I feel it will be greatly compromised due to the density of the area and the negative impact this project would have on our community as a whole.

Very truly yours,

Lisa Lynne Cirace

Frances C. Cirace

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Deborah A. Decker
65 Martha Road Apt. 10P
Charles River Park
Boston, MA 02114

Dear Mr. Rourke,

I am adamantly opposed to the construction of 2 towers adjacent to the Amy Lowell Apartments, Charles River Park. The park has already achieved residential saturation, and any further construction would diminish the beautiful landscaping that now prevails.

Moreover, the addition of some 250+ vehicles would prove to be far too congestive and chaotic for the neighborhood, causing major traffic difficulties.

I believe that the addition of the recently constructed buildings in the Park, that preserved wide-open space for recreational activities, was tastefully executed. The building of 2 towers in such a small area of land would only prove to be an architectural nightmare.

Should you wish to contact me, my home telephone number is 617-723-4672. Thank you for your consideration of this matter.

Sincerely,

Deborah A. Decker



Wednesday, March 10, 2011

Mr. Jay Rourke
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

RE: Equity Residential Development of the Garden Garage on Lomasney Way

The West End Museum has the following concerns regarding the proposed development of the Garden Garage on Lomasney Way by Equity Residential. Much of this construction and redevelopment will occur within 100 feet of our facility, which is located at the rear of 150 Staniford Street on the Lomasney Way side of West End Place. The immediate impact of the redevelopment would jeopardize the viability of the West End Museum, as well as the other members of the West End Community Collaborative which are housed in the museum space.

- Business for the West End Museum and West End Community Collaborative will be disrupted 24/7 for three or more years.
- Noise during business hours will be continuous.
- Traffic will be impacted due to the loss of parking, especially during Bruins and Celtics games when our weekend and evening programs, lectures and presentations take place.
- Increased traffic from the loss of parking will cause idling and traffic jams which will add to the noise impact.
- The loss of parking will deprive our patrons and offer less parking options.
- The loss of pedestrian flow from Science Park/West End T Station down Martha Road and Lomasney Way will be significant.
- No pedestrian flow will occur from Thoreau Path for three plus years.
- A considerable number of these inconveniences will deter patrons from visiting the Museum.
- The increased number of construction vehicles needed for the proposed project will idle in cue adjacent to our facility on Lomasney Way waiting to enter the construction site. This will create added exhaust pollution, as well as a visual wall in front of our Museum.
- The increased amount of construction vehicles will impact significantly upon the West End Place/Equity easement, which will consequently interfere with access to our employee parking area which is only accessible through that easement.
- The excavation and deep digging below the existing surface will unearth a considerable number of rodents which will seek the closest available openings; our space being in such close proximity is at greatest risk.

In light of Equity's recent construction and renovations at Longfellow Towers on Staniford Street, which was started in the summer of 2010 and is projected to go through the summer of 2011, and where little warning was given to their neighbors regarding the length of construction and the impact of that project; it is inconceivable that a project of the proposed magnitude of the Garden Garage will be handled any better as to consider the loss and impact upon their neighbors. Many of Equity's own commercial tenants have suffered considerable financial loss due to the small renovation project of the Longfellow Towers drop area. The impact of the proposed Garden Garage project, where the construction of two tall towers (21 and 28-stories) will take over three years, will be exponentially more significant to all West End businesses, especially area non-profits and may jeopardize the survival of some who are already struggling.

That being said, the proposed project is not without its merits; there may be long term benefits to the small businesses on Lomasney Way as a result of this development, should they weather the impact. The activation and creation of new residences and commercial spaces on Lomasney Way and Martha Road will create destination points and increased pedestrian flow. More open space will also make it easier for pedestrian flow between Thoreau Path and Lomasney Way.

However, the primary concern of the directors of the West End Museum is the immediate impacts over the three or more years when the construction will be taking place and how these impacts will affect our ability to do business.

The West End Museum, Incorporated is a 501(c)3 non-profit neighborhood museum. The primary purpose of the West End Museum is to operate and maintain a neighborhood museum dedicated to the collection, preservation and interpretation of the history and culture of the West End of Boston. The Museum acknowledges its role as an educational institution and a trustee of significant material culture.

The West End Museum fulfills its mission by providing exhibits to the public on a regular basis, by providing access to its collections for research, by providing a resource to the West End Neighborhood for historical and cultural interests. It involves the public in its mission through outreach programming, neighborhood events, and educational programming in the school systems, thereby increasing and sustaining the public's appreciation of an important American urban neighborhood from the seventeenth century to the present time.

Scincerely,

Diane Lucia
Executive Director
The West End Museum, Incorporated

cc: Jay RourkeCity Councilor Michael Ross
City Councilor Salvatore LaMattina
City Councilor President Stephen J. Murphy
City Councilors At Large Felix G. Arroyo, John R. Connolly, Ayanna Pressley
State Representative Marty Walz
State Senator Anthony Petruccelli
State Senator Sonia Chang-Diaz
West End Civic Association
West End Council
West End Place
West End Community Center
West End Museum
Amy Lowell
Whittier Place
Hawthorne Place
Bob O'Brien, Downtown North Association
Greg White, Equity Residential
Chris Mahar, Delaware North
Beacon Hill Times
The Courant

6 Whittier Place, Unit 12-R
Boston, MA 02114
(617) 742-0926
March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Mr. Rouke:

My name is William Swanson, and I've been an owner-occupant in Charles River Park for well over 18 years now. I like living in the Park for its suburban-urban design, its convenience to transportation, and above all else for its openness, the lack of the crowded, heavily urban feeling that one gets when walking through almost any other section of downtown Boston. Walking to work, and home from work, along Thoreau Path is a pleasant way to ease into and out of a potentially stressful workday.

I'm writing to express my opposition to the proposed towers being considered for the area currently occupied by the Garden Garage. Having reviewed the diagrams presented in the PNF, as well as the overall planning proposals presented in the West End Community Presentation of May 5th, 2009, my concerns are:

- the height of the proposed towers, which is out of keeping with just about every other building in the West End area save for the Longfellow towers
- the implied period of disruptive construction to build them, with consequential damage to Thoreau Path and the greenspace in the area (even if these are subsequently relandscaped)
- the sense that current development planning is heading toward a few very tall towers, rather than more low-rise structures that would fit in better with the overall layout of the Park.

In addition, I feel the need to raise an objection now, as the proposals -- in particular the final slide from the 2009 presentation -- raise the very real concern that future development along the same lines might include the construction of a similarly high tower or towers in front of my own building, thereby destroying the view of the Charles River that is one of the many reasons I purchased my unit in Charles River Park to begin with.

Like many of my fellow residents in Charles River Park, I'm open to discussion of ways to improve the layout and liveability of the area, but not when this entails changes that disrupt the particular qualities of the Park that have kept me living here for many years. Please reconsider the plans for these buildings, and let's find a solution that works better for everyone involved: the BRA, Equity, and the current owners and residents in the Park.

Sincerely yours,

William R. Swanson

3/10/11

To Whom It May Concern:

I am an owner of unit 23-B at 8 Whittier place. I am very disturbed about plans for two high rise buildings within yards of me. I am very aware of the mistakes in urban renewal which led to the destruction of the West End neighborhood, and I see in this a way to sabotage the efforts so many of us residents have made to re-create the neighborhood. These buildings would add to the congestion and traffic and make life miserable for the many people who are residing in the Charles River Park community. We go through multiple inconveniences whenever there is a garden event. That will be increased 100fold should new apartments be added. We have suffered through the big dig, construction of the other Equity apartments, and now the bridge construction at Leverett Circle, and wonder when we can sleep in peace or enjoy the comfort of a quiet day without noise.

For the past two years I have been watching the construction directly across the river of North Place which will add thousands of people and hundreds of cars to an already dense area. Where is community planning? Are we so short-sighted now that we cannot see the impact of what happens within 4 or 5 blocks from us because it is Cambridge and Charlestown?

One can wonder whose needs are being met by this plan other than the developer's pocketbook. I believe we could laud a developer who would unit with the mayor to build much needed housing in the planned Dudley Square revival.

We need to go back to the drawing board to look at overall best interests of the larger Boston area before creating a debacle that we will regret for years.

Sincerely yours,

Carol Murphy

Carol Murphy LICSW

Ariana I. Fulginiti
On behalf of Joseph R. (Jr.) and
Ariana I. Fulginiti
65 Martha Road, Unit # 11-M
Boston, MA 02114

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

As tax credit unit residents of the Amy Lowell apartment complex in the West End, my husband and I were drawn to the relocation in Boston to the West End in 2004 for a variety of reasons, some historic and others primarily due to the Open Space unavailable in other Boston central neighborhoods. Furthermore, as moderately affordable housing goes, the Amy Lowell complex offers the best of all worlds, notably – since we deliberately selected a unit on the top floor – the panoramic view which is 60% of the appeal by itself.

I mention "historic" reasons because my husband's father's family, when they arrived in this country and this Commonwealth from Italy, all settled in the West End, some at Hawthorn Place, others at what used to be called Charles River Park and still another family over at Pinckney Street on the Flats of Beacon Hill., where we both once lived when circumstances and times were less of a financial hardship on us and my husband's disabilities forced him to an earlier retirement than he had ever planned to have back in 2002.

This setting and our perch on the penthouse floor whose outdoor patio (where else in Boston can ANYONE find an apartment left with the pastoral flavor of this specific open space – since we chose to face the mini central park setting in back versus the Zakim Bridge and the traffic fumes and noise out front – and all the amenities that come with this?) comprises 70% of the reason behind our decision to want to make this address and location our home.

Due to the historicity of the West End's priority to remain a neighborhood, at least through the terms of Mayor Menino's predecessors – Kevin White and Raymond Flynn -- unfettered by the zealous copulation of excessive over-development within a neighborhood that had been primed to serve its residents, we DO NOT SUPPORT ANY FURTHER EFFORTS BY ANY AGENCY, ANY DEVELOPER AND ANY PRIVATE INTERESTS AS THESE MIGHT COINCIDE WITH THE FULFILLMENT OF ANY PROMISES AND ASSURANCES MADE BY MEMBERS OF OUR CITY COUNCIL OR STATE REPRESENTATIVES TO ENCROACH ONE STEP DEEPER WITH BUILDING PROPOSALS THAN HAS ALREADY BEEN ATTEMPTED BY THE EQUITY PARTNERSHIP AND ANY OTHER DESIGNEE SUPPORTED BY AND SPEAKING FOR THE DAVIS COMPANY.

The Garden Garage Project and all the meager proposals aligned with it have been meager at best and insupportable at best. One or two of the meetings we attended at the Amy Lowell House proved that Equity isn't really interested in listening and talking to us than it is focused primarily in misleading us by

miring us with all kinds of complex and complicated details to lure us into the fantasy of believing in and supporting yet another nuisance construction project.

Nothing that Equity has proposed, including the newest buildings constructed recently in our cul de sac complex that is the West End community has truly made any sense because, not to be over simplified, it does not take the residential community into consideration as much as it seeks to benefit everyone BUT the residential community. I was under the impression that Mayor Menino had already assured us that if we wanted the Basketball Garage to remain, the City of Boston would not interfere with our wishes. How can that be anything we can actually bank on if two other projects escaped the Mayor's recent attention and were allowed to be constructed DESPITE PROTESTS BY WEST END RESIDENTS? How can we take the Mayor at his word when a promised STOP & SHOP market was to have been constructed to offset the expensive WHOLE FOODS MARKET and which died on the drawing board because the Mayor cultivated developers which headed to the wrong West End areas?

The areas that literally NEED a cleanup development and restorations and renovations remain untouched and a blemish to us in the community. The Causeway Street roadway and its intermittent streets with commercial establishments could use a real buff over ....YET the City prefers to tamper with a process that interferes with the wishes of a neighborhood's residents by attempting to further develop in our own complex.

Let's face the blunt facts of this situation: is the City of Boston and the Mayor truly and genuinely concerned about its residents or is this yet another example of a perception whose echoes haunt us time and time again, every time promises become converted as compromises all to benefit the well-lined pockets of our city council and other city officials. To that end, some of us living in our complex are still not being offered the choice of which cable company we'd prefer to utilize because arrangements made during the dawning of the entire former development of the West End confined residents just to RCN Cable without giving us the choice to also opt for Comcast, a community able to establish a cable satellite option or residents preferring other alternatives.

It seems as though we residents can live here only at the behest of the City...until PAC monies or favors need to be fully rewarded and then our community finds itself sacrificed on the drawing board of proposed construction the majority of us don't want. Is anyone REALLY LISTENING or is this merely a prelude to fulfilling procedural BRA requirements. Perhaps the time must come to herald the horns by calling attention to Boston broadcast media outlets, stage a rally, hold a demonstration or do anything visible so that we can be heard outside the periphery of our own community.

Sincerely,

Ariana I. Fulginiti

Joseph R. Fulginiti, Jr.

Cc: Halkeen Management, Property Managers of Amy Lowell
Councilor Michael Ross, City Council Representative of the West End

Gary Hammer
150 Staniford Street, Unit 914
Boston, Massachusetts 02114

March 10, 2011

VIA ELECTRONIC MAIL

Mr. Jay Rourke
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

RE: Garden Garage Redevelopment Project (Equity Residential), 35 Lomasney Way, Boston

Dear Mr. Rourke:

I am writing to provide comments on the January 7, 2011 Project Notification Form filed by Equity Residential for the proposed redevelopment of the Garden Garage, 35 Lomasney Way, in Boston's West End. I am a resident, cooperative shareholder, and previous managing board member at West End Place, one of the residential properties directly abutting the site of the proposed project.

While I am generally supportive of the proponent's concept to replace the current unattractive parking garage with new residential uses and improved open space, I have a number of concerns that I hope can be studied and addressed adequately through the BRA's Article 80 review process. My specific comments are itemized below.

- CONSTRUCTION-PERIOD IMPACTS: The proposed development site is in extremely close proximity to two existing residential buildings: West End Place and the Amy Lowell House. A rigorous plan for controlling noise, dust, vibration, construction traffic, and other related impacts will be critical in order to protect the quality of life for all nearby residents over the course of the construction period. In addition, an effective system for monitoring and responding to potential structural impacts to the nearby buildings and below-grade garages should be developed and implemented prior to construction.
- LOMASNEY WAY DRIVEWAY/DELIVERIES AND LOADING: The PNF states that deliveries, servicing, and residential move-in/move-out for the proposed buildings will be accomplished within the existing Longfellow Place service area, with access via the existing driveway from Lomasney Way. While not mentioned in the PNF or labeled on the site plans, it is important to note that this existing driveway also provides access to the West End Place residential parking garage, and that a portion of the Longfellow Place service area also functions as a service area for the 183 residences at West End Place. Further study is needed to evaluate the potential traffic and operational impacts of using this single driveway to provide loading/unloading and service access to support an additional 500 residences, as proposed by the project.
- PEDESTRIAN ACCOMMODATIONS: While the proposed generously-scaled pedestrian connection from Lomasney Way to Thoreau Path will be most welcome, the proponent should also take steps to ensure that greater safety is provided for pedestrians along Lomasney Way itself. Currently, pedestrians on Lomasney Way are prohibited from

passing through the Garden Garage structure to access Thoreau Path, so pedestrians must cross multiple entry/exit traffic lanes along the garage frontage. The vehicular access/egress plan for the new garage should seek to minimize the number of entry and exit lanes from the garage, and maximize sight lines for both drivers and pedestrians, in order to provide for a safe and pleasant pedestrian experience along Lomasney Way. Furthermore, in recognition of the additional pedestrian and vehicular traffic this project will generate, there may be a need to undertake interim safety improvements to crosswalks and traffic signals in the area, keeping in mind that future enhancements are anticipated as part of the eventual implementation of the Causeway Street Crossroads Initiative project.

- NEW OPEN SPACE / INTERFACE WITH WEST END PLACE COURTYARD: The overall design and perimeter treatment for the new open space, particularly in the location where it will abut the West End Place courtyard, should be carefully developed in consultation with West End Place residents and our on-site management staff.
- TDM / ZIPCAR: As part of its transportation demand management measures, the proponent should seek to locate several Zipcars in the new garage for use by residents and the general public, as is currently the practice at the proponent's Longfellow Place garage.

I look forward to reviewing more detailed information about the proposed project and its potential impacts as part of the Draft Project Impact Report.

Thank you for this opportunity to comment.

Sincerely,



Gary Hammer
Resident - West End Place

Coalition for Public Education

Expanding Quality Education for Downtown Neighborhoods

Wednesday, March 09, 2011

Jay Rourke

Senior Project Manager

Boston Redevelopment Authority

One City Hall Plaza

Boston, MA 02201

Jay.rourke.bra@cityofboston.gov

Dear Mr. Rourke,

We, the Coalition for Public Education, are residents of the West End, North End, and Beacon Hill. We are tax payers and residents who wish to remain in our downtown neighborhoods, and yet we have only one public school in our collective neighborhoods.

Development and construction continue around us, endlessly. A school could be included in one of these projects, and perhaps help gain some community support for some of the proposed projects.

In the interest of our neighborhoods, the families that live in them, and most importantly the children, we need a public school! Let's keep the families downtown!

We will continue to monitor the proposed developments in our neighborhoods to further our goal.

Regards,

Chiara Rhouate Becca Griffin

Kelly Feely Jennifer McGivern

Lori Glazier Bill Jacobson

Coalition for Public Education

Coalitionforpubliceducation@gmail.com

March 10, 2011

Jay Rourke
Senior Project Manager
Boston Redevelopment Authority
One City Hall Plaza
Boston, MA 02201

Dear Mr Rourke,

I wanted to communicate my feelings on the Garden Garage Redevelopment project.

My family and I have been living at Charles River Park for almost 15 years. My husband and I have been raising our children here in the city. We love Charles River Park, the way it is. This area has endured many construction projects. From the Big Dig to the Equity apartment projects to the Craegie Bridge, this area has been one big construction zone.

Equity has built new townhouses, and apartment buildings in Charles River Park. These have not been filled. Along with the vacancies, we have seen an increase in trash (especially alcohol bottles) and lack of respect for the neighborhood.

Why build more in an area that already has large vacancies. This area has been one where families have been able to live and grow here. The more you build, the closer you will get back to when you bulldozed the original West End.

This is a great neighborhood. People have moved here and stayed because of this great neighborhood. We don't want or need another building. The environmental impact of this project will negatively affect the residents of the West End.

My husband and I are not in favor of this project at all. You are gambling with our quality of life with this project. If you feel that the city needs more apartment buildings, then build somewhere else.

Please think very carefully, not with the dollar sign in mind but of the effect this will have on all of the residents of the West End.

Thank you for you time.

Sincerely,

Alexandra Tisdale
8 Whittier Place, Boston, MA 02114

Rourke, Jay

From: parisbill [parisbill@rcn.com]
Sent: Thursday, March 10, 2011 7:29 PM
To: Rourke, Jay
Subject: RE: Garden Garage Redevelopment Project (Equity Residential), 35 Lomasney Way, Boston

William Georgaqui 150 Staniford Street, Unit 632 Boston, Massachusetts 02114

March 10, 2011

VIA ELECTRONIC MAIL

Mr. Jay Rourke

Boston Redevelopment Authority

One City Hall Square

Boston, MA 02201

RE: Garden Garage Redevelopment Project (Equity Residential), 35 Lomasney Way, Boston

Dear Mr. Rourke:

I am writing to offer my comments on the January 7, 2011 Project Notification Form filed by Equity Residential for the proposed redevelopment of the Garden Garage, 35 Lomasney Way, in Boston's West End.

I was born and grew up in in the West End. Most of my family returned to the West End after redevelopment.

I am presently a resident, cooperative shareholder of West End Place and Chairperson of the West End Place Neighborhood Relations Committee

I am also on the Board of Directors of the West End Community Center.

I am generally supportive of the Equity Residential proposal to replace the eye sore parking garage with new residential uses and improved open space

I do share a number of concerns that I trust will be carefully studied and addressed via the BRA's Article 80 review process.

Many of these specific concerns were initially addressed by the West End Place Garden Garage Redevelopment Project Advisory Task Force of which I was a member along with various West End resident groups and individuals.

I look forward to reviewing more detailed information about the proposed project and its potential impacts as part of the Draft Project Impact Report.

Thank you for this opportunity to comment.

Sincerely,

William Georgaqui

Resident - West End Place

Malek Al-Khatib
6 Whittier Place
Unit 12-A
Boston, MA 02114
Email: malek_khatib@msn.com
Tel: 617-723-4027

February 28, 2011

The Honorable Mayor Thomas Menino
City of Boston
One City Hall
Boston, MA 02201

RE: Garden Garage Development. Project Notification Form (PNF) - Equity Residential
Boston's West End

Dear Mayor Menino,

Thank you for your remarkable efforts and services to our city and especially the West End community. We appreciate meeting with us on numerous occasions and maintaining open dialogue with us, supporting the West End Museum, the West End Community Center, and Thoreau Path improvement project.

You discussed with us, during the opening of the West End Community Center last year, the Garden Garage development. We were very pleased to hear your views and we were optimistic about improvements and revitalizations in our community.

Equity Residential recently submitted a Project Notification Form (PNF) for the development of the Garden Garage. We are pleased to see that there are plans to replace this cold bleak structure.

We appreciate the two project public meetings held by the BRA in addition to meetings with IAG. Community members discussed the project in depth, expressed support for the improvement concept of garage. However, they equally expressed concerns about the massing, the height, and configuration of the proposed buildings. We look forward to more open dialogue with the community to reach consensus on this project.

We have summarized the views shared by many residents in our community as follows:

1. West End Perspective

The West End neighborhood was largely rebuilt in the 1960s when high-rise residential, office, and retail buildings replaced a dense fabric of four to six story brick buildings similar to the historic Beacon Hill and the North End. Sections of the West End that were not demolished are now part of other historic Boston neighborhoods such as the lower part of the Beacon Hill along Cambridge Street.

The area was developed around residents, pedestrian network, and open and green space with connections to the Charles River waterfront as well as the surrounding streets. The high rise buildings and concentration of dwellers were balanced by large open and green space between these buildings. This urban development created a unique environment of light, green space, and recreational opportunities for the West End community in Boston.

Therefore, this area of the West End is a defined Boston neighborhood with a unique history, identity, and character. That character is largely described by the principal use function of housing for a diverse

population. With the historic presence of the world renowned MGH, the addition of MEEI, and other health institutions, the West End now includes a high concentration of health care institutions.

This uniqueness of the West End added to the diversity of Boston's downtown neighborhoods. Each neighborhood has its own unique characteristics and environment that attracts residents who enjoy the lifestyle of such neighborhood. Bostonians have the choice of selecting the urban neighborhood of specific characteristics and fabric that suit their lifestyle and the quality of life they seek. It varies from the historic Beacon Hill and North End with dense low rise buildings and narrow streets, the more open less dense Back Bay, the recently renovated South End with mid rise buildings, the continuously developing downtown area of new high rise residential buildings with relatively narrow streets, to the West End, to mention a few.

The people who live in the West End now selected this neighborhood for its distinct characters and they cherish the quality of life created by this community. Residents understand that there is always a place for improvements and enhancement to the West End. Therefore, they welcome changes and improvements to the West End. However, converting this urban setting to a totally different fabric would deprive the residents of the basics and fundamentals that brought them to this neighborhood and bonded them together as a community.

It is important to recognize that the entire area was developed as an integral urban area and was not developed as individual buildings. We applaud the Proponent in recognizing this context and stating: *"Clearly, one of the most important principles of urban design in this neighborhood is to respect and enhance the established character of the residential area and to recognize its historic relevance."* We will work with the Equity and the BRA to make this project celebrate and enhance the characteristics and fabric of the West End.

2. Building Use

The Proponent plans to change the building use to a mix of Retail and Residential and relocating the existing above ground parking to underground. The proponent will not require an amendment to the Planned Development Area (PDA) governing this area. The community is strongly in favor of change in use. This would improve the street front of Lomasney Way, invite more foot traffic to the sidewalk, and improve on the present barren environment.

Notwithstanding this change, consideration should be given to maintaining sports club activities such as Basket Ball City, tennis courts, and outside courts presently on top of the parking garage. The retail component in this project should substantially be increased if it is to succeed to contribute to improving the fabric of Lomasney Way Martha Road barren corridor.

We support the Proponent offer to provide 15 percent of the units to be affordable to moderate income and middle income households. However, we believe that the option of contributing to a housing creation fund outside this project will not provide the diversity and opportunity for moderate income residents to be able to live in the West End.

In addition, the Proponent has not established the distribution of units based on the number of bedrooms in the buildings. The community feels that at least 20% of all units should be 3 bedrooms to provide housing for families in the West End. Studios and one bedroom units are more oriented towards single residents and do not respond to the community needs.

3. Buildings Height

The existing zoning limits building height to 125 feet. The proponent is proposing two towers; the north tower is 21 stories while the south tower is 28 stories. As a result, the proponent is requesting zoning relief to increase the buildings height by about 250% from 125 to 310 feet. While height alone is not an issue in the West End, the addition of 21 and 28 storey buildings in close proximity of other existing buildings and at the peripheral of Thoreau Path is not desirable and violates the open space principal of West End. This is further exacerbated by the massing of the buildings, 50% increase in permitted Floor Area Ratio, and configuration of the ground level as discussed below.

The existing garage height is lower than Amy Lowell building and is less than 100 feet including the bubble. The proposed increase in height from the existing will create structures that are disproportionate not only to the abutting buildings but to the context of this neighborhood and will adversely alter the unique character of the West End.

Therefore, restricting the new development to 125 ft. zoning height will result in a more than 25% increase in the existing building height. Such an increase should be in the context of preserving the objectives sought by the Urban Renewal Plan.

4. Building Massing and Floor to Area Ratio (FAR)

According to the PNF, the present zoning FAR is 3 by right. The proponent is requesting zoning relief to increase the FAR from 3.0 to 4.4. This is almost a 50% increase in FAR. The community is questioning the validity of a project that requires 250% increase in the height combined with 50% increase in FAR. Does this project truly reflect the context of the West End or is it more suitable to the financial district of Boston or perhaps downtown Manhattan in New York? Furthermore, the proponent did not discuss the actual FAR increase based on existing building, which is less than 3%.

A building within the same footprint of the existing building and height not any higher than existing abutting buildings may blend better with the fabric of the area. The reduction in the existing foot print and apparent increase in "usable open space", proposed by the proponent, does not justify the proposed increase in the massing of these building.

Therefore, restricting the new development to FAR 3 or less would help preserve the objectives sought by the Urban Renewal Plan.

5. Pedestrian Traffic

The Proponent stated: *"The proposed Project will add retail options and create a strong pedestrian connection that will reenergize the Nashua Street area and reconnect the West End to the Bulfinch Triangle and North End neighborhoods. As a result, this new development is an opportunity to create a "sense of place" in the West End, to pull together the individual buildings toward a centerpiece, a place*

with community retail and open spaces that invite residents to socialize with residents of this historic community.

The Proponent considers the primary pedestrian routes are those that service the institutions in and around the West End. Routes that are used by West End residents are considered secondary. We consider this inconsistent with his statement of respecting the residential character of the West End.

The presence and influence of institutions in the West End is increasing, especially with MEEI development plans and future potential developments of more institutional buildings along Nashua Street. The residential component in the West End will be "secondary" if not preserved and enhanced.

The routes proposed by the Proponent will serve pedestrians commuting from transit stations to their employment institutional buildings. The increase in "usable open space" presented by the proponent would predominantly serve as a route to allow pedestrian commuters, who go now through the existing garage building, a wider and more direct access to Thoreau Path, and the institutions buildings. None of the proposed elements in the project would provide destination elements for such commuters or "a sense of place."

Providing direct routes from the station to the institutions should not be the goal of this project. MGH provides shuttle busses between the North Station, Nashua Street Parking, and MGH campus. Therefore, transportation is available for the MGH and other institutions. People who are in a hurry or cannot walk can take the shuttle buses.

These proposed pedestrian routes will not improve the foot traffic on Lomasney and actually will adversely affect any opportunity for providing retail or an inviting environment along the Martha Road, Lomasney Way corridor.

All cities in the US are recognizing the importance of residents in all districts including the very congested city centers. The BRA and the Proponent who are committed to "*to respect and enhance the established character of the residential area and to recognize its historic relevance.*" should improve "secondary routes" and create destination points in the proposed development for both the residents and commuters. Pedestrian routes should be planned to improve West Enders routes and divert pedestrians who go through the garage to Staniford Stairway, Lomasney Way, etc. to increase foot traffic circulation. This in turn will provide more opportunity for successful retail on these streets.

6. Lomasney Way Street Front

The West End lost all residential and almost all retail components to institutional developments along Cambridge Street. Attempts to revitalize Cambridge and Blossom Street fronts met with strong objections from the institutions. The community applauds the Proponent's intent to create an active pedestrian friendly edge and retail along Lomasney Way.

However, most of the proposed street front is utilized as passage for pedestrian commuters, entry and exist of the underground parking garage, and lobbies for the two towers. The proposed street front hardly makes a change to the present barren environment along Lomasney Way.

The proposed retail space is very small and would at best be used as a convenience store serving the residents of the new buildings above. It is unlikely to be inviting and be a pedestrian destination and contribute to the matrix of the street. A much larger retail and closing the access route through the project would improve the foot traffic and encourages more retail stores to open in the West End Place retail front and create a pedestrian friendly environment.

7. Vehicular Traffic and Number of Parking Spaces

Traffic studies to the area, part of the Crossroad Initiative, rated Lomasney Way intersection F when it comes to traffic capacity. The community is strongly in favor of relocating the present parking garage to underground. However, adding more parking spaces and vehicular traffic for 500 residential units would exacerbate the traffic condition. We recommend;

a. Route traffic to exit the garage through the Longfellow Building Parking Garage on Staniford Street.
b. Eliminate leasing parking spaces to institutions.
c. Do not increase the number of parking spaces and utilize some of the 710 existing parking spaces to be leased to the residential units. We will support a request by the Proponent for a reduced parking space relief.

8. Thoreau Path and Open Green Space

Thoreau Path is the lifeline of the West End. It is the green garden residents and families enjoy in tranquility. Many social activities take place on the path. The West End Childrens' Festival that is now an annual Boston event that attracts thousands of families from all Boston neighborhoods is held along Thoreau Path. This path is fundamental to the context of the present West End and should be preserved.

Thoreau Path is a sliver of unique green open space. It will be adversely impacted by the massing, height, and pedestrian routes as proposed in this project. The open sky and light on the heart of the Path will be dimmed and blocked by the proposed two high rise buildings in conjunction with the large mass of the proposed 8 storey building. The "walls effect" on the site path as the sky is blocked would convert this green path into more of a gorge between unnatural cold cliffs.

The apparent increase in "usable open space" does not contribute to the path and is more serving the pedestrian routes. The increase in usable open space did not result in preserving the Children's Annex or Tennis and Basketball Courts. The proposed bocce court is certainly not enough recreational relative to what the community is losing. The loss of significant recreational amenities without adequate replacement is not acceptable. This is not an increase in "open space" and it would not justify this increase in the height and massing of these building.

9. No Build Alternative

The present condition of the building appears to be in a fair condition. The community supports the changes to the building configuration and use provided that such a change would improve the quality of

life of the West End residents. The residents would have no choice but to consider the No Build Alternative acceptable if all other alternatives adversely impact the quality of life in the West End.

The Project is located within Planned Development Area (PDA). According to the plan and the PDA, BRA approval is required for any additions or expansions of the existing development. The Proponent will seek amendments to the PDA.

The proposed project is out of context with the West End. Therefore, we recommend that the BRA require the Proponent to resubmit the PNF after further consultation with the BRA and the community. We have worked with Equity and the BRA in the development of the Emerson Place before. We will be happy to work again with Equity and the BRA on improving this project to be profitable to Equity and attractive enhancement to the West End.

Mr. Mayor,

You have always been an advocate and worked hard for improving the City of Boston and enhancing the quality of life of the residential neighborhood. We seek your support in preserving if not enhancing the quality of life in our neighborhood.

We would like to take some time of your busy schedule to meet with us and discuss this opportunity in detail. Thank you for your consideration.

Sincerely,

Malek Al-Khatib	6 Whittier Place, 12A	A. Khatib
Robin Assaf	6 Whittier Place, 12A	
Duane Lucia	West End Place	
Tishey Noiseux	6 Whittier Place, 12M	
Margaret Mill	6 Whittier Place, 10E	
Lily DeFurest	6 Whittier Place, 12N	
Myrna Barlow	6 Whittier Place, 9L	
Bill LoVuolo	6 Whittier Place, 12F	

Jacqueline Socoko 6 Whittier Pl, 9A
Elizabeth C. Healey 8 Whittier 6g + 24G
Lynne B. Young 8 Whittier Pl #20C
M. Clifford Young 8 [illegible]

Please see attached pages for additional signatures

cc: Jay Rourke, Boston Redevelopment Authority, One City Hall Square, Boston, MA 02201-1007.
City Councilor Michael Ross
City Councilor Salvatore LaMattina
City Councilor President Stephen J. Murphy
City Councilors At Large Felix G. Arroyo, John R. Connolly, Ayanna Pressley
State Representative Marty Walz
State Senator Anthony Petruccelli
State Senator Sonia Chang-Diaz
West End Civic Association
West End Council
West End Place
West End Community Center
West End Museum
Amy Lowell
Whittier Place
Hawthorne Place
Bob O'Brien, Downtown North Association
Greg White, Equity Residential
Chris Mahar, Delaware North
Beacon Hill Times
The Currant

Please see attached pages for additional signatures

The Honorable Mayor Thomas Menino
City of Boston
Ref: Garden Garage PNF, West End

We the undersigned support Malek Al-Khatib`s letter Dated February 28, 2011 regarding the Garden Garage PNF, West End

Name	Address	Signature
Joanne Spitz	9 Hawthorne Pl 10C	Joanne Spitz
Andrew M Stahelin	6 Whittier Pl 8M	
Margaret Foley	6 Whittier Place, 14A	Margaret Foley
Daniel K Glennon	6 Whittier Pl.	
	Boston, MA 02114	
Kevin Seaver	8 Whittier	Kevin Seaver
Martha Manning	65 Martha Rd	Martha Manning
Jon Newman	1 Gleason Pl.	aft 7 C
Anna Spagnuolo	Amy Farell	
[redacted]	[redacted]	
Michael Grace	8 Whittier Pl 20K	
Susan Witkje	6 Whittier Pl 17N	
Merle Adelson	9 Hawthorne	
Venus Jalal	8 Whittier 4C	
Susan Hamilton	9 Hawthorne Pl 2G	
Sean A Burgess	50 E. Springfield	
Hui Jenny Chen	9 Hawthorne Pl. Apt 5R	
Helena Kurban	8 Whittier 9K	
Amal Kurban	8 Whittier 9K	
Cristina Pierelli	8 Whittier 17F	
Rafael Fioretti	8 Whittier 7K	
Nicholas Balow	6 Whittier Pl 9L	
Edward J. Ford	8 Whittier Pl 22D	

The Honorable Mayor Thomas Menino
City of Boston
Ref: Garden Garage PNF, West End

We the undersigned support Malek Al-Khatib's letter Dated February 28, 2011 regarding the Garden Garage PNF, West End

Name	Address	Signature
Michael Bennett	8 Whittier #19H	
Kenen Bennett	8 Whittier 19H	
	19H 8 whittier	
Sam Coote	8 Whittier 21F	
GHADA BARKETI	8 Whittier 10E	
Sonia Lewin	8 Whittier 2H	
Ruth Lewin	8 whittier 2G	
STEPHANIE GUIDAGNO	8 WHITTIER, 6C	
KAMIL KALUSKI	6 WHITTIER, 17K	
Carol Murphy	8 Whittier 23-B	
DONNA Mc CREADY	8 WHITTIE 18-K	
Heather Stein	8 Whittier 23H	
Gail Senney	8 Whittier pl 20F	
John Senney	8 whittier pl 20F	
Adrian Parker	8 whittier pl 20C	
Sunil Pandya	8 Whittier Pl #2K	
Sunil Sheth	8 Whittier Pl #2K	
Carol Reade	1 1 11 #9J	
Katherine Remley	" " 9E	
DeeDee Carlson	8 W Whittier 15H	
Lars Carlson	8 Whittier Pl. 15H	
Karol Kopacz	8 Whittier Pl. 4H	
ESTHER ANNE TRENT	8 whittier pl 21H	
Soroche Kohistani	8 Whittier pl 21C	

The Honorable Mayor Thomas Menino
City of Boston
Ref: Garden Garage PNF, West End

We the undersigned support Malek Al-Khatib's letter Dated February 28, 2011 regarding the Garden Garage PNF, West End

Name	Address	Signature
Jill Heddadin	9 Hawthorne Pl	
Colleen DeMaria	6 Whittier Place	Colleen DeMaria
Ivy A. Turner	7 Whittier Place #107	
G.R. Kohistani	8 Whittier Place, 4C	
Noorie Kohistani	8 Whittier Place 4C	
Mary Ann Boyle	8 Whittier Place 23G	
Michael W. Lu	6 Whittier Pl 16F	

Rourke, Jay

From: Rob Sadowski [robsadowski@gmail.com]
Sent: Thursday, March 10, 2011 10:43 PM
To: Rourke, Jay
Subject: Comment on Garden Garage Project

March 10, 2011

Mr. Jay Rourke

Boston Redevelopment Authority

One City Hall Square

Boston, MA 02201-1007

Sent via Email

Dear Mr. Rourke –

I am 16 year resident of the City of Boston and a current resident and property owner in the West End. I am writing to provide my comments on the proposed Garden Garage Project. I have serious concerns about the detrimental effects of the proposed project on the existing neighborhood and area, and I am urging the BRA to require the developers to modify their proposal.

My most significant concern pertains to the size of the proposed buildings. The Garage that will be demolished and replaced is 97 feet tall. According to the plan "excluding rooftop mechanicals, the South Tower will be approximately 310 feet high and the North Tower will be approximately 240 feet high." If the developer is sincere about design principles that "respect and enhance the established character of the residential area," I do not believe that replacing an existing structure with two new structures that are 150% and 210% larger does this. To reinforce my point, both proposed buildings exceed the existing code as concerns maximum height; the proposed South Tower is more than double the maximum permitted height of 155 feet for a large project. Further, Mayor Menino, at a meeting on May 13, 2009 at the West End Museum, assured concerned residents and gave us his word that he would not support the construction of a structure that exceeded the height of the original structure if the neighborhood opposed it, and there is clearly significant opposition to the size of the proposed towers.

The excessive height of the proposed towers will directly affect my quality of life. As an owner of a west-facing unit in 8 Whittier Place, the towers will block my horizon view of the harbor and prevent morning sunlight from reaching my home in the winter months.

I believe that the developer should be asked to reduce the size of the proposed structures. The existing proposal floor area ratio (FAR) is almost 50% larger than permissible by code (4.4 proposed, vs. 3.0) and rather than grant code relief, I suggest they be asked to reduce the height of the proposed towers to conform to the existing FAR guidelines.

My second concern is the significant addition of parking spaces. There is already severe traffic congestion in the area during events held at TD Garden, which are held at least 150 days a year. As a resident who owns a parking space and drives in and out daily, I am acutely aware of this problem. A net increase of 140 spaces will exacerbate this problem. I also do not understand how 140 new spaces will only generate 33 new vehicle trips during the afternoon peak hour when these traffic problems occur. If this is the case, why are 140 new spaces needed?

Another comment concerns the proposed "new active pedestrian connection through the site, which provides a safer, more humane pedestrian experience connecting North Station to MGH and the Charles River Esplanade" I believe that most residents appreciate the fact the Thoreau Path and surrounding green space are insulated from traffic noise and excessive pedestrian traffic, and that this is actually a drawback, not a positive to the current project proposal. A wide pedestrian connection is likely to invite significant foot traffic after TD Garden events, and I believe residents would prefer to avoid the unfortunate destruction of property and bad behavior that happens all too frequently after these events. I would like to see this part of the proposal reconsidered.

The developer describes plans for "ground floor uses such as residential lobbies, retail, and other tenant amenities" to "help activate the streetscape and pedestrian walkways." I support this idea, but note that other promised retail development in the area (such as ground floor retail in the Archstone Avenir at 101 Canal Street, which is a much more desirable retail location in terms of foot traffic) is vacant after several years and these ground floor vacancies create a negative perception of the area as abandoned and undesirable. I think this is a significant project risk.

My final comment is that this is a very ambitious project proposal, and I hope the BRA has assurances and supreme confidence that the developer has the funding to complete the project and make it a success in whatever final form it takes. I think you will agree that the city does not need another Filene's re-development, Columbus Center, or W Residences, to name a few projects that have not gone according to plan despite a more prosperous financial environment.

This final comment is more worrisome given my experience with the developer. In public interactions concerning this project, Equity Residental's representatives have been supremely arrogant and dismissive of

residents' concerns. I do not think they embrace the collaborative spirit that the BRA asks for between developers, the city, and its residents. Their disregard for key zoning regulations concerning the height and density of the development are clear evidence of their bad faith.

In closing, as a 9 year resident of the West End, I am extremely pleased with the improvements to the neighborhood over the past decade. The improvements are a large part of why I moved from Back Bay to the West End. The surface transformation of Causeway Street, the improvements to the traffic infrastructure around TD Garden, and the restoration of Thoreau Path (among others) have all made significant improvements to the neighborhood and residents' quality of life. I do not think this project as proposed will have the same positive impact and I urge the BRA to require the developer to make significant amendments that will make it a positive change for the community.

Sincerely yours,

Robert A. Sadowski

Resident and City Taxpayer

8 Whittier Place 10-D

Boston, MA 02114

Jay Ronke

B.R.A.

2011 MAR -9 A 11:39

PREVENTIVE MEDICINE

Do No Harm

Gilbert R. Lavoie, MD, MPH
8 Whittier Place, Suite 8H
Boston, MA 02114-1410 USA
TEL 617-947-9123
FAX 617-948-1553
Email: glavoie@massmed.org

March 6, 2011

To: John Palmieri, BRA Director

RE: The Equity Proposed Residential Development at the West End:

The Garden Garage project

We reside at 8 Whittier Place facing the beautiful Charles River. We absolutely love this area as it is safe, easy walking for most needs, and has open space around our apartment complexes. I do not want any more building in this area for many reasons.

1. **The first and foremost reason is simply safety.** This area is already very congested in that there is only one street - Martha Road, which is a one way for 8 Whittier Place, 6 Whittier Place, The Clubs at Charles River Park, and Amy Lowell Apartments. The traffic has already increased from the new buildings at Mass General Hospital and the Liberty Hotel; this added congestion is hampering emergency vehicles attempting to navigate this area. Now you are also contemplating the additional new apartment buildings for hundreds of more groups!
   Presently there is a need to rearrange the traffic patterns in this immediate area to allow for reasonable emergency vehicle access. Any <u>additional</u> increase in traffic would not be sane unless the traffic flow is completely restructured before any new construction.

2. **The present design is unacceptable.** Please come to our neighborhood with a better design which will better blend in with our open space, family atmosphere, and low buildings presently in the immediate area. **The West End Place is a good example of a beautiful building with a pleasant archway and reasonable height.**

Sincerely,

Gilbert R. Lavoie

Gilbert R. Lavoie

Bonnie Lavoie

Bonnie Lavoie

John J. Bowen
8 Whittier Place, 24C
Boston, Massachusetts 02114

March 8, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, Massachusetts -2201-1007

Dear Mr. Rourke,

In 1962, Herbert J. Gans, one of the most prolific and influential sociologists of his generation wrote *The Urban Villagers* in which he the described the West End as one of the greatest urban areas in the United States. Gans advanced the position that the urban renewal project of this neighborhood initiated in the 1950's which displaced thousands of people including members of my family and obliterated a diverse and rich culture was a major mistake on the part of the City of Boston.

I have been a resident and homeowner at 8 Whittier Place since 1994 and during this time have witnessed the continued development of Charles River Park which for the most part has been responsible. This includes the project at Charles River Plaza which transformed what had become an urban wasteland to a vibrant economic center and the West End Apartments which created underground parking and green space that is now enjoyed by the young and old.

I am deeply disturbed by the project that has been proposed by Equity and currently under review by the Boston Redevelopment Authority for the Garden Garage Project. Many important issues have been raised by individuals and community groups. The one that I want to focus on is density. Clear and simple ---- the project is much too large for the footprint.

My late father was a longtime employee of the Boston Housing Authority who was very proud of his tenure that spanned more than three decades. I recall his telling me how exciting it was to be part of the planning process for the original Columbia Point Housing Development. To Dad and his colleagues the idea of creating public housing on an open space that abutted the shoreline of Boston Harbor was quite wonderful.

He went onto to say that after about a year of operation there was a growing consensus that the project was over built and there was a density issue that was contributing to serious problems. The ultimate resolution, many years later, was a significant downsizing.

I want to go on record and say that I am **adamantly** opposed to the towers proposed by Equity.

Sincerely,

John J. Bowen

Copies to: The Honorable Thomas M. Menino
WPCT Board of Trustees

Rourke, Jay

From: Tavares, Nancy [n.tavares@neu.edu]
Sent: Tuesday, March 08, 2011 4:38 PM
To: Rourke, Jay
Cc: whittierplace@rcn.com
Subject: residential plans

I am writing to express my dismay at the magnitude of the buildings you are proposing over the Bubble Garage. The West End has had to endure a decimation of their community in the past and this will be another blight on the area. Not only will those huge buildings block out sunlight, they will overshadow the area. We moved from the Prudential area to escape this type of overbuilding only to find that this kind of overbuilding with no thought to the quality of lives of the people who live there is rampant in the City of Boston. Boston is known for its quality of life; i.e. grass, trees, park areas. If people wanted to live in New York, they would have settled there instead of Boston. As a community, we deserve better. We can certainly live with buildings that are built at a much lower height, but there is no need to have the oversized project that you are proposing. I hope that you will listen to the will of the people who live in this community and not think only of the large profit margin that such a project will incur.

Nancy J. Tavares, MSW, LICSW
Co-op Advisor/Faculty
College of Social Sciences and Humanities
School of Criminal Justice
Northeastern University
Boston, MA 02114
617-373-3379

Rourke, Jay

From: denise rollinson [dcrollinson@yahoo.com]
Sent: Wednesday, March 09, 2011 12:23 PM
To: Rourke, Jay
Cc: whittierplace@rcn.com
Subject: Opposition to Equity residential plans at CRP
Attachments: BRA.docx

Dear Mr. Rourke,
We are opposed to the development of the two new buildings by Equity Residential at Charles River Park. As two physicians who have lived here for 20 years, we feel it is unconscionable for Equity to build two new high rise apartment buildings on this already crowded property. The slogan was always, "if you lived here, you'd be home now". The folks at Equity are changing the landscape so much, that we might as well put up a sign that reads "if you live here now, you are living in a ghetto".

The new TD North facility and the other two Equity properties have been built without enlargement of the surrounding roads or creating appropriate parking places. As a result, we are barely able to leave our single parking place to go to work if there is a Celtic or Bruins game or some other event. The roads around CRP (including Martha's Road, Staniford Street, Cambridge Street and Storrow Drive) have become so congested that it is almost impossible for ambulances and fire trucks to get through. Martha's Road is too narrow to handle the additional traffic from the occupants of 500 more units that will egress onto it from the two new 20 story apartment buildings. This is dangerously poor planning and will cost lives and delays in treatment of acute medical problems by ambulance personnel and first responders to emergencies, such as firefighters.

Apartment dwellers are transient occupants who do not maintain and upgrade the quality of their apartments. This will drive down market prices of all of the units in CRP. Martha's road will be unable to handle the traffic of constant moving vans arriving all year long to help tenants move in and out. Ambulances and firefighters will not be able to get through. The new tenants will not be happy when they try to move in or go somewhere, and discover that the Celtics, Bruins or Lady Gaga are playing at the TD North Pavilion, and they are stuck in traffic in front of their apartments. The new tenants will be upset at hearing the Bruins and Celtics fans leanings on their horns after every single game because they cannot get out of the parking lot fast enough. Meanwhile, working folks like us will not be able to get to work on time because of the added traffic congestion. This plan cannot possibly be approved by any city planner who has any common sense, any conscience, or an education in urban planning.

The Whole Foods grocery store is our only local place to obtain groceries. It is already overcrowded because of the additional Equity units at CRP and because of the thousands of employees at MGH who shop there. Folks from Back Bay, Beacon Hill, and the North End use it their grocery store as well. The small convenience store, J Pace & Sons, on CRP property, is so crowded that it is almost impossible to shop there now, never mind adding the residents from 500 more units and their significant others.

We pay very high condominium fees to maintain beautiful gardens at CRP, yet every day, people from the two other Equity properties, as well as from MGH and West End Place, sit and walk all over our gardens and landscaped grass. Does Equity plan to build a garden for the residents of their two new high rises? We built a special playground for our children. Is Equity going to do the same? Are the tenants in this low income housing going to pay high condominium fees like we do to maintain the beauty of CRP?

We all know that Equity will make plenty of money if this project is allowed to proceed. The question is, "how would the bosses of Equity feel if two, 20-story, high rises were built in their very own back yard?" The answer is, "they don't care" because they live in places like Weston where there are strict building codes.

We have endured the big dig, the development of many other buildings, and quite frankly, we are out of room. We are sick and tired of being manipulated by greedy builders who do not care about enhancing the neighborhood. The demolition process is going to create a lot of dust and filth in the air which will decrease the air quality, making it hazardous for CRP residents with asthma and COPD, especially those in the Amy Lowell House. We hope that you plan to reimburse those of us who will be receiving the brunt of this dust in our apartments and assist residents suffering from adverse effects of inhaled respiratory irritants from the demolition of the garages. In addition, many of us who work in health care work night shifts, and have to sleep during the day. The noise pollution from this project will seriously impair the ability to sleep during day. How would you like to be cared for a sleep-deprived doctor when you have chest pain or some other serious illness?

The greed and carelessness of Equity to even introduce plans to build these two 20 story apartment complexes without any consideration to the community is beyond belief. We beg you to reconsider this atrocious plan to ruin the CRP development which is truly an oasis in a desert.

Thank you,

Sincerely

Denise Rollinson, MD

Kenneth Sassower, MD

Rourke, Jay

From: Angela [angela.adinolfi@gmail.com]
Sent: Wednesday, March 09, 2011 2:42 PM
To: Rourke, Jay
Cc: whittierplace@rcn.com; guillaume rousseau
Subject: Bubble garage

Dear Mr. Rourke,
My husband and I are strongly opposed to the towers Equity proposes to build.
The area is already very crowded with tall, charmless buildings, including Mass General.
We moved here two years ago to stay in the city, but still a restful area, and to be next to MGH for my cancer treatments.
This new project will add more people, construction, noise and overall pollution to the West End.
There is simply no more room to build here. Just because you CAN build up doesn't mean you SHOULD.
Thanks for your consideration,
Angela & Guillaume Rousseau
9 Hawthorne Place
Boston

Sent from my iPad

Nadège PEPIN
9 Hawthorne Place 10E
Boston, MA 02114

T 617 9559470
nadege.rique@gmail.com

March 9, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
BOSTON, MA 02201-1007

Re: Garden Garage Project PNF Comments

Dear Mr. Rourke,

My family and I have been renting an apartment in Hawthorne Place for some month now and I have to admit I was first pragmatically interested in the incredible location this place has to offer. It took a very short time before we realized how lucky we were to have joined such an international, open and interesting community surrounded by green paths and an easy access to the Charles River trails and boating communities.

This gigantic project clearly appears to me as purely financial, with no sort of will to add any value to the existing community. I am very surprised that the City did not frame it by some urbanism constraints in order to keep its size reasonable and avoid past mistakes. This would certainly have better helped the project melt into the community. Now I am afraid it faces an understandable wave of disapproval. Not to mention the nuisance resulting from the construction phase decoupled by the size of those towers, the resulting erased view for the apartment overlooking the Tobin bridge and the implied lack of natural light for the Hawthorne residents. This is certainly a very aggressive project that does not show any sort of interest for a smooth development of the West End community. **I am therefore letting you know I strongly disapprove this project in full** and truly think this will not improve the area. I am certain you could rethink it in a way that would impact people's well being more positively.

Sincerely yours,

Nadège PEPIN

Rourke, Jay

From: Stan Bozek [sjb7@rcn.com]
Sent: Wednesday, March 09, 2011 10:19 PM
To: Rourke, Jay
Subject: Fw: Equity Garden Garage Project.

----- Original Message -----
From: Stan Bozek
To: Jay Rourke
Sent: Wednesday, March 09, 2011 9:59 PM
Subject: Equity Garden Garage Project.

March 9,2011
Mr. Jay Rourke
Senior Project Manager
Boston Redevelopment Authority
Boston City Hall
Boston Ma.02201

Dear Mr. Rourke
I am now and have been a resident of West End Place since 1998 and long before that I lived here before the Rappaports demolished it.
I have seen many changes.I was recently looking at the buildings that Equity put up at Charles River Park,I noticed that they fit right in.

The project I'm concerned about is the one being built on the domed garage area.I do not look foreward to 2-3 years of construction.
I lived right next to the garage

I looked at the plans and the heights that Equity is proposing are far too high with there surroundings.My building is 10 stories, the
synagogue is very low and Amy Lowell is probably no higher than West End Place.

Bear in mind that West End Place has an inner courtyard with patios,for the people who live there,also trees,grass and benches.

If the sun is blocked how are we to sell those units? I hope that Equity be told about this and will propose some modifications or something
more suitable for it's surroundings.
Respectfully,
Stan J. Bozek
150 Staniford Street
unit 500
Boston,Ma.02114-2594
617-670-1856
sjb7@rcn.com

Information from ESET Smart Security, version of virus signature database 5940 (20110309)

The message was checked by ESET Smart Security.

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http://www.eset.com

March 10, 2011

Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

RE: Garden Garage Project

Dear Mr. Rourke:

I am an owner for over 10 years of a condominium in Hawthorne Place. Over the past several years there have been many high rise buildings constructed in the West End area by commercial and non-profit entities. This has progressed to the point that traffic congestion, wind-tunnel effects, and reduced visibility have had a severe impact on quality of life in this part of Boston.

I strongly oppose granting any variance for construction on the Garden Garage site!

Yours truly,

John M. Siliski, M.D.
Hawthorne Place #105
Boston MA 02114

8 Whittier Place, Unit 19-C
Boston, MA 02114

Jay Rourke
Senior Project Manager
Boston Redevelopment Authority
One City Hall Plaza
Boston, MA 02201

March 6, 2011

RE: Opposition to construction of two, high-rise towers by Equity Residential at the Garden Garage location (Lomasney Way, Boston, 02114).

Dear Mr. Rourke:

I own a two-bedroom condominium on the 19th Floor, 8 Whittier Place, in the West End. I have been a resident here for 33 years.

I strongly oppose the construction of the two high-rise towers (28 floors and 21 floors) at the Garden Garage site.

If the structure is any higher than 12 floors, I will lose my view of the Boston harbor, the ocean, the islands, and the sunrise over the ocean each morning, which I have enjoyed for 33 years.

Please see attached two PowerPoint files, that show how the construction of the 28-story apartment building will destroy my view to the East.

It would also create long shadows over Thoreau Path in the Charles River Park, and would increase the "wind tunnel" effect that we already have here in the Park.

In addition, the neighborhood at Charles River Park would be severely, adversely affected with 1,000 more people (and hundreds of cars) added to the congestion, which is already ever-present near the Garden Garage.

The construction of two high-rise apartment buildings would also lower the property value of my two-bedroom condominium, for future resale.

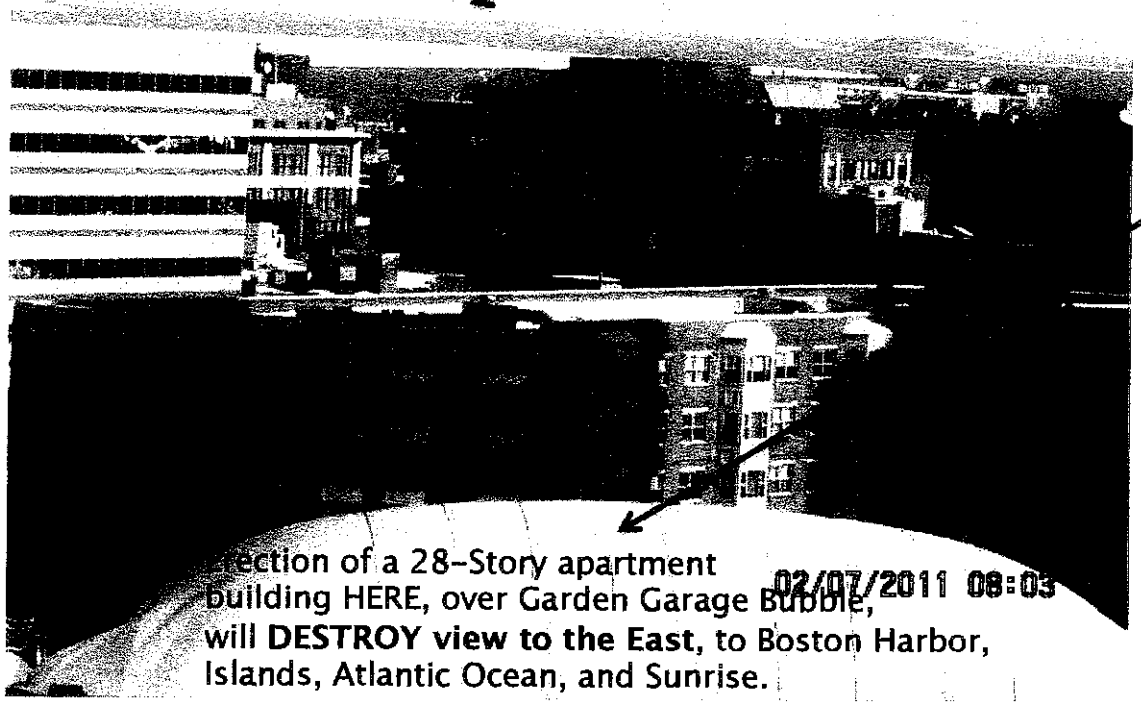
Please let me know what else I can do to prevent, or mitigate this building project by Equity Residential. Thank you.

Sincerely yours,

Margaret Naeser

Margaret Naeser, Ph.D.
8 Whittier Place, Unit 19-C
Boston, MA 02114
Email: mnaeser@bu.edu
Home Phone: 617-723-9487 Cell Phone: 617-686-1312

Current view to the East, from 19th Floor, 8 Whittier Place, Boston, 02114



Section of a 28-Story apartment Building HERE, over Garden Garage Bubble, will **DESTROY view to the East**, to Boston Harbor, Islands, Atlantic Ocean, and Sunrise.

Current view shows Boston Harbor, Islands, Atlantic Ocean, and Sunrise.

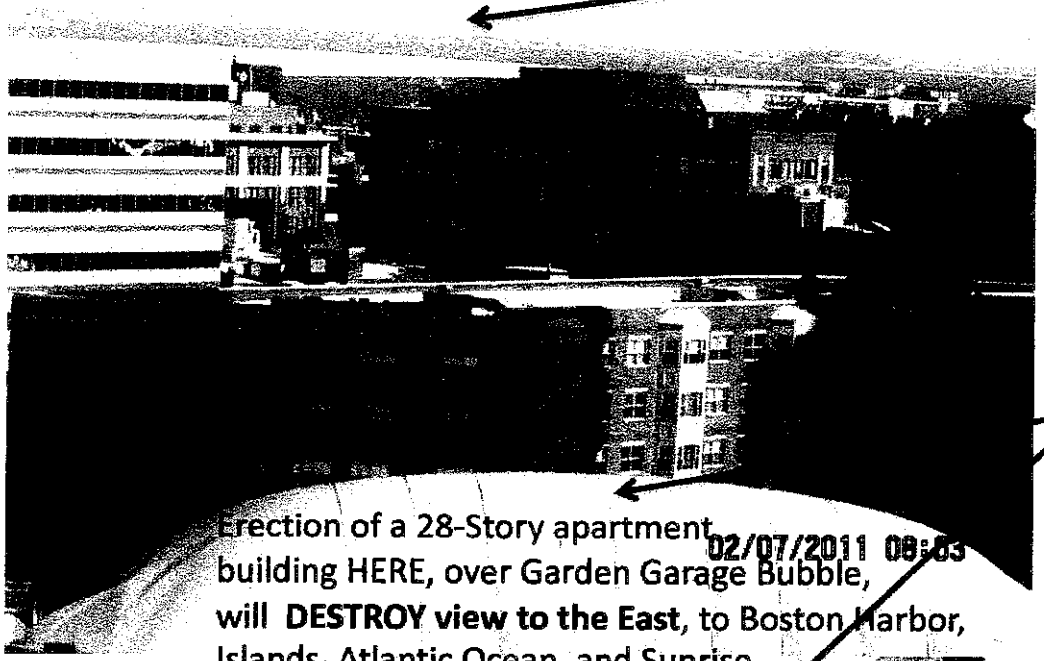
Construction of 28-Story Apartment Building, by Equity Residential will **DESTROY this beautiful view.**

Please do not destroy this view.

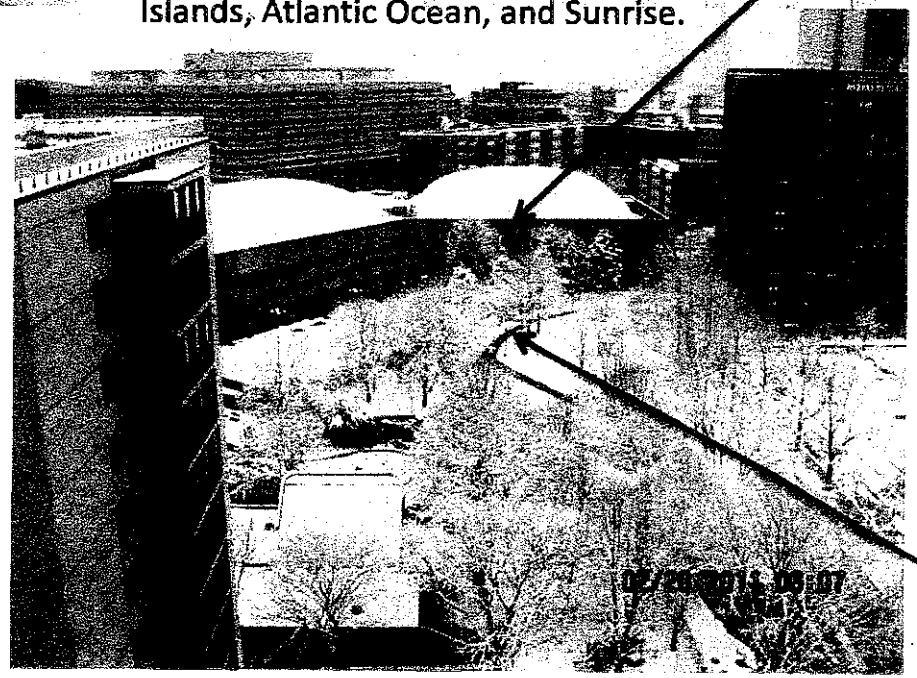
If a building is built, please make it ***no more than 12 stories high***.

The Charles River Park has beautiful open spaces now. The proposed high-rise apartment building will **ruin these views**, and **decrease property values** for condo units facing East.

Current view to the East, from 19th Floor, 8 Whittier Place, Boston, 02114



Erection of a 28-Story apartment building HERE, over Garden Garage Bubble, will **DESTROY view to the East**, to Boston Harbor, Islands, Atlantic Ocean, and Sunrise.



Current view shows Boston Harbor, Islands, Atlantic Ocean, and Sunrise.

Construction of 28-Story Apartment Building, by Equity Residential will **DESTROY this beautiful view**.

Please do not destroy this view.

If a building is built, please make it ***no more than 12 stories high***.

Charles River Park has beautiful open spaces now. The proposed high-rise apartment building will **ruin these views**, and **decrease property values** for condo units facing East.

It is important to preserve Thoreau Path, and **current open spaces**, without creating **long shadows, from a 28-Story building**.

Jay Rourke, Senior Project Manager
Boston Redevelopment Authority
One City Hall Plaza
Boston, MA 02201

March 1, 2011

Having participated in several meetings regarding the development of the 'Garden Garage' project I would like to take this opportunity to make several comments in writing which, I hope, will be incorporated into the continuing deliberations shaping the venture.

First, let me say that I am pleased to see that the garages may be replaced with residences; I am confident that our new neighbors will make positive contributions to our west end community. I do, however, feel that the new development needs to fit the neighborhood and contribute to its continued restoration. Therefore I would like to suggest that the building be conceptualized to present a welcoming face to the park and that it integrate well with its neighboring buildings in terms of height and mass. By so doing, the west end green on Thoreau Path can become more of a center and the retail services located in the park will thrive.

Second, I feel that the impact of the new development on traffic in and out of the garage, in particular, requires consideration. Two issues come to mind – the service access and the parking access. Given that another apartment is scheduled for development across from the residences, and that this is prime territory for event parking for the Boston Garden, access and egress as well as traffic flow requires careful analysis. My suggestion is that the traffic engineers actually monitor the flow during events – if that pattern can be handled, everything else will work! Likewise, consideration needs to be given to the increased traffic in the easement as well as the ventilation of the new underground garage space.

Third, I really think that the project needs a new name – not the 'Garden Garage' project. The Garden has a garage directly underneath it – this is not the Garden's Garage! How about a name that is more west end....not a marketing slogan. I think the neighborhood would appreciate it and good will is an essential commodity in any new development.

Finally, I strongly encourage you to make sure that any further presentations consider the audience. It is not appropriate to speak to the residents as if they were architects, or traffic engineers, or developers. The presenters need to come at the development from the perspective of a resident in the West End – I guarantee you that those in the meetings would be more likely to listen – and to feel that they were being heard!

Hope these comments are helpful – good luck!

Dr. Katherine German
West End Place #331
Boston, MA 02114

FROM: JOSEPH ANDREW McDONALD 28 February 2011
8 WHITTIER PLACE UNIT 11-J, BOSTON MA 02114
617-367-0649

TO: JAY ROURKE
Senior Project Manager
Boston Redevelopment Authority
Garden Garage Proposal

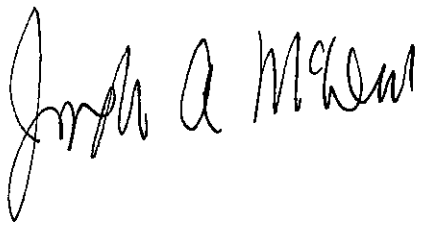
SUBJECT: GARDEN GARAGE PROPOSAL

1. I concur with the letter sent by the West End Civic Association, but I wish to elaborate on the problems that will be added to traffic flow by the proposal now presented by the Equity Corporation.

2. At present, before every evening Bruins or Celtics Game, a tremendous traffic jam occurs during the 30 minutes before the game. All the game traffic traveling eastward across the Craigie Bridge, eastward along Storrow Drive, and both northward and southward along Interstate 93 is funneled from Leverett Circle into Martha Road and Lomasney Way past the present Garden Garage. With five bays open to Lomasney Way, it can "swallow" multiple automobiles swiftly. Even so, both Martha Road and Lomasney Way are packed solid with automobile fo 30 minutes. Residents are unable to reach Whittier Place and the Amy Lowell residences.

3. The proposed development will have only three bays for entry/exit, so will be able to "swallow" game traffic only half as efficiently. We require a study and report by the Boston Traffic Department on the effect of these delays. Three lanes are adequate during the day, but not for the 30 (or maybe now 45) minutes before games.

4. The construction project now calls for 3 years work, so for at least two winters none of the 350 parking spaces opposite the garden will be available. While there is excess parking at the Government Center Garage, it seems impossible to feed the traffic through the complicated Lomasney/Causeway/Staniford/Merrimac intersection. If fans chose the alternate route by Cambridge Street, it would stress the already vexed Charles Circle. We need a second study by the Boston Traffic Department on how traffic will be rerouted for these two or three years.



150 STANIFORD STREET
BOSTON, MA 02114

WEST
END
PLACE

PHONE 617.720.4646
FAX 617.725.1888

March 2, 2011

Mr. Jay Rourke, Senior Project Manager
Boston Redevelopment Authority
Boston City Hall
Boston, MA 02201

Dear Mr. Rourke:

On behalf of the managing board and unit owners of West End Place, I am pleased to submit our statement of response to the Garden Garage Project proposed by Equity Residential in the PNF dated January 7, 2011.

The proposed demolition of the existing garage and construction of a large residential complex is a major project for the west end area and a very substantial one for the abutters such as West End Place. As noted in our statement, we have chosen to point out a number of issues and concerns of the condominium that should be addressed more thoroughly by the developer, but we wish to reserve expressing a formal position until the developer has provided detailed responses in the project impact report. It is our hope that the Boston Redevelopment Authority will convey to the developer these issues and concerns with the expectation that they will be appropriately addressed as the planning process unfolds.

We are most appreciative of the leadership of the BRA and your office in facilitating the planning and approval process, and we look forward to continued dialog and a convergence of interests that will bring to life a new project for the enhancement of the west end area and the City of Boston.

Sincerely,

William Grogan
President of the Managing Board

Attachment: *West End Place Comments on Garden Garage Project*

West End Place Comments:

Garden Garage Project

February 28, 2011

This statement is the response by representatives of the West End Place Condominium Association (WEP) to the Garden Garage Project proposed by Equity Residential in the PNF dated January 7, 2011. It is to be submitted to the Boston Redevelopment Authority in conjunction with the Article 80 Review Process for large scale projects. The statement is intended to present the issues and concerns of the condominium that should be addressed in detail by the developer in the Draft Project Impact Report (DPIR). West End Place is not taking a formal position on the issues at this time but expects to review the DPIR upon its completion and subsequently to submit a more definitive statement on any areas of continuing concern.

The following sections of the statement summarize the apparent strengths of the proposed project and the issues of concern. Issues 1-4 are applicable to the overall West End. Issues 5-6 are applicable mostly to West End Place.

Project Strengths

1. Removal of unattractive parking garage and re-location underground
2. Increase of open space for the West End neighborhood
3. Improvement of pedestrian access to Thoreau Path and connectivity between West End and North Station area
4. Creation of additional residential apartments, with 15% affordable
5. Provision for additional retail establishments and services
6. Energizing of Lomasney Way, Martha Road, and Nashua Street with more vibrant life
7. Addition to real estate tax base for City of Boston
8. Potential increase of real estate values for neighboring condominiums and cooperatives
9. Strength and commitment of Equity Residential

Project Issues

1. <u>Building scale and design issues</u>
   - 1.1. Height, number, form, and footprint of towers need in-depth analyses in comparison to other proposed alternatives coupled with trade-offs (including advantages and disadvantages) required for other alternatives and providing compelling rationale for preferred conceptual design, including economics of reduction in scale
   - 1.2. Impacts of proposed project design need to be documented in detail, including means of minimizing impacts
     - a. Spatial impacts: integration of tall buildings in existing urban context/fabric and local character and identity of the West End;
     - b. Micro-climatic impacts: sun, solar glare, shade, sky, and wind (pedestrian ways and abutting properties;

c. Engineering impacts: soil, water, ledge, surrounding buildings, and surrounding infrastructures;
d. View corridor impacts: from other buildings, from the street-level, and from public spaces; and
e. Economic impacts: positive and negative impacts of proposed project, in comparison with a "normal" project (i.e. one constructed in scale of current buildings), from standpoint of developer, municipal authority, and local residents

2. Parking and traffic issues
   2.1. Need to document adequacy of proposed garage entry/exit on Lomasney Way plus feasibility analysis of exiting through Longfellow garage to Staniford Street
   2.2. Need assessment and solutions on air quality and exhaust mechanisms
   2.3. Need assessment and solutions on traffic flow and congestion, especially during rush hours and TD Garden events and including overall traffic flow planning and management for the area (e.g. Crossroads Initiative traffic planning)
   2.4. Need for parking availability for residents/guests in Amy Lowell House and West End Place

3. Community/neighborhood issues
   3.1. Need to assess and consider housing mix issues
      a. Amount of affordable housing
      b. Amount of family housing (three bedroom)
   3.2. Need to assess and consider public space issues
      a. Thoreau Path enhancements: access, openness, views, signage, gathering places, kiosks, plantings, pavings, furnishings, etc.
      b. Recreation spaces: types and locations
   3.3. Need to assess and consider retail and services issues
      a. Types of retails and services
      b. Amount of retails and services
   3.4. Need to review formal names of new buildings and nomenclature for West End

4. Construction period issues
   4.1. Need to assess impact of demolition of existing garage
   4.2. Need to assess impact of extent (footprint) and depth of excavation below ground, especially bedrock
   4.3. Need to assess impact of staging work beyond property lines, worker vehicles, materials removal and delivery, including methods and schedules
   4.4. Need to assess plan for rodent control during construction period
   4.5. Need to review construction management plan (CMP) and communication plan, including construction hours and policies
   4.6. Need to assess and develop plan for extended construction period (beyond three years)
   4.7. Need to assess and develop remedies for direct impacts on abutters (Amy Lowell House and West End Place)
      a. Impact on abutting buildings, garages, and courtyard structures
      b. Impact of noise and dust

c. Impact of ground vibration
d. Impact on air quality
e. Impact on utilities, temporary cut-offs and on-going usage
f. Impact on potential sales of units to buyers during construction period

5.

Easement and loading/service area issues (shared with Longfellow Place and West End Place)

5.1. Project needs revision of Easement Agreement regarding allocations of space, rights-of-passage, use, etc.
5.2. Project needs solutions for management of trash bays, loading operations, and move-ins/move-outs in Loading/Service Area
5.3. Project needs solutions with respect to policies and procedures for entry and exit, passage, and temporary standing in service road
5.4. Project needs solutions for service road enhancements: security guard control system, caution devices and traffic lights, and means of left/right turns
5.5. Air quality and exhaust mechanisms need assessment and solutions

6. Special opportunities for collaboration with WEP

6.1. Enhancement of visual link from WEP archway and courtyard, including views of 8-story portion of South Tower (design and appearance), view of open spaces, and view of blue sky
6.2. Opportunities for sharing recreational facilities
6.3. Consideration of improvements for Easement (policies, gate, security guard, etc.)
6.4. Preservation and use of dog run along Easement

Summation

In summary, the above issues need to be addressed by the developer at the next stage of the review process. Although WEP is not taking a formal position until after the DPIR is produced and reviewed, the following preferred general solutions are emerging as follows:
(1) lower buildings in scale and connected imaginatively to the character of the existing West End and the dynamics of the Nashua Street area; (2) efficient, effective and feasible solutions for garage activity and traffic; (3) community-related components to achieve an appropriate housing mix, Thoreau path and park centrality, and Nashua street vitality; (4) thoroughly developed enforceable construction management plans, including mitigation of at-risk issues; and (5) other appropriate iinprovements and enhancement resulting from the planning and review process.

This statement, prepared by Denton Crews, Jane Forrestall, and Bill Georgaqui, was approved by the Managing Board of the West End Place Condominium Association on February 28, 2011.

Rourke, Jay

From: Bonnie Joseph [bonnie.joseph@yahoo.com]
Sent: Monday, March 07, 2011 5:37 PM
To: Rourke, Jay; weca.boston@gmail.com
Cc: weca.boston@gmail.com
Subject: Redevelopment project too much

Dear Mr. Rourke,

Undoubtedly you are hearing from many of the residents of the West End in regard to the Bubble garage project. Everyone I have talked to about this Equity project feels that the scope is too large for the infrastructure that supports this area. Simply put, you can't add to the congestion in this area unless you have a plan for the infrastructure and change what already doesn't work. It would be negligent to do otherwise and result in more cost to taxpayers, as well as safety concerns.

As it is, if there is an event at the Fleet Center (which there frequently is) traffic backs up for a mile onto Storrow Bridge or over the disasterous Museum of Science bridge. That's why practically every night they call in a police detail. As a taxpay to this over run! Only locals know how to negotiate the Leverett Circle. One could count numerous near misses by those unfamiliar with the traffic pattern and unsure of which of the twelve options to take. They only have seconds to make a decision. Cabbies can't even figure it out.

Although I support much needed growth and employment in a slow economy I don't think short term benefits will justify the long term detriment to living conditions in the area. If you lived here you can't get out of your parking lot now. Or if you lived here you'd be home now, if you only had another driveway.

I support safety, planning and the enhancement of community. This project offers none of that.

Thank you for reconsidering this endeavor.

Bonnie Joseph
8 Whittier Place
Boston, MA

Rourke, Jay

From: kmanning10@aol.com
Sent: Saturday, March 05, 2011 8:20 PM
To: Rourke, Jay
Subject: Equity Development West End Garage

Dear Jay:
I attended the recent Community meeting held at Schriner's regarding the Equity Residential West End Garage redevelopment.

I am writing to express my concern on this project for several reasons.

1. The sheer size of the new development. The footprint of the buildings is simply too imposing for the space available. The impact of the footprint will affect not only the sense breathing room in the West End; but also permanently mar the beautiful skyline we now enjoy (including Harbor views) and cast massive dark shadows where none exist now.

2. Congestion and traffic flow. Impact on our airspace, breathing room; more people, more cars, more exhaust, more traffic backup.

As described during the meeting, the land blasting that the City (Fire Dept) authorized during the last Equity development in the West End; caused irreparable building cracks evident in my unit (8 Whittier 23D) and that of one of my neighbors on 23. I request that someone from Equity come visit my unit to assess the damage. I fear more damage to our building with new blasts.

Also, my view from 23D is directly impacted by this proposed development. This new development is dead square in my site line. I request that someone from Equity come to my unit to look the current skyline view and discuss how the new development would impact my home, and potentially my home valuation.

Sincerely,

Katharine Manning
8 Whittier Place 23D
Boston, MA
617-248-0371

Rourke, Jay

From: Elaine Austin [elaine_austin@hotmail.com]
Sent: Sunday, March 06, 2011 11:52 AM
To: Rourke, Jay
Subject: Opposition to Equity Garden Garage project

Elaine Austin
6 Whittier Place Apt 5E-6
Boston, Ma 02114
617-532-1077

March 6, 2011
Jay Rourke, Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, Ma 02201-1007
Re: Garden Garage PNF Comments

Dear Mr. Rourke,

We purchased our condominium in August 2008. I am strongly opposed to the project as described in the project notification for the Garden Garage project. Main areas of concern: 1) The buildings are too high. This will degrade our quality of life. 2) Such huge buildings could cause a deterioration of water and sewer services for everyone else living here **3) A risk in the PNF described situations where the adjacent buildings could be destroyed**

For whatever project is eventually given the go-ahead, the builder should be required to take out a bond or insurance that would compensate Whittier and Hawthorne condo owners, and Amy Lowell owners their purchase price or full market value – whichever is greater – in the event that the project destabilizes the nearby buildings enough to destroy them. This compensation should include parking easements purchased. This bond/insurance policy should also cover the situation where the buildings were only partially destroyed (example: project work results in some cracks in a building or makes some of the façade fall off). There should also be a requirement that a detailed record of the condition of buildings including photos be provided to Whittier, Hawthorne and Amy Lowell after it is verified by all parties as being correct. The risk as stated in this PNF:

3.2.9.3 Potential Impacts to Adjacent Buildings and Utilities
Potential impacts to adjacent facilities due to foundation construction include impacts to area groundwater levels, noise, ground vibrations and ground movement due to excavation and rock removal. The foundation design and construction will need to be completed to limit adverse impacts to adjacent facilities.

Not enough study of this issue has been done. Just because someone could build something doesn't mean they should if it destroys the rest of the neighborhood in the process.

Sincerely,

Rourke, Jay

From: Aaron Tward [atward@partners.org]
Sent: Sunday, March 06, 2011 9:35 PM
To: Rourke, Jay
Cc: whittierplace@rcn.com
Subject: Garden Garage

Aaron Tward

8 Whittier Place #18E
Boston, MA

02114

Jay Rourke
Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Dear Mr. Rourke,

I am writing to you to express my concern about Equity Residential's plan for redevelopment of the Garden Garage in the West End.

Although in principle I do not object to redevelopment outright, the proposed buildings place an unacceptable burden upon other residents of the West End. In particular, although attention was paid to attempting to preserve some resident's views, nonetheless, both of these buildings would significantly adversely affect our view, hence decreasing the property value of my condominium, and that of other similar homeowners. Indeed, Equity Residential acknowledges that both of these proposed towers are in violation of the height requirements of the Boston Downton IPOD. I call upon you to aid in simply enforcing the law with regards to these height requirements - 310 feet excluding rooftop mechanicals is simply too high and would create an eyesore. 125 feet as stipulated in the Downtown IPOD is far more acceptable.

Additionally, this neighborhood already has difficulty with noise and traffic, and increasing the density of housing and amount of traffic both during construction and after construction has completed will place an undue burden upon the residents of the West End.

I look forward to some definitive resolution of this situation, and appreciate your consideration.

Sincerely,

Aaron Tward M.D. Ph.D.
Clinical Fellow in Otology and Laryngology Harvard Medical School Resident in Otolaryngology
Massachusetts Eye and Ear Infirmary

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please contact the Partners Compliance HelpLine at http://www.partners.org/complianceline . If the e-mail was sent to you in error but does not contain patient information, please contact the sender and properly dispose of the e-mail.

Rourke, Jay

From: B Sinkiewicz [gsrbri@gmail.com]
Sent: Monday, March 07, 2011 8:51 AM
To: Rourke, Jay
Cc: whittierplace@rcn.com
Subject: Garden Garage Project

Dear Mr. Rourke:

I am a resident at Eight Whittier Place and am writing to express my concerns about the subject project.

The infrastructure in the West End area is already under significant strain, due to the large number of residential buildings, hospitals, and the Boston Garden. Traffic grows worse and worse and impacts not only the immediate area, but Route 93S, Storrow Drive, and the other roads that are impacted by traffic issues at Leverett Circle due to vehicle congestion exacerbated by the large volume of traffic, both vehicle and pedestrian, in the West End.

I can't speak to other infrastructure impacts in-detail (sewerage, water supply, etc.), as these are harder to quantify. However, adding 500 additional residential units and large parking garages with no comparable increase in infrastructure to account for this large increase in volume is worrisome.

At this time, I can only convey that I, along w/many other West End residents, am against this project going forward and the investment of tax dollars in a project that will overburden the area and numb the improvements that have been recently made to make the West End a livable area.

Thank you.

Brian Sinkiewicz
8 Whittier Place, Apt 22A
Boston, MA 02114

Rourke, Jay

From: TFlynnCLMP@aol.com
Sent: Monday, March 07, 2011 12:48 PM
To: Rourke, Jay
Subject: Garden Garage Project

Dear Jay,

I am writing you today to let you know that the Carpenters Union would like to go on record in full support of Equity Residential plans to revitalize the area around the Boston Garden. Omit Equity would like to replace an existing 40 year old pre cast above ground parking garage with a new 850 car , below ground parking. In addition, Equity would like to erect 2 new apartment towers, of 21 and 28 stories, creating 500 units of much needed housing units. Furthermore, with a record number of Carpenters currently unemployed, and have been for an extended period of time, we are particularly excited about a project creating over 425 construction jobs, and they can't come soon enough. I would respectfully ask the BRA Board to look favorably upon the application of Equity Residential

Rourke, Jay

From: Michael Curley [mjc2217@columbia.edu]
Sent: Friday, January 21, 2011 10:45 AM
To: Rourke, Jay
Subject: Garden Garage Towers

Mr. Rourke,

Please do not approve the Garden Garage Towers plan as currently proposed. The "tower in the park" concept is clearly flawed from an urban design/planning perspective and will only erode the urban fabric you are trying to create in this area. I urge you to not be afraid of density at the pedestrian level, connect the towers with some element that still allows for pedestrian use, just not a park. Think to the future of the area, if every set of apartments that is built here is connected with a park, half of downtown Boston will be parks in 50 years. If people want parks, isn't that what the Greenway (easily within walking distance) is for? Additionally, the area immediately around North Station has huge potential for transit oriented development, 385,000 square feet of parking is counterproductive, ease parking requirements and let the developer produce a higher quality structure that is better for the city. Thank you for your time.

Michael Curley

Rourke, Jay

From: Margaret Naeser, Ph.D. [mnaeser@bu.edu]
Sent: Sunday, January 30, 2011 1:04 PM
To: Rourke, Jay
Subject: Opposition to Construction of High Towers at Garden Garage

January 30, 2011

Jay Rourke

Senior Project Manager

Boston Redevelopment Authority

One City Hall Plaza

Boston, MA 02201

RE: Opposition to construction of two, high towers by Equity Residential at the Garden Garage location (Lomasney Way, Boston, 02114).

Dear Mr. Rourke:

Per our conversation at the January 25, Garden Garage Community Meeting, the purpose of this email is twofold:

1. To inform the BRA that I am in strong opposition to the construction of the two new, 21- and 28-story towers by Equity Residential, at the site of the current Garden Garage.

Therefore, I am in favor of leaving the Garden Garage, as it is.

2. To request that a photographer come to my condominium unit, to photograph the magnificent views of the Boston Harbor, which I would lose, if Equity Residential is allowed to construct the two, high towers on the Garden Garage site. You had suggested that this photography could be done, so that the impact would be documented.

I own a two-bedroom condominium at 8 Whittier Place, on the 19th floor, where my living room windows face the east, and I have an ocean view. The high towers would be built directly east, less than a city block in front of my living room and bedroom windows. The high towers would obstruct my view of the Boston Harbor, the islands, the Atlantic Ocean, as well as runways at Logan Airport. It is a most gorgeous view, which I have enjoyed for 33 years.

Anyone who comes into my condo, Unit #19-C, is immediately drawn to my living room windows, to see the view to the east. If Equity Residential constructs the high towers (21 floors and 28 floors), I will lose this view, which I had expected to retain for decades to come in the future.

In August, 1977, I moved from Palo Alto, California to 8 Whittier Place, Boston, 02114. Thus, I have enjoyed a magnificent view of the Boston Harbor and the sunrise, for 33 years. The view is especially beautiful with the sailboats in the harbor. It is devastating to think that I would lose this view, if Equity is allowed to construct these two, high towers.

I am employed at the VA Boston Healthcare System, Jamaica Plain campus; and am a Research Professor of Neurology, Boston University School of Medicine, where I conduct brain imaging research (MRI scanning) with stroke patients who have language problems (aphasia). My schedule is quite busy, so I would need advance notice, to arrange for a photographer.

Again, I would like to stress that I am in complete opposition to the construction of these two, high towers, by Equity Residential. In addition to obstructing my beautiful view of the Boston Harbor (and the sunrise), it would increase the population density by at least 1000 people, and increase the traffic congestion that is already quite dense in this area. It would create long shadows over the Thoreau Path area in the Charles River Park, and would increase the "wind tunnel" effect that we already have here in the Park. Also, the construction of the two, high towers in front of my living room windows would decrease the value of my condo, due to obstruction of the view to the Boston Harbor.

Sincerely,

Margaret Naeser, Ph.D.

Whittier Place, Unit 19-C

Boston, MA 02114

Email: mnaeser@bu.edu

Home Phone: 617-723-9487

Cell Phone: 617-686-1312

Rourke, Jay

From: Robert Cabitt [robertcabitt@verizon.net]
Sent: Monday, February 07, 2011 8:41 PM
To: Rourke, Jay
Subject: Proposed Development of Garden Garage

The Proposed Development of the Garden Garage by Equity, the LARGEST real estate company in the United States, is a sorry example of the greed and selfishness of this GOLIATH. We need a David with a slingshot to slay this proposal.

Not satisfied with expanding the West End/Charles River Park, Equity now wants another MONSTER in our backyard when they haven't yet rented their new apartments.

I have lived at Amy Lowell Apartments since 1993 and experienced numerous rent increases
despite empty units and frequent turnover of tenants. The market rent at Amy Lowell now exceeds $1800. You can rent a condo at Whittier Place with TWICE the square footage for less money than the 550 s.f. Amy Lowell units.

Rents at Equity's proposed development will be even HIGHER. Their political campaign contributions will increase exponentially.

Maybe we need a tenant revolution like the current political disaster in Egypt to fight Equity
dictatorship. Maybe we need a new mayor.

P.S. I am opposed to Equity's Proposed Development of the Garden Garage.

Robert M. Cabitt
65 Martha Road #6B
Boston, MA 02114
617.248.9410; 617.571.1144
robertcabitt@verizon.net

Rourke, Jay

From: Tom Austin [tom.austin@gmail.com]
Sent: Wednesday, February 09, 2011 9:07 AM
To: Rourke, Jay
Cc: gwhite@eqrworld.com; Shurtleff, Lauren
Subject: garden garage redevelopment project

I for one support replacing the parking garage with a new building or two. It's an eyesore and I believe the area would be well served by an even taller, signature structure, with a 450 foot tall west tower and a smaller 6 story east building. I've written the developer suggesting the incorporation of a small boutique hotel in the bottom 8 floors and a stack of condos in the top 20, or something like that, with rental units in the middle (the more condos, the better). By 2015, when this project is complete, the market for condos should be much larger. If not, with a change in final finishes, they can be turned into rentals.

Blockage of sunlight can be minimized with a single slender tower with a footprint not much larger than currently envisioned for that location. Adjacent to Amy Lowell House, the shadow footprint on Charles River Park would be minimized.

Traffic management during (and after) construction is essential. It can take 45 minutes or more today to leave the Whittier Place parking garage some evenings. I can imagine that removing the garage can be tied to a plan to reduce traffic on Martha drive and Lomasney Way. Once the new underground garage opens, how does the developer plan to cut down its impact on the neighborhood?

The garage should go. Let's be smart about how we do it.

Rourke, Jay

From: Benjamin Tisdale III [benegriprock@hotmail.com]
Sent: Thursday, February 10, 2011 11:03 PM
To: Rourke, Jay
Subject: Propsoed Building; Garden Garage

Good Day, Mr. Rourke,

Here's hoping this email; which I am writing in lieu of a letter (which I may also send), finds you well.
I, and my family, on the other hand, are not well; having to once again battle Equity Residential over the quality of life in our neighborhood. It seems that the dust from their last unwanted and intrusive project has barely settled. Yet here we are again.

It is no secret that Equity has not been a good neighbor in the Charles River Park/West End neighborhood. They value nothing but their profits and care little for the long term residents. Since the completion of their last works, there has been an increase in trash, loud and rowdy students, and people in general who care little for the over all quality of life. And, those units are not even fully occupied.

It has been reported recently that the population of Boston has been on a steady decline. So why does Equity chose to build more and bigger buildings? Could it be that they do not care about the over all loss of the enjoyment of our property? Empty units are nothing but a tax write off to them. Yet we will be stuck with bigger, semi-empty buildings; with the potential to rob our homes of the day light we now enjoy and the water views we've paid so dearly for...

It would appear that Equity will not be satisfied until they have completely over-run and ruined the West End; turning it into the one thing it was re-created to avoid; an over crowded, dark, congested mass of concrete and buildings.

Now I know it will be virtually impossible to stop Equity completely from building this "proposed project." I understand that they do own that land. Still, I, my family and several of my neighbors beseech you: Please Scale it DOWN. 21 stories and 28 stories are much too big... It will take up too much space, further over-run our neighborhood and severely lesson our quality of life. 500 units is too much.

I ask you Sir, to please, If we can not stop this project, at least limit Equity's efforts to take over ruin the West End. It is our home...and we've had quite enough of Equity.

Respectfully,

Benjamin F. Tisdale
8 Whittier Place
The West End

Rourke, Jay

From: josephpventi@gmail.com on behalf of Joseph Venti [jventi@rcn.com]
Sent: Monday, February 14, 2011 11:43 AM
To: Rourke, Jay
Subject: Garden Garage proposal

Jay, I attended the last presentation and as a condo owner at 9 Hawthorne, I was impressed by the presentation given by the architect. I liked the proposal and the opening spaces that allow me to get a view that I don't presently get as well as the design of the high riser buildings.

--

Joe Venti
9 Hawthorne Place #5D
Boston, MA 02114

Rourke, Jay

From: diane190@rcn.com
Sent: Tuesday, March 01, 2011 4:03 PM
To: Rourke, Jay
Subject: Garden Garage project

I attended the Feb 7 meeting and have the following comment:

1. The city of Boston and the BRA destroyed a neighborhood in the late 50's and early 60's in order to create the Charles River Park enclave.
2. While this new enclave initially was physically unattractive (I have seen photos) it gradually, in time, has developed into a real park like environment, so different from other areas of the city.
3. Having now lived in this park area for 9 years, I have come to see how residents have views of sky, sun, moon, water and greenery from a variety of vantage points, views not available from most other parts of the city.
4. The most recent buildings of Equity Residential (West End Place) destroyed or interfered with some of these views.
5. Now it appears that this latest proposal will continue that process, blocking views of sun and rising moon from those residents whose apartments/condos face east. Water views will also be blocked on those higher level units.
6. While I applaud the change of the ugly garage and bubble into pleasant looking apartments, it does appear that this project as currently configured will once again take a step toward the destruction of the West End.
7. Charles River Park will now appear like a New York City environment of high rises, little greenery, and no views.

I would urge the BRA to find some accommodation with those already residing in the area and try not to destroy their propery values and the views.

Diane Wood

617-523-618

Edward O'Neil
65 Martha Rd.
Apt. 4M
Boston, MA 02114-

March 9, 2011

Jay Rourke, Project Mgr.
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Garden Garage
Project PNF
Comments

Dear Mr. Rourke:

Well, here we go again. Bad enough that we here at Amy Lowell House, as well as residents of the Whittier and Emerson complexes, had to endure months (or was it years?) of early-morning noise (beginning at 4:30 a.m.) from vehicles "delivering supplies" (a cute way of circumnavigating an ordinance designed to control noise before 7:00 a.m.) during construction of the apartment buildings behind the MGH, as well as the seemingly endless activity at Hawthorne! But now, only yards from our home for the last fifteen years? (Difficult not to sense a little BRA arrogance here.)

I can only wish – in vain, of course – that the BRA could concentrate its efforts in more immediately necessary areas.

Meanwhile, I'll get out my magic marker and change that rubric to: "If you lived here, you'd be deaf now"!

Sincerely,

Edward O'Neil

Heather and Jeff Stein

Dear Mr. Rourke,

We are opposed to the proposed Equity towers. The influx of families will put an additional stress on the West End in terms of education and the lack of public schools. Therefore, we oppose this project.

Sincerely,

Heather Stein

Attachment A

Transportation Technical Appendix

- Traffic Count Data
- Synchro Reports
- Trip Generation

Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
E/W Street: Charles River Dam Road
City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011
Page No : 1

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Groups Printed- Cars - Trucks

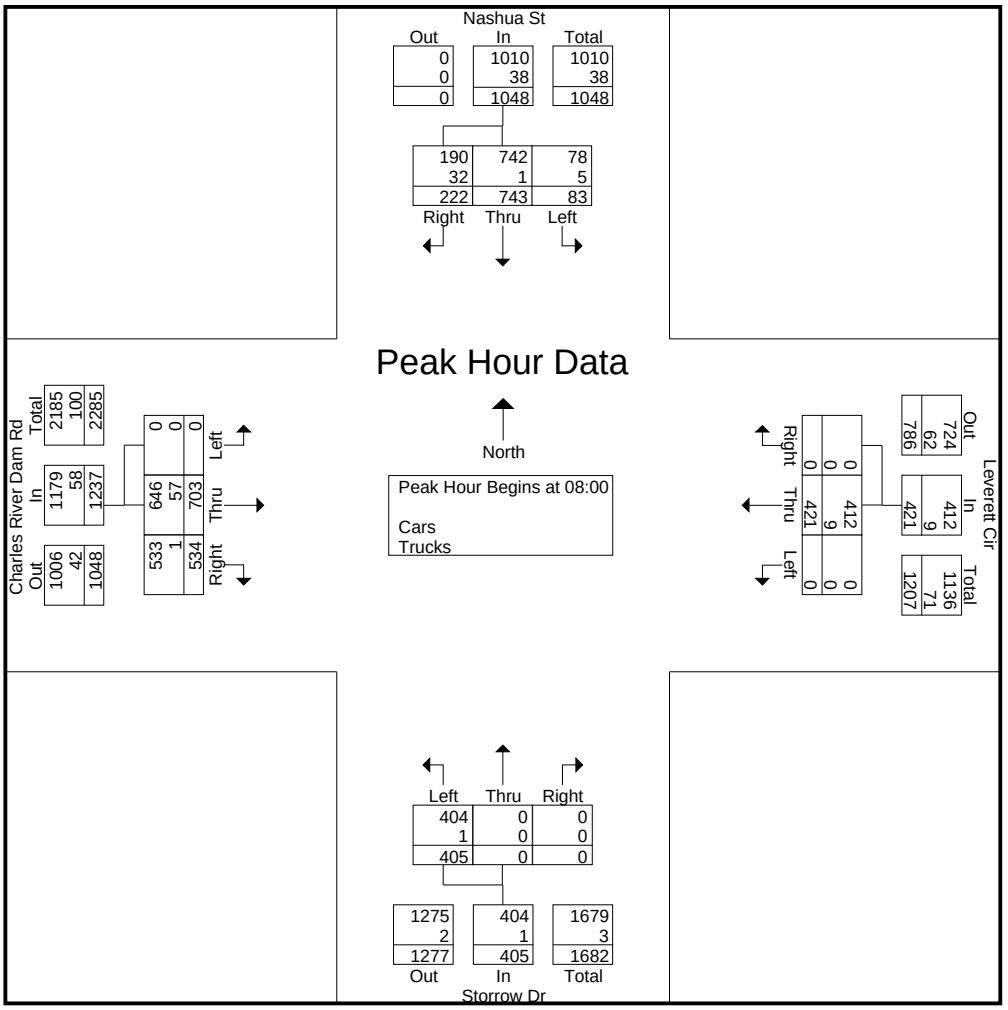
	Nashua St From North			Leverett Cir From East			Storrow Dr From South			Charles River Dam Rd From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:30	33	186	56	0	114	0	80	0	0	0	170	134	773
07:45	33	178	46	0	123	0	84	0	0	0	137	138	739
Total	66	364	102	0	237	0	164	0	0	0	307	272	1512
08:00	18	211	45	0	95	0	106	0	0	0	149	143	767
08:15	21	164	50	0	95	0	95	0	0	0	188	130	743
08:30	24	183	70	0	120	0	90	0	0	0	161	119	767
08:45	20	185	57	0	111	0	114	0	0	0	205	142	834
Total	83	743	222	0	421	0	405	0	0	0	703	534	3111
09:00	18	129	46	0	92	0	68	0	0	0	160	120	633
09:15	23	159	54	0	85	0	101	0	0	0	167	113	702
Grand Total	190	1395	424	0	835	0	738	0	0	0	1337	1039	5958
Apprch %	9.5	69.4	21.1	0	100	0	100	0	0	0	56.3	43.7	
Total %	3.2	23.4	7.1	0	14	0	12.4	0	0	0	22.4	17.4	
Cars	178	1393	371	0	801	0	737	0	0	0	1229	1036	5745
% Cars	93.7	99.9	87.5	0	95.9	0	99.9	0	0	0	91.9	99.7	96.4
Trucks	12	2	53	0	34	0	1	0	0	0	108	3	213
% Trucks	6.3	0.1	12.5	0	4.1	0	0.1	0	0	0	8.1	0.3	3.6

	Nashua St From North				Leverett Cir From East				Storrow Dr From South				Charles River Dam Rd 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 07:30 to 09:15 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	18	**211**	45	274	0	95	0	95	106	0	0	106	0	149	**143**	292	767
08:15	21	164	50	235	0	95	0	95	95	0	0	95	0	188	130	318	743
08:30	**24**	183	**70**	**277**	0	**120**	0	**120**	90	0	0	90	0	161	119	280	767
08:45	20	185	57	262	0	111	0	111	**114**	0	0	**114**	0	**205**	142	**347**	**834**
Total Volume	83	743	222	1048	0	421	0	421	405	0	0	405	0	703	534	1237	3111
% App. Total	7.9	70.9	21.2		0	100	0		100	0	0		0	56.8	43.2		
PHF	.865	.880	.793	.946	.000	.877	.000	.877	.888	.000	.000	.888	.000	.857	.934	.891	.933
Cars	78	742	190	1010	0	412	0	412	404	0	0	404	0	646	533	1179	3005
% Cars	94.0	99.9	85.6	96.4	0	97.9	0	97.9	99.8	0	0	99.8	0	91.9	99.8	95.3	96.6
Trucks	5	1	32	38	0	9	0	9	1	0	0	1	0	57	1	58	106
% Trucks	6.0	0.1	14.4	3.6	0	2.1	0	2.1	0.2	0	0	0.2	0	8.1	0.2	4.7	3.4

Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
E/W Street: Charles River Dam Road
City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011



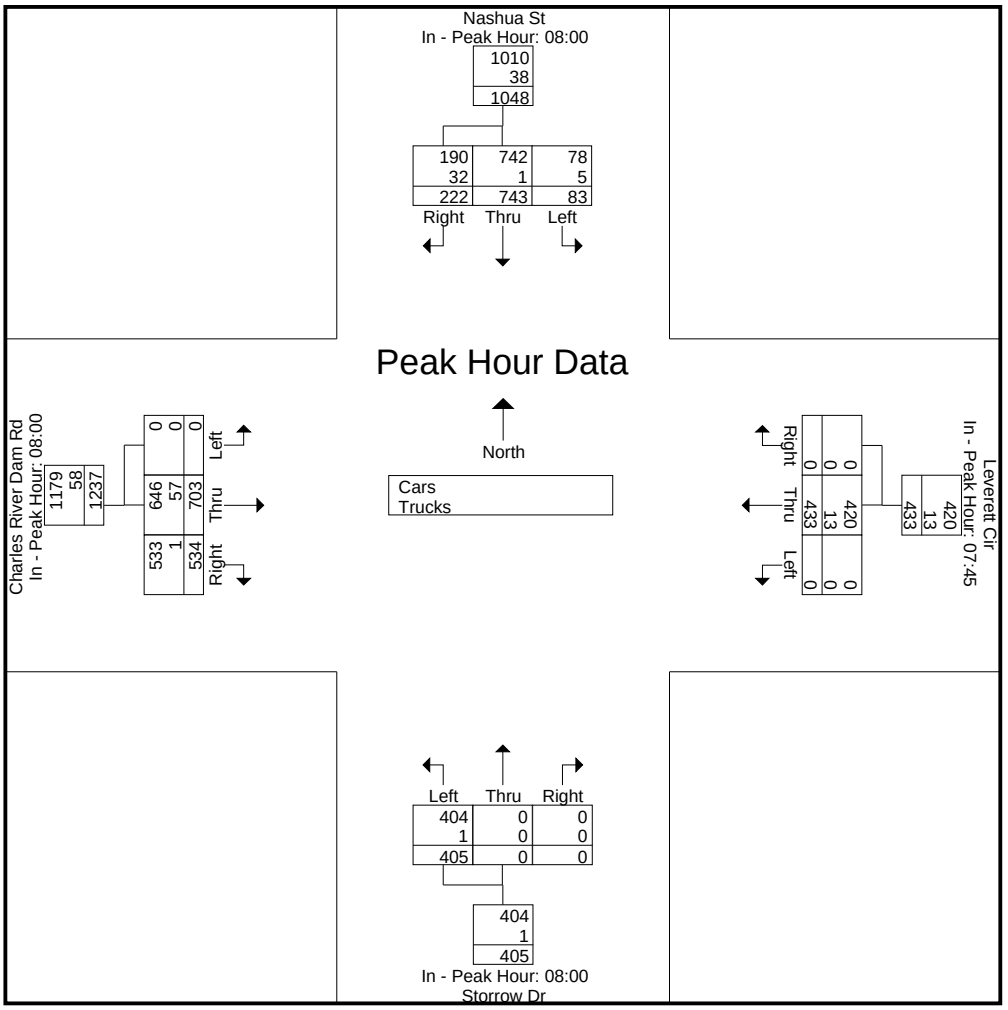
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00				07:45				08:00				08:00			
+0 mins.	18	**211**	45	274	0	**123**	0	**123**	106	0	0	106	0	149	**143**	292
+15 mins.	21	164	50	235	0	95	0	95	95	0	0	95	0	188	130	318
+30 mins.	**24**	183	**70**	**277**	0	95	0	95	90	0	0	90	0	161	119	280
+45 mins.	20	185	57	262	0	120	0	120	**114**	0	0	**114**	0	**205**	142	**347**
Total Volume	83	743	222	1048	0	433	0	433	405	0	0	405	0	703	534	1237
% App. Total	7.9	70.9	21.2		0	100	0		100	0	0		0	56.8	43.2	
PHF	.865	.880	.793	.946	.000	.880	.000	.880	.888	.000	.000	.888	.000	.857	.934	.891
Cars	78	742	190	1010	0	420	0	420	404	0	0	404	0	646	533	1179
% Cars	94	99.9	85.6	96.4	0	97	0	97	99.8	0	0	99.8	0	91.9	99.8	95.3
Trucks	5	1	32	38	0	13	0	13	1	0	0	1	0	57	1	58
% Trucks	6	0.1	14.4	3.6	0	3	0	3	0.2	0	0	0.2	0	8.1	0.2	4.7

Accurate Counts
978-664-2565

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File Name : 15410001
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Page No : 3



Accurate Counts
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City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011

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Groups Printed- Cars

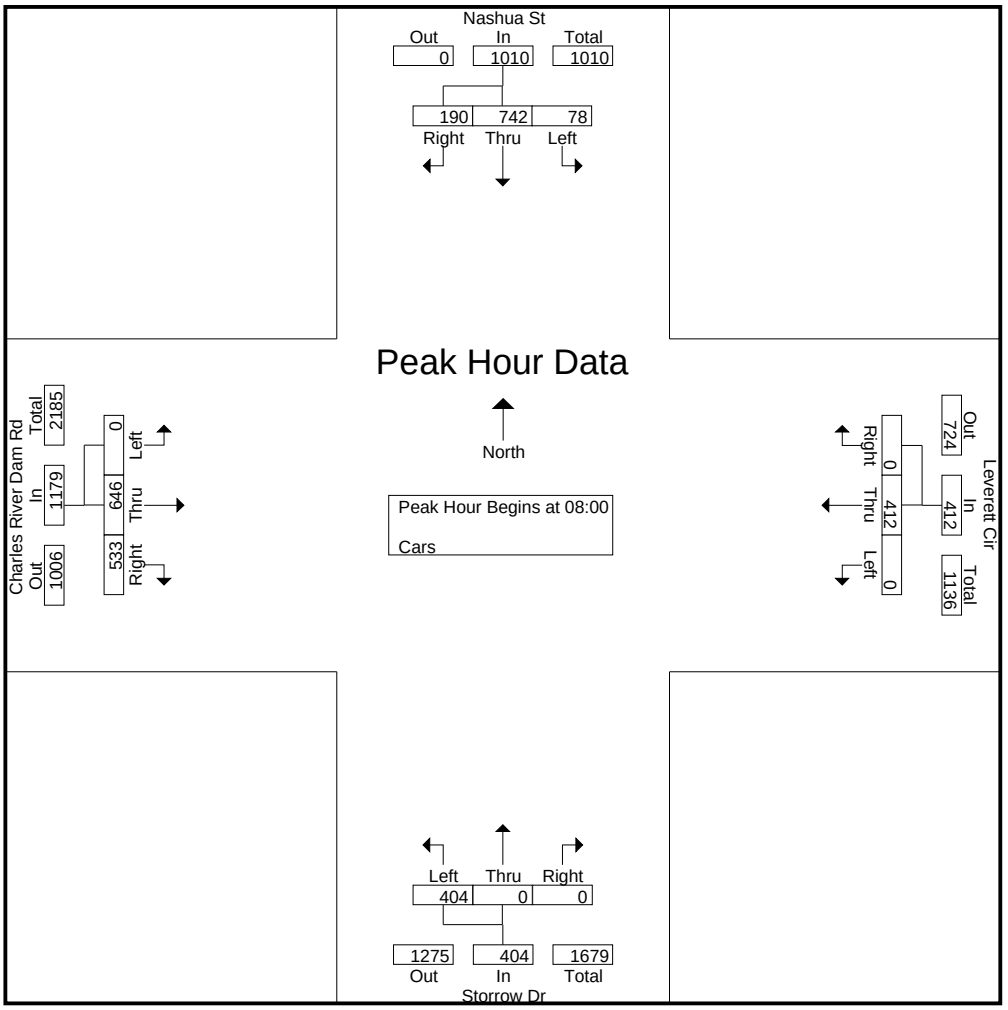
	Nashua St From North			Leverett Cir From East			Storrow Dr From South			Charles River Dam Rd From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:30	31	185	49	0	108	0	80	0	0	0	160	133	746
07:45	32	178	41	0	118	0	84	0	0	0	125	138	716
Total	63	363	90	0	226	0	164	0	0	0	285	271	1462
08:00	17	211	40	0	92	0	106	0	0	0	134	143	743
08:15	20	164	43	0	93	0	95	0	0	0	171	129	715
08:30	23	183	60	0	117	0	90	0	0	0	152	119	744
08:45	18	184	47	0	110	0	113	0	0	0	189	142	803
Total	78	742	190	0	412	0	404	0	0	0	646	533	3005
09:00	18	129	40	0	85	0	68	0	0	0	148	119	607
09:15	19	159	51	0	78	0	101	0	0	0	150	113	671
Grand Total	178	1393	371	0	801	0	737	0	0	0	1229	1036	5745
Apprch %	9.2	71.7	19.1	0	100	0	100	0	0	0	54.3	45.7	
Total %	3.1	24.2	6.5	0	13.9	0	12.8	0	0	0	21.4	18	

	Nashua St From North				Leverett Cir From East				Storrow Dr From South				Charles River Dam Rd 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 07:30 to 09:15 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	17	**211**	40	**268**	0	92	0	92	106	0	0	106	0	134	**143**	277	743
08:15	20	164	43	227	0	93	0	93	95	0	0	95	0	171	129	300	715
08:30	**23**	183	**60**	266	0	**117**	0	**117**	90	0	0	90	0	152	119	271	744
08:45	18	184	47	249	0	110	0	110	**113**	0	0	**113**	0	**189**	142	**331**	**803**
Total Volume	78	742	190	1010	0	412	0	412	404	0	0	404	0	646	533	1179	3005
% App. Total	7.7	73.5	18.8		0	100	0		100	0	0		0	54.8	45.2		
PHF	.848	.879	.792	.942	.000	.880	.000	.880	.894	.000	.000	.894	.000	.854	.932	.890	.936

Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
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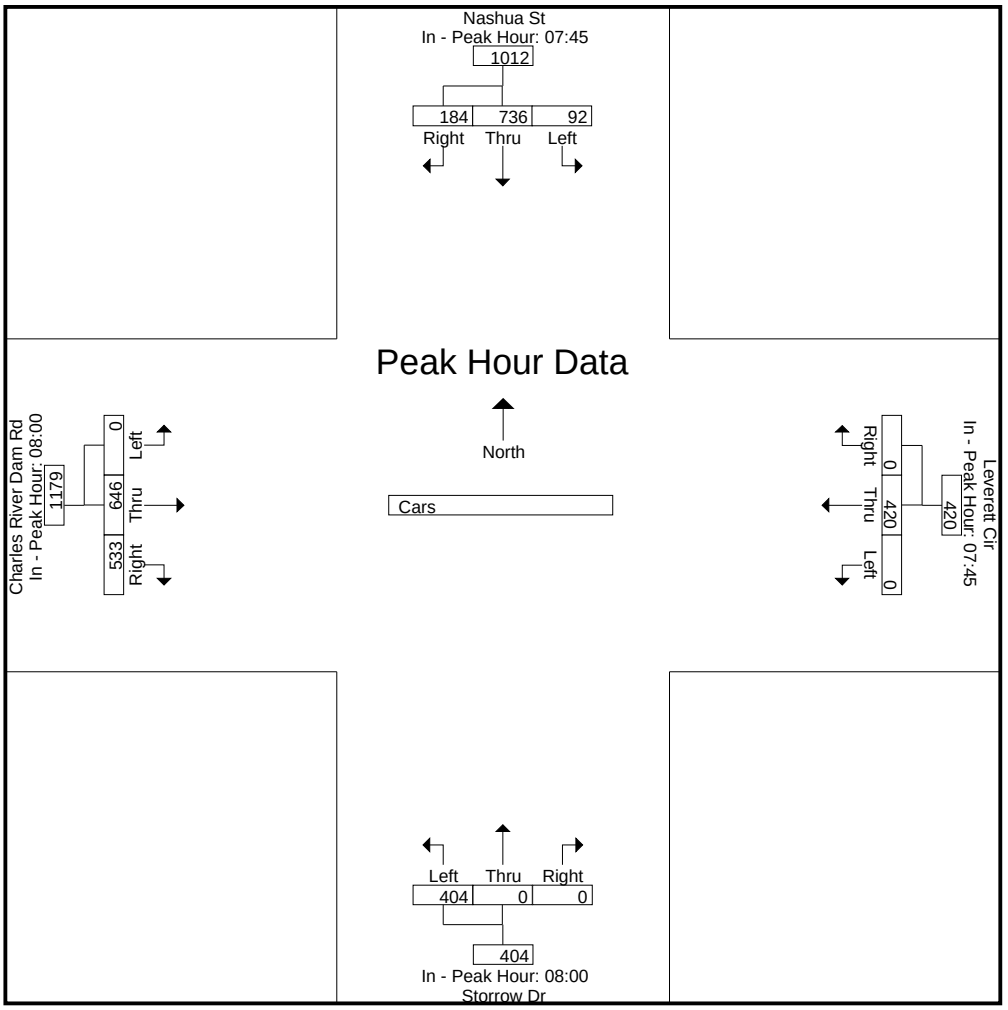
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45				07:45				08:00				08:00			
+0 mins.	**32**	178	41	251	0	**118**	0	**118**	106	0	0	106	0	134	**143**	277
+15 mins.	17	**211**	40	**268**	0	92	0	92	95	0	0	95	0	171	129	300
+30 mins.	20	164	43	227	0	93	0	93	90	0	0	90	0	152	119	271
+45 mins.	23	183	**60**	266	0	117	0	117	**113**	0	0	**113**	0	**189**	142	**331**
Total Volume	92	736	184	1012	0	420	0	420	404	0	0	404	0	646	533	1179
% App. Total	9.1	72.7	18.2		0	100	0		100	0	0		0	54.8	45.2	
PHF	.719	.872	.767	.944	.000	.890	.000	.890	.894	.000	.000	.894	.000	.854	.932	.890

Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
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File Name : 15410001
Site Code : 15410001
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Groups Printed- Trucks

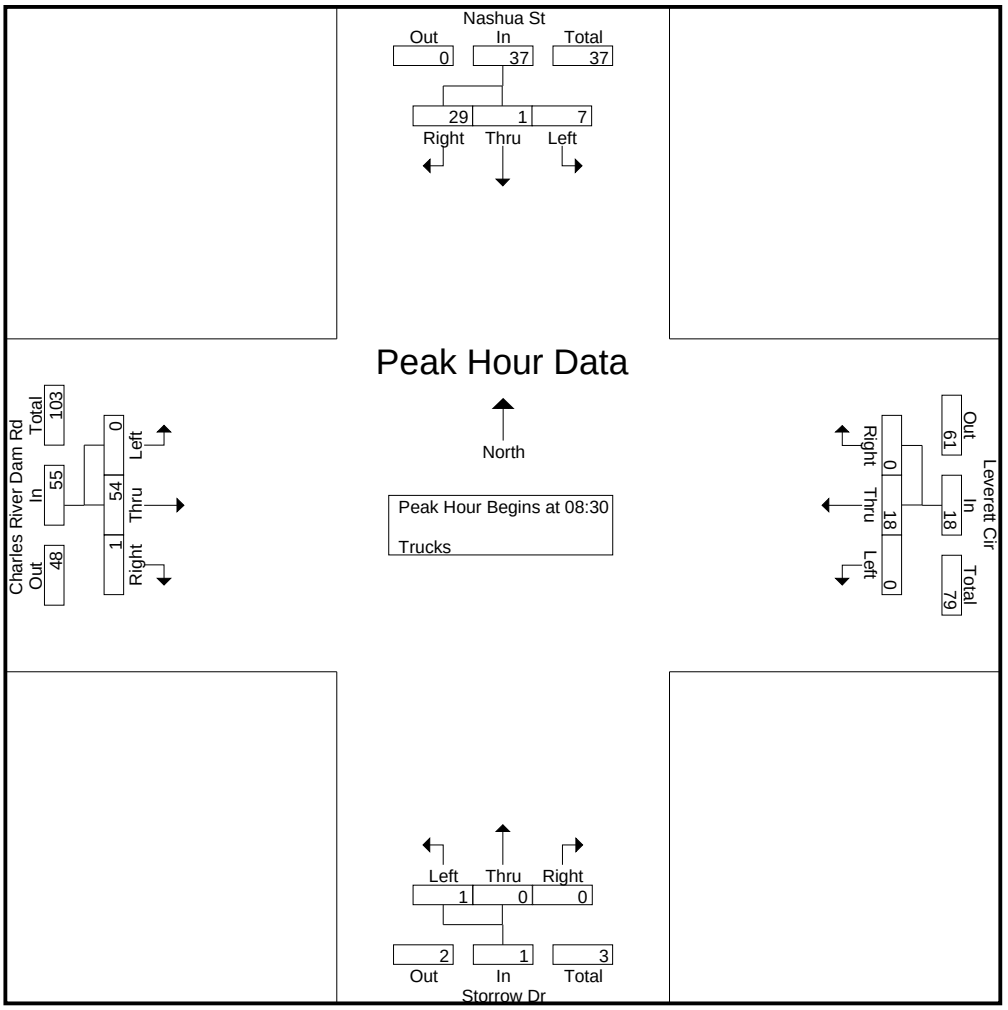
	Nashua St From North			Leverett Cir From East			Storrow Dr From South			Charles River Dam Rd From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:30	2	1	7	0	6	0	0	0	0	0	10	1	27
07:45	1	0	5	0	5	0	0	0	0	0	12	0	23
Total	3	1	12	0	11	0	0	0	0	0	22	1	50
08:00	1	0	5	0	3	0	0	0	0	0	15	0	24
08:15	1	0	7	0	2	0	0	0	0	0	17	1	28
08:30	1	0	10	0	3	0	0	0	0	0	9	0	23
08:45	2	1	10	0	1	0	1	0	0	0	16	0	31
Total	5	1	32	0	9	0	1	0	0	0	57	1	106
09:00	0	0	6	0	7	0	0	0	0	0	12	1	26
09:15	4	0	3	0	7	0	0	0	0	0	17	0	31
Grand Total	12	2	53	0	34	0	1	0	0	0	108	3	213
Apprch %	17.9	3	79.1	0	100	0	100	0	0	0	97.3	2.7	
Total %	5.6	0.9	24.9	0	16	0	0.5	0	0	0	50.7	1.4	

	Nashua St From North				Leverett Cir From East				Storrow Dr From South				Charles River Dam Rd 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 07:30 to 09:15 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:30																	
08:30	1	0	**10**	11	0	3	0	3	0	0	0	0	0	9	0	9	23
08:45	2	**1**	10	**13**	0	1	0	1	**1**	0	0	**1**	0	16	0	16	**31**
09:00	0	0	6	6	0	**7**	0	**7**	0	0	0	0	0	12	**1**	13	26
09:15	**4**	0	3	7	0	7	0	7	0	0	0	0	0	**17**	0	**17**	31
Total Volume	7	1	29	37	0	18	0	18	1	0	0	1	0	54	1	55	111
% App. Total	18.9	2.7	78.4		0	100	0		100	0	0		0	98.2	1.8		
PHF	.438	.250	.725	.712	.000	.643	.000	.643	.250	.000	.000	.250	.000	.794	.250	.809	.895

Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
E/W Street: Charles River Dam Road
City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011



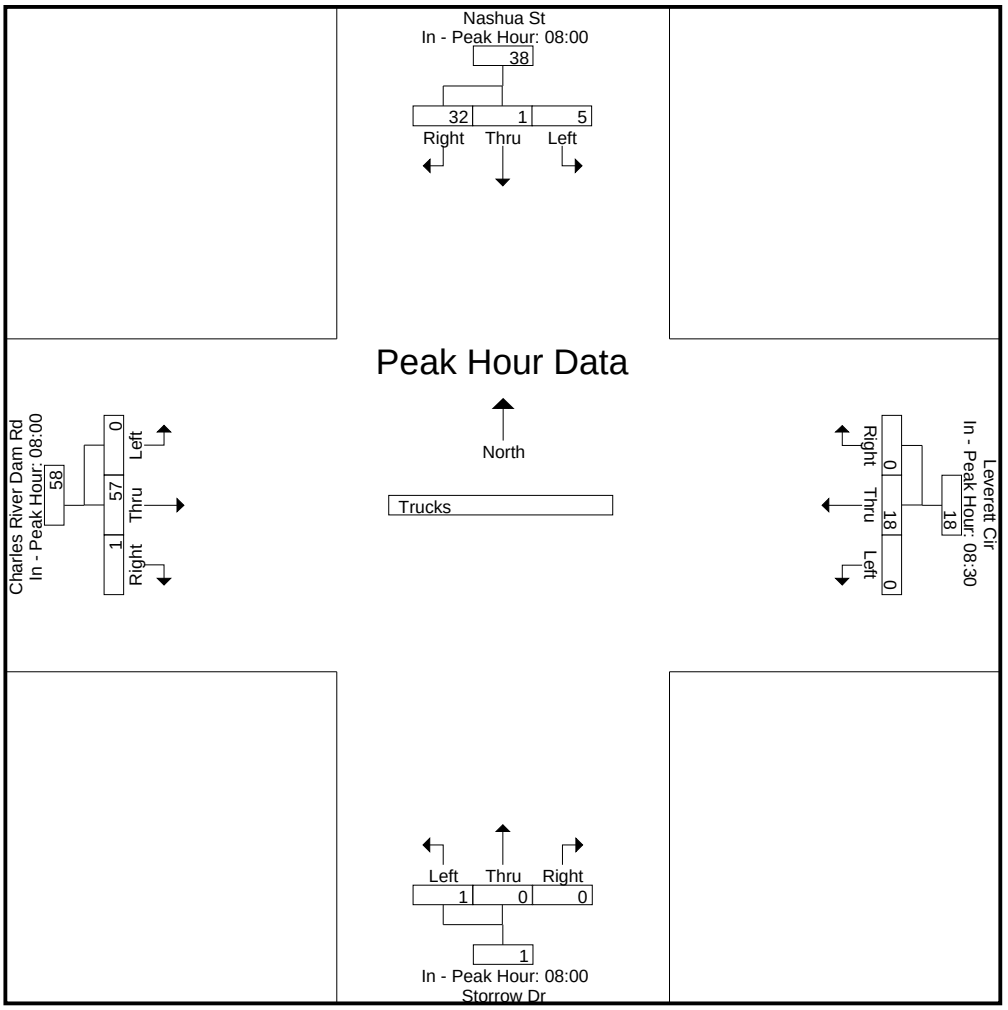
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00				08:30				08:00				08:00			
+0 mins.	1	0	5	6	0	3	0	3	0	0	0	0	0	15	0	15
+15 mins.	1	0	7	8	0	1	0	1	0	0	0	0	0	**17**	**1**	**18**
+30 mins.	1	0	**10**	11	0	**7**	0	**7**	0	0	0	0	0	9	0	9
+45 mins.	**2**	**1**	10	**13**	0	7	0	7	**1**	0	0	**1**	0	16	0	16
Total Volume	5	1	32	38	0	18	0	18	1	0	0	1	0	57	1	58
% App. Total	13.2	2.6	84.2		0	100	0		100	0	0		0	98.3	1.7	
PHF	.625	.250	.800	.731	.000	.643	.000	.643	.250	.000	.000	.250	.000	.838	.250	.806

Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
E/W Street: Charles River Dam Road
City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
E/W Street: Charles River Dam Road
City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011
Page No : 1

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Groups Printed- Bikes Peds

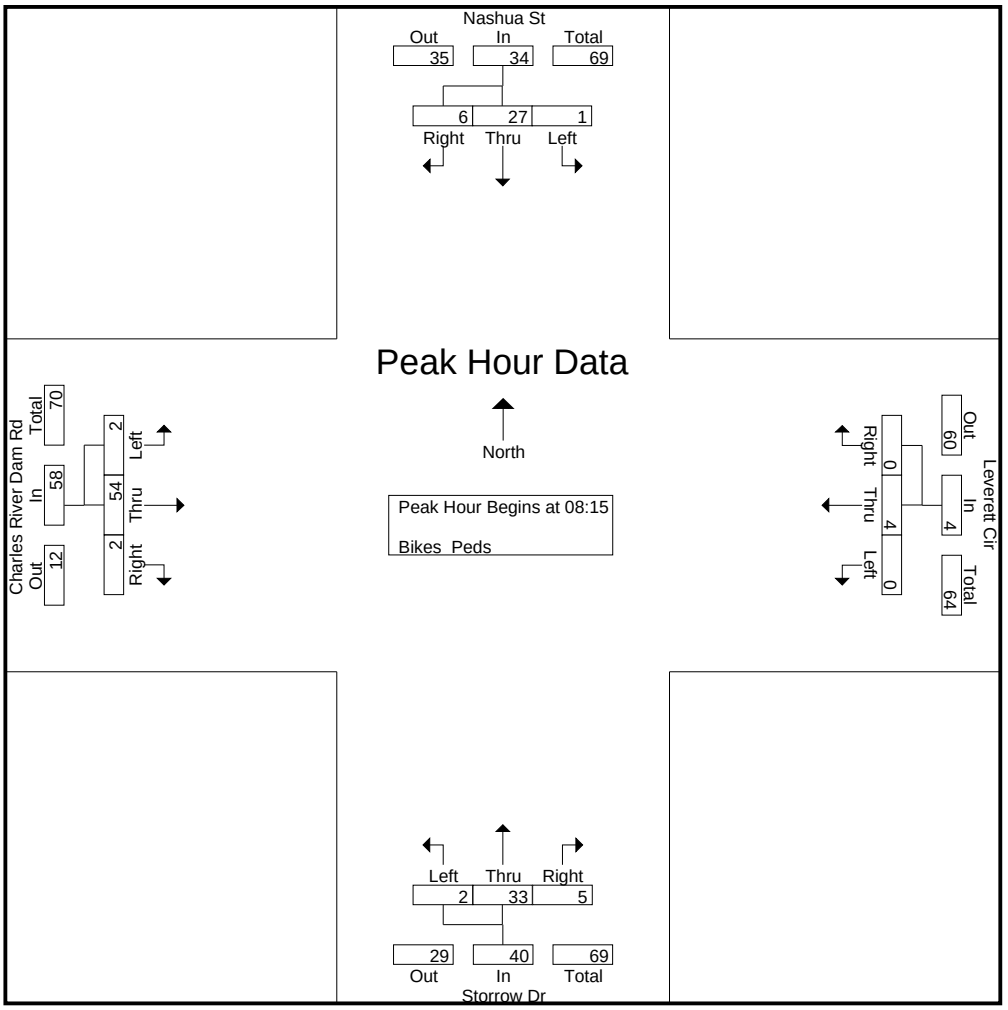
	Nashua St From North				Leverett Cir From East				Storrow Dr From South				Charles River Dam Rd From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:30	0	1	2	0	0	1	0	5	1	7	2	0	1	9	1	30	35	25	60
07:45	1	3	0	0	0	0	0	4	0	7	0	0	2	13	0	43	47	26	73
Total	1	4	2	0	0	1	0	9	1	14	2	0	3	22	1	73	82	51	133
08:00	0	6	1	0	0	0	0	1	1	4	1	0	0	8	0	26	27	21	48
08:15	0	7	2	1	0	0	0	5	0	8	0	0	1	10	1	36	42	29	71
08:30	0	12	1	0	0	1	0	8	1	8	2	1	1	16	0	32	41	42	83
08:45	1	4	1	2	0	1	0	5	1	5	3	2	0	18	1	20	29	35	64
Total	1	29	5	3	0	2	0	19	3	25	6	3	2	52	2	114	139	127	266
09:00	0	4	2	4	0	2	0	8	0	12	0	1	0	10	0	22	35	30	65
09:15	1	1	0	5	0	0	0	5	0	1	2	4	0	12	1	8	22	18	40
Grand Total	3	38	9	12	0	5	0	41	4	52	10	8	5	96	4	217	278	226	504
Apprch %	6	76	18		0	100	0		6.1	78.8	15.2		4.8	91.4	3.8				
Total %	1.3	16.8	4		0	2.2	0		1.8	23	4.4		2.2	42.5	1.8		55.2	44.8	

	Nashua St From North				Leverett Cir From East				Storrow Dr From South				Charles River Dam Rd 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 07:30 to 09:15 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:15																	
08:15	0	7	**2**	9	0	0	0	0	0	8	0	8	**1**	10	**1**	12	29
08:30	0	**12**	1	**13**	0	1	0	1	**1**	8	2	11	1	16	0	17	**42**
08:45	**1**	4	1	6	0	1	0	1	1	5	**3**	9	0	**18**	1	**19**	35
09:00	0	4	2	6	0	**2**	0	**2**	0	**12**	0	**12**	0	10	0	10	30
Total Volume	1	27	6	34	0	4	0	4	2	33	5	40	2	54	2	58	136
% App. Total	2.9	79.4	17.6		0	100	0		5	82.5	12.5		3.4	93.1	3.4		
PHF	.250	.563	.750	.654	.000	.500	.000	.500	.500	.688	.417	.833	.500	.750	.500	.763	.810

Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
E/W Street: Charles River Dam Road
City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011



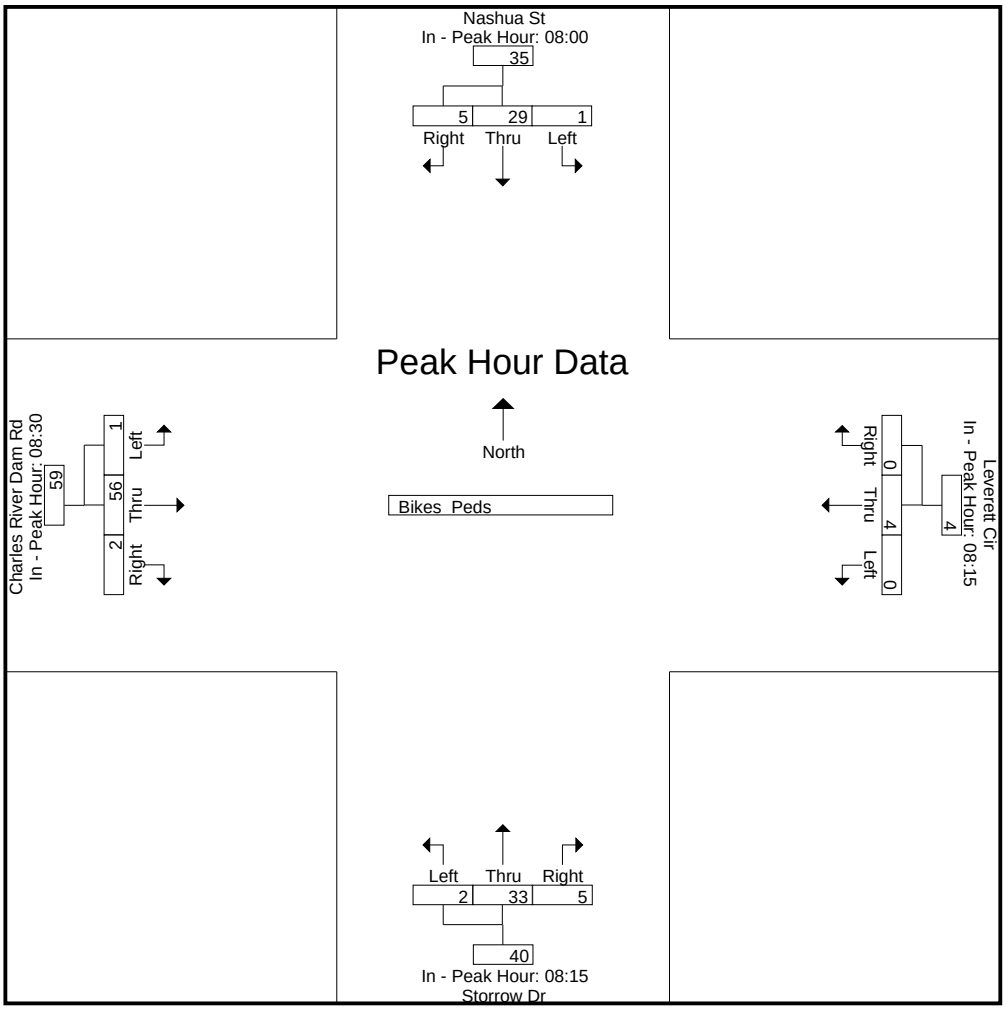
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00				08:15				08:15				08:30			
+0 mins.	0	6	1	7	0	0	0	0	0	8	0	8	**1**	16	0	17
+15 mins.	0	7	**2**	9	0	1	0	1	**1**	8	2	11	0	**18**	**1**	**19**
+30 mins.	0	**12**	1	**13**	0	1	0	1	1	5	**3**	9	0	10	0	10
+45 mins.	**1**	4	1	6	0	**2**	0	**2**	0	**12**	0	**12**	0	12	1	13
Total Volume	1	29	5	35	0	4	0	4	2	33	5	40	1	56	2	59
% App. Total	2.9	82.9	14.3		0	100	0		5	82.5	12.5		1.7	94.9	3.4	
PHF	.250	.604	.625	.673	.000	.500	.000	.500	.500	.688	.417	.833	.250	.778	.500	.776

Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
E/W Street: Charles River Dam Road
City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
E/W Street: Charles River Dam Road
City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011
Page No : 1

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Groups Printed- Cars - Trucks

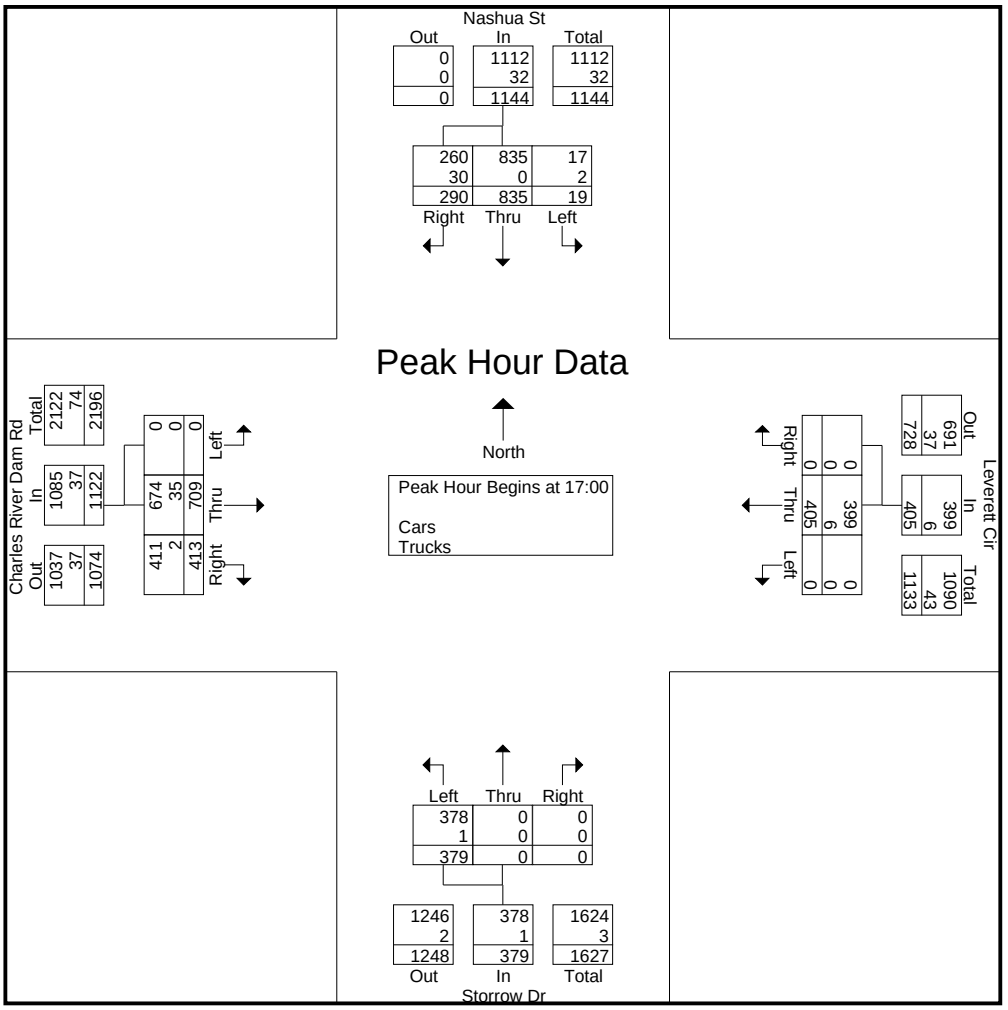
	Nashua St From North			Leverett Cir From East			Storrow Dr From South			Charles River Dam Rd From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
16:00	6	105	45	0	69	0	91	0	0	0	203	111	630
16:15	3	140	52	0	84	0	108	0	0	0	199	126	712
16:30	3	122	48	0	82	0	119	0	0	0	204	130	708
16:45	7	182	72	0	73	0	114	0	0	0	178	133	759
Total	19	549	217	0	308	0	432	0	0	0	784	500	2809
17:00	8	190	65	0	84	0	105	0	0	0	164	85	701
17:15	4	208	72	0	106	0	70	0	0	0	166	107	733
17:30	2	224	80	0	104	0	103	0	0	0	195	104	812
17:45	5	213	73	0	111	0	101	0	0	0	184	117	804
Total	19	835	290	0	405	0	379	0	0	0	709	413	3050
Grand Total	38	1384	507	0	713	0	811	0	0	0	1493	913	5859
Apprch %	2	71.7	26.3	0	100	0	100	0	0	0	62.1	37.9	
Total %	0.6	23.6	8.7	0	12.2	0	13.8	0	0	0	25.5	15.6	
Cars	33	1384	438	0	699	0	810	0	0	0	1405	907	5676
% Cars	86.8	100	86.4	0	98	0	99.9	0	0	0	94.1	99.3	96.9
Trucks	5	0	69	0	14	0	1	0	0	0	88	6	183
% Trucks	13.2	0	13.6	0	2	0	0.1	0	0	0	5.9	0.7	3.1

	Nashua St From North				Leverett Cir From East				Storrow Dr From South				Charles River Dam Rd 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 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	**8**	190	65	263	0	84	0	84	**105**	0	0	**105**	0	164	85	249	701
17:15	4	208	72	284	0	106	0	106	70	0	0	70	0	166	107	273	733
17:30	2	**224**	**80**	**306**	0	104	0	104	103	0	0	103	0	**195**	104	299	**812**
17:45	5	213	73	291	0	**111**	0	**111**	101	0	0	101	0	184	**117**	**301**	804
Total Volume	19	835	290	1144	0	405	0	405	379	0	0	379	0	709	413	1122	3050
% App. Total	1.7	73	25.3		0	100	0		100	0	0		0	63.2	36.8		
PHF	.594	.932	.906	.935	.000	.912	.000	.912	.902	.000	.000	.902	.000	.909	.882	.932	.939
Cars	17	835	260	1112	0	399	0	399	378	0	0	378	0	674	411	1085	2974
% Cars	89.5	100	89.7	97.2	0	98.5	0	98.5	99.7	0	0	99.7	0	95.1	99.5	96.7	97.5
Trucks	2	0	30	32	0	6	0	6	1	0	0	1	0	35	2	37	76
% Trucks	10.5	0	10.3	2.8	0	1.5	0	1.5	0.3	0	0	0.3	0	4.9	0.5	3.3	2.5

Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
E/W Street: Charles River Dam Road
City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011
Page No : 2



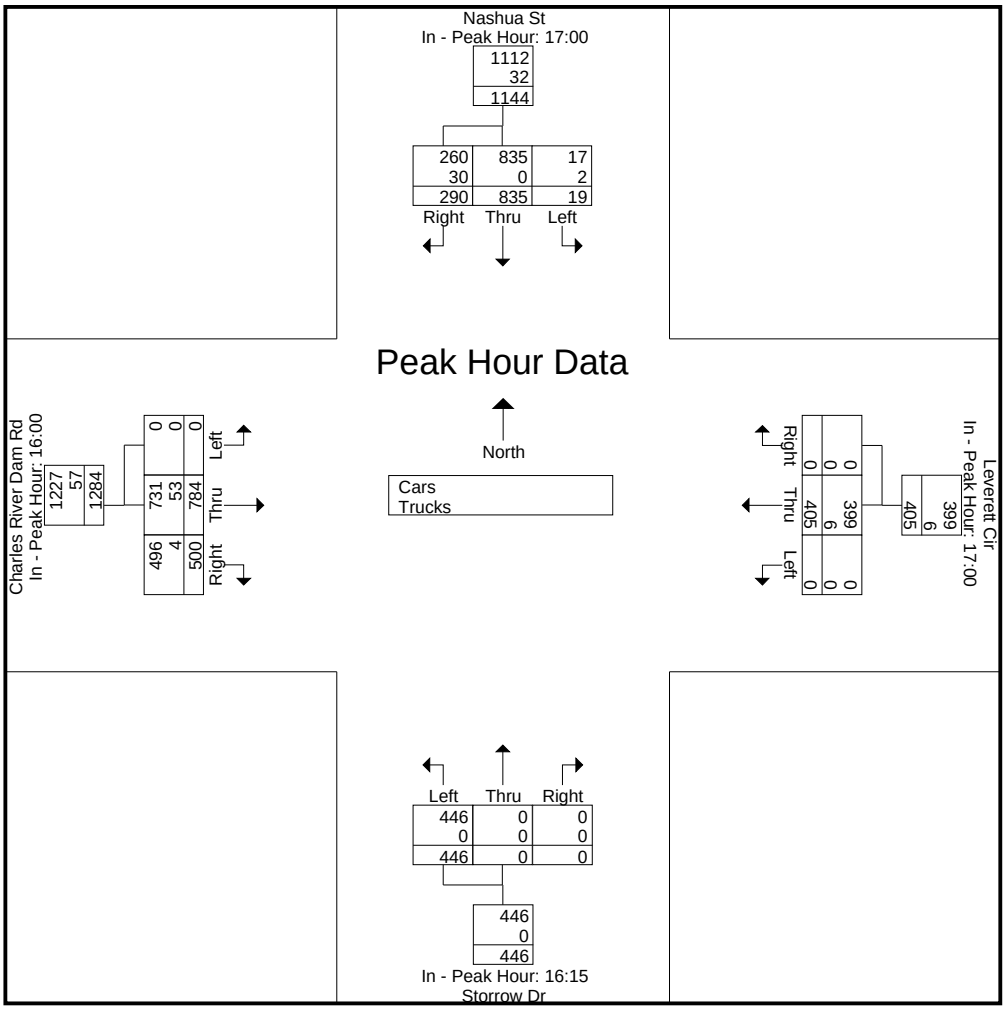
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	17:00				17:00				16:15				16:00			
+0 mins.	**8**	190	65	263	0	84	0	84	108	0	0	108	0	203	111	314
+15 mins.	4	208	72	284	0	106	0	106	**119**	0	0	**119**	0	199	126	325
+30 mins.	2	**224**	**80**	**306**	0	104	0	104	114	0	0	114	0	**204**	130	**334**
+45 mins.	5	213	73	291	0	**111**	0	**111**	105	0	0	105	0	178	**133**	311
Total Volume	19	835	290	1144	0	405	0	405	446	0	0	446	0	784	500	1284
% App. Total	1.7	73	25.3		0	100	0		100	0	0		0	61.1	38.9	
PHF	.594	.932	.906	.935	.000	.912	.000	.912	.937	.000	.000	.937	.000	.961	.940	.961
Cars	17	835	260	1112	0	399	0	399	446	0	0	446	0	731	496	1227
% Cars	89.5	100	89.7	97.2	0	98.5	0	98.5	100	0	0	100	0	93.2	99.2	95.6
Trucks	2	0	30	32	0	6	0	6	0	0	0	0	0	53	4	57
% Trucks	10.5	0	10.3	2.8	0	1.5	0	1.5	0	0	0	0	0	6.8	0.8	4.4

Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
E/W Street: Charles River Dam Road
City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
E/W Street: Charles River Dam Road
City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011

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Groups Printed- Cars

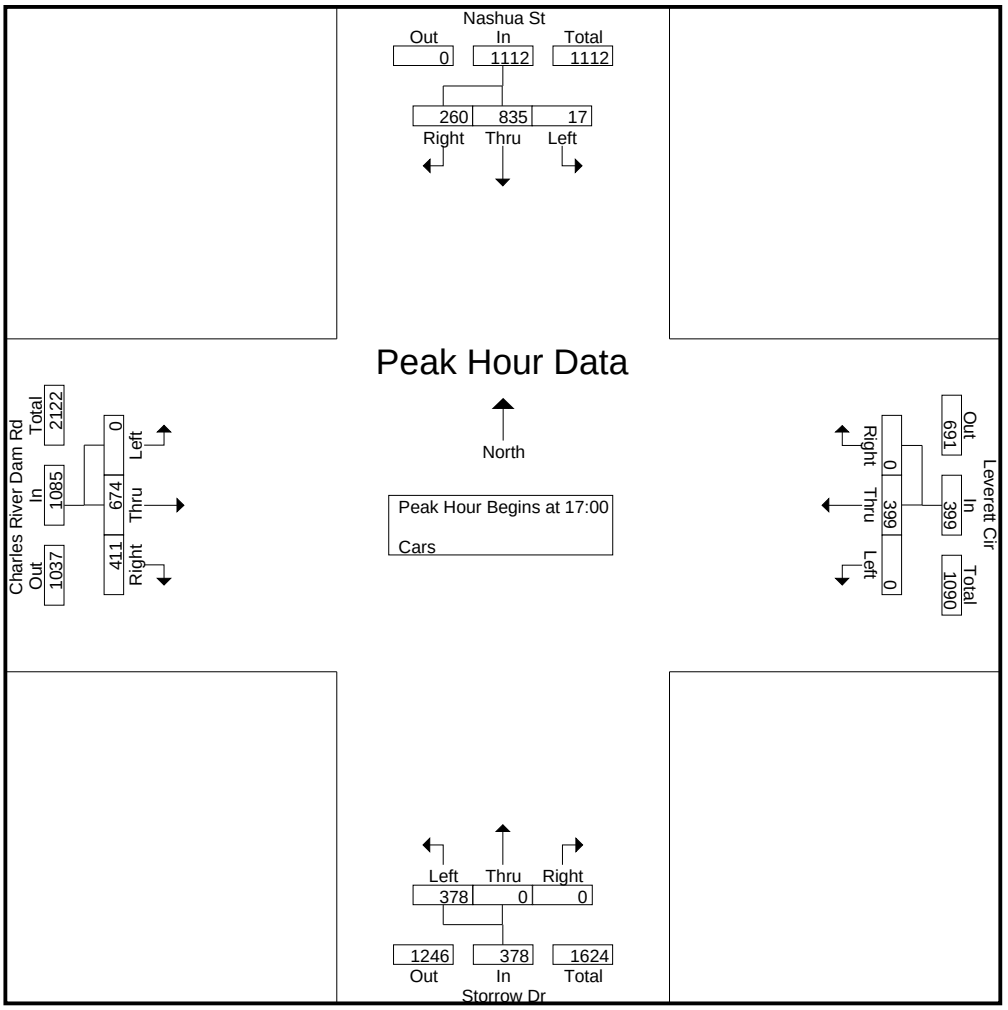
	Nashua St From North			Leverett Cir From East			Storrow Dr From South			Charles River Dam Rd From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
16:00	5	105	41	0	65	0	91	0	0	0	184	109	600
16:15	2	140	38	0	82	0	108	0	0	0	189	126	685
16:30	2	122	37	0	80	0	119	0	0	0	193	130	683
16:45	7	182	62	0	73	0	114	0	0	0	165	131	734
Total	16	549	178	0	300	0	432	0	0	0	731	496	2702
17:00	8	190	58	0	83	0	105	0	0	0	154	83	681
17:15	4	208	64	0	106	0	70	0	0	0	155	107	714
17:30	2	224	70	0	99	0	103	0	0	0	189	104	791
17:45	3	213	68	0	111	0	100	0	0	0	176	117	788
Total	17	835	260	0	399	0	378	0	0	0	674	411	2974
Grand Total	33	1384	438	0	699	0	810	0	0	0	1405	907	5676
Apprch %	1.8	74.6	23.6	0	100	0	100	0	0	0	60.8	39.2	
Total %	0.6	24.4	7.7	0	12.3	0	14.3	0	0	0	24.8	16	

	Nashua St From North				Leverett Cir From East				Storrow Dr From South				Charles River Dam Rd 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 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	**8**	190	58	256	0	83	0	83	**105**	0	0	**105**	0	154	83	237	681
17:15	4	208	64	276	0	106	0	106	70	0	0	70	0	155	107	262	714
17:30	2	**224**	**70**	**296**	0	99	0	99	103	0	0	103	0	**189**	104	**293**	**791**
17:45	3	213	68	284	0	**111**	0	**111**	100	0	0	100	0	176	**117**	293	788
Total Volume	17	835	260	1112	0	399	0	399	378	0	0	378	0	674	411	1085	2974
% App. Total	1.5	75.1	23.4		0	100	0		100	0	0		0	62.1	37.9		
PHF	.531	.932	.929	.939	.000	.899	.000	.899	.900	.000	.000	.900	.000	.892	.878	.926	.940

Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
E/W Street: Charles River Dam Road
City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011
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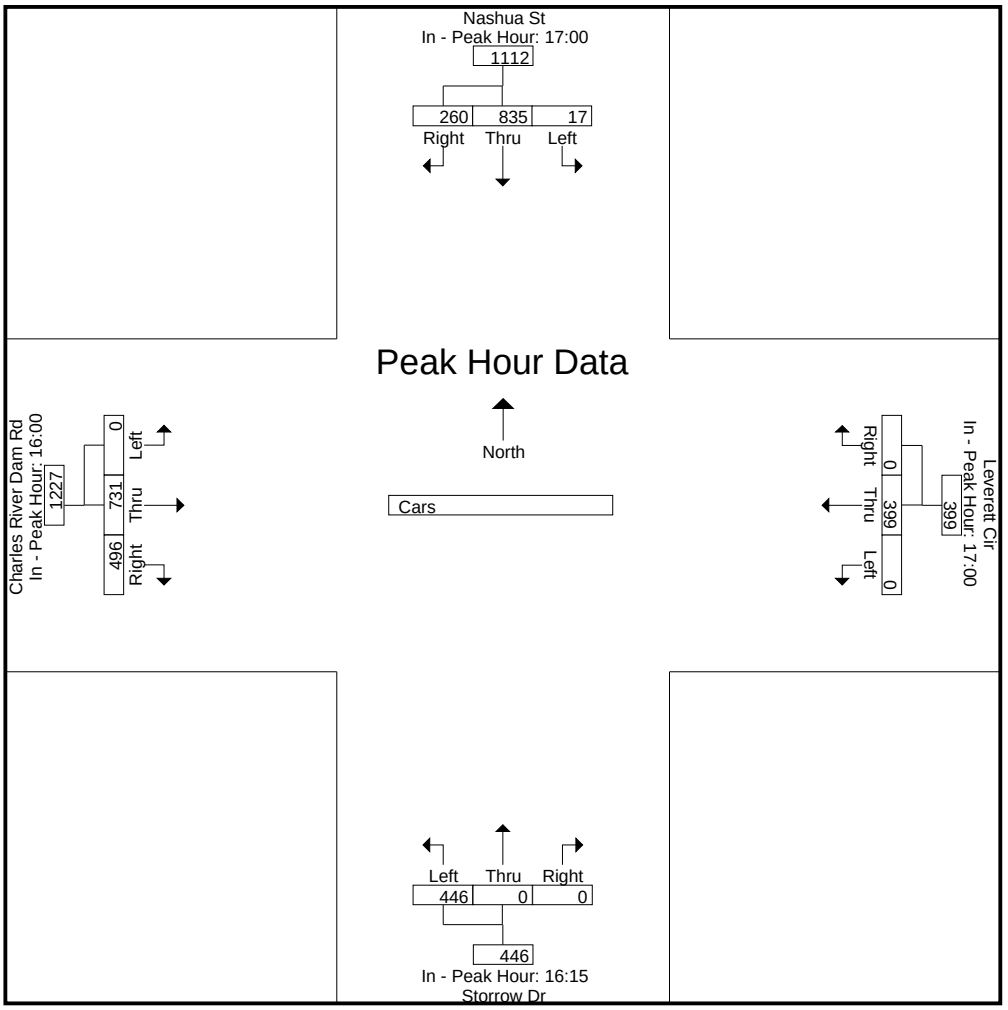
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	17:00				17:00				16:15				16:00			
+0 mins.	**8**	190	58	256	0	83	0	83	108	0	0	108	0	184	109	293
+15 mins.	4	208	64	276	0	106	0	106	**119**	0	0	**119**	0	189	126	315
+30 mins.	2	**224**	**70**	**296**	0	99	0	99	114	0	0	114	0	**193**	130	**323**
+45 mins.	3	213	68	284	0	**111**	0	**111**	105	0	0	105	0	165	**131**	296
Total Volume	17	835	260	1112	0	399	0	399	446	0	0	446	0	731	496	1227
% App. Total	1.5	75.1	23.4		0	100	0		100	0	0		0	59.6	40.4	
PHF	.531	.932	.929	.939	.000	.899	.000	.899	.937	.000	.000	.937	.000	.947	.947	.950

Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
E/W Street: Charles River Dam Road
City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
E/W Street: Charles River Dam Road
City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011

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Groups Printed- Trucks

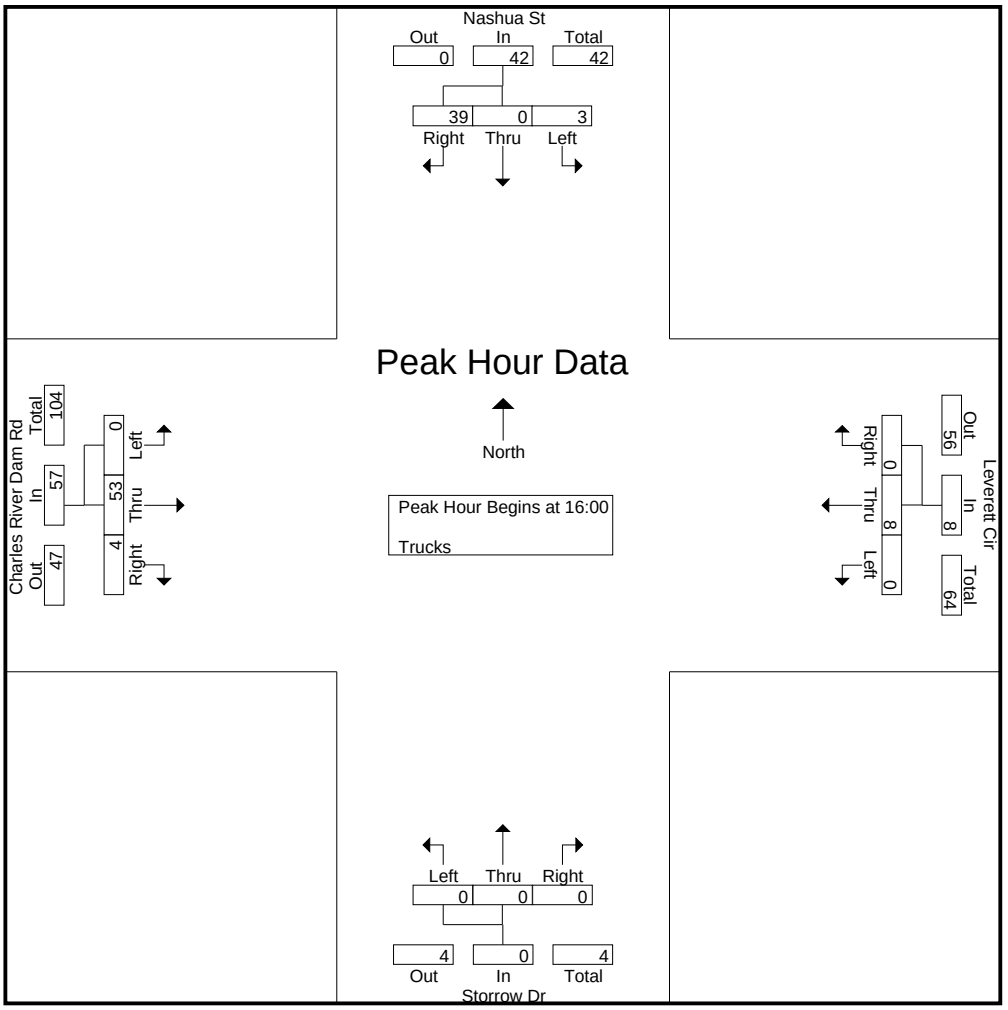
	Nashua St From North			Leverett Cir From East			Storrow Dr From South			Charles River Dam Rd From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
16:00	1	0	4	0	4	0	0	0	0	0	19	2	30
16:15	1	0	14	0	2	0	0	0	0	0	10	0	27
16:30	1	0	11	0	2	0	0	0	0	0	11	0	25
16:45	0	0	10	0	0	0	0	0	0	0	13	2	25
Total	3	0	39	0	8	0	0	0	0	0	53	4	107
17:00	0	0	7	0	1	0	0	0	0	0	10	2	20
17:15	0	0	8	0	0	0	0	0	0	0	11	0	19
17:30	0	0	10	0	5	0	0	0	0	0	6	0	21
17:45	2	0	5	0	0	0	1	0	0	0	8	0	16
Total	2	0	30	0	6	0	1	0	0	0	35	2	76
Grand Total	5	0	69	0	14	0	1	0	0	0	88	6	183
Apprch %	6.8	0	93.2	0	100	0	100	0	0	0	93.6	6.4	
Total %	2.7	0	37.7	0	7.7	0	0.5	0	0	0	48.1	3.3	

	Nashua St From North				Leverett Cir From East				Storrow Dr From South				Charles River Dam Rd 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 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	**1**	0	4	5	0	**4**	0	**4**	0	0	0	0	0	**19**	**2**	**21**	**30**
16:15	1	0	**14**	**15**	0	2	0	2	0	0	0	0	0	10	0	10	27
16:30	1	0	11	12	0	2	0	2	0	0	0	0	0	11	0	11	25
16:45	0	0	10	10	0	0	0	0	0	0	0	0	0	13	2	15	25
Total Volume	3	0	39	42	0	8	0	8	0	0	0	0	0	53	4	57	107
% App. Total	7.1	0	92.9		0	100	0		0	0	0		0	93	7		
PHF	.750	.000	.696	.700	.000	.500	.000	.500	.000	.000	.000	.000	.000	.697	.500	.679	.892

Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
E/W Street: Charles River Dam Road
City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011
Page No : 2



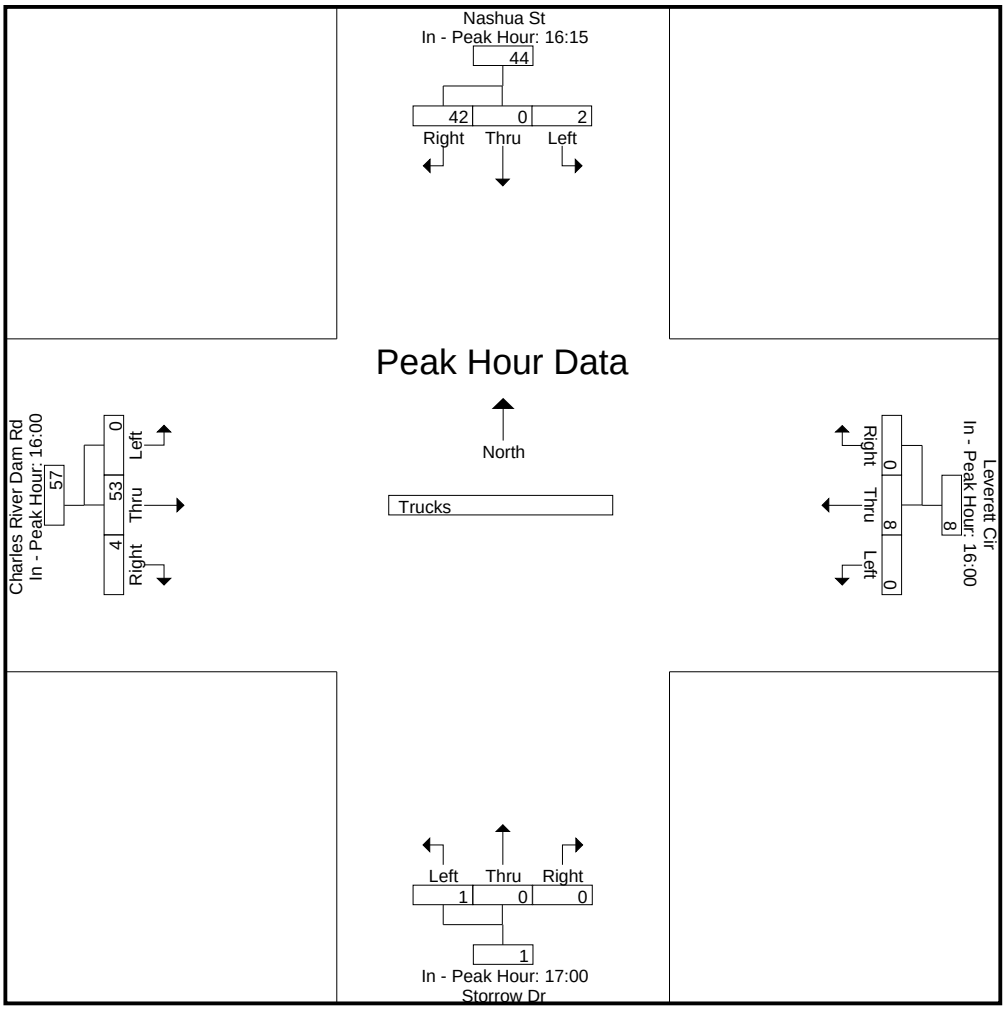
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	16:15				16:00				17:00				16:00			
+0 mins.	**1**	0	**14**	**15**	0	**4**	0	**4**	0	0	0	0	0	**19**	**2**	**21**
+15 mins.	1	0	11	12	0	2	0	2	0	0	0	0	0	10	0	10
+30 mins.	0	0	10	10	0	2	0	2	0	0	0	0	0	11	0	11
+45 mins.	0	0	7	7	0	0	0	0	**1**	0	0	**1**	0	13	2	15
Total Volume	2	0	42	44	0	8	0	8	1	0	0	1	0	53	4	57
% App. Total	4.5	0	95.5		0	100	0		100	0	0		0	93	7	
PHF	.500	.000	.750	.733	.000	.500	.000	.500	.250	.000	.000	.250	.000	.697	.500	.679

Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
E/W Street: Charles River Dam Road
City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
E/W Street: Charles River Dam Road
City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011

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Groups Printed- Bikes Peds

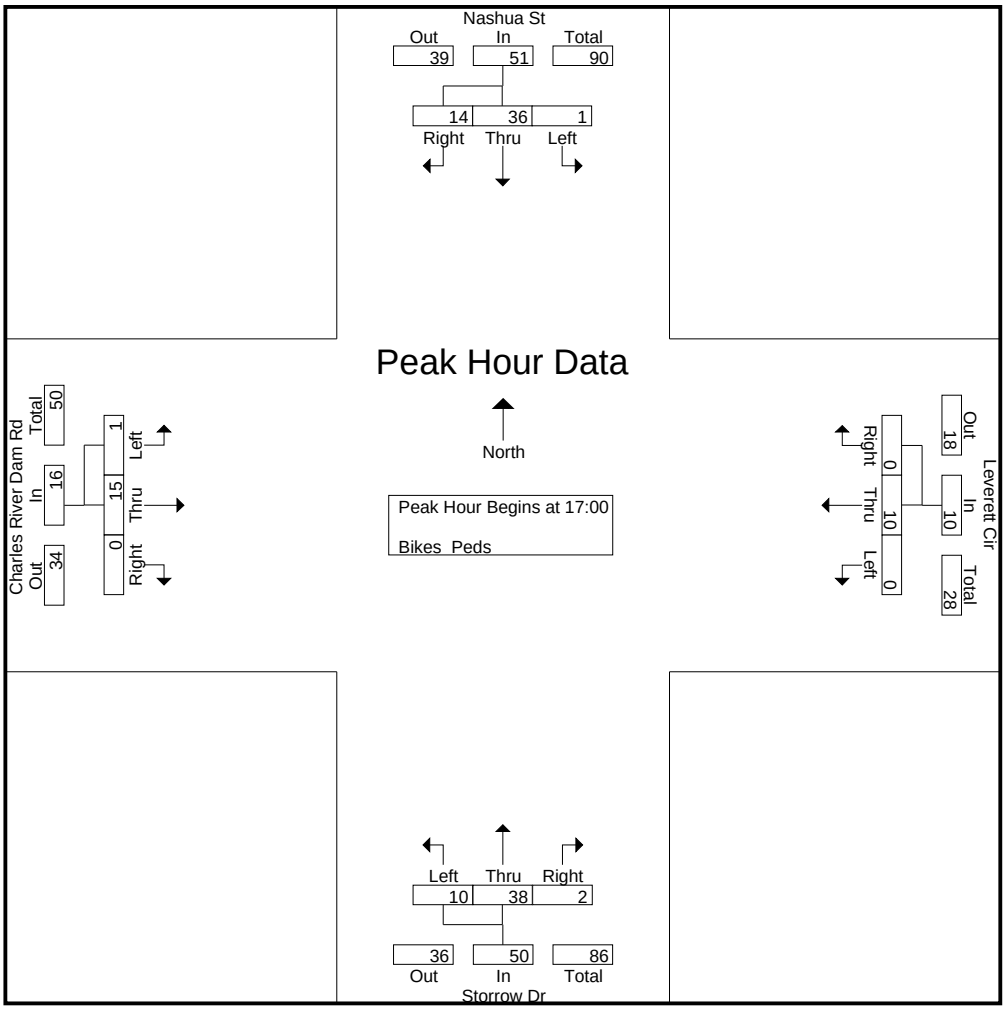
	Nashua St From North				Leverett Cir From East				Storrow Dr From South				Charles River Dam Rd From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
16:00	0	6	1	1	0	1	0	5	0	2	0	0	0	1	0	34	40	11	51
16:15	0	7	2	7	0	0	0	12	1	4	0	0	0	1	0	17	36	15	51
16:30	0	7	2	9	0	0	0	11	1	6	0	3	1	3	0	24	47	20	67
16:45	0	6	3	1	0	0	0	2	1	3	0	1	0	3	0	25	29	16	45
Total	0	26	8	18	0	1	0	30	3	15	0	4	1	8	0	100	152	62	214
17:00	0	5	2	3	0	0	0	9	4	13	1	1	0	4	0	21	34	29	63
17:15	0	9	8	3	0	4	0	10	1	7	0	2	0	4	0	28	43	33	76
17:30	1	13	3	3	0	0	0	5	2	15	1	0	1	1	0	44	52	37	89
17:45	0	9	1	6	0	6	0	9	3	3	0	5	0	6	0	23	43	28	71
Total	1	36	14	15	0	10	0	33	10	38	2	8	1	15	0	116	172	127	299
Grand Total	1	62	22	33	0	11	0	63	13	53	2	12	2	23	0	216	324	189	513
Apprch %	1.2	72.9	25.9		0	100	0		19.1	77.9	2.9		8	92	0				
Total %	0.5	32.8	11.6		0	5.8	0		6.9	28	1.1		1.1	12.2	0		63.2	36.8	

	Nashua St From North				Leverett Cir From East				Storrow Dr From South				Charles River Dam Rd 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 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	0	5	2	7	0	0	0	0	**4**	13	**1**	**18**	0	4	0	4	29
17:15	0	9	**8**	**17**	0	4	0	4	1	7	0	8	0	4	0	4	33
17:30	**1**	**13**	3	17	0	0	0	0	2	**15**	1	18	**1**	1	0	2	**37**
17:45	0	9	1	10	0	**6**	0	**6**	3	3	0	6	0	**6**	0	**6**	28
Total Volume	1	36	14	51	0	10	0	10	10	38	2	50	1	15	0	16	127
% App. Total	2	70.6	27.5		0	100	0		20	76	4		6.2	93.8	0		
PHF	.250	.692	.438	.750	.000	.417	.000	.417	.625	.633	.500	.694	.250	.625	.000	.667	.858

Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
E/W Street: Charles River Dam Road
City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011



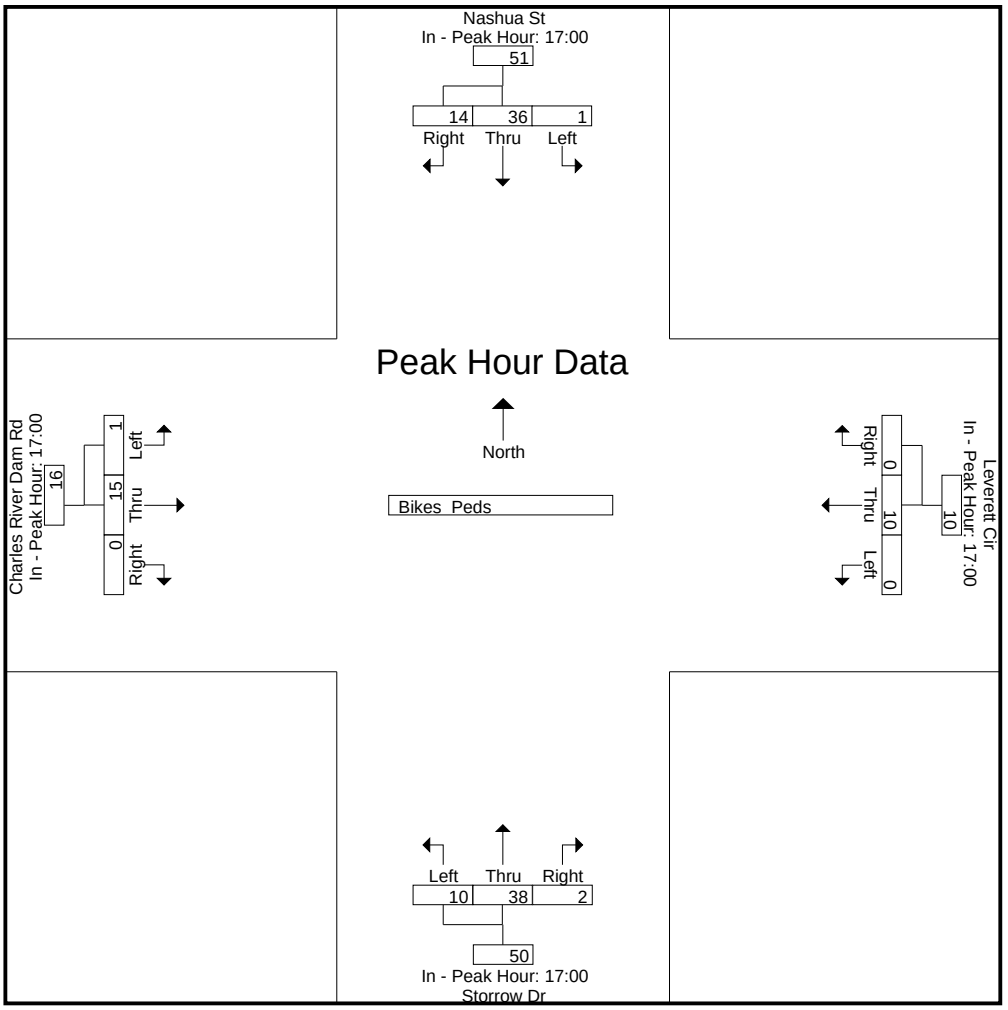
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	17:00				17:00				17:00				17:00			
+0 mins.	0	5	2	7	0	0	0	0	**4**	13	**1**	**18**	0	4	0	4
+15 mins.	0	9	**8**	**17**	0	4	0	4	1	7	0	8	0	4	0	4
+30 mins.	**1**	**13**	3	17	0	0	0	0	2	**15**	1	18	**1**	1	0	2
+45 mins.	0	9	1	10	0	**6**	0	**6**	3	3	0	6	0	**6**	0	**6**
Total Volume	1	36	14	51	0	10	0	10	10	38	2	50	1	15	0	16
% App. Total	2	70.6	27.5		0	100	0		20	76	4		6.2	93.8	0	
PHF	.250	.692	.438	.750	.000	.417	.000	.417	.625	.633	.500	.694	.250	.625	.000	.667

Accurate Counts
978-664-2565

N/S Street : Nashua St / Storrow Dr
E/W Street: Charles River Dam Road
City/State : Boston, MA
Weather : Clear

File Name : 15410001
Site Code : 15410001
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 1

Groups Printed- Cars - Trucks

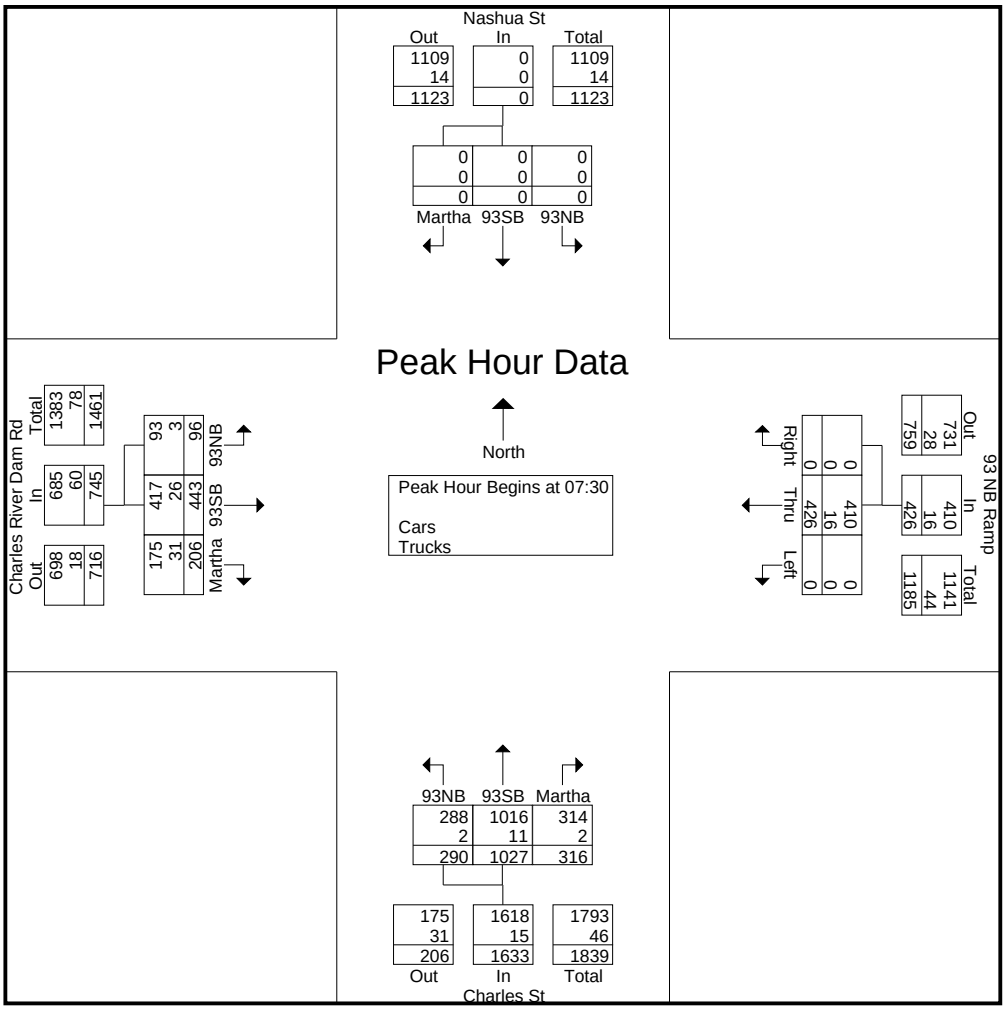
	Nashua St From North			93 NB Ramp From East			Charles St From South			Charles River Dam Rd From West			
Start Time	93NB	93SB	Martha	Left	Thru	Right	93NB	93SB	Martha	93NB	93SB	Martha	Int. Total
07:30	0	0	0	0	109	0	88	274	70	23	140	51	755
07:45	0	0	0	0	125	0	79	266	76	27	89	38	700
Total	0	0	0	0	234	0	167	540	146	50	229	89	1455
08:00	0	0	0	0	99	0	68	240	92	16	117	57	689
08:15	0	0	0	0	93	0	55	247	78	30	97	60	660
08:30	0	0	0	0	114	0	47	239	96	29	111	57	693
08:45	0	0	0	0	117	0	43	216	101	27	129	69	702
Total	0	0	0	0	423	0	213	942	367	102	454	243	2744
09:00	0	0	0	0	94	0	36	206	77	12	103	63	591
09:15	0	0	0	0	87	0	60	254	74	20	93	55	643
Grand Total	0	0	0	0	838	0	476	1942	664	184	879	450	5433
Apprch %	0	0	0	0	100	0	15.4	63	21.5	12.2	58.1	29.7	
Total %	0	0	0	0	15.4	0	8.8	35.7	12.2	3.4	16.2	8.3	
Cars	0	0	0	0	805	0	473	1926	661	177	834	382	5258
% Cars	0	0	0	0	96.1	0	99.4	99.2	99.5	96.2	94.9	84.9	96.8
Trucks	0	0	0	0	33	0	3	16	3	7	45	68	175
% Trucks	0	0	0	0	3.9	0	0.6	0.8	0.5	3.8	5.1	15.1	3.2

	Nashua St From North				93 NB Ramp From East				Charles St From South				Charles River Dam Rd From West				
Start Time	93NB	93SB	Martha	App. Total	Left	Thru	Right	App. Total	93NB	93SB	Martha	App. Total	93NB	93SB	Martha	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30																	
07:30	0	0	0	0	0	109	0	109	**88**	**274**	70	**432**	23	**140**	51	**214**	**755**
07:45	0	0	0	0	0	**125**	0	**125**	79	266	76	421	27	89	38	154	700
08:00	0	0	0	0	0	99	0	99	68	240	**92**	400	16	117	57	190	689
08:15	0	0	0	0	0	93	0	93	55	247	78	380	**30**	97	**60**	187	660
Total Volume	0	0	0	0	0	426	0	426	290	1027	316	1633	96	443	206	745	2804
% App. Total	0	0	0		0	100	0		17.8	62.9	19.4		12.9	59.5	27.7		
PHF	.000	.000	.000	.000	.000	.852	.000	.852	.824	.937	.859	.945	.800	.791	.858	.870	.928
Cars	0	0	0	0	0	410	0	410	288	1016	314	1618	93	417	175	685	2713
% Cars	0	0	0	0	0	96.2	0	96.2	99.3	98.9	99.4	99.1	96.9	94.1	85.0	91.9	96.8
Trucks	0	0	0	0	0	16	0	16	2	11	2	15	3	26	31	60	91
% Trucks	0	0	0	0	0	3.8	0	3.8	0.7	1.1	0.6	0.9	3.1	5.9	15.0	8.1	3.2

Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 2



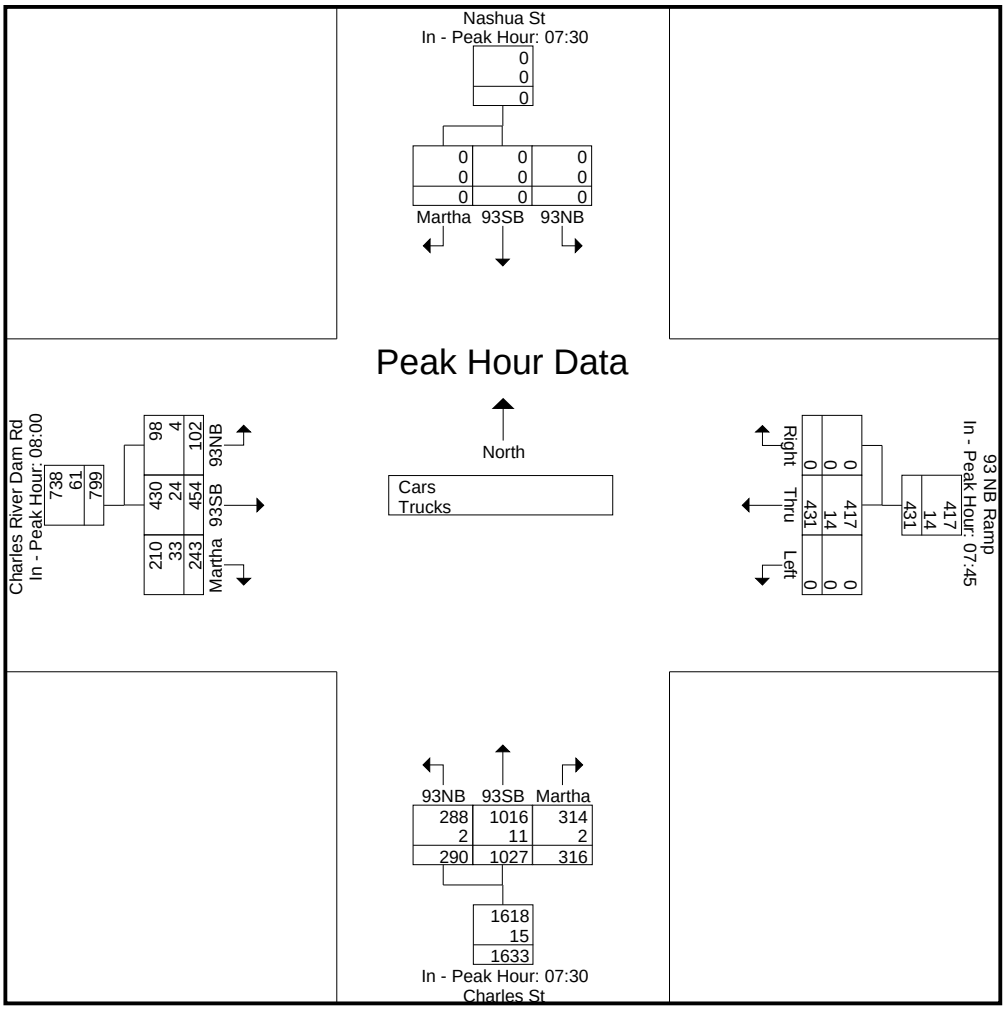
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30				07:45				07:30				08:00			
+0 mins.	0	0	0	0	0	**125**	0	**125**	**88**	**274**	70	**432**	16	117	57	190
+15 mins.	0	0	0	0	0	99	0	99	79	266	76	421	**30**	97	60	187
+30 mins.	0	0	0	0	0	93	0	93	68	240	**92**	400	29	111	57	197
+45 mins.	0	0	0	0	0	114	0	114	55	247	78	380	27	**129**	**69**	**225**
Total Volume	0	0	0	0	0	431	0	431	290	1027	316	1633	102	454	243	799
% App. Total	0	0	0		0	100	0		17.8	62.9	19.4		12.8	56.8	30.4	
PHF	.000	.000	.000	.000	.000	.862	.000	.862	.824	.937	.859	.945	.850	.880	.880	.888
Cars	0	0	0	0	0	417	0	417	288	1016	314	1618	98	430	210	738
% Cars	0	0	0	0	0	96.8	0	96.8	99.3	98.9	99.4	99.1	96.1	94.7	86.4	92.4
Trucks	0	0	0	0	0	14	0	14	2	11	2	15	4	24	33	61
% Trucks	0	0	0	0	0	3.2	0	3.2	0.7	1.1	0.6	0.9	3.9	5.3	13.6	7.6

Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 1

Groups Printed- Cars

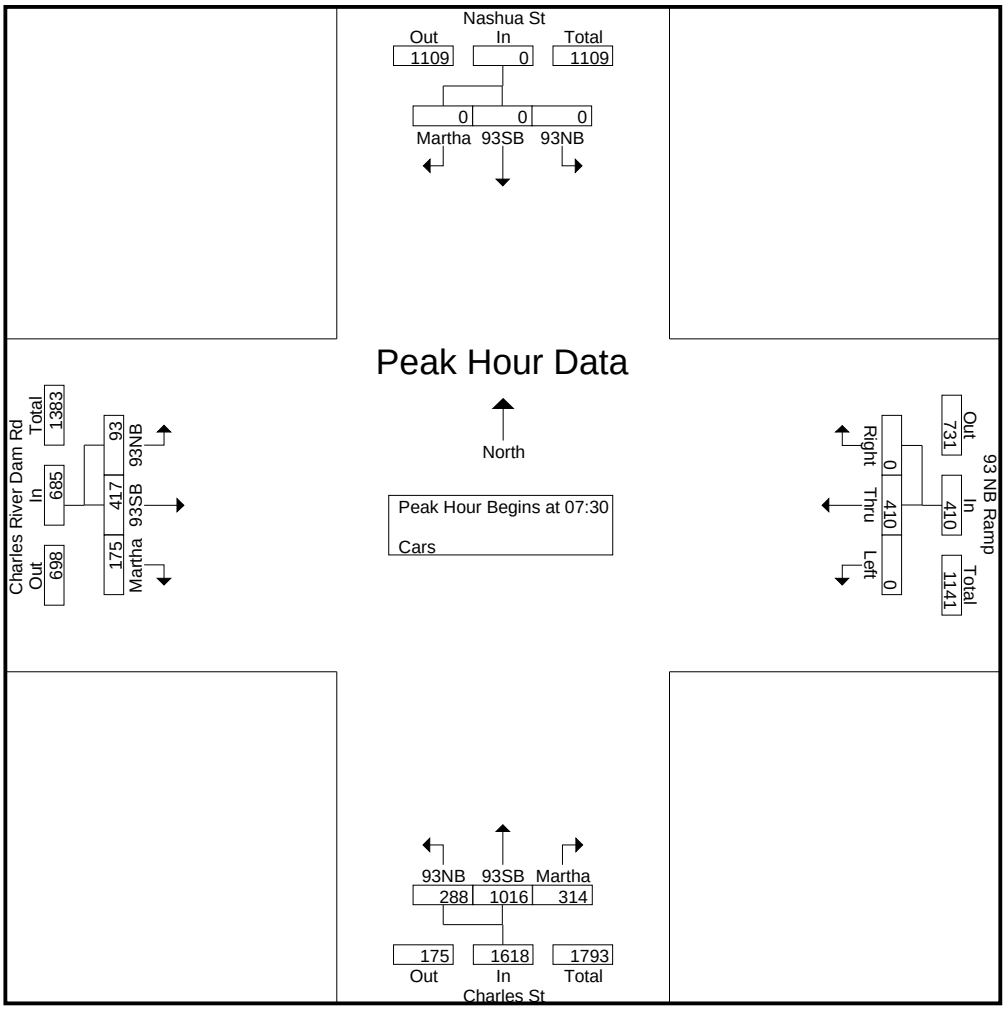
	Nashua St From North			93 NB Ramp From East			Charles St From South			Charles River Dam Rd From West			
Start Time	93NB	93SB	Martha	Left	Thru	Right	93NB	93SB	Martha	93NB	93SB	Martha	Int. Total
07:30	0	0	0	0	104	0	88	273	69	23	133	45	735
07:45	0	0	0	0	120	0	79	262	75	26	83	30	675
Total	0	0	0	0	224	0	167	535	144	49	216	75	1410
08:00	0	0	0	0	96	0	67	239	92	15	112	47	668
08:15	0	0	0	0	90	0	54	242	78	29	89	53	635
08:30	0	0	0	0	111	0	47	238	96	28	110	48	678
08:45	0	0	0	0	116	0	42	214	101	26	119	62	680
Total	0	0	0	0	413	0	210	933	367	98	430	210	2661
09:00	0	0	0	0	87	0	36	205	76	12	99	55	570
09:15	0	0	0	0	81	0	60	253	74	18	89	42	617
Grand Total	0	0	0	0	805	0	473	1926	661	177	834	382	5258
Apprch %	0	0	0	0	100	0	15.5	62.9	21.6	12.7	59.9	27.4	
Total %	0	0	0	0	15.3	0	9	36.6	12.6	3.4	15.9	7.3	

	Nashua St From North				93 NB Ramp From East				Charles St From South				Charles River Dam Rd From West				
Start Time	93NB	93SB	Martha	App. Total	Left	Thru	Right	App. Total	93NB	93SB	Martha	App. Total	93NB	93SB	Martha	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30																	
07:30	0	0	0	0	0	104	0	104	**88**	**273**	69	**430**	23	**133**	45	**201**	**735**
07:45	0	0	0	0	0	**120**	0	**120**	79	262	75	416	26	83	30	139	675
08:00	0	0	0	0	0	96	0	96	67	239	**92**	398	15	112	47	174	668
08:15	0	0	0	0	0	90	0	90	54	242	78	374	**29**	89	**53**	171	635
Total Volume	0	0	0	0	0	410	0	410	288	1016	314	1618	93	417	175	685	2713
% App. Total	0	0	0		0	100	0		17.8	62.8	19.4		13.6	60.9	25.5		
PHF	.000	.000	.000	.000	.000	.854	.000	.854	.818	.930	.853	.941	.802	.784	.825	.852	.923

Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 2



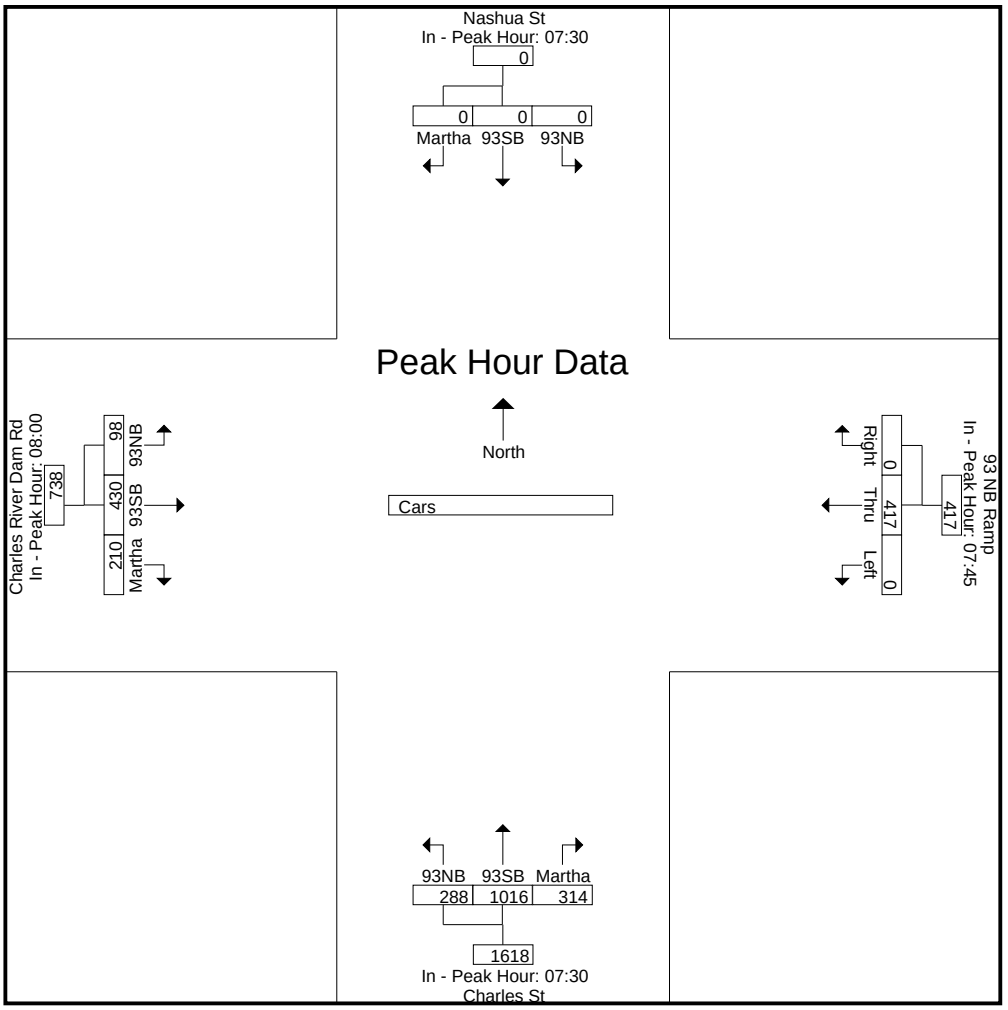
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30				07:45				07:30				08:00			
+0 mins.	0	0	0	0	0	**120**	0	**120**	**88**	**273**	69	**430**	15	112	47	174
+15 mins.	0	0	0	0	0	96	0	96	79	262	75	416	**29**	89	53	171
+30 mins.	0	0	0	0	0	90	0	90	67	239	**92**	398	28	110	48	186
+45 mins.	0	0	0	0	0	111	0	111	54	242	78	374	26	**119**	**62**	**207**
Total Volume	0	0	0	0	0	417	0	417	288	1016	314	1618	98	430	210	738
% App. Total	0	0	0		0	100	0		17.8	62.8	19.4		13.3	58.3	28.5	
PHF	.000	.000	.000	.000	.000	.869	.000	.869	.818	.930	.853	.941	.845	.903	.847	.891

Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 1

Groups Printed- Trucks

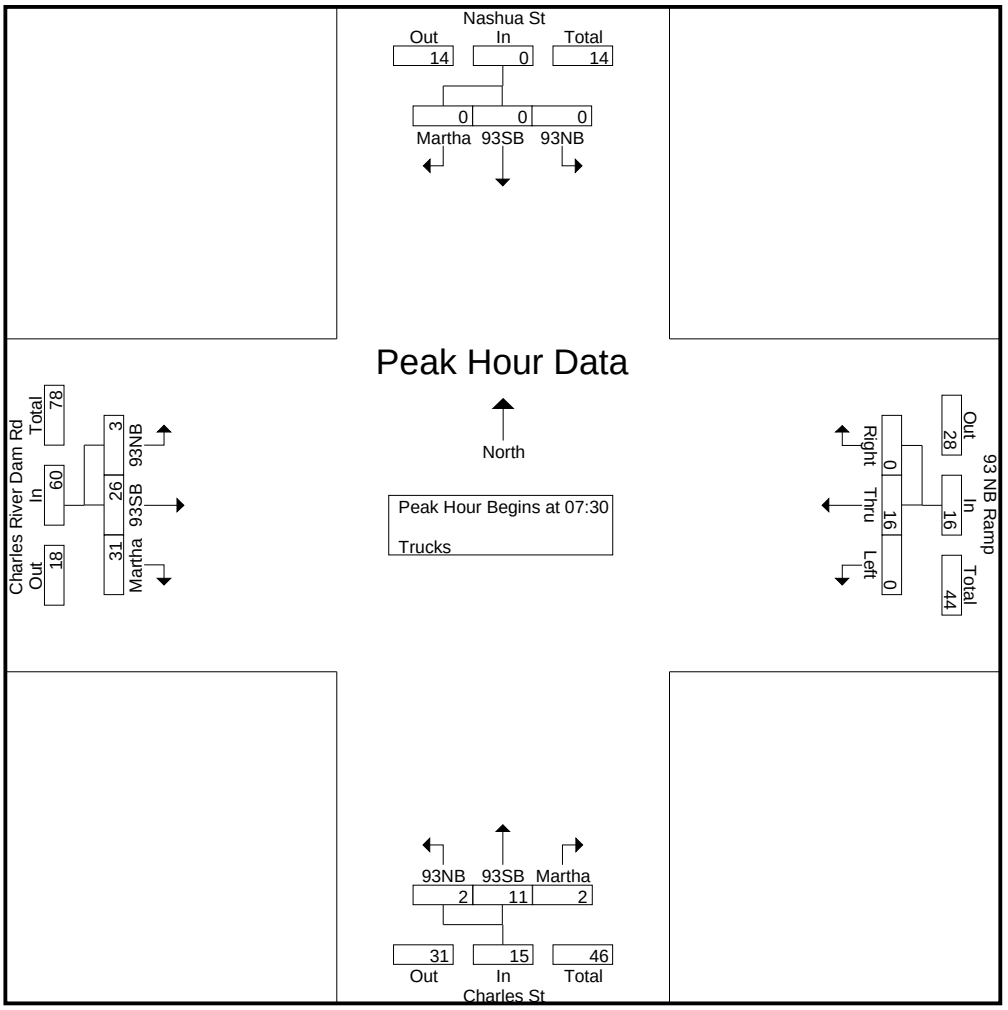
	Nashua St From North			93 NB Ramp From East			Charles St From South			Charles River Dam Rd From West			
Start Time	93NB	93SB	Martha	Left	Thru	Right	93NB	93SB	Martha	93NB	93SB	Martha	Int. Total
07:30	0	0	0	0	5	0	0	1	1	0	7	6	20
07:45	0	0	0	0	5	0	0	4	1	1	6	8	25
Total	0	0	0	0	10	0	0	5	2	1	13	14	45
08:00	0	0	0	0	3	0	1	1	0	1	5	10	21
08:15	0	0	0	0	3	0	1	5	0	1	8	7	25
08:30	0	0	0	0	3	0	0	1	0	1	1	9	15
08:45	0	0	0	0	1	0	1	2	0	1	10	7	22
Total	0	0	0	0	10	0	3	9	0	4	24	33	83
09:00	0	0	0	0	7	0	0	1	1	0	4	8	21
09:15	0	0	0	0	6	0	0	1	0	2	4	13	26
Grand Total	0	0	0	0	33	0	3	16	3	7	45	68	175
Apprch %	0	0	0	0	100	0	13.6	72.7	13.6	5.8	37.5	56.7	
Total %	0	0	0	0	18.9	0	1.7	9.1	1.7	4	25.7	38.9	

	Nashua St From North				93 NB Ramp From East				Charles St From South				Charles River Dam Rd From West				
Start Time	93NB	93SB	Martha	App. Total	Left	Thru	Right	App. Total	93NB	93SB	Martha	App. Total	93NB	93SB	Martha	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30																	
07:30	0	0	0	0	0	**5**	0	**5**	0	1	**1**	2	0	7	6	13	20
07:45	0	0	0	0	0	5	0	5	0	4	1	5	**1**	6	8	15	**25**
08:00	0	0	0	0	0	3	0	3	**1**	1	0	2	1	5	**10**	**16**	21
08:15	0	0	0	0	0	3	0	3	1	**5**	0	**6**	1	**8**	7	16	25
Total Volume	0	0	0	0	0	16	0	16	2	11	2	15	3	26	31	60	91
% App. Total	0	0	0		0	100	0		13.3	73.3	13.3		5	43.3	51.7		
PHF	.000	.000	.000	.000	.000	.800	.000	.800	.500	.550	.500	.625	.750	.813	.775	.938	.910

Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 2



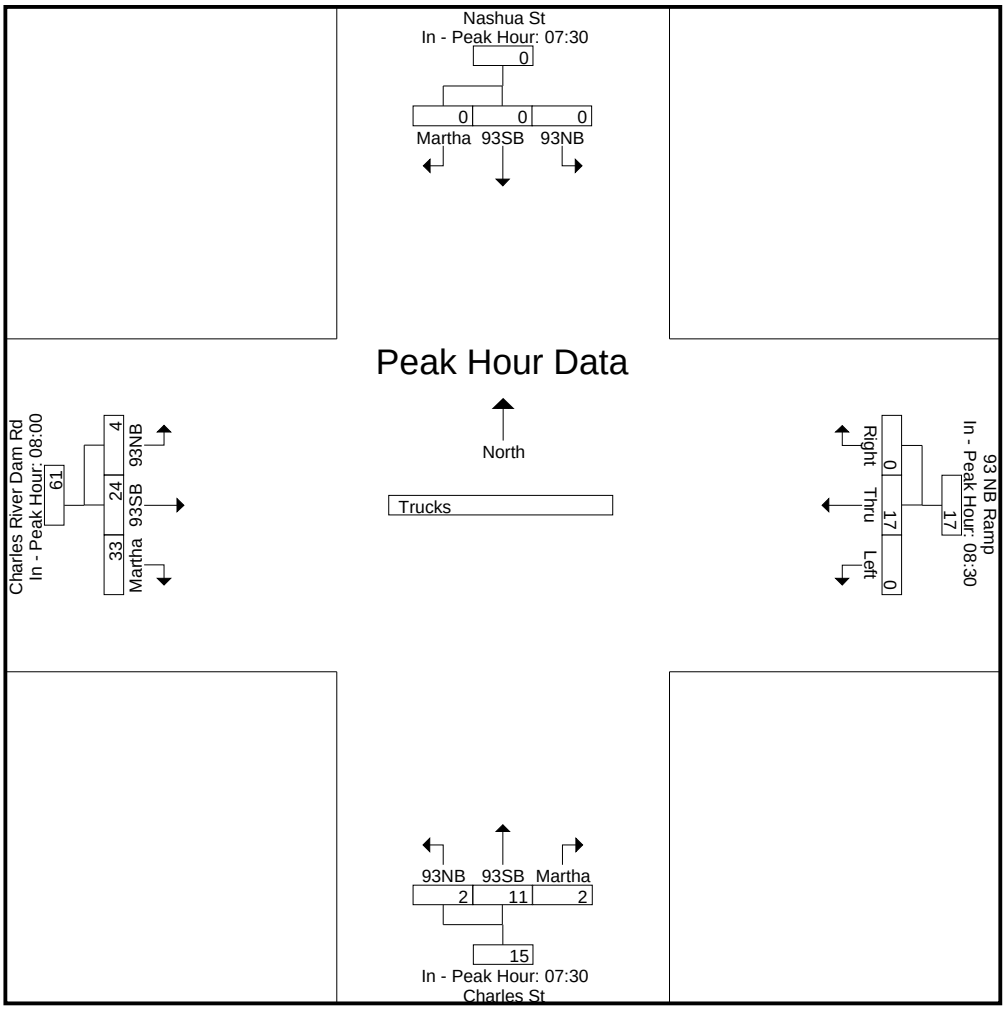
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30				08:30				07:30				08:00			
+0 mins.	0	0	0	0	0	3	0	3	0	1	**1**	2	**1**	5	**10**	16
+15 mins.	0	0	0	0	0	1	0	1	0	4	1	5	1	8	7	16
+30 mins.	0	0	0	0	0	**7**	0	**7**	**1**	1	0	2	1	1	9	11
+45 mins.	0	0	0	0	0	6	0	6	1	**5**	0	**6**	1	**10**	7	**18**
Total Volume	0	0	0	0	0	17	0	17	2	11	2	15	4	24	33	61
% App. Total	0	0	0		0	100	0		13.3	73.3	13.3		6.6	39.3	54.1	
PHF	.000	.000	.000	.000	.000	.607	.000	.607	.500	.550	.500	.625	1.000	.600	.825	.847

Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 1

Groups Printed- Bikes Peds

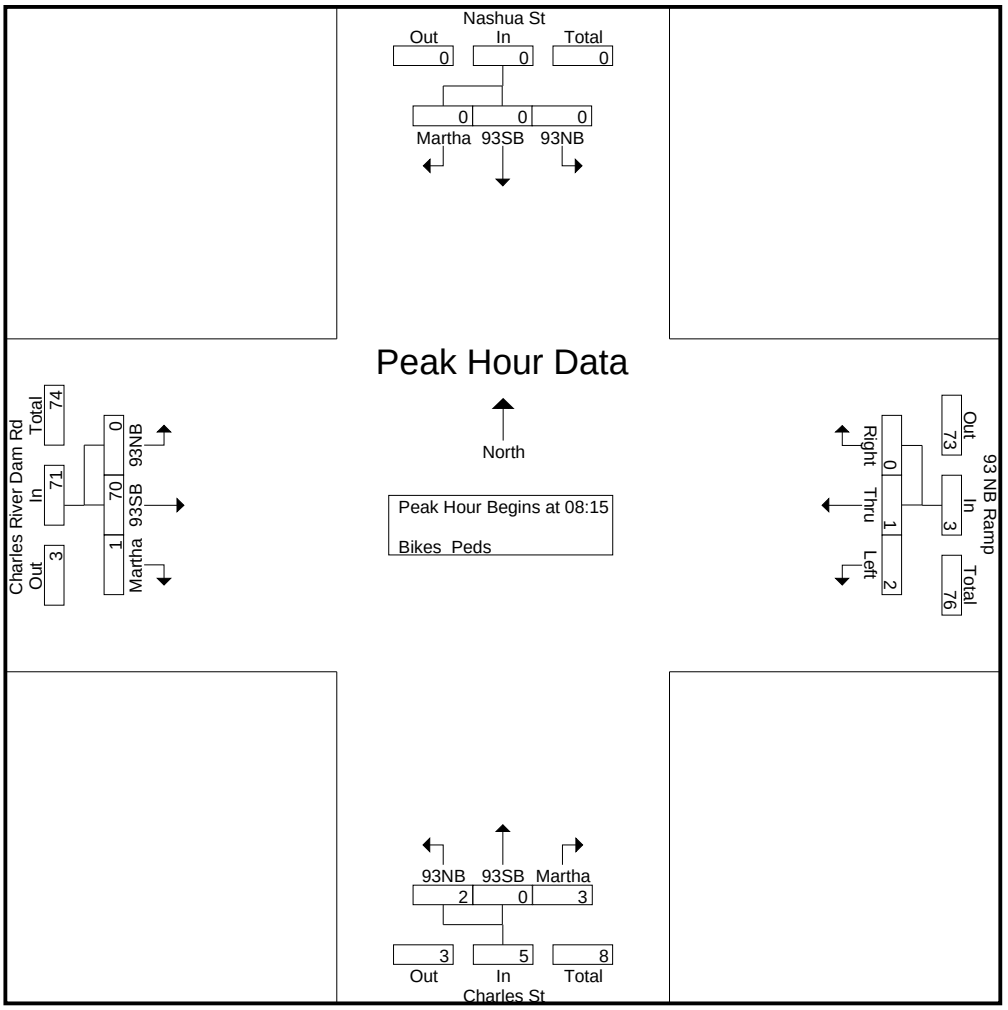
	Nashua St From North				93 NB Ramp From East				Charles St From South				Charles River Dam Rd From West						
Start Time	93NB	93SB	Martha	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:30	0	0	0	0	1	4	0	0	0	0	2	36	0	13	0	0	36	20	56
07:45	0	0	0	0	0	1	0	0	0	0	4	51	0	14	0	0	51	19	70
Total	0	0	0	0	1	5	0	0	0	0	6	87	0	27	0	0	87	39	126
08:00	0	0	0	0	1	1	0	0	0	0	1	46	0	11	0	0	46	14	60
08:15	0	0	0	0	0	0	0	0	2	0	2	47	0	16	0	0	47	20	67
08:30	0	0	0	0	1	0	0	0	0	0	0	48	0	23	0	0	48	24	72
08:45	0	0	0	0	0	0	0	0	0	0	0	56	0	14	1	0	56	15	71
Total	0	0	0	0	2	1	0	0	2	0	3	197	0	64	1	0	197	73	270
09:00	0	0	0	0	1	1	0	0	0	0	1	41	0	17	0	0	41	20	61
09:15	0	0	0	0	0	2	0	0	0	0	0	39	0	18	0	0	39	20	59
Grand Total	0	0	0	0	4	9	0	0	2	0	10	364	0	126	1	0	364	152	516
Apprch %	0	0	0		30.8	69.2	0		16.7	0	83.3		0	99.2	0.8				
Total %	0	0	0		2.6	5.9	0		1.3	0	6.6		0	82.9	0.7		70.5	29.5	

	Nashua St From North				93 NB Ramp From East				Charles St From South				Charles River Dam Rd From West				
Start Time	93NB	93SB	Martha	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:15																	
08:15	0	0	0	0	0	0	0	0	**2**	0	**2**	**4**	0	16	0	16	20
08:30	0	0	0	0	**1**	0	0	1	0	0	0	0	0	**23**	0	**23**	**24**
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	14	**1**	15	15
09:00	0	0	0	0	1	**1**	0	**2**	0	0	1	1	0	17	0	17	20
Total Volume	0	0	0	0	2	1	0	3	2	0	3	5	0	70	1	71	79
% App. Total	0	0	0		66.7	33.3	0		40	0	60		0	98.6	1.4		
PHF	.000	.000	.000	.000	.500	.250	.000	.375	.250	.000	.375	.313	.000	.761	.250	.772	.823

Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 2



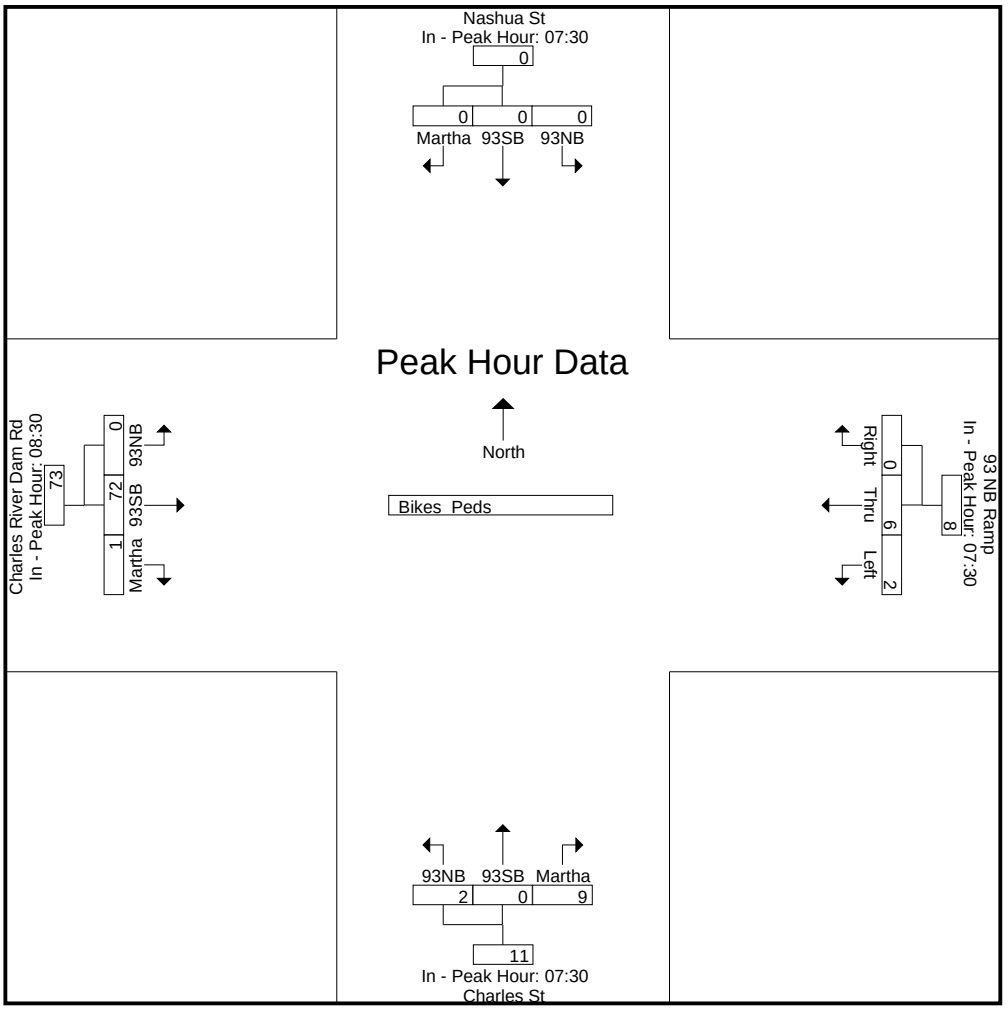
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30				07:30				07:30				08:30			
+0 mins.	0	0	0	0	**1**	**4**	0	**5**	0	0	2	2	0	**23**	0	**23**
+15 mins.	0	0	0	0	0	1	0	1	0	0	**4**	**4**	0	14	**1**	15
+30 mins.	0	0	0	0	1	1	0	2	0	0	1	1	0	17	0	17
+45 mins.	0	0	0	0	0	0	0	0	**2**	0	2	4	0	18	0	18
Total Volume	0	0	0	0	2	6	0	8	2	0	9	11	0	72	1	73
% App. Total	0	0	0		25	75	0		18.2	0	81.8		0	98.6	1.4	
PHF	.000	.000	.000	.000	.500	.375	.000	.400	.250	.000	.563	.688	.000	.783	.250	.793

Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 1

Groups Printed- Cars - Trucks

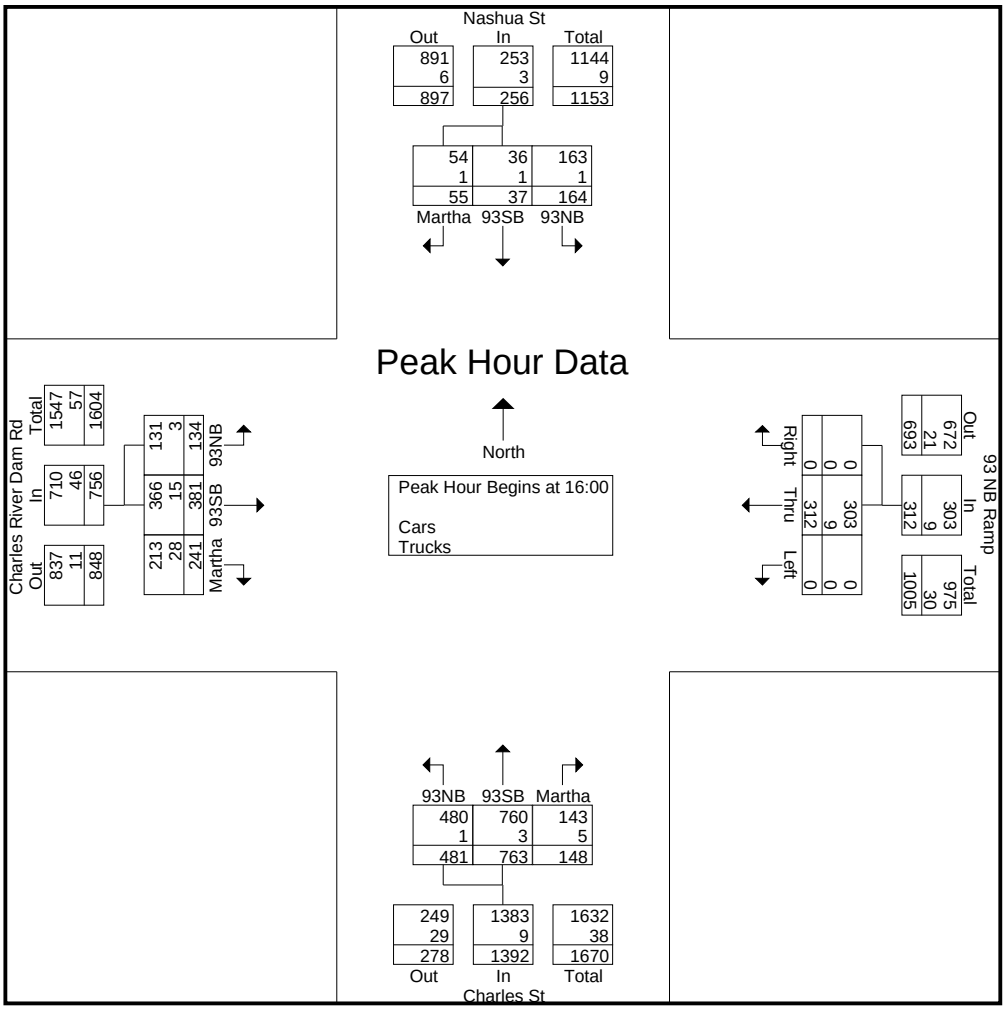
	Nashua St From North			93 NB Ramp From East			Charles St From South			Charles River Dam Rd From West			
Start Time	93NB	93SB	Martha	Left	Thru	Right	93NB	93SB	Martha	93NB	93SB	Martha	Int. Total
16:00	47	5	8	0	66	0	131	204	29	40	107	48	685
16:15	35	9	21	0	83	0	132	212	32	35	94	67	720
16:30	38	14	9	0	87	0	129	186	44	41	104	68	720
16:45	44	9	17	0	76	0	89	161	43	18	76	58	591
Total	164	37	55	0	312	0	481	763	148	134	381	241	2716
17:00	35	14	5	0	81	0	76	164	45	25	82	58	585
17:15	44	15	14	0	103	0	107	153	51	24	74	75	660
17:30	45	12	14	0	109	0	73	167	44	27	93	72	656
17:45	38	8	17	0	108	0	83	172	51	31	95	83	686
Total	162	49	50	0	401	0	339	656	191	107	344	288	2587
Grand Total	326	86	105	0	713	0	820	1419	339	241	725	529	5303
Apprch %	63.1	16.6	20.3	0	100	0	31.8	55	13.1	16.1	48.5	35.4	
Total %	6.1	1.6	2	0	13.4	0	15.5	26.8	6.4	4.5	13.7	10	
Cars	325	85	103	0	698	0	818	1416	334	238	702	478	5197
% Cars	99.7	98.8	98.1	0	97.9	0	99.8	99.8	98.5	98.8	96.8	90.4	98
Trucks	1	1	2	0	15	0	2	3	5	3	23	51	106
% Trucks	0.3	1.2	1.9	0	2.1	0	0.2	0.2	1.5	1.2	3.2	9.6	2

	Nashua St From North				93 NB Ramp From East				Charles St From South				Charles River Dam Rd From West				
Start Time	93NB	93SB	Martha	App. Total	Left	Thru	Right	App. Total	93NB	93SB	Martha	App. Total	93NB	93SB	Martha	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	**47**	5	8	60	0	66	0	66	131	204	29	364	40	**107**	48	195	685
16:15	35	9	**21**	65	0	83	0	83	**132**	**212**	32	**376**	35	94	67	196	**720**
16:30	38	**14**	9	61	0	**87**	0	**87**	129	186	**44**	359	**41**	104	**68**	**213**	720
16:45	44	9	17	**70**	0	76	0	76	89	161	43	293	18	76	58	152	591
Total Volume	164	37	55	256	0	312	0	312	481	763	148	1392	134	381	241	756	2716
% App. Total	64.1	14.5	21.5		0	100	0		34.6	54.8	10.6		17.7	50.4	31.9		
PHF	.872	.661	.655	.914	.000	.897	.000	.897	.911	.900	.841	.926	.817	.890	.886	.887	.943
Cars	163	36	54	253	0	303	0	303	480	760	143	1383	131	366	213	710	2649
% Cars	99.4	97.3	98.2	98.8	0	97.1	0	97.1	99.8	99.6	96.6	99.4	97.8	96.1	88.4	93.9	97.5
Trucks	1	1	1	3	0	9	0	9	1	3	5	9	3	15	28	46	67
% Trucks	0.6	2.7	1.8	1.2	0	2.9	0	2.9	0.2	0.4	3.4	0.6	2.2	3.9	11.6	6.1	2.5

Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 2



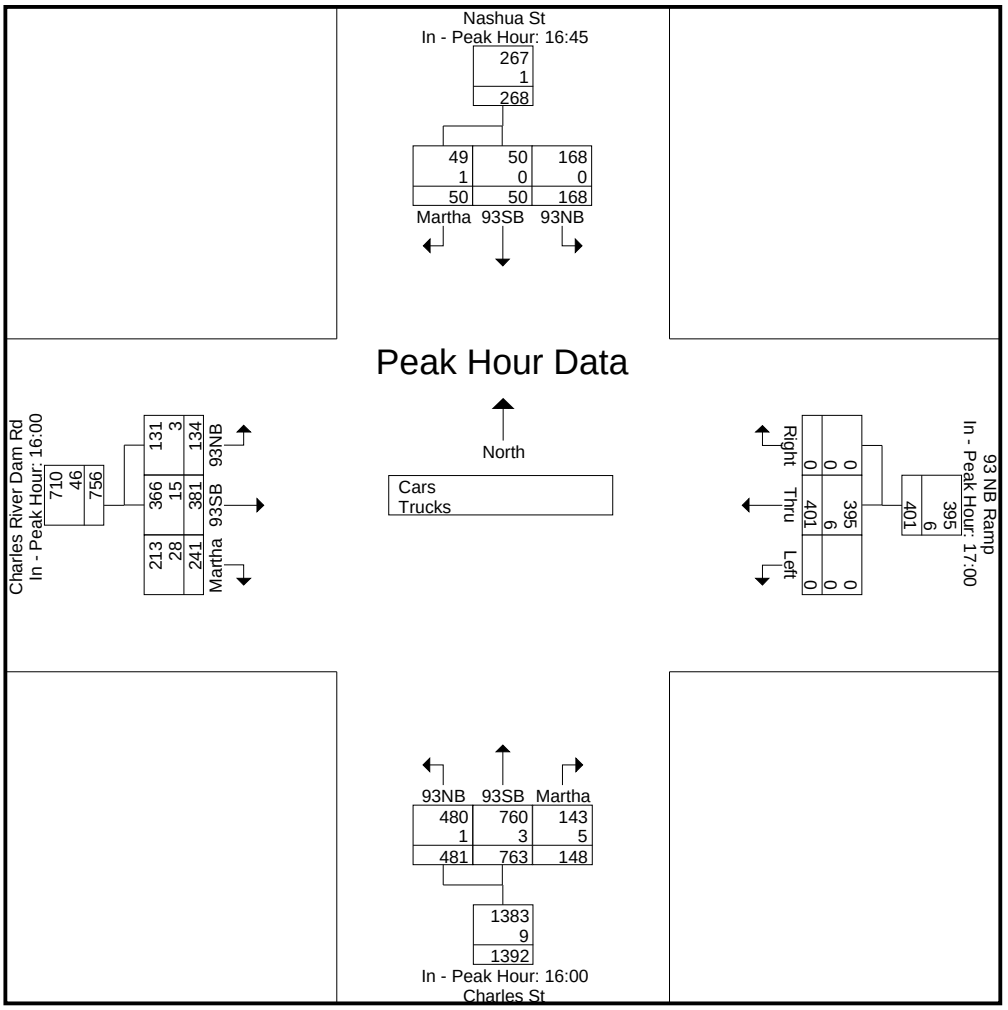
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	16:45				17:00				16:00				16:00			
+0 mins.	44	9	**17**	70	0	81	0	81	131	204	29	364	40	**107**	48	195
+15 mins.	35	14	5	54	0	103	0	103	**132**	**212**	32	**376**	35	94	67	196
+30 mins.	44	**15**	14	**73**	0	**109**	0	**109**	129	186	**44**	359	**41**	104	**68**	**213**
+45 mins.	**45**	12	14	71	0	108	0	108	89	161	43	293	18	76	58	152
Total Volume	168	50	50	268	0	401	0	401	481	763	148	1392	134	381	241	756
% App. Total	62.7	18.7	18.7		0	100	0		34.6	54.8	10.6		17.7	50.4	31.9	
PHF	.933	.833	.735	.918	.000	.920	.000	.920	.911	.900	.841	.926	.817	.890	.886	.887
Cars	168	50	49	267	0	395	0	395	480	760	143	1383	131	366	213	710
% Cars	100	100	98	99.6	0	98.5	0	98.5	99.8	99.6	96.6	99.4	97.8	96.1	88.4	93.9
Trucks	0	0	1	1	0	6	0	6	1	3	5	9	3	15	28	46
% Trucks	0	0	2	0.4	0	1.5	0	1.5	0.2	0.4	3.4	0.6	2.2	3.9	11.6	6.1

Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
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Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 1

Groups Printed- Cars

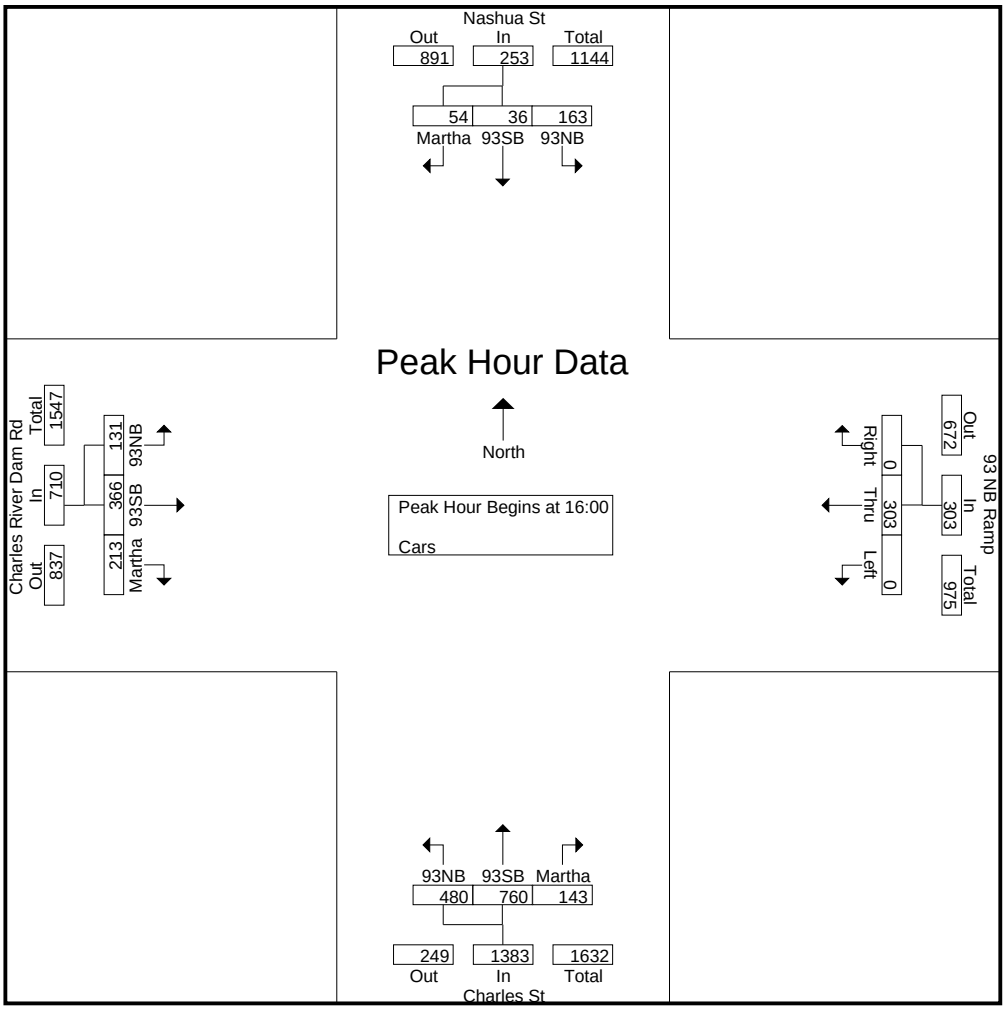
	Nashua St From North			93 NB Ramp From East			Charles St From South			Charles River Dam Rd From West			
Start Time	93NB	93SB	Martha	Left	Thru	Right	93NB	93SB	Martha	93NB	93SB	Martha	Int. Total
16:00	46	5	7	0	63	0	131	204	27	39	102	37	661
16:15	35	9	21	0	80	0	131	211	31	35	92	60	705
16:30	38	13	9	0	85	0	129	184	42	39	101	62	702
16:45	44	9	17	0	75	0	89	161	43	18	71	54	581
Total	163	36	54	0	303	0	480	760	143	131	366	213	2649
17:00	35	14	5	0	80	0	75	164	45	25	78	53	574
17:15	44	15	14	0	103	0	107	153	51	24	73	73	657
17:30	45	12	13	0	104	0	73	167	44	27	91	62	638
17:45	38	8	17	0	108	0	83	172	51	31	94	77	679
Total	162	49	49	0	395	0	338	656	191	107	336	265	2548
Grand Total	325	85	103	0	698	0	818	1416	334	238	702	478	5197
Apprch %	63.4	16.6	20.1	0	100	0	31.9	55.1	13	16.8	49.5	33.7	
Total %	6.3	1.6	2	0	13.4	0	15.7	27.2	6.4	4.6	13.5	9.2	

	Nashua St From North				93 NB Ramp From East				Charles St From South				Charles River Dam Rd From West				
Start Time	93NB	93SB	Martha	App. Total	Left	Thru	Right	App. Total	93NB	93SB	Martha	App. Total	93NB	93SB	Martha	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	**46**	5	7	58	0	63	0	63	**131**	204	27	362	**39**	**102**	37	178	661
16:15	35	9	**21**	65	0	80	0	80	131	**211**	31	**373**	35	92	60	187	**705**
16:30	38	**13**	9	60	0	**85**	0	**85**	129	184	42	355	39	101	**62**	**202**	702
16:45	44	9	17	**70**	0	75	0	75	89	161	**43**	293	18	71	54	143	581
Total Volume	163	36	54	253	0	303	0	303	480	760	143	1383	131	366	213	710	2649
% App. Total	64.4	14.2	21.3		0	100	0		34.7	55	10.3		18.5	51.5	30		
PHF	.886	.692	.643	.904	.000	.891	.000	.891	.916	.900	.831	.927	.840	.897	.859	.879	.939

Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 2



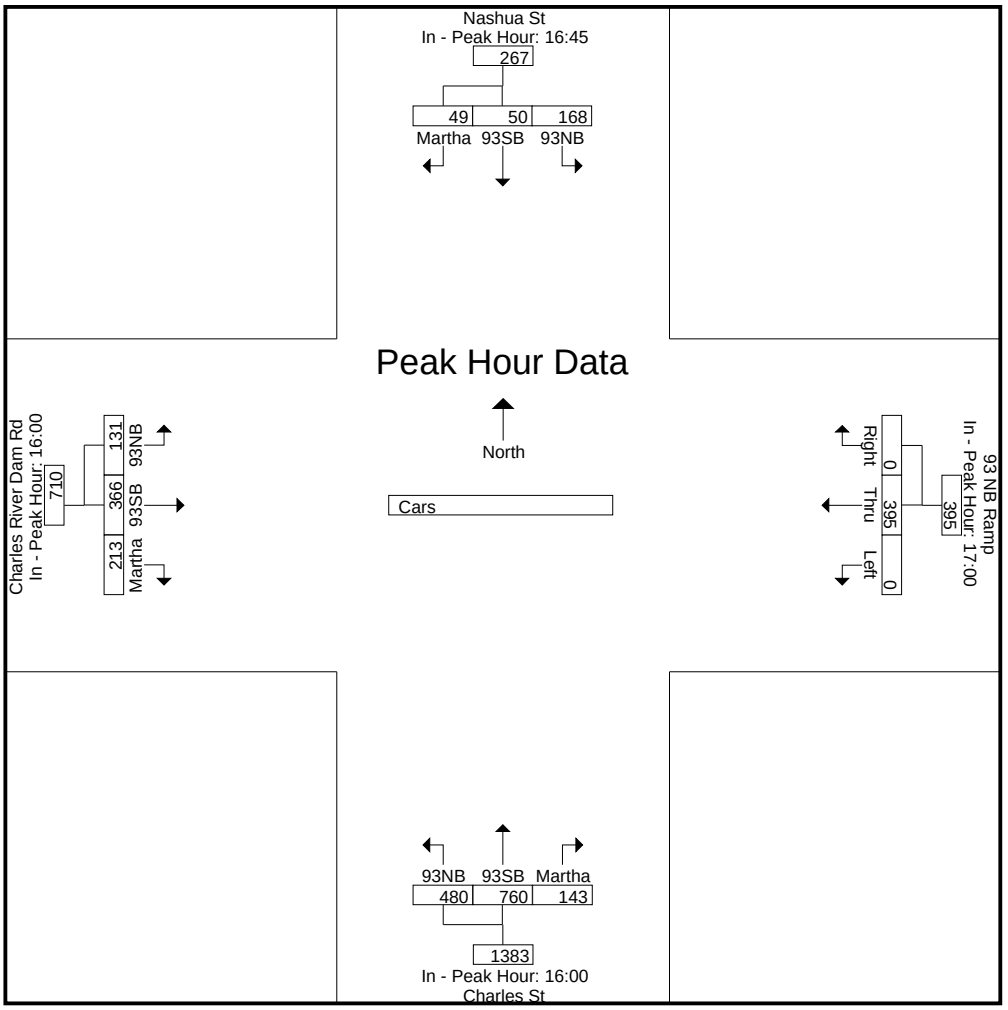
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	16:45				17:00				16:00				16:00			
+0 mins.	44	9	**17**	70	0	80	0	80	**131**	204	27	362	**39**	**102**	37	178
+15 mins.	35	14	5	54	0	103	0	103	131	**211**	31	**373**	35	92	60	187
+30 mins.	44	**15**	14	**73**	0	104	0	104	129	184	42	355	39	101	**62**	**202**
+45 mins.	**45**	12	13	70	0	**108**	0	**108**	89	161	**43**	293	18	71	54	143
Total Volume	168	50	49	267	0	395	0	395	480	760	143	1383	131	366	213	710
% App. Total	62.9	18.7	18.4		0	100	0		34.7	55	10.3		18.5	51.5	30	
PHF	.933	.833	.721	.914	.000	.914	.000	.914	.916	.900	.831	.927	.840	.897	.859	.879

Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 1

Groups Printed- Trucks

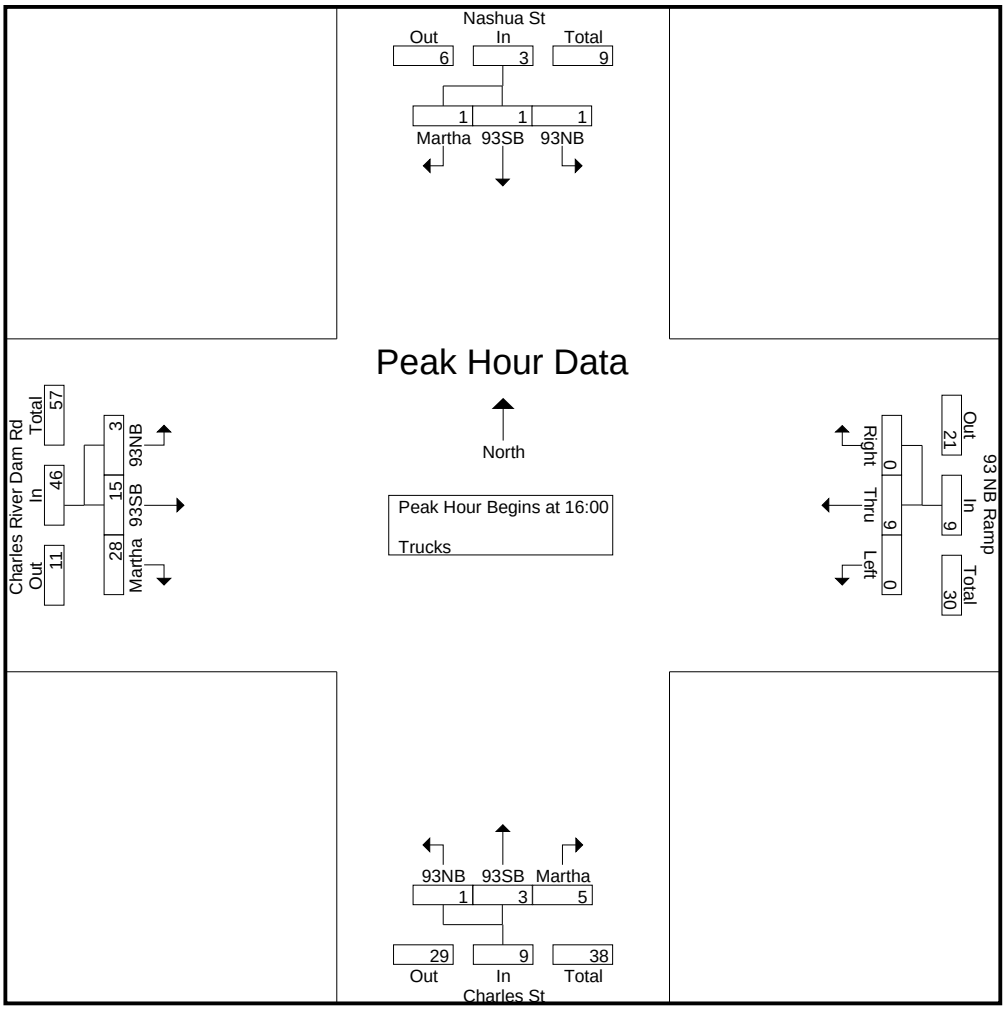
	Nashua St From North			93 NB Ramp From East			Charles St From South			Charles River Dam Rd From West			
Start Time	93NB	93SB	Martha	Left	Thru	Right	93NB	93SB	Martha	93NB	93SB	Martha	Int. Total
16:00	1	0	1	0	3	0	0	0	2	1	5	11	24
16:15	0	0	0	0	3	0	1	1	1	0	2	7	15
16:30	0	1	0	0	2	0	0	2	2	2	3	6	18
16:45	0	0	0	0	1	0	0	0	0	0	5	4	10
Total	1	1	1	0	9	0	1	3	5	3	15	28	67
17:00	0	0	0	0	1	0	1	0	0	0	4	5	11
17:15	0	0	0	0	0	0	0	0	0	0	1	2	3
17:30	0	0	1	0	5	0	0	0	0	0	2	10	18
17:45	0	0	0	0	0	0	0	0	0	0	1	6	7
Total	0	0	1	0	6	0	1	0	0	0	8	23	39
Grand Total	1	1	2	0	15	0	2	3	5	3	23	51	106
Apprch %	25	25	50	0	100	0	20	30	50	3.9	29.9	66.2	
Total %	0.9	0.9	1.9	0	14.2	0	1.9	2.8	4.7	2.8	21.7	48.1	

	Nashua St From North				93 NB Ramp From East				Charles St From South				Charles River Dam Rd From West				
Start Time	93NB	93SB	Martha	App. Total	Left	Thru	Right	App. Total	93NB	93SB	Martha	App. Total	93NB	93SB	Martha	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	**1**	0	**1**	**2**	0	**3**	0	**3**	0	0	**2**	2	1	**5**	**11**	**17**	**24**
16:15	0	0	0	0	0	3	0	3	**1**	1	1	3	0	2	7	9	15
16:30	0	**1**	0	1	0	2	0	2	0	**2**	2	**4**	**2**	3	6	11	18
16:45	0	0	0	0	0	1	0	1	0	0	0	0	0	5	4	9	10
Total Volume	1	1	1	3	0	9	0	9	1	3	5	9	3	15	28	46	67
% App. Total	33.3	33.3	33.3		0	100	0		11.1	33.3	55.6		6.5	32.6	60.9		
PHF	.250	.250	.250	.375	.000	.750	.000	.750	.250	.375	.625	.563	.375	.750	.636	.676	.698

Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 2



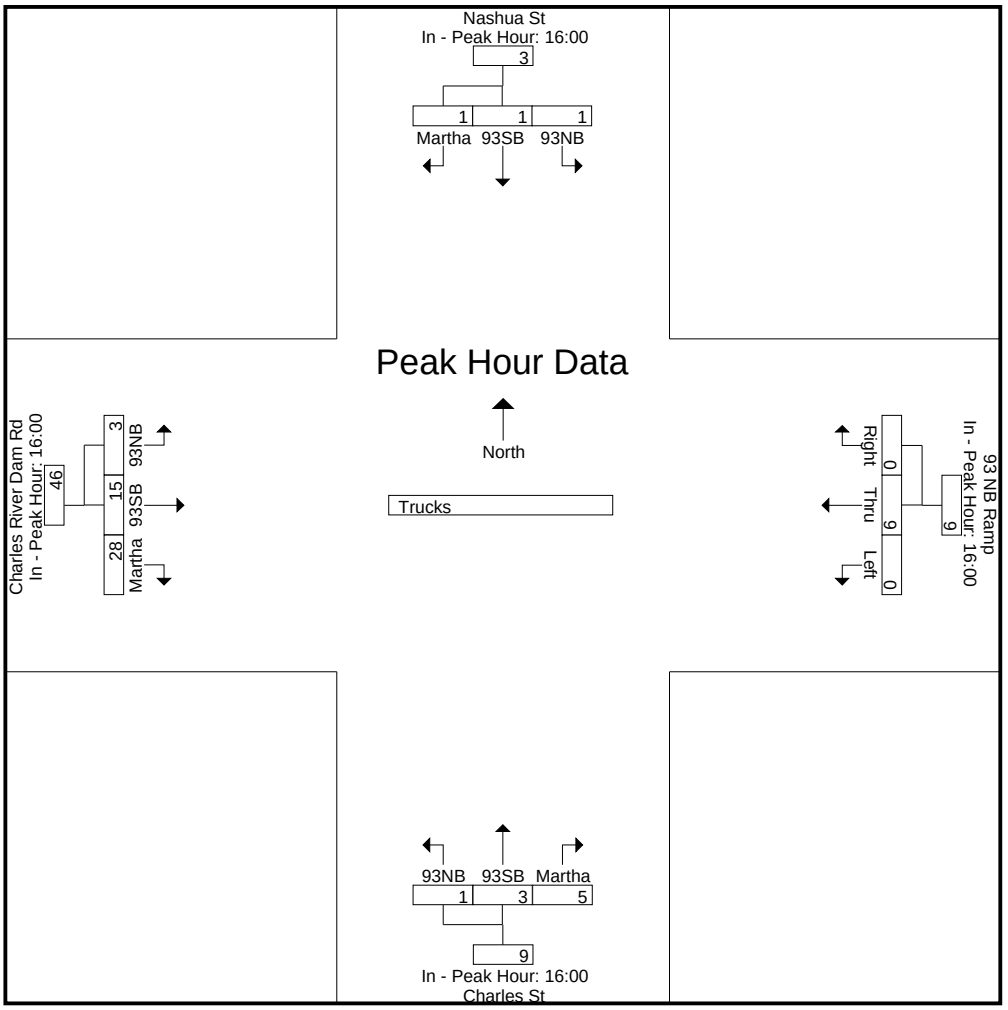
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	16:00				16:00				16:00				16:00			
+0 mins.	**1**	0	**1**	**2**	0	**3**	0	**3**	0	0	**2**	2	1	**5**	**11**	**17**
+15 mins.	0	0	0	0	0	3	0	3	**1**	1	1	3	0	2	7	9
+30 mins.	0	**1**	0	1	0	2	0	2	0	**2**	2	**4**	**2**	3	6	11
+45 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	5	4	9
Total Volume	1	1	1	3	0	9	0	9	1	3	5	9	3	15	28	46
% App. Total	33.3	33.3	33.3		0	100	0		11.1	33.3	55.6		6.5	32.6	60.9	
PHF	.250	.250	.250	.375	.000	.750	.000	.750	.250	.375	.625	.563	.375	.750	.636	.676

Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 1

Groups Printed- Bikes Peds

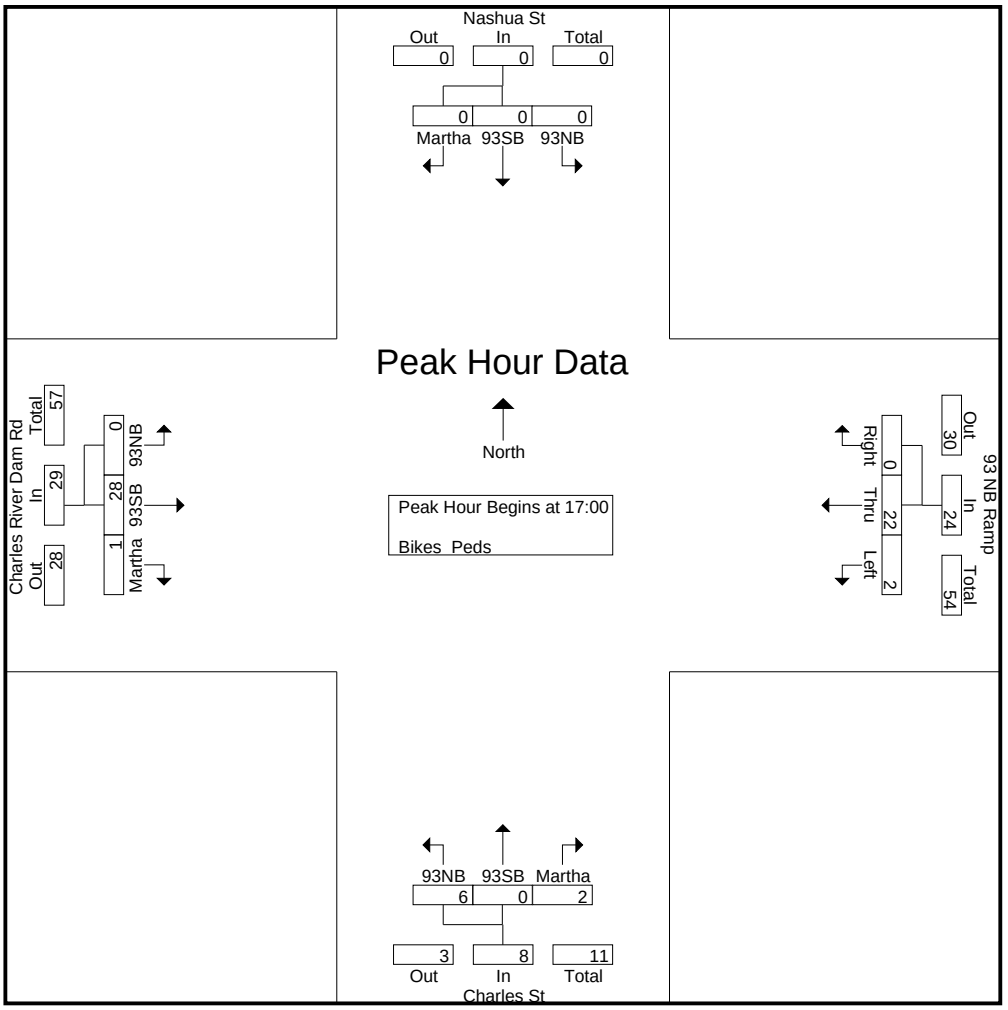
	Nashua St From North				93 NB Ramp From East				Charles St From South				Charles River Dam Rd From West						
Start Time	93NB	93SB	Martha	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
16:00	0	0	0	0	0	0	0	1	0	0	0	70	0	2	1	0	71	3	74
16:15	0	0	0	0	4	4	0	0	1	0	2	62	0	4	2	0	62	17	79
16:30	0	0	0	0	0	7	0	0	0	0	0	66	0	5	0	0	66	12	78
16:45	0	0	0	0	0	4	0	0	2	0	0	58	0	6	0	0	58	12	70
Total	0	0	0	0	4	15	0	1	3	0	2	256	0	17	3	0	257	44	301
17:00	0	0	0	0	1	3	0	0	2	0	0	96	0	4	0	0	96	10	106
17:15	0	0	0	0	0	3	0	0	2	0	0	96	0	8	1	0	96	14	110
17:30	0	0	0	0	1	11	0	0	1	0	0	75	0	11	0	0	75	24	99
17:45	0	0	0	0	0	5	0	0	1	0	2	81	0	5	0	0	81	13	94
Total	0	0	0	0	2	22	0	0	6	0	2	348	0	28	1	0	348	61	409
Grand Total	0	0	0	0	6	37	0	1	9	0	4	604	0	45	4	0	605	105	710
Apprch %	0	0	0		14	86	0		69.2	0	30.8		0	91.8	8.2				
Total %	0	0	0		5.7	35.2	0		8.6	0	3.8		0	42.9	3.8		85.2	14.8	

	Nashua St From North				93 NB Ramp From East				Charles St From South				Charles River Dam Rd From West				
Start Time	93NB	93SB	Martha	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	0	0	0	0	**1**	3	0	4	**2**	0	0	2	0	4	0	4	10
17:15	0	0	0	0	0	3	0	3	2	0	0	2	0	8	**1**	9	14
17:30	0	0	0	0	1	**11**	0	**12**	1	0	0	1	0	**11**	0	**11**	**24**
17:45	0	0	0	0	0	5	0	5	1	0	**2**	**3**	0	5	0	5	13
Total Volume	0	0	0	0	2	22	0	24	6	0	2	8	0	28	1	29	61
% App. Total	0	0	0		8.3	91.7	0		75	0	25		0	96.6	3.4		
PHF	.000	.000	.000	.000	.500	.500	.000	.500	.750	.000	.250	.667	.000	.636	.250	.659	.635

Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 2



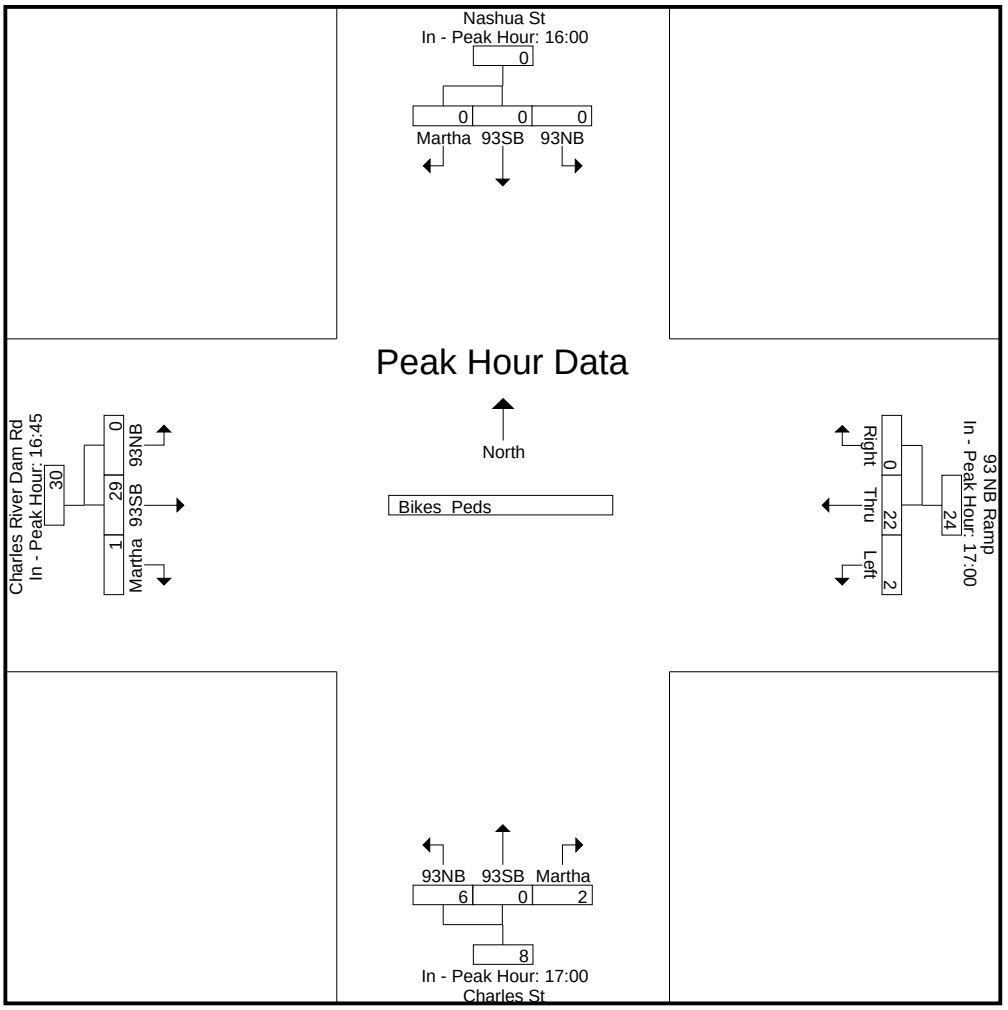
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	16:00				17:00				17:00				16:45			
+0 mins.	0	0	0	0	**1**	3	0	4	**2**	0	0	2	0	6	0	6
+15 mins.	0	0	0	0	0	3	0	3	2	0	0	2	0	4	0	4
+30 mins.	0	0	0	0	1	**11**	0	**12**	1	0	0	1	0	8	**1**	9
+45 mins.	0	0	0	0	0	5	0	5	1	0	**2**	**3**	0	**11**	0	**11**
Total Volume	0	0	0	0	2	22	0	24	6	0	2	8	0	29	1	30
% App. Total	0	0	0		8.3	91.7	0		75	0	25		0	96.7	3.3	
PHF	.000	.000	.000	.000	.500	.500	.000	.500	.750	.000	.250	.667	.000	.659	.250	.682

Accurate Counts
978-664-2565

N/S Street : Nashua St / Charles St
E/W Street: Rt 93 Rmps / Leverett Cir
City/State : Boston, MA
Weather : Clear

File Name : 15410002
Site Code : 15410002
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011

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Groups Printed- Cars - Trucks

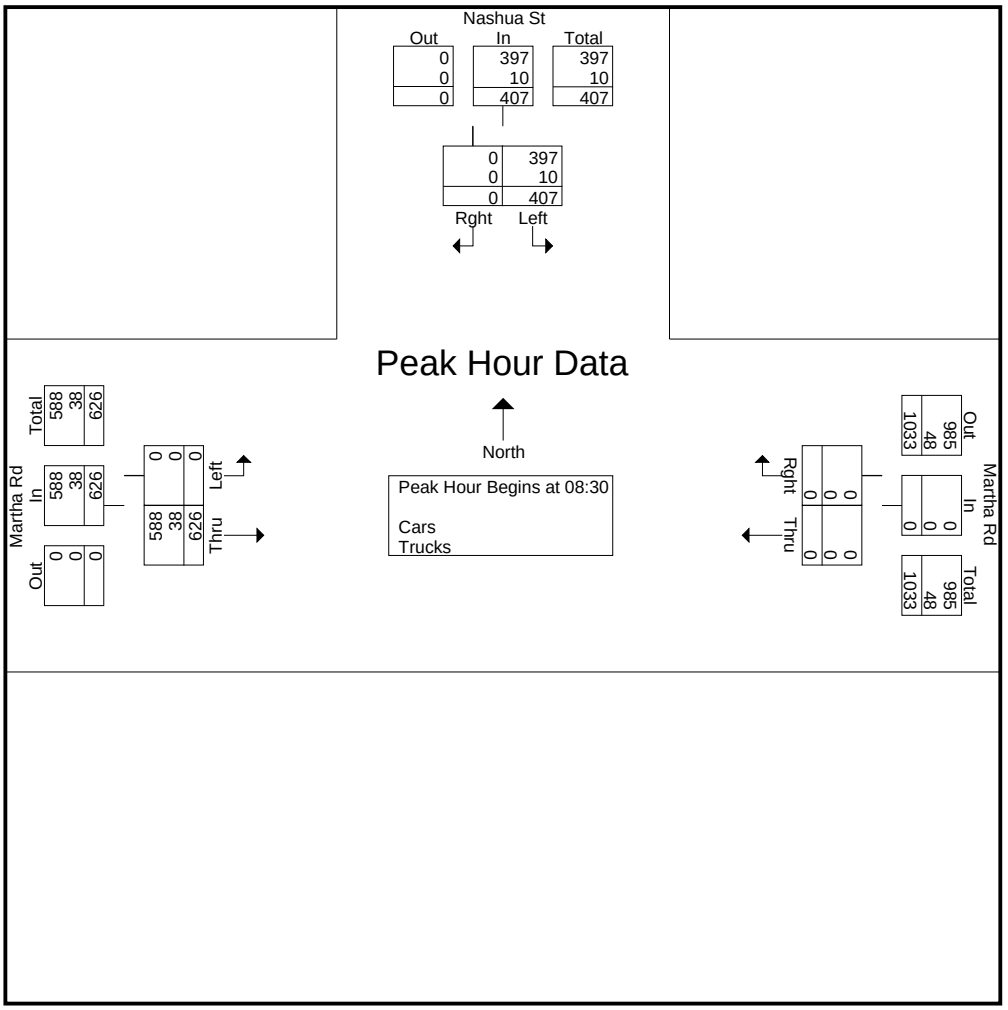
	Nashua St From North		Martha Rd From East		Martha Rd From West		
Start Time	Left	Rght	Thru	Rght	Left	Thru	Int. Total
07:30	88	0	0	0	0	137	225
07:45	67	0	0	0	0	117	184
Total	155	0	0	0	0	254	409
08:00	64	0	0	0	0	153	217
08:15	78	0	0	0	0	152	230
08:30	91	0	0	0	0	163	254
08:45	106	0	0	0	0	168	274
Total	339	0	0	0	0	636	975
09:00	107	0	0	0	0	141	248
09:15	103	0	0	0	0	154	257
Grand Total	704	0	0	0	0	1185	1889
Apprch %	100	0	0	0	0	100	
Total %	37.3	0	0	0	0	62.7	
Cars	691	0	0	0	0	1116	1807
% Cars	98.2	0	0	0	0	94.2	95.7
Trucks	13	0	0	0	0	69	82
% Trucks	1.8	0	0	0	0	5.8	4.3

	Nashua St From North			Martha Rd From East			Martha Rd From West			
Start Time	Left	Rght	App. Total	Thru	Rght	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:30										
08:30	91	0	91	0	0	0	0	163	163	254
08:45	106	0	106	0	0	0	0	**168**	**168**	**274**
09:00	**107**	0	**107**	0	0	0	0	141	141	248
09:15	103	0	103	0	0	0	0	154	154	257
Total Volume	407	0	407	0	0	0	0	626	626	1033
% App. Total	100	0		0	0		0	100		
PHF	.951	.000	.951	.000	.000	.000	.000	.932	.932	.943
Cars	397	0	397	0	0	0	0	588	588	985
% Cars	97.5	0	97.5	0	0	0	0	93.9	93.9	95.4
Trucks	10	0	10	0	0	0	0	38	38	48
% Trucks	2.5	0	2.5	0	0	0	0	6.1	6.1	4.6

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1

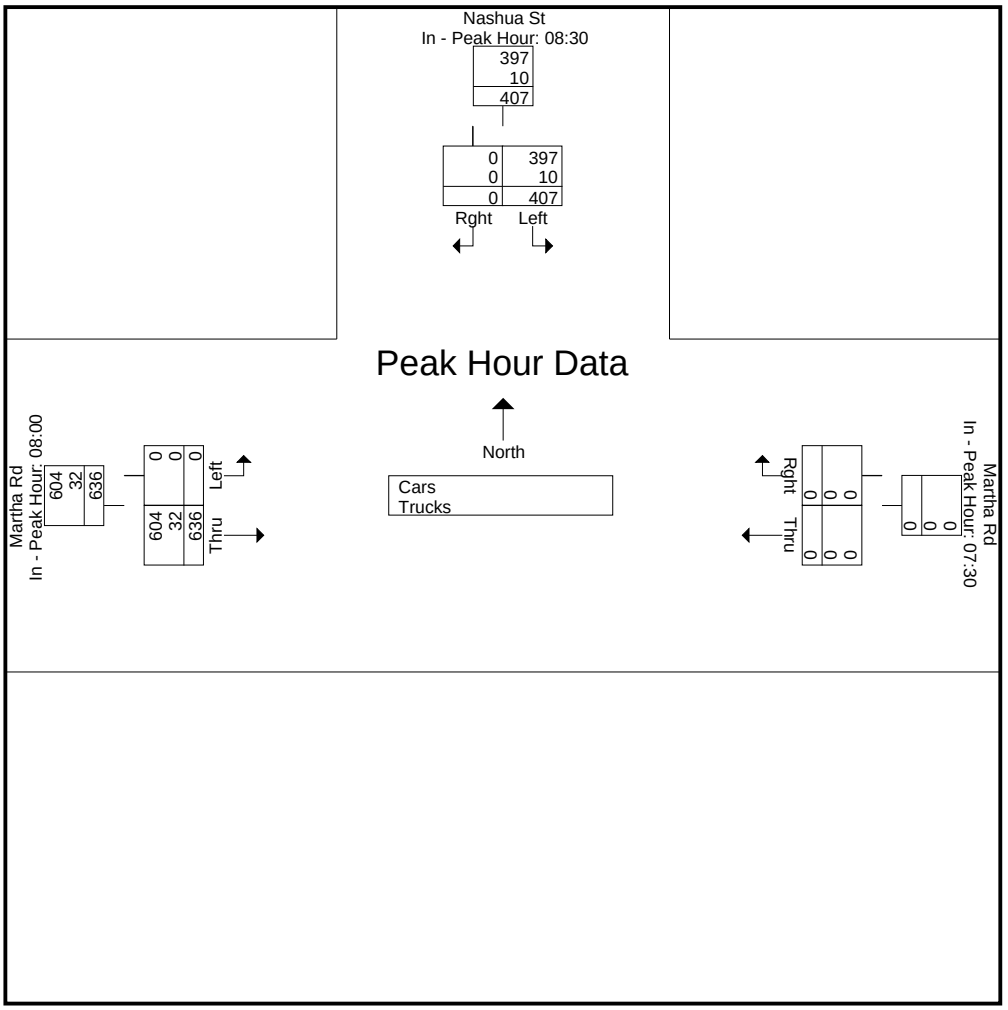
Peak Hour for Each Approach Begins at:

	08:30			07:30			08:00		
+0 mins.	91	0	91	0	0	0	0	153	153
+15 mins.	106	0	106	0	0	0	0	152	152
+30 mins.	**107**	0	**107**	0	0	0	0	163	163
+45 mins.	103	0	103	0	0	0	0	**168**	**168**
Total Volume	407	0	407	0	0	0	0	636	636
% App. Total	100	0		0	0		0	100	
PHF	.951	.000	.951	.000	.000	.000	.000	.946	.946
Cars	397	0	397	0	0	0	0	604	604
% Cars	97.5	0	97.5	0	0	0	0	95	95
Trucks	10	0	10	0	0	0	0	32	32
% Trucks	2.5	0	2.5	0	0	0	0	5	5

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011

.

Groups Printed- Cars

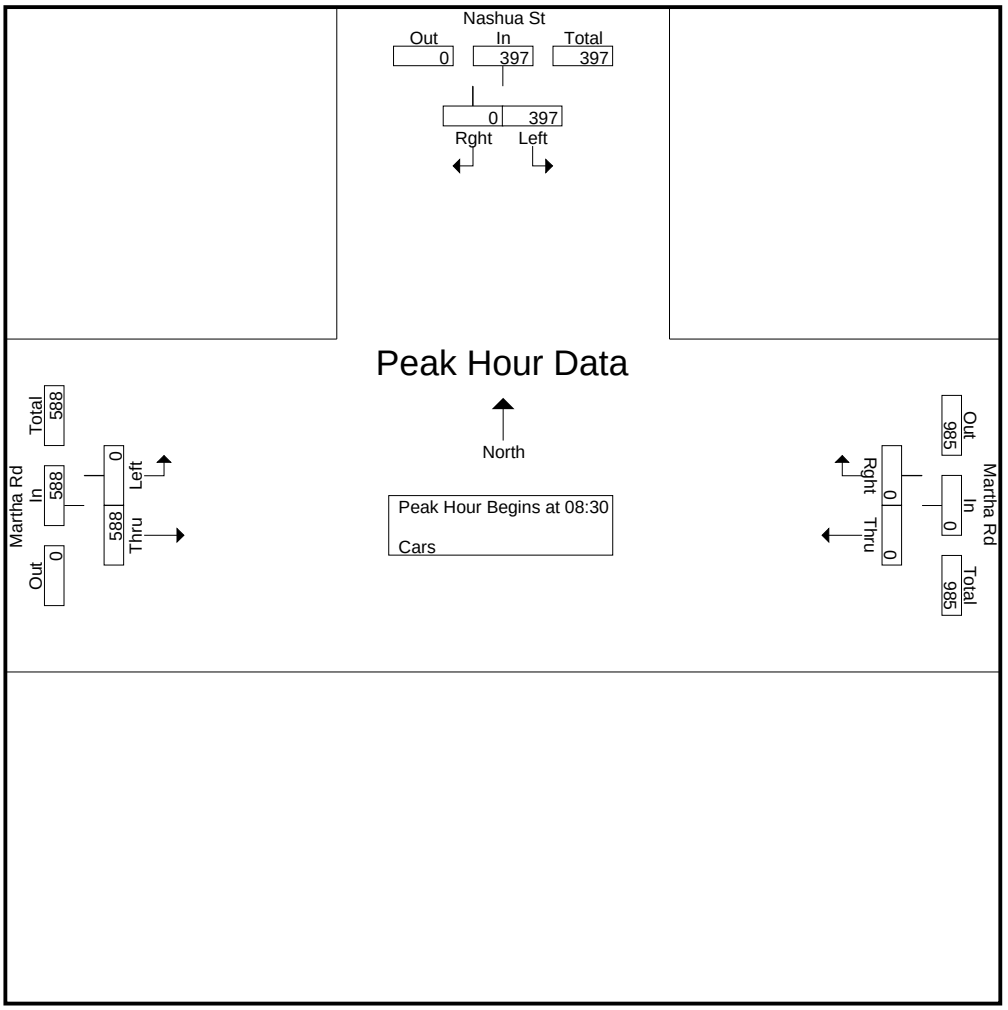
	Nashua St From North		Martha Rd From East		Martha Rd From West		
Start Time	Left	Rght	Thru	Rght	Left	Thru	Int. Total
07:30	85	0	0	0	0	130	215
07:45	67	0	0	0	0	108	175
Total	152	0	0	0	0	238	390
08:00	64	0	0	0	0	143	207
08:15	78	0	0	0	0	147	225
08:30	90	0	0	0	0	153	243
08:45	103	0	0	0	0	161	264
Total	335	0	0	0	0	604	939
09:00	104	0	0	0	0	132	236
09:15	100	0	0	0	0	142	242
Grand Total	691	0	0	0	0	1116	1807
Apprch %	100	0	0	0	0	100	
Total %	38.2	0	0	0	0	61.8	

	Nashua St From North			Martha Rd From East			Martha Rd From West			
Start Time	Left	Rght	App. Total	Thru	Rght	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:30										
08:30	90	0	90	0	0	0	0	153	153	243
08:45	103	0	103	0	0	0	0	**161**	**161**	**264**
09:00	**104**	0	**104**	0	0	0	0	132	132	236
09:15	100	0	100	0	0	0	0	142	142	242
Total Volume	397	0	397	0	0	0	0	588	588	985
% App. Total	100	0		0	0		0	100		
PHF	.954	.000	.954	.000	.000	.000	.000	.913	.913	.933

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1

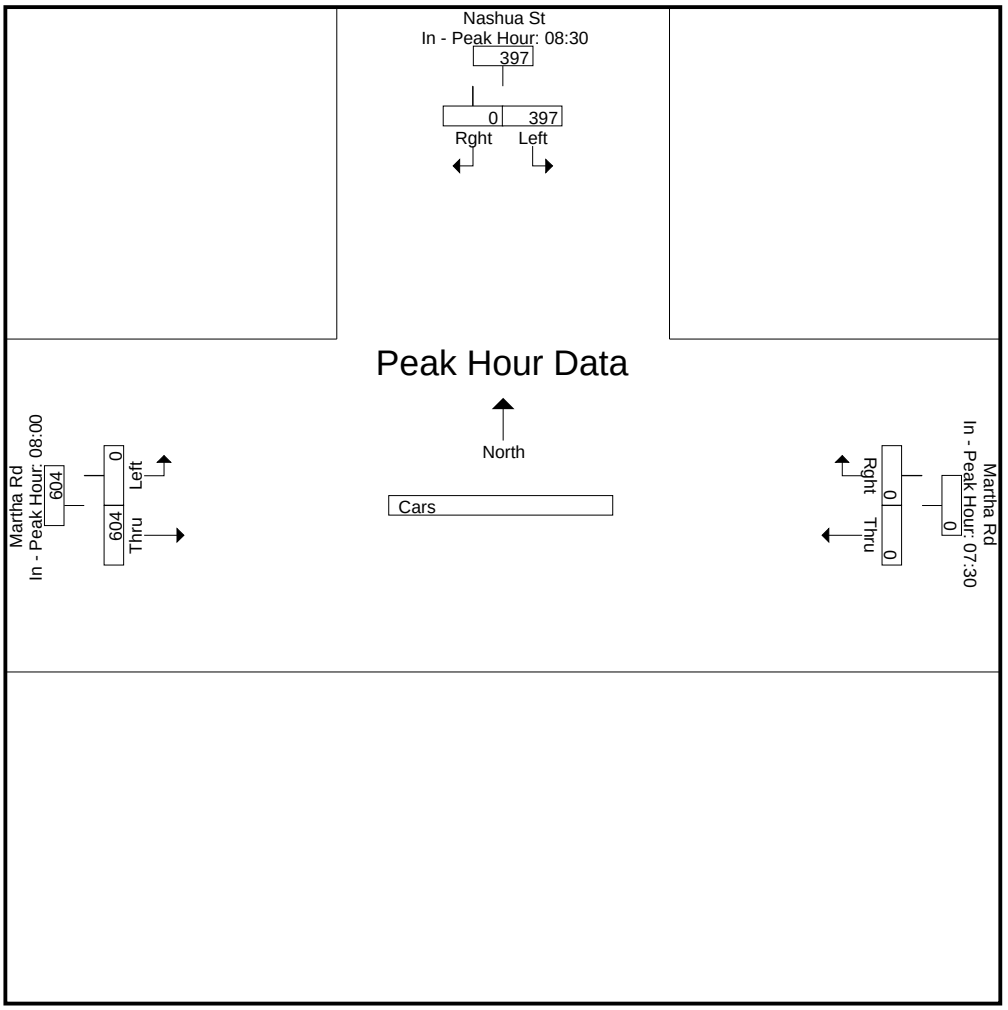
Peak Hour for Each Approach Begins at:

	08:30			07:30			08:00		
+0 mins.	90	0	90	0	0	0	0	143	143
+15 mins.	103	0	103	0	0	0	0	147	147
+30 mins.	**104**	0	**104**	0	0	0	0	153	153
+45 mins.	100	0	100	0	0	0	0	**161**	**161**
Total Volume	397	0	397	0	0	0	0	604	604
% App. Total	100	0		0	0		0	100	
PHF	.954	.000	.954	.000	.000	.000	.000	.938	.938

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011
Page No : 1

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Groups Printed- Trucks

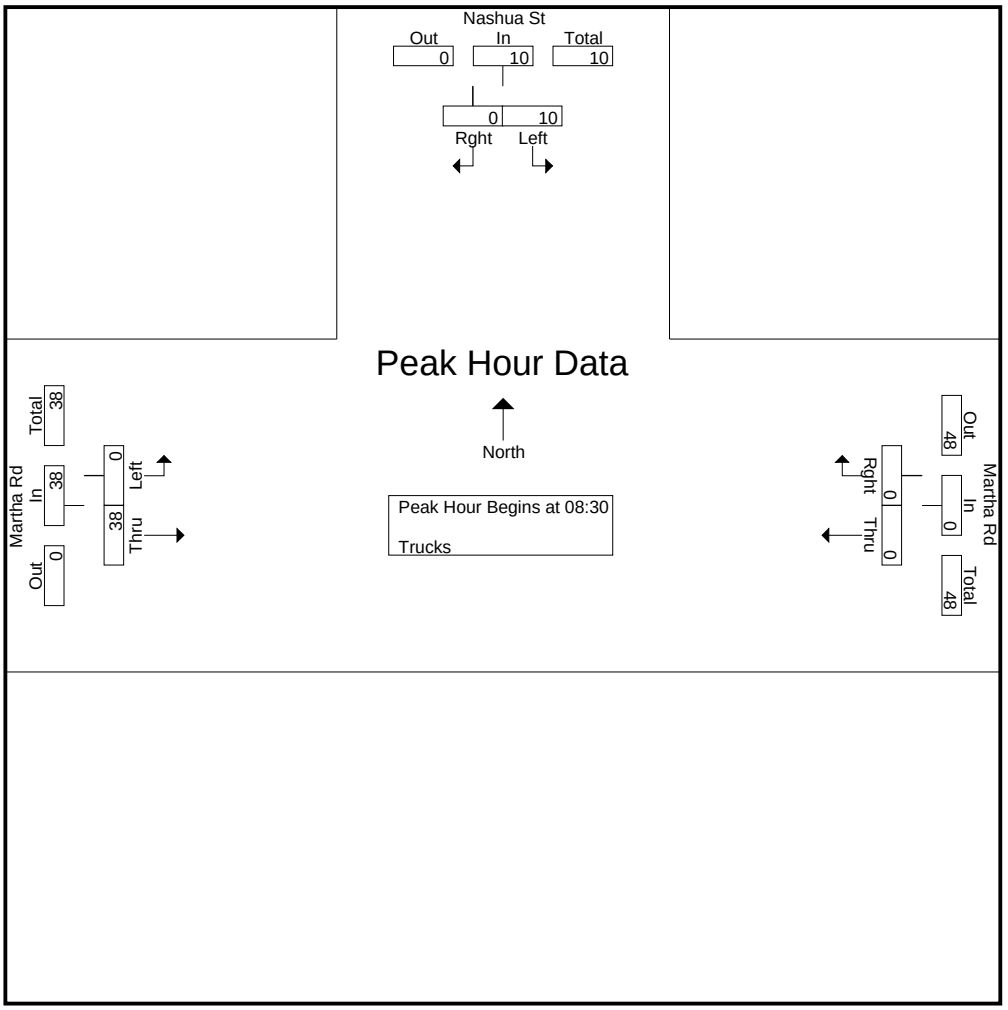
	Nashua St From North		Martha Rd From East		Martha Rd From West		
Start Time	Left	Rght	Thru	Rght	Left	Thru	Int. Total
07:30	3	0	0	0	0	7	10
07:45	0	0	0	0	0	9	9
Total	3	0	0	0	0	16	19
08:00	0	0	0	0	0	10	10
08:15	0	0	0	0	0	5	5
08:30	1	0	0	0	0	10	11
08:45	3	0	0	0	0	7	10
Total	4	0	0	0	0	32	36
09:00	3	0	0	0	0	9	12
09:15	3	0	0	0	0	12	15
Grand Total	13	0	0	0	0	69	82
Apprch %	100	0	0	0	0	100	
Total %	15.9	0	0	0	0	84.1	

	Nashua St From North			Martha Rd From East			Martha Rd From West			
Start Time	Left	Rght	App. Total	Thru	Rght	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:30										
08:30	1	0	1	0	0	0	0	10	10	11
08:45	**3**	0	**3**	0	0	0	0	7	7	10
09:00	3	0	3	0	0	0	0	9	9	12
09:15	3	0	3	0	0	0	0	**12**	**12**	**15**
Total Volume	10	0	10	0	0	0	0	38	38	48
% App. Total	100	0		0	0		0	100		
PHF	.833	.000	.833	.000	.000	.000	.000	.792	.792	.800

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1

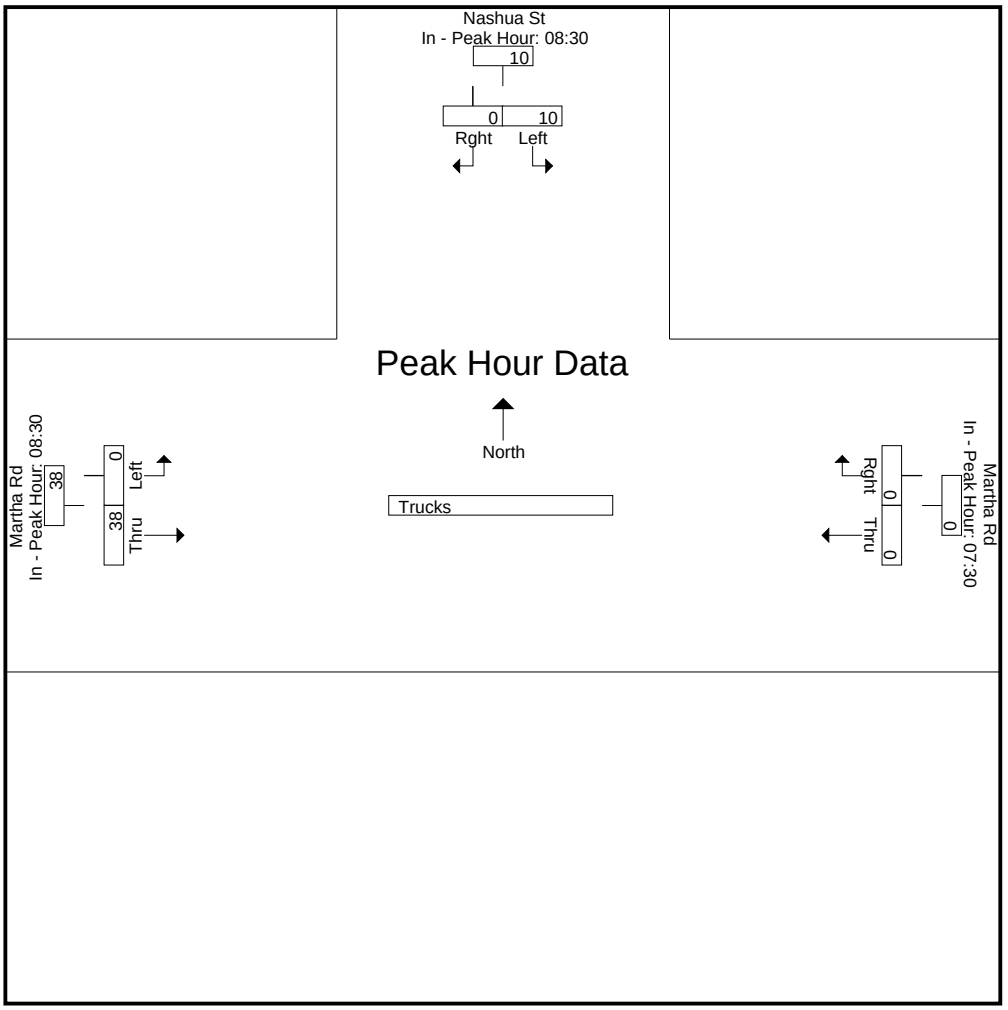
Peak Hour for Each Approach Begins at:

	08:30			07:30			08:30		
+0 mins.	1	0	1	0	0	0	0	10	10
+15 mins.	**3**	0	**3**	0	0	0	0	7	7
+30 mins.	3	0	3	0	0	0	0	9	9
+45 mins.	3	0	3	0	0	0	0	**12**	**12**
Total Volume	10	0	10	0	0	0	0	38	38
% App. Total	100	0		0	0		0	100	
PHF	.833	.000	.833	.000	.000	.000	.000	.792	.792

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011

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Groups Printed- Bikes Peds

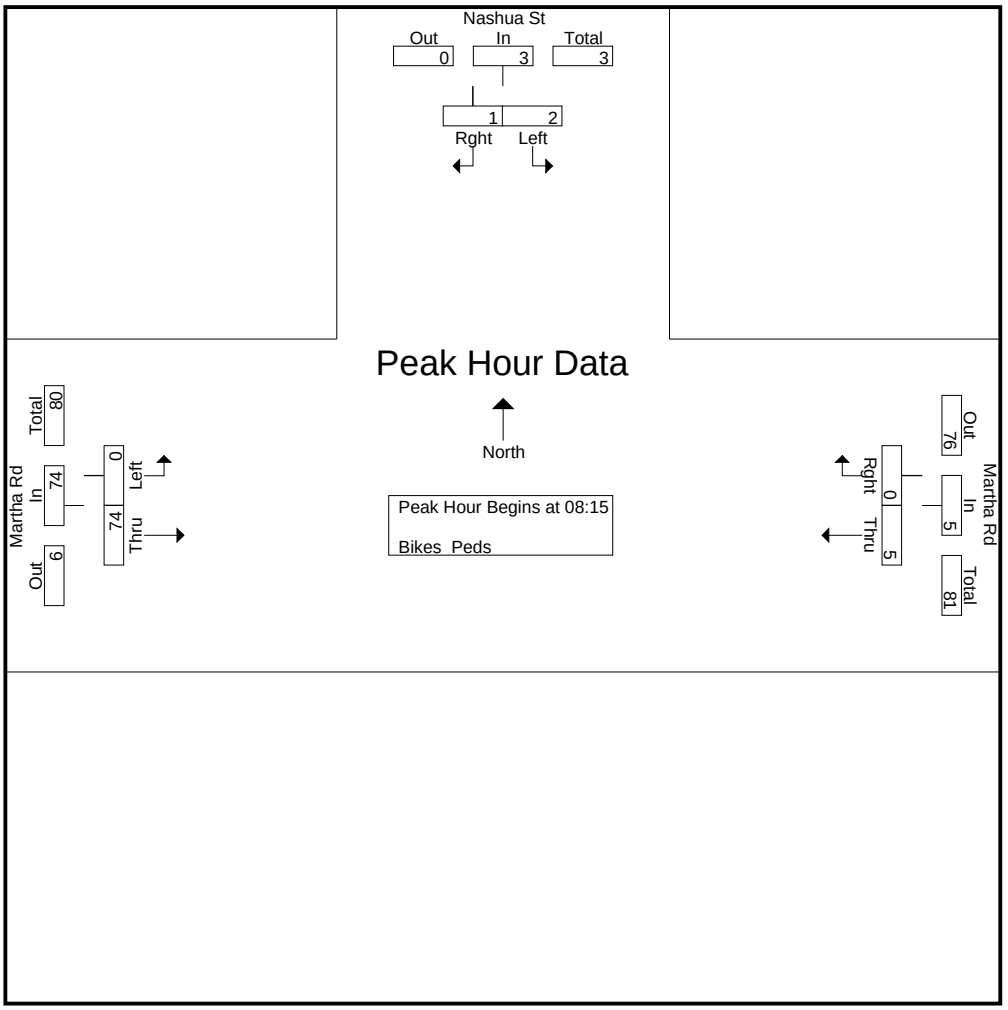
	Nashua St From North			Martha Rd From East			Martha Rd From West					
Start Time	Left	Rght	Peds	Thru	Rght	Peds	Left	Thru	Peds	Exclu. Total	Inclu. Total	Int. Total
07:30	0	0	9	2	0	0	0	12	86	95	14	109
07:45	0	0	13	0	0	1	1	15	130	144	16	160
Total	0	0	22	2	0	1	1	27	216	239	30	269
08:00	1	0	10	1	0	1	1	9	134	145	12	157
08:15	1	0	19	0	0	1	0	20	115	135	21	156
08:30	0	1	2	2	0	1	0	20	107	110	23	133
08:45	0	0	20	3	0	7	0	17	61	88	20	108
Total	2	1	51	6	0	10	1	66	417	478	76	554
09:00	1	0	33	0	0	2	0	17	103	138	18	156
09:15	0	0	34	1	0	5	0	8	70	109	9	118
Grand Total	3	1	140	9	0	18	2	118	806	964	133	1097
Apprch %	75	25		100	0		1.7	98.3				
Total %	2.3	0.8		6.8	0		1.5	88.7		87.9	12.1	

	Nashua St From North			Martha Rd From East			Martha Rd From West			
Start Time	Left	Rght	App. Total	Thru	Rght	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:15										
08:15	**1**	0	**1**	0	0	0	0	**20**	**20**	21
08:30	0	**1**	1	2	0	2	0	20	20	**23**
08:45	0	0	0	**3**	0	**3**	0	17	17	20
09:00	1	0	1	0	0	0	0	17	17	18
Total Volume	2	1	3	5	0	5	0	74	74	82
% App. Total	66.7	33.3		100	0		0	100		
PHF	.500	.250	.750	.417	.000	.417	.000	.925	.925	.891

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1

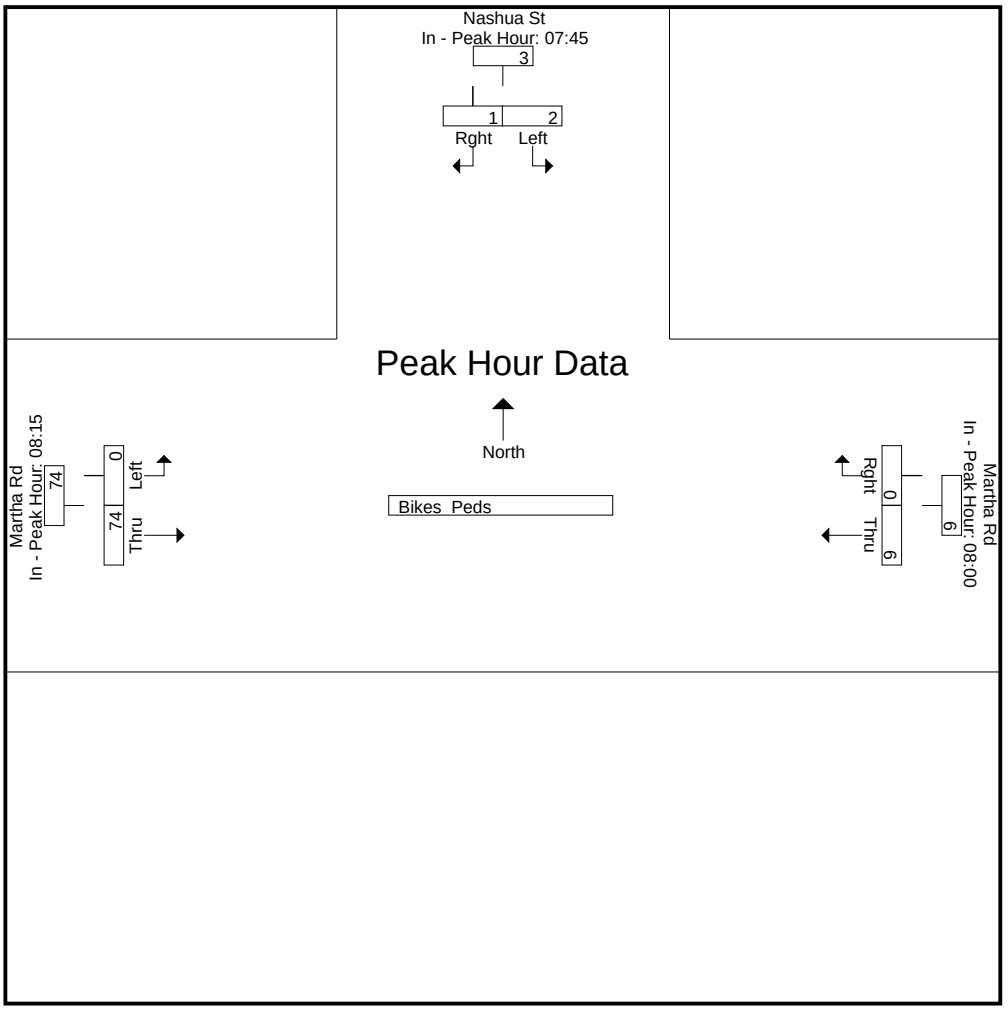
Peak Hour for Each Approach Begins at:

	07:45			08:00			08:15		
+0 mins.	0	0	0	1	0	1	0	**20**	**20**
+15 mins.	**1**	0	**1**	0	0	0	0	20	20
+30 mins.	1	0	1	2	0	2	0	17	17
+45 mins.	0	**1**	1	**3**	0	**3**	0	17	17
Total Volume	2	1	3	6	0	6	0	74	74
% App. Total	66.7	33.3		100	0		0	100	
PHF	.500	.250	.750	.500	.000	.500	.000	.925	.925

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011

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Groups Printed- Cars - Trucks

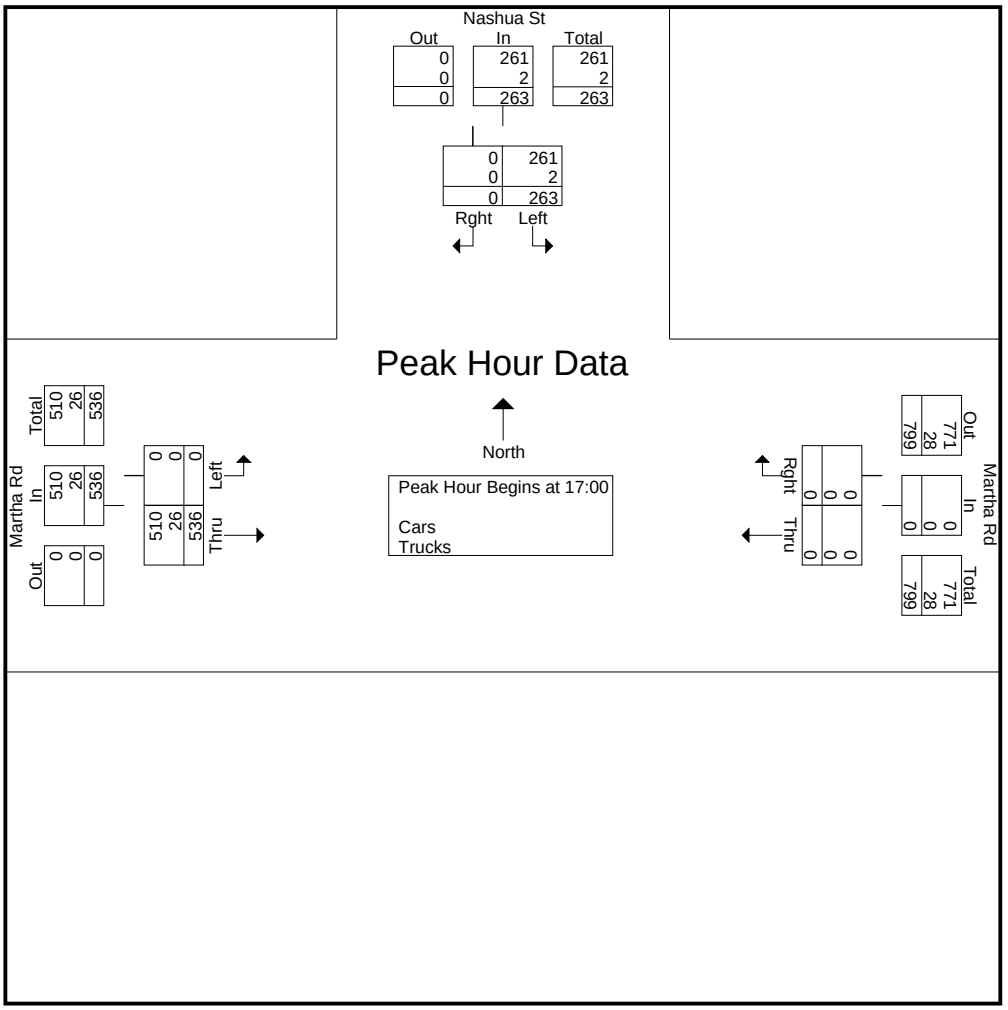
	Nashua St From North		Martha Rd From East		Martha Rd From West		
Start Time	Left	Rght	Thru	Rght	Left	Thru	Int. Total
16:00	43	0	0	0	0	100	143
16:15	41	0	0	0	0	127	168
16:30	51	0	0	0	0	116	167
16:45	71	0	0	0	0	117	188
Total	206	0	0	0	0	460	666
17:00	61	0	0	0	0	127	188
17:15	66	0	0	0	0	127	193
17:30	65	0	0	0	0	139	204
17:45	71	0	0	0	0	143	214
Total	263	0	0	0	0	536	799
Grand Total	469	0	0	0	0	996	1465
Apprch %	100	0	0	0	0	100	
Total %	32	0	0	0	0	68	
Cars	465	0	0	0	0	938	1403
% Cars	99.1	0	0	0	0	94.2	95.8
Trucks	4	0	0	0	0	58	62
% Trucks	0.9	0	0	0	0	5.8	4.2

	Nashua St From North			Martha Rd From East			Martha Rd From West			
Start Time	Left	Rght	App. Total	Thru	Rght	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 17:00										
17:00	61	0	61	0	0	0	0	127	127	188
17:15	66	0	66	0	0	0	0	127	127	193
17:30	65	0	65	0	0	0	0	139	139	204
17:45	**71**	0	**71**	0	0	0	0	**143**	**143**	**214**
Total Volume	263	0	263	0	0	0	0	536	536	799
% App. Total	100	0		0	0		0	100		
PHF	.926	.000	.926	.000	.000	.000	.000	.937	.937	.933
Cars	261	0	261	0	0	0	0	510	510	771
% Cars	99.2	0	99.2	0	0	0	0	95.1	95.1	96.5
Trucks	2	0	2	0	0	0	0	26	26	28
% Trucks	0.8	0	0.8	0	0	0	0	4.9	4.9	3.5

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

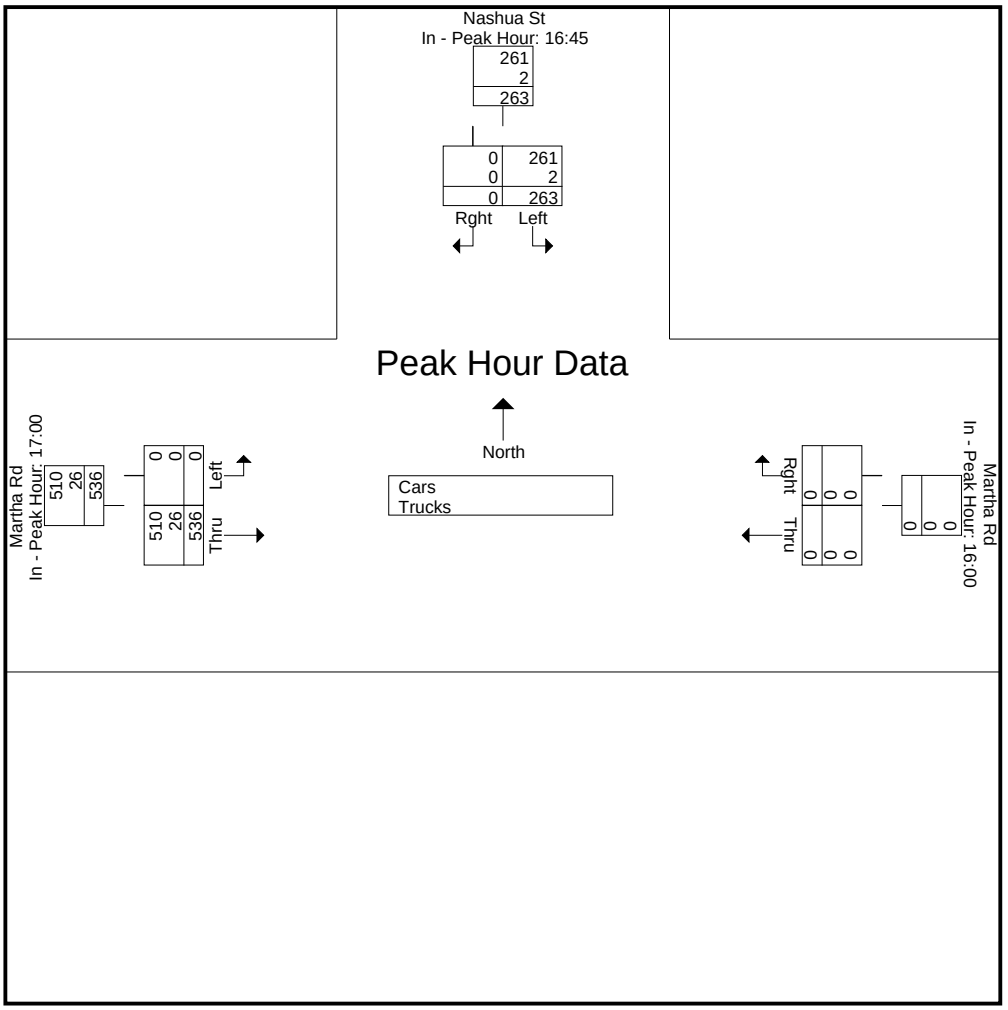
Peak Hour for Each Approach Begins at:

	16:45			16:00			17:00		
+0 mins.	**71**	0	**71**	0	0	0	0	127	127
+15 mins.	61	0	61	0	0	0	0	127	127
+30 mins.	66	0	66	0	0	0	0	139	139
+45 mins.	65	0	65	0	0	0	0	**143**	**143**
Total Volume	263	0	263	0	0	0	0	536	536
% App. Total	100	0		0	0		0	100	
PHF	.926	.000	.926	.000	.000	.000	.000	.937	.937
Cars	261	0	261	0	0	0	0	510	510
% Cars	99.2	0	99.2	0	0	0	0	95.1	95.1
Trucks	2	0	2	0	0	0	0	26	26
% Trucks	0.8	0	0.8	0	0	0	0	4.9	4.9

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011
Page No : 1

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Groups Printed- Cars

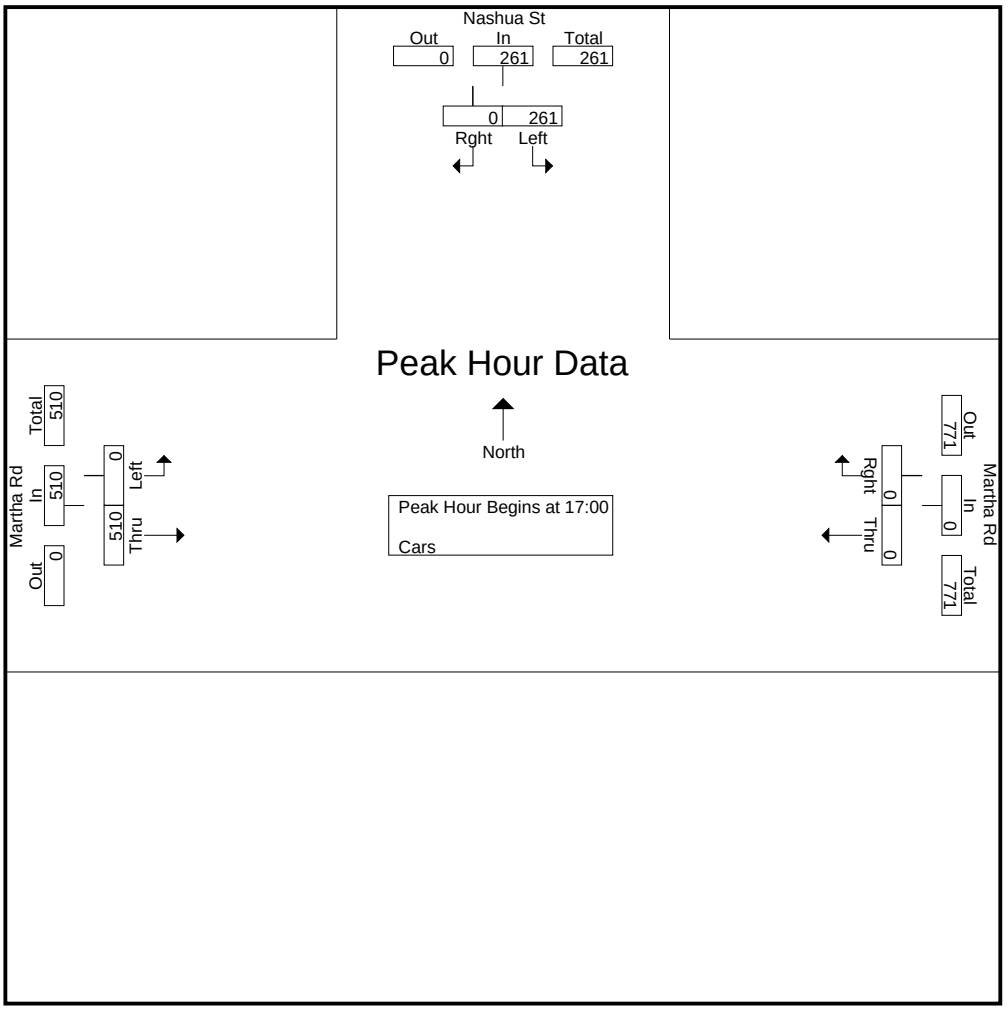
	Nashua St From North		Martha Rd From East		Martha Rd From West		
Start Time	Left	Rght	Thru	Rght	Left	Thru	Int. Total
16:00	43	0	0	0	0	87	130
16:15	40	0	0	0	0	119	159
16:30	50	0	0	0	0	109	159
16:45	71	0	0	0	0	113	184
Total	204	0	0	0	0	428	632
17:00	60	0	0	0	0	121	181
17:15	66	0	0	0	0	124	190
17:30	64	0	0	0	0	129	193
17:45	71	0	0	0	0	136	207
Total	261	0	0	0	0	510	771
Grand Total	465	0	0	0	0	938	1403
Apprch %	100	0	0	0	0	100	
Total %	33.1	0	0	0	0	66.9	

	Nashua St From North			Martha Rd From East			Martha Rd From West			
Start Time	Left	Rght	App. Total	Thru	Rght	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 17:00										
17:00	60	0	60	0	0	0	0	121	121	181
17:15	66	0	66	0	0	0	0	124	124	190
17:30	64	0	64	0	0	0	0	129	129	193
17:45	**71**	0	**71**	0	0	0	0	**136**	**136**	**207**
Total Volume	261	0	261	0	0	0	0	510	510	771
% App. Total	100	0		0	0		0	100		
PHF	.919	.000	.919	.000	.000	.000	.000	.938	.938	.931

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

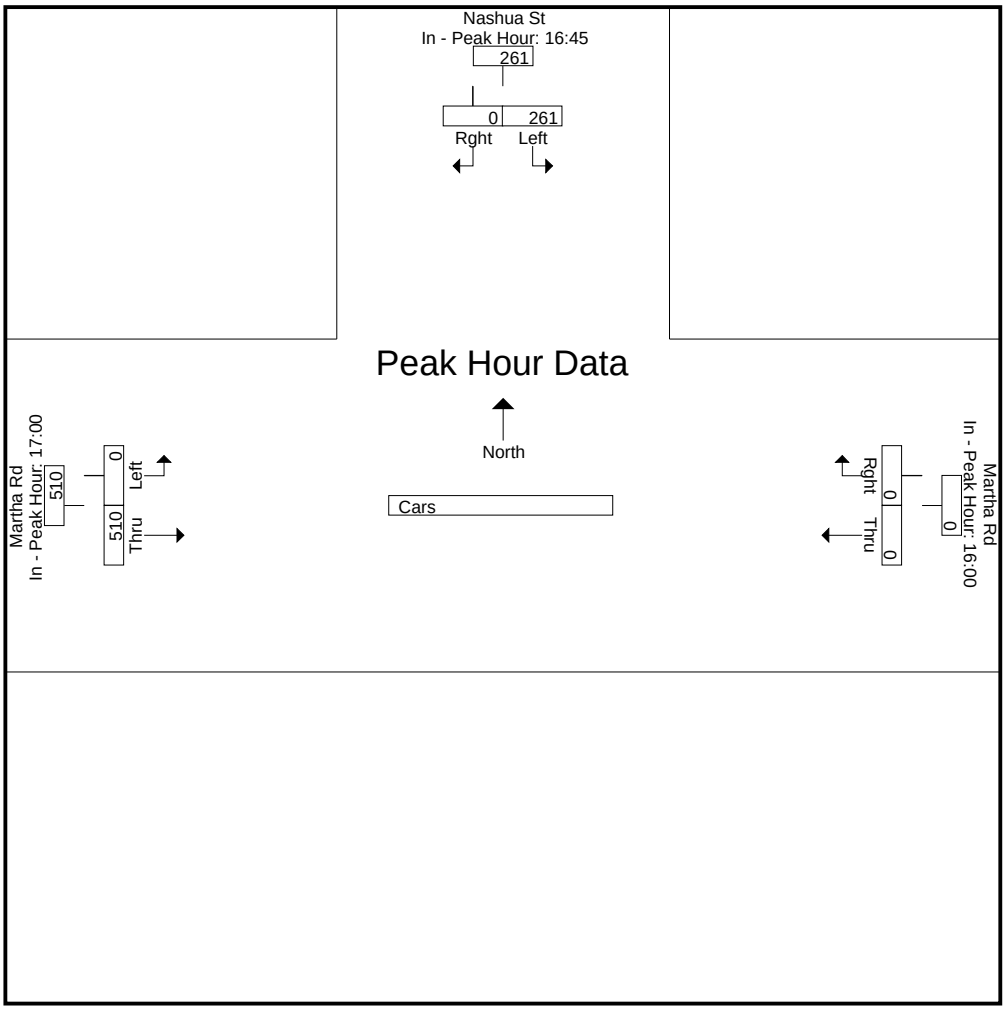
Peak Hour for Each Approach Begins at:

	16:45			16:00			17:00		
+0 mins.	**71**	0	**71**	0	0	0	0	121	121
+15 mins.	60	0	60	0	0	0	0	124	124
+30 mins.	66	0	66	0	0	0	0	129	129
+45 mins.	64	0	64	0	0	0	0	**136**	**136**
Total Volume	261	0	261	0	0	0	0	510	510
% App. Total	100	0		0	0		0	100	
PHF	.919	.000	.919	.000	.000	.000	.000	.938	.938

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011
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Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011

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Groups Printed- Trucks

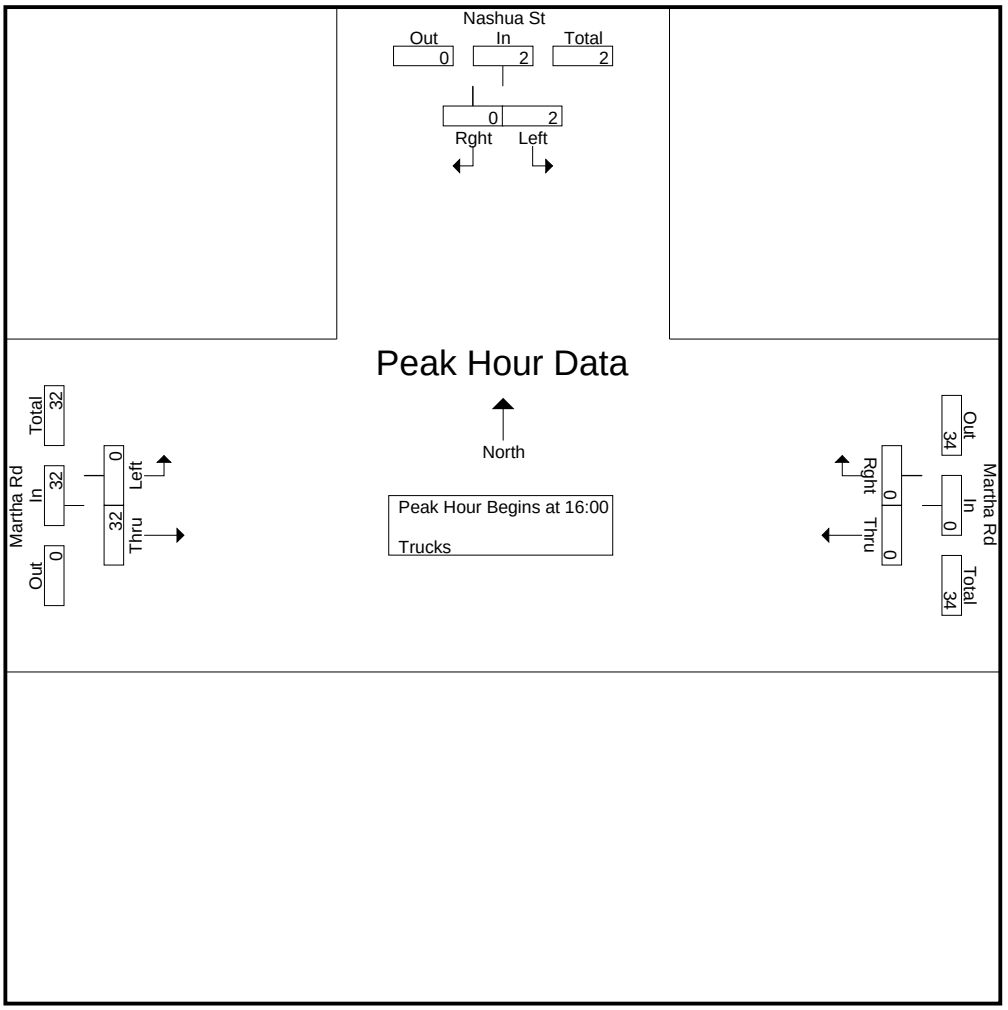
	Nashua St From North		Martha Rd From East		Martha Rd From West		
Start Time	Left	Rght	Thru	Rght	Left	Thru	Int. Total
16:00	0	0	0	0	0	13	13
16:15	1	0	0	0	0	8	9
16:30	1	0	0	0	0	7	8
16:45	0	0	0	0	0	4	4
Total	2	0	0	0	0	32	34
17:00	1	0	0	0	0	6	7
17:15	0	0	0	0	0	3	3
17:30	1	0	0	0	0	10	11
17:45	0	0	0	0	0	7	7
Total	2	0	0	0	0	26	28
Grand Total	4	0	0	0	0	58	62
Apprch %	100	0	0	0	0	100	
Total %	6.5	0	0	0	0	93.5	

	Nashua St From North			Martha Rd From East			Martha Rd From West			
Start Time	Left	Rght	App. Total	Thru	Rght	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 16:00										
16:00	0	0	0	0	0	0	0	**13**	**13**	**13**
16:15	**1**	0	**1**	0	0	0	0	8	8	9
16:30	1	0	1	0	0	0	0	7	7	8
16:45	0	0	0	0	0	0	0	4	4	4
Total Volume	2	0	2	0	0	0	0	32	32	34
% App. Total	100	0		0	0		0	100		
PHF	.500	.000	.500	.000	.000	.000	.000	.615	.615	.654

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

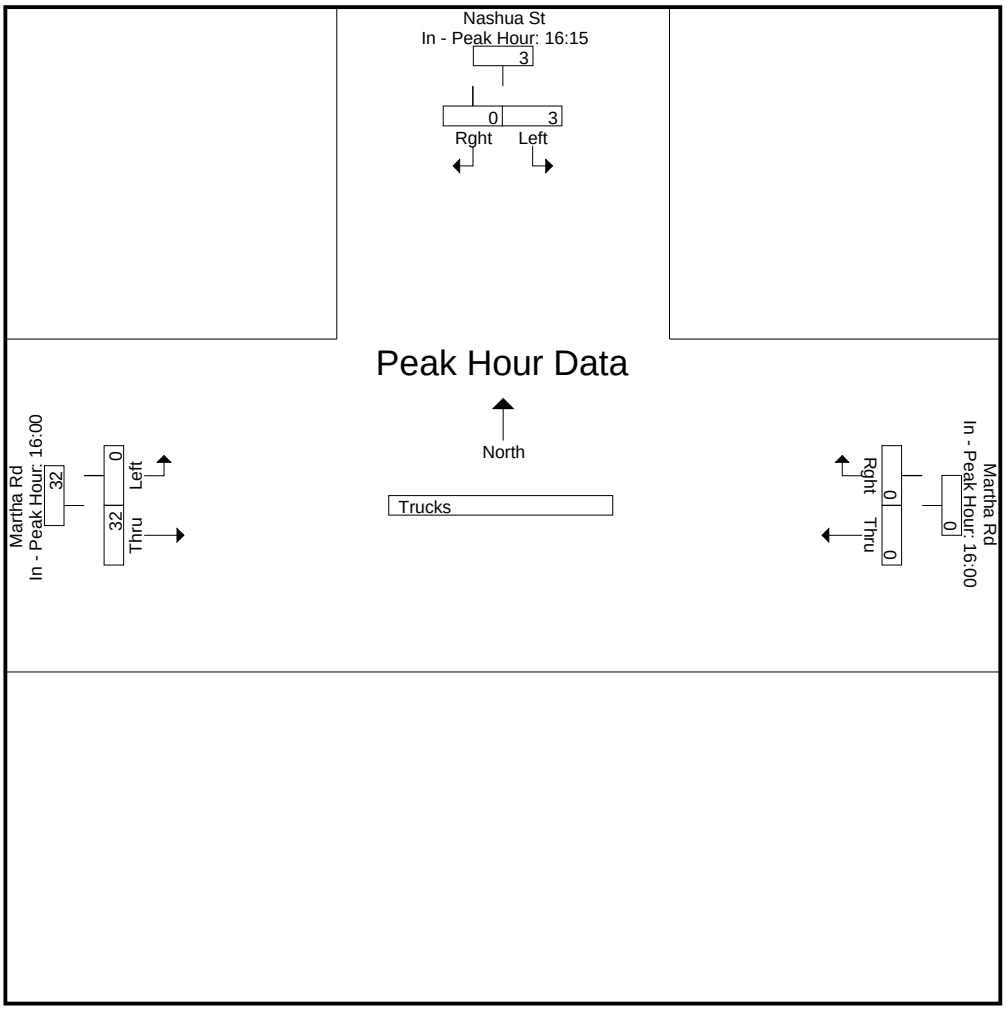
Peak Hour for Each Approach Begins at:

	16:15			16:00			16:00		
+0 mins.	**1**	0	**1**	0	0	0	0	**13**	**13**
+15 mins.	1	0	1	0	0	0	0	8	8
+30 mins.	0	0	0	0	0	0	0	7	7
+45 mins.	1	0	1	0	0	0	0	4	4
Total Volume	3	0	3	0	0	0	0	32	32
% App. Total	100	0		0	0		0	100	
PHF	.750	.000	.750	.000	.000	.000	.000	.615	.615

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011

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Groups Printed- Bikes Peds

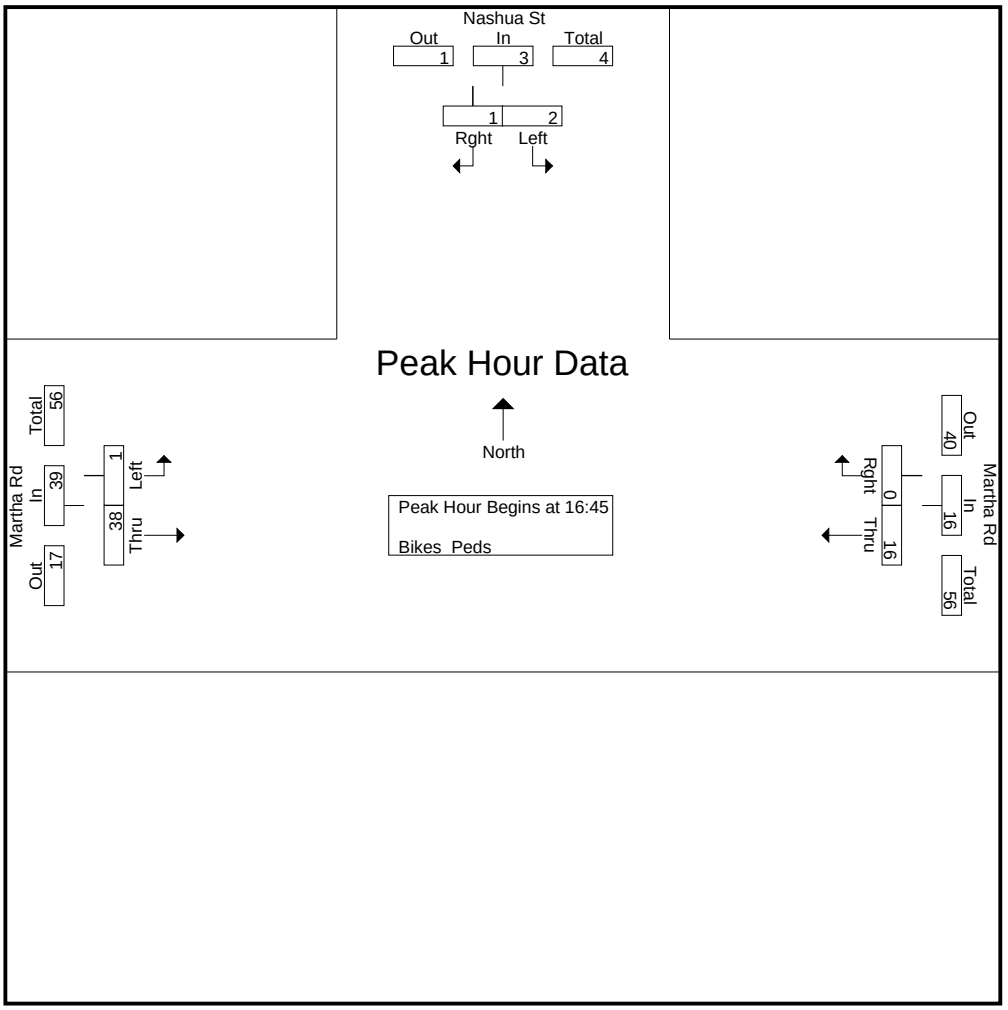
	Nashua St From North			Martha Rd From East			Martha Rd From West					
Start Time	Left	Rght	Peds	Thru	Rght	Peds	Left	Thru	Peds	Exclu. Total	Inclu. Total	Int. Total
16:00	0	0	64	0	0	1	0	2	79	144	2	146
16:15	1	0	100	3	0	0	0	3	85	185	7	192
16:30	0	0	81	3	0	0	0	3	100	181	6	187
16:45	0	0	90	3	0	2	0	7	80	172	10	182
Total	1	0	335	9	0	3	0	15	344	682	25	707
17:00	1	0	102	4	0	2	0	9	108	212	14	226
17:15	0	0	110	1	0	0	1	8	105	215	10	225
17:30	1	1	92	8	0	0	0	14	124	216	24	240
17:45	1	0	44	3	0	8	0	3	61	113	7	120
Total	3	1	348	16	0	10	1	34	398	756	55	811
Grand Total	4	1	683	25	0	13	1	49	742	1438	80	1518
Apprch %	80	20		100	0		2	98				
Total %	5	1.2		31.2	0		1.2	61.2		94.7	5.3	

	Nashua St From North			Martha Rd From East			Martha Rd From West			
Start Time	Left	Rght	App. Total	Thru	Rght	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 16:45										
16:45	0	0	0	3	0	3	0	7	7	10
17:00	**1**	0	1	4	0	4	0	9	9	14
17:15	0	0	0	1	0	1	**1**	8	9	10
17:30	1	**1**	**2**	**8**	0	**8**	0	**14**	**14**	**24**
Total Volume	2	1	3	16	0	16	1	38	39	58
% App. Total	66.7	33.3		100	0		2.6	97.4		
PHF	.500	.250	.375	.500	.000	.500	.250	.679	.696	.604

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

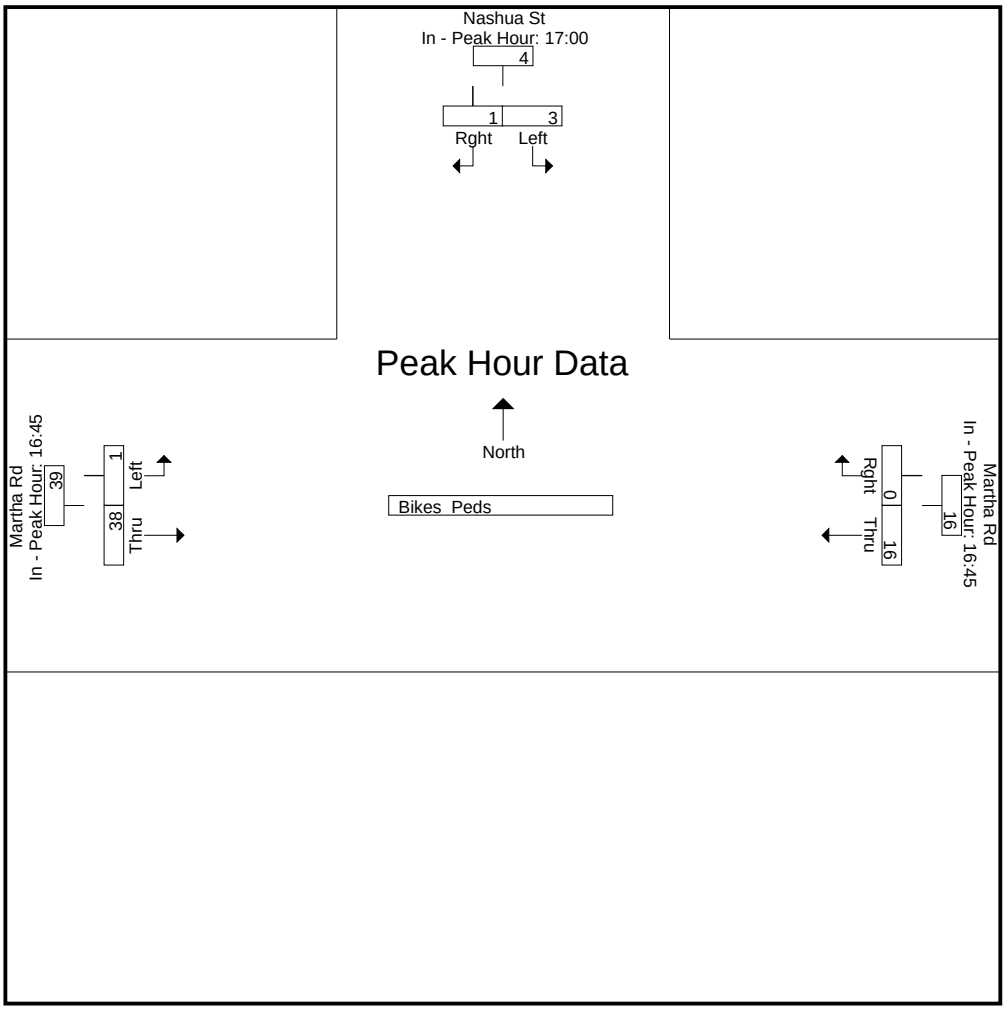
Peak Hour for Each Approach Begins at:

	17:00			16:45			16:45		
+0 mins.	**1**	0	1	3	0	3	0	7	7
+15 mins.	0	0	0	4	0	4	0	9	9
+30 mins.	1	**1**	**2**	1	0	1	**1**	8	9
+45 mins.	1	0	1	**8**	0	**8**	0	**14**	**14**
Total Volume	3	1	4	16	0	16	1	38	39
% App. Total	75	25		100	0		2.6	97.4	
PHF	.750	.250	.500	.500	.000	.500	.250	.679	.696

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Martha Road
City/State : Boston, MA
Weather : Clear

File Name : 15410003
Site Code : 15410003
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 1

Groups Printed- Cars - Trucks

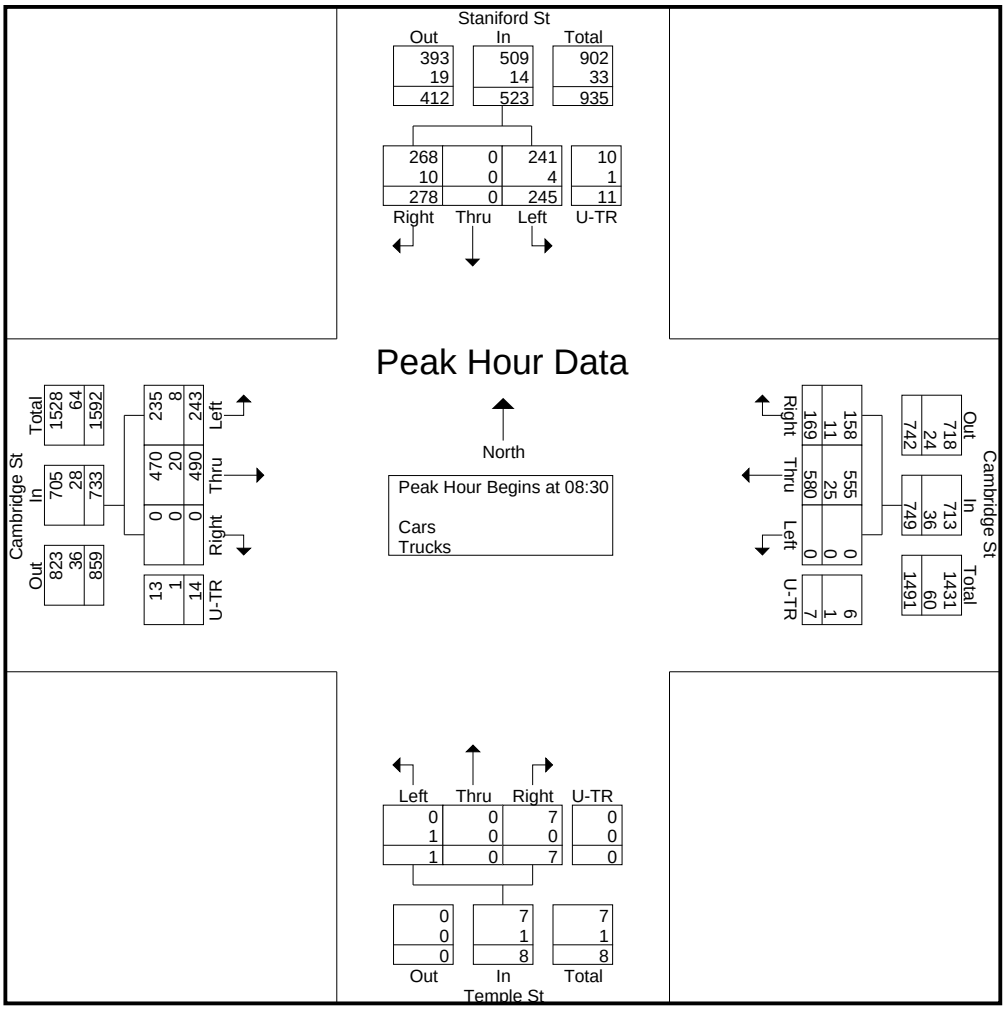
	Staniford St From North				Cambridge St From East				Temple St From South				Cambridge St From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
07:30	43	0	65	0	0	94	40	0	0	1	5	0	44	117	0	3	412
07:45	43	0	44	0	0	99	24	1	0	0	3	0	53	110	0	0	377
Total	86	0	109	0	0	193	64	1	0	1	8	0	97	227	0	3	789
08:00	55	0	64	3	0	121	28	0	0	0	0	0	58	127	0	6	462
08:15	64	0	67	3	0	111	29	2	0	0	1	0	44	107	0	6	434
08:30	71	0	74	3	0	139	45	4	1	0	2	0	62	131	0	5	537
08:45	65	0	59	5	0	143	37	2	0	0	3	0	61	127	0	3	505
Total	255	0	264	14	0	514	139	8	1	0	6	0	225	492	0	20	1938
09:00	63	0	78	0	0	132	42	0	0	0	0	0	50	110	0	2	477
09:15	46	0	67	3	0	166	45	1	0	0	2	0	70	122	0	4	526
Grand Total	450	0	518	17	0	1005	290	10	1	1	16	0	442	951	0	29	3730
Apprch %	45.7	0	52.6	1.7	0	77	22.2	0.8	5.6	5.6	88.9	0	31.1	66.9	0	2	
Total %	12.1	0	13.9	0.5	0	26.9	7.8	0.3	0	0	0.4	0	11.8	25.5	0	0.8	
Cars	436	0	494	14	0	955	272	9	0	1	16	0	429	914	0	20	3560
% Cars	96.9	0	95.4	82.4	0	95	93.8	90	0	100	100	0	97.1	96.1	0	69	95.4
Trucks	14	0	24	3	0	50	18	1	1	0	0	0	13	37	0	9	170
% Trucks	3.1	0	4.6	17.6	0	5	6.2	10	100	0	0	0	2.9	3.9	0	31	4.6

	Staniford St From North					Cambridge St From East					Temple St From South					Cambridge 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 07:30 to 09:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:30																					
08:30	**71**	0	74	3	**148**	0	139	**45**	**4**	188	**1**	0	2	0	**3**	62	**131**	0	**5**	**198**	**537**
08:45	65	0	59	**5**	129	0	143	37	2	182	0	0	**3**	0	3	61	127	0	3	191	505
09:00	63	0	**78**	0	141	0	132	42	0	174	0	0	0	0	0	50	110	0	2	162	477
09:15	46	0	67	3	116	0	**166**	45	1	**212**	0	0	2	0	2	**70**	122	0	4	196	526
Total Volume	245	0	278	11	534	0	580	169	7	756	1	0	7	0	8	243	490	0	14	747	2045
% App. Total	45.9	0	52.1	2.1		0	76.7	22.4	0.9		12.5	0	87.5	0		32.5	65.6	0	1.9		
PHF	.863	.000	.891	.550	.902	.000	.873	.939	.438	.892	.250	.000	.583	.000	.667	.868	.935	.000	.700	.943	.952
Cars	241	0	268	10	519	0	555	158	6	719	0	0	7	0	7	235	470	0	13	718	1963
% Cars	98.4	0	96.4	90.9	97.2	0	95.7	93.5	85.7	95.1	0	0	100	0	87.5	96.7	95.9	0	92.9	96.1	96.0
Trucks	4	0	10	1	15	0	25	11	1	37	1	0	0	0	1	8	20	0	1	29	82
% Trucks	1.6	0	3.6	9.1	2.8	0	4.3	6.5	14.3	4.9	100	0	0	0	12.5	3.3	4.1	0	7.1	3.9	4.0

Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011



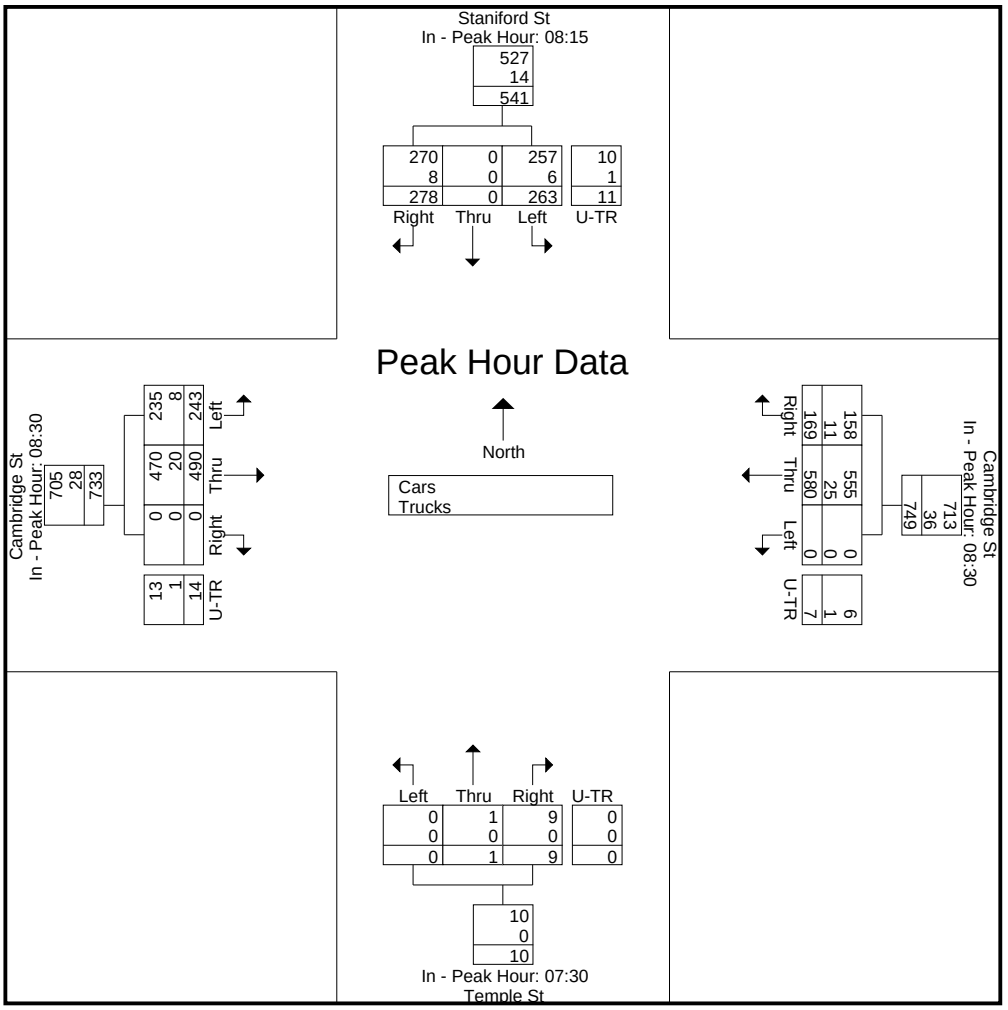
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:15					08:30					07:30					08:30				
+0 mins.	64	0	67	3	134	0	139	**45**	**4**	188	0	**1**	**5**	0	**6**	62	**131**	0	**5**	**198**
+15 mins.	**71**	0	74	3	**148**	0	143	37	2	182	0	0	3	0	3	61	127	0	3	191
+30 mins.	65	0	59	**5**	129	0	132	42	0	174	0	0	0	0	0	50	110	0	2	162
+45 mins.	63	0	**78**	0	141	0	**166**	45	1	**212**	0	0	1	0	1	**70**	122	0	4	196
Total Volume	263	0	278	11	552	0	580	169	7	756	0	1	9	0	10	243	490	0	14	747
% App. Total	47.6	0	50.4	2		0	76.7	22.4	0.9		0	10	90	0		32.5	65.6	0	1.9	
PHF	.926	.000	.891	.550	.932	.000	.873	.939	.438	.892	.000	.250	.450	.000	.417	.868	.935	.000	.700	.943
Cars	257	0	270	10	537	0	555	158	6	719	0	1	9	0	10	235	470	0	13	718
% Cars	97.7	0	97.1	90.9	97.3	0	95.7	93.5	85.7	95.1	0	100	100	0	100	96.7	95.9	0	92.9	96.1
Trucks	6	0	8	1	15	0	25	11	1	37	0	0	0	0	0	8	20	0	1	29
% Trucks	2.3	0	2.9	9.1	2.7	0	4.3	6.5	14.3	4.9	0	0	0	0	0	3.3	4.1	0	7.1	3.9

Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011

Groups Printed- Cars

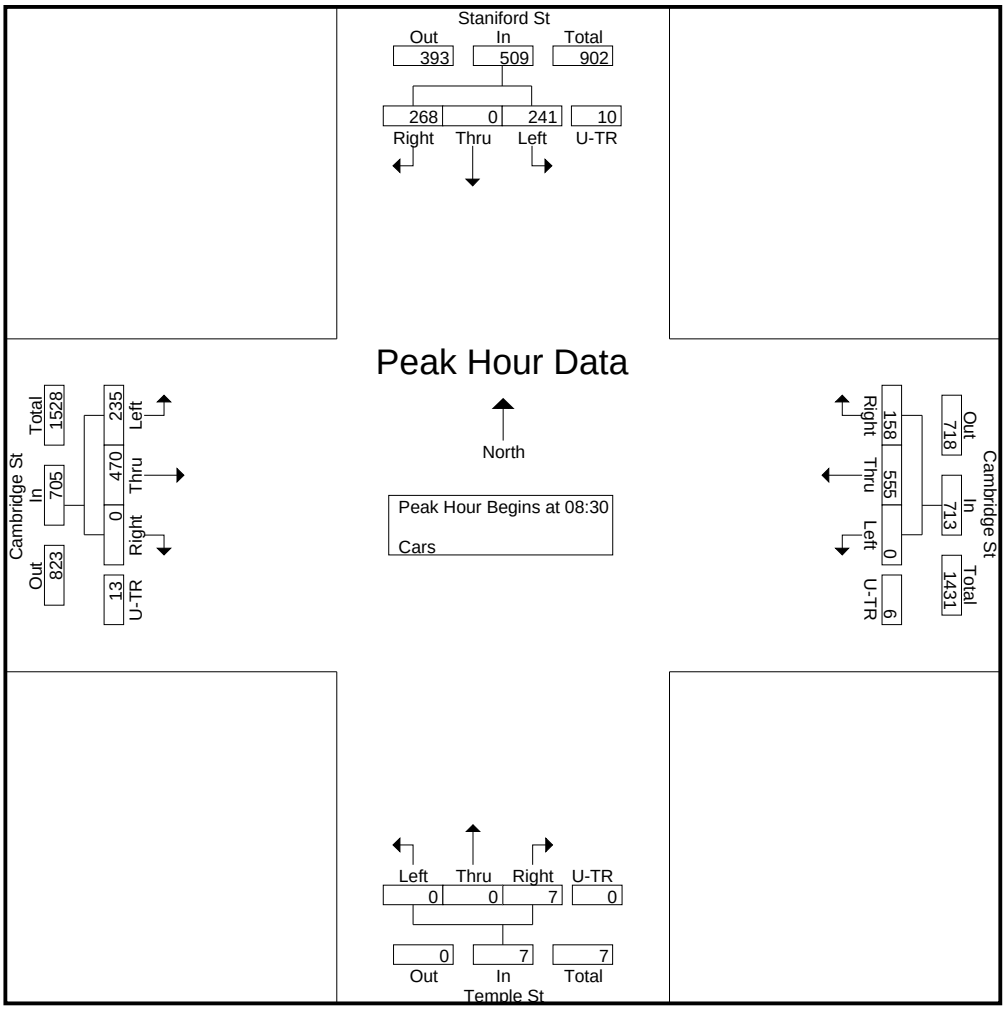
	Staniford St From North				Cambridge St From East				Temple St From South				Cambridge St From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
07:30	39	0	61	0	0	83	38	0	0	1	5	0	44	113	0	0	384
07:45	41	0	39	0	0	94	22	1	0	0	3	0	51	104	0	0	355
Total	80	0	100	0	0	177	60	1	0	1	8	0	95	217	0	0	739
08:00	54	0	61	1	0	115	27	0	0	0	0	0	56	122	0	1	437
08:15	61	0	65	3	0	108	27	2	0	0	1	0	43	105	0	6	421
08:30	70	0	71	2	0	136	41	4	0	0	2	0	58	126	0	4	514
08:45	64	0	58	5	0	137	35	2	0	0	3	0	61	124	0	3	492
Total	249	0	255	11	0	496	130	8	0	0	6	0	218	477	0	14	1864
09:00	62	0	76	0	0	127	41	0	0	0	0	0	48	105	0	2	461
09:15	45	0	63	3	0	155	41	0	0	0	2	0	68	115	0	4	496
Grand Total	436	0	494	14	0	955	272	9	0	1	16	0	429	914	0	20	3560
Apprch %	46.2	0	52.3	1.5	0	77.3	22	0.7	0	5.9	94.1	0	31.5	67.1	0	1.5	
Total %	12.2	0	13.9	0.4	0	26.8	7.6	0.3	0	0	0.4	0	12.1	25.7	0	0.6	

	Staniford St From North					Cambridge St From East					Temple St From South					Cambridge 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 07:30 to 09:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:30																					
08:30	**70**	0	71	2	**143**	0	136	**41**	**4**	181	0	0	2	0	2	58	**126**	0	**4**	**188**	**514**
08:45	64	0	58	**5**	127	0	137	35	2	174	0	0	**3**	0	**3**	61	124	0	3	188	492
09:00	62	0	**76**	0	138	0	127	41	0	168	0	0	0	0	0	48	105	0	2	155	461
09:15	45	0	63	3	111	0	**155**	41	0	**196**	0	0	2	0	2	**68**	115	0	4	187	496
Total Volume	241	0	268	10	519	0	555	158	6	719	0	0	7	0	7	235	470	0	13	718	1963
% App. Total	46.4	0	51.6	1.9		0	77.2	22	0.8		0	0	100	0		32.7	65.5	0	1.8		
PHF	.861	.000	.882	.500	.907	.000	.895	.963	.375	.917	.000	.000	.583	.000	.583	.864	.933	.000	.813	.955	.955

Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 2



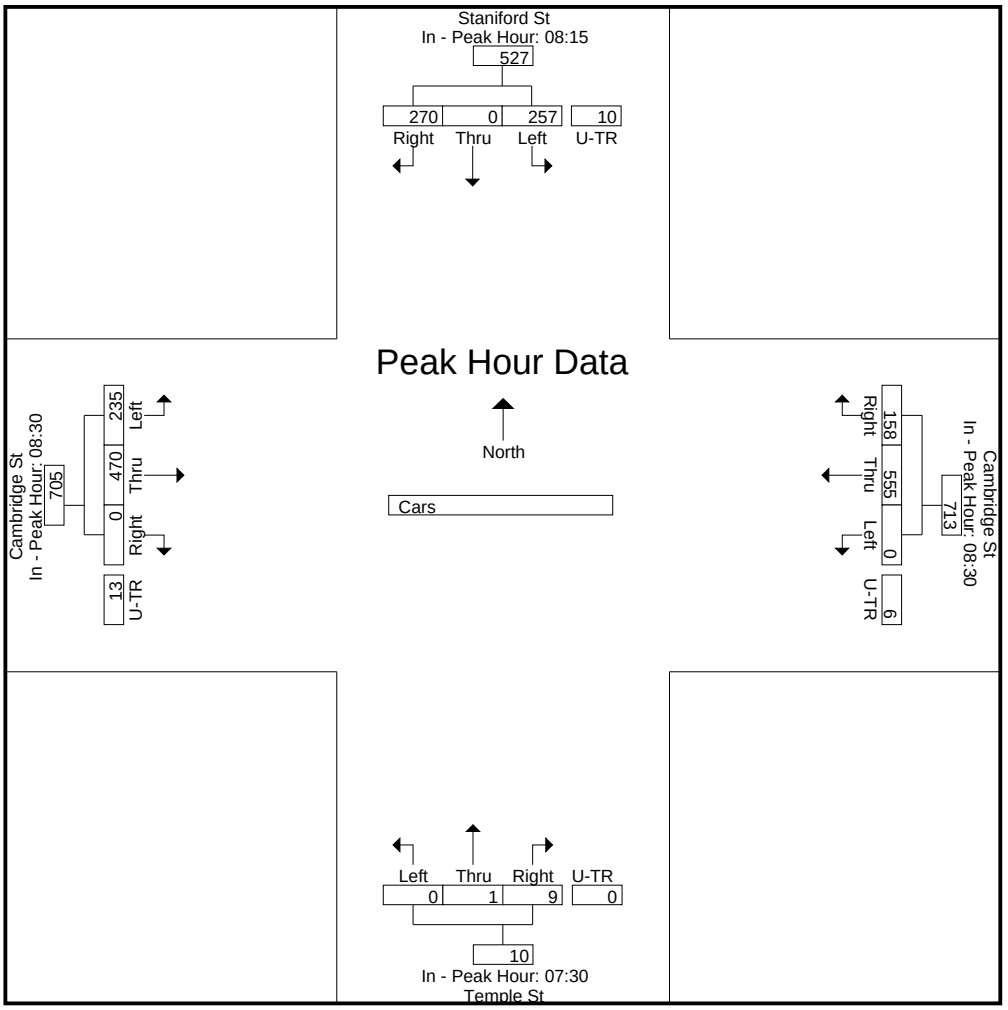
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:15					08:30					07:30					08:30				
+0 mins.	61	0	65	3	129	0	136	**41**	**4**	181	0	**1**	**5**	0	**6**	58	**126**	0	**4**	**188**
+15 mins.	**70**	0	71	2	**143**	0	137	35	2	174	0	0	3	0	3	61	124	0	3	188
+30 mins.	64	0	58	**5**	127	0	127	41	0	168	0	0	0	0	0	48	105	0	2	155
+45 mins.	62	0	**76**	0	138	0	**155**	41	0	**196**	0	0	1	0	1	**68**	115	0	4	187
Total Volume	257	0	270	10	537	0	555	158	6	719	0	1	9	0	10	235	470	0	13	718
% App. Total	47.9	0	50.3	1.9		0	77.2	22	0.8		0	10	90	0		32.7	65.5	0	1.8	
PHF	.918	.000	.888	.500	.939	.000	.895	.963	.375	.917	.000	.250	.450	.000	.417	.864	.933	.000	.813	.955

Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011

Groups Printed- Trucks

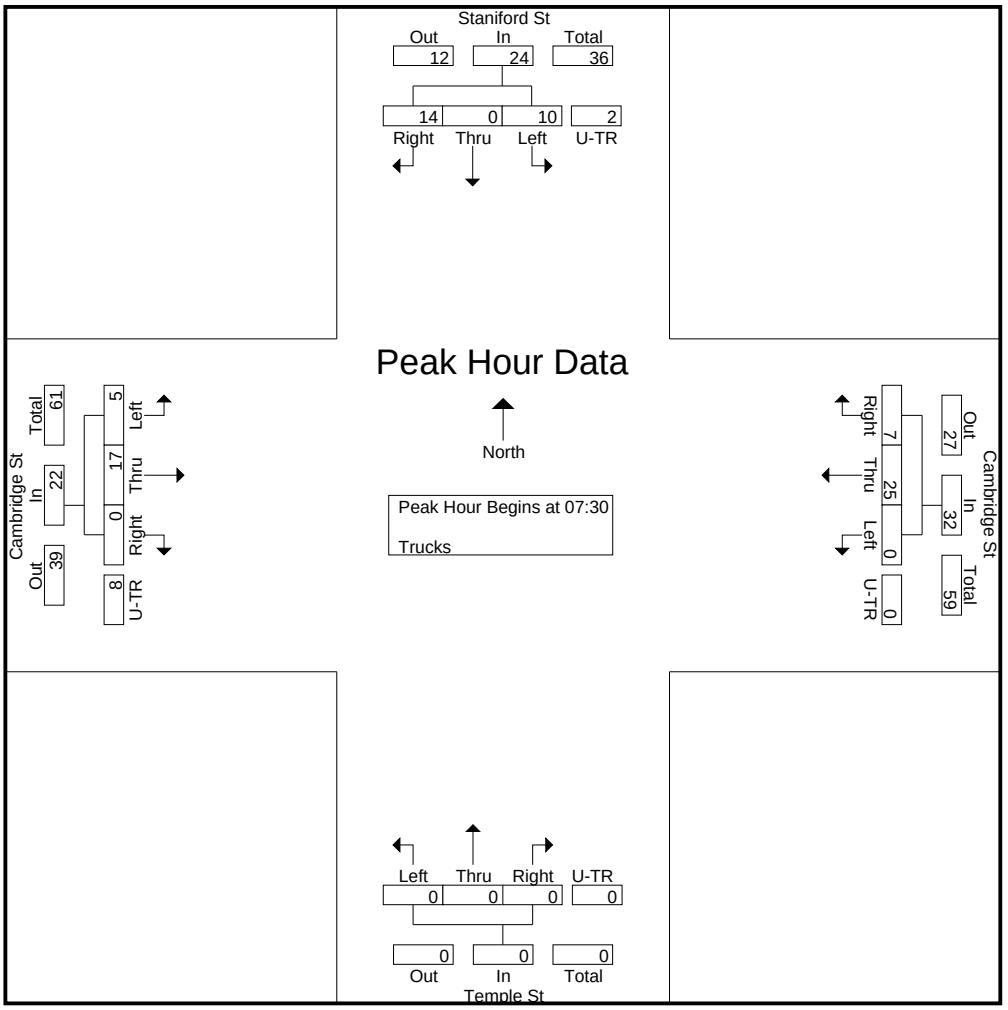
	Staniford St From North				Cambridge St From East				Temple St From South				Cambridge St From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
07:30	4	0	4	0	0	11	2	0	0	0	0	0	0	4	0	3	28
07:45	2	0	5	0	0	5	2	0	0	0	0	0	2	6	0	0	22
Total	6	0	9	0	0	16	4	0	0	0	0	0	2	10	0	3	50
08:00	1	0	3	2	0	6	1	0	0	0	0	0	2	5	0	5	25
08:15	3	0	2	0	0	3	2	0	0	0	0	0	1	2	0	0	13
08:30	1	0	3	1	0	3	4	0	1	0	0	0	4	5	0	1	23
08:45	1	0	1	0	0	6	2	0	0	0	0	0	0	3	0	0	13
Total	6	0	9	3	0	18	9	0	1	0	0	0	7	15	0	6	74
09:00	1	0	2	0	0	5	1	0	0	0	0	0	2	5	0	0	16
09:15	1	0	4	0	0	11	4	1	0	0	0	0	2	7	0	0	30
Grand Total	14	0	24	3	0	50	18	1	1	0	0	0	13	37	0	9	170
Apprch %	34.1	0	58.5	7.3	0	72.5	26.1	1.4	100	0	0	0	22	62.7	0	15.3	
Total %	8.2	0	14.1	1.8	0	29.4	10.6	0.6	0.6	0	0	0	7.6	21.8	0	5.3	

	Staniford St From North					Cambridge St From East					Temple St From South					Cambridge 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 07:30 to 09:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30																					
07:30	**4**	0	4	0	**8**	0	**11**	**2**	0	**13**	0	0	0	0	0	0	4	0	3	7	**28**
07:45	2	0	**5**	0	7	0	5	2	0	7	0	0	0	0	0	**2**	**6**	0	0	8	22
08:00	1	0	3	**2**	6	0	6	1	0	7	0	0	0	0	0	2	5	0	**5**	**12**	25
08:15	3	0	2	0	5	0	3	2	0	5	0	0	0	0	0	1	2	0	0	3	13
Total Volume	10	0	14	2	26	0	25	7	0	32	0	0	0	0	0	5	17	0	8	30	88
% App. Total	38.5	0	53.8	7.7		0	78.1	21.9	0		0	0	0	0		16.7	56.7	0	26.7		
PHF	.625	.000	.700	.250	.813	.000	.568	.875	.000	.615	.000	.000	.000	.000	.000	.625	.708	.000	.400	.625	.786

Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 2



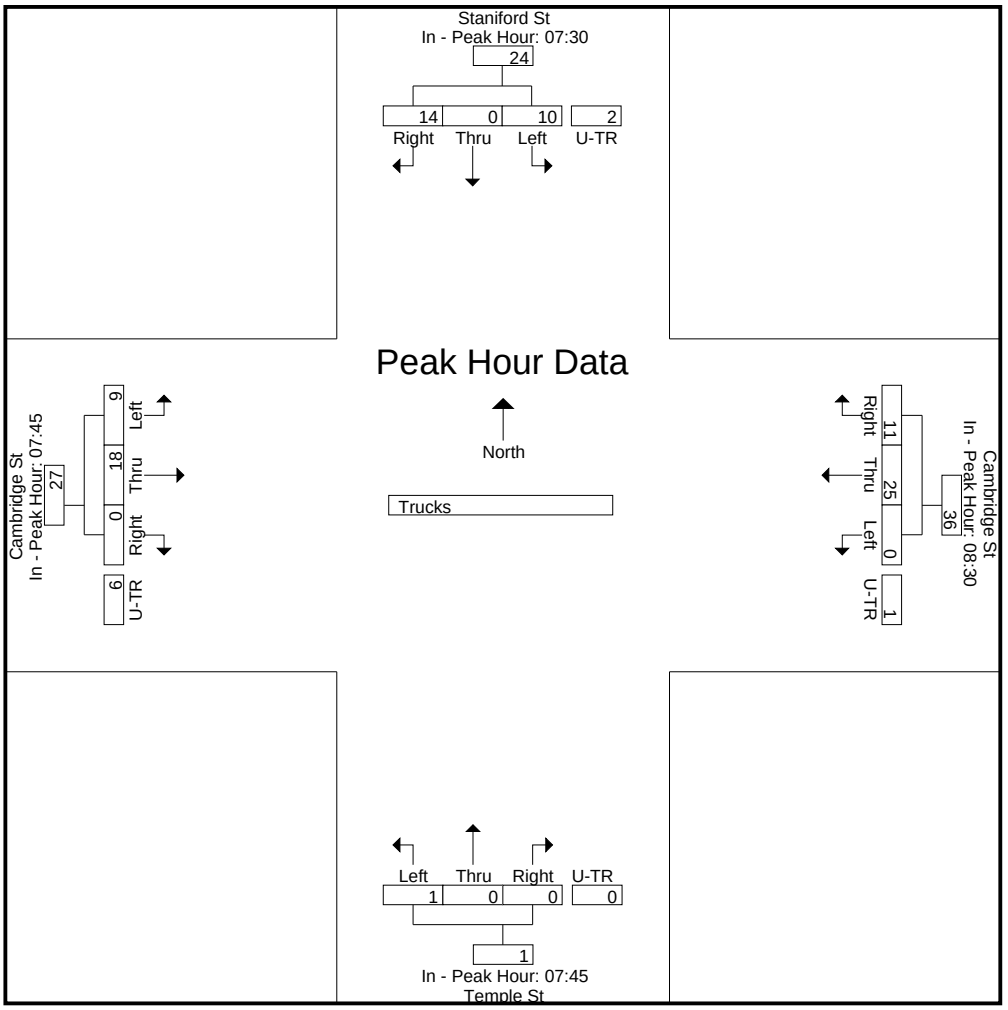
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30					08:30					07:45					07:45				
+0 mins.	**4**	0	4	0	**8**	0	3	**4**	0	7	0	0	0	0	0	2	**6**	0	0	8
+15 mins.	2	0	**5**	0	7	0	6	2	0	8	0	0	0	0	0	2	5	0	**5**	**12**
+30 mins.	1	0	3	**2**	6	0	5	1	0	6	0	0	0	0	0	1	2	0	0	3
+45 mins.	3	0	2	0	5	0	**11**	4	**1**	**16**	**1**	0	0	0	**1**	**4**	5	0	1	10
Total Volume	10	0	14	2	26	0	25	11	1	37	1	0	0	0	1	9	18	0	6	33
% App. Total	38.5	0	53.8	7.7		0	67.6	29.7	2.7		100	0	0	0		27.3	54.5	0	18.2	
PHF	.625	.000	.700	.250	.813	.000	.568	.688	.250	.578	.250	.000	.000	.000	.250	.563	.750	.000	.300	.688

Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 1

Groups Printed- Bikes Peds

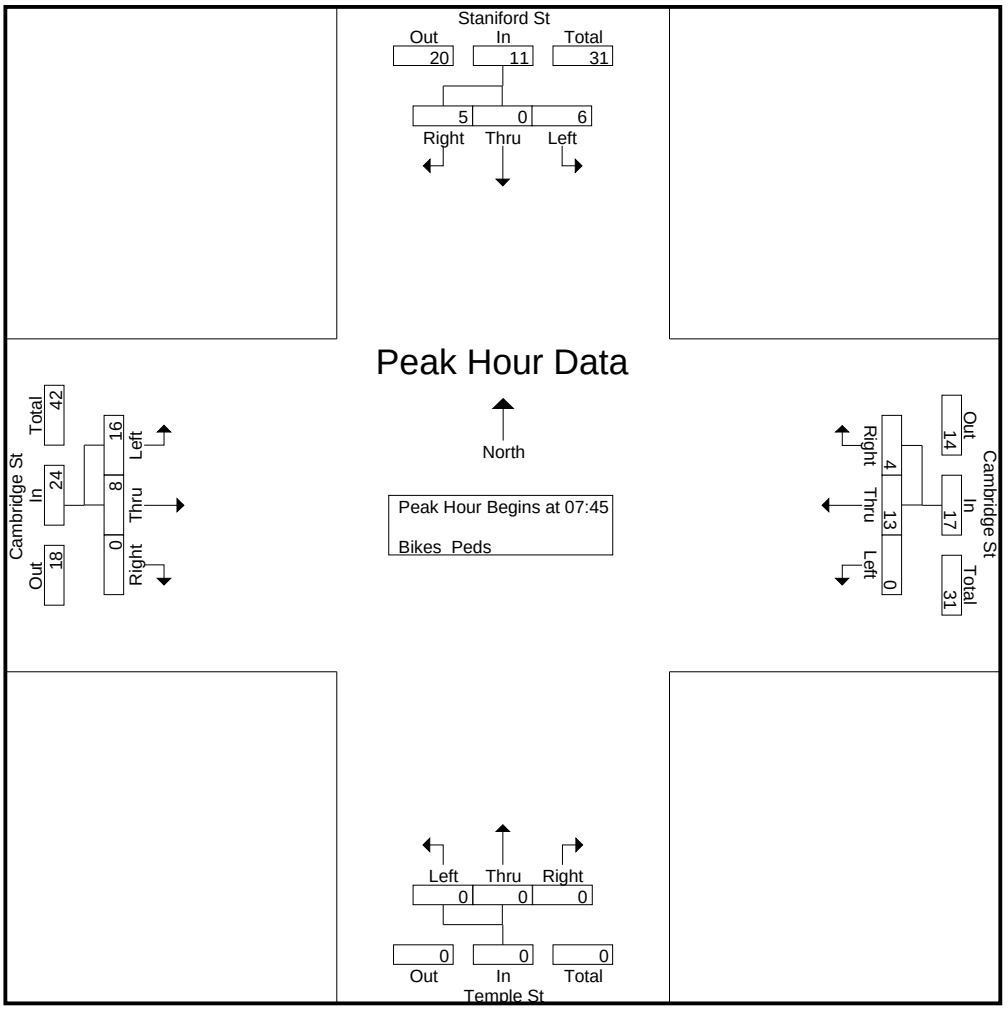
	Staniford St From North				Cambridge St From East				Temple St From South				Cambridge St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:30	1	0	0	27	0	1	0	18	1	0	1	54	2	0	0	38	137	6	143
07:45	3	0	1	46	0	3	0	35	0	0	0	84	2	2	0	90	255	11	266
Total	4	0	1	73	0	4	0	53	1	0	1	138	4	2	0	128	392	17	409
08:00	2	0	2	46	0	3	1	28	0	0	0	69	7	3	0	110	253	18	271
08:15	0	0	0	67	0	4	1	36	0	0	0	98	2	3	0	153	354	10	364
08:30	1	0	2	96	0	3	2	36	0	0	0	90	5	0	0	136	358	13	371
08:45	0	0	2	87	0	4	0	66	0	0	0	123	3	0	0	201	477	9	486
Total	3	0	6	296	0	14	4	166	0	0	0	380	17	6	0	600	1442	50	1492
09:00	3	0	0	73	0	1	1	46	0	0	0	116	7	0	0	160	395	12	407
09:15	4	0	3	97	0	5	1	50	0	0	0	73	5	0	0	203	423	18	441
Grand Total	14	0	10	539	0	24	6	315	1	0	1	707	33	8	0	1091	2652	97	2749
Apprch %	58.3	0	41.7		0	80	20		50	0	50		80.5	19.5	0				
Total %	14.4	0	10.3		0	24.7	6.2		1	0	1		34	8.2	0		96.5	3.5	

	Staniford St From North				Cambridge St From East				Temple St From South				Cambridge 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 07:30 to 09:15 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45																	
07:45	**3**	0	1	**4**	0	3	0	3	0	0	0	0	2	2	0	4	11
08:00	2	0	**2**	4	0	3	1	4	0	0	0	0	**7**	**3**	0	**10**	**18**
08:15	0	0	0	0	0	**4**	1	**5**	0	0	0	0	2	3	0	5	10
08:30	1	0	2	3	0	3	**2**	5	0	0	0	0	5	0	0	5	13
Total Volume	6	0	5	11	0	13	4	17	0	0	0	0	16	8	0	24	52
% App. Total	54.5	0	45.5		0	76.5	23.5		0	0	0		66.7	33.3	0		
PHF	.500	.000	.625	.688	.000	.813	.500	.850	.000	.000	.000	.000	.571	.667	.000	.600	.722

Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 2



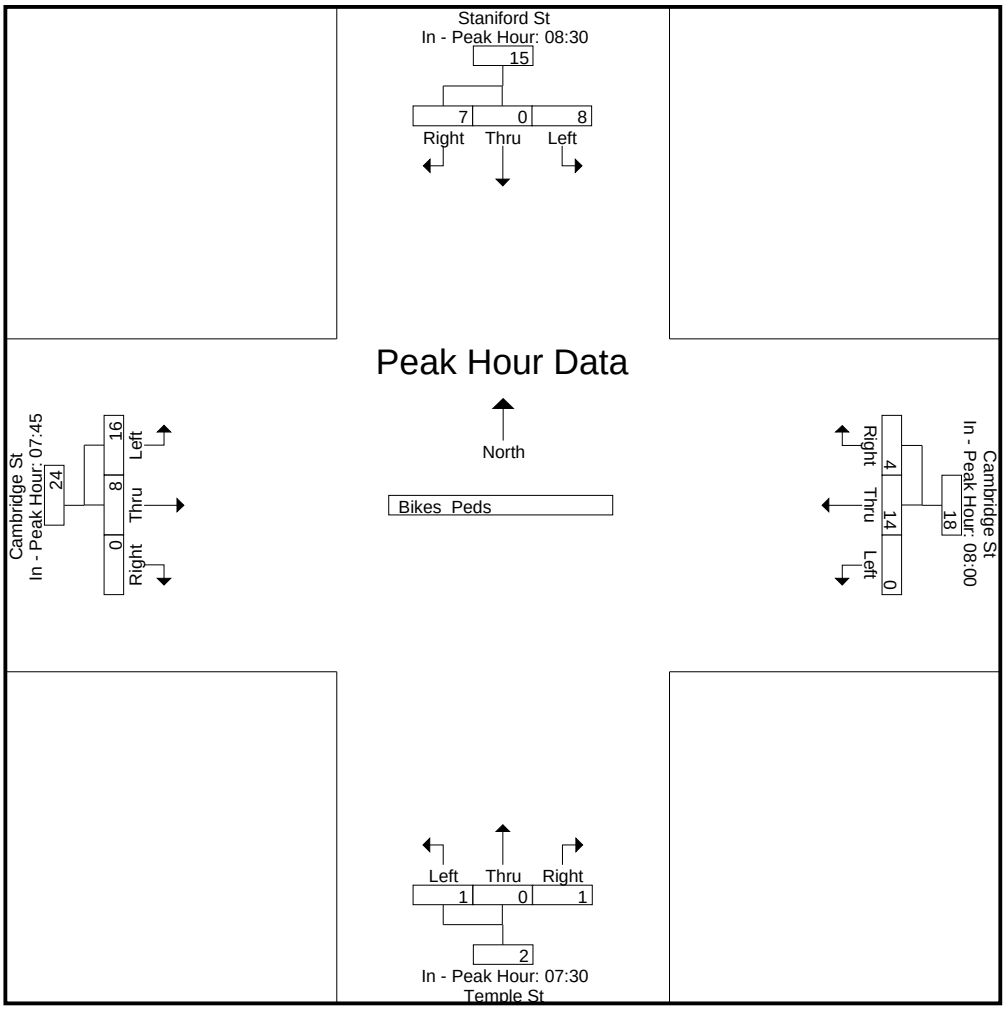
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:30				08:00				07:30				07:45			
+0 mins.	1	0	2	3	0	3	1	4	**1**	0	**1**	**2**	2	2	0	4
+15 mins.	0	0	2	2	0	**4**	1	**5**	0	0	0	0	**7**	**3**	0	**10**
+30 mins.	3	0	0	3	0	3	**2**	5	0	0	0	0	2	3	0	5
+45 mins.	**4**	0	**3**	**7**	0	4	0	4	0	0	0	0	5	0	0	5
Total Volume	8	0	7	15	0	14	4	18	1	0	1	2	16	8	0	24
% App. Total	53.3	0	46.7		0	77.8	22.2		50	0	50		66.7	33.3	0	
PHF	.500	.000	.583	.536	.000	.875	.500	.900	.250	.000	.250	.250	.571	.667	.000	.600

Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 1

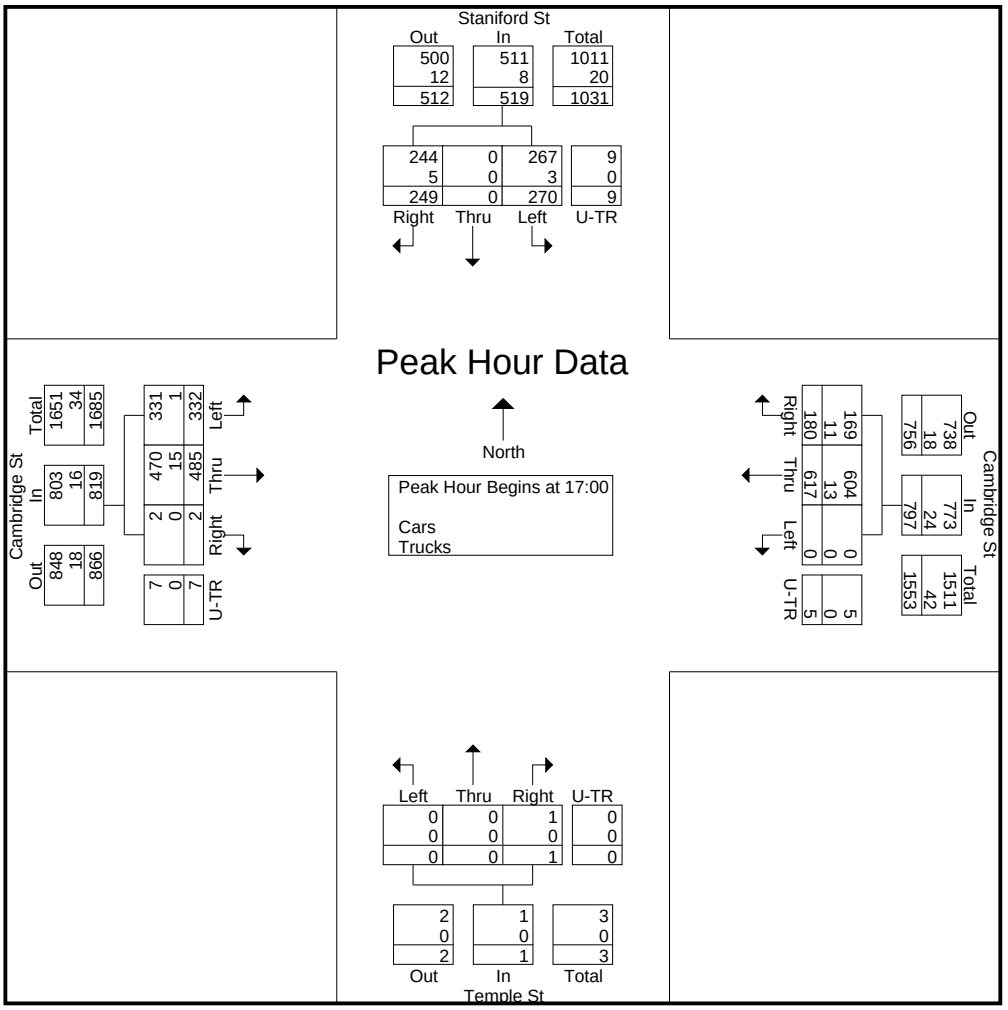
Groups Printed- Cars - Trucks

	Staniford St From North				Cambridge St From East				Temple St From South				Cambridge 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
16:00	60	1	66	2	0	110	34	0	0	0	1	0	89	106	0	0	469
16:15	48	0	49	0	0	104	45	3	0	0	3	0	77	113	0	2	444
16:30	50	0	52	1	0	124	34	0	0	0	1	0	83	123	0	0	468
16:45	51	0	53	2	0	141	43	0	0	0	1	0	86	140	0	1	518
Total	209	1	220	5	0	479	156	3	0	0	6	0	335	482	0	3	1899
17:00	63	0	64	6	0	143	54	1	0	0	0	0	84	133	1	1	550
17:15	75	0	65	3	0	140	39	3	0	0	1	0	95	131	0	0	552
17:30	60	0	63	0	0	144	48	1	0	0	0	0	73	111	0	1	501
17:45	72	0	57	0	0	190	39	0	0	0	0	0	80	110	1	5	554
Total	270	0	249	9	0	617	180	5	0	0	1	0	332	485	2	7	2157
Grand Total	479	1	469	14	0	1096	336	8	0	0	7	0	667	967	2	10	4056
Apprch %	49.7	0.1	48.7	1.5	0	76.1	23.3	0.6	0	0	100	0	40.5	58.7	0.1	0.6	
Total %	11.8	0	11.6	0.3	0	27	8.3	0.2	0	0	0.2	0	16.4	23.8	0	0.2	
Cars	472	1	453	14	0	1073	307	5	0	0	7	0	665	939	2	10	3948
% Cars	98.5	100	96.6	100	0	97.9	91.4	62.5	0	0	100	0	99.7	97.1	100	100	97.3
Trucks	7	0	16	0	0	23	29	3	0	0	0	0	2	28	0	0	108
% Trucks	1.5	0	3.4	0	0	2.1	8.6	37.5	0	0	0	0	0.3	2.9	0	0	2.7

	Staniford St From North					Cambridge St From East					Temple St From South					Cambridge 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 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 17:00																					
17:00	63	0	64	**6**	133	0	143	**54**	1	198	0	0	0	0	0	84	**133**	**1**	1	219	550
17:15	**75**	0	**65**	3	**143**	0	140	39	**3**	182	0	0	**1**	0	**1**	**95**	131	0	0	**226**	552
17:30	60	0	63	0	123	0	144	48	1	193	0	0	0	0	0	73	111	0	1	185	501
17:45	72	0	57	0	129	0	**190**	39	0	**229**	0	0	0	0	0	80	110	1	**5**	196	**554**
Total Volume	270	0	249	9	528	0	617	180	5	802	0	0	1	0	1	332	485	2	7	826	2157
% App. Total	51.1	0	47.2	1.7		0	76.9	22.4	0.6		0	0	100	0		40.2	58.7	0.2	0.8		
PHF	.900	.000	.958	.375	.923	.000	.812	.833	.417	.876	.000	.000	.250	.000	.250	.874	.912	.500	.350	.914	.973
Cars	267	0	244	9	520	0	604	169	5	778	0	0	1	0	1	331	470	2	7	810	2109
% Cars	98.9	0	98.0	100	98.5	0	97.9	93.9	100	97.0	0	0	100	0	100	99.7	96.9	100	100	98.1	97.8
Trucks	3	0	5	0	8	0	13	11	0	24	0	0	0	0	0	1	15	0	0	16	48
% Trucks	1.1	0	2.0	0	1.5	0	2.1	6.1	0	3.0	0	0	0	0	0	0.3	3.1	0	0	1.9	2.2

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 2



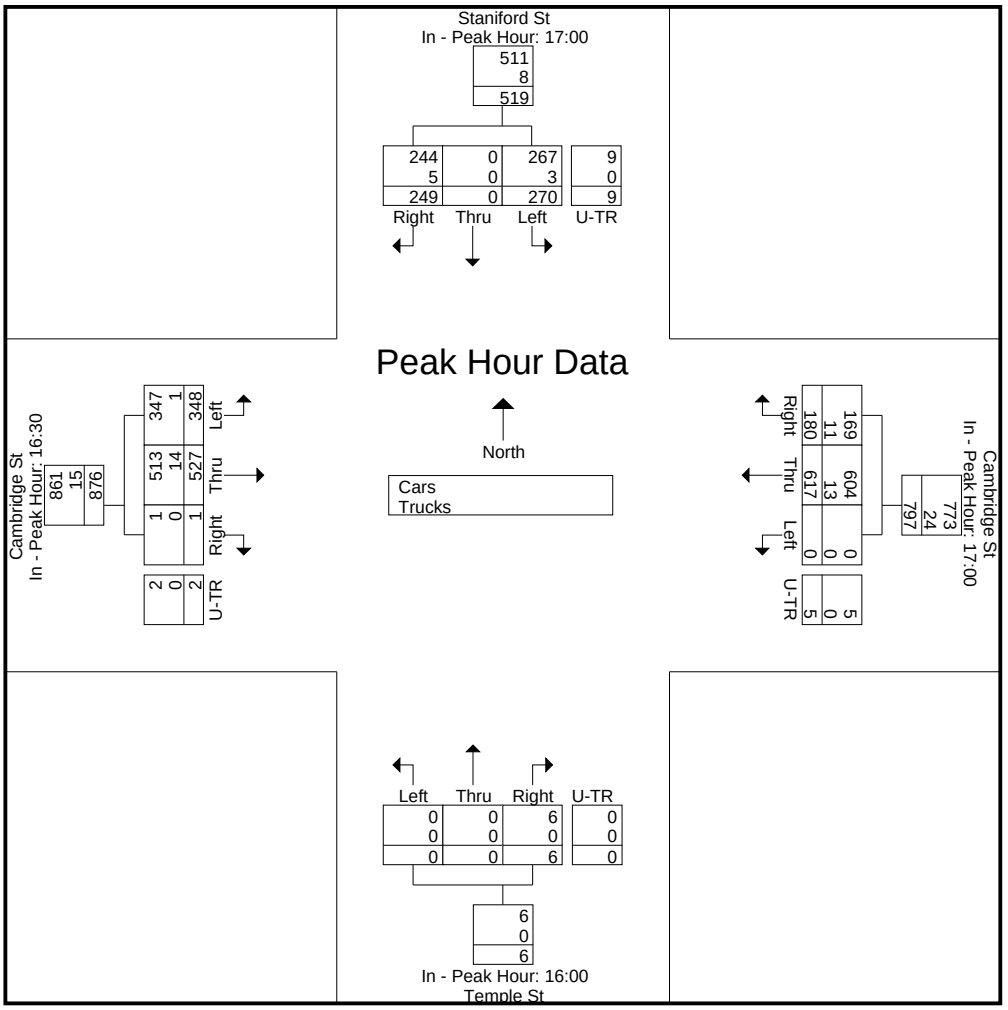
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	17:00					17:00					16:00					16:30				
+0 mins.	63	0	64	**6**	133	0	143	**54**	1	198	0	0	1	0	1	83	123	0	0	206
+15 mins.	**75**	0	**65**	3	**143**	0	140	39	**3**	182	0	0	**3**	0	**3**	86	**140**	0	**1**	**227**
+30 mins.	60	0	63	0	123	0	144	48	1	193	0	0	1	0	1	84	133	**1**	1	219
+45 mins.	72	0	57	0	129	0	**190**	39	0	**229**	0	0	1	0	1	**95**	131	0	0	226
Total Volume	270	0	249	9	528	0	617	180	5	802	0	0	6	0	6	348	527	1	2	878
% App. Total	51.1	0	47.2	1.7		0	76.9	22.4	0.6		0	0	100	0		39.6	60	0.1	0.2	
PHF	.900	.000	.958	.375	.923	.000	.812	.833	.417	.876	.000	.000	.500	.000	.500	.916	.941	.250	.500	.967
Cars	267	0	244	9	520	0	604	169	5	778	0	0	6	0	6	347	513	1	2	863
% Cars	98.9	0	98	100	98.5	0	97.9	93.9	100	97	0	0	100	0	100	99.7	97.3	100	100	98.3
Trucks	3	0	5	0	8	0	13	11	0	24	0	0	0	0	0	1	14	0	0	15
% Trucks	1.1	0	2	0	1.5	0	2.1	6.1	0	3	0	0	0	0	0	0.3	2.7	0	0	1.7

Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 1

Groups Printed- Cars

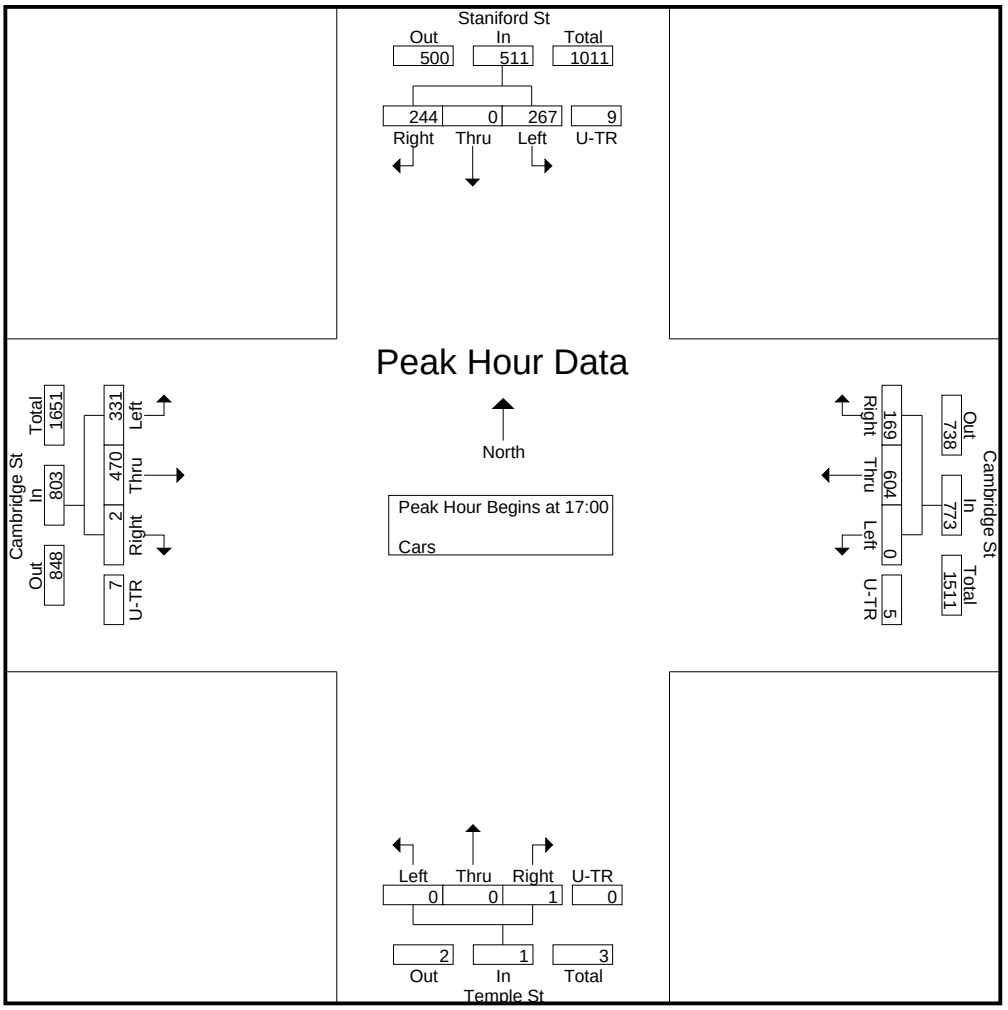
	Staniford St From North				Cambridge St From East				Temple St From South				Cambridge St From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
16:00	58	1	64	2	0	107	32	0	0	0	1	0	89	100	0	0	454
16:15	47	0	47	0	0	101	39	0	0	0	3	0	77	113	0	2	429
16:30	50	0	48	1	0	122	29	0	0	0	1	0	83	119	0	0	453
16:45	50	0	50	2	0	139	38	0	0	0	1	0	85	137	0	1	503
Total	205	1	209	5	0	469	138	0	0	0	6	0	334	469	0	3	1839
17:00	62	0	63	6	0	141	52	1	0	0	0	0	84	128	1	1	539
17:15	73	0	63	3	0	135	35	3	0	0	1	0	95	129	0	0	537
17:30	60	0	62	0	0	141	47	1	0	0	0	0	73	105	0	1	490
17:45	72	0	56	0	0	187	35	0	0	0	0	0	79	108	1	5	543
Total	267	0	244	9	0	604	169	5	0	0	1	0	331	470	2	7	2109
Grand Total	472	1	453	14	0	1073	307	5	0	0	7	0	665	939	2	10	3948
Apprch %	50.2	0.1	48.2	1.5	0	77.5	22.2	0.4	0	0	100	0	41.2	58.1	0.1	0.6	
Total %	12	0	11.5	0.4	0	27.2	7.8	0.1	0	0	0.2	0	16.8	23.8	0.1	0.3	

	Staniford St From North					Cambridge St From East					Temple St From South					Cambridge 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 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 17:00																					
17:00	62	0	**63**	**6**	131	0	141	**52**	1	194	0	0	0	0	0	84	128	**1**	1	214	539
17:15	**73**	0	63	3	**139**	0	135	35	**3**	173	0	0	**1**	0	**1**	**95**	**129**	0	0	**224**	537
17:30	60	0	62	0	122	0	141	47	1	189	0	0	0	0	0	73	105	0	1	179	490
17:45	72	0	56	0	128	0	**187**	35	0	**222**	0	0	0	0	0	79	108	1	**5**	193	**543**
Total Volume	267	0	244	9	520	0	604	169	5	778	0	0	1	0	1	331	470	2	7	810	2109
% App. Total	51.3	0	46.9	1.7		0	77.6	21.7	0.6		0	0	100	0		40.9	58	0.2	0.9		
PHF	.914	.000	.968	.375	.935	.000	.807	.813	.417	.876	.000	.000	.250	.000	.250	.871	.911	.500	.350	.904	.971

Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 2



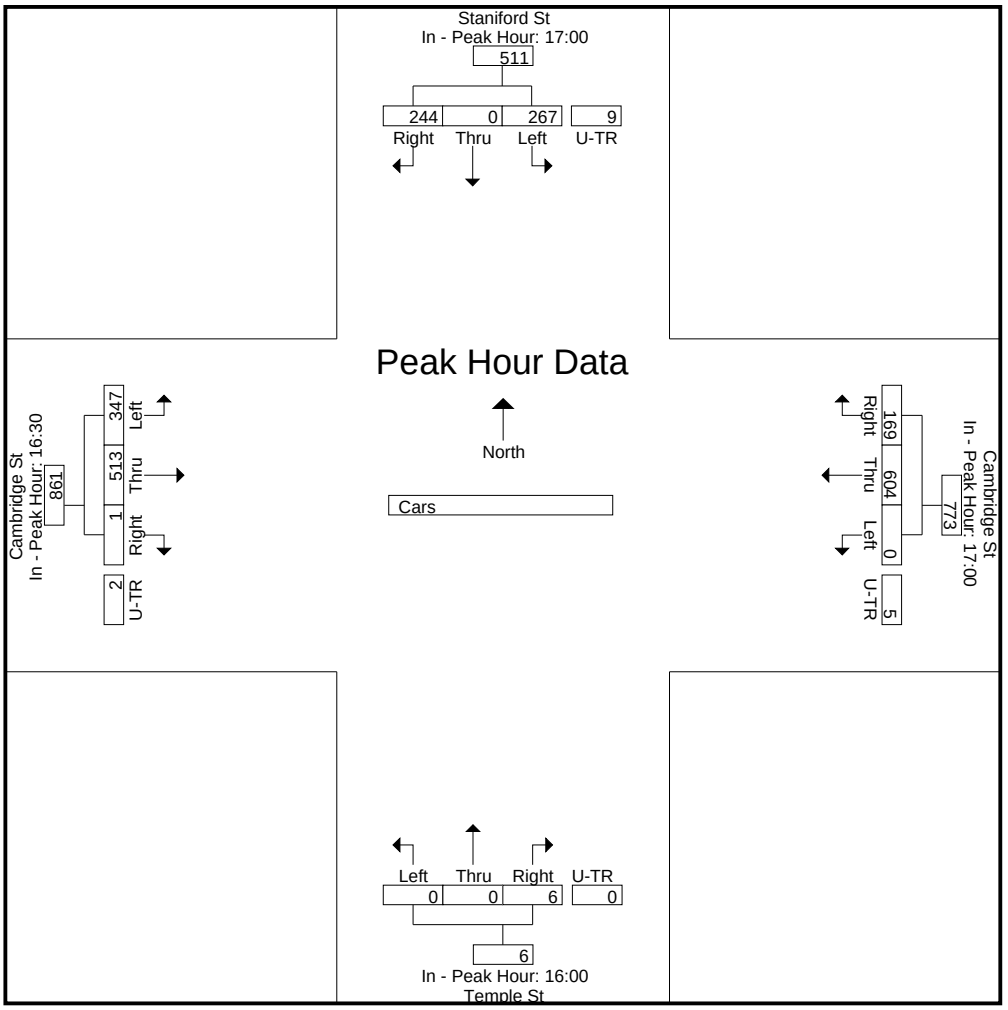
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	17:00					17:00					16:00					16:30				
+0 mins.	62	0	**63**	**6**	131	0	141	**52**	1	194	0	0	1	0	1	83	119	0	0	202
+15 mins.	**73**	0	63	3	**139**	0	135	35	**3**	173	0	0	**3**	0	**3**	85	**137**	0	**1**	223
+30 mins.	60	0	62	0	122	0	141	47	1	189	0	0	1	0	1	84	128	**1**	1	214
+45 mins.	72	0	56	0	128	0	**187**	35	0	**222**	0	0	1	0	1	**95**	129	0	0	**224**
Total Volume	267	0	244	9	520	0	604	169	5	778	0	0	6	0	6	347	513	1	2	863
% App. Total	51.3	0	46.9	1.7		0	77.6	21.7	0.6		0	0	100	0		40.2	59.4	0.1	0.2	
PHF	.914	.000	.968	.375	.935	.000	.807	.813	.417	.876	.000	.000	.500	.000	.500	.913	.936	.250	.500	.963

Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 1

Groups Printed- Trucks

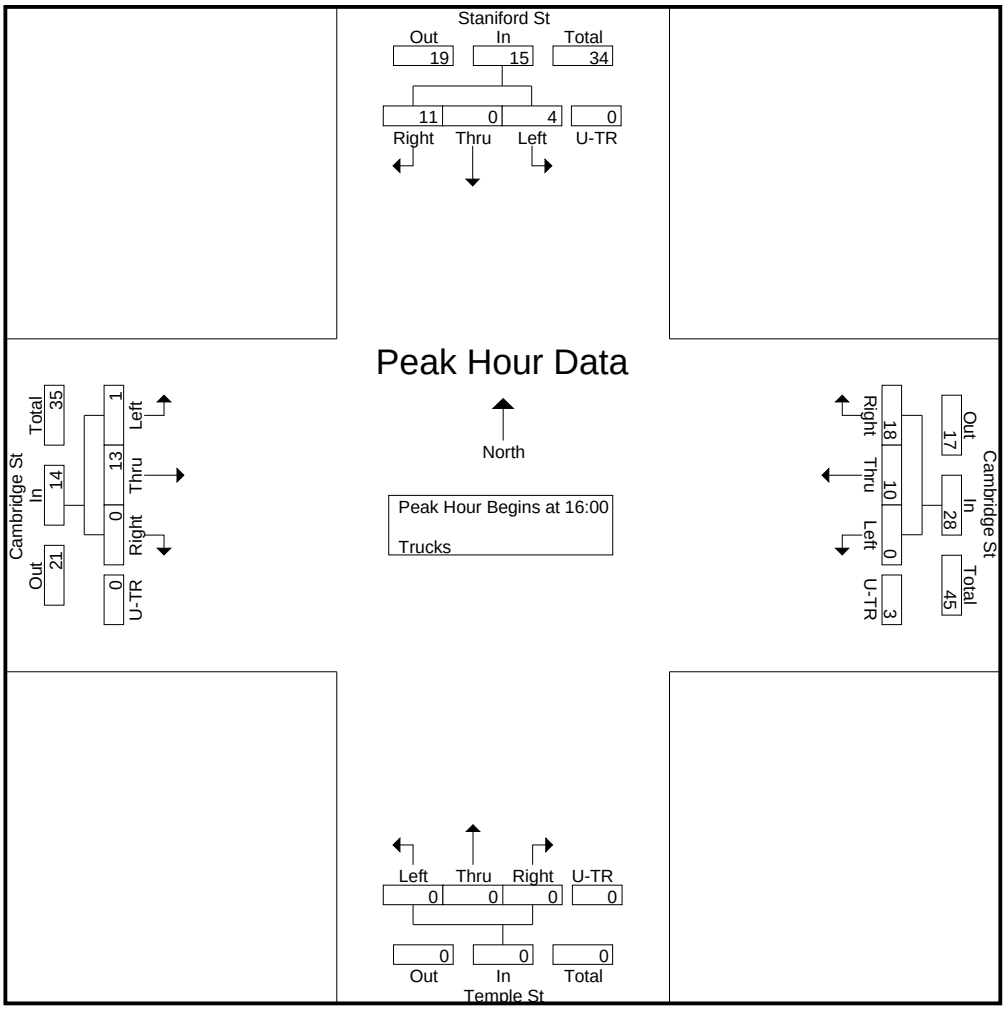
	Staniford St From North				Cambridge St From East				Temple St From South				Cambridge St From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
16:00	2	0	2	0	0	3	2	0	0	0	0	0	0	6	0	0	15
16:15	1	0	2	0	0	3	6	3	0	0	0	0	0	0	0	0	15
16:30	0	0	4	0	0	2	5	0	0	0	0	0	0	4	0	0	15
16:45	1	0	3	0	0	2	5	0	0	0	0	0	1	3	0	0	15
Total	4	0	11	0	0	10	18	3	0	0	0	0	1	13	0	0	60
17:00	1	0	1	0	0	2	2	0	0	0	0	0	0	5	0	0	11
17:15	2	0	2	0	0	5	4	0	0	0	0	0	0	2	0	0	15
17:30	0	0	1	0	0	3	1	0	0	0	0	0	0	6	0	0	11
17:45	0	0	1	0	0	3	4	0	0	0	0	0	1	2	0	0	11
Total	3	0	5	0	0	13	11	0	0	0	0	0	1	15	0	0	48
Grand Total	7	0	16	0	0	23	29	3	0	0	0	0	2	28	0	0	108
Apprch %	30.4	0	69.6	0	0	41.8	52.7	5.5	0	0	0	0	6.7	93.3	0	0	
Total %	6.5	0	14.8	0	0	21.3	26.9	2.8	0	0	0	0	1.9	25.9	0	0	

	Staniford St From North					Cambridge St From East					Temple St From South					Cambridge 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 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	**2**	0	2	0	**4**	0	**3**	2	0	5	0	0	0	0	0	0	**6**	0	0	**6**	**15**
16:15	1	0	2	0	3	0	3	**6**	**3**	**12**	0	0	0	0	0	0	0	0	0	0	15
16:30	0	0	**4**	0	4	0	2	5	0	7	0	0	0	0	0	0	4	0	0	4	15
16:45	1	0	3	0	4	0	2	5	0	7	0	0	0	0	0	**1**	3	0	0	4	15
Total Volume	4	0	11	0	15	0	10	18	3	31	0	0	0	0	0	1	13	0	0	14	60
% App. Total	26.7	0	73.3	0		0	32.3	58.1	9.7		0	0	0	0		7.1	92.9	0	0		
PHF	.500	.000	.688	.000	.938	.000	.833	.750	.250	.646	.000	.000	.000	.000	.000	.250	.542	.000	.000	.583	1.000

Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
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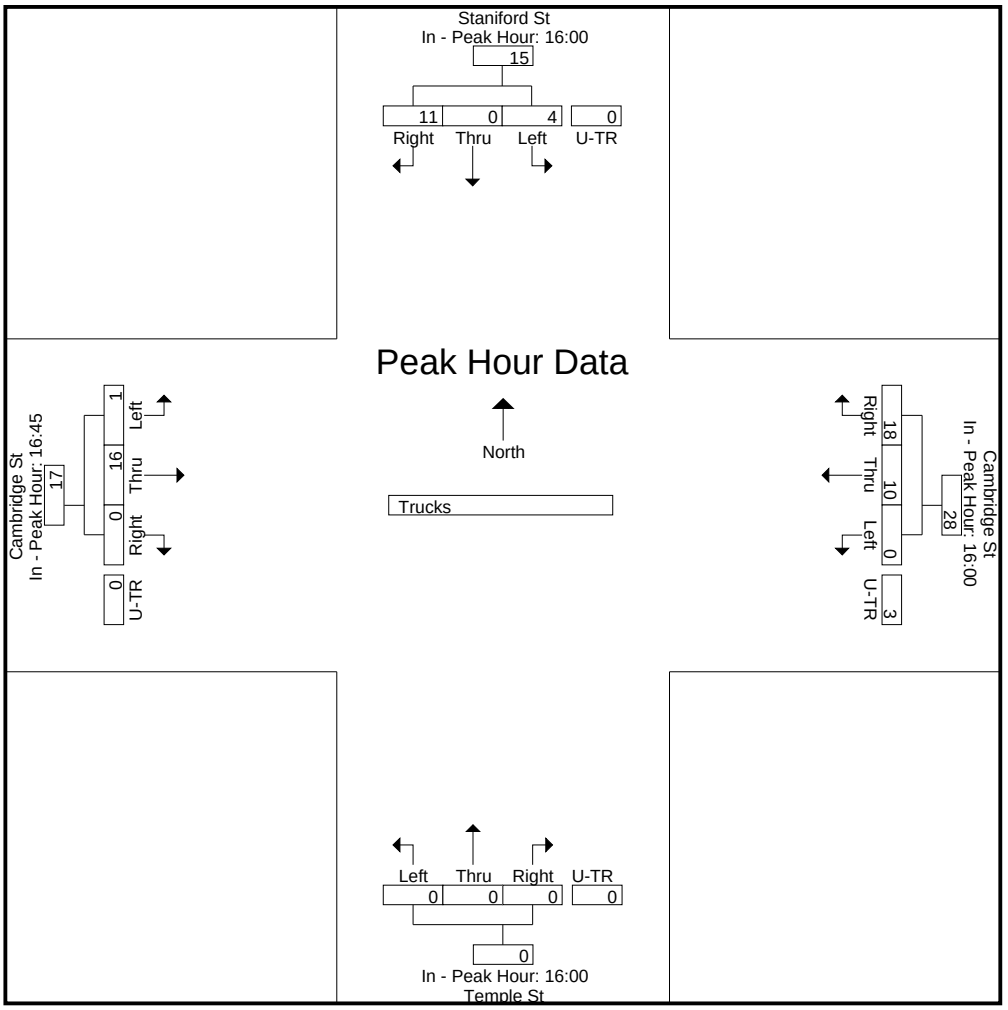
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	16:00					16:00					16:00					16:45				
+0 mins.	**2**	0	2	0	**4**	0	**3**	2	0	5	0	0	0	0	0	**1**	3	0	0	4
+15 mins.	1	0	2	0	3	0	3	**6**	**3**	**12**	0	0	0	0	0	0	5	0	0	5
+30 mins.	0	0	**4**	0	4	0	2	5	0	7	0	0	0	0	0	0	2	0	0	2
+45 mins.	1	0	3	0	4	0	2	5	0	7	0	0	0	0	0	0	**6**	0	0	**6**
Total Volume	4	0	11	0	15	0	10	18	3	31	0	0	0	0	0	1	16	0	0	17
% App. Total	26.7	0	73.3	0		0	32.3	58.1	9.7		0	0	0	0		5.9	94.1	0	0	
PHF	.500	.000	.688	.000	.938	.000	.833	.750	.250	.646	.000	.000	.000	.000	.000	.250	.667	.000	.000	.708

Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 1

Groups Printed- Bikes Peds

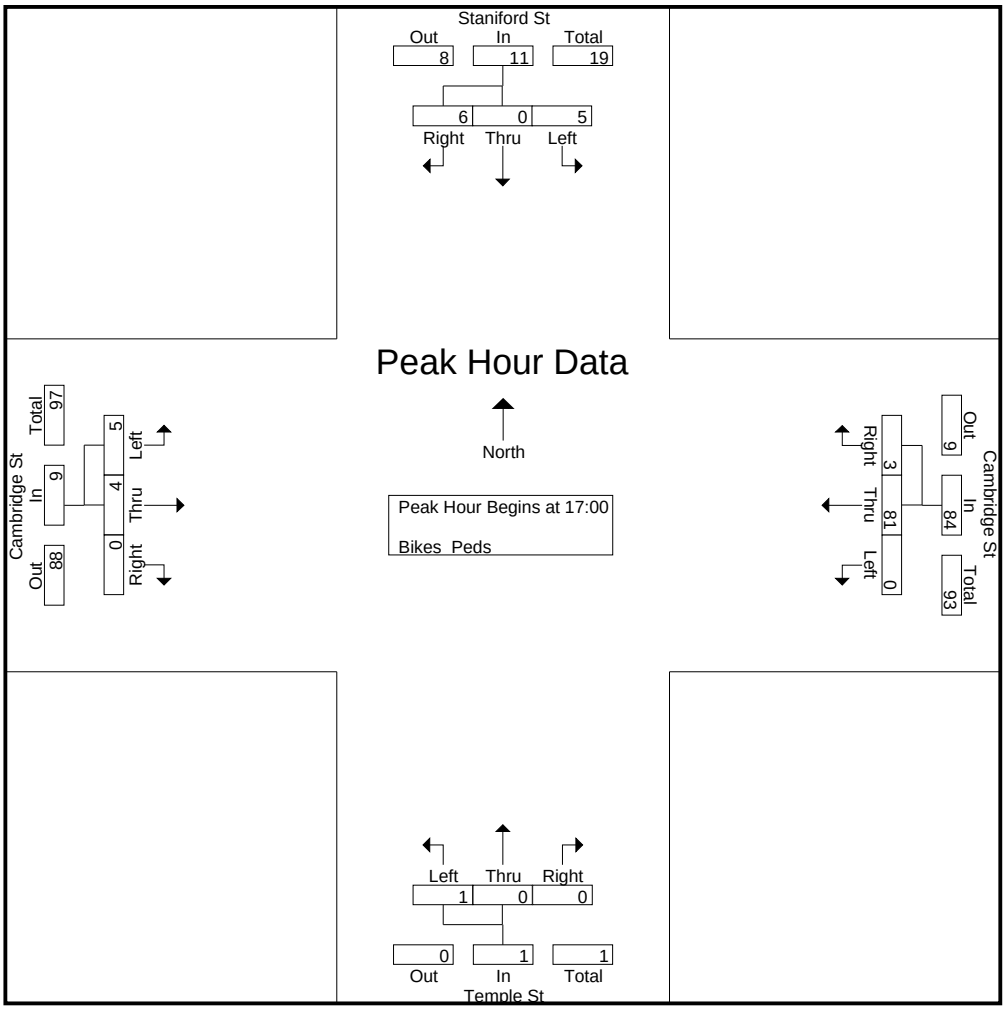
	Staniford St From North				Cambridge St From East				Temple St From South				Cambridge St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
16:00	1	0	0	87	0	6	0	28	0	0	1	67	2	0	0	67	249	10	259
16:15	1	0	1	93	0	8	0	45	0	0	0	85	1	0	0	82	305	11	316
16:30	1	0	3	77	0	8	1	45	0	0	0	75	0	1	0	74	271	14	285
16:45	0	0	2	108	0	11	0	36	0	0	0	109	2	0	0	70	323	15	338
Total	3	0	6	365	0	33	1	154	0	0	1	336	5	1	0	293	1148	50	1198
17:00	1	0	1	157	0	11	0	52	0	0	0	95	3	1	0	89	393	17	410
17:15	1	0	3	138	0	13	0	75	0	0	0	69	1	1	0	62	344	19	363
17:30	0	0	1	129	0	25	1	35	0	0	0	81	0	1	0	101	346	28	374
17:45	3	0	1	96	0	32	2	26	1	0	0	84	1	1	0	48	254	41	295
Total	5	0	6	520	0	81	3	188	1	0	0	329	5	4	0	300	1337	105	1442
Grand Total	8	0	12	885	0	114	4	342	1	0	1	665	10	5	0	593	2485	155	2640
Apprch %	40	0	60		0	96.6	3.4		50	0	50		66.7	33.3	0				
Total %	5.2	0	7.7		0	73.5	2.6		0.6	0	0.6		6.5	3.2	0		94.1	5.9	

	Staniford St From North				Cambridge St From East				Temple St From South				Cambridge 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 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	1	0	1	2	0	11	0	11	0	0	0	0	**3**	**1**	0	**4**	17
17:15	1	0	**3**	**4**	0	13	0	13	0	0	0	0	1	1	0	2	19
17:30	0	0	1	1	0	25	1	26	0	0	0	0	0	1	0	1	28
17:45	**3**	0	1	4	0	**32**	**2**	**34**	**1**	0	0	**1**	1	1	0	2	**41**
Total Volume	5	0	6	11	0	81	3	84	1	0	0	1	5	4	0	9	105
% App. Total	45.5	0	54.5		0	96.4	3.6		100	0	0		55.6	44.4	0		
PHF	.417	.000	.500	.688	.000	.633	.375	.618	.250	.000	.000	.250	.417	1.000	.000	.563	.640

Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 2



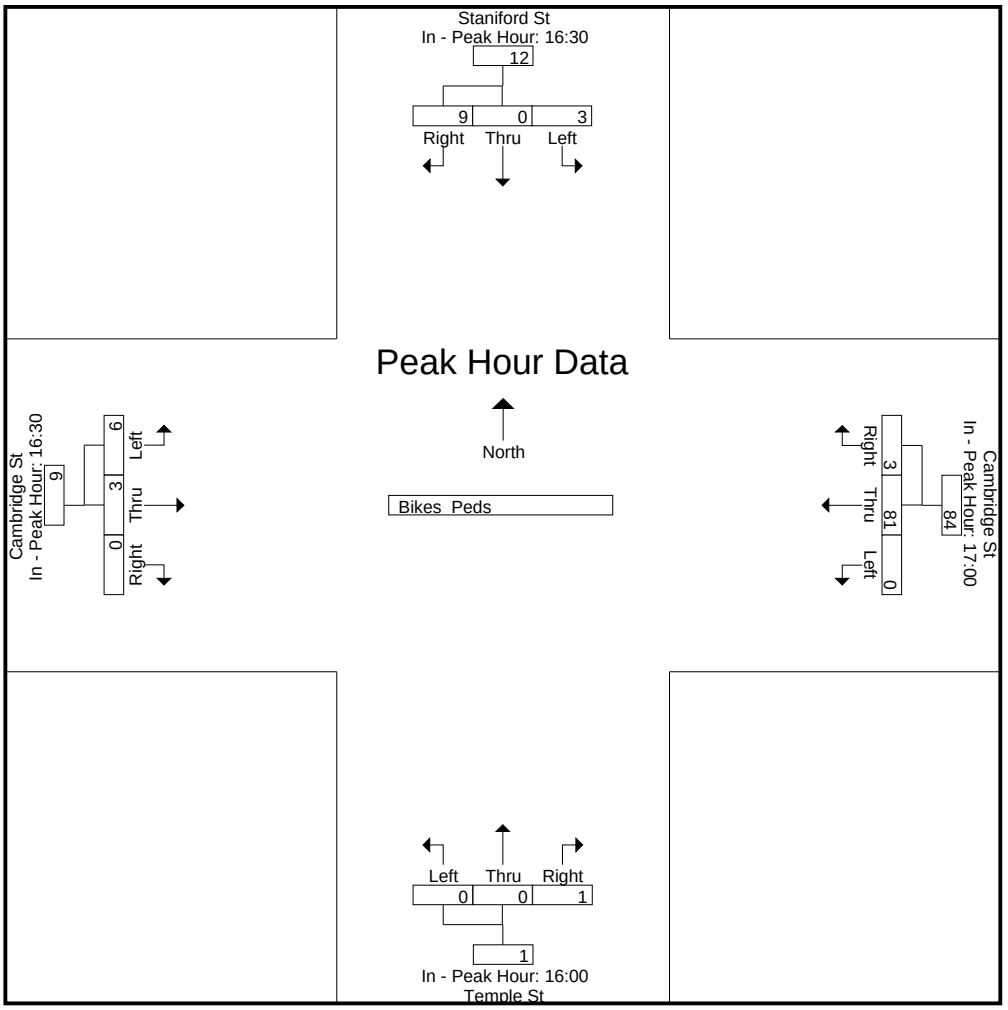
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	16:30				17:00				16:00				16:30			
+0 mins.	**1**	0	**3**	**4**	0	11	0	11	0	0	**1**	**1**	0	**1**	0	1
+15 mins.	0	0	2	2	0	13	0	13	0	0	0	0	2	0	0	2
+30 mins.	1	0	1	2	0	25	1	26	0	0	0	0	**3**	1	0	**4**
+45 mins.	1	0	3	4	0	**32**	**2**	**34**	0	0	0	0	1	1	0	2
Total Volume	3	0	9	12	0	81	3	84	0	0	1	1	6	3	0	9
% App. Total	25	0	75		0	96.4	3.6		0	0	100		66.7	33.3	0	
PHF	.750	.000	.750	.750	.000	.633	.375	.618	.000	.000	.250	.250	.500	.750	.000	.563

Accurate Counts
978-664-2565

N/S Street : Staniford St / Temple St
E/W Street: Cambridge Street
City/State : Boston, MA
Weather : Clear

File Name : 15410008
Site Code : 15410008
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 1

Groups Printed- Cars - Trucks

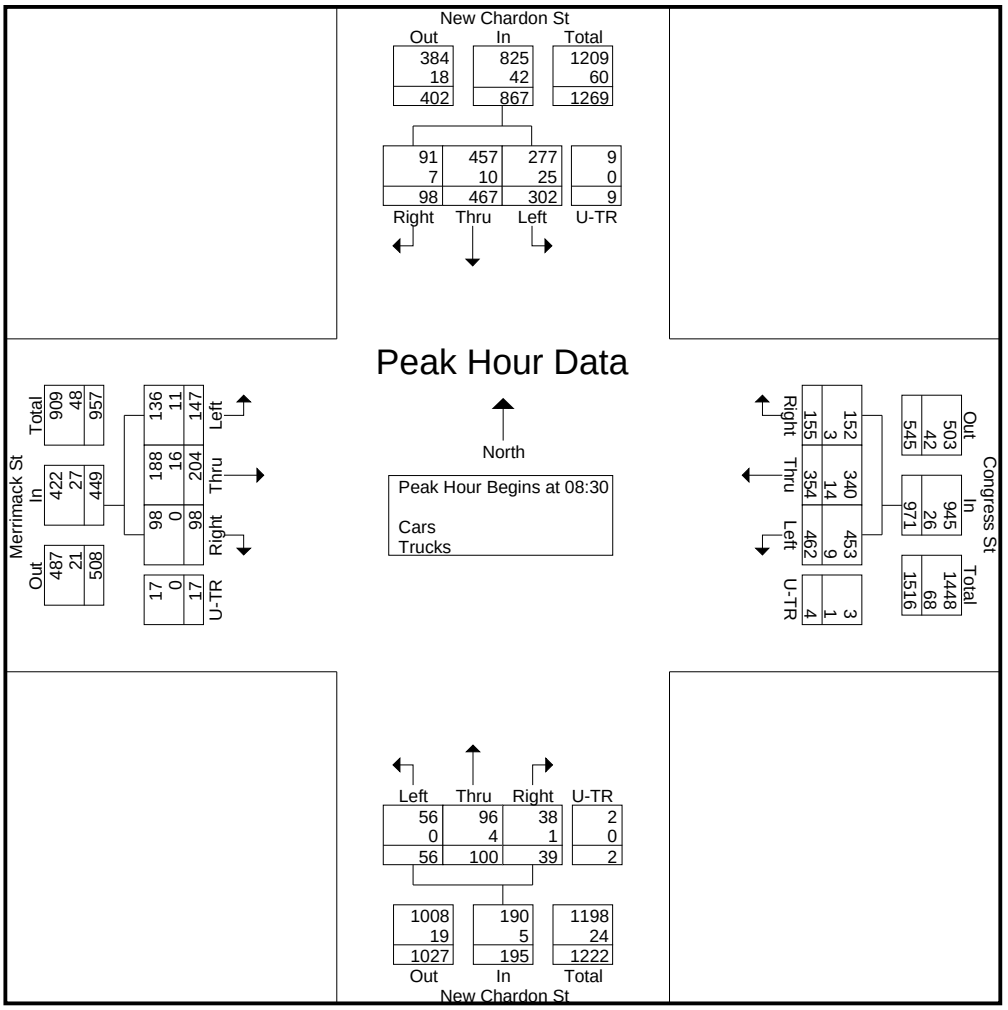
	New Chardon St From North				Congress St From East				New Chardon St From South				Merrimack St From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
07:30	51	100	23	2	67	66	25	0	6	16	5	0	43	41	20	2	467
07:45	72	88	14	1	102	77	38	0	18	34	11	0	36	46	9	3	549
Total	123	188	37	3	169	143	63	0	24	50	16	0	79	87	29	5	1016
08:00	73	97	16	2	87	80	38	1	10	40	9	0	36	53	31	1	574
08:15	73	126	23	2	99	69	35	1	14	40	7	0	31	48	14	4	586
08:30	80	115	18	1	138	88	36	0	13	25	7	1	27	59	30	6	644
08:45	82	114	27	1	122	95	32	2	10	22	6	0	41	61	25	6	646
Total	308	452	84	6	446	332	141	4	47	127	29	1	135	221	100	17	2450
09:00	77	121	22	2	89	70	46	0	10	30	9	0	40	49	26	1	592
09:15	63	117	31	5	113	101	41	2	23	23	17	1	39	35	17	4	632
Grand Total	571	878	174	16	817	646	291	6	104	230	71	2	293	392	172	27	4690
Apprch %	34.8	53.6	10.6	1	46.4	36.7	16.5	0.3	25.6	56.5	17.4	0.5	33.1	44.3	19.5	3.1	
Total %	12.2	18.7	3.7	0.3	17.4	13.8	6.2	0.1	2.2	4.9	1.5	0	6.2	8.4	3.7	0.6	
Cars	526	861	160	16	793	612	280	5	101	220	69	2	272	361	172	27	4477
% Cars	92.1	98.1	92	100	97.1	94.7	96.2	83.3	97.1	95.7	97.2	100	92.8	92.1	100	100	95.5
Trucks	45	17	14	0	24	34	11	1	3	10	2	0	21	31	0	0	213
% Trucks	7.9	1.9	8	0	2.9	5.3	3.8	16.7	2.9	4.3	2.8	0	7.2	7.9	0	0	4.5

	New Chardon St From North					Congress St From East					New Chardon St From South					Merrimack 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 07:30 to 09:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:30																					
08:30	80	115	18	1	214	**138**	88	36	0	**262**	13	25	7	**1**	46	27	59	**30**	**6**	122	644
08:45	**82**	114	27	1	**224**	122	95	32	**2**	251	10	22	6	0	38	**41**	**61**	25	6	**133**	**646**
09:00	77	**121**	22	2	222	89	70	**46**	0	205	10	**30**	9	0	49	40	49	26	1	116	592
09:15	63	117	**31**	**5**	216	113	**101**	41	2	257	**23**	23	**17**	1	**64**	39	35	17	4	95	632
Total Volume	302	467	98	9	876	462	354	155	4	975	56	100	39	2	197	147	204	98	17	466	2514
% App. Total	34.5	53.3	11.2	1		47.4	36.3	15.9	0.4		28.4	50.8	19.8	1		31.5	43.8	21	3.6		
PHF	.921	.965	.790	.450	.978	.837	.876	.842	.500	.930	.609	.833	.574	.500	.770	.896	.836	.817	.708	.876	.973
Cars	277	457	91	9	834	453	340	152	3	948	56	96	38	2	192	136	188	98	17	439	2413
% Cars	91.7	97.9	92.9	100	95.2	98.1	96.0	98.1	75.0	97.2	100	96.0	97.4	100	97.5	92.5	92.2	100	100	94.2	96.0
Trucks	25	10	7	0	42	9	14	3	1	27	0	4	1	0	5	11	16	0	0	27	101
% Trucks	8.3	2.1	7.1	0	4.8	1.9	4.0	1.9	25.0	2.8	0	4.0	2.6	0	2.5	7.5	7.8	0	0	5.8	4.0

Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 2



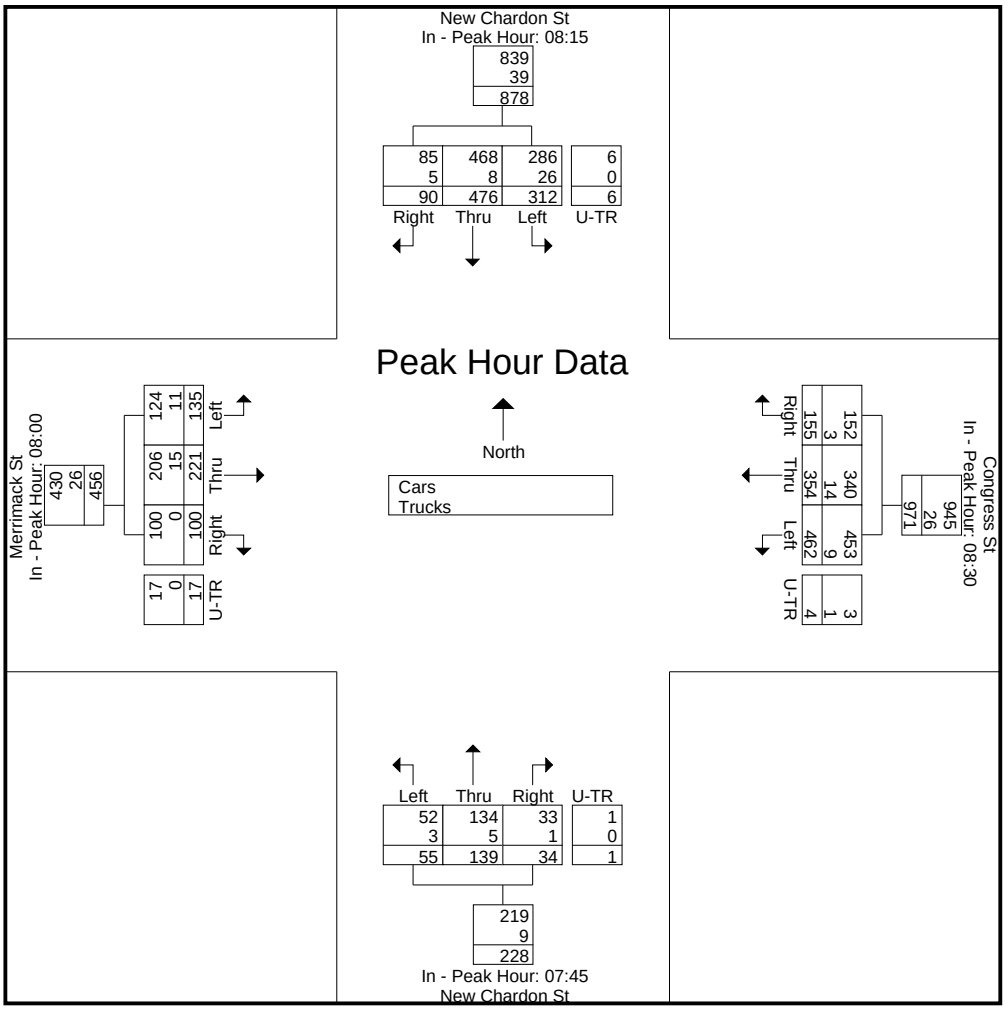
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:15					08:30					07:45					08:00				
+0 mins.	73	**126**	23	**2**	**224**	**138**	88	36	0	**262**	**18**	34	**11**	0	**63**	36	53	**31**	1	121
+15 mins.	80	115	18	1	214	122	95	32	**2**	251	10	**40**	9	0	59	31	48	14	4	97
+30 mins.	**82**	114	**27**	1	224	89	70	**46**	0	205	14	40	7	0	61	27	59	30	**6**	122
+45 mins.	77	121	22	2	222	113	**101**	41	2	257	13	25	7	**1**	46	**41**	**61**	25	6	**133**
Total Volume	312	476	90	6	884	462	354	155	4	975	55	139	34	1	229	135	221	100	17	473
% App. Total	35.3	53.8	10.2	0.7		47.4	36.3	15.9	0.4		24	60.7	14.8	0.4		28.5	46.7	21.1	3.6	
PHF	.951	.944	.833	.750	.987	.837	.876	.842	.500	.930	.764	.869	.773	.250	.909	.823	.906	.806	.708	.889
Cars	286	468	85	6	845	453	340	152	3	948	52	134	33	1	220	124	206	100	17	447
% Cars	91.7	98.3	94.4	100	95.6	98.1	96	98.1	75	97.2	94.5	96.4	97.1	100	96.1	91.9	93.2	100	100	94.5
Trucks	26	8	5	0	39	9	14	3	1	27	3	5	1	0	9	11	15	0	0	26
% Trucks	8.3	1.7	5.6	0	4.4	1.9	4	1.9	25	2.8	5.5	3.6	2.9	0	3.9	8.1	6.8	0	0	5.5

Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011

Groups Printed- Cars

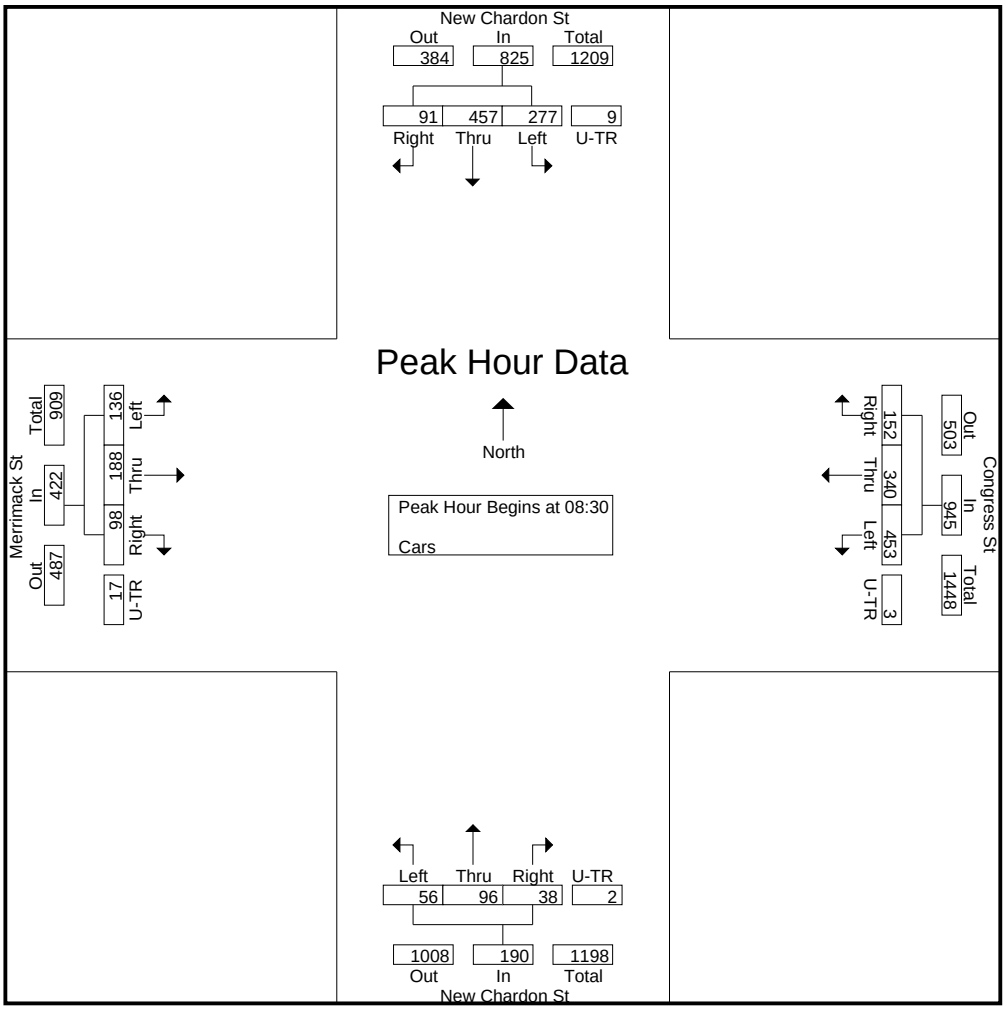
	New Chardon St From North				Congress St From East				New Chardon St From South				Merrimack St From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
07:30	47	97	21	2	63	61	24	0	6	15	5	0	40	39	20	2	442
07:45	65	87	13	1	97	73	36	0	17	33	10	0	35	40	9	3	519
Total	112	184	34	3	160	134	60	0	23	48	15	0	75	79	29	5	961
08:00	70	95	13	2	84	74	37	1	10	39	9	0	32	48	31	1	546
08:15	67	125	22	2	96	64	31	1	12	37	7	0	29	46	14	4	557
08:30	72	114	16	1	136	85	36	0	13	25	7	1	25	52	30	6	619
08:45	77	111	26	1	121	90	30	1	10	21	6	0	38	60	25	6	623
Total	286	445	77	6	437	313	134	3	45	122	29	1	124	206	100	17	2345
09:00	70	118	21	2	86	67	46	0	10	28	9	0	36	44	26	1	564
09:15	58	114	28	5	110	98	40	2	23	22	16	1	37	32	17	4	607
Grand Total	526	861	160	16	793	612	280	5	101	220	69	2	272	361	172	27	4477
Apprch %	33.7	55.1	10.2	1	46.9	36.2	16.6	0.3	25.8	56.1	17.6	0.5	32.7	43.4	20.7	3.2	
Total %	11.7	19.2	3.6	0.4	17.7	13.7	6.3	0.1	2.3	4.9	1.5	0	6.1	8.1	3.8	0.6	

	New Chardon St From North					Congress St From East					New Chardon St From South					Merrimack 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 07:30 to 09:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:30																					
08:30	72	114	16	1	203	**136**	85	36	0	**257**	13	25	7	**1**	46	25	52	**30**	**6**	113	619
08:45	**77**	111	26	1	**215**	121	90	30	1	242	10	21	6	0	37	**38**	**60**	25	6	**129**	**623**
09:00	70	**118**	21	2	211	86	67	**46**	0	199	10	**28**	9	0	47	36	44	26	1	107	564
09:15	58	114	**28**	**5**	205	110	**98**	40	**2**	250	**23**	22	**16**	1	**62**	37	32	17	4	90	607
Total Volume	277	457	91	9	834	453	340	152	3	948	56	96	38	2	192	136	188	98	17	439	2413
% App. Total	33.2	54.8	10.9	1.1		47.8	35.9	16	0.3		29.2	50	19.8	1		31	42.8	22.3	3.9		
PHF	.899	.968	.813	.450	.970	.833	.867	.826	.375	.922	.609	.857	.594	.500	.774	.895	.783	.817	.708	.851	.968

Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 2



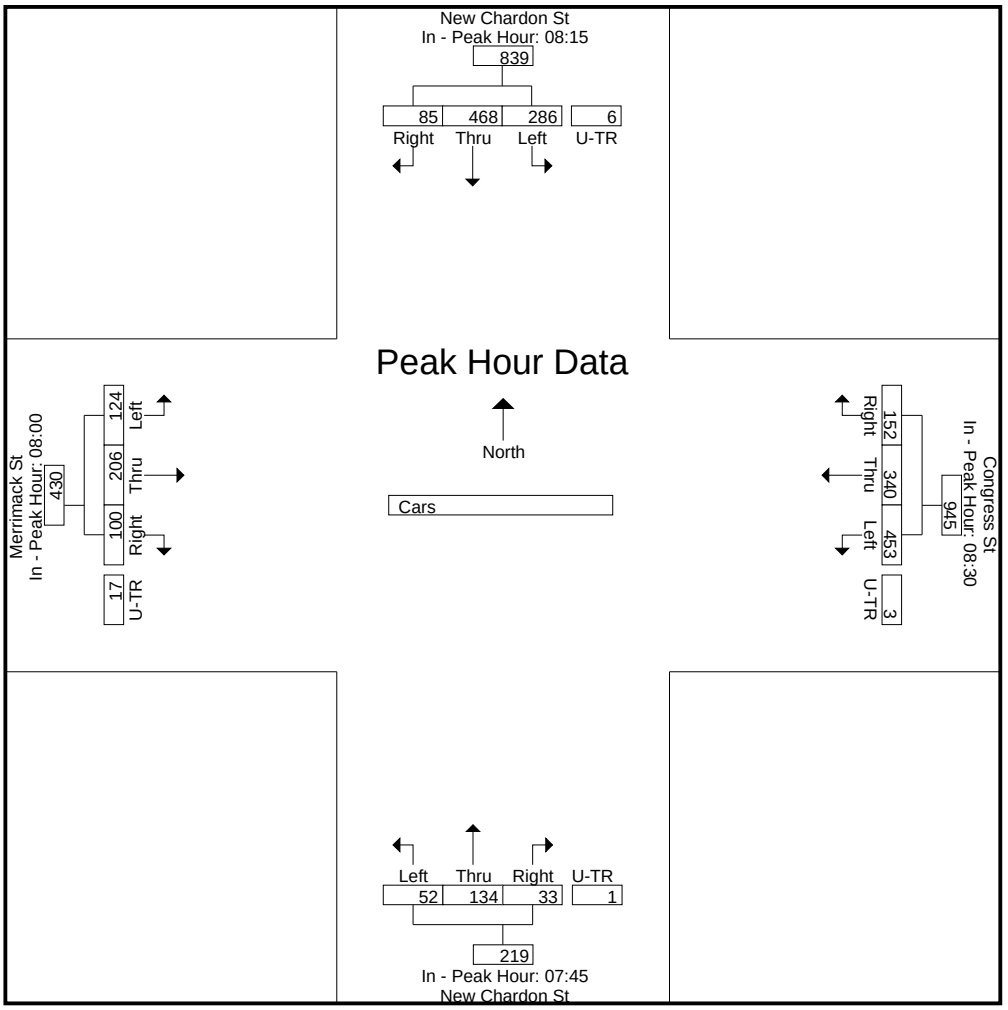
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:15					08:30					07:45					08:00				
+0 mins.	67	**125**	22	**2**	**216**	**136**	85	36	0	**257**	**17**	33	**10**	0	**60**	32	48	**31**	1	112
+15 mins.	72	114	16	1	203	121	90	30	1	242	10	**39**	9	0	58	29	46	14	4	93
+30 mins.	**77**	111	**26**	1	215	86	67	**46**	0	199	12	37	7	0	56	25	52	30	**6**	113
+45 mins.	70	118	21	2	211	110	**98**	40	**2**	250	13	25	7	**1**	46	**38**	**60**	25	6	**129**
Total Volume	286	468	85	6	845	453	340	152	3	948	52	134	33	1	220	124	206	100	17	447
% App. Total	33.8	55.4	10.1	0.7		47.8	35.9	16	0.3		23.6	60.9	15	0.5		27.7	46.1	22.4	3.8	
PHF	.929	.936	.817	.750	.978	.833	.867	.826	.375	.922	.765	.859	.825	.250	.917	.816	.858	.806	.708	.866

Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 1

Groups Printed- Trucks

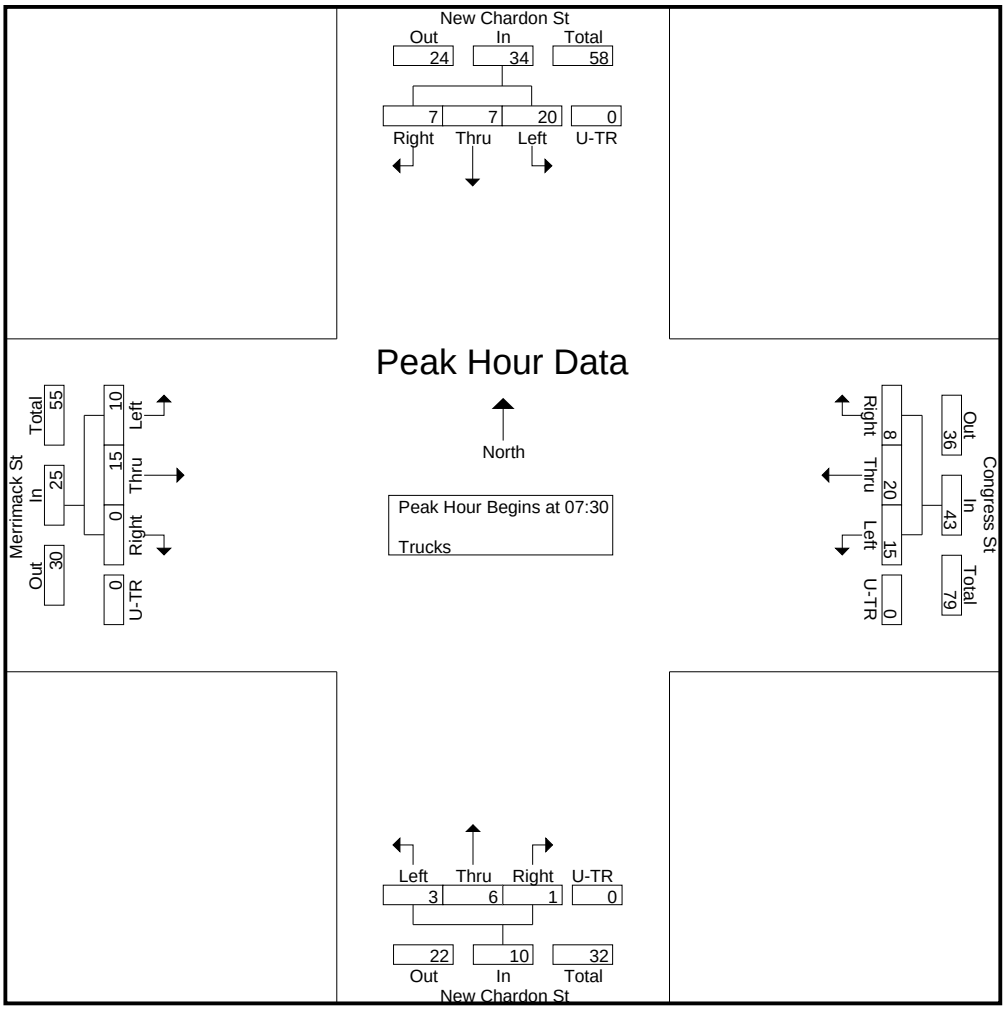
	New Chardon St From North				Congress St From East				New Chardon St From South				Merrimack St From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
07:30	4	3	2	0	4	5	1	0	0	1	0	0	3	2	0	0	25
07:45	7	1	1	0	5	4	2	0	1	1	1	0	1	6	0	0	30
Total	11	4	3	0	9	9	3	0	1	2	1	0	4	8	0	0	55
08:00	3	2	3	0	3	6	1	0	0	1	0	0	4	5	0	0	28
08:15	6	1	1	0	3	5	4	0	2	3	0	0	2	2	0	0	29
08:30	8	1	2	0	2	3	0	0	0	0	0	0	2	7	0	0	25
08:45	5	3	1	0	1	5	2	1	0	1	0	0	3	1	0	0	23
Total	22	7	7	0	9	19	7	1	2	5	0	0	11	15	0	0	105
09:00	7	3	1	0	3	3	0	0	0	2	0	0	4	5	0	0	28
09:15	5	3	3	0	3	3	1	0	0	1	1	0	2	3	0	0	25
Grand Total	45	17	14	0	24	34	11	1	3	10	2	0	21	31	0	0	213
Apprch %	59.2	22.4	18.4	0	34.3	48.6	15.7	1.4	20	66.7	13.3	0	40.4	59.6	0	0	
Total %	21.1	8	6.6	0	11.3	16	5.2	0.5	1.4	4.7	0.9	0	9.9	14.6	0	0	

	New Chardon St From North					Congress St From East					New Chardon St From South					Merrimack 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 07:30 to 09:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30																					
07:30	4	**3**	2	0	**9**	4	5	1	0	10	0	1	0	0	1	3	2	0	0	5	25
07:45	**7**	1	1	0	9	**5**	4	2	0	11	1	1	**1**	0	3	1	**6**	0	0	7	**30**
08:00	3	2	**3**	0	8	3	**6**	1	0	10	0	1	0	0	1	**4**	5	0	0	**9**	28
08:15	6	1	1	0	8	3	5	**4**	0	**12**	**2**	**3**	0	0	**5**	2	2	0	0	4	29
Total Volume	20	7	7	0	34	15	20	8	0	43	3	6	1	0	10	10	15	0	0	25	112
% App. Total	58.8	20.6	20.6	0		34.9	46.5	18.6	0		30	60	10	0		40	60	0	0		
PHF	.714	.583	.583	.000	.944	.750	.833	.500	.000	.896	.375	.500	.250	.000	.500	.625	.625	.000	.000	.694	.933

Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 2



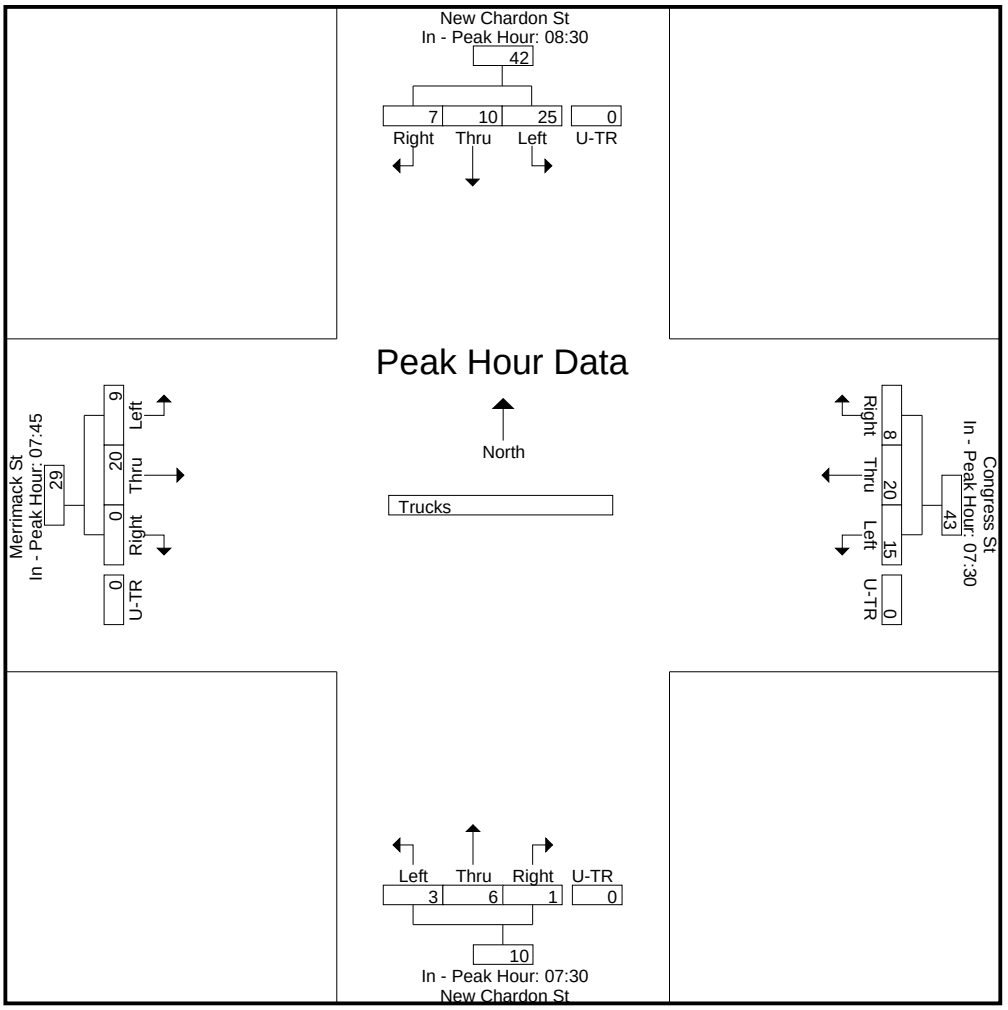
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:30					07:30					07:30					07:45				
+0 mins.	**8**	1	2	0	**11**	4	5	1	0	10	0	1	0	0	1	1	6	0	0	7
+15 mins.	5	**3**	1	0	9	**5**	4	2	0	11	1	1	**1**	0	3	**4**	5	0	0	**9**
+30 mins.	7	3	1	0	11	3	**6**	1	0	10	0	1	0	0	1	2	2	0	0	4
+45 mins.	5	3	**3**	0	11	3	5	**4**	0	**12**	**2**	**3**	0	0	**5**	2	**7**	0	0	9
Total Volume	25	10	7	0	42	15	20	8	0	43	3	6	1	0	10	9	20	0	0	29
% App. Total	59.5	23.8	16.7	0		34.9	46.5	18.6	0		30	60	10	0		31	69	0	0	
PHF	.781	.833	.583	.000	.955	.750	.833	.500	.000	.896	.375	.500	.250	.000	.500	.563	.714	.000	.000	.806

Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
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Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 1

Groups Printed- Bikes Peds

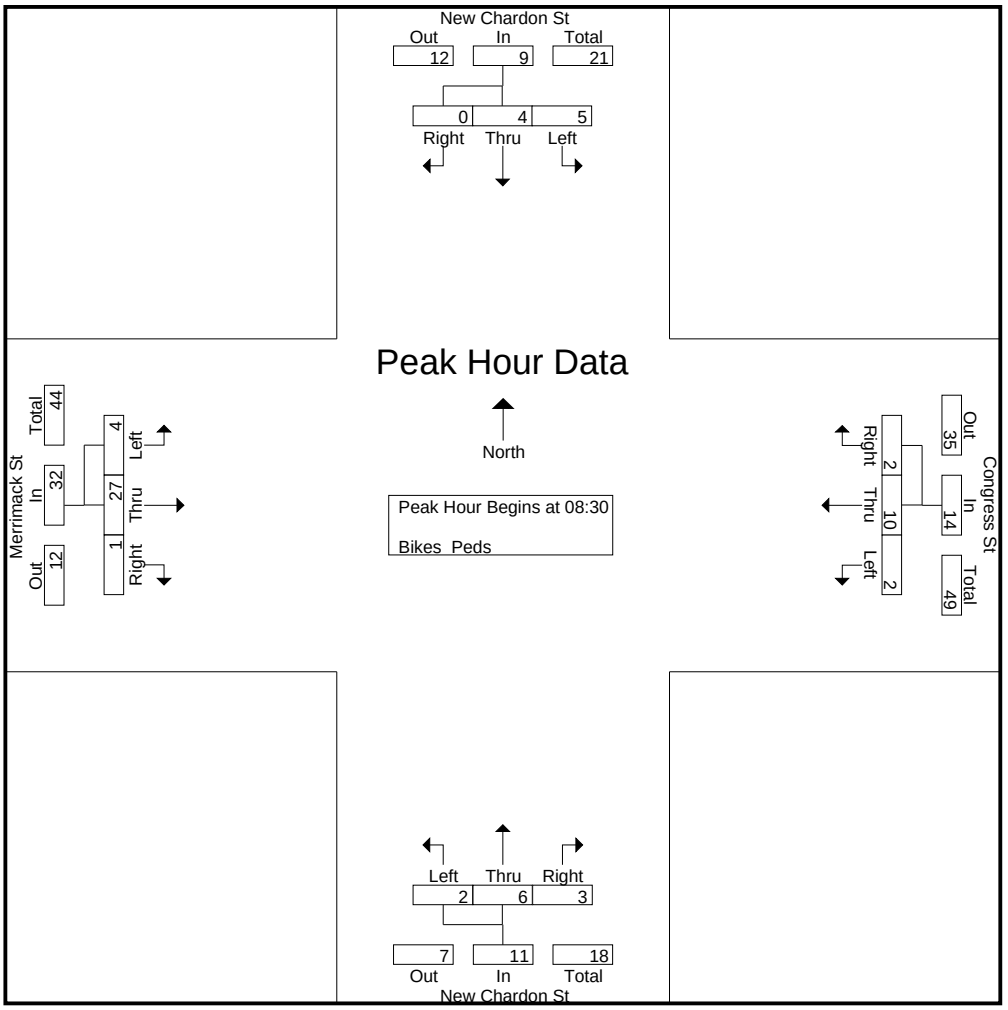
	New Chardon St From North				Congress St From East				New Chardon St From South				Merrimack St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:30	0	0	0	108	0	1	0	28	0	0	0	25	0	4	2	9	170	7	177
07:45	0	0	0	199	3	1	0	53	0	2	2	38	0	10	0	14	304	18	322
Total	0	0	0	307	3	2	0	81	0	2	2	63	0	14	2	23	474	25	499
08:00	1	0	0	175	1	0	1	46	0	0	1	52	1	5	0	17	290	10	300
08:15	0	0	1	237	0	2	1	59	1	1	3	61	0	8	0	27	384	17	401
08:30	1	0	0	283	0	0	0	72	1	1	0	71	2	8	0	35	461	13	474
08:45	1	1	0	153	0	6	0	26	0	0	0	69	0	6	0	61	309	14	323
Total	3	1	1	848	1	8	2	203	2	2	4	253	3	27	0	140	1444	54	1498
09:00	1	1	0	247	2	4	1	37	0	0	2	73	1	8	0	46	403	20	423
09:15	2	2	0	161	0	0	1	41	1	5	1	51	1	5	1	42	295	19	314
Grand Total	6	4	1	1563	6	14	4	362	3	9	9	440	5	54	3	251	2616	118	2734
Apprch %	54.5	36.4	9.1		25	58.3	16.7		14.3	42.9	42.9		8.1	87.1	4.8				
Total %	5.1	3.4	0.8		5.1	11.9	3.4		2.5	7.6	7.6		4.2	45.8	2.5		95.7	4.3	

	New Chardon St From North				Congress St From East				New Chardon St From South				Merrimack 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 07:30 to 09:15 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:30																	
08:30	1	0	0	1	0	0	0	0	**1**	1	0	2	**2**	**8**	0	**10**	13
08:45	1	1	0	2	0	**6**	0	6	0	0	0	0	0	6	0	6	14
09:00	1	1	0	2	**2**	4	**1**	**7**	0	0	**2**	2	1	8	0	9	**20**
09:15	**2**	**2**	0	**4**	0	0	1	1	1	**5**	1	**7**	1	5	**1**	7	19
Total Volume	5	4	0	9	2	10	2	14	2	6	3	11	4	27	1	32	66
% App. Total	55.6	44.4	0		14.3	71.4	14.3		18.2	54.5	27.3		12.5	84.4	3.1		
PHF	.625	.500	.000	.563	.250	.417	.500	.500	.500	.300	.375	.393	.500	.844	.250	.800	.825

Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011



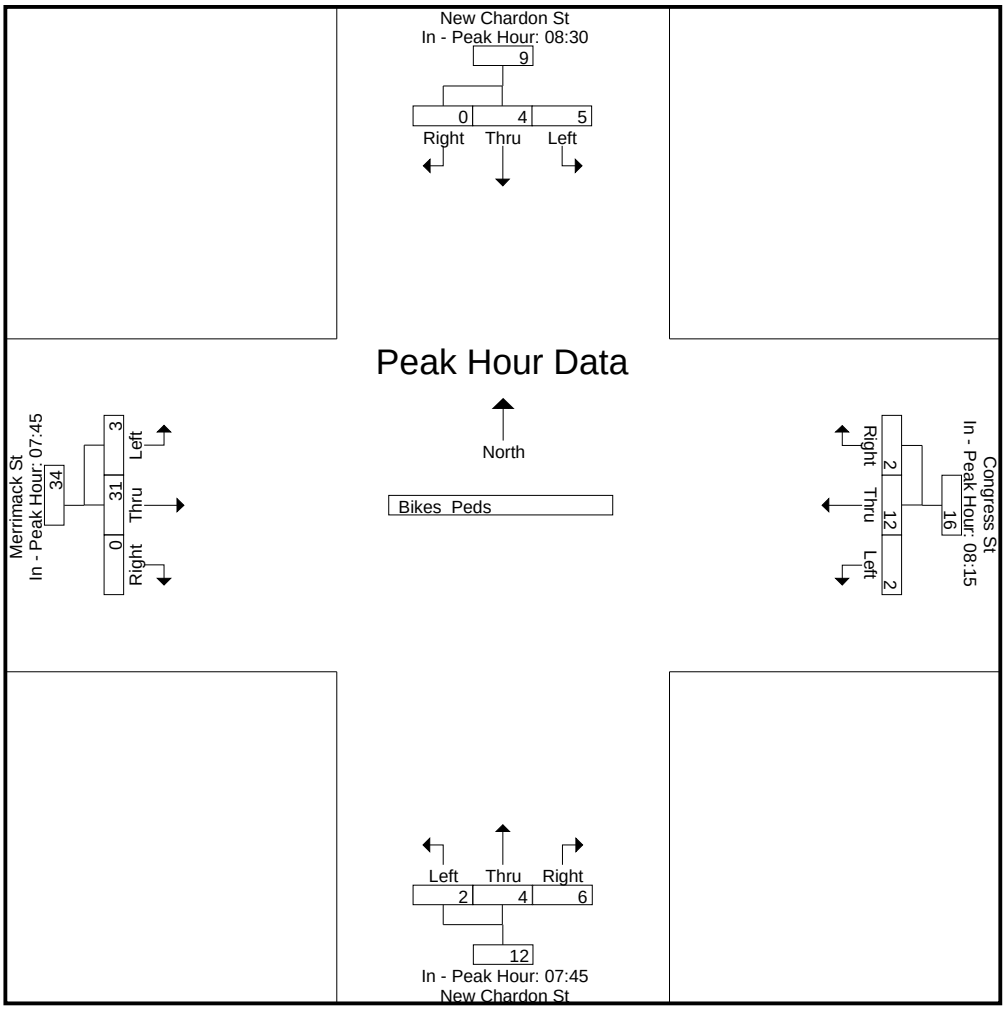
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:30				08:15				07:45				07:45			
+0 mins.	1	0	0	1	0	2	**1**	3	0	**2**	2	4	0	**10**	0	**10**
+15 mins.	1	1	0	2	0	0	0	0	0	0	1	1	1	5	0	6
+30 mins.	1	1	0	2	0	**6**	0	6	**1**	1	**3**	**5**	0	8	0	8
+45 mins.	**2**	**2**	0	**4**	**2**	4	1	**7**	1	1	0	2	**2**	8	0	10
Total Volume	5	4	0	9	2	12	2	16	2	4	6	12	3	31	0	34
% App. Total	55.6	44.4	0		12.5	75	12.5		16.7	33.3	50		8.8	91.2	0	
PHF	.625	.500	.000	.563	.250	.500	.500	.571	.500	.500	.500	.600	.375	.775	.000	.850

Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 1

Groups Printed- Cars - Trucks

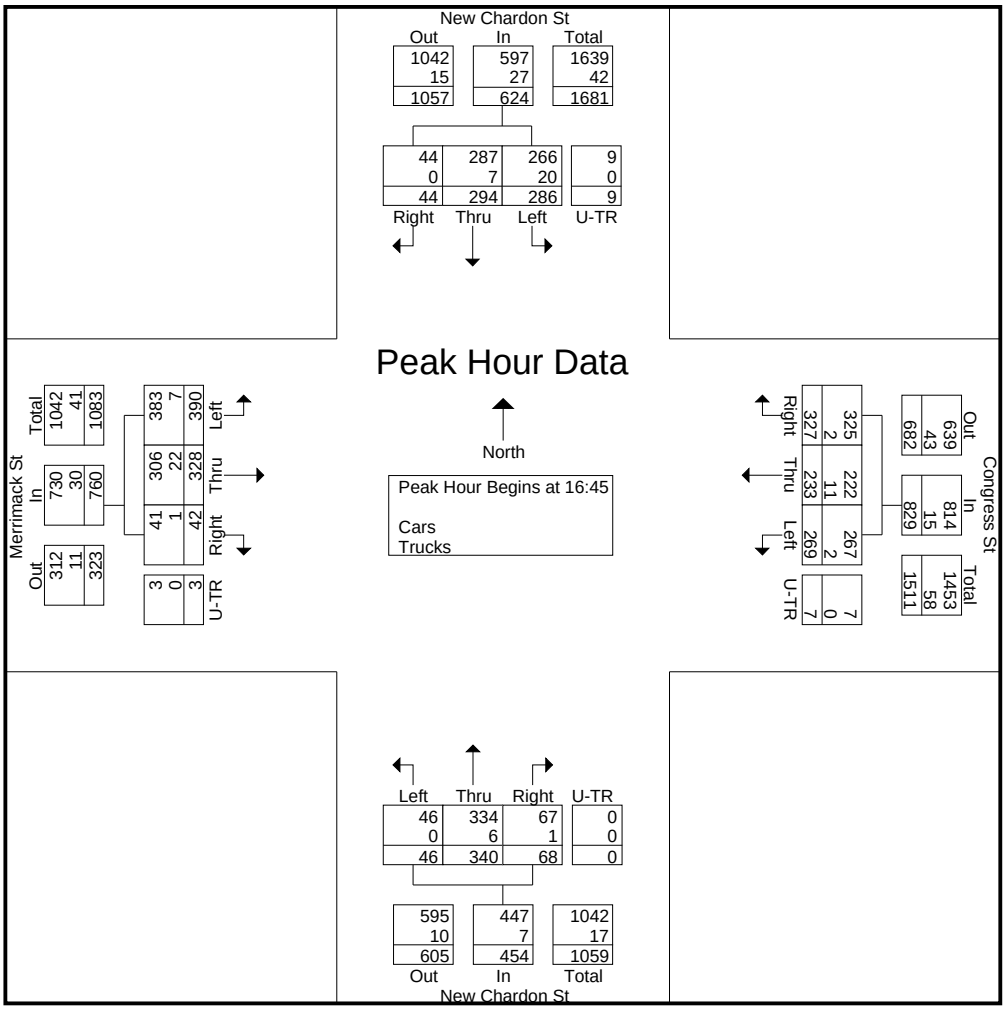
	New Chardon St From North				Congress St From East				New Chardon St From South				Merrimack St From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
16:00	41	49	12	4	65	57	63	1	13	72	15	0	84	82	10	0	568
16:15	56	48	10	0	61	72	66	0	13	72	11	0	99	83	9	0	600
16:30	59	68	16	2	72	62	72	1	14	68	18	0	100	83	8	1	644
16:45	65	67	18	4	53	63	88	3	11	66	21	0	91	76	11	0	637
Total	221	232	56	10	251	254	289	5	51	278	65	0	374	324	38	1	2449
17:00	87	74	10	3	59	62	80	2	14	80	16	0	102	88	9	1	687
17:15	77	79	9	1	77	44	65	1	10	106	13	0	101	85	12	1	681
17:30	57	74	7	1	80	64	94	1	11	88	18	0	96	79	10	1	681
17:45	55	86	9	5	74	43	55	2	8	82	16	0	91	103	6	1	636
Total	276	313	35	10	290	213	294	6	43	356	63	0	390	355	37	4	2685
Grand Total	497	545	91	20	541	467	583	11	94	634	128	0	764	679	75	5	5134
Apprch %	43.1	47.3	7.9	1.7	33.8	29.2	36.4	0.7	11	74.1	15	0	50.2	44.6	4.9	0.3	
Total %	9.7	10.6	1.8	0.4	10.5	9.1	11.4	0.2	1.8	12.3	2.5	0	14.9	13.2	1.5	0.1	
Cars	455	529	91	20	536	441	579	11	93	623	126	0	744	626	72	5	4951
% Cars	91.5	97.1	100	100	99.1	94.4	99.3	100	98.9	98.3	98.4	0	97.4	92.2	96	100	96.4
Trucks	42	16	0	0	5	26	4	0	1	11	2	0	20	53	3	0	183
% Trucks	8.5	2.9	0	0	0.9	5.6	0.7	0	1.1	1.7	1.6	0	2.6	7.8	4	0	3.6

	New Chardon St From North					Congress St From East					New Chardon St From South					Merrimack 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 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:45																					
16:45	65	67	**18**	**4**	154	53	63	88	**3**	207	11	66	**21**	0	98	91	76	11	0	178	637
17:00	**87**	74	10	3	**174**	59	62	80	2	203	**14**	80	16	0	110	**102**	**88**	9	**1**	**200**	**687**
17:15	77	**79**	9	1	166	77	44	65	1	187	10	**106**	13	0	**129**	101	85	**12**	1	199	681
17:30	57	74	7	1	139	**80**	**64**	**94**	1	**239**	11	88	18	0	117	96	79	10	1	186	681
Total Volume	286	294	44	9	633	269	233	327	7	836	46	340	68	0	454	390	328	42	3	763	2686
% App. Total	45.2	46.4	7	1.4		32.2	27.9	39.1	0.8		10.1	74.9	15	0		51.1	43	5.5	0.4		
PHF	.822	.930	.611	.563	.909	.841	.910	.870	.583	.874	.821	.802	.810	.000	.880	.956	.932	.875	.750	.954	.977
Cars	266	287	44	9	606	267	222	325	7	821	46	334	67	0	447	383	306	41	3	733	2607
% Cars	93.0	97.6	100	100	95.7	99.3	95.3	99.4	100	98.2	100	98.2	98.5	0	98.5	98.2	93.3	97.6	100	96.1	97.1
Trucks	20	7	0	0	27	2	11	2	0	15	0	6	1	0	7	7	22	1	0	30	79
% Trucks	7.0	2.4	0	0	4.3	0.7	4.7	0.6	0	1.8	0	1.8	1.5	0	1.5	1.8	6.7	2.4	0	3.9	2.9

Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 2



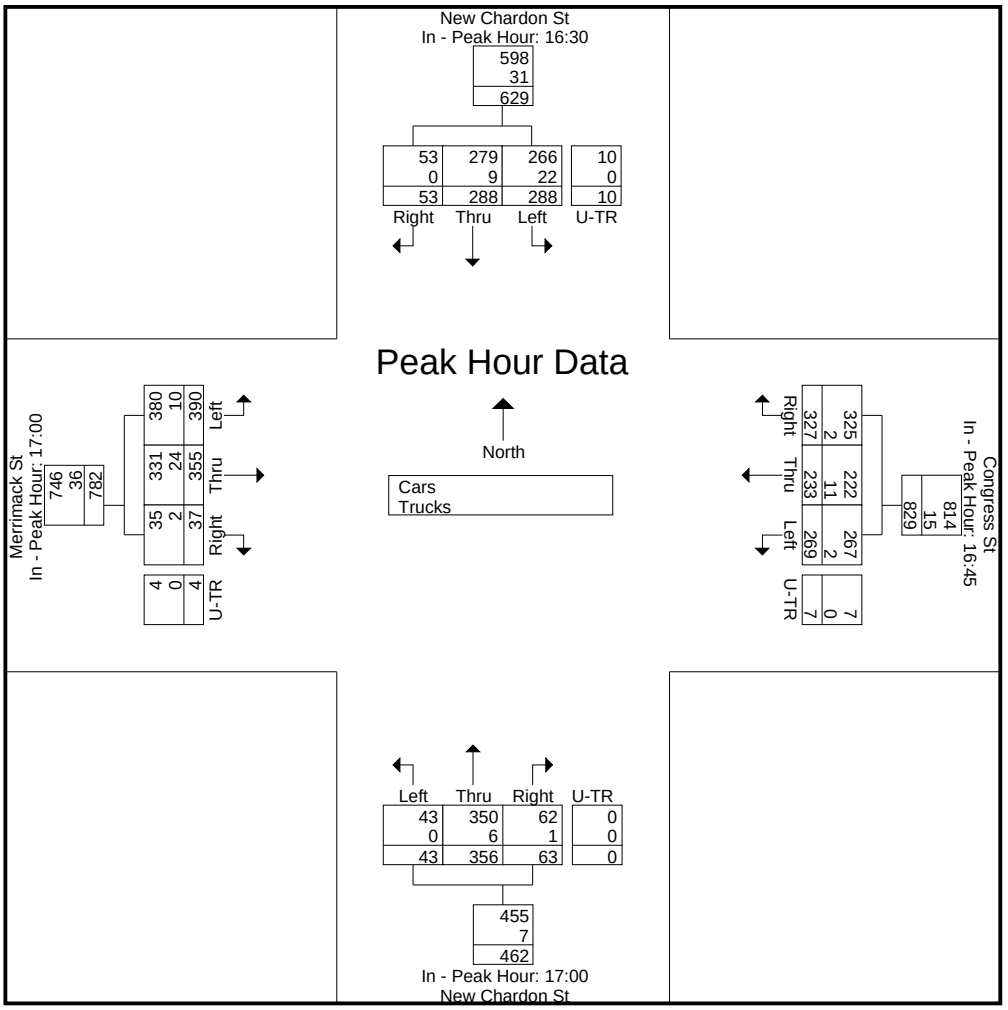
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	16:30					16:45					17:00					17:00				
+0 mins.	59	68	16	2	145	53	63	88	**3**	207	**14**	80	16	0	110	**102**	88	9	**1**	200
+15 mins.	65	67	**18**	**4**	154	59	62	80	2	203	10	**106**	13	0	**129**	101	85	**12**	1	199
+30 mins.	**87**	74	10	3	**174**	77	44	65	1	187	11	88	**18**	0	117	96	79	10	1	186
+45 mins.	77	**79**	9	1	166	**80**	**64**	**94**	1	**239**	8	82	16	0	106	91	**103**	6	1	**201**
Total Volume	288	288	53	10	639	269	233	327	7	836	43	356	63	0	462	390	355	37	4	786
% App. Total	45.1	45.1	8.3	1.6		32.2	27.9	39.1	0.8		9.3	77.1	13.6	0		49.6	45.2	4.7	0.5	
PHF	.828	.911	.736	.625	.918	.841	.910	.870	.583	.874	.768	.840	.875	.000	.895	.956	.862	.771	1.000	.978
Cars	266	279	53	10	608	267	222	325	7	821	43	350	62	0	455	380	331	35	4	750
% Cars	92.4	96.9	100	100	95.1	99.3	95.3	99.4	100	98.2	100	98.3	98.4	0	98.5	97.4	93.2	94.6	100	95.4
Trucks	22	9	0	0	31	2	11	2	0	15	0	6	1	0	7	10	24	2	0	36
% Trucks	7.6	3.1	0	0	4.9	0.7	4.7	0.6	0	1.8	0	1.7	1.6	0	1.5	2.6	6.8	5.4	0	4.6

Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 1

Groups Printed- Cars

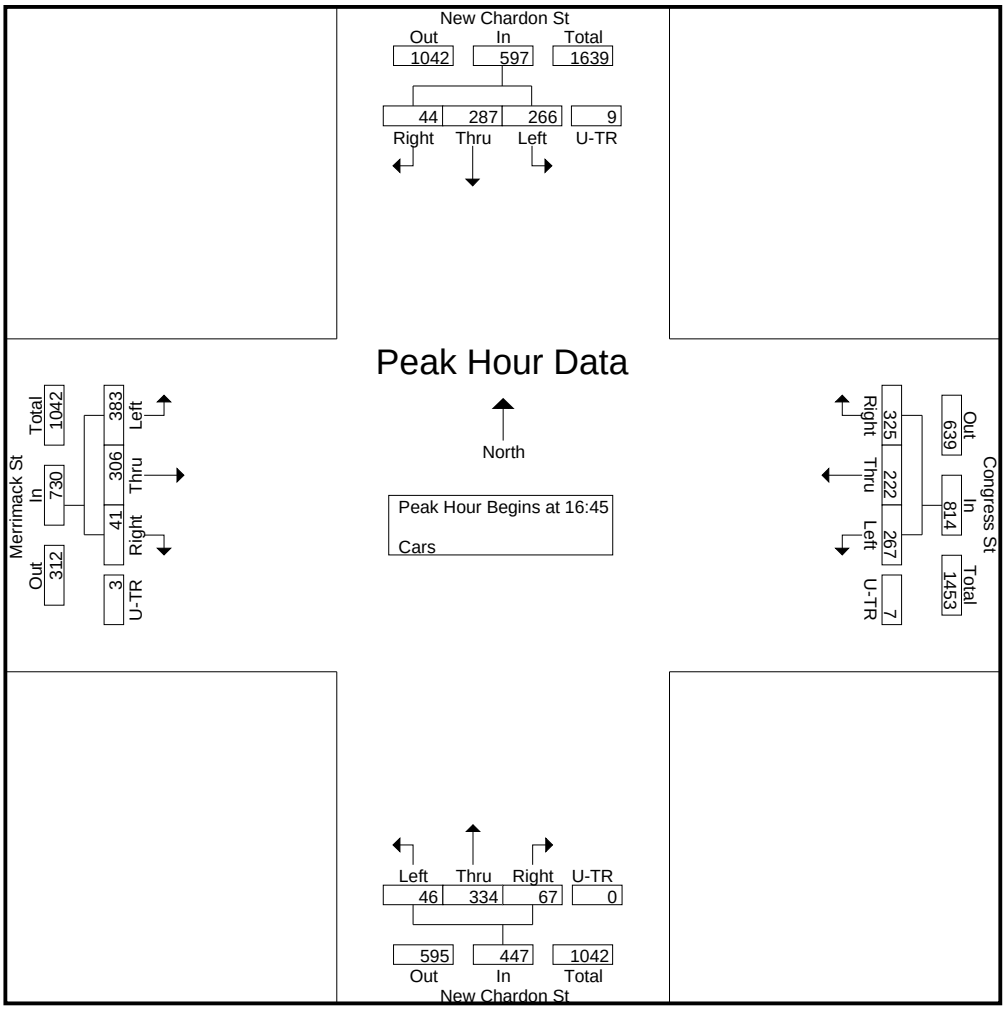
	New Chardon St From North				Congress St From East				New Chardon St From South				Merrimack St From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
16:00	35	46	12	4	64	56	63	1	13	69	15	0	81	73	10	0	542
16:15	49	46	10	0	61	68	66	0	13	72	10	0	97	77	8	0	577
16:30	52	66	16	2	71	55	70	1	13	67	18	0	96	75	8	1	611
16:45	61	64	18	4	52	60	88	3	11	65	21	0	90	70	11	0	618
Total	197	222	56	10	248	239	287	5	50	273	64	0	364	295	37	1	2348
17:00	81	74	10	3	59	59	79	2	14	79	16	0	101	80	8	1	666
17:15	72	75	9	1	76	43	64	1	10	103	13	0	99	81	12	1	660
17:30	52	74	7	1	80	60	94	1	11	87	17	0	93	75	10	1	663
17:45	53	84	9	5	73	40	55	2	8	81	16	0	87	95	5	1	614
Total	258	307	35	10	288	202	292	6	43	350	62	0	380	331	35	4	2603
Grand Total	455	529	91	20	536	441	579	11	93	623	126	0	744	626	72	5	4951
Apprch %	41.6	48.3	8.3	1.8	34.2	28.1	36.9	0.7	11	74	15	0	51.4	43.3	5	0.3	
Total %	9.2	10.7	1.8	0.4	10.8	8.9	11.7	0.2	1.9	12.6	2.5	0	15	12.6	1.5	0.1	

	New Chardon St From North					Congress St From East					New Chardon St From South					Merrimack 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 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:45																					
16:45	61	64	**18**	**4**	147	52	**60**	88	**3**	203	11	65	**21**	0	97	90	70	11	0	171	618
17:00	**81**	74	10	3	**168**	59	59	79	2	199	**14**	79	16	0	109	**101**	80	8	**1**	190	**666**
17:15	72	**75**	9	1	157	76	43	64	1	184	10	**103**	13	0	**126**	99	**81**	**12**	1	**193**	660
17:30	52	74	7	1	134	**80**	60	**94**	1	**235**	11	87	17	0	115	93	75	10	1	179	663
Total Volume	266	287	44	9	606	267	222	325	7	821	46	334	67	0	447	383	306	41	3	733	2607
% App. Total	43.9	47.4	7.3	1.5		32.5	27	39.6	0.9		10.3	74.7	15	0		52.3	41.7	5.6	0.4		
PHF	.821	.957	.611	.563	.902	.834	.925	.864	.583	.873	.821	.811	.798	.000	.887	.948	.944	.854	.750	.949	.979

Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 2



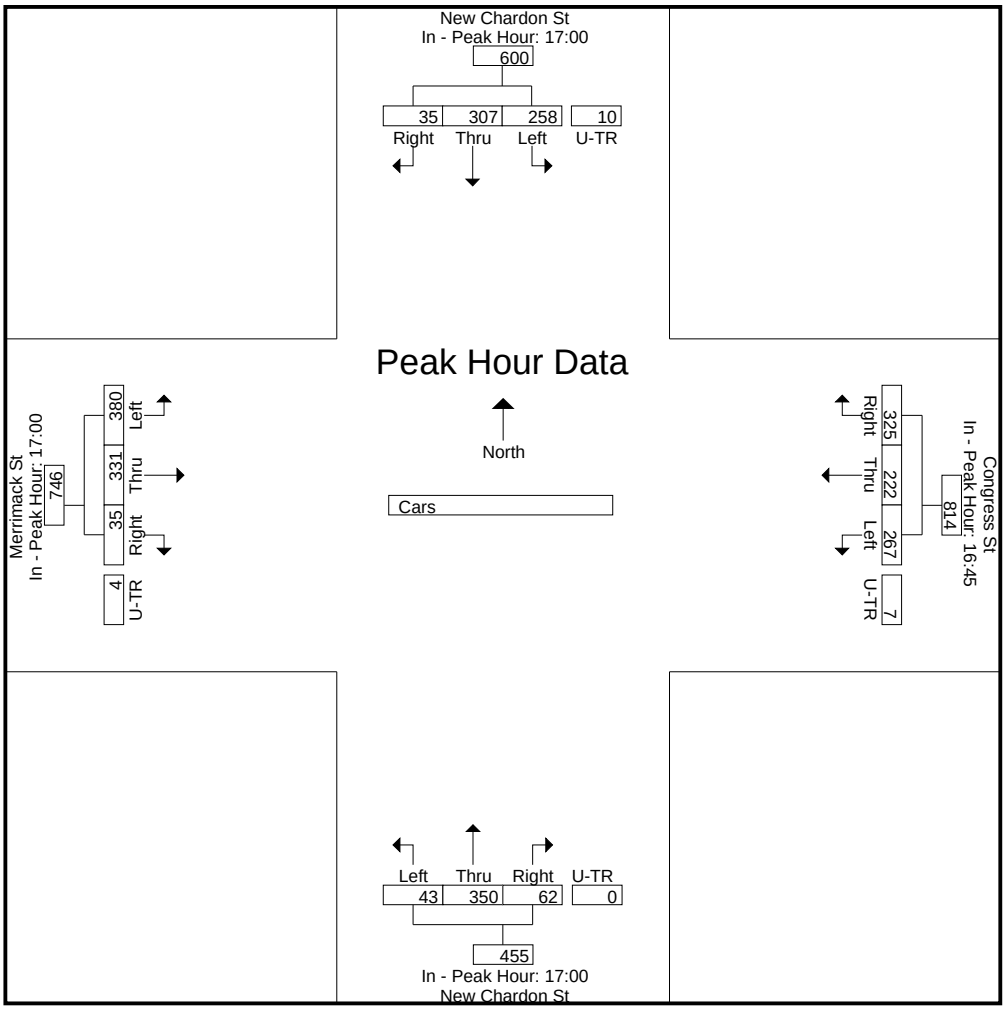
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	17:00					16:45					17:00					17:00				
+0 mins.	**81**	74	**10**	3	**168**	52	**60**	88	**3**	203	**14**	79	16	0	109	**101**	80	8	**1**	190
+15 mins.	72	75	9	1	157	59	59	79	2	199	10	**103**	13	0	**126**	99	81	**12**	1	**193**
+30 mins.	52	74	7	1	134	76	43	64	1	184	11	87	**17**	0	115	93	75	10	1	179
+45 mins.	53	**84**	9	**5**	151	**80**	60	**94**	1	**235**	8	81	16	0	105	87	**95**	5	1	188
Total Volume	258	307	35	10	610	267	222	325	7	821	43	350	62	0	455	380	331	35	4	750
% App. Total	42.3	50.3	5.7	1.6		32.5	27	39.6	0.9		9.5	76.9	13.6	0		50.7	44.1	4.7	0.5	
PHF	.796	.914	.875	.500	.908	.834	.925	.864	.583	.873	.768	.850	.912	.000	.903	.941	.871	.729	1.000	.972

Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 1

Groups Printed- Trucks

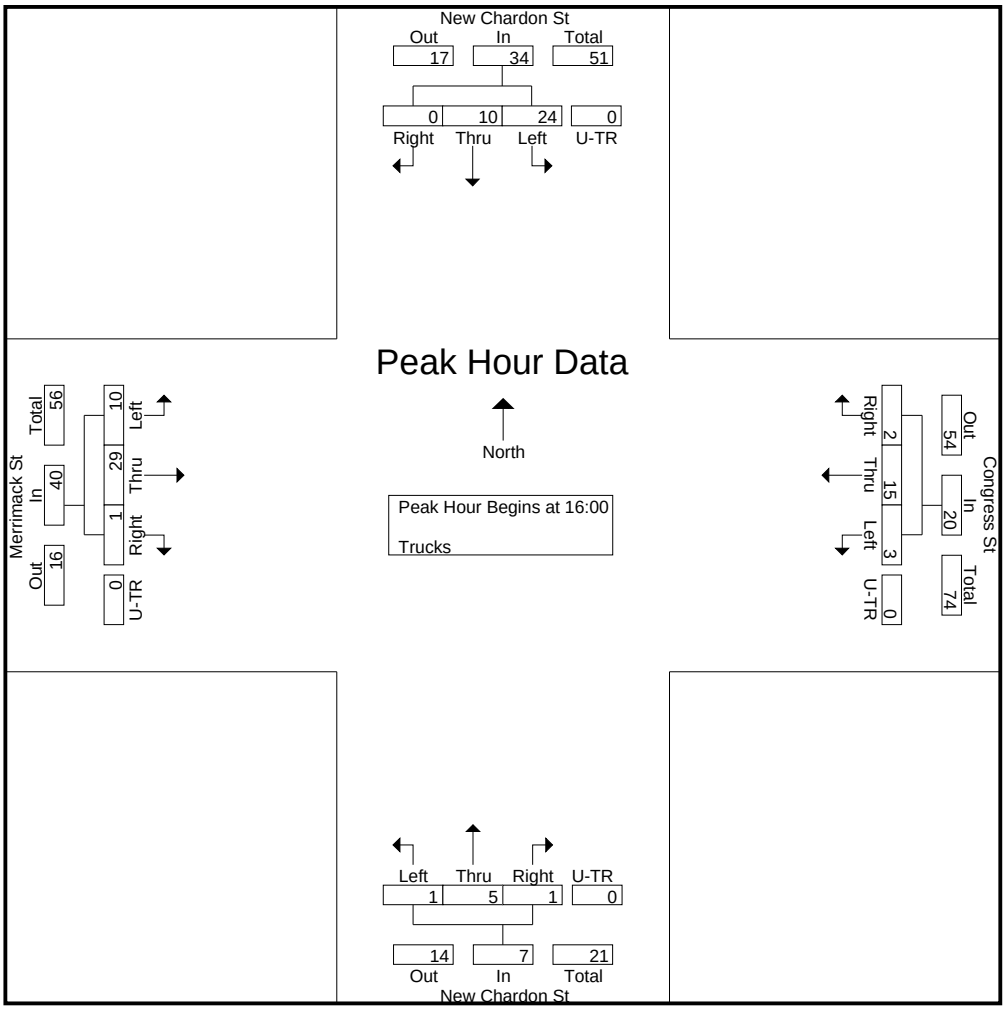
	New Chardon St From North				Congress St From East				New Chardon St From South				Merrimack St From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
16:00	6	3	0	0	1	1	0	0	0	3	0	0	3	9	0	0	26
16:15	7	2	0	0	0	4	0	0	0	0	1	0	2	6	1	0	23
16:30	7	2	0	0	1	7	2	0	1	1	0	0	4	8	0	0	33
16:45	4	3	0	0	1	3	0	0	0	1	0	0	1	6	0	0	19
Total	24	10	0	0	3	15	2	0	1	5	1	0	10	29	1	0	101
17:00	6	0	0	0	0	3	1	0	0	1	0	0	1	8	1	0	21
17:15	5	4	0	0	1	1	1	0	0	3	0	0	2	4	0	0	21
17:30	5	0	0	0	0	4	0	0	0	1	1	0	3	4	0	0	18
17:45	2	2	0	0	1	3	0	0	0	1	0	0	4	8	1	0	22
Total	18	6	0	0	2	11	2	0	0	6	1	0	10	24	2	0	82
Grand Total	42	16	0	0	5	26	4	0	1	11	2	0	20	53	3	0	183
Apprch %	72.4	27.6	0	0	14.3	74.3	11.4	0	7.1	78.6	14.3	0	26.3	69.7	3.9	0	
Total %	23	8.7	0	0	2.7	14.2	2.2	0	0.5	6	1.1	0	10.9	29	1.6	0	

	New Chardon St From North					Congress St From East					New Chardon St From South					Merrimack 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 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	6	**3**	0	0	**9**	**1**	1	0	0	2	0	**3**	0	0	**3**	3	**9**	0	0	**12**	26
16:15	**7**	2	0	0	9	0	4	0	0	4	0	0	**1**	0	1	2	6	**1**	0	9	23
16:30	7	2	0	0	9	1	**7**	**2**	0	**10**	**1**	1	0	0	2	**4**	8	0	0	12	**33**
16:45	4	3	0	0	7	1	3	0	0	4	0	1	0	0	1	1	6	0	0	7	19
Total Volume	24	10	0	0	34	3	15	2	0	20	1	5	1	0	7	10	29	1	0	40	101
% App. Total	70.6	29.4	0	0		15	75	10	0		14.3	71.4	14.3	0		25	72.5	2.5	0		
PHF	.857	.833	.000	.000	.944	.750	.536	.250	.000	.500	.250	.417	.250	.000	.583	.625	.806	.250	.000	.833	.765

Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 2



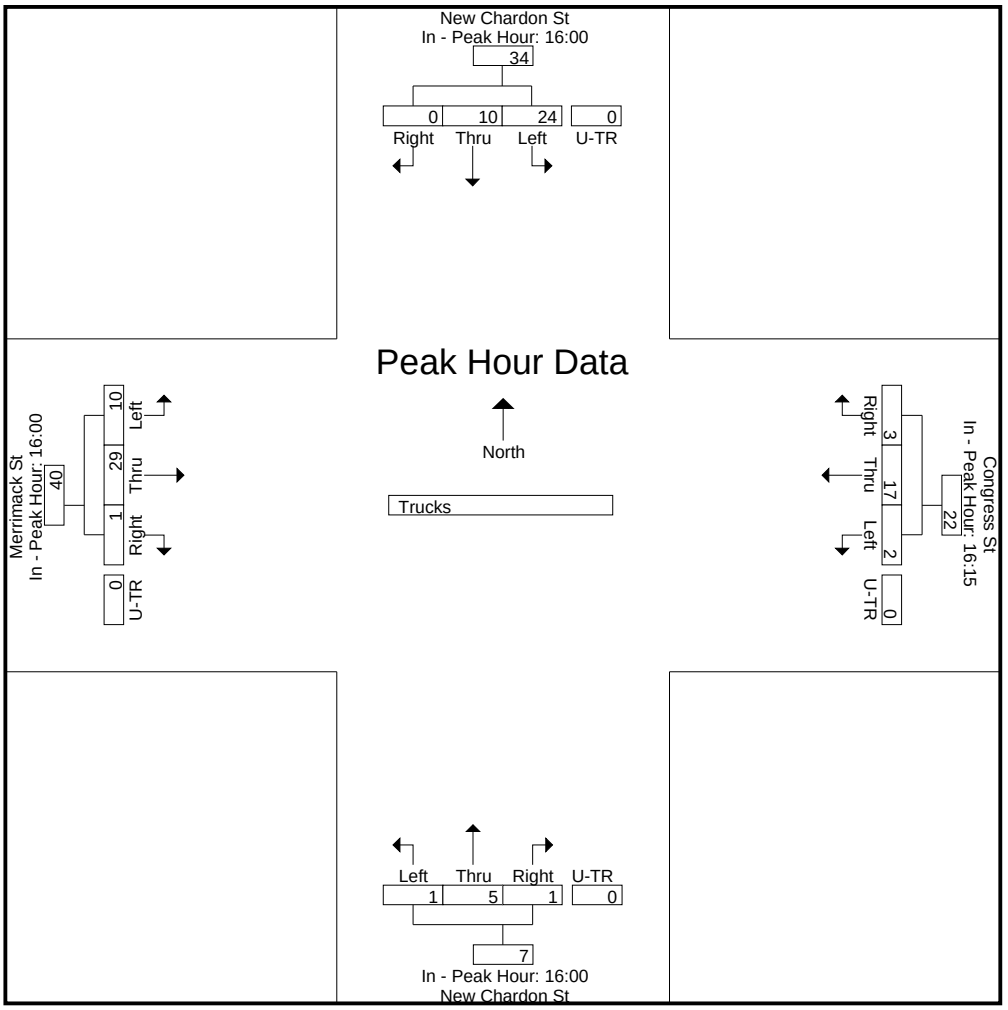
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	16:00					16:15					16:00					16:00				
+0 mins.	6	**3**	0	0	**9**	0	4	0	0	4	0	**3**	0	0	**3**	3	**9**	0	0	**12**
+15 mins.	**7**	2	0	0	9	**1**	**7**	**2**	0	**10**	0	0	**1**	0	1	2	6	**1**	0	9
+30 mins.	7	2	0	0	9	1	3	0	0	4	**1**	1	0	0	2	**4**	8	0	0	12
+45 mins.	4	3	0	0	7	0	3	1	0	4	0	1	0	0	1	1	6	0	0	7
Total Volume	24	10	0	0	34	2	17	3	0	22	1	5	1	0	7	10	29	1	0	40
% App. Total	70.6	29.4	0	0		9.1	77.3	13.6	0		14.3	71.4	14.3	0		25	72.5	2.5	0	
PHF	.857	.833	.000	.000	.944	.500	.607	.375	.000	.550	.250	.417	.250	.000	.583	.625	.806	.250	.000	.833

Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 1

Groups Printed- Bikes Peds

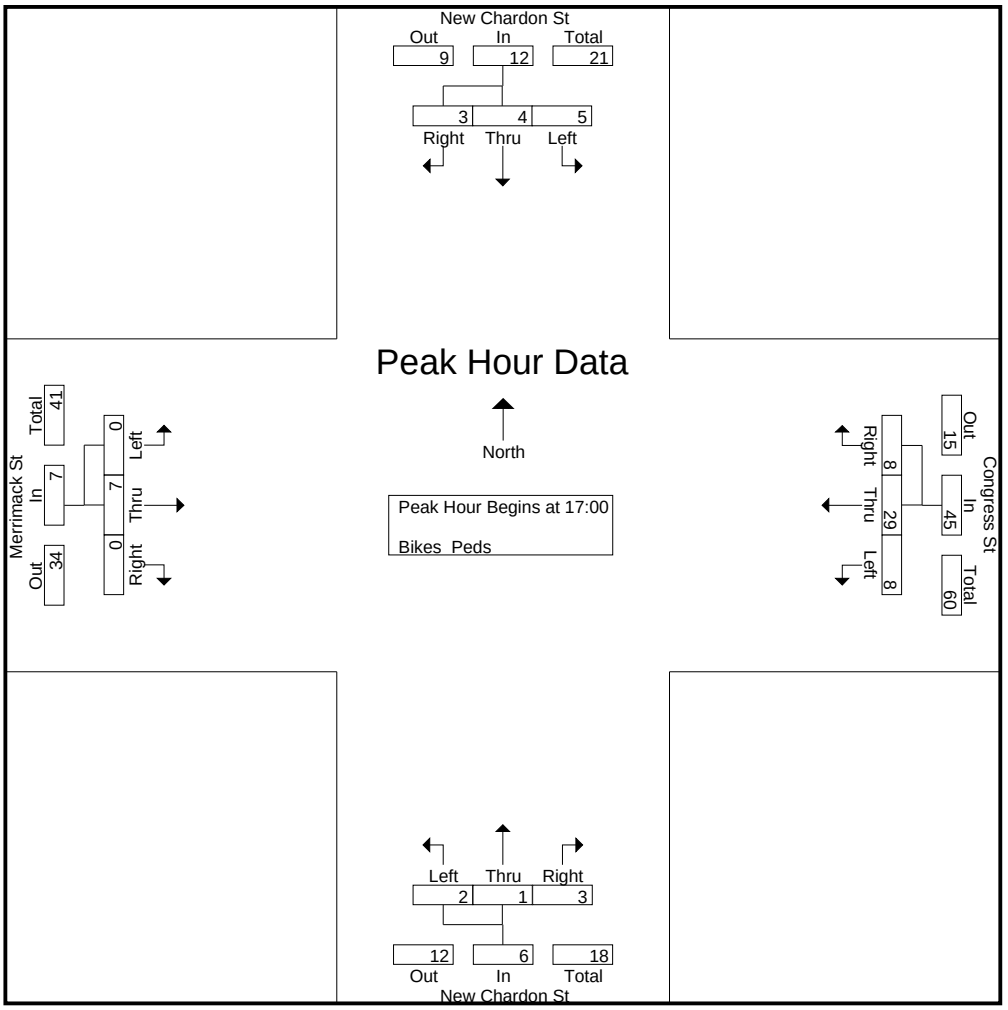
	New Chardon St From North				Congress St From East				New Chardon St From South				Merrimack St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
16:00	3	0	0	159	3	1	3	48	0	0	1	38	1	3	0	14	259	15	274
16:15	1	0	0	144	0	3	1	59	1	0	2	26	1	0	0	20	249	9	258
16:30	1	0	0	228	1	3	0	36	0	1	5	23	0	3	1	24	311	15	326
16:45	1	0	1	220	1	7	0	39	0	0	0	19	0	2	0	19	297	12	309
Total	6	0	1	751	5	14	4	182	1	1	8	106	2	8	1	77	1116	51	1167
17:00	1	1	1	350	2	7	0	65	1	0	1	20	0	4	0	17	452	18	470
17:15	1	1	0	306	0	4	2	66	0	0	0	21	0	0	0	20	413	8	421
17:30	2	0	1	250	3	14	2	59	1	1	2	16	0	1	0	7	332	27	359
17:45	1	2	1	168	3	4	4	48	0	0	0	9	0	2	0	14	239	17	256
Total	5	4	3	1074	8	29	8	238	2	1	3	66	0	7	0	58	1436	70	1506
Grand Total	11	4	4	1825	13	43	12	420	3	2	11	172	2	15	1	135	2552	121	2673
Apprch %	57.9	21.1	21.1		19.1	63.2	17.6		18.8	12.5	68.8		11.1	83.3	5.6				
Total %	9.1	3.3	3.3		10.7	35.5	9.9		2.5	1.7	9.1		1.7	12.4	0.8		95.5	4.5	

	New Chardon St From North				Congress St From East				New Chardon St From South				Merrimack 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 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	1	1	**1**	3	2	7	0	9	**1**	0	1	2	0	**4**	0	**4**	18
17:15	1	1	0	2	0	4	2	6	0	0	0	0	0	0	0	0	8
17:30	**2**	0	1	3	**3**	**14**	2	**19**	1	**1**	**2**	**4**	0	1	0	1	**27**
17:45	1	**2**	1	**4**	3	4	**4**	11	0	0	0	0	0	2	0	2	17
Total Volume	5	4	3	12	8	29	8	45	2	1	3	6	0	7	0	7	70
% App. Total	41.7	33.3	25		17.8	64.4	17.8		33.3	16.7	50		0	100	0		
PHF	.625	.500	.750	.750	.667	.518	.500	.592	.500	.250	.375	.375	.000	.438	.000	.438	.648

Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 2



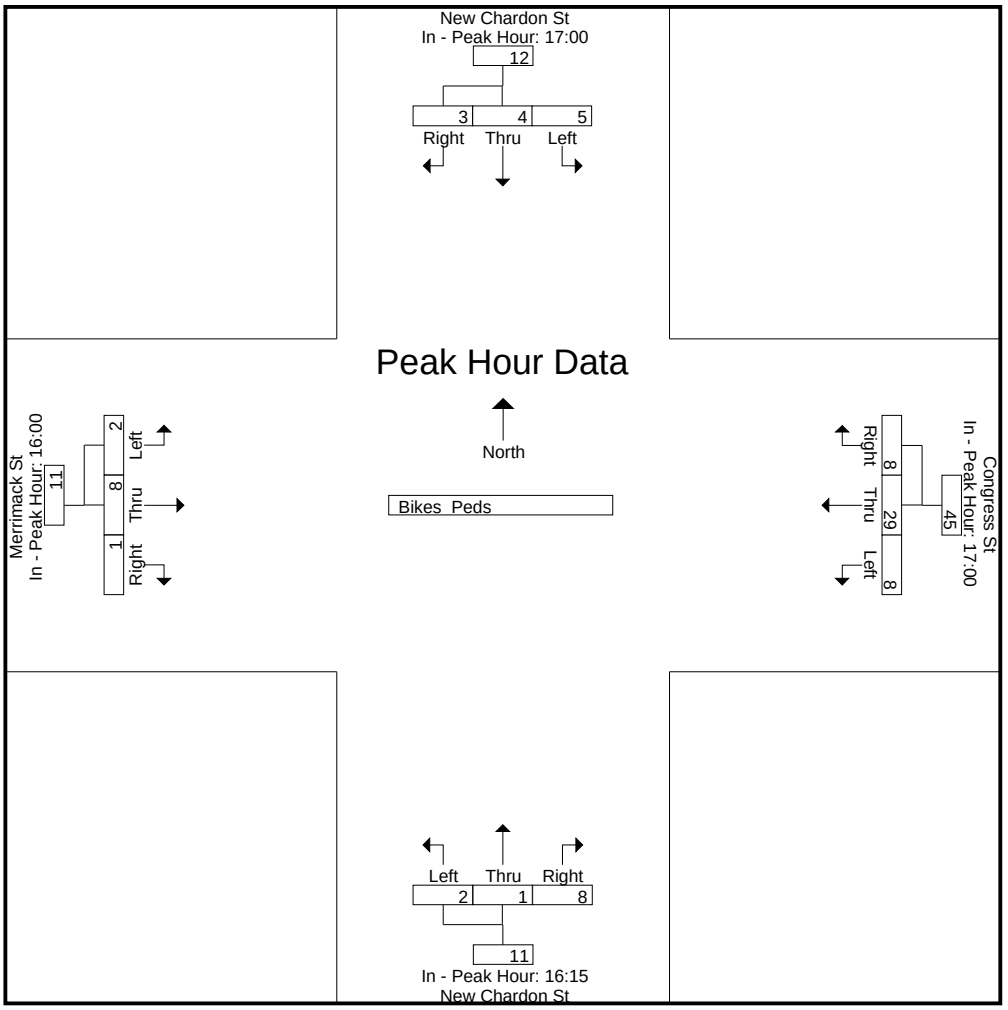
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	17:00				17:00				16:15				16:00			
+0 mins.	1	1	**1**	3	2	7	0	9	**1**	0	2	3	**1**	**3**	0	**4**
+15 mins.	1	1	0	2	0	4	2	6	0	**1**	**5**	**6**	1	0	0	1
+30 mins.	**2**	0	1	3	**3**	**14**	2	**19**	0	0	0	0	0	3	**1**	4
+45 mins.	1	**2**	1	**4**	3	4	**4**	11	1	0	1	2	0	2	0	2
Total Volume	5	4	3	12	8	29	8	45	2	1	8	11	2	8	1	11
% App. Total	41.7	33.3	25		17.8	64.4	17.8		18.2	9.1	72.7		18.2	72.7	9.1	
PHF	.625	.500	.750	.750	.667	.518	.500	.592	.500	.250	.400	.458	.500	.667	.250	.688

Accurate Counts
978-664-2565

N/S Street : New Chardon Street
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 15410009
Site Code : 15410009
Start Date : 6/16/2011
Page No : 3



Accurate Counts

978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 1

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Groups Printed- Cars - Trucks

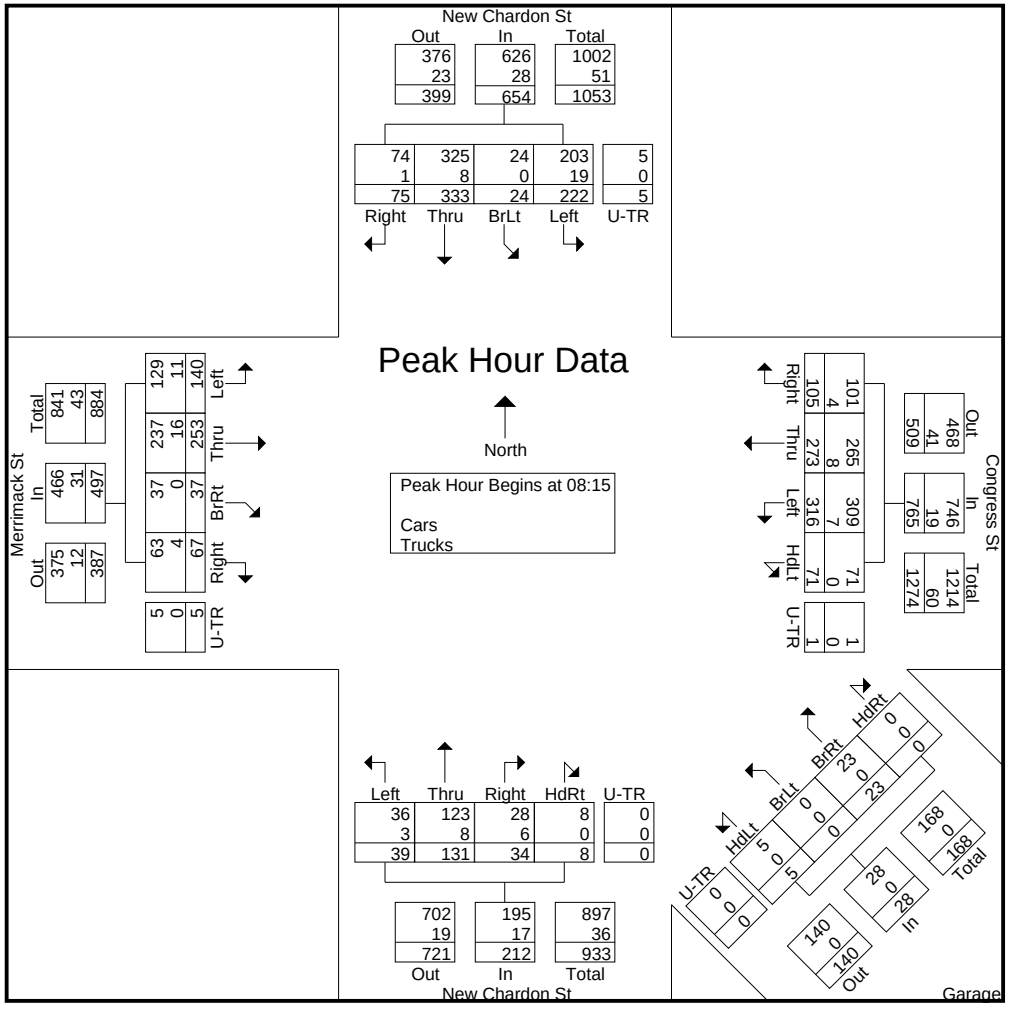
	New Chardon St From North					Congress St From East					Garage From Southeast					New Chardon St From South					Merrimack St From West					
Start Time	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	U-TR	Left	Thru	Right	HdRt	U-TR	Left	Thru	BrRt	Right	U-TR	Int. Total
07:30	56	5	73	18	0	13	54	73	26	0	1	0	8	0	0	6	27	5	1	0	23	31	6	4	0	430
07:45	49	1	90	22	3	14	71	72	33	1	1	0	6	0	0	4	15	8	0	0	32	32	3	11	2	470
Total	105	6	163	40	3	27	125	145	59	1	2	0	14	0	0	10	42	13	1	0	55	63	9	15	2	900
08:00	56	3	64	15	1	15	63	50	21	1	0	0	6	0	0	8	21	3	1	0	32	37	6	10	1	414
08:15	58	4	87	15	2	15	77	74	23	0	0	0	7	0	0	7	36	5	1	0	39	48	6	15	1	520
08:30	53	4	82	20	2	12	74	66	30	1	1	0	8	0	0	9	38	12	0	0	41	58	4	15	0	530
08:45	54	11	92	20	1	26	85	71	34	0	1	0	5	0	0	10	33	9	3	0	37	61	15	6	1	575
Total	221	22	325	70	6	68	299	261	108	2	2	0	26	0	0	34	128	29	5	0	149	204	31	46	3	2039
09:00	57	5	72	20	0	18	80	62	18	0	3	0	3	0	0	13	24	8	4	0	23	86	12	31	3	542
09:15	52	15	69	19	0	30	76	77	23	1	1	0	3	0	0	6	20	9	5	0	30	59	10	11	4	520
Grand Total	435	48	629	149	9	143	580	545	208	4	8	0	46	0	0	63	214	59	15	0	257	412	62	103	12	4001
Apprch %	34.3	3.8	49.5	11.7	0.7	9.7	39.2	36.8	14.1	0.3	14.8	0	85.2	0	0	17.9	61	16.8	4.3	0	30.4	48.7	7.3	12.2	1.4	
Total %	10.9	1.2	15.7	3.7	0.2	3.6	14.5	13.6	5.2	0.1	0.2	0	1.1	0	0	1.6	5.3	1.5	0.4	0	6.4	10.3	1.5	2.6	0.3	
Cars	398	48	613	147	9	143	563	525	202	4	8	0	46	0	0	60	206	50	15	0	233	378	62	98	12	3820
% Cars	91.5	100	97.5	98.7	100	100	97.1	96.3	97.1	100	100	0	100	0	0	95.2	96.3	84.7	100	0	90.7	91.7	100	95.1	100	95.5
Trucks	37	0	16	2	0	0	17	20	6	0	0	0	0	0	0	3	8	9	0	0	24	34	0	5	0	181
% Trucks	8.5	0	2.5	1.3	0	0	2.9	3.7	2.9	0	0	0	0	0	0	4.8	3.7	15.3	0	0	9.3	8.3	0	4.9	0	4.5

	New Chardon St From North						Congress St From East						Garage From Southeast						New Chardon St From South						Merrimack St From West						
Start Time	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	Left	Thru	BrRt	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 08:15																															
08:15	**58**	4	87	15	**2**	166	15	77	**74**	23	0	189	0	0	7	0	0	7	7	36	5	1	0	49	39	48	6	15	1	109	520
08:30	53	4	82	**20**	2	161	12	74	66	30	**1**	183	1	0	**8**	0	0	**9**	9	**38**	**12**	0	0	**59**	**41**	58	4	15	0	118	530
08:45	54	**11**	**92**	20	1	**178**	**26**	**85**	71	**34**	0	**216**	1	0	5	0	0	6	10	33	9	3	0	55	37	61	**15**	6	1	120	**575**
09:00	57	5	72	20	0	154	18	80	62	18	0	178	**3**	0	3	0	0	6	**13**	24	8	**4**	0	49	23	**86**	12	**31**	**3**	**155**	542
Total Volume	222	24	333	75	5	659	71	316	273	105	1	766	5	0	23	0	0	28	39	131	34	8	0	212	140	253	37	67	5	502	2167
% App. Total	33.7	3.6	50.5	11.4	0.8		9.3	41.3	35.6	13.7	0.1		17.9	0	82.1	0	0		18.4	61.8	16	3.8	0		27.9	50.4	7.4	13.3	1		
PHF	.957	.545	.905	.938	.625	.926	.683	.929	.922	.772	.250	.887	.417	.000	.719	.000	.000	.778	.750	.862	.708	.500	.000	.898	.854	.735	.617	.540	.417	.810	.942
Cars	203	24	325	74	5	631	71	309	265	101	1	747	5	0	23	0	0	28	36	123	28	8	0	195	129	237	37	63	5	471	2072
% Cars	91.4	100	97.6	98.7	100	95.8	100	97.8	97.1	96.2	100	97.5	100	0	100	0	0	100	92.3	93.9	82.4	100	0	92.0	92.1	93.7	100	94.0	100	93.8	95.6
Trucks	19	0	8	1	0	28	0	7	8	4	0	19	0	0	0	0	0	0	3	8	6	0	0	17	11	16	0	4	0	31	95
% Trucks	8.6	0	2.4	1.3	0	4.2	0	2.2	2.9	3.8	0	2.5	0	0	0	0	0	0	7.7	6.1	17.6	0	0	8.0	7.9	6.3	0	6.0	0	6.2	4.4

Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

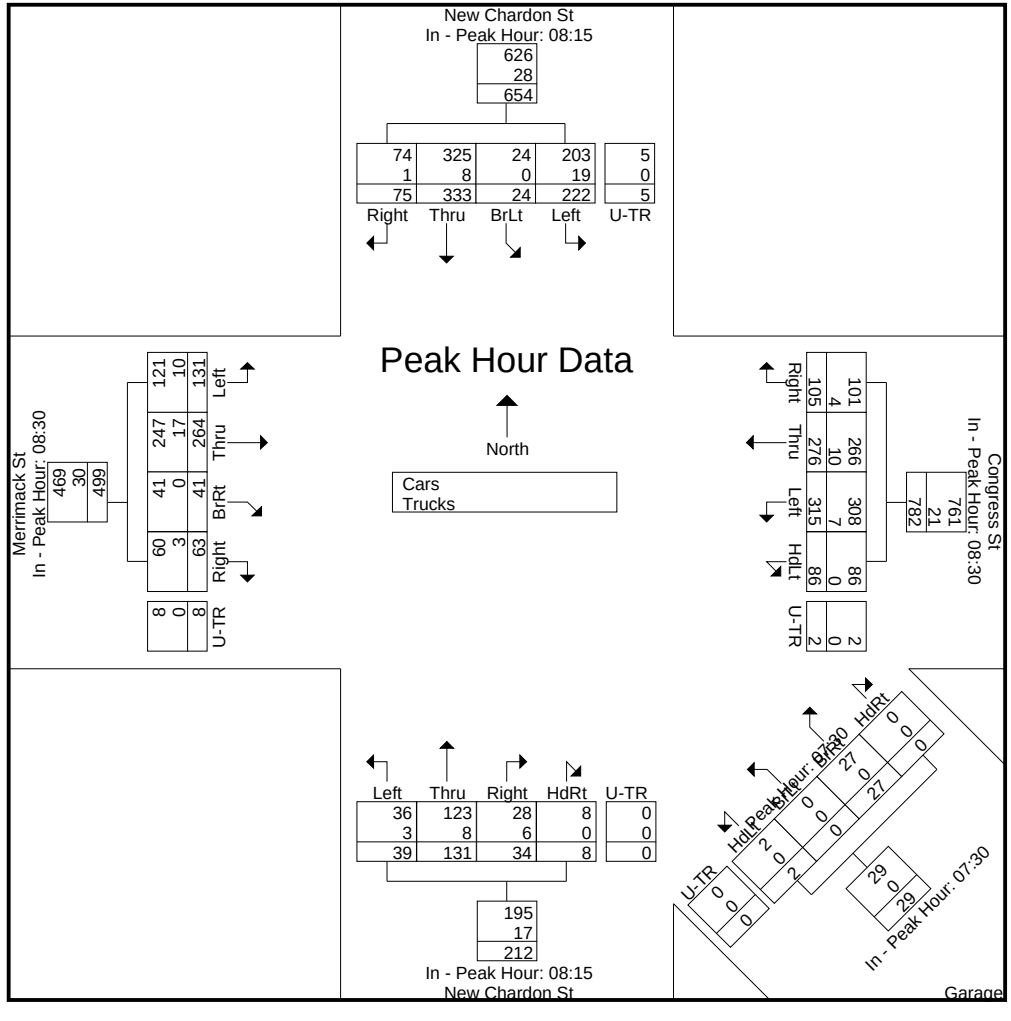
File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 2



Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:15						08:30						07:30						08:15						08:30					
+0 mins.	**58**	4	87	15	**2**	166	12	74	66	30	**1**	183	**1**	0	**8**	0	0	**9**	7	36	5	1	0	49	**41**	58	4	15	0	118
+15 mins.	53	4	82	**20**	2	161	26	**85**	71	**34**	0	**216**	1	0	6	0	0	7	9	**38**	**12**	0	0	**59**	37	61	**15**	6	1	120
+30 mins.	54	**11**	**92**	20	1	**178**	18	80	62	18	0	178	0	0	6	0	0	6	10	33	9	3	0	55	23	**86**	12	**31**	3	**155**
+45 mins.	57	5	72	20	0	154	**30**	76	**77**	23	1	207	0	0	7	0	0	7	**13**	24	8	**4**	0	49	30	59	10	11	**4**	114
Total Volume	222	24	333	75	5	659	86	315	276	105	2	784	2	0	27	0	0	29	39	131	34	8	0	212	131	264	41	63	8	507
% App. Total	33.7	3.6	50.5	11.4	0.8		11	40.2	35.2	13.4	0.3		6.9	0	93.1	0	0		18.4	61.8	16	3.8	0		25.8	52.1	8.1	12.4	1.6	
PHF	.957	.545	.905	.938	.625	.926	.717	.926	.896	.772	.500	.907	.500	.000	.844	.000	.000	.806	.750	.862	.708	.500	.000	.898	.799	.767	.683	.508	.500	.818
Cars	203	24	325	74	5	631	86	308	266	101	2	763	2	0	27	0	0	29	36	123	28	8	0	195	121	247	41	60	8	477
% Cars	91.4	100	97.6	98.7	100	95.8	100	97.8	96.4	96.2	100	97.3	100	0	100	0	0	100	92.3	93.9	82.4	100	0	92	92.4	93.6	100	95.2	100	94.1

% Trucks	8.6	0	2.4	1.3	0	4.2	0	2.2	3.6	3.8	0	2.7	0	0	0	0	0	0	7.7	6.1	17.6	0	0	8	7.6	6.4	0	4.8	0	5.9



Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 1

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Groups Printed- Cars

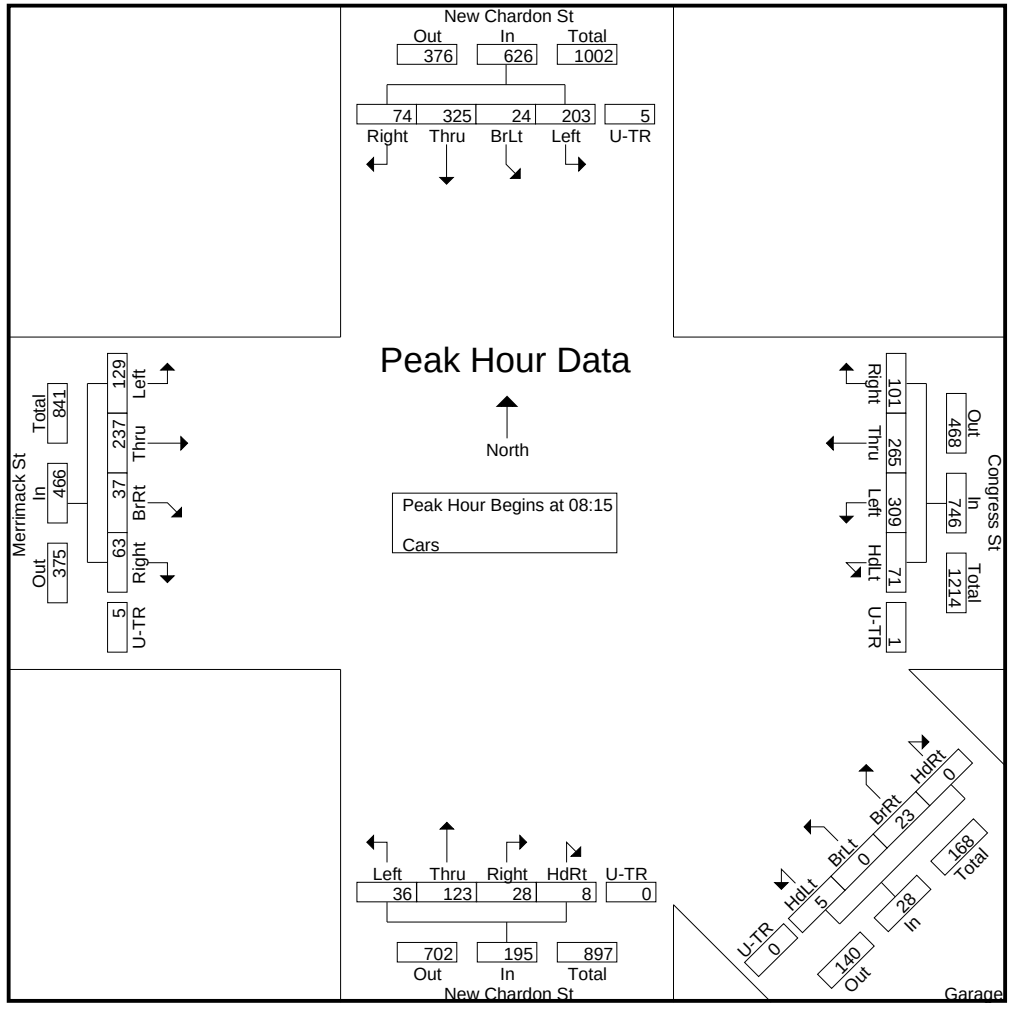
	New Chardon St From North					Congress St From East					Garage From Southeast					New Chardon St From South					Merrimack St From West					
Start Time	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	U-TR	Left	Thru	Right	HdRt	U-TR	Left	Thru	BrRt	Right	U-TR	Int. Total
07:30	52	5	72	18	0	13	51	70	25	0	1	0	8	0	0	6	27	5	1	0	18	28	6	4	0	410
07:45	43	1	88	22	3	14	69	69	32	1	1	0	6	0	0	4	15	7	0	0	30	28	3	11	2	449
Total	95	6	160	40	3	27	120	139	57	1	2	0	14	0	0	10	42	12	1	0	48	56	9	15	2	859
08:00	52	3	63	14	1	15	60	48	21	1	0	0	6	0	0	8	21	3	1	0	27	31	6	9	1	391
08:15	54	4	86	14	2	15	75	72	23	0	0	0	7	0	0	7	35	3	1	0	37	44	6	14	1	500
08:30	47	4	81	20	2	12	73	64	29	1	1	0	8	0	0	7	33	8	0	0	37	55	4	15	0	501
08:45	50	11	87	20	1	26	82	69	32	0	1	0	5	0	0	10	31	9	3	0	36	57	15	6	1	552
Total	203	22	317	68	6	68	290	253	105	2	2	0	26	0	0	32	120	23	5	0	137	187	31	44	3	1944
09:00	52	5	71	20	0	18	79	60	17	0	3	0	3	0	0	12	24	8	4	0	19	81	12	28	3	519
09:15	48	15	65	19	0	30	74	73	23	1	1	0	3	0	0	6	20	7	5	0	29	54	10	11	4	498
Grand Total	398	48	613	147	9	143	563	525	202	4	8	0	46	0	0	60	206	50	15	0	233	378	62	98	12	3820
Apprch %	32.8	4	50.5	12.1	0.7	10	39.2	36.5	14.1	0.3	14.8	0	85.2	0	0	18.1	62.2	15.1	4.5	0	29.8	48.3	7.9	12.5	1.5	
Total %	10.4	1.3	16	3.8	0.2	3.7	14.7	13.7	5.3	0.1	0.2	0	1.2	0	0	1.6	5.4	1.3	0.4	0	6.1	9.9	1.6	2.6	0.3	

	New Chardon St From North						Congress St From East						Garage From Southeast						New Chardon St From South						Merrimack St From West						
Start Time	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	Left	Thru	BrRt	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 08:15																															
08:15	**54**	4	86	14	**2**	160	15	75	**72**	23	0	185	0	0	7	0	0	7	7	**35**	3	1	0	46	**37**	44	6	14	1	102	500
08:30	47	4	81	**20**	2	154	12	73	64	29	**1**	179	1	0	**8**	0	0	**9**	7	33	8	0	0	48	37	55	4	15	0	111	501
08:45	50	**11**	**87**	20	1	**169**	**26**	**82**	69	**32**	0	**209**	1	0	5	0	0	6	10	31	**9**	3	0	**53**	36	57	**15**	6	1	115	**552**
09:00	52	5	71	20	0	148	18	79	60	17	0	174	**3**	0	3	0	0	6	**12**	24	8	**4**	0	48	19	**81**	12	**28**	**3**	**143**	519
Total Volume	203	24	325	74	5	631	71	309	265	101	1	747	5	0	23	0	0	28	36	123	28	8	0	195	129	237	37	63	5	471	2072
% App. Total	32.2	3.8	51.5	11.7	0.8		9.5	41.4	35.5	13.5	0.1		17.9	0	82.1	0	0		18.5	63.1	14.4	4.1	0		27.4	50.3	7.9	13.4	1.1		
PHF	.940	.545	.934	.925	.625	.933	.683	.942	.920	.789	.250	.894	.417	.000	.719	.000	.000	.778	.750	.879	.778	.500	.000	.920	.872	.731	.617	.563	.417	.823	.938

Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 2



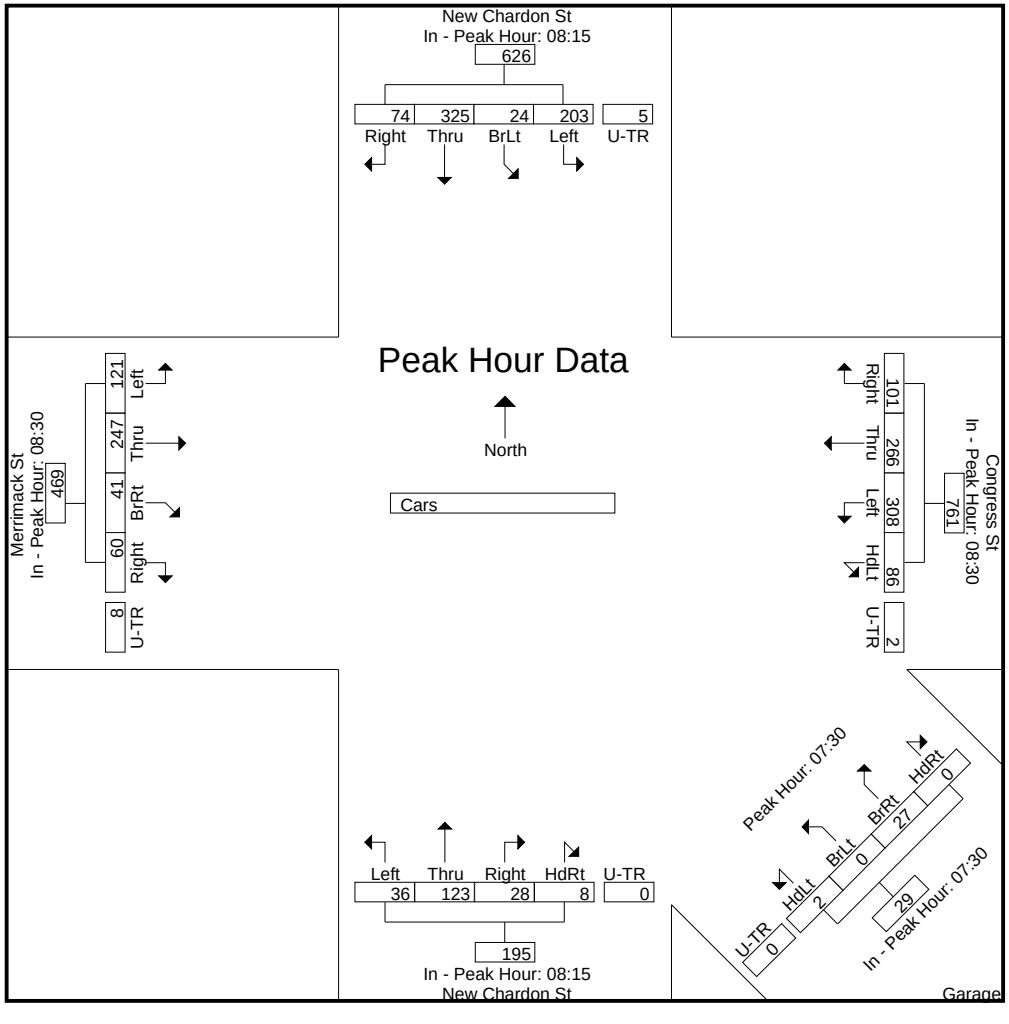
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:15						08:30						07:30						08:15						08:30					
+0 mins.	**54**	4	86	14	**2**	160	12	73	64	29	**1**	179	**1**	0	**8**	0	0	**9**	7	**35**	3	1	0	46	**37**	55	4	15	0	111
+15 mins.	47	4	81	**20**	2	154	26	**82**	69	**32**	0	**209**	1	0	6	0	0	7	7	33	8	0	0	48	36	57	**15**	6	1	115
+30 mins.	50	**11**	**87**	20	1	**169**	18	79	60	17	0	174	0	0	6	0	0	6	10	31	**9**	3	0	**53**	19	**81**	12	**28**	3	**143**
+45 mins.	52	5	71	20	0	148	**30**	74	**73**	23	1	201	0	0	7	0	0	7	**12**	24	8	**4**	0	48	29	54	10	11	**4**	108
Total Volume	203	24	325	74	5	631	86	308	266	101	2	763	2	0	27	0	0	29	36	123	28	8	0	195	121	247	41	60	8	477
% App. Total	32.2	3.8	51.5	11.7	0.8		11.3	40.4	34.9	13.2	0.3		6.9	0	93.1	0	0		18.5	63.1	14.4	4.1	0		25.4	51.8	8.6	12.6	1.7	
PHF	.940	.545	.934	.925	.625	.933	.717	.939	.911	.789	.500	.913	.500	.000	.844	.000	.000	.806	.750	.879	.778	.500	.000	.920	.818	.762	.683	.536	.500	.834

Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 1

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Groups Printed- Trucks

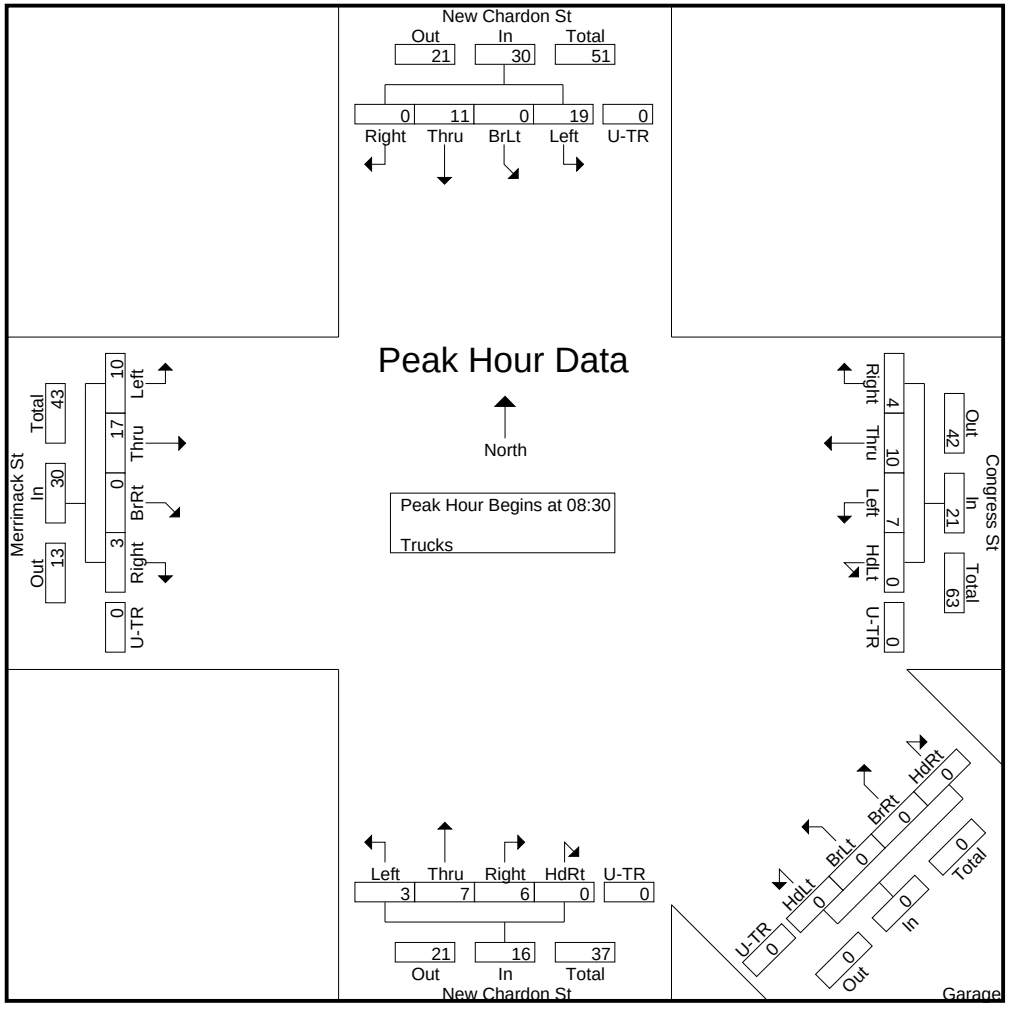
	New Chardon St From North					Congress St From East					Garage From Southeast					New Chardon St From South					Merrimack St From West					
Start Time	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	U-TR	Left	Thru	Right	HdRt	U-TR	Left	Thru	BrRt	Right	U-TR	Int. Total
07:30	4	0	1	0	0	0	3	3	1	0	0	0	0	0	0	0	0	0	0	0	5	3	0	0	0	20
07:45	6	0	2	0	0	0	2	3	1	0	0	0	0	0	0	0	0	1	0	0	2	4	0	0	0	21
Total	10	0	3	0	0	0	5	6	2	0	0	0	0	0	0	0	0	1	0	0	7	7	0	0	0	41
08:00	4	0	1	1	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	5	6	0	1	0	23
08:15	4	0	1	1	0	0	2	2	0	0	0	0	0	0	0	0	1	2	0	0	2	4	0	1	0	20
08:30	6	0	1	0	0	0	1	2	1	0	0	0	0	0	0	2	5	4	0	0	4	3	0	0	0	29
08:45	4	0	5	0	0	0	3	2	2	0	0	0	0	0	0	0	2	0	0	0	1	4	0	0	0	23
Total	18	0	8	2	0	0	9	8	3	0	0	0	0	0	0	2	8	6	0	0	12	17	0	2	0	95
09:00	5	0	1	0	0	0	1	2	1	0	0	0	0	0	0	1	0	0	0	0	4	5	0	3	0	23
09:15	4	0	4	0	0	0	2	4	0	0	0	0	0	0	0	0	0	2	0	0	1	5	0	0	0	22
Grand Total	37	0	16	2	0	0	17	20	6	0	0	0	0	0	0	3	8	9	0	0	24	34	0	5	0	181
Apprch %	67.3	0	29.1	3.6	0	0	39.5	46.5	14	0	0	0	0	0	0	15	40	45	0	0	38.1	54	0	7.9	0	
Total %	20.4	0	8.8	1.1	0	0	9.4	11	3.3	0	0	0	0	0	0	1.7	4.4	5	0	0	13.3	18.8	0	2.8	0	

	New Chardon St From North						Congress St From East						Garage From Southeast						New Chardon St From South						Merrimack St From West						
Start Time	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	Left	Thru	BrRt	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 08:30																															
08:30	**6**	0	1	0	0	7	0	1	2	1	0	4	0	0	0	0	0	0	**2**	**5**	**4**	0	0	**11**	**4**	3	0	0	0	7	**29**
08:45	4	0	**5**	0	0	**9**	0	**3**	2	**2**	0	**7**	0	0	0	0	0	0	0	2	0	0	0	2	1	4	0	0	0	5	23
09:00	5	0	1	0	0	6	0	1	2	1	0	4	0	0	0	0	0	0	1	0	0	0	0	1	4	**5**	0	**3**	0	**12**	23
09:15	4	0	4	0	0	8	0	2	**4**	0	0	6	0	0	0	0	0	0	0	0	2	0	0	2	1	5	0	0	0	6	22
Total Volume	19	0	11	0	0	30	0	7	10	4	0	21	0	0	0	0	0	0	3	7	6	0	0	16	10	17	0	3	0	30	97
% App. Total	63.3	0	36.7	0	0		0	33.3	47.6	19	0		0	0	0	0	0		18.8	43.8	37.5	0	0		33.3	56.7	0	10	0		
PHF	.792	.000	.550	.000	.000	.833	.000	.583	.625	.500	.000	.750	.000	.000	.000	.000	.000	.000	.375	.350	.375	.000	.000	.364	.625	.850	.000	.250	.000	.625	.836

Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 2



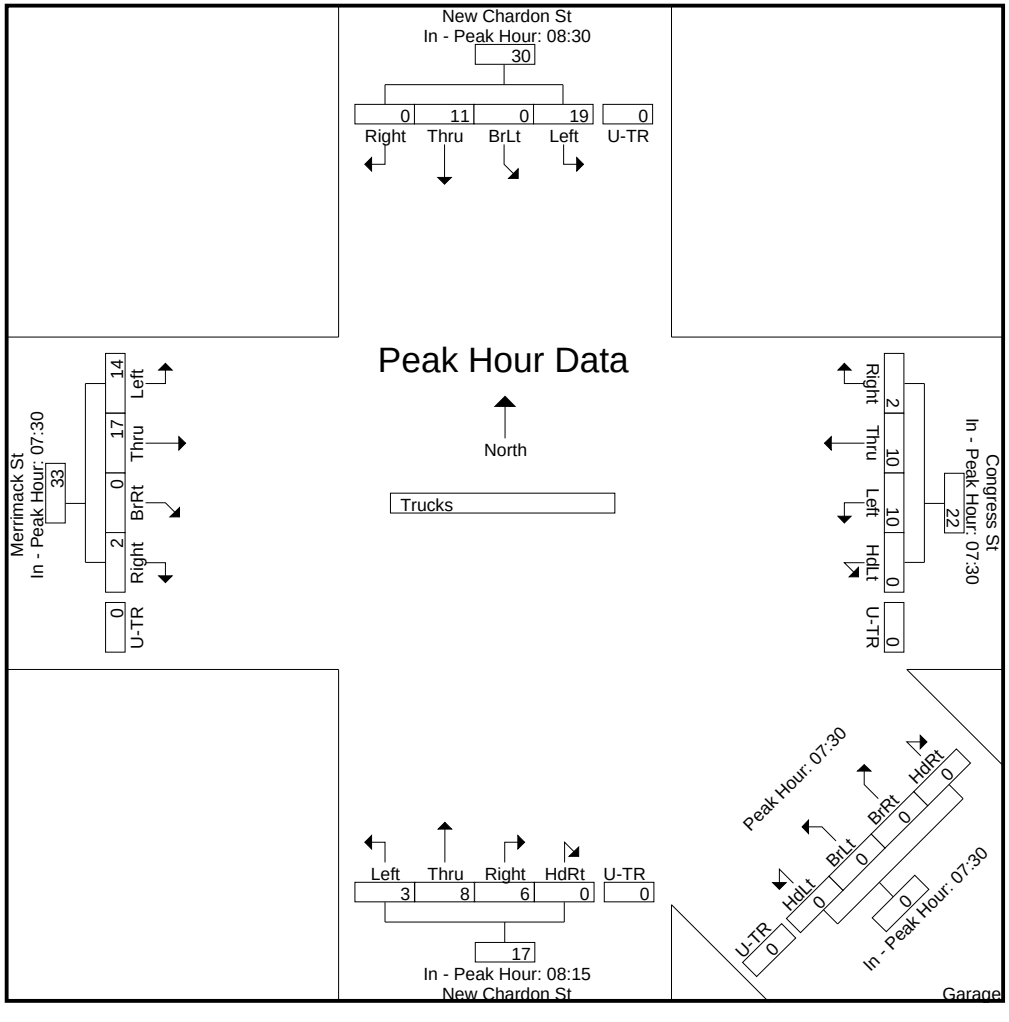
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:30						07:30						07:30						08:15						07:30					
+0 mins.	**6**	0	1	0	0	7	0	**3**	**3**	**1**	0	**7**	0	0	0	0	0	0	0	1	2	0	0	3	**5**	3	0	0	0	8
+15 mins.	4	0	**5**	0	0	**9**	0	2	3	1	0	6	0	0	0	0	0	0	**2**	**5**	**4**	0	0	**11**	2	4	0	0	0	6
+30 mins.	5	0	1	0	0	6	0	3	2	0	0	5	0	0	0	0	0	0	0	2	0	0	0	2	5	**6**	0	**1**	0	**12**
+45 mins.	4	0	4	0	0	8	0	2	2	0	0	4	0	0	0	0	0	0	1	0	0	0	0	1	2	4	0	1	0	7
Total Volume	19	0	11	0	0	30	0	10	10	2	0	22	0	0	0	0	0	0	3	8	6	0	0	17	14	17	0	2	0	33
% App. Total	63.3	0	36.7	0	0		0	45.5	45.5	9.1	0		0	0	0	0	0		17.6	47.1	35.3	0	0		42.4	51.5	0	6.1	0	
PHF	.792	.000	.550	.000	.000	.833	.000	.833	.833	.500	.000	.786	.000	.000	.000	.000	.000	.000	.375	.400	.375	.000	.000	.386	.700	.708	.000	.500	.000	.688

Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 1

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Groups Printed- Bikes Peds

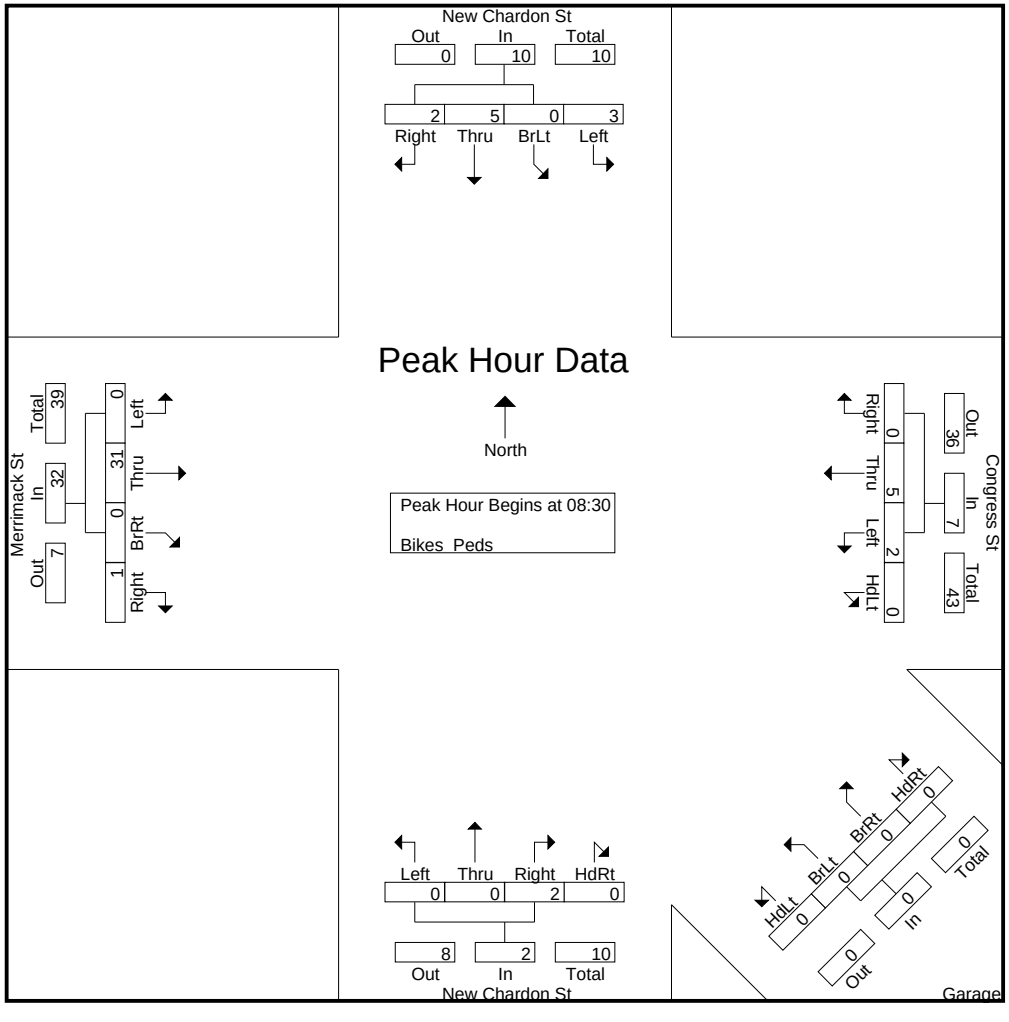
	New Chardon St From North					Congress St From East					Garage From Southeast					New Chardon St From South					Merrimack St From West							
Start Time	Left	BrLt	Thru	Right	Peds	HdLt	Left	Thru	Right	Peds	HdLt	BrLt	BrRt	HdRt	Peds	Left	Thru	Right	HdRt	Peds	Left	Thru	BrRt	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:30	1	0	0	0	62	0	0	1	0	21	0	0	0	0	14	0	0	0	0	20	0	1	0	0	13	130	3	133
07:45	1	0	0	0	41	0	1	0	0	14	0	0	0	0	25	0	0	0	0	39	0	2	0	1	20	139	5	144
Total	2	0	0	0	103	0	1	1	0	35	0	0	0	0	39	0	0	0	0	59	0	3	0	1	33	269	8	277
08:00	1	0	2	0	73	0	0	2	0	31	0	0	0	0	10	0	0	0	0	47	0	5	0	0	23	184	10	194
08:15	0	0	1	0	181	0	0	1	0	97	0	0	0	0	20	0	0	1	0	65	1	5	0	1	15	378	10	388
08:30	1	0	1	0	130	0	2	1	0	41	0	0	0	0	26	0	0	1	0	47	0	9	0	0	32	276	15	291
08:45	0	0	0	0	109	0	0	2	0	28	0	0	0	0	19	0	0	1	0	56	0	5	0	0	45	257	8	265
Total	2	0	4	0	493	0	2	6	0	197	0	0	0	0	75	0	0	3	0	215	1	24	0	1	115	1095	43	1138
09:00	1	0	3	2	204	0	0	0	0	60	0	0	0	0	66	0	0	0	0	68	0	8	0	0	59	457	14	471
09:15	1	0	1	0	118	0	0	2	0	17	0	0	0	0	56	0	0	0	0	81	0	9	0	1	35	307	14	321
Grand Total	6	0	8	2	918	0	3	9	0	309	0	0	0	0	236	0	0	3	0	423	1	44	0	3	242	2128	79	2207
Apprch %	37.5	0	50	12.5		0	25	75	0		0	0	0	0		0	0	100	0		2.1	91.7	0	6.2				
Total %	7.6	0	10.1	2.5		0	3.8	11.4	0		0	0	0	0		0	0	3.8	0		1.3	55.7	0	3.8		96.4	3.6	

	New Chardon St From North					Congress St From East					Garage From Southeast					New Chardon St From South					Merrimack St 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 07:30 to 09:15 - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 08:30																										
08:30	**1**	0	1	0	2	0	**2**	1	0	**3**	0	0	0	0	0	0	0	**1**	0	**1**	0	**9**	0	0	9	**15**
08:45	0	0	0	0	0	0	0	**2**	0	2	0	0	0	0	0	0	0	1	0	1	0	5	0	0	5	8
09:00	1	0	**3**	**2**	**6**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	8	14
09:15	1	0	1	0	2	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	9	0	**1**	**10**	14
Total Volume	3	0	5	2	10	0	2	5	0	7	0	0	0	0	0	0	0	2	0	2	0	31	0	1	32	51
% App. Total	30	0	50	20		0	28.6	71.4	0		0	0	0	0		0	0	100	0		0	96.9	0	3.1		
PHF	.750	.000	.417	.250	.417	.000	.250	.625	.000	.583	.000	.000	.000	.000	.000	.000	.000	.500	.000	.500	.000	.861	.000	.250	.800	.850

Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 2



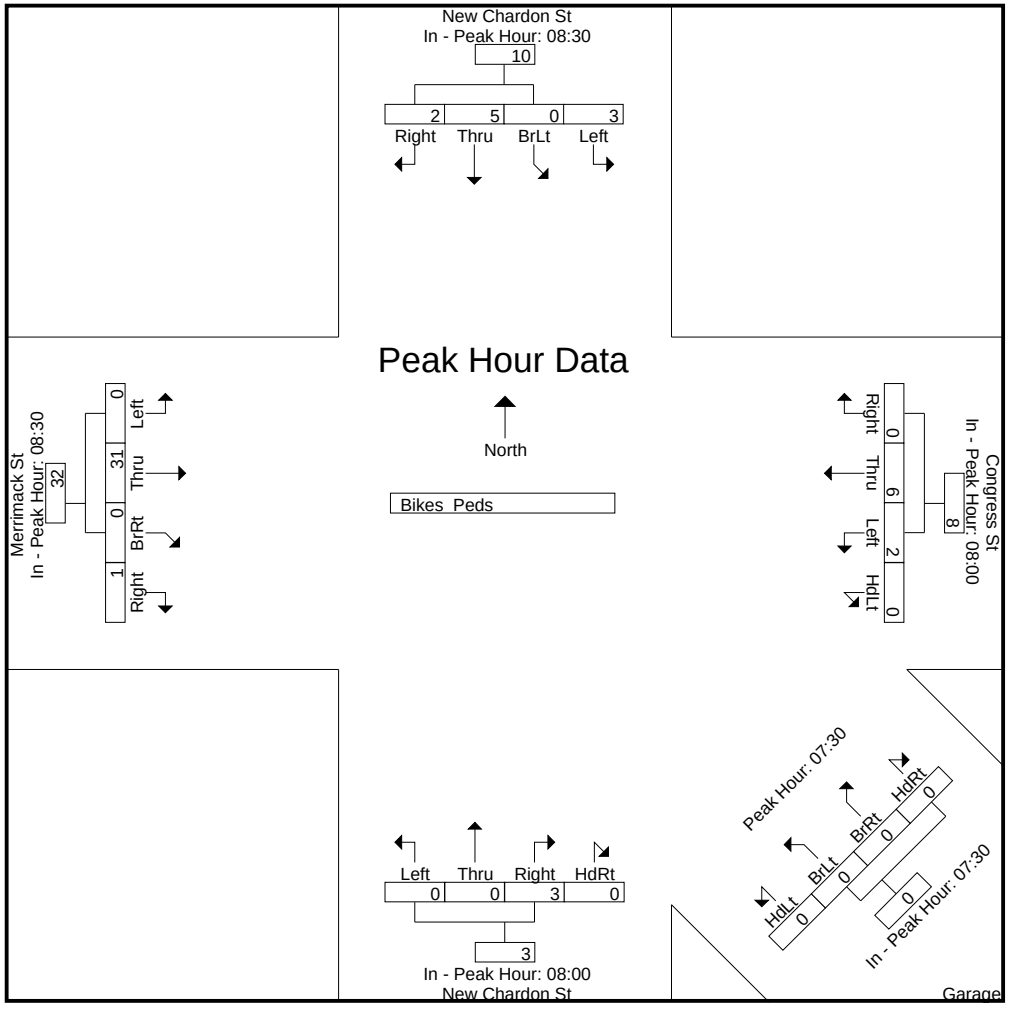
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:30					08:00					07:30					08:00					08:30				
+0 mins.	**1**	0	1	0	2	0	0	**2**	0	2	0	0	0	0	0	0	0	0	0	0	0	**9**	0	0	9
+15 mins.	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	**1**	0	**1**	0	5	0	0	5
+30 mins.	1	0	**3**	**2**	**6**	0	**2**	1	0	**3**	0	0	0	0	0	0	0	1	0	1	0	8	0	0	8
+45 mins.	1	0	1	0	2	0	0	2	0	2	0	0	0	0	0	0	0	1	0	1	0	9	0	**1**	**10**
Total Volume	3	0	5	2	10	0	2	6	0	8	0	0	0	0	0	0	0	3	0	3	0	31	0	1	32
% App. Total	30	0	50	20		0	25	75	0		0	0	0	0		0	0	100	0		0	96.9	0	3.1	
PHF	.750	.000	.417	.250	.417	.000	.250	.750	.000	.667	.000	.000	.000	.000	.000	.000	.000	.750	.000	.750	.000	.861	.000	.250	.800

Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 3



Accurate Counts

978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 1

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Groups Printed- Cars - Trucks

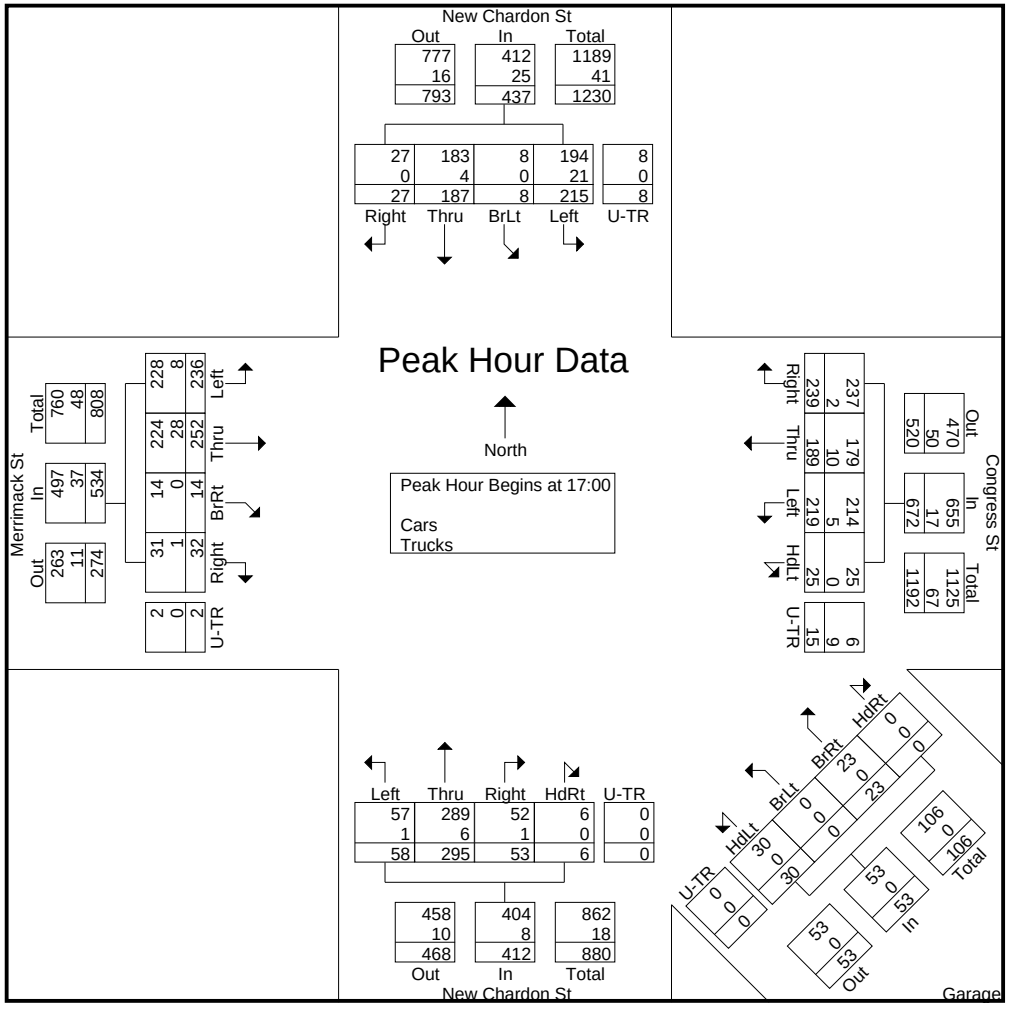
	New Chardon St From North					Congress St From East					Garage From Southeast					New Chardon St From South					Merrimack St From West					
Start Time	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	U-TR	Left	Thru	Right	HdRt	U-TR	Left	Thru	BrRt	Right	U-TR	Int. Total
16:00	48	2	25	6	0	10	44	45	45	0	5	0	5	0	0	14	81	16	12	0	92	69	1	5	1	526
16:15	39	2	40	10	0	0	56	45	63	2	2	0	5	0	0	16	65	26	4	0	63	73	2	9	0	522
16:30	50	1	46	6	3	16	50	68	57	1	6	0	3	0	0	9	65	13	0	0	69	57	1	12	0	533
16:45	61	3	55	12	6	7	36	55	67	3	2	0	6	0	0	12	54	4	0	0	60	52	5	5	0	505
Total	198	8	166	34	9	33	186	213	232	6	15	0	19	0	0	51	265	59	16	0	284	251	9	31	1	2086
17:00	65	5	38	7	0	3	54	37	48	3	4	0	2	0	0	18	64	12	0	0	59	50	3	5	0	477
17:15	49	0	63	6	1	2	53	68	73	1	8	0	6	0	0	17	91	11	2	0	56	56	5	16	1	585
17:30	44	1	52	6	3	7	58	51	57	9	8	0	7	0	0	11	46	7	2	0	67	70	4	7	0	517
17:45	57	2	34	8	4	13	54	33	61	2	10	0	8	0	0	12	94	23	2	0	54	76	2	4	1	554
Total	215	8	187	27	8	25	219	189	239	15	30	0	23	0	0	58	295	53	6	0	236	252	14	32	2	2133
Grand Total	413	16	353	61	17	58	405	402	471	21	45	0	42	0	0	109	560	112	22	0	520	503	23	63	3	4219
Apprch %	48	1.9	41	7.1	2	4.3	29.8	29.6	34.7	1.5	51.7	0	48.3	0	0	13.6	69.7	13.9	2.7	0	46.8	45.2	2.1	5.7	0.3	
Total %	9.8	0.4	8.4	1.4	0.4	1.4	9.6	9.5	11.2	0.5	1.1	0	1	0	0	2.6	13.3	2.7	0.5	0	12.3	11.9	0.5	1.5	0.1	
Cars	367	16	346	60	17	58	396	380	468	10	44	0	42	0	0	106	549	106	22	0	501	446	23	62	3	4022
% Cars	88.9	100	98	98.4	100	100	97.8	94.5	99.4	47.6	97.8	0	100	0	0	97.2	98	94.6	100	0	96.3	88.7	100	98.4	100	95.3
Trucks	46	0	7	1	0	0	9	22	3	11	1	0	0	0	0	3	11	6	0	0	19	57	0	1	0	197
% Trucks	11.1	0	2	1.6	0	0	2.2	5.5	0.6	52.4	2.2	0	0	0	0	2.8	2	5.4	0	0	3.7	11.3	0	1.6	0	4.7

	New Chardon St From North						Congress St From East						Garage From Southeast						New Chardon St From South						Merrimack St From West						
Start Time	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	Left	Thru	BrRt	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 17:00																															
17:00	**65**	**5**	38	7	0	115	3	54	37	48	3	145	4	0	2	0	0	6	**18**	64	12	0	0	94	59	50	3	5	0	117	477
17:15	49	0	**63**	6	1	**119**	2	53	**68**	**73**	1	**197**	8	0	6	0	0	14	17	91	11	**2**	0	121	56	56	**5**	**16**	**1**	134	**585**
17:30	44	1	52	6	3	106	7	**58**	51	57	**9**	182	8	0	7	0	0	15	11	46	7	2	0	66	**67**	70	4	7	0	**148**	517
17:45	57	2	34	**8**	**4**	105	**13**	54	33	61	2	163	**10**	0	**8**	0	0	**18**	12	**94**	**23**	2	0	**131**	54	**76**	2	4	1	137	554
Total Volume	215	8	187	27	8	445	25	219	189	239	15	687	30	0	23	0	0	53	58	295	53	6	0	412	236	252	14	32	2	536	2133
% App. Total	48.3	1.8	42	6.1	1.8		3.6	31.9	27.5	34.8	2.2		56.6	0	43.4	0	0		14.1	71.6	12.9	1.5	0		44	47	2.6	6	0.4		
PHF	.827	.400	.742	.844	.500	.935	.481	.944	.695	.818	.417	.872	.750	.000	.719	.000	.000	.736	.806	.785	.576	.750	.000	.786	.881	.829	.700	.500	.500	.905	.912
Cars	194	8	183	27	8	420	25	214	179	237	6	661	30	0	23	0	0	53	57	289	52	6	0	404	228	224	14	31	2	499	2037
% Cars	90.2	100	97.9	100	100	94.4	100	97.7	94.7	99.2	40.0	96.2	100	0	100	0	0	100	98.3	98.0	98.1	100	0	98.1	96.6	88.9	100	96.9	100	93.1	95.5
Trucks	21	0	4	0	0	25	0	5	10	2	9	26	0	0	0	0	0	0	1	6	1	0	0	8	8	28	0	1	0	37	96
% Trucks	9.8	0	2.1	0	0	5.6	0	2.3	5.3	0.8	60.0	3.8	0	0	0	0	0	0	1.7	2.0	1.9	0	0	1.9	3.4	11.1	0	3.1	0	6.9	4.5

Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

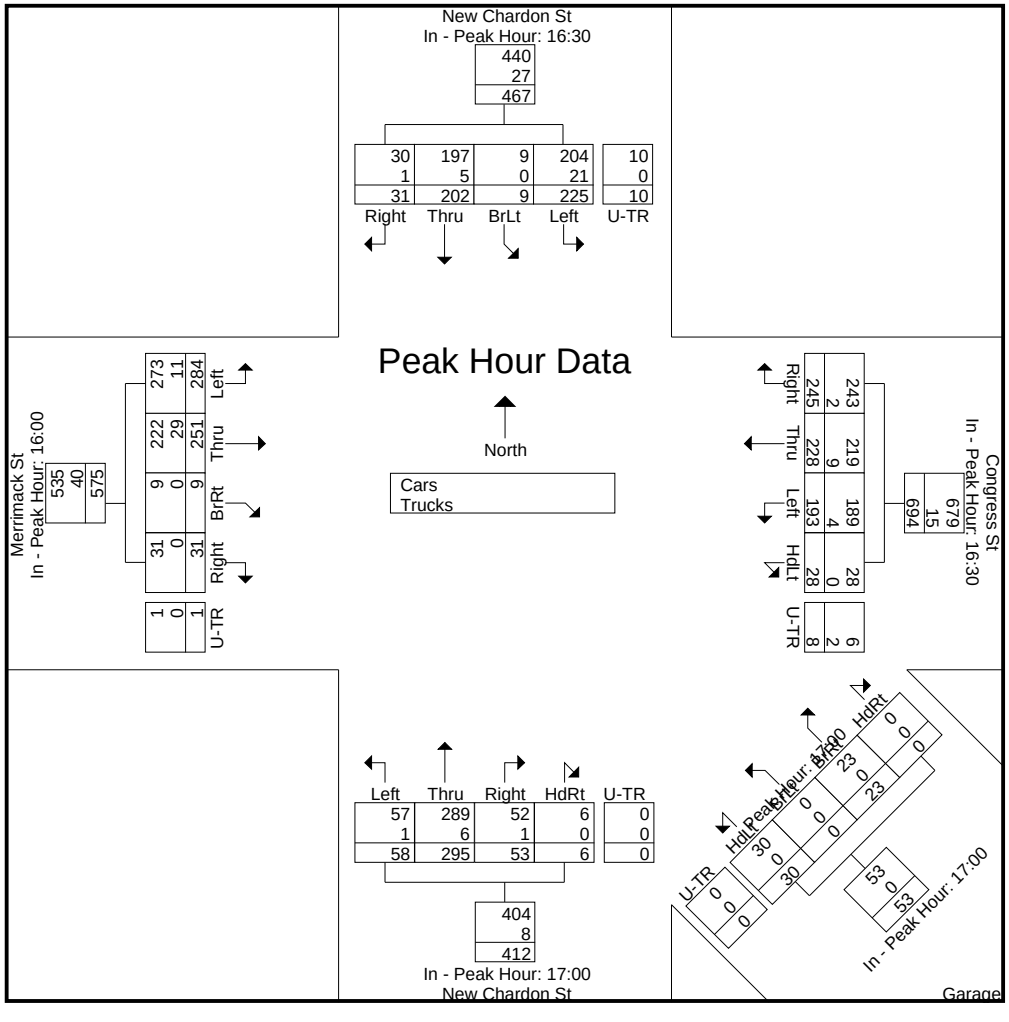
File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 2



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	16:30						16:30						17:00						17:00						16:00					
+0 mins.	50	1	46	6	3	106	**16**	50	**68**	57	1	192	4	0	2	0	0	6	**18**	64	12	0	0	94	**92**	69	1	5	**1**	**168**
+15 mins.	61	3	55	**12**	**6**	**137**	7	36	55	67	**3**	168	8	0	6	0	0	14	17	91	11	**2**	0	121	63	**73**	2	9	0	147
+30 mins.	**65**	**5**	38	7	0	115	3	**54**	37	48	3	145	8	0	7	0	0	15	11	46	7	2	0	66	69	57	1	**12**	0	139
+45 mins.	49	0	**63**	6	1	119	2	53	68	**73**	1	**197**	**10**	0	**8**	0	0	**18**	12	**94**	**23**	2	0	**131**	60	52	**5**	5	0	122
Total Volume	225	9	202	31	10	477	28	193	228	245	8	702	30	0	23	0	0	53	58	295	53	6	0	412	284	251	9	31	1	576
% App. Total	47.2	1.9	42.3	6.5	2.1		4	27.5	32.5	34.9	1.1		56.6	0	43.4	0	0		14.1	71.6	12.9	1.5	0		49.3	43.6	1.6	5.4	0.2	
PHF	.865	.450	.802	.646	.417	.870	.438	.894	.838	.839	.667	.891	.750	.000	.719	.000	.000	.736	.806	.785	.576	.750	.000	.786	.772	.860	.450	.646	.250	.857
Cars	204	9	197	30	10	450	28	189	219	243	6	685	30	0	23	0	0	53	57	289	52	6	0	404	273	222	9	31	1	536
% Cars	90.7	100	97.5	96.8	100	94.3	100	97.9	96.1	99.2	75	97.6	100	0	100	0	0	100	98.3	98	98.1	100	0	98.1	96.1	88.4	100	100	100	93.1

% Trucks	9.3	0	2.5	3.2	0	5.7	0	2.1	3.9	0.8	25	2.4	0	0	0	0	0	0	1.7	2	1.9	0	0	1.9	3.9	11.6	0	0	0	6.9



Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 1

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Groups Printed- Cars

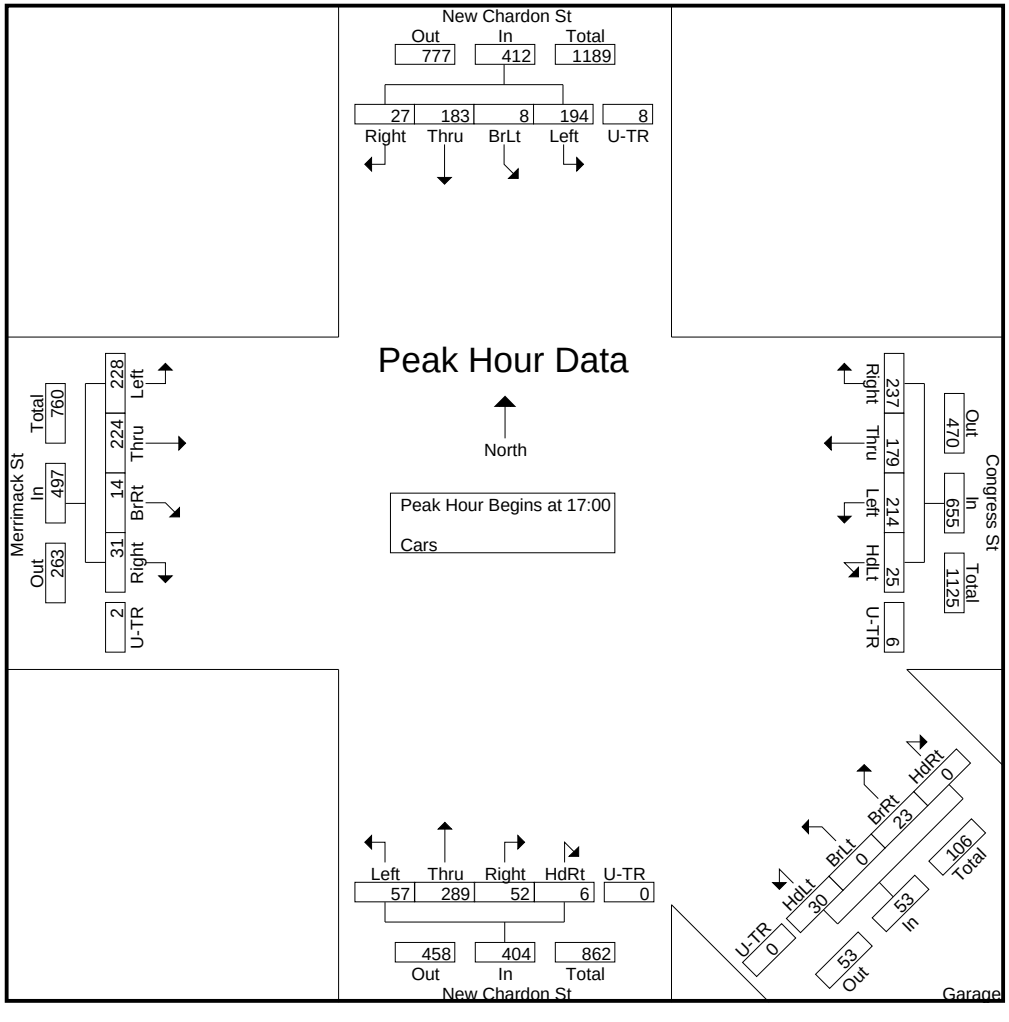
	New Chardon St From North					Congress St From East					Garage From Southeast					New Chardon St From South					Merrimack St From West					
Start Time	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	U-TR	Left	Thru	Right	HdRt	U-TR	Left	Thru	BrRt	Right	U-TR	Int. Total
16:00	40	2	24	6	0	10	42	42	45	0	4	0	5	0	0	13	80	14	12	0	90	58	1	5	1	494
16:15	33	2	40	10	0	0	55	42	63	2	2	0	5	0	0	16	63	24	4	0	59	67	2	9	0	498
16:30	43	1	45	5	3	16	49	66	57	1	6	0	3	0	0	8	63	12	0	0	66	48	1	12	0	505
16:45	57	3	54	12	6	7	36	51	66	1	2	0	6	0	0	12	54	4	0	0	58	49	5	5	0	488
Total	173	8	163	33	9	33	182	201	231	4	14	0	19	0	0	49	260	54	16	0	273	222	9	31	1	1985
17:00	61	5	37	7	0	3	52	36	48	3	4	0	2	0	0	17	64	12	0	0	58	44	3	4	0	460
17:15	43	0	61	6	1	2	52	66	72	1	8	0	6	0	0	17	90	11	2	0	52	52	5	16	1	564
17:30	39	1	51	6	3	7	57	46	56	0	8	0	7	0	0	11	43	6	2	0	67	63	4	7	0	484
17:45	51	2	34	8	4	13	53	31	61	2	10	0	8	0	0	12	92	23	2	0	51	65	2	4	1	529
Total	194	8	183	27	8	25	214	179	237	6	30	0	23	0	0	57	289	52	6	0	228	224	14	31	2	2037
Grand Total	367	16	346	60	17	58	396	380	468	10	44	0	42	0	0	106	549	106	22	0	501	446	23	62	3	4022
Apprch %	45.5	2	42.9	7.4	2.1	4.4	30.2	29	35.7	0.8	51.2	0	48.8	0	0	13.5	70.1	13.5	2.8	0	48.4	43.1	2.2	6	0.3	
Total %	9.1	0.4	8.6	1.5	0.4	1.4	9.8	9.4	11.6	0.2	1.1	0	1	0	0	2.6	13.6	2.6	0.5	0	12.5	11.1	0.6	1.5	0.1	

	New Chardon St From North						Congress St From East						Garage From Southeast						New Chardon St From South						Merrimack St From West						
Start Time	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	Left	Thru	BrRt	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 17:00																															
17:00	**61**	**5**	37	7	0	110	3	52	36	48	**3**	142	4	0	2	0	0	6	**17**	64	12	0	0	93	58	44	3	4	0	109	460
17:15	43	0	**61**	6	1	**111**	2	52	**66**	**72**	1	**193**	8	0	6	0	0	14	17	90	11	**2**	0	120	52	52	**5**	**16**	**1**	126	**564**
17:30	39	1	51	6	3	100	7	**57**	46	56	0	166	8	0	7	0	0	15	11	43	6	2	0	62	**67**	63	4	7	0	**141**	484
17:45	51	2	34	**8**	**4**	99	**13**	53	31	61	2	160	**10**	0	**8**	0	0	**18**	12	**92**	**23**	2	0	**129**	51	**65**	2	4	1	123	529
Total Volume	194	8	183	27	8	420	25	214	179	237	6	661	30	0	23	0	0	53	57	289	52	6	0	404	228	224	14	31	2	499	2037
% App. Total	46.2	1.9	43.6	6.4	1.9		3.8	32.4	27.1	35.9	0.9		56.6	0	43.4	0	0		14.1	71.5	12.9	1.5	0		45.7	44.9	2.8	6.2	0.4		
PHF	.795	.400	.750	.844	.500	.946	.481	.939	.678	.823	.500	.856	.750	.000	.719	.000	.000	.736	.838	.785	.565	.750	.000	.783	.851	.862	.700	.484	.500	.885	.903

Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 2



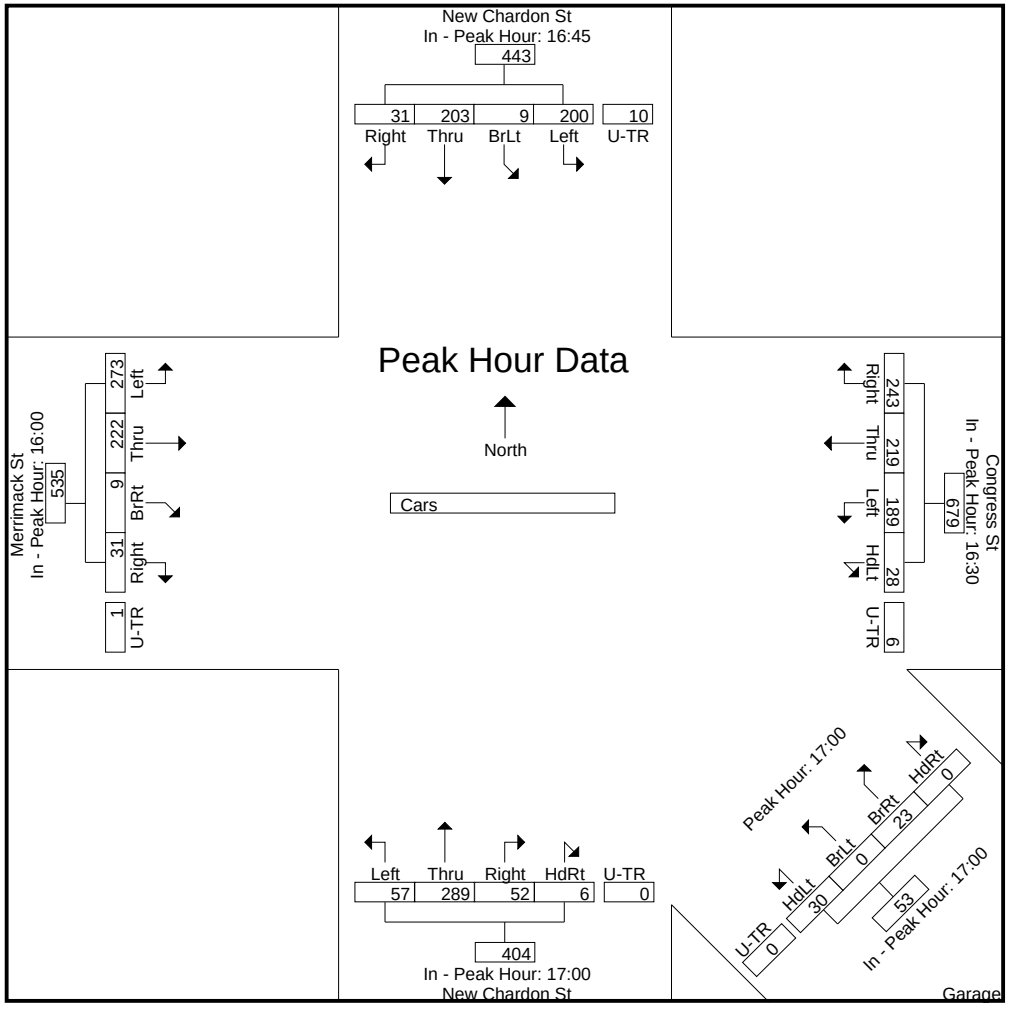
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	16:45						16:30						17:00						17:00						16:00					
+0 mins.	57	3	54	**12**	**6**	**132**	**16**	49	**66**	57	1	189	4	0	2	0	0	6	**17**	64	12	0	0	93	**90**	58	1	5	**1**	**155**
+15 mins.	**61**	**5**	37	7	0	110	7	36	51	66	1	161	8	0	6	0	0	14	17	90	11	**2**	0	120	59	**67**	2	9	0	137
+30 mins.	43	0	**61**	6	1	111	3	**52**	36	48	**3**	142	8	0	7	0	0	15	11	43	6	2	0	62	66	48	1	**12**	0	127
+45 mins.	39	1	51	6	3	100	2	52	66	**72**	1	**193**	**10**	0	**8**	0	0	**18**	12	**92**	**23**	2	0	**129**	58	49	**5**	5	0	117
Total Volume	200	9	203	31	10	453	28	189	219	243	6	685	30	0	23	0	0	53	57	289	52	6	0	404	273	222	9	31	1	536
% App. Total	44.2	2	44.8	6.8	2.2		4.1	27.6	32	35.5	0.9		56.6	0	43.4	0	0		14.1	71.5	12.9	1.5	0		50.9	41.4	1.7	5.8	0.2	
PHF	.820	.450	.832	.646	.417	.858	.438	.909	.830	.844	.500	.887	.750	.000	.719	.000	.000	.736	.838	.785	.565	.750	.000	.783	.758	.828	.450	.646	.250	.865

Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
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Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 1

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Groups Printed- Trucks

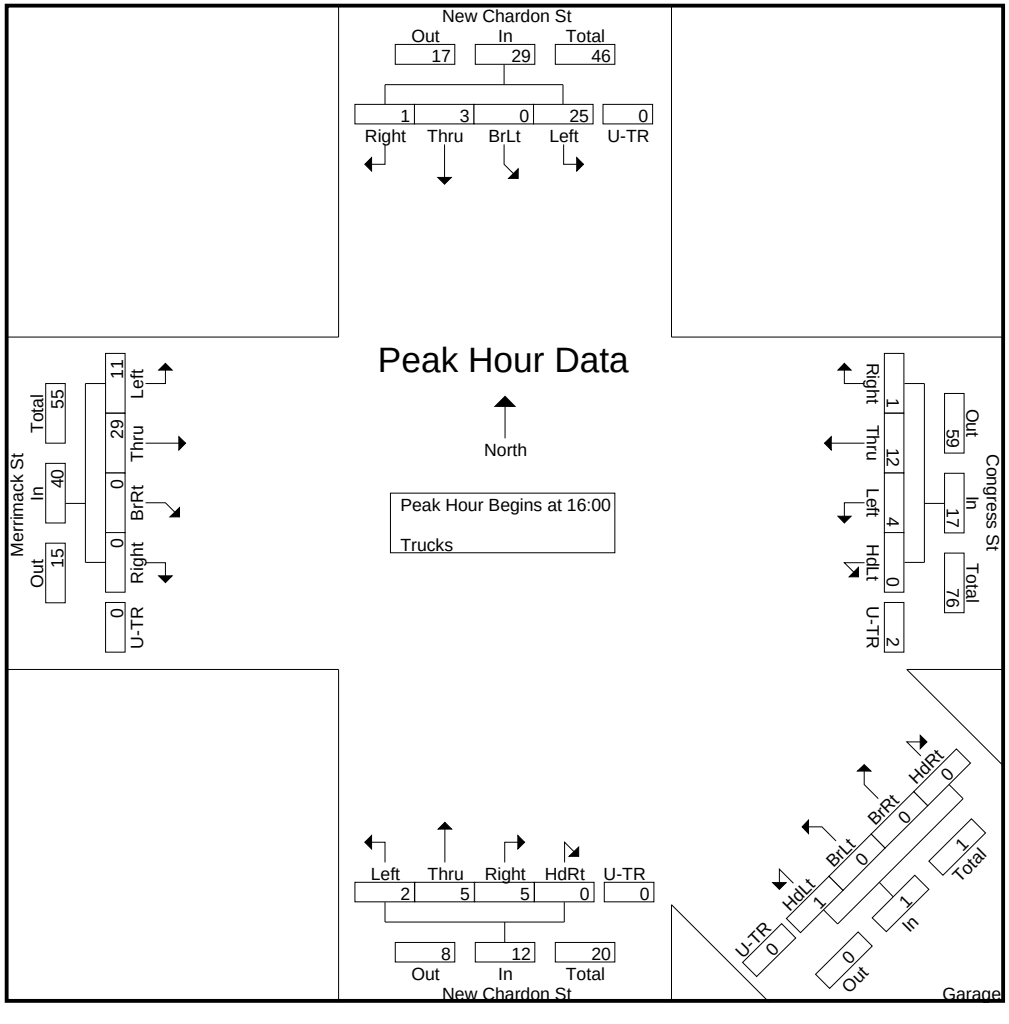
	New Chardon St From North					Congress St From East					Garage From Southeast					New Chardon St From South					Merrimack St From West					
Start Time	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	U-TR	Left	Thru	Right	HdRt	U-TR	Left	Thru	BrRt	Right	U-TR	Int. Total
16:00	8	0	1	0	0	0	2	3	0	0	1	0	0	0	0	1	1	2	0	0	2	11	0	0	0	32
16:15	6	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	2	2	0	0	4	6	0	0	0	24
16:30	7	0	1	1	0	0	1	2	0	0	0	0	0	0	0	1	2	1	0	0	3	9	0	0	0	28
16:45	4	0	1	0	0	0	0	4	1	2	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0	17
Total	25	0	3	1	0	0	4	12	1	2	1	0	0	0	0	2	5	5	0	0	11	29	0	0	0	101
17:00	4	0	1	0	0	0	2	1	0	0	0	0	0	0	0	1	0	0	0	0	1	6	0	1	0	17
17:15	6	0	2	0	0	0	1	2	1	0	0	0	0	0	0	0	1	0	0	0	4	4	0	0	0	21
17:30	5	0	1	0	0	0	1	5	1	9	0	0	0	0	0	0	3	1	0	0	0	7	0	0	0	33
17:45	6	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	2	0	0	0	3	11	0	0	0	25
Total	21	0	4	0	0	0	5	10	2	9	0	0	0	0	0	1	6	1	0	0	8	28	0	1	0	96
Grand Total	46	0	7	1	0	0	9	22	3	11	1	0	0	0	0	3	11	6	0	0	19	57	0	1	0	197
Apprch %	85.2	0	13	1.9	0	0	20	48.9	6.7	24.4	100	0	0	0	0	15	55	30	0	0	24.7	74	0	1.3	0	
Total %	23.4	0	3.6	0.5	0	0	4.6	11.2	1.5	5.6	0.5	0	0	0	0	1.5	5.6	3	0	0	9.6	28.9	0	0.5	0	

	New Chardon St From North						Congress St From East						Garage From Southeast						New Chardon St From South						Merrimack St From West						
Start Time	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	Left	Thru	BrRt	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 16:00																															
16:00	**8**	0	**1**	0	0	**9**	0	**2**	3	0	0	5	**1**	0	0	0	0	**1**	**1**	1	**2**	0	0	**4**	2	**11**	0	0	0	**13**	**32**
16:15	6	0	0	0	0	6	0	1	3	0	0	4	0	0	0	0	0	0	0	**2**	2	0	0	4	**4**	6	0	0	0	10	24
16:30	7	0	1	**1**	0	9	0	1	2	0	0	3	0	0	0	0	0	0	1	2	1	0	0	4	3	9	0	0	0	12	28
16:45	4	0	1	0	0	5	0	0	**4**	**1**	**2**	**7**	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0	5	17
Total Volume	25	0	3	1	0	29	0	4	12	1	2	19	1	0	0	0	0	1	2	5	5	0	0	12	11	29	0	0	0	40	101
% App. Total	86.2	0	10.3	3.4	0		0	21.1	63.2	5.3	10.5		100	0	0	0	0		16.7	41.7	41.7	0	0		27.5	72.5	0	0	0		
PHF	.781	.000	.750	.250	.000	.806	.000	.500	.750	.250	.250	.679	.250	.000	.000	.000	.000	.250	.500	.625	.625	.000	.000	.750	.688	.659	.000	.000	.000	.769	.789

Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 2



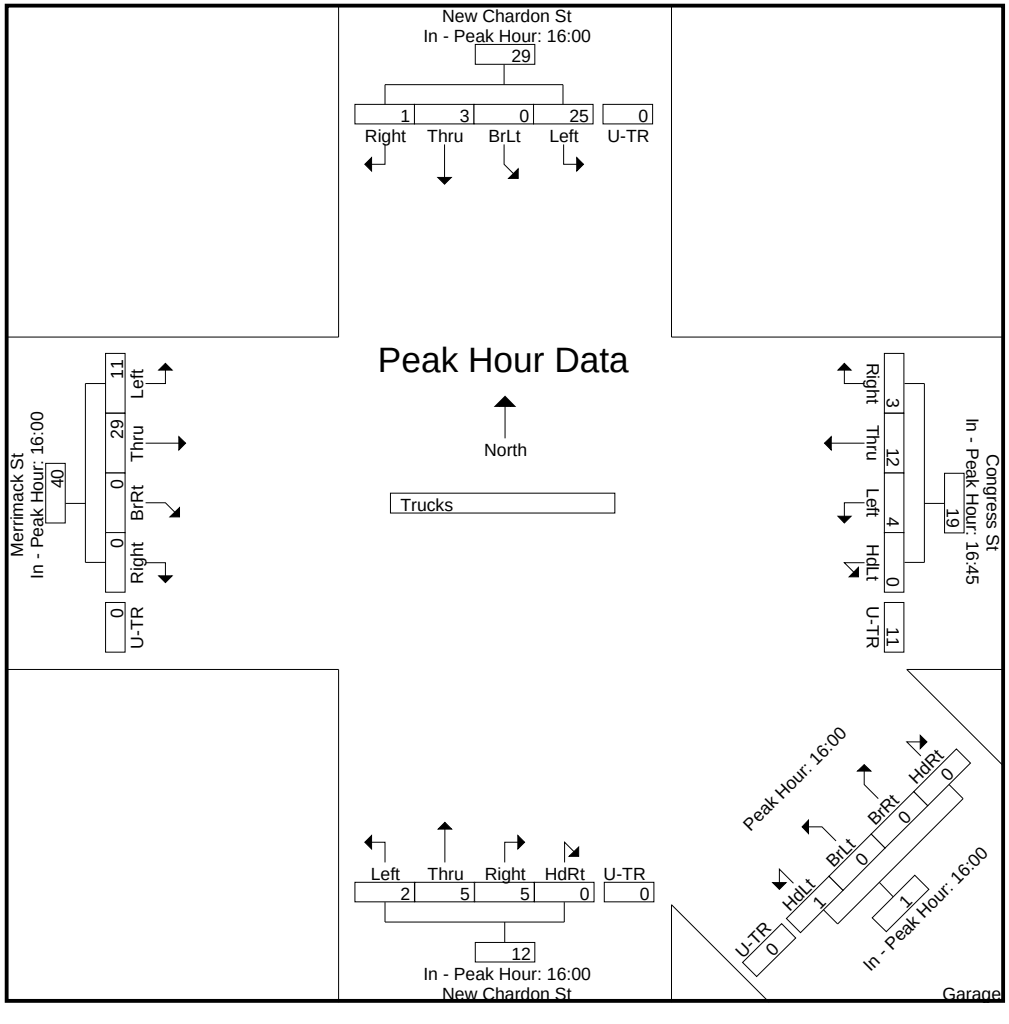
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	16:00						16:45						16:00						16:00						16:00					
+0 mins.	**8**	0	**1**	0	0	**9**	0	0	4	**1**	2	7	**1**	0	0	0	0	**1**	**1**	1	**2**	0	0	**4**	2	**11**	0	0	0	**13**
+15 mins.	6	0	0	0	0	6	0	**2**	1	0	0	3	0	0	0	0	0	0	0	**2**	2	0	0	4	**4**	6	0	0	0	10
+30 mins.	7	0	1	**1**	0	9	0	1	2	1	0	4	0	0	0	0	0	0	1	2	1	0	0	4	3	9	0	0	0	12
+45 mins.	4	0	1	0	0	5	0	1	**5**	1	**9**	**16**	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0	5
Total Volume	25	0	3	1	0	29	0	4	12	3	11	30	1	0	0	0	0	1	2	5	5	0	0	12	11	29	0	0	0	40
% App. Total	86.2	0	10.3	3.4	0		0	13.3	40	10	36.7		100	0	0	0	0		16.7	41.7	41.7	0	0		27.5	72.5	0	0	0	
PHF	.781	.000	.750	.250	.000	.806	.000	.500	.600	.750	.306	.469	.250	.000	.000	.000	.000	.250	.500	.625	.625	.000	.000	.750	.688	.659	.000	.000	.000	.769

Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
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Groups Printed- Bikes Peds

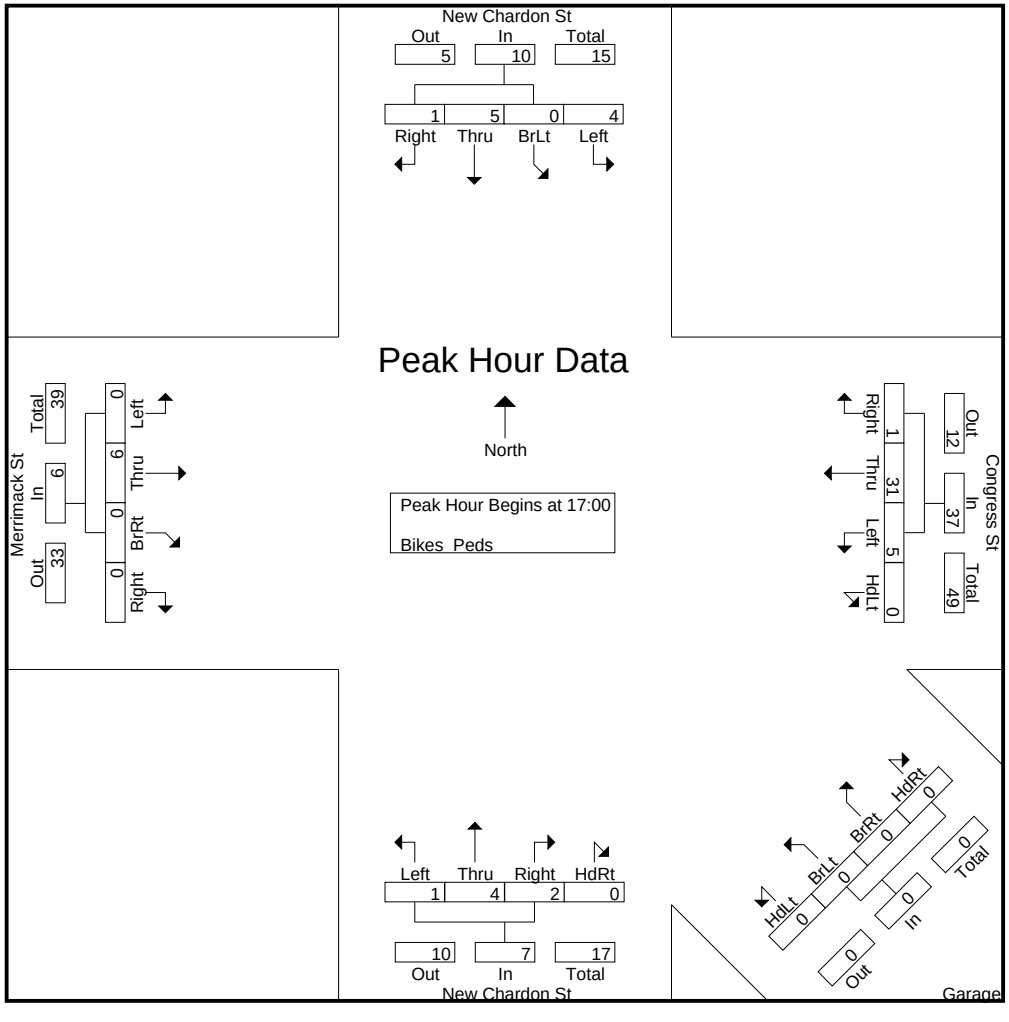
	New Chardon St From North					Congress St From East					Garage From Southeast					New Chardon St From South					Merrimack St From West							
Start Time	Left	BrLt	Thru	Right	Peds	HdLt	Left	Thru	Right	Peds	HdLt	BrLt	BrRt	HdRt	Peds	Left	Thru	Right	HdRt	Peds	Left	Thru	BrRt	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
16:00	0	0	0	1	187	0	0	0	0	50	0	0	0	0	18	0	0	0	0	51	0	3	0	0	20	326	4	330
16:15	0	0	0	1	134	0	0	3	0	63	0	0	0	0	27	0	0	0	0	39	0	0	0	0	30	293	4	297
16:30	1	0	0	0	135	0	0	5	0	55	0	0	0	0	35	0	0	1	0	37	0	1	0	0	29	291	8	299
16:45	0	0	0	0	181	0	0	10	2	51	0	0	0	0	32	0	0	0	0	39	0	0	0	0	31	334	12	346
Total	1	0	0	2	637	0	0	18	2	219	0	0	0	0	112	0	0	1	0	166	0	4	0	0	110	1244	28	1272
17:00	0	0	0	0	303	0	2	5	0	111	0	0	0	0	0	1	0	0	0	12	0	3	0	0	8	434	11	445
17:15	2	0	2	0	272	0	1	9	0	65	0	0	0	0	16	0	2	0	0	51	0	0	0	0	25	429	16	445
17:30	0	0	1	1	187	0	1	11	0	60	0	0	0	0	10	0	1	1	0	35	0	3	0	0	20	312	19	331
17:45	2	0	2	0	111	0	1	6	1	28	0	0	0	0	23	0	1	1	0	59	0	0	0	0	21	242	14	256
Total	4	0	5	1	873	0	5	31	1	264	0	0	0	0	49	1	4	2	0	157	0	6	0	0	74	1417	60	1477
Grand Total	5	0	5	3	1510	0	5	49	3	483	0	0	0	0	161	1	4	3	0	323	0	10	0	0	184	2661	88	2749
Apprch %	38.5	0	38.5	23.1		0	8.8	86	5.3		0	0	0	0		12.5	50	37.5	0		0	100	0	0				
Total %	5.7	0	5.7	3.4		0	5.7	55.7	3.4		0	0	0	0		1.1	4.5	3.4	0		0	11.4	0	0		96.8	3.2	

	New Chardon St From North					Congress St From East					Garage From Southeast					New Chardon St From South					Merrimack St 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 16:00 to 17:45 - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 17:00																										
17:00	0	0	0	0	0	0	**2**	5	0	7	0	0	0	0	0	**1**	0	0	0	1	0	**3**	0	0	**3**	11
17:15	**2**	0	**2**	0	**4**	0	1	9	0	10	0	0	0	0	0	0	**2**	0	0	**2**	0	0	0	0	0	16
17:30	0	0	1	**1**	2	0	1	**11**	0	**12**	0	0	0	0	0	0	1	**1**	0	2	0	3	0	0	3	**19**
17:45	2	0	2	0	4	0	1	6	**1**	8	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	14
Total Volume	4	0	5	1	10	0	5	31	1	37	0	0	0	0	0	1	4	2	0	7	0	6	0	0	6	60
% App. Total	40	0	50	10		0	13.5	83.8	2.7		0	0	0	0		14.3	57.1	28.6	0		0	100	0	0		
PHF	.500	.000	.625	.250	.625	.000	.625	.705	.250	.771	.000	.000	.000	.000	.000	.250	.500	.500	.000	.875	.000	.500	.000	.000	.500	.789

Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 2



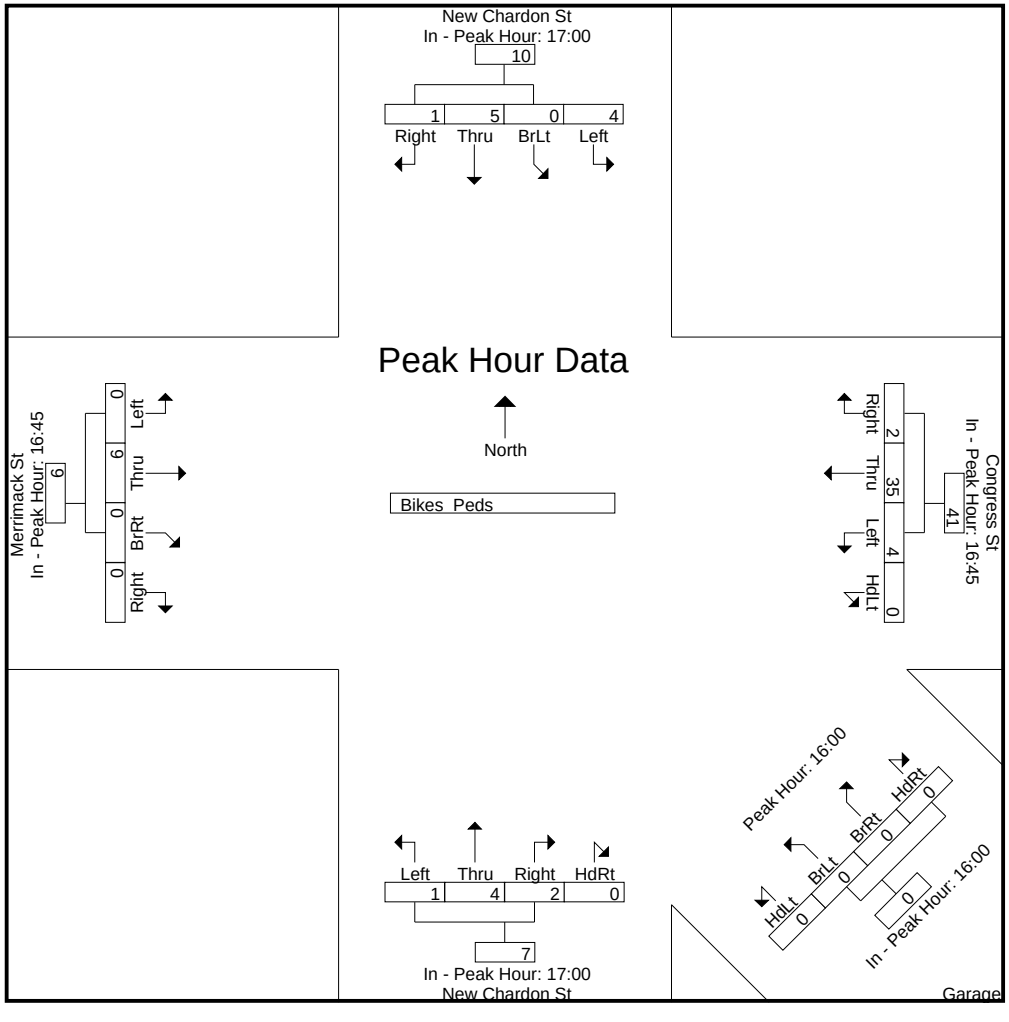
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	17:00					16:45					16:00					17:00					16:45				
+0 mins.	0	0	0	0	0	0	0	10	**2**	**12**	0	0	0	0	0	**1**	0	0	0	1	0	0	0	0	0
+15 mins.	**2**	0	**2**	0	**4**	0	**2**	5	0	7	0	0	0	0	0	0	**2**	0	0	**2**	0	**3**	0	0	**3**
+30 mins.	0	0	1	**1**	2	0	1	9	0	10	0	0	0	0	0	0	1	**1**	0	2	0	0	0	0	0
+45 mins.	2	0	2	0	4	0	1	**11**	0	12	0	0	0	0	0	0	1	1	0	2	0	3	0	0	3
Total Volume	4	0	5	1	10	0	4	35	2	41	0	0	0	0	0	1	4	2	0	7	0	6	0	0	6
% App. Total	40	0	50	10		0	9.8	85.4	4.9		0	0	0	0		14.3	57.1	28.6	0		0	100	0	0	
PHF	.500	.000	.625	.250	.625	.000	.500	.795	.250	.854	.000	.000	.000	.000	.000	.250	.500	.500	.000	.875	.000	.500	.000	.000	.500

Accurate Counts
978-664-2565

N/S Street : New Chardon St / Garage
E/W Street: Congress St / Merrimack St
City/State : Boston, MA
Weather : Clear

File Name : 154100a9
Site Code : 15410009
Start Date : 7/19/2011
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 1

Groups Printed- Cars - Trucks

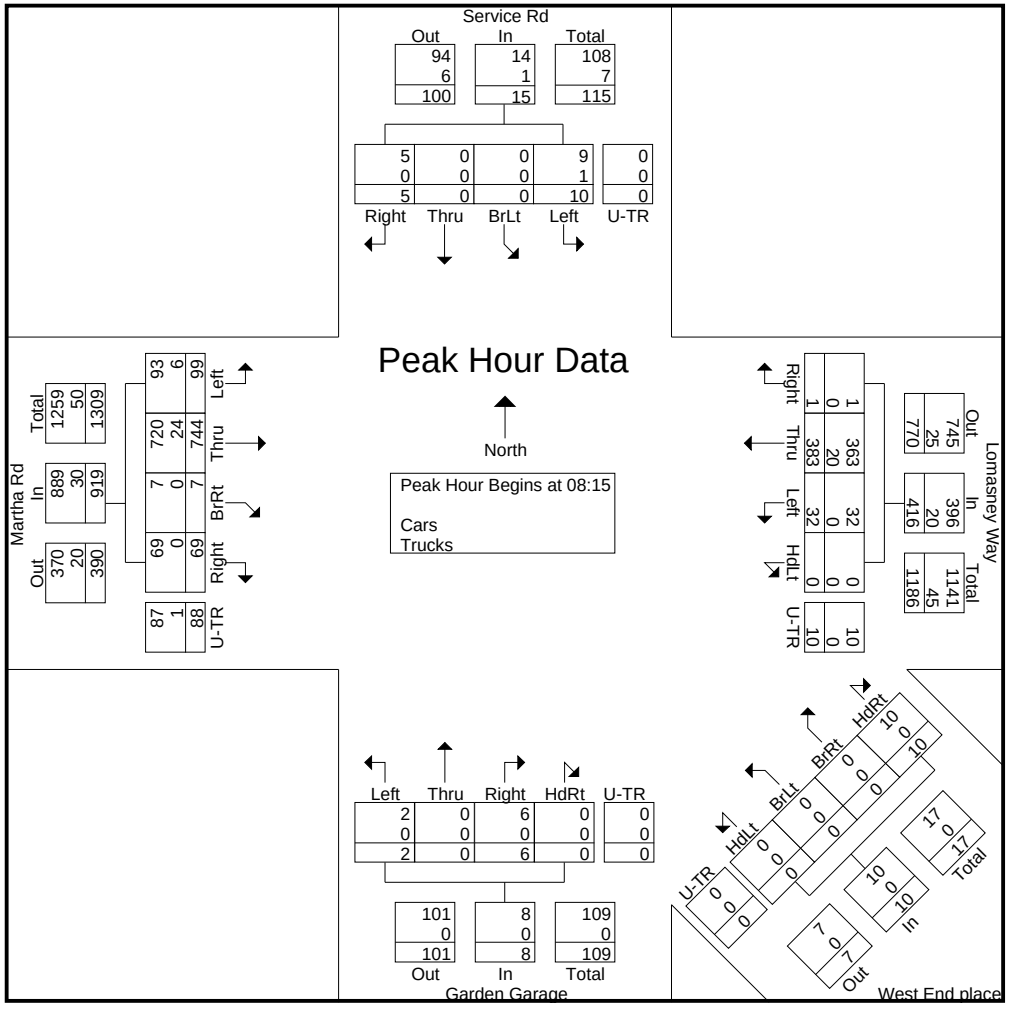
	Service Rd From North					Lomasney Way From East					West End place From Southeast					Garden Garage From South					Martha Rd From West					
Start Time	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	U-TR	Left	Thru	Right	HdRt	U-TR	Left	Thru	BrRt	Right	U-TR	Int. Total
07:30	3	0	0	0	0	0	4	91	1	2	0	0	0	1	0	0	0	3	0	0	34	134	0	21	16	310
07:45	5	0	0	2	0	0	11	101	3	0	0	0	0	3	0	0	0	1	0	0	27	138	1	19	20	331
Total	8	0	0	2	0	0	15	192	4	2	0	0	0	4	0	0	0	4	0	0	61	272	1	40	36	641
08:00	1	0	0	3	0	0	7	61	1	0	0	0	0	0	0	0	0	0	0	0	26	137	1	24	23	284
08:15	3	0	0	0	0	0	8	105	1	3	0	0	0	3	0	0	0	2	0	0	17	182	1	18	20	363
08:30	3	0	0	0	0	0	13	107	0	1	0	0	0	2	0	1	0	2	0	0	33	186	2	22	24	396
08:45	2	0	0	1	0	0	3	108	0	1	0	0	0	1	0	0	0	2	0	0	32	183	1	18	29	381
Total	9	0	0	4	0	0	31	381	2	5	0	0	0	6	0	1	0	6	0	0	108	688	5	82	96	1424
09:00	2	0	0	4	0	0	8	63	0	5	0	0	0	4	0	1	0	0	0	0	17	193	3	11	15	326
09:15	0	0	0	2	0	0	2	69	0	2	0	0	0	0	0	0	0	0	0	0	24	201	1	7	9	317
Grand Total	19	0	0	12	0	0	56	705	6	14	0	0	0	14	0	2	0	10	0	0	210	1354	10	140	156	2708
Apprch %	61.3	0	0	38.7	0	0	7.2	90.3	0.8	1.8	0	0	0	100	0	16.7	0	83.3	0	0	11.2	72.4	0.5	7.5	8.3	
Total %	0.7	0	0	0.4	0	0	2.1	26	0.2	0.5	0	0	0	0.5	0	0.1	0	0.4	0	0	7.8	50	0.4	5.2	5.8	
Cars	17	0	0	12	0	0	56	673	6	14	0	0	0	14	0	2	0	10	0	0	198	1300	10	140	155	2607
% Cars	89.5	0	0	100	0	0	100	95.5	100	100	0	0	0	100	0	100	0	100	0	0	94.3	96	100	100	99.4	96.3
Trucks	2	0	0	0	0	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	12	54	0	0	1	101
% Trucks	10.5	0	0	0	0	0	0	4.5	0	0	0	0	0	0	0	0	0	0	0	0	5.7	4	0	0	0.6	3.7

	Service Rd From North						Lomasney Way From East						West End place From Southeast						Garden Garage From South						Martha Rd From West						
Start Time	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	Left	Thru	BrRt	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 08:15																															
08:15	**3**	0	0	0	0	3	0	8	105	**1**	3	117	0	0	0	3	0	3	0	0	**2**	0	0	2	17	182	1	18	20	238	363
08:30	3	0	0	0	0	3	0	**13**	107	0	1	**121**	0	0	0	2	0	2	**1**	0	2	0	0	**3**	**33**	186	2	**22**	24	**267**	**396**
08:45	2	0	0	1	0	3	0	3	**108**	0	1	112	0	0	0	1	0	1	0	0	2	0	0	2	32	183	1	18	**29**	263	381
09:00	2	0	0	**4**	0	**6**	0	8	63	0	**5**	76	0	0	0	**4**	0	**4**	1	0	0	0	0	1	17	**193**	**3**	11	15	239	326
Total Volume	10	0	0	5	0	15	0	32	383	1	10	426	0	0	0	10	0	10	2	0	6	0	0	8	99	744	7	69	88	1007	1466
% App. Total	66.7	0	0	33.3	0		0	7.5	89.9	0.2	2.3		0	0	0	100	0		25	0	75	0	0		9.8	73.9	0.7	6.9	8.7		
PHF	.833	.000	.000	.313	.000	.625	.000	.615	.887	.250	.500	.880	.000	.000	.000	.625	.000	.625	.500	.000	.750	.000	.000	.667	.750	.964	.583	.784	.759	.943	.926
Cars	9	0	0	5	0	14	0	32	363	1	10	406	0	0	0	10	0	10	2	0	6	0	0	8	93	720	7	69	87	976	1414
% Cars	90.0	0	0	100	0	93.3	0	100	94.8	100	100	95.3	0	0	0	100	0	100	100	0	100	0	0	100	93.9	96.8	100	100	98.9	96.9	96.5
Trucks	1	0	0	0	0	1	0	0	20	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	6	24	0	0	1	31	52
% Trucks	10.0	0	0	0	0	6.7	0	0	5.2	0	0	4.7	0	0	0	0	0	0	0	0	0	0	0	0	6.1	3.2	0	0	1.1	3.1	3.5

Accurate Counts
978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

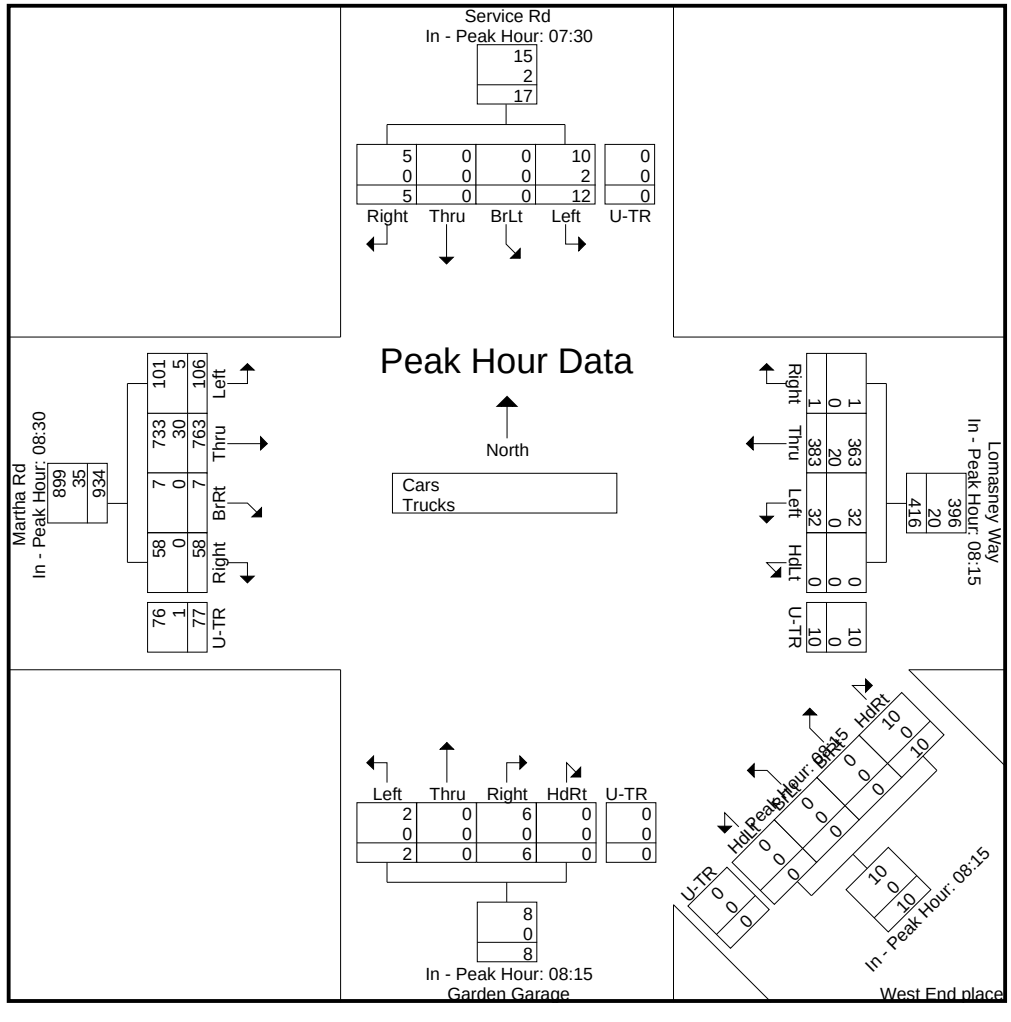
File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30						08:15						08:15						08:15						08:30					
+0 mins.	3	0	0	0	0	3	0	8	105	**1**	3	117	0	0	0	3	0	3	0	0	**2**	0	0	2	**33**	186	2	**22**	24	**267**
+15 mins.	**5**	0	0	2	0	**7**	0	**13**	107	0	1	**121**	0	0	0	2	0	2	**1**	0	2	0	0	**3**	32	183	1	18	**29**	263
+30 mins.	1	0	0	**3**	0	4	0	3	**108**	0	1	112	0	0	0	1	0	1	0	0	2	0	0	2	17	193	**3**	11	15	239
+45 mins.	3	0	0	0	0	3	0	8	63	0	**5**	76	0	0	0	**4**	0	**4**	1	0	0	0	0	1	24	**201**	1	7	9	242
Total Volume	12	0	0	5	0	17	0	32	383	1	10	426	0	0	0	10	0	10	2	0	6	0	0	8	106	763	7	58	77	1011
% App. Total	70.6	0	0	29.4	0		0	7.5	89.9	0.2	2.3		0	0	0	100	0		25	0	75	0	0		10.5	75.5	0.7	5.7	7.6	
PHF	.600	.000	.000	.417	.000	.607	.000	.615	.887	.250	.500	.880	.000	.000	.000	.625	.000	.625	.500	.000	.750	.000	.000	.667	.803	.949	.583	.659	.664	.947
Cars	10	0	0	5	0	15	0	32	363	1	10	406	0	0	0	10	0	10	2	0	6	0	0	8	101	733	7	58	76	975
% Cars	83.3	0	0	100	0	88.2	0	100	94.8	100	100	95.3	0	0	0	100	0	100	100	0	100	0	0	100	95.3	96.1	100	100	98.7	96.4

% Trucks	16.7	0	0	0	0	11.8	0	0	5.2	0	0	4.7	0	0	0	0	0	0	0	0	0	0	0	0	4.7	3.9	0	0	1.3	3.6



Accurate Counts
978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 1

Groups Printed- Cars

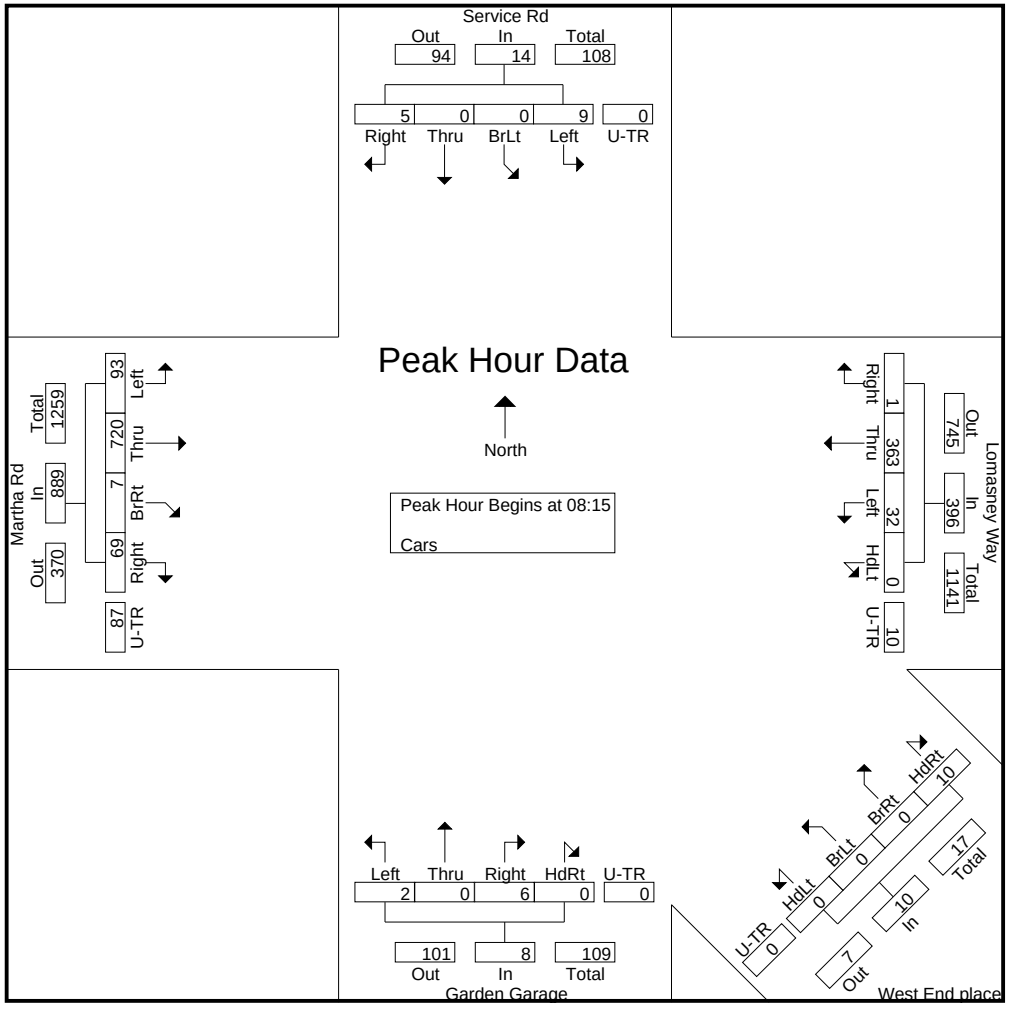
	Service Rd From North					Lomasney Way From East					West End place From Southeast					Garden Garage From South					Martha Rd From West					
Start Time	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	U-TR	Left	Thru	Right	HdRt	U-TR	Left	Thru	BrRt	Right	U-TR	Int. Total
07:30	3	0	0	0	0	0	4	86	1	2	0	0	0	1	0	0	0	3	0	0	32	128	0	21	16	297
07:45	4	0	0	2	0	0	11	98	3	0	0	0	0	3	0	0	0	1	0	0	25	132	1	19	20	319
Total	7	0	0	2	0	0	15	184	4	2	0	0	0	4	0	0	0	4	0	0	57	260	1	40	36	616
08:00	1	0	0	3	0	0	7	58	1	0	0	0	0	0	0	0	0	0	0	0	24	129	1	24	23	271
08:15	2	0	0	0	0	0	8	97	1	3	0	0	0	3	0	0	0	2	0	0	16	178	1	18	20	349
08:30	3	0	0	0	0	0	13	104	0	1	0	0	0	2	0	1	0	2	0	0	31	180	2	22	23	384
08:45	2	0	0	1	0	0	3	102	0	1	0	0	0	1	0	0	0	2	0	0	31	176	1	18	29	367
Total	8	0	0	4	0	0	31	361	2	5	0	0	0	6	0	1	0	6	0	0	102	663	5	82	95	1371
09:00	2	0	0	4	0	0	8	60	0	5	0	0	0	4	0	1	0	0	0	0	15	186	3	11	15	314
09:15	0	0	0	2	0	0	2	68	0	2	0	0	0	0	0	0	0	0	0	0	24	191	1	7	9	306
Grand Total	17	0	0	12	0	0	56	673	6	14	0	0	0	14	0	2	0	10	0	0	198	1300	10	140	155	2607
Apprch %	58.6	0	0	41.4	0	0	7.5	89.9	0.8	1.9	0	0	0	100	0	16.7	0	83.3	0	0	11	72.1	0.6	7.8	8.6	
Total %	0.7	0	0	0.5	0	0	2.1	25.8	0.2	0.5	0	0	0	0.5	0	0.1	0	0.4	0	0	7.6	49.9	0.4	5.4	5.9	

	Service Rd From North						Lomasney Way From East						West End place From Southeast						Garden Garage From South						Martha Rd From West						
Start Time	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	Left	Thru	BrRt	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 08:15																															
08:15	2	0	0	0	0	2	0	8	97	**1**	3	109	0	0	0	3	0	3	0	0	**2**	0	0	2	16	178	1	18	20	233	349
08:30	**3**	0	0	0	0	3	0	**13**	**104**	0	1	**118**	0	0	0	2	0	2	**1**	0	2	0	0	**3**	**31**	180	2	**22**	23	**258**	**384**
08:45	2	0	0	1	0	3	0	3	102	0	1	106	0	0	0	1	0	1	0	0	2	0	0	2	31	176	1	18	**29**	255	367
09:00	2	0	0	**4**	0	**6**	0	8	60	0	**5**	73	0	0	0	**4**	0	**4**	1	0	0	0	0	1	15	**186**	**3**	11	15	230	314
Total Volume	9	0	0	5	0	14	0	32	363	1	10	406	0	0	0	10	0	10	2	0	6	0	0	8	93	720	7	69	87	976	1414
% App. Total	64.3	0	0	35.7	0		0	7.9	89.4	0.2	2.5		0	0	0	100	0		25	0	75	0	0		9.5	73.8	0.7	7.1	8.9		
PHF	.750	.000	.000	.313	.000	.583	.000	.615	.873	.250	.500	.860	.000	.000	.000	.625	.000	.625	.500	.000	.750	.000	.000	.667	.750	.968	.583	.784	.750	.946	.921

Accurate Counts
978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 2



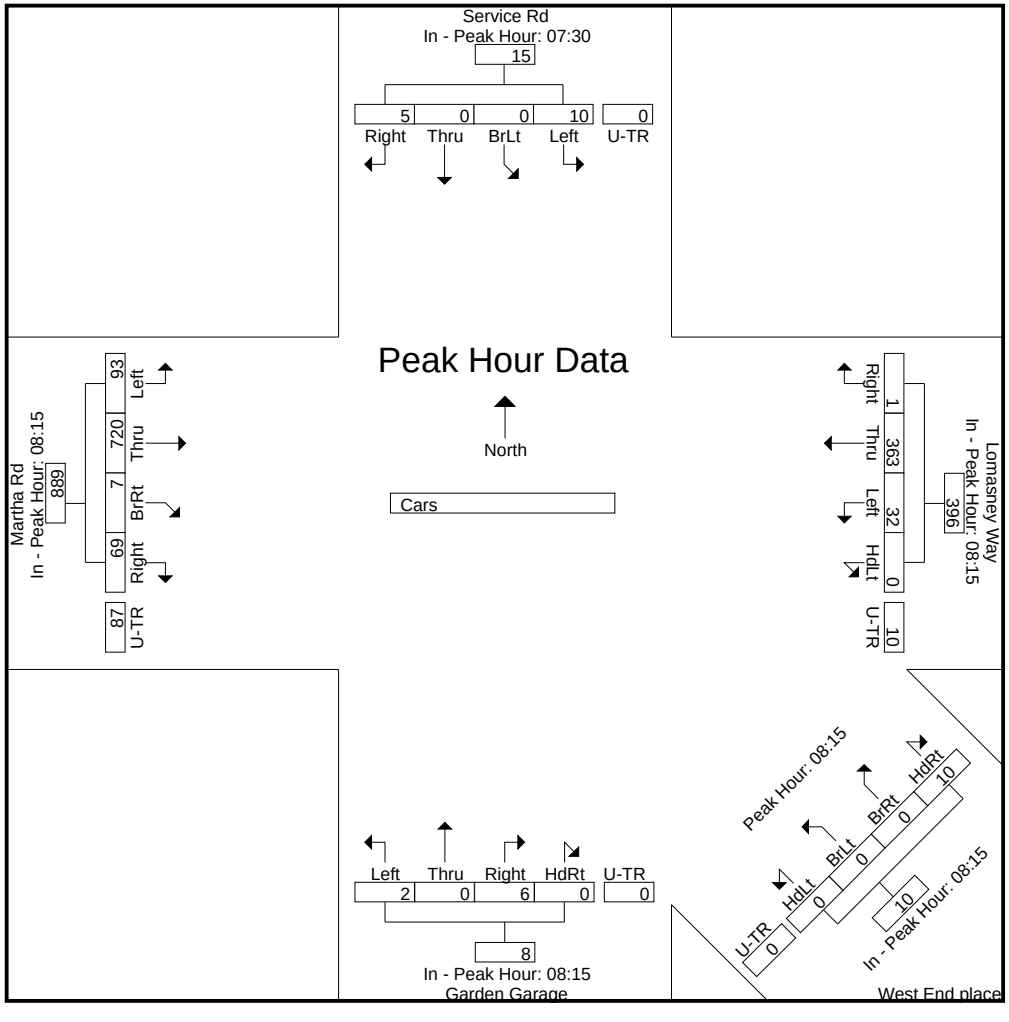
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30						08:15						08:15						08:15						08:15					
+0 mins.	3	0	0	0	0	3	0	8	97	**1**	3	109	0	0	0	3	0	3	0	0	**2**	0	0	2	16	178	1	18	20	233
+15 mins.	**4**	0	0	2	0	**6**	0	**13**	**104**	0	1	**118**	0	0	0	2	0	2	**1**	0	2	0	0	**3**	**31**	180	2	**22**	23	**258**
+30 mins.	1	0	0	**3**	0	4	0	3	102	0	1	106	0	0	0	1	0	1	0	0	2	0	0	2	31	176	1	18	**29**	255
+45 mins.	2	0	0	0	0	2	0	8	60	0	**5**	73	0	0	0	**4**	0	**4**	1	0	0	0	0	1	15	**186**	**3**	11	15	230
Total Volume	10	0	0	5	0	15	0	32	363	1	10	406	0	0	0	10	0	10	2	0	6	0	0	8	93	720	7	69	87	976
% App. Total	66.7	0	0	33.3	0		0	7.9	89.4	0.2	2.5		0	0	0	100	0		25	0	75	0	0		9.5	73.8	0.7	7.1	8.9	
PHF	.625	.000	.000	.417	.000	.625	.000	.615	.873	.250	.500	.860	.000	.000	.000	.625	.000	.625	.500	.000	.750	.000	.000	.667	.750	.968	.583	.784	.750	.946

Accurate Counts
978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 1

Groups Printed- Trucks

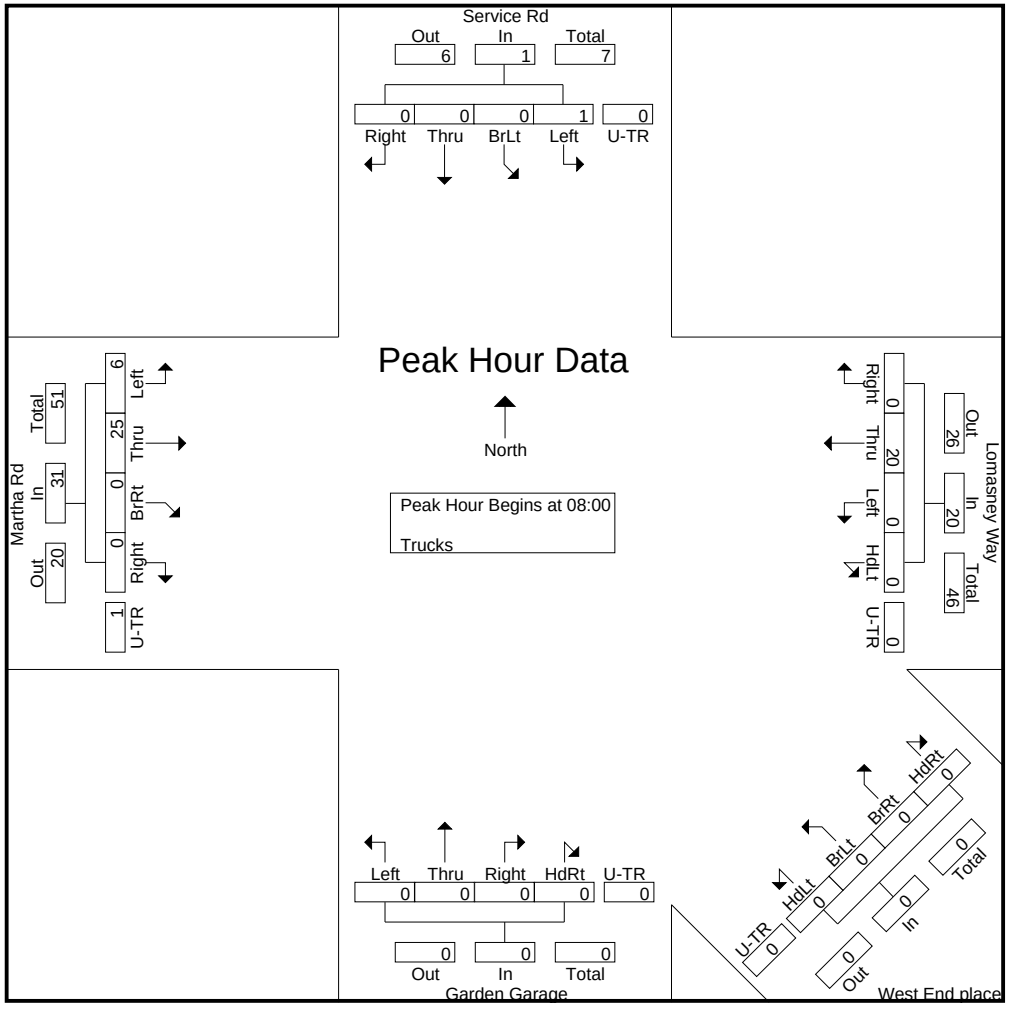
	Service Rd From North					Lomasney Way From East					West End place From Southeast					Garden Garage From South					Martha Rd From West					
Start Time	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	U-TR	Left	Thru	Right	HdRt	U-TR	Left	Thru	BrRt	Right	U-TR	Int. Total
07:30	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	2	6	0	0	0	13
07:45	1	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	2	6	0	0	0	12
Total	1	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	4	12	0	0	0	25
08:00	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	2	8	0	0	0	13
08:15	1	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0	0	0	14
08:30	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	2	6	0	0	1	12
08:45	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	1	7	0	0	0	14
Total	1	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	6	25	0	0	1	53
09:00	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	2	7	0	0	0	12
09:15	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	11
Grand Total	2	0	0	0	0	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	12	54	0	0	1	101
Apprch %	100	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	17.9	80.6	0	0	1.5	
Total %	2	0	0	0	0	0	0	31.7	0	0	0	0	0	0	0	0	0	0	0	0	11.9	53.5	0	0	1	

	Service Rd From North						Lomasney Way From East						West End place From Southeast						Garden Garage From South						Martha Rd From West						
Start Time	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	Left	Thru	BrRt	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 08:00																															
08:00	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	**2**	**8**	0	0	0	**10**	13
08:15	**1**	0	0	0	0	**1**	0	0	**8**	0	0	**8**	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0	0	0	5	**14**
08:30	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	2	6	0	0	**1**	9	12
08:45	0	0	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	1	7	0	0	0	8	14
Total Volume	1	0	0	0	0	1	0	0	20	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	6	25	0	0	1	32	53
% App. Total	100	0	0	0	0		0	0	100	0	0		0	0	0	0	0		0	0	0	0	0		18.8	78.1	0	0	3.1		
PHF	.250	.000	.000	.000	.000	.250	.000	.000	.625	.000	.000	.625	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.750	.781	.000	.000	.250	.800	.946

Accurate Counts
978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 2



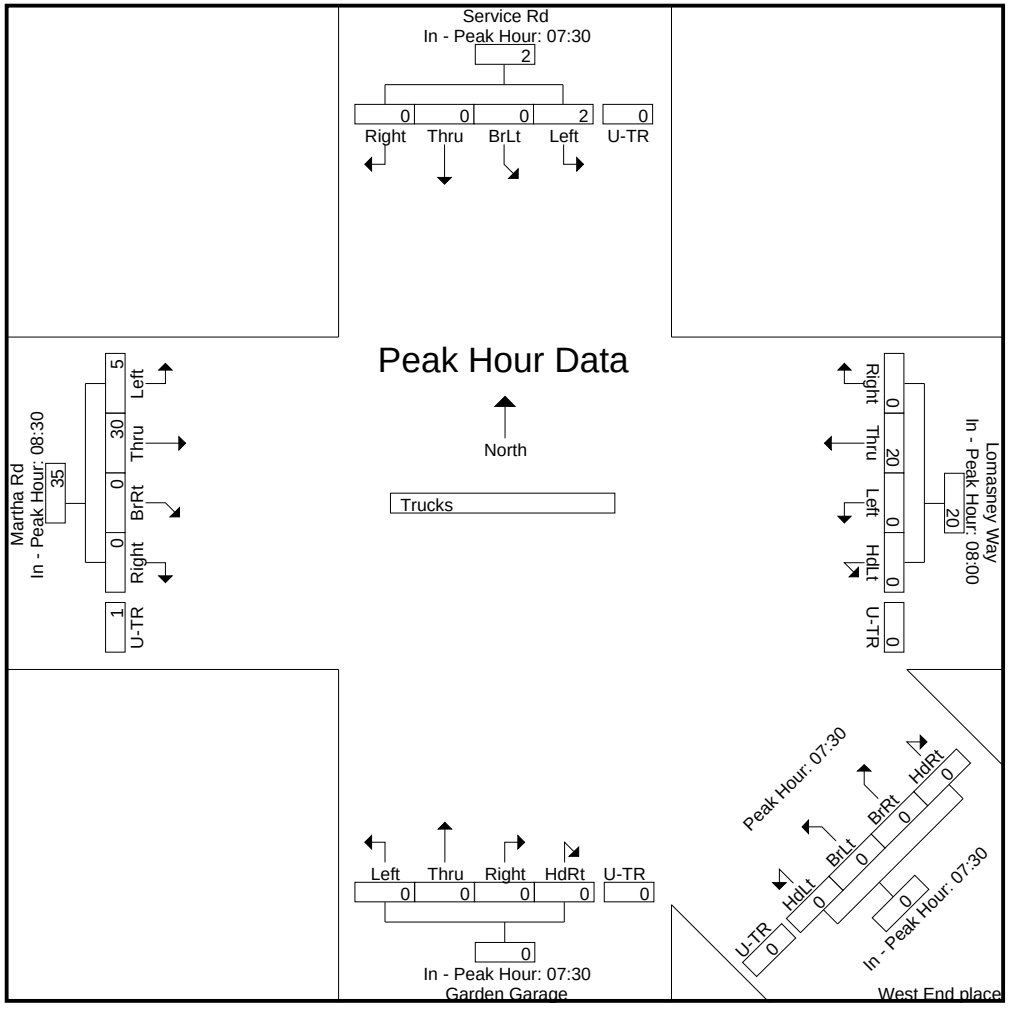
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30						08:00						07:30						07:30						08:30					
+0 mins.	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	**2**	6	0	0	**1**	9
+15 mins.	**1**	0	0	0	0	**1**	0	0	**8**	0	0	**8**	0	0	0	0	0	0	0	0	0	0	0	0	1	7	0	0	0	8
+30 mins.	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	2	7	0	0	0	9
+45 mins.	1	0	0	0	0	1	0	0	6	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	**10**	0	0	0	**10**
Total Volume	2	0	0	0	0	2	0	0	20	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	5	30	0	0	1	36
% App. Total	100	0	0	0	0		0	0	100	0	0		0	0	0	0	0		0	0	0	0	0		13.9	83.3	0	0	2.8	
PHF	.500	.000	.000	.000	.000	.500	.000	.000	.625	.000	.000	.625	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.625	.750	.000	.000	.250	.900

Accurate Counts
978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 1

Groups Printed- Bikes Peds

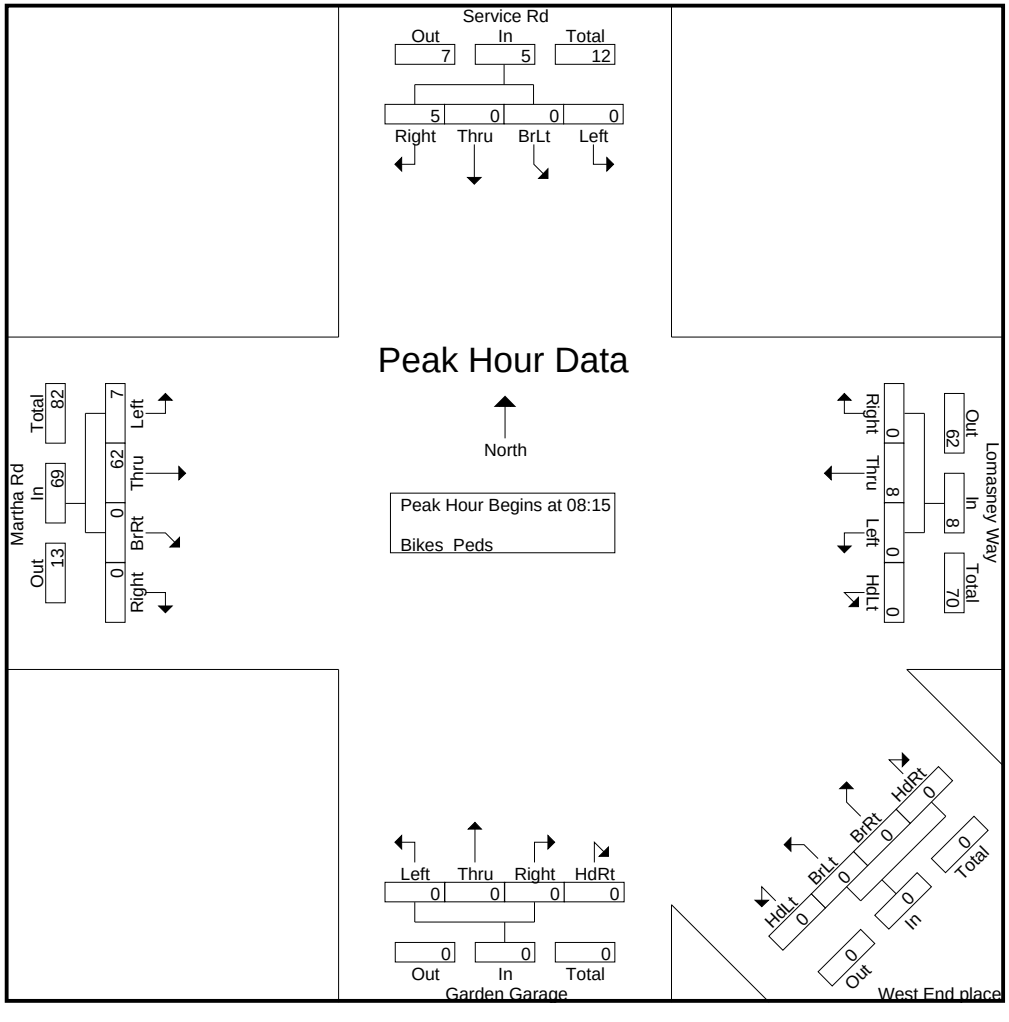
	Service Rd From North					Lomasney Way From East					West End place From Southeast					Garden Garage From South					Martha Rd From West							
Start Time	Left	BrLt	Thru	Right	Peds	HdLt	Left	Thru	Right	Peds	HdLt	BrLt	BrRt	HdRt	Peds	Left	Thru	Right	HdRt	Peds	Left	Thru	BrRt	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:30	2	0	0	0	0	0	0	2	0	24	0	0	0	0	0	0	0	0	0	24	0	12	0	0	2	50	16	66
07:45	0	0	0	0	0	0	0	1	0	13	0	0	0	0	0	0	0	0	0	24	1	14	0	0	2	39	16	55
Total	2	0	0	0	0	0	0	3	0	37	0	0	0	0	0	0	0	0	0	48	1	26	0	0	4	89	32	121
08:00	0	0	0	0	0	0	0	1	0	32	0	0	0	0	0	0	0	0	0	31	1	10	0	0	0	63	12	75
08:15	0	0	0	0	1	0	0	3	0	15	0	0	0	0	0	0	0	0	0	18	3	14	0	0	4	38	20	58
08:30	0	0	0	2	1	0	0	2	0	28	0	0	0	0	0	0	0	0	0	26	2	14	0	0	0	55	20	75
08:45	0	0	0	1	0	0	0	1	0	31	0	0	0	0	0	0	0	0	0	36	1	17	0	0	8	75	20	95
Total	0	0	0	3	2	0	0	7	0	106	0	0	0	0	0	0	0	0	0	111	7	55	0	0	12	231	72	303
09:00	0	0	0	2	1	0	0	2	0	45	0	0	0	0	0	0	0	0	0	40	1	17	0	0	2	88	22	110
09:15	0	0	0	1	3	0	0	1	0	28	0	0	0	0	0	0	0	0	0	15	1	9	0	0	7	53	12	65
Grand Total	2	0	0	6	6	0	0	13	0	216	0	0	0	0	0	0	0	0	0	214	10	107	0	0	25	461	138	599
Apprch %	25	0	0	75		0	0	100	0		0	0	0	0		0	0	0	0		8.5	91.5	0	0				
Total %	1.4	0	0	4.3		0	0	9.4	0		0	0	0	0		0	0	0	0		7.2	77.5	0	0		77	23	

	Service Rd From North					Lomasney Way From East					West End place From Southeast					Garden Garage From South					Martha Rd 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 07:30 to 09:15 - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 08:15																										
08:15	0	0	0	0	0	0	0	**3**	0	**3**	0	0	0	0	0	0	0	0	0	0	**3**	14	0	0	17	20
08:30	0	0	0	**2**	**2**	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2	14	0	0	16	20
08:45	0	0	0	1	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	**17**	0	0	**18**	20
09:00	0	0	0	2	2	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	1	17	0	0	18	**22**
Total Volume	0	0	0	5	5	0	0	8	0	8	0	0	0	0	0	0	0	0	0	0	7	62	0	0	69	82
% App. Total	0	0	0	100		0	0	100	0		0	0	0	0		0	0	0	0		10.1	89.9	0	0		
PHF	.000	.000	.000	.625	.625	.000	.000	.667	.000	.667	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.583	.912	.000	.000	.958	.932

Accurate Counts
978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 2



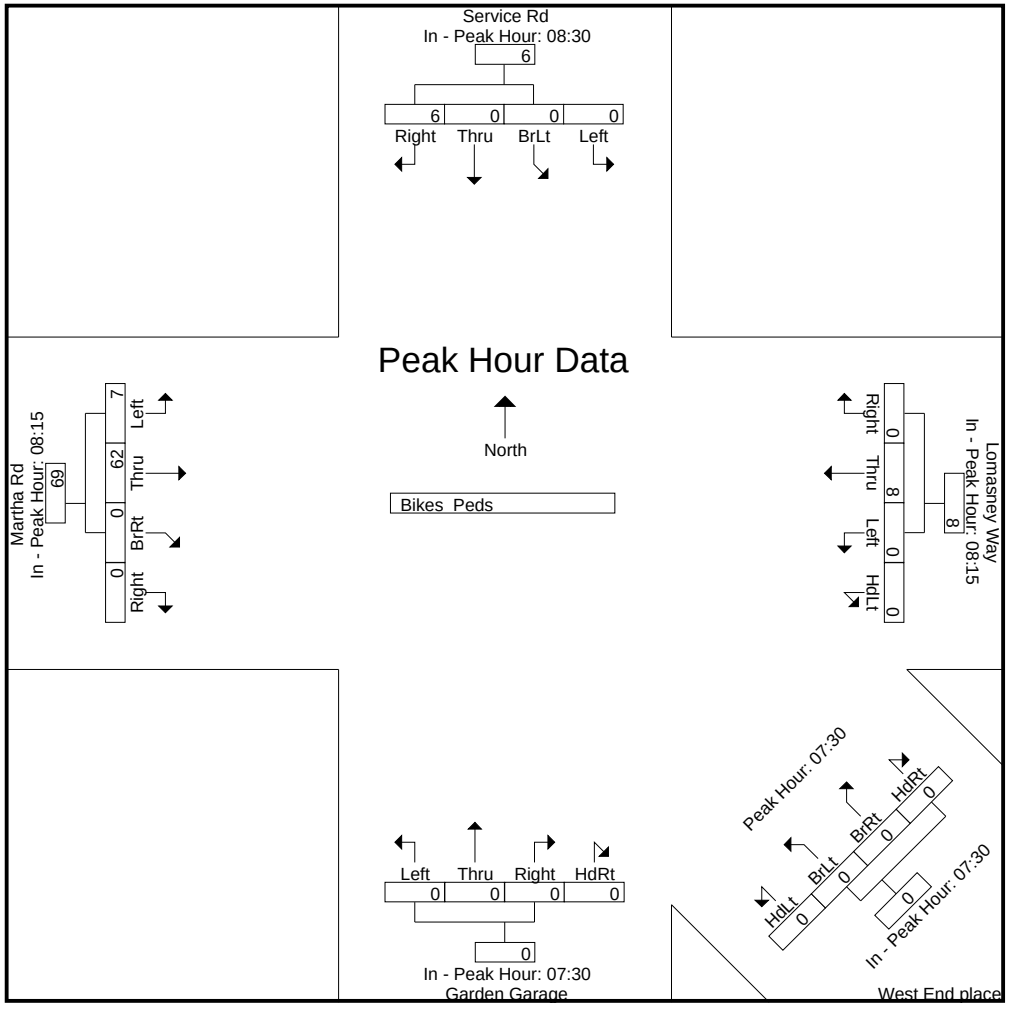
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:30					08:15					07:30					07:30					08:15				
+0 mins.	0	0	0	**2**	**2**	0	0	**3**	0	**3**	0	0	0	0	0	0	0	0	0	0	**3**	14	0	0	17
+15 mins.	0	0	0	1	1	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2	14	0	0	16
+30 mins.	0	0	0	2	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	**17**	0	0	**18**
+45 mins.	0	0	0	1	1	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	1	17	0	0	18
Total Volume	0	0	0	6	6	0	0	8	0	8	0	0	0	0	0	0	0	0	0	0	7	62	0	0	69
% App. Total	0	0	0	100		0	0	100	0		0	0	0	0		0	0	0	0		10.1	89.9	0	0	
PHF	.000	.000	.000	.750	.750	.000	.000	.667	.000	.667	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.583	.912	.000	.000	.958

Accurate Counts
978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 1

Groups Printed- Cars - Trucks

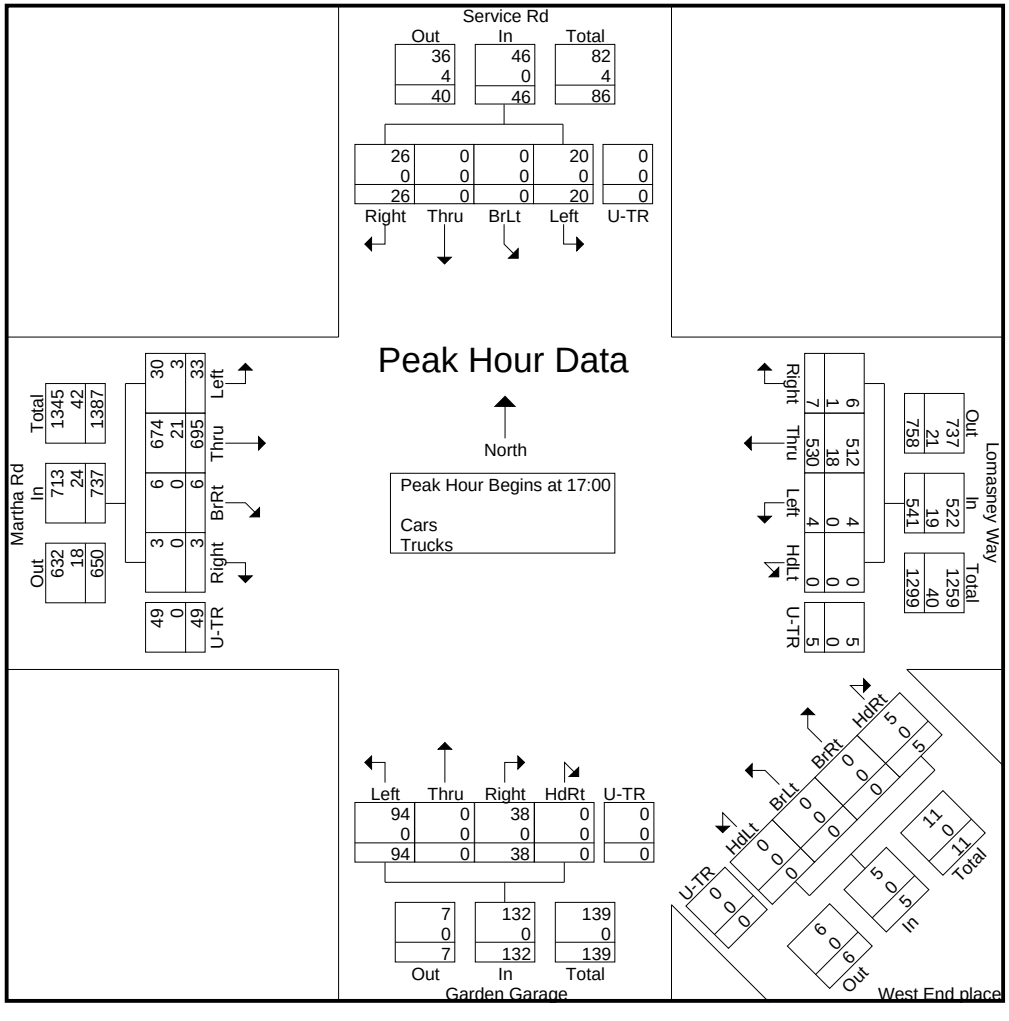
	Service Rd From North					Lomasney Way From East					West End place From Southeast					Garden Garage From South					Martha Rd From West					
Start Time	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	U-TR	Left	Thru	Right	HdRt	U-TR	Left	Thru	BrRt	Right	U-TR	Int. Total
16:00	6	0	0	7	0	0	1	111	2	2	0	0	0	1	0	23	0	6	0	0	8	121	1	1	9	299
16:15	3	0	0	10	0	0	2	106	0	1	0	0	0	3	0	23	0	6	0	0	12	134	0	1	14	315
16:30	3	0	0	10	0	0	0	118	1	4	0	0	0	2	0	16	1	6	0	0	9	156	0	1	11	338
16:45	6	0	0	11	0	0	0	106	1	3	0	0	0	0	0	17	1	7	0	0	6	174	2	2	8	344
Total	18	0	0	38	0	0	3	441	4	10	0	0	0	6	0	79	2	25	0	0	35	585	3	5	42	1296
17:00	5	0	0	11	0	0	1	143	0	2	0	0	0	1	0	26	0	8	0	0	14	156	0	0	15	382
17:15	4	0	0	7	0	0	1	120	3	1	0	0	0	1	0	30	0	6	0	0	10	174	1	0	10	368
17:30	8	0	0	5	0	0	0	136	3	1	0	0	0	1	0	23	0	11	0	0	4	177	3	1	15	388
17:45	3	0	0	3	0	0	2	131	1	1	0	0	0	2	0	15	0	13	0	0	5	188	2	2	9	377
Total	20	0	0	26	0	0	4	530	7	5	0	0	0	5	0	94	0	38	0	0	33	695	6	3	49	1515
Grand Total	38	0	0	64	0	0	7	971	11	15	0	0	0	11	0	173	2	63	0	0	68	1280	9	8	91	2811
Apprch %	37.3	0	0	62.7	0	0	0.7	96.7	1.1	1.5	0	0	0	100	0	72.7	0.8	26.5	0	0	4.7	87.9	0.6	0.5	6.2	
Total %	1.4	0	0	2.3	0	0	0.2	34.5	0.4	0.5	0	0	0	0.4	0	6.2	0.1	2.2	0	0	2.4	45.5	0.3	0.3	3.2	
Cars	37	0	0	64	0	0	7	926	7	15	0	0	0	11	0	173	2	63	0	0	61	1232	9	8	91	2706
% Cars	97.4	0	0	100	0	0	100	95.4	63.6	100	0	0	0	100	0	100	100	100	0	0	89.7	96.2	100	100	100	96.3
Trucks	1	0	0	0	0	0	0	45	4	0	0	0	0	0	0	0	0	0	0	0	7	48	0	0	0	105
% Trucks	2.6	0	0	0	0	0	0	4.6	36.4	0	0	0	0	0	0	0	0	0	0	0	10.3	3.8	0	0	0	3.7

	Service Rd From North						Lomasney Way From East						West End place From Southeast						Garden Garage From South						Martha Rd From West						
Start Time	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	Left	Thru	BrRt	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 17:00																															
17:00	5	0	0	**11**	0	**16**	0	1	**143**	0	**2**	**146**	0	0	0	1	0	1	26	0	8	0	0	34	**14**	156	0	0	**15**	185	382
17:15	4	0	0	7	0	11	0	1	120	**3**	1	125	0	0	0	1	0	1	**30**	0	6	0	0	**36**	10	174	1	0	10	195	368
17:30	**8**	0	0	5	0	13	0	0	136	3	1	140	0	0	0	1	0	1	23	0	11	0	0	34	4	177	**3**	1	15	200	**388**
17:45	3	0	0	3	0	6	0	**2**	131	1	1	135	0	0	0	**2**	0	**2**	15	0	**13**	0	0	28	5	**188**	2	**2**	9	**206**	377
Total Volume	20	0	0	26	0	46	0	4	530	7	5	546	0	0	0	5	0	5	94	0	38	0	0	132	33	695	6	3	49	786	1515
% App. Total	43.5	0	0	56.5	0		0	0.7	97.1	1.3	0.9		0	0	0	100	0		71.2	0	28.8	0	0		4.2	88.4	0.8	0.4	6.2		
PHF	.625	.000	.000	.591	.000	.719	.000	.500	.927	.583	.625	.935	.000	.000	.000	.625	.000	.625	.783	.000	.731	.000	.000	.917	.589	.924	.500	.375	.817	.954	.976
Cars	20	0	0	26	0	46	0	4	512	6	5	527	0	0	0	5	0	5	94	0	38	0	0	132	30	674	6	3	49	762	1472
% Cars	100	0	0	100	0	100	0	100	96.6	85.7	100	96.5	0	0	0	100	0	100	100	0	100	0	0	100	90.9	97.0	100	100	100	96.9	97.2
Trucks	0	0	0	0	0	0	0	0	18	1	0	19	0	0	0	0	0	0	0	0	0	0	0	0	3	21	0	0	0	24	43
% Trucks	0	0	0	0	0	0	0	0	3.4	14.3	0	3.5	0	0	0	0	0	0	0	0	0	0	0	0	9.1	3.0	0	0	0	3.1	2.8

Accurate Counts
978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

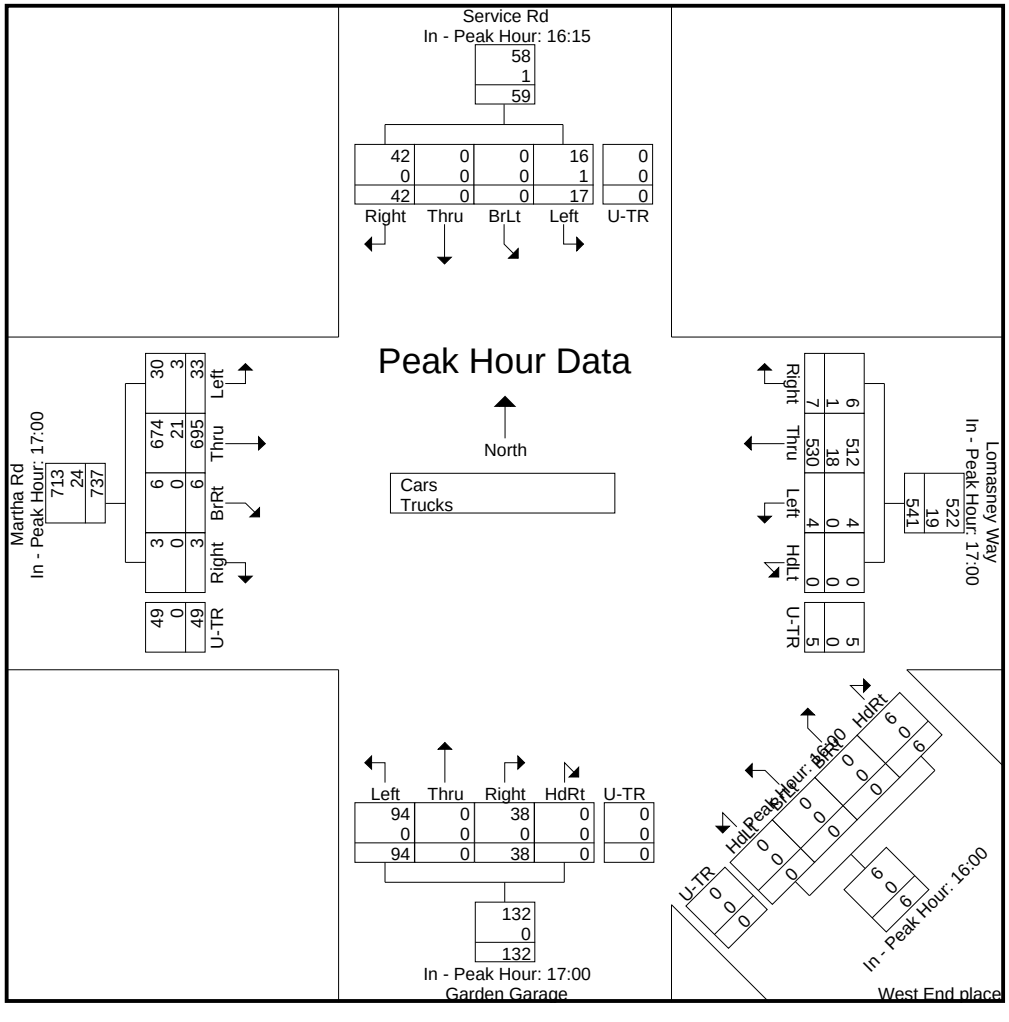
File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	16:15						17:00						16:00						17:00						17:00					
+0 mins.	3	0	0	10	0	13	0	1	**143**	0	**2**	**146**	0	0	0	1	0	1	26	0	8	0	0	34	**14**	156	0	0	**15**	185
+15 mins.	3	0	0	10	0	13	0	1	120	**3**	1	125	0	0	0	**3**	0	**3**	**30**	0	6	0	0	**36**	10	174	1	0	10	195
+30 mins.	**6**	0	0	**11**	0	**17**	0	0	136	3	1	140	0	0	0	2	0	2	23	0	11	0	0	34	4	177	**3**	1	15	200
+45 mins.	5	0	0	11	0	16	0	**2**	131	1	1	135	0	0	0	0	0	0	15	0	**13**	0	0	28	5	**188**	2	**2**	9	**206**
Total Volume	17	0	0	42	0	59	0	4	530	7	5	546	0	0	0	6	0	6	94	0	38	0	0	132	33	695	6	3	49	786
% App. Total	28.8	0	0	71.2	0		0	0.7	97.1	1.3	0.9		0	0	0	100	0		71.2	0	28.8	0	0		4.2	88.4	0.8	0.4	6.2	
PHF	.708	.000	.000	.955	.000	.868	.000	.500	.927	.583	.625	.935	.000	.000	.000	.500	.000	.500	.783	.000	.731	.000	.000	.917	.589	.924	.500	.375	.817	.954
Cars	16	0	0	42	0	58	0	4	512	6	5	527	0	0	0	6	0	6	94	0	38	0	0	132	30	674	6	3	49	762
% Cars	94.1	0	0	100	0	98.3	0	100	96.6	85.7	100	96.5	0	0	0	100	0	100	100	0	100	0	0	100	90.9	97	100	100	100	96.9

% Trucks	5.9	0	0	0	0	1.7	0	0	3.4	14.3	0	3.5	0	0	0	0	0	0	0	0	0	0	0	0	9.1	3	0	0	0	3.1



Accurate Counts

978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 1

Groups Printed- Cars

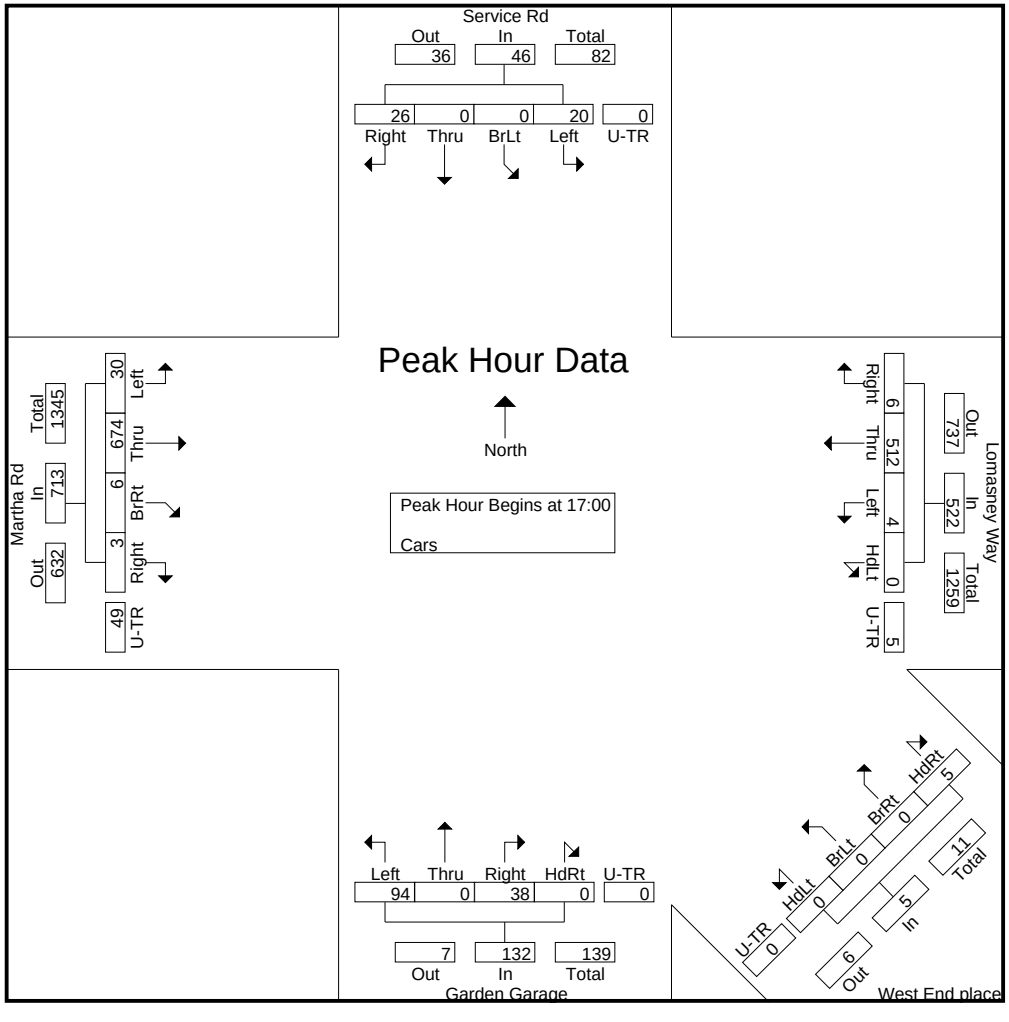
	Service Rd From North					Lomasney Way From East					West End place From Southeast					Garden Garage From South					Martha Rd From West					
Start Time	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	U-TR	Left	Thru	Right	HdRt	U-TR	Left	Thru	BrRt	Right	U-TR	Int. Total
16:00	6	0	0	7	0	0	1	107	0	2	0	0	0	1	0	23	0	6	0	0	8	109	1	1	9	281
16:15	3	0	0	10	0	0	2	97	0	1	0	0	0	3	0	23	0	6	0	0	9	128	0	1	14	297
16:30	3	0	0	10	0	0	0	113	0	4	0	0	0	2	0	16	1	6	0	0	8	151	0	1	11	326
16:45	5	0	0	11	0	0	0	97	1	3	0	0	0	0	0	17	1	7	0	0	6	170	2	2	8	330
Total	17	0	0	38	0	0	3	414	1	10	0	0	0	6	0	79	2	25	0	0	31	558	3	5	42	1234
17:00	5	0	0	11	0	0	1	140	0	2	0	0	0	1	0	26	0	8	0	0	13	151	0	0	15	373
17:15	4	0	0	7	0	0	1	113	2	1	0	0	0	1	0	30	0	6	0	0	10	171	1	0	10	357
17:30	8	0	0	5	0	0	0	130	3	1	0	0	0	1	0	23	0	11	0	0	3	170	3	1	15	374
17:45	3	0	0	3	0	0	2	129	1	1	0	0	0	2	0	15	0	13	0	0	4	182	2	2	9	368
Total	20	0	0	26	0	0	4	512	6	5	0	0	0	5	0	94	0	38	0	0	30	674	6	3	49	1472
Grand Total	37	0	0	64	0	0	7	926	7	15	0	0	0	11	0	173	2	63	0	0	61	1232	9	8	91	2706
Apprch %	36.6	0	0	63.4	0	0	0.7	97	0.7	1.6	0	0	0	100	0	72.7	0.8	26.5	0	0	4.4	87.9	0.6	0.6	6.5	
Total %	1.4	0	0	2.4	0	0	0.3	34.2	0.3	0.6	0	0	0	0.4	0	6.4	0.1	2.3	0	0	2.3	45.5	0.3	0.3	3.4	

	Service Rd From North						Lomasney Way From East						West End place From Southeast						Garden Garage From South						Martha Rd From West						
Start Time	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	Left	Thru	BrRt	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 17:00																															
17:00	5	0	0	**11**	0	**16**	0	1	**140**	0	**2**	**143**	0	0	0	1	0	1	26	0	8	0	0	34	**13**	151	0	0	**15**	179	373
17:15	4	0	0	7	0	11	0	1	113	2	1	117	0	0	0	1	0	1	**30**	0	6	0	0	**36**	10	171	1	0	10	192	357
17:30	**8**	0	0	5	0	13	0	0	130	**3**	1	134	0	0	0	1	0	1	23	0	11	0	0	34	3	170	**3**	1	15	192	**374**
17:45	3	0	0	3	0	6	0	**2**	129	1	1	133	0	0	0	**2**	0	**2**	15	0	**13**	0	0	28	4	**182**	2	**2**	9	**199**	368
Total Volume	20	0	0	26	0	46	0	4	512	6	5	527	0	0	0	5	0	5	94	0	38	0	0	132	30	674	6	3	49	762	1472
% App. Total	43.5	0	0	56.5	0		0	0.8	97.2	1.1	0.9		0	0	0	100	0		71.2	0	28.8	0	0		3.9	88.5	0.8	0.4	6.4		
PHF	.625	.000	.000	.591	.000	.719	.000	.500	.914	.500	.625	.921	.000	.000	.000	.625	.000	.625	.783	.000	.731	.000	.000	.917	.577	.926	.500	.375	.817	.957	.984

Accurate Counts
978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 2



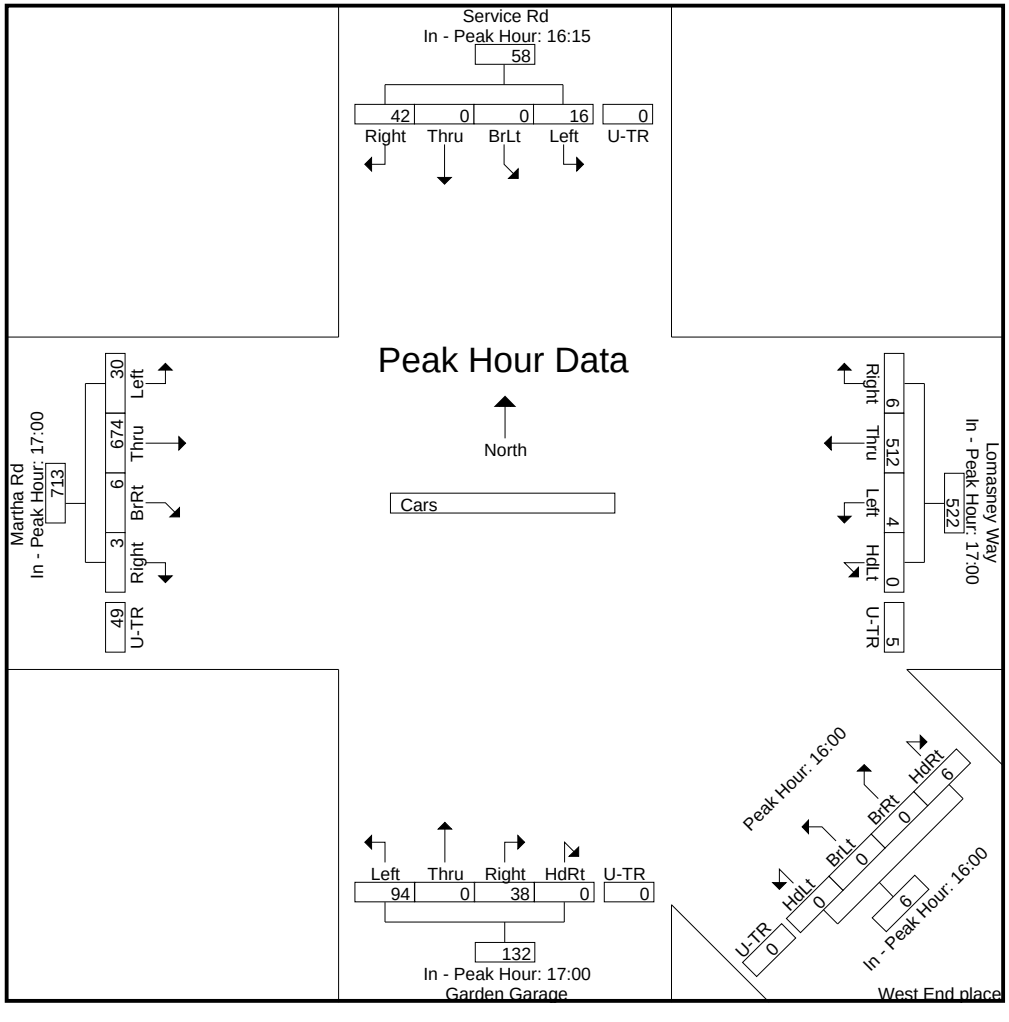
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	16:15						17:00						16:00						17:00						17:00					
+0 mins.	3	0	0	10	0	13	0	1	**140**	0	**2**	**143**	0	0	0	1	0	1	26	0	8	0	0	34	**13**	151	0	0	**15**	179
+15 mins.	3	0	0	10	0	13	0	1	113	2	1	117	0	0	0	**3**	0	**3**	**30**	0	6	0	0	**36**	10	171	1	0	10	192
+30 mins.	**5**	0	0	**11**	0	**16**	0	0	130	**3**	1	134	0	0	0	2	0	2	23	0	11	0	0	34	3	170	**3**	1	15	192
+45 mins.	5	0	0	11	0	16	0	**2**	129	1	1	133	0	0	0	0	0	0	15	0	**13**	0	0	28	4	**182**	2	**2**	9	**199**
Total Volume	16	0	0	42	0	58	0	4	512	6	5	527	0	0	0	6	0	6	94	0	38	0	0	132	30	674	6	3	49	762
% App. Total	27.6	0	0	72.4	0		0	0.8	97.2	1.1	0.9		0	0	0	100	0		71.2	0	28.8	0	0		3.9	88.5	0.8	0.4	6.4	
PHF	.800	.000	.000	.955	.000	.906	.000	.500	.914	.500	.625	.921	.000	.000	.000	.500	.000	.500	.783	.000	.731	.000	.000	.917	.577	.926	.500	.375	.817	.957

Accurate Counts
978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 1

Groups Printed- Trucks

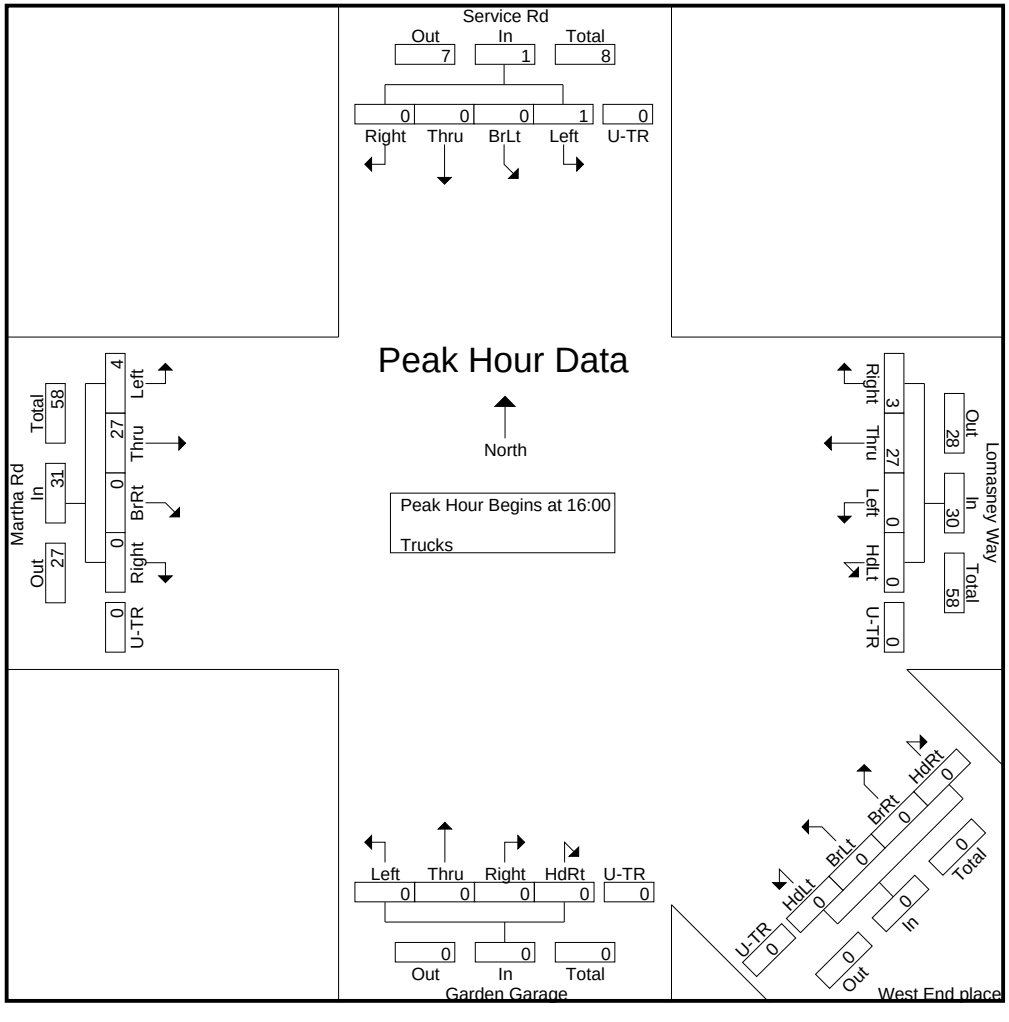
	Service Rd From North					Lomasney Way From East					West End place From Southeast					Garden Garage From South					Martha Rd From West					
Start Time	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	U-TR	Left	Thru	Right	HdRt	U-TR	Left	Thru	BrRt	Right	U-TR	Int. Total
16:00	0	0	0	0	0	0	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	18
16:15	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	3	6	0	0	0	18
16:30	0	0	0	0	0	0	0	5	1	0	0	0	0	0	0	0	0	0	0	0	1	5	0	0	0	12
16:45	1	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	14
Total	1	0	0	0	0	0	0	27	3	0	0	0	0	0	0	0	0	0	0	0	4	27	0	0	0	62
17:00	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0	0	0	9
17:15	0	0	0	0	0	0	0	7	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	11
17:30	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	1	7	0	0	0	14
17:45	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	6	0	0	0	9
Total	0	0	0	0	0	0	0	18	1	0	0	0	0	0	0	0	0	0	0	0	3	21	0	0	0	43
Grand Total	1	0	0	0	0	0	0	45	4	0	0	0	0	0	0	0	0	0	0	0	7	48	0	0	0	105
Apprch %	100	0	0	0	0	0	0	91.8	8.2	0	0	0	0	0	0	0	0	0	0	0	12.7	87.3	0	0	0	
Total %	1	0	0	0	0	0	0	42.9	3.8	0	0	0	0	0	0	0	0	0	0	0	6.7	45.7	0	0	0	

	Service Rd From North						Lomasney Way From East						West End place From Southeast						Garden Garage From South						Martha Rd From West						
Start Time	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	Left	Thru	BrRt	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 16:00																															
16:00	0	0	0	0	0	0	0	0	4	**2**	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	**12**	0	0	0	**12**	**18**
16:15	0	0	0	0	0	0	0	0	**9**	0	0	**9**	0	0	0	0	0	0	0	0	0	0	0	0	**3**	6	0	0	0	9	18
16:30	0	0	0	0	0	0	0	0	5	1	0	6	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0	0	0	6	12
16:45	**1**	0	0	0	0	**1**	0	0	9	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	14
Total Volume	1	0	0	0	0	1	0	0	27	3	0	30	0	0	0	0	0	0	0	0	0	0	0	0	4	27	0	0	0	31	62
% App. Total	100	0	0	0	0		0	0	90	10	0		0	0	0	0	0		0	0	0	0	0		12.9	87.1	0	0	0		
PHF	.250	.000	.000	.000	.000	.250	.000	.000	.750	.375	.000	.833	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.333	.563	.000	.000	.000	.646	.861

Accurate Counts
978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 2



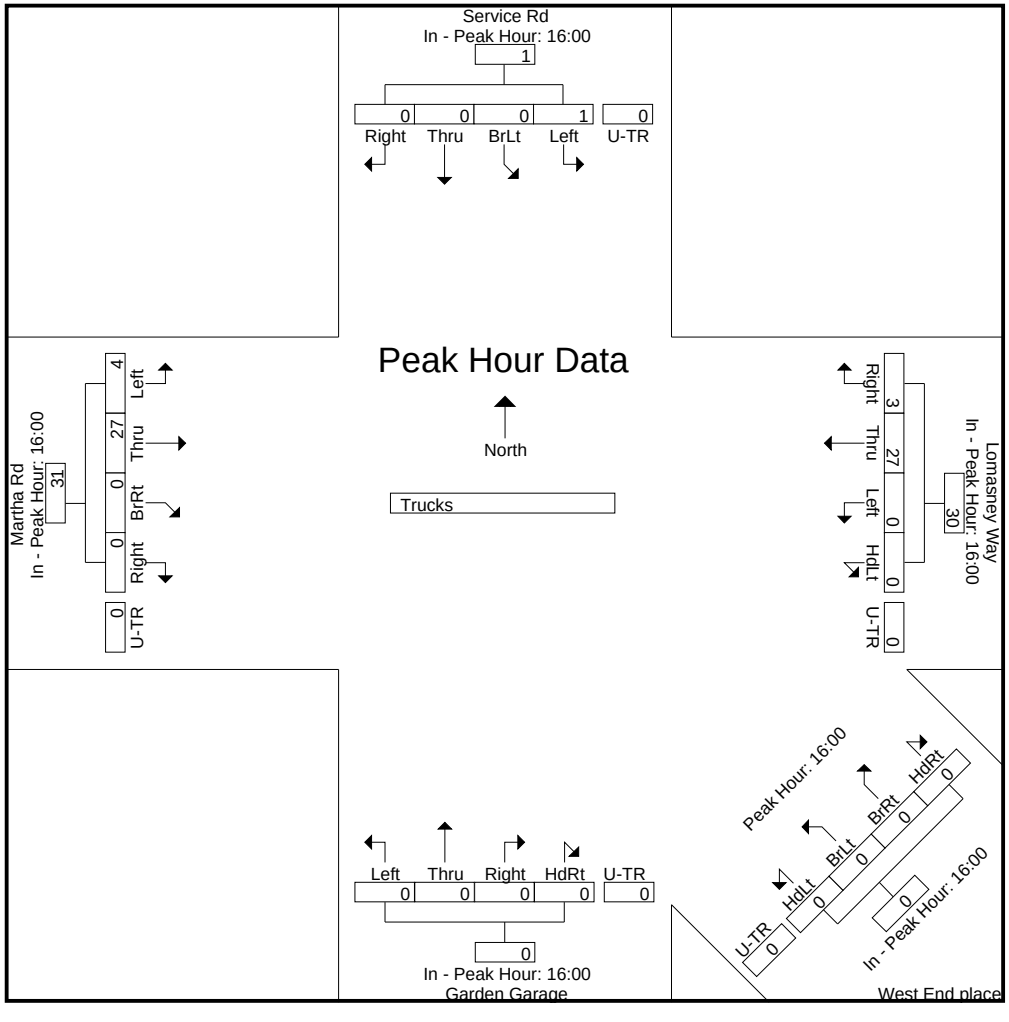
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	16:00						16:00						16:00						16:00						16:00					
+0 mins.	0	0	0	0	0	0	0	0	4	**2**	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	**12**	0	0	0	**12**
+15 mins.	0	0	0	0	0	0	0	0	**9**	0	0	**9**	0	0	0	0	0	0	0	0	0	0	0	0	**3**	6	0	0	0	9
+30 mins.	0	0	0	0	0	0	0	0	5	1	0	6	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0	0	0	6
+45 mins.	**1**	0	0	0	0	**1**	0	0	9	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4
Total Volume	1	0	0	0	0	1	0	0	27	3	0	30	0	0	0	0	0	0	0	0	0	0	0	0	4	27	0	0	0	31
% App. Total	100	0	0	0	0		0	0	90	10	0		0	0	0	0	0		0	0	0	0	0		12.9	87.1	0	0	0	
PHF	.250	.000	.000	.000	.000	.250	.000	.000	.750	.375	.000	.833	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.333	.563	.000	.000	.000	.646

Accurate Counts
978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 1

Groups Printed- Bikes Peds

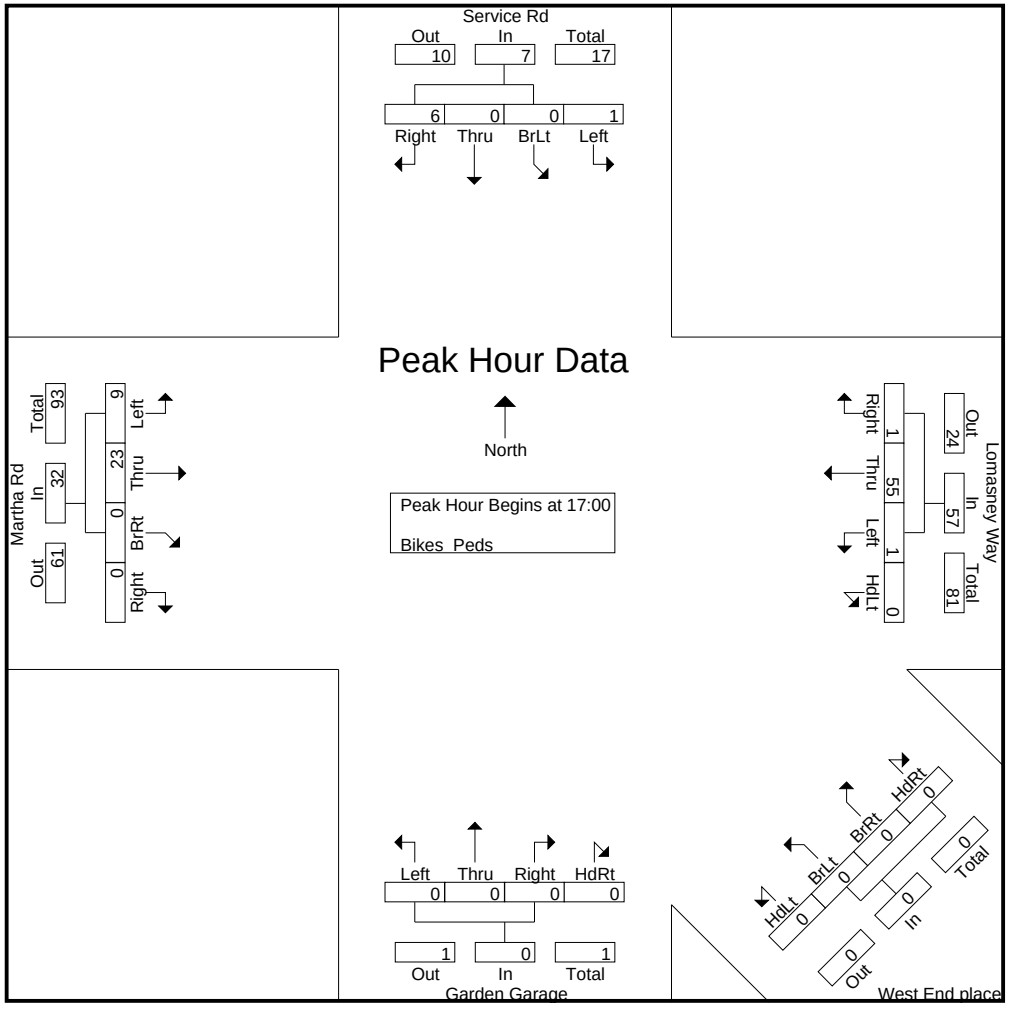
	Service Rd From North					Lomasney Way From East					West End place From Southeast					Garden Garage From South					Martha Rd From West							
Start Time	Left	BrLt	Thru	Right	Peds	HdLt	Left	Thru	Right	Peds	HdLt	BrLt	BrRt	HdRt	Peds	Left	Thru	Right	HdRt	Peds	Left	Thru	BrRt	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
16:00	0	0	0	0	0	0	0	10	0	23	0	0	0	0	0	0	0	0	0	30	2	3	0	0	0	53	15	68
16:15	0	0	0	0	0	0	0	7	0	31	0	0	0	0	0	0	0	0	0	58	1	5	0	0	0	89	13	102
16:30	0	0	0	0	0	0	0	6	0	25	0	0	0	0	0	0	0	0	0	30	1	2	0	0	8	63	9	72
16:45	0	0	0	0	0	0	0	6	0	34	0	0	0	0	0	0	0	0	0	36	2	6	0	0	2	72	14	86
Total	0	0	0	0	0	0	0	29	0	113	0	0	0	0	0	0	0	0	0	154	6	16	0	0	10	277	51	328
17:00	0	0	0	0	2	0	1	15	0	49	0	0	0	0	0	0	0	0	0	59	1	6	0	0	2	112	23	135
17:15	1	0	0	0	0	0	0	8	0	37	0	0	0	0	0	0	0	0	0	69	2	8	0	0	2	108	19	127
17:30	0	0	0	5	6	0	0	21	0	37	0	0	0	0	0	0	0	0	0	51	5	6	0	0	3	97	37	134
17:45	0	0	0	1	3	0	0	11	1	41	0	0	0	0	0	0	0	0	0	57	1	3	0	0	3	104	17	121
Total	1	0	0	6	11	0	1	55	1	164	0	0	0	0	0	0	0	0	0	236	9	23	0	0	10	421	96	517
Grand Total	1	0	0	6	11	0	1	84	1	277	0	0	0	0	0	0	0	0	0	390	15	39	0	0	20	698	147	845
Apprch %	14.3	0	0	85.7		0	1.2	97.7	1.2		0	0	0	0		0	0	0	0		27.8	72.2	0	0				
Total %	0.7	0	0	4.1		0	0.7	57.1	0.7		0	0	0	0		0	0	0	0		10.2	26.5	0	0		82.6	17.4	

	Service Rd From North					Lomasney Way From East					West End place From Southeast					Garden Garage From South					Martha Rd 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 16:00 to 17:45 - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 17:00																										
17:00	0	0	0	0	0	0	**1**	15	0	16	0	0	0	0	0	0	0	0	0	0	1	6	0	0	7	23
17:15	**1**	0	0	0	1	0	0	8	0	8	0	0	0	0	0	0	0	0	0	0	2	**8**	0	0	10	19
17:30	0	0	0	**5**	**5**	0	0	**21**	0	**21**	0	0	0	0	0	0	0	0	0	0	**5**	6	0	0	**11**	**37**
17:45	0	0	0	1	1	0	0	11	**1**	12	0	0	0	0	0	0	0	0	0	0	1	3	0	0	4	17
Total Volume	1	0	0	6	7	0	1	55	1	57	0	0	0	0	0	0	0	0	0	0	9	23	0	0	32	96
% App. Total	14.3	0	0	85.7		0	1.8	96.5	1.8		0	0	0	0		0	0	0	0		28.1	71.9	0	0		
PHF	.250	.000	.000	.300	.350	.000	.250	.655	.250	.679	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.450	.719	.000	.000	.727	.649

Accurate Counts
978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 2



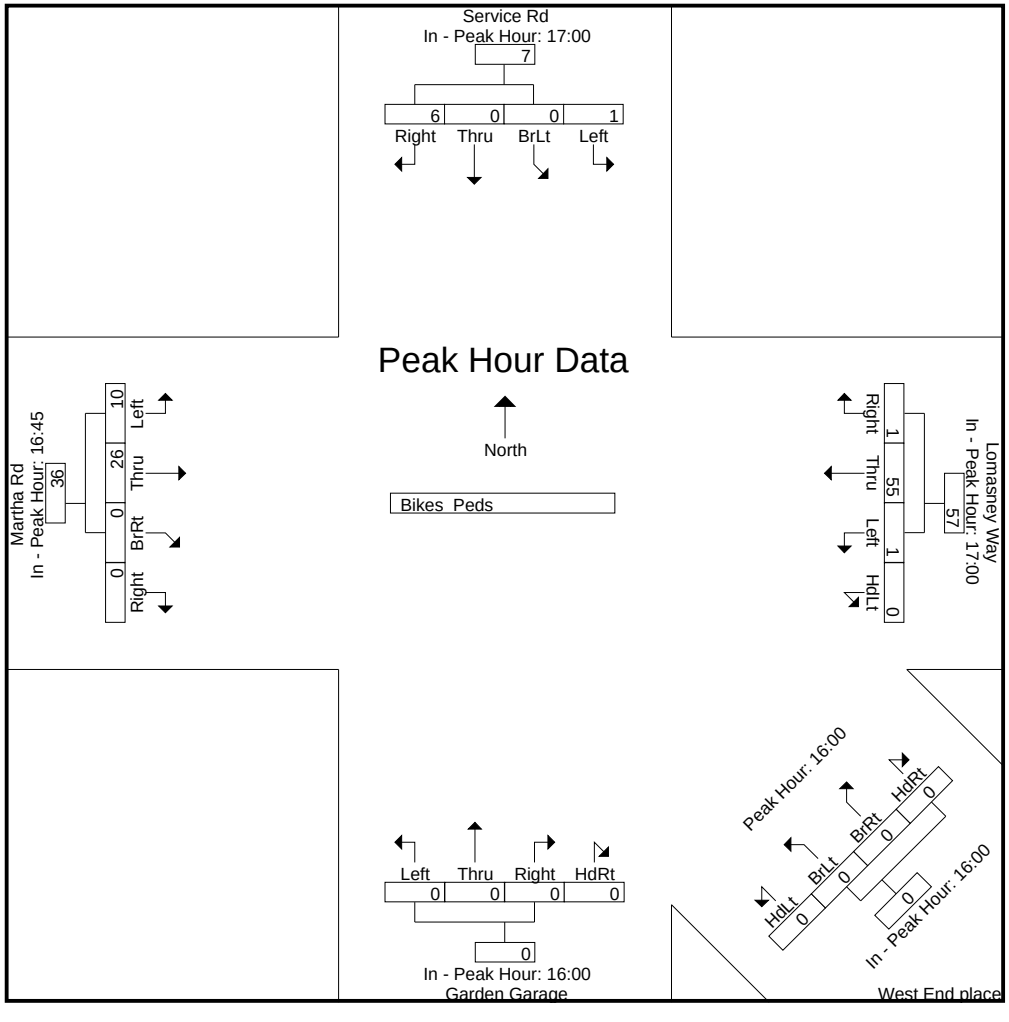
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	17:00					17:00					16:00					16:00					16:45				
+0 mins.	0	0	0	0	0	0	**1**	15	0	16	0	0	0	0	0	0	0	0	0	0	2	6	0	0	8
+15 mins.	**1**	0	0	0	1	0	0	8	0	8	0	0	0	0	0	0	0	0	0	0	1	6	0	0	7
+30 mins.	0	0	0	**5**	**5**	0	0	**21**	0	**21**	0	0	0	0	0	0	0	0	0	0	2	**8**	0	0	10
+45 mins.	0	0	0	1	1	0	0	11	**1**	12	0	0	0	0	0	0	0	0	0	0	**5**	6	0	0	**11**
Total Volume	1	0	0	6	7	0	1	55	1	57	0	0	0	0	0	0	0	0	0	0	10	26	0	0	36
% App. Total	14.3	0	0	85.7		0	1.8	96.5	1.8		0	0	0	0		0	0	0	0		27.8	72.2	0	0	
PHF	.250	.000	.000	.300	.350	.000	.250	.655	.250	.679	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.500	.813	.000	.000	.818

Accurate Counts
978-664-2565

N/S Street : Garage D*Ways / Service Rd
E/W Street: Lomasney Way / Martha Rd
City/State : Boston, MA
Weather : Clear

File Name : 15410004
Site Code : 15410004
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011

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Groups Printed- Cars - Trucks

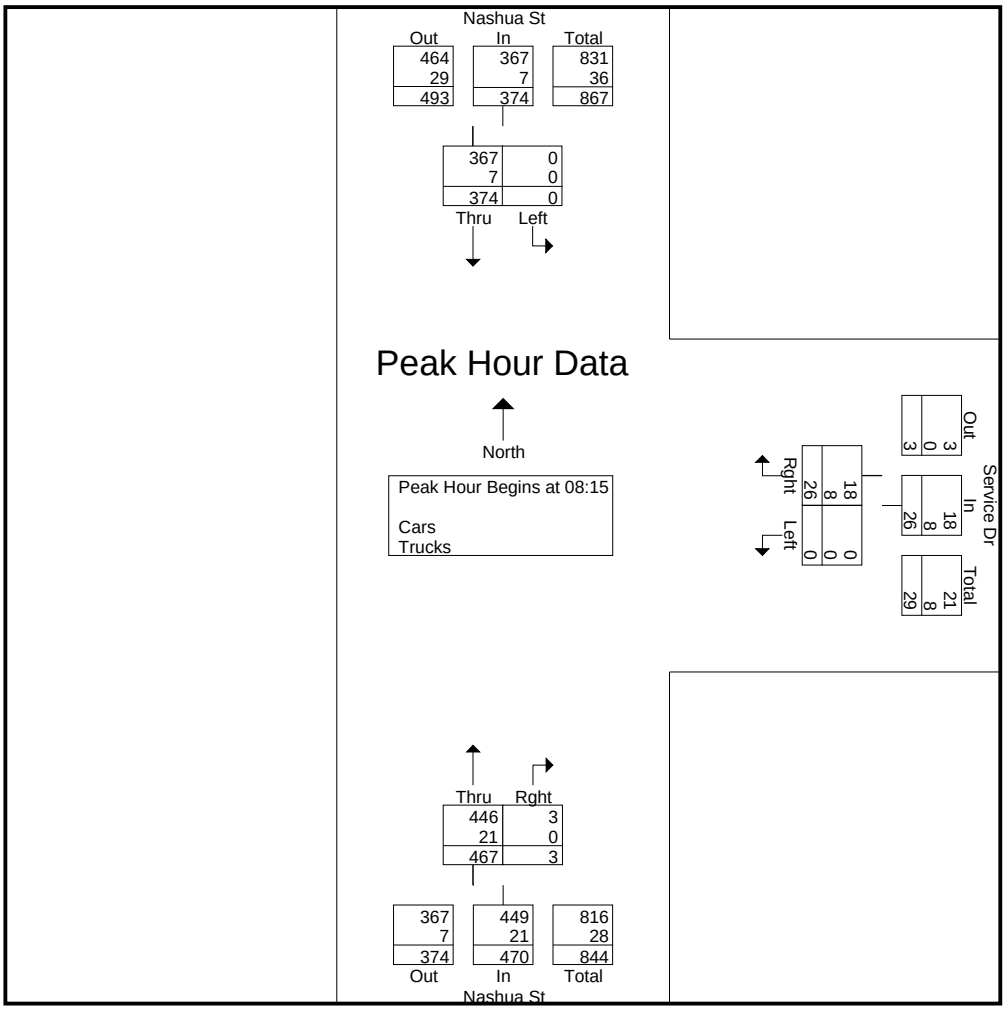
	Nashua St From North		Service Dr From East		Nashua St From South		
Start Time	Left	Thru	Left	Rght	Thru	Rght	Int. Total
07:30	0	91	0	6	103	1	201
07:45	0	68	0	4	127	2	201
Total	0	159	0	10	230	3	402
08:00	0	61	0	8	89	1	159
08:15	0	80	0	4	125	1	210
08:30	0	90	0	6	126	1	223
08:45	0	103	0	10	136	1	250
Total	0	334	0	28	476	4	842
09:00	0	101	0	6	80	0	187
09:15	0	105	0	5	80	0	190
Grand Total	0	699	0	49	866	7	1621
Apprch %	0	100	0	100	99.2	0.8	
Total %	0	43.1	0	3	53.4	0.4	
Cars	0	686	0	35	832	7	1560
% Cars	0	98.1	0	71.4	96.1	100	96.2
Trucks	0	13	0	14	34	0	61
% Trucks	0	1.9	0	28.6	3.9	0	3.8

	Nashua St From North			Service Dr From East			Nashua St From South			
Start Time	Left	Thru	App. Total	Left	Rght	App. Total	Thru	Rght	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:15										
08:15	0	80	80	0	4	4	125	**1**	126	210
08:30	0	90	90	0	6	6	126	1	127	223
08:45	0	**103**	**103**	0	**10**	**10**	**136**	1	**137**	**250**
09:00	0	101	101	0	6	6	80	0	80	187
Total Volume	0	374	374	0	26	26	467	3	470	870
% App. Total	0	100		0	100		99.4	0.6		
PHF	.000	.908	.908	.000	.650	.650	.858	.750	.858	.870
Cars	0	367	367	0	18	18	446	3	449	834
% Cars	0	98.1	98.1	0	69.2	69.2	95.5	100	95.5	95.9
Trucks	0	7	7	0	8	8	21	0	21	36
% Trucks	0	1.9	1.9	0	30.8	30.8	4.5	0	4.5	4.1

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
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Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1

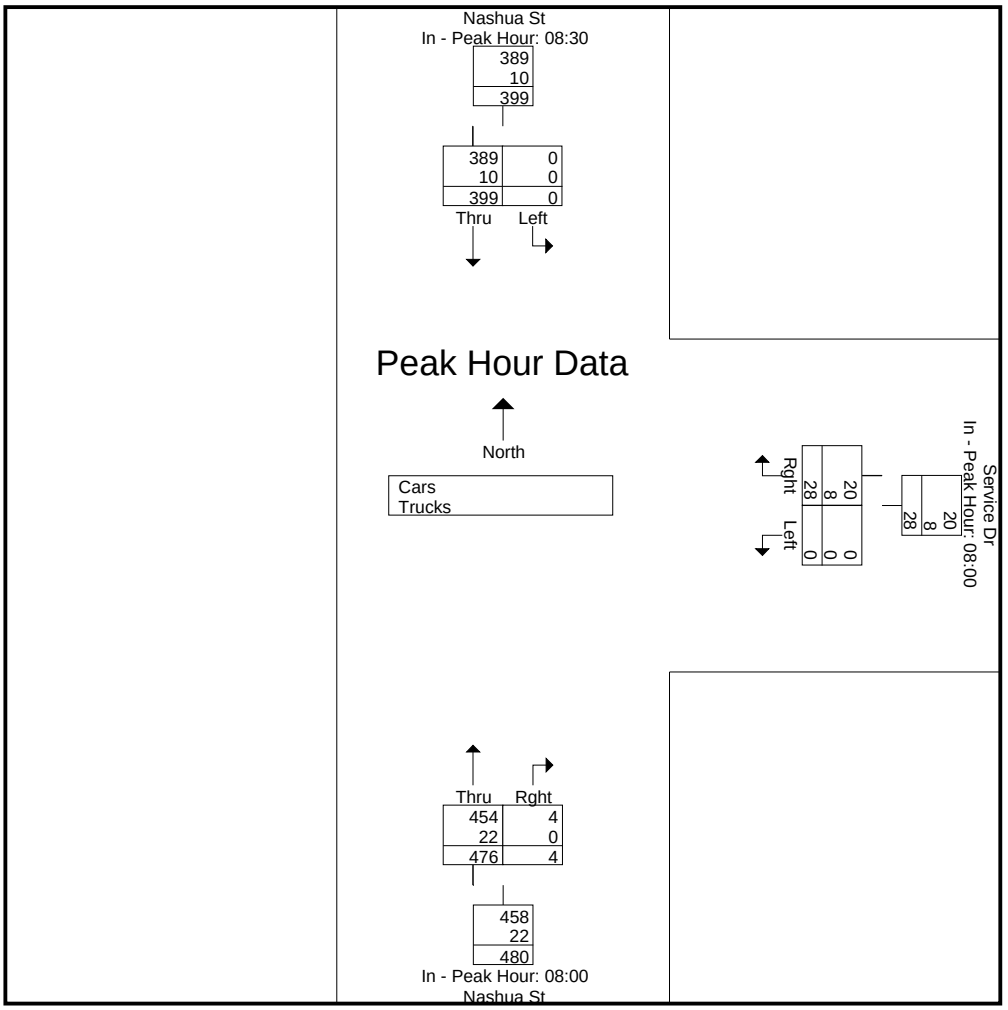
Peak Hour for Each Approach Begins at:

	08:30			08:00			08:00		
+0 mins.	0	90	90	0	8	8	89	**1**	90
+15 mins.	0	103	103	0	4	4	125	1	126
+30 mins.	0	101	101	0	6	6	126	1	127
+45 mins.	0	**105**	**105**	0	**10**	**10**	**136**	1	**137**
Total Volume	0	399	399	0	28	28	476	4	480
% App. Total	0	100		0	100		99.2	0.8	
PHF	.000	.950	.950	.000	.700	.700	.875	1.000	.876
Cars	0	389	389	0	20	20	454	4	458
% Cars	0	97.5	97.5	0	71.4	71.4	95.4	100	95.4
Trucks	0	10	10	0	8	8	22	0	22
% Trucks	0	2.5	2.5	0	28.6	28.6	4.6	0	4.6

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
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Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
Page No : 1

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Groups Printed- Cars

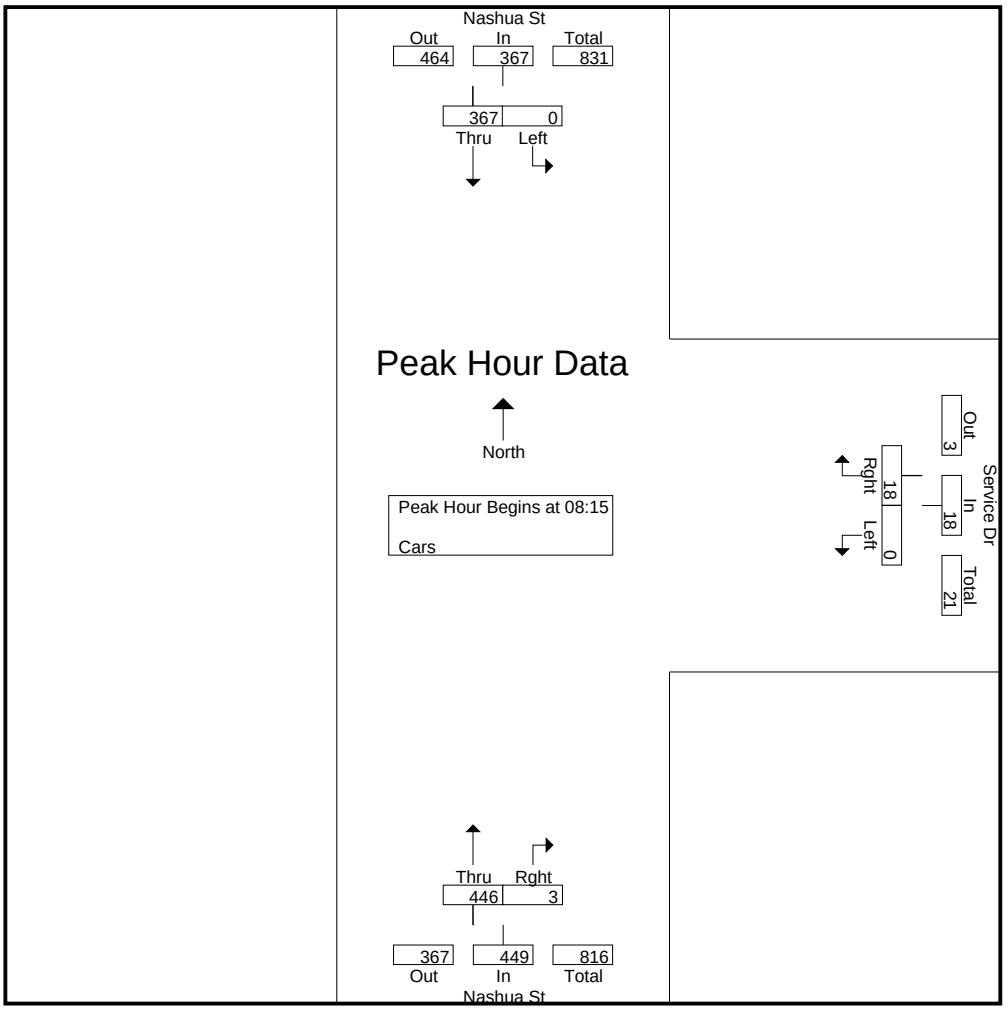
	Nashua St From North		Service Dr From East		Nashua St From South		
Start Time	Left	Thru	Left	Rght	Thru	Rght	Int. Total
07:30	0	88	0	4	100	1	193
07:45	0	68	0	3	123	2	196
Total	0	156	0	7	223	3	389
08:00	0	61	0	6	85	1	153
08:15	0	80	0	3	119	1	203
08:30	0	89	0	4	120	1	214
08:45	0	100	0	7	130	1	238
Total	0	330	0	20	454	4	808
09:00	0	98	0	4	77	0	179
09:15	0	102	0	4	78	0	184
Grand Total	0	686	0	35	832	7	1560
Apprch %	0	100	0	100	99.2	0.8	
Total %	0	44	0	2.2	53.3	0.4	

	Nashua St From North			Service Dr From East			Nashua St From South			
Start Time	Left	Thru	App. Total	Left	Rght	App. Total	Thru	Rght	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:15										
08:15	0	80	80	0	3	3	119	**1**	120	203
08:30	0	89	89	0	4	4	120	1	121	214
08:45	0	**100**	**100**	0	**7**	**7**	**130**	1	**131**	**238**
09:00	0	98	98	0	4	4	77	0	77	179
Total Volume	0	367	367	0	18	18	446	3	449	834
% App. Total	0	100		0	100		99.3	0.7		
PHF	.000	.918	.918	.000	.643	.643	.858	.750	.857	.876

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1

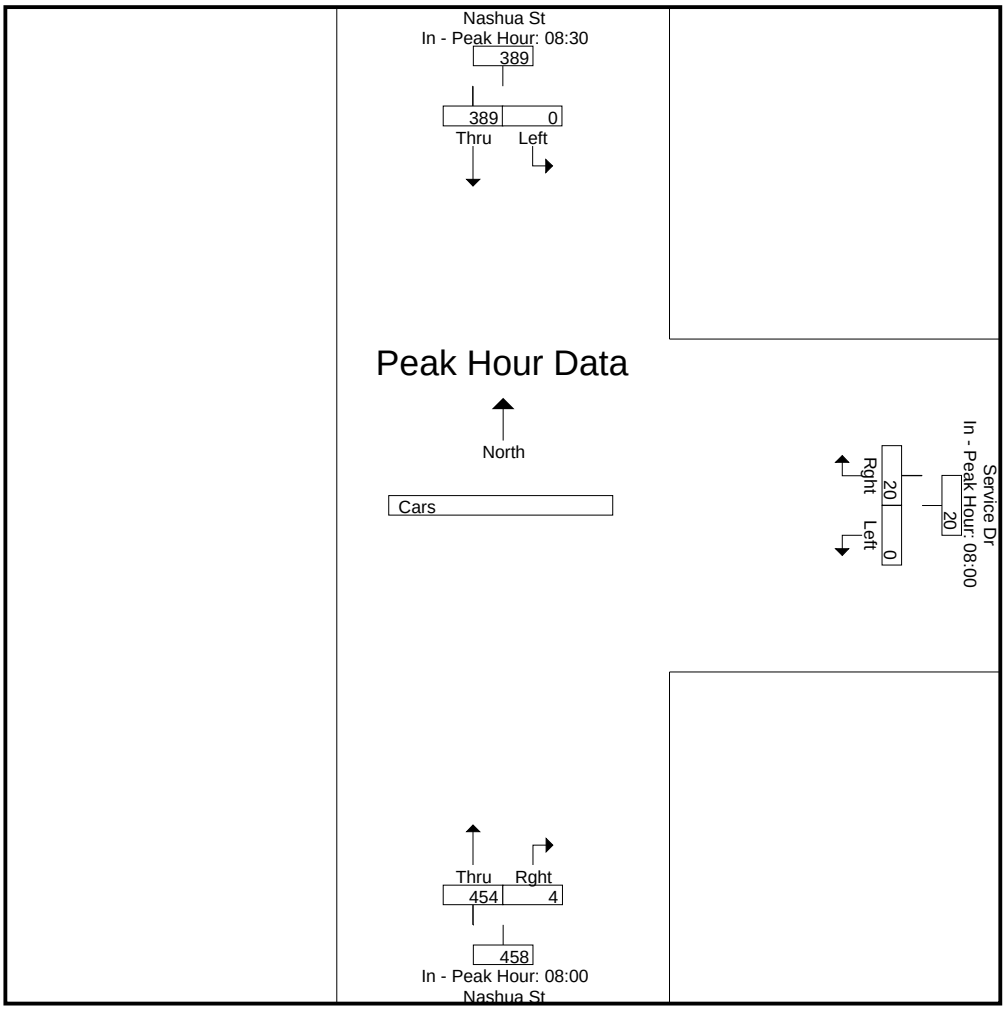
Peak Hour for Each Approach Begins at:

	08:30			08:00			08:00		
+0 mins.	0	89	89	0	6	6	85	**1**	86
+15 mins.	0	100	100	0	3	3	119	1	120
+30 mins.	0	98	98	0	4	4	120	1	121
+45 mins.	0	**102**	**102**	0	**7**	**7**	**130**	1	**131**
Total Volume	0	389	389	0	20	20	454	4	458
% App. Total	0	100		0	100		99.1	0.9	
PHF	.000	.953	.953	.000	.714	.714	.873	1.000	.874

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
Page No : 1

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Groups Printed- Trucks

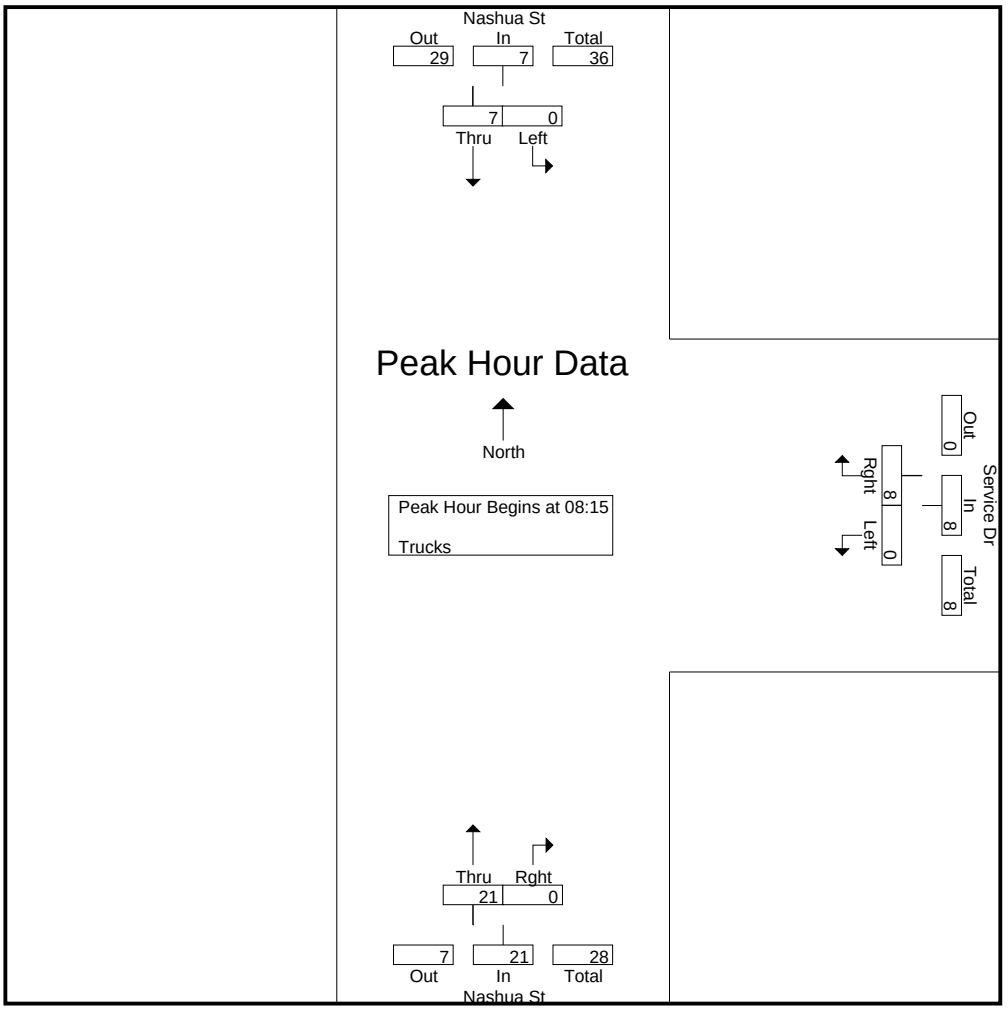
	Nashua St From North		Service Dr From East		Nashua St From South		
Start Time	Left	Thru	Left	Rght	Thru	Rght	Int. Total
07:30	0	3	0	2	3	0	8
07:45	0	0	0	1	4	0	5
Total	0	3	0	3	7	0	13
08:00	0	0	0	2	4	0	6
08:15	0	0	0	1	6	0	7
08:30	0	1	0	2	6	0	9
08:45	0	3	0	3	6	0	12
Total	0	4	0	8	22	0	34
09:00	0	3	0	2	3	0	8
09:15	0	3	0	1	2	0	6
Grand Total	0	13	0	14	34	0	61
Apprch %	0	100	0	100	100	0	
Total %	0	21.3	0	23	55.7	0	

	Nashua St From North			Service Dr From East			Nashua St From South			
Start Time	Left	Thru	App. Total	Left	Rght	App. Total	Thru	Rght	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:15										
08:15	0	0	0	0	1	1	**6**	0	**6**	7
08:30	0	1	1	0	2	2	6	0	6	9
08:45	0	**3**	**3**	0	**3**	**3**	6	0	6	**12**
09:00	0	3	3	0	2	2	3	0	3	8
Total Volume	0	7	7	0	8	8	21	0	21	36
% App. Total	0	100		0	100		100	0		
PHF	.000	.583	.583	.000	.667	.667	.875	.000	.875	.750

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1

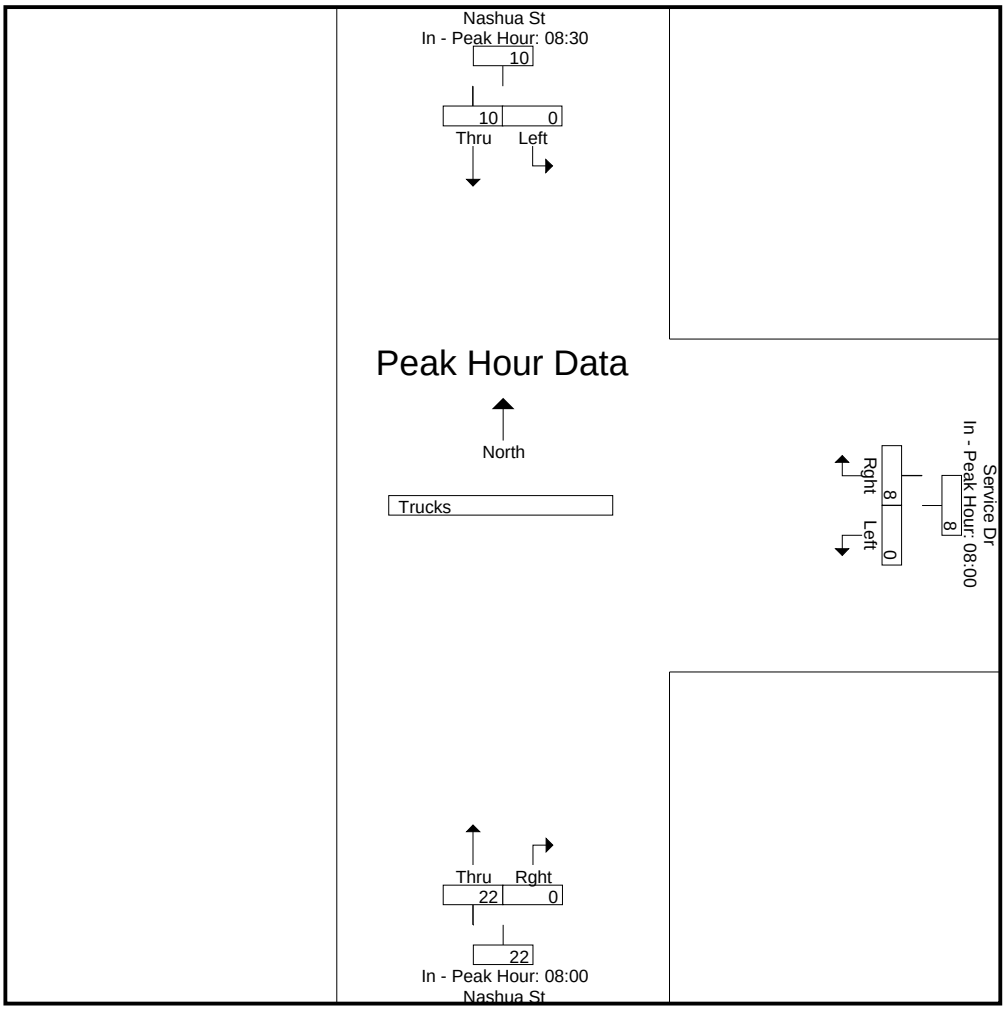
Peak Hour for Each Approach Begins at:

	08:30			08:00			08:00		
+0 mins.	0	1	1	0	2	2	4	0	4
+15 mins.	0	**3**	**3**	0	1	1	**6**	0	**6**
+30 mins.	0	3	3	0	2	2	6	0	6
+45 mins.	0	3	3	0	**3**	**3**	6	0	6
Total Volume	0	10	10	0	8	8	22	0	22
% App. Total	0	100		0	100		100	0	
PHF	.000	.833	.833	.000	.667	.667	.917	.000	.917

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
Page No : 1

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Groups Printed- Bikes Peds

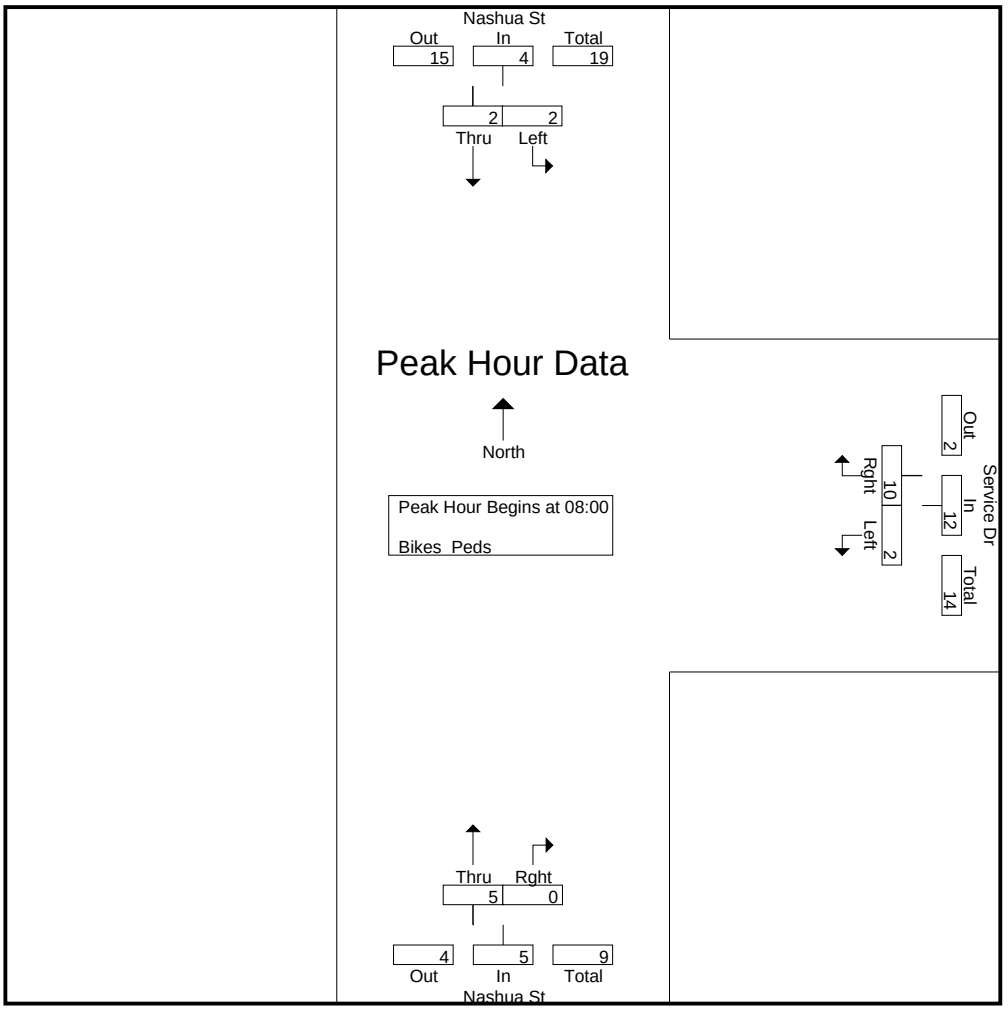
	Nashua St From North			Service Dr From East			Nashua St From South					
Start Time	Left	Thru	Peds	Left	Rght	Peds	Thru	Rght	Peds	Exclu. Total	Inclu. Total	Int. Total
07:30	2	2	1	0	0	1	4	0	102	104	8	112
07:45	0	0	2	0	0	4	0	0	101	107	0	107
Total	2	2	3	0	0	5	4	0	203	211	8	219
08:00	2	2	1	1	2	3	0	0	139	143	7	150
08:15	0	0	2	0	0	3	1	0	82	87	1	88
08:30	0	0	2	1	6	4	4	0	108	114	11	125
08:45	0	0	1	0	2	5	0	0	61	67	2	69
Total	2	2	6	2	10	15	5	0	390	411	21	432
09:00	0	1	0	0	0	6	1	0	110	116	2	118
09:15	0	0	5	0	1	3	0	0	46	54	1	55
Grand Total	4	5	14	2	11	29	10	0	749	792	32	824
Apprch %	44.4	55.6		15.4	84.6		100	0				
Total %	12.5	15.6		6.2	34.4		31.2	0		96.1	3.9	

	Nashua St From North			Service Dr From East			Nashua St From South			
Start Time	Left	Thru	App. Total	Left	Rght	App. Total	Thru	Rght	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00										
08:00	**2**	**2**	**4**	**1**	2	3	0	0	0	7
08:15	0	0	0	0	0	0	1	0	1	1
08:30	0	0	0	1	**6**	**7**	**4**	0	**4**	**11**
08:45	0	0	0	0	2	2	0	0	0	2
Total Volume	2	2	4	2	10	12	5	0	5	21
% App. Total	50	50		16.7	83.3		100	0		
PHF	.250	.250	.250	.500	.417	.429	.313	.000	.313	.477

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
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Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1

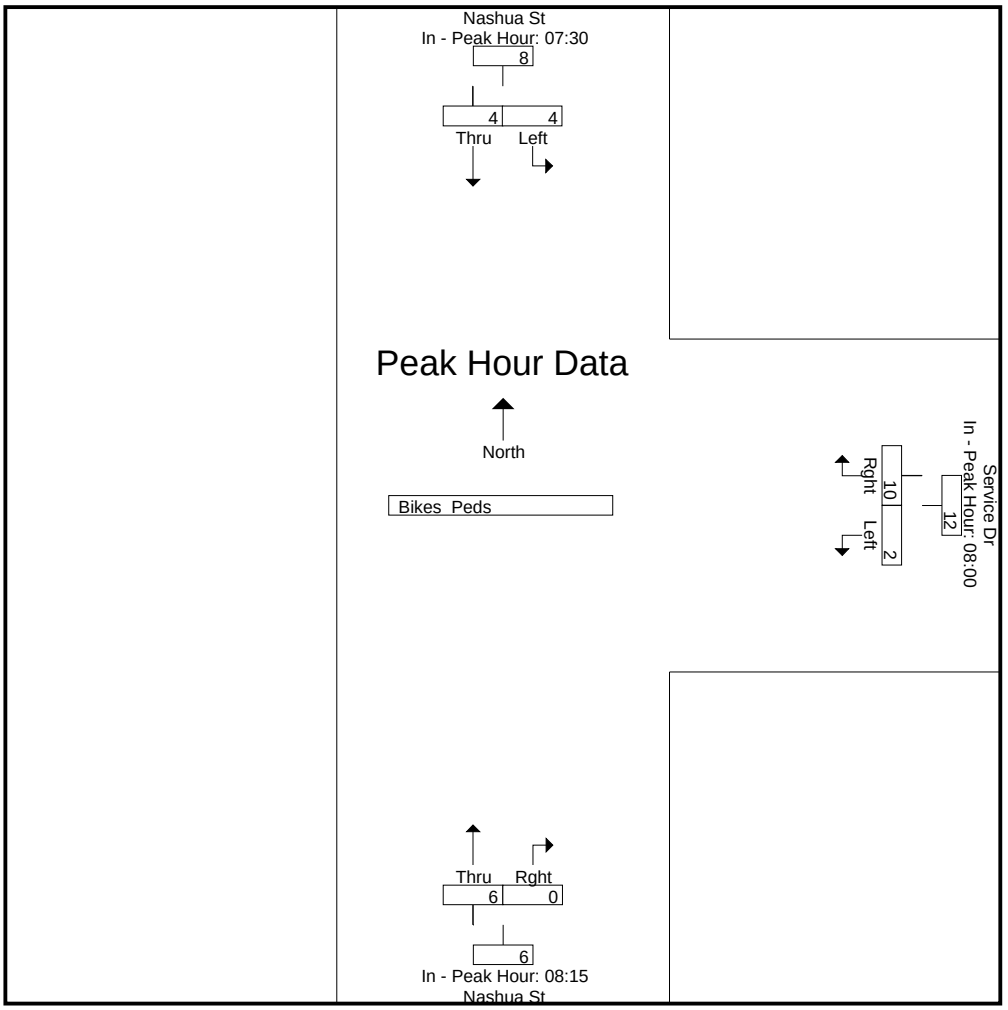
Peak Hour for Each Approach Begins at:

	07:30			08:00			08:15		
+0 mins.	**2**	**2**	**4**	**1**	2	3	1	0	1
+15 mins.	0	0	0	0	0	0	**4**	0	**4**
+30 mins.	2	2	4	1	**6**	**7**	0	0	0
+45 mins.	0	0	0	0	2	2	1	0	1
Total Volume	4	4	8	2	10	12	6	0	6
% App. Total	50	50		16.7	83.3		100	0	
PHF	.500	.500	.500	.500	.417	.429	.375	.000	.375

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
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Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
Page No : 1

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Groups Printed- Cars - Trucks

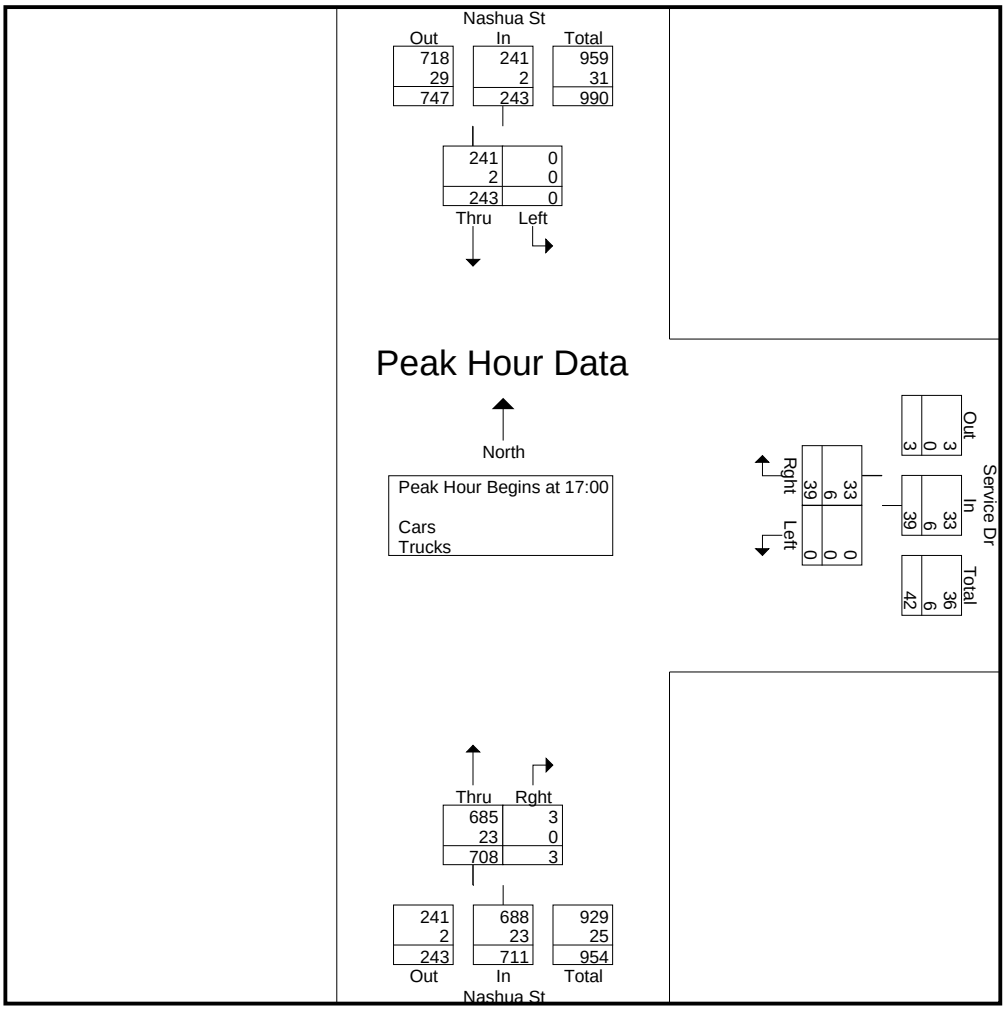
	Nashua St From North		Service Dr From East		Nashua St From South		
Start Time	Left	Thru	Left	Rght	Thru	Rght	Int. Total
16:00	0	44	0	9	159	1	213
16:15	0	40	0	9	155	0	204
16:30	0	52	0	9	150	3	214
16:45	0	69	0	14	135	0	218
Total	0	205	0	41	599	4	849
17:00	0	60	0	10	195	1	266
17:15	0	54	0	10	172	0	236
17:30	0	72	0	10	181	1	264
17:45	0	57	0	9	160	1	227
Total	0	243	0	39	708	3	993
Grand Total	0	448	0	80	1307	7	1842
Apprch %	0	100	0	100	99.5	0.5	
Total %	0	24.3	0	4.3	71	0.4	
Cars	0	444	0	67	1251	7	1769
% Cars	0	99.1	0	83.8	95.7	100	96
Trucks	0	4	0	13	56	0	73
% Trucks	0	0.9	0	16.2	4.3	0	4

	Nashua St From North			Service Dr From East			Nashua St From South			
Start Time	Left	Thru	App. Total	Left	Rght	App. Total	Thru	Rght	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 17:00										
17:00	0	60	60	0	**10**	**10**	**195**	**1**	**196**	**266**
17:15	0	54	54	0	10	10	172	0	172	236
17:30	0	**72**	**72**	0	10	10	181	1	182	264
17:45	0	57	57	0	9	9	160	1	161	227
Total Volume	0	243	243	0	39	39	708	3	711	993
% App. Total	0	100		0	100		99.6	0.4		
PHF	.000	.844	.844	.000	.975	.975	.908	.750	.907	.933
Cars	0	241	241	0	33	33	685	3	688	962
% Cars	0	99.2	99.2	0	84.6	84.6	96.8	100	96.8	96.9
Trucks	0	2	2	0	6	6	23	0	23	31
% Trucks	0	0.8	0.8	0	15.4	15.4	3.2	0	3.2	3.1

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

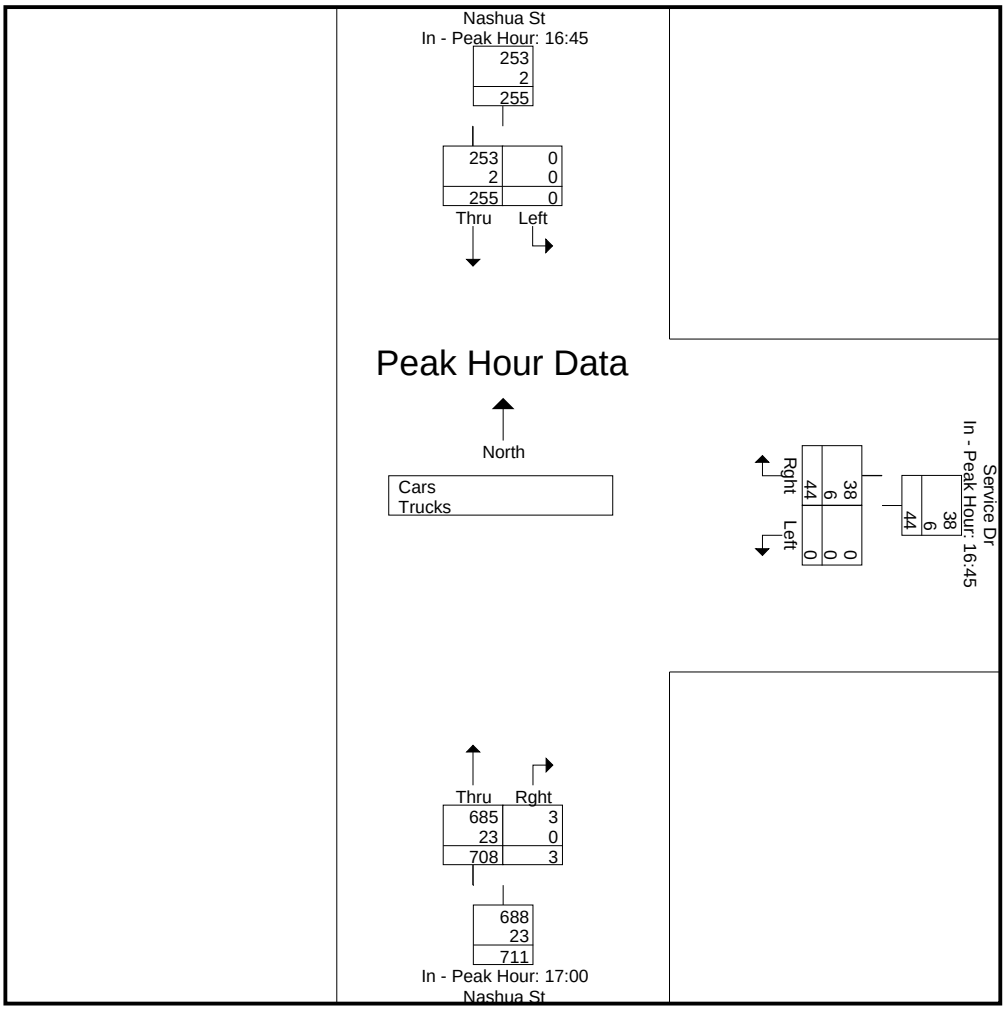
Peak Hour for Each Approach Begins at:

	16:45			16:45			17:00		
+0 mins.	0	69	69	0	**14**	**14**	**195**	**1**	**196**
+15 mins.	0	60	60	0	10	10	172	0	172
+30 mins.	0	54	54	0	10	10	181	1	182
+45 mins.	0	**72**	**72**	0	10	10	160	1	161
Total Volume	0	255	255	0	44	44	708	3	711
% App. Total	0	100		0	100		99.6	0.4	
PHF	.000	.885	.885	.000	.786	.786	.908	.750	.907
Cars	0	253	253	0	38	38	685	3	688
% Cars	0	99.2	99.2	0	86.4	86.4	96.8	100	96.8
Trucks	0	2	2	0	6	6	23	0	23
% Trucks	0	0.8	0.8	0	13.6	13.6	3.2	0	3.2

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
Page No : 1

.

Groups Printed- Cars

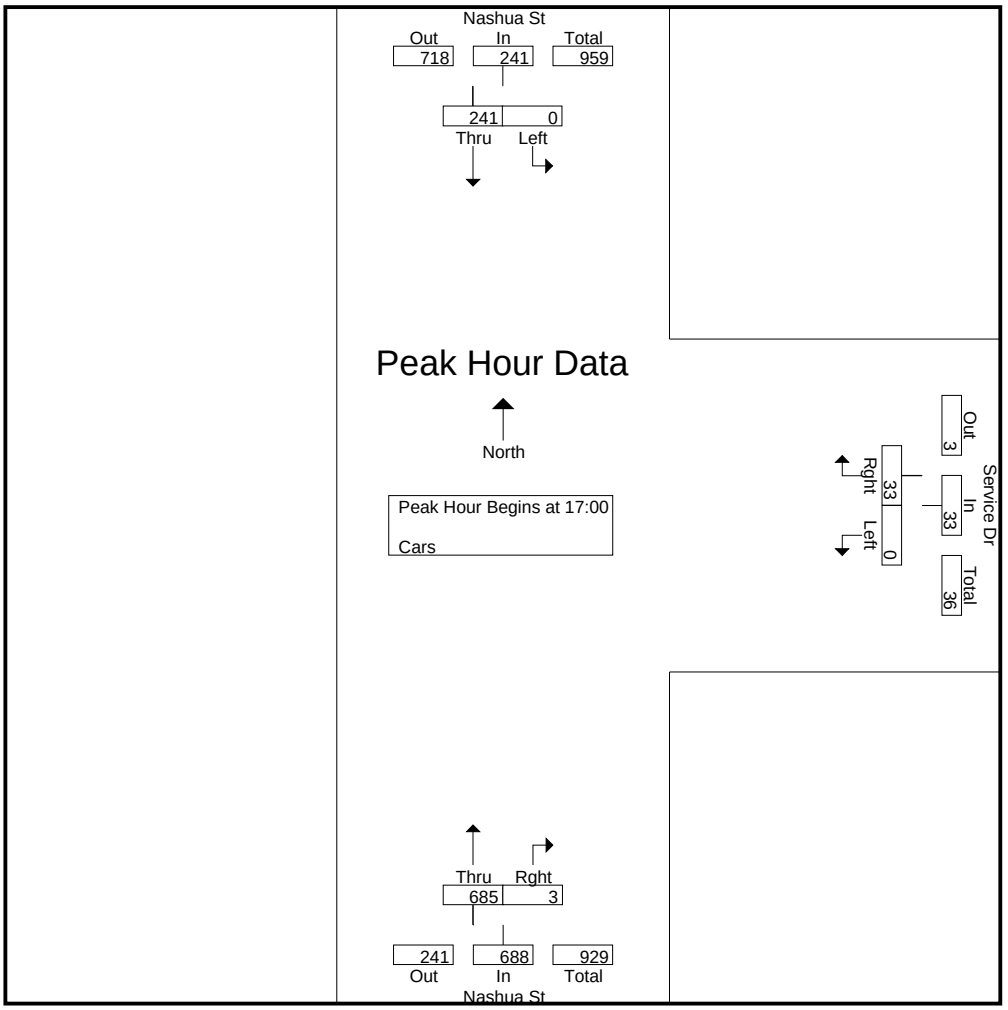
	Nashua St From North		Service Dr From East		Nashua St From South		
Start Time	Left	Thru	Left	Rght	Thru	Rght	Int. Total
16:00	0	44	0	7	151	1	203
16:15	0	39	0	7	147	0	193
16:30	0	51	0	8	144	3	206
16:45	0	69	0	12	124	0	205
Total	0	203	0	34	566	4	807
17:00	0	59	0	9	191	1	260
17:15	0	54	0	8	165	0	227
17:30	0	71	0	9	173	1	254
17:45	0	57	0	7	156	1	221
Total	0	241	0	33	685	3	962
Grand Total	0	444	0	67	1251	7	1769
Apprch %	0	100	0	100	99.4	0.6	
Total %	0	25.1	0	3.8	70.7	0.4	

	Nashua St From North			Service Dr From East			Nashua St From South			
Start Time	Left	Thru	App. Total	Left	Rght	App. Total	Thru	Rght	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 17:00										
17:00	0	59	59	0	**9**	**9**	**191**	**1**	**192**	**260**
17:15	0	54	54	0	8	8	165	0	165	227
17:30	0	**71**	**71**	0	9	9	173	1	174	254
17:45	0	57	57	0	7	7	156	1	157	221
Total Volume	0	241	241	0	33	33	685	3	688	962
% App. Total	0	100		0	100		99.6	0.4		
PHF	.000	.849	.849	.000	.917	.917	.897	.750	.896	.925

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

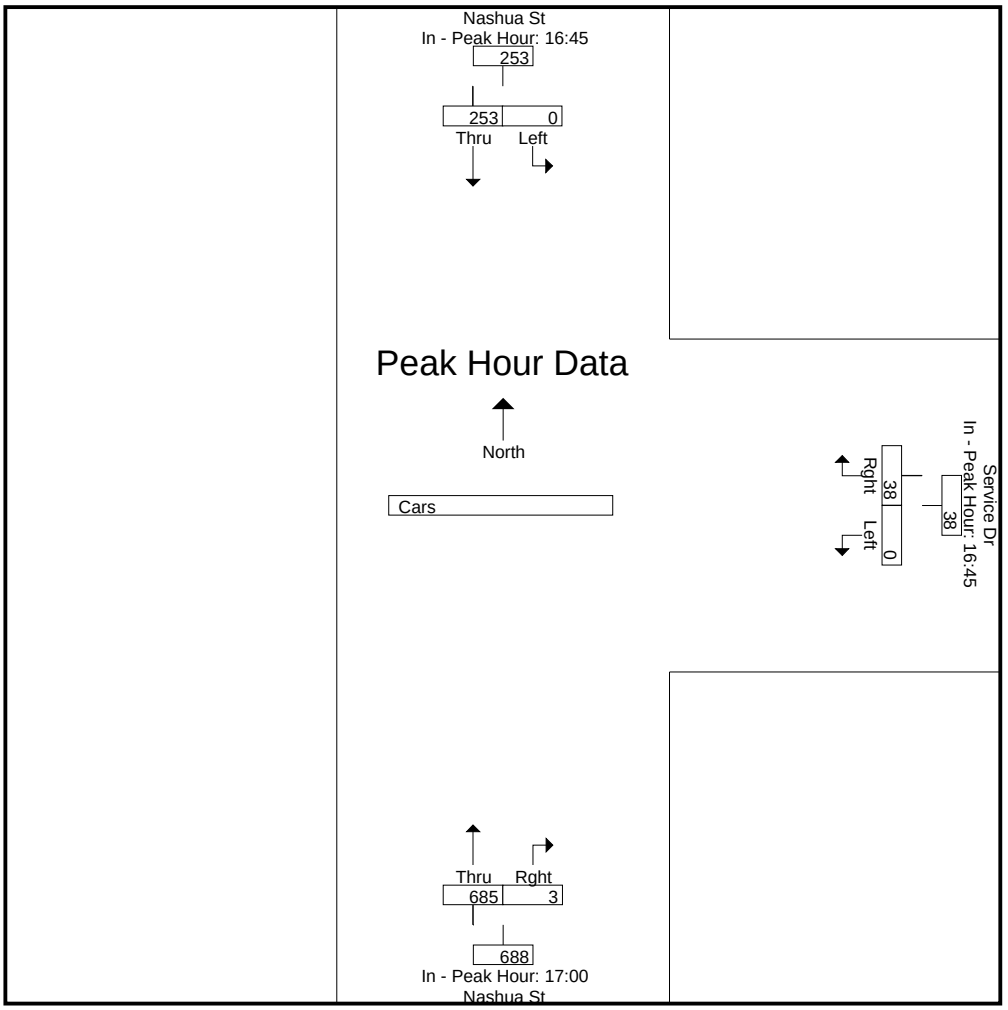
Peak Hour for Each Approach Begins at:

	16:45			16:45			17:00		
+0 mins.	0	69	69	0	**12**	**12**	**191**	**1**	**192**
+15 mins.	0	59	59	0	9	9	165	0	165
+30 mins.	0	54	54	0	8	8	173	1	174
+45 mins.	0	**71**	**71**	0	9	9	156	1	157
Total Volume	0	253	253	0	38	38	685	3	688
% App. Total	0	100		0	100		99.6	0.4	
PHF	.000	.891	.891	.000	.792	.792	.897	.750	.896

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
Page No : 1

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Groups Printed- Trucks

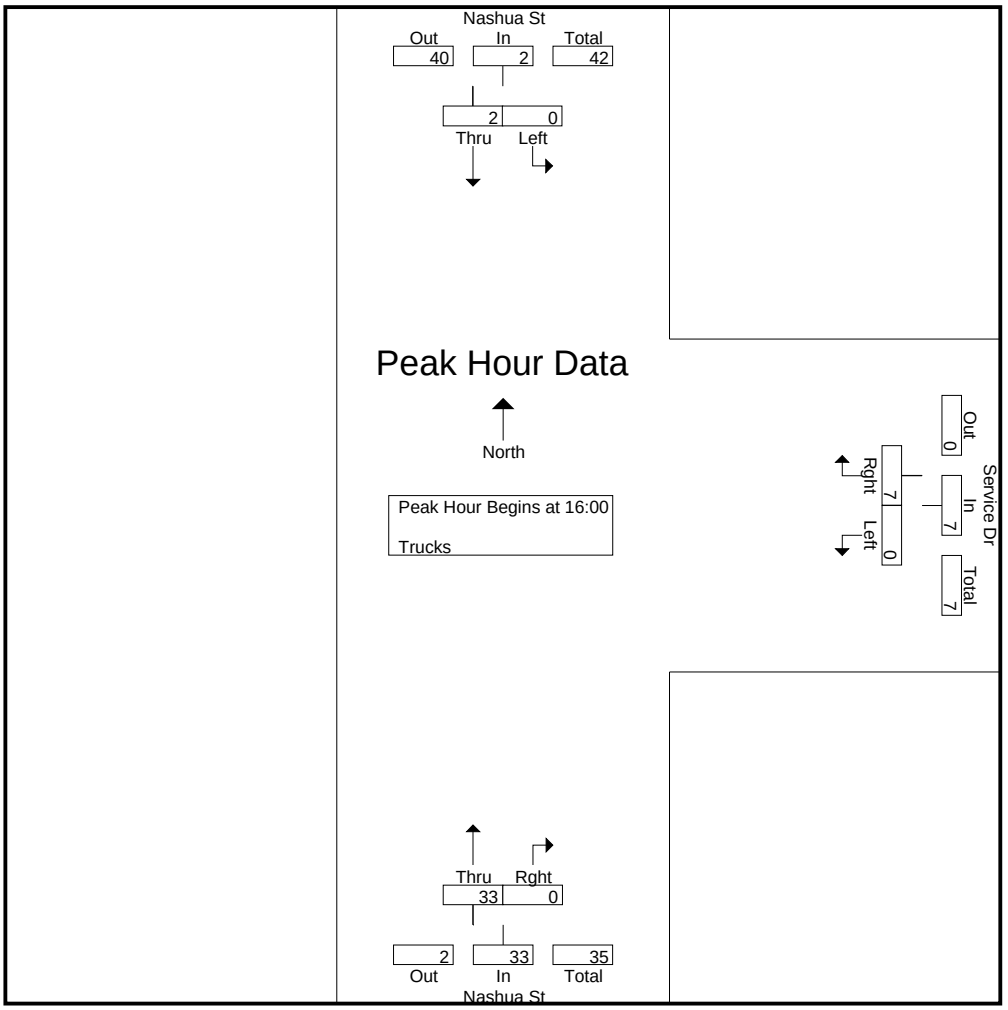
	Nashua St From North		Service Dr From East		Nashua St From South		
Start Time	Left	Thru	Left	Rght	Thru	Rght	Int. Total
16:00	0	0	0	2	8	0	10
16:15	0	1	0	2	8	0	11
16:30	0	1	0	1	6	0	8
16:45	0	0	0	2	11	0	13
Total	0	2	0	7	33	0	42
17:00	0	1	0	1	4	0	6
17:15	0	0	0	2	7	0	9
17:30	0	1	0	1	8	0	10
17:45	0	0	0	2	4	0	6
Total	0	2	0	6	23	0	31
Grand Total	0	4	0	13	56	0	73
Apprch %	0	100	0	100	100	0	
Total %	0	5.5	0	17.8	76.7	0	

	Nashua St From North			Service Dr From East			Nashua St From South			
Start Time	Left	Thru	App. Total	Left	Rght	App. Total	Thru	Rght	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 16:00										
16:00	0	0	0	0	**2**	**2**	8	0	8	10
16:15	0	**1**	**1**	0	2	2	8	0	8	11
16:30	0	1	1	0	1	1	6	0	6	8
16:45	0	0	0	0	2	2	**11**	0	**11**	**13**
Total Volume	0	2	2	0	7	7	33	0	33	42
% App. Total	0	100		0	100		100	0		
PHF	.000	.500	.500	.000	.875	.875	.750	.000	.750	.808

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

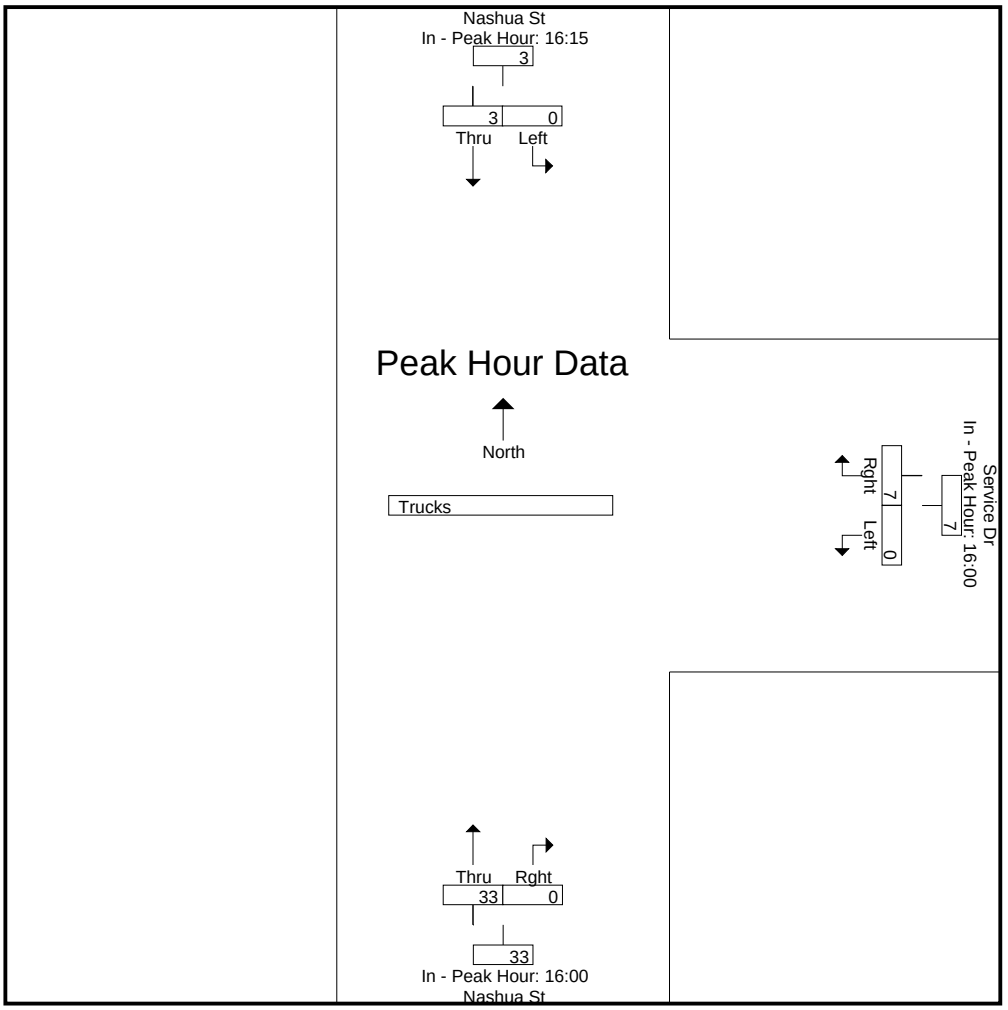
Peak Hour for Each Approach Begins at:

	16:15			16:00			16:00		
+0 mins.	0	**1**	**1**	0	**2**	**2**	8	0	8
+15 mins.	0	1	1	0	2	2	8	0	8
+30 mins.	0	0	0	0	1	1	6	0	6
+45 mins.	0	1	1	0	2	2	**11**	0	**11**
Total Volume	0	3	3	0	7	7	33	0	33
% App. Total	0	100		0	100		100	0	
PHF	.000	.750	.750	.000	.875	.875	.750	.000	.750

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
Page No : 1

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Groups Printed- Bikes Peds

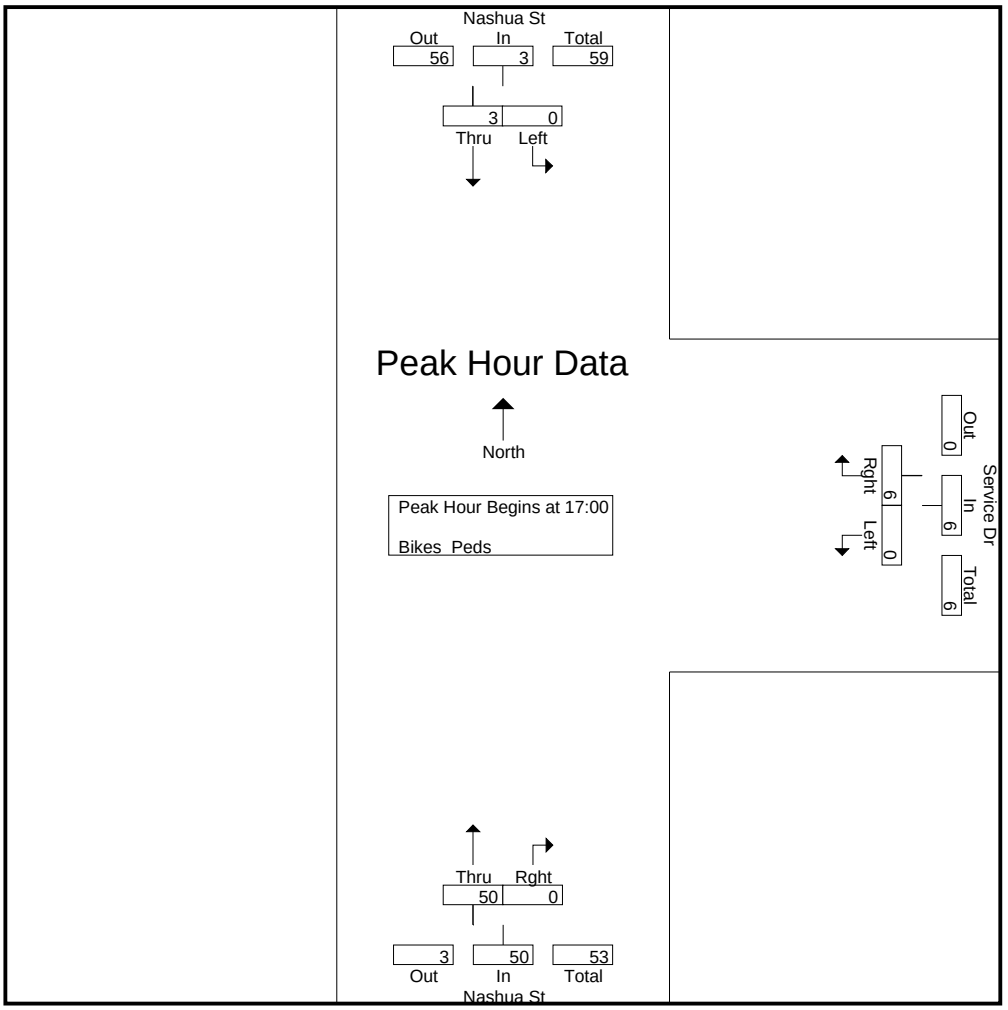
	Nashua St From North			Service Dr From East			Nashua St From South					
Start Time	Left	Thru	Peds	Left	Rght	Peds	Thru	Rght	Peds	Exclu. Total	Inclu. Total	Int. Total
16:00	0	0	1	0	1	5	10	0	85	91	11	102
16:15	0	0	2	0	1	1	2	0	132	135	3	138
16:30	0	0	2	0	0	16	4	0	141	159	4	163
16:45	0	1	1	0	1	7	5	0	153	161	7	168
Total	0	1	6	0	3	29	21	0	511	546	25	571
17:00	0	0	1	0	2	4	11	0	144	149	13	162
17:15	0	2	0	0	0	5	11	0	146	151	13	164
17:30	0	0	0	0	0	13	18	0	120	133	18	151
17:45	0	1	1	0	4	10	10	0	69	80	15	95
Total	0	3	2	0	6	32	50	0	479	513	59	572
Grand Total	0	4	8	0	9	61	71	0	990	1059	84	1143
Apprch %	0	100		0	100		100	0				
Total %	0	4.8		0	10.7		84.5	0		92.7	7.3	

	Nashua St From North			Service Dr From East			Nashua St From South			
Start Time	Left	Thru	App. Total	Left	Rght	App. Total	Thru	Rght	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 17:00										
17:00	0	0	0	0	2	2	11	0	11	13
17:15	0	**2**	**2**	0	0	0	11	0	11	13
17:30	0	0	0	0	0	0	**18**	0	**18**	**18**
17:45	0	1	1	0	**4**	**4**	10	0	10	15
Total Volume	0	3	3	0	6	6	50	0	50	59
% App. Total	0	100		0	100		100	0		
PHF	.000	.375	.375	.000	.375	.375	.694	.000	.694	.819

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

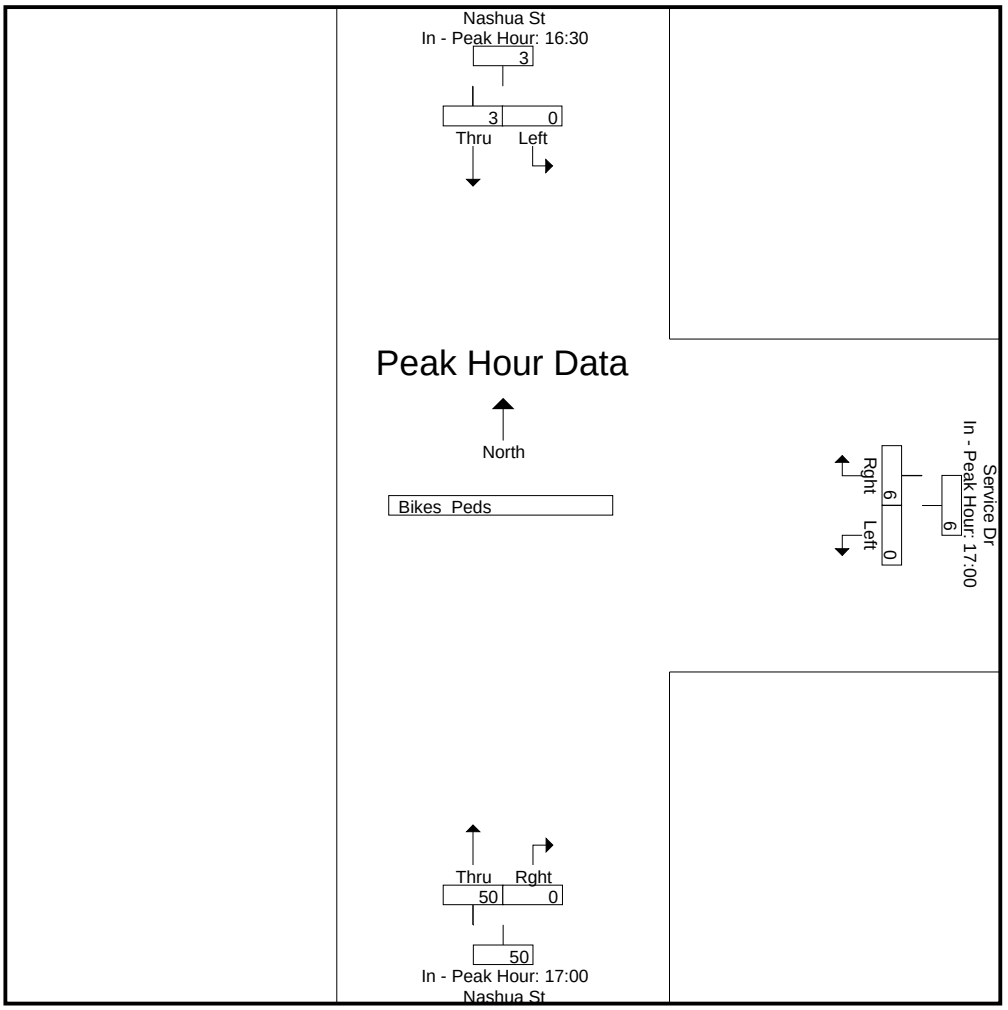
Peak Hour for Each Approach Begins at:

	16:30			17:00			17:00		
+0 mins.	0	0	0	0	2	2	11	0	11
+15 mins.	0	1	1	0	0	0	11	0	11
+30 mins.	0	0	0	0	0	0	**18**	0	**18**
+45 mins.	0	**2**	**2**	0	**4**	**4**	10	0	10
Total Volume	0	3	3	0	6	6	50	0	50
% App. Total	0	100		0	100		100	0	
PHF	.000	.375	.375	.000	.375	.375	.694	.000	.694

Accurate Counts
978-664-2565

N/S Street : Nashua Street
E/W Street: Garden Service Road
City/State : Boston, MA
Weather : Clear

File Name : 15410005
Site Code : 15410005
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
Page No : 1

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Groups Printed- Cars - Trucks

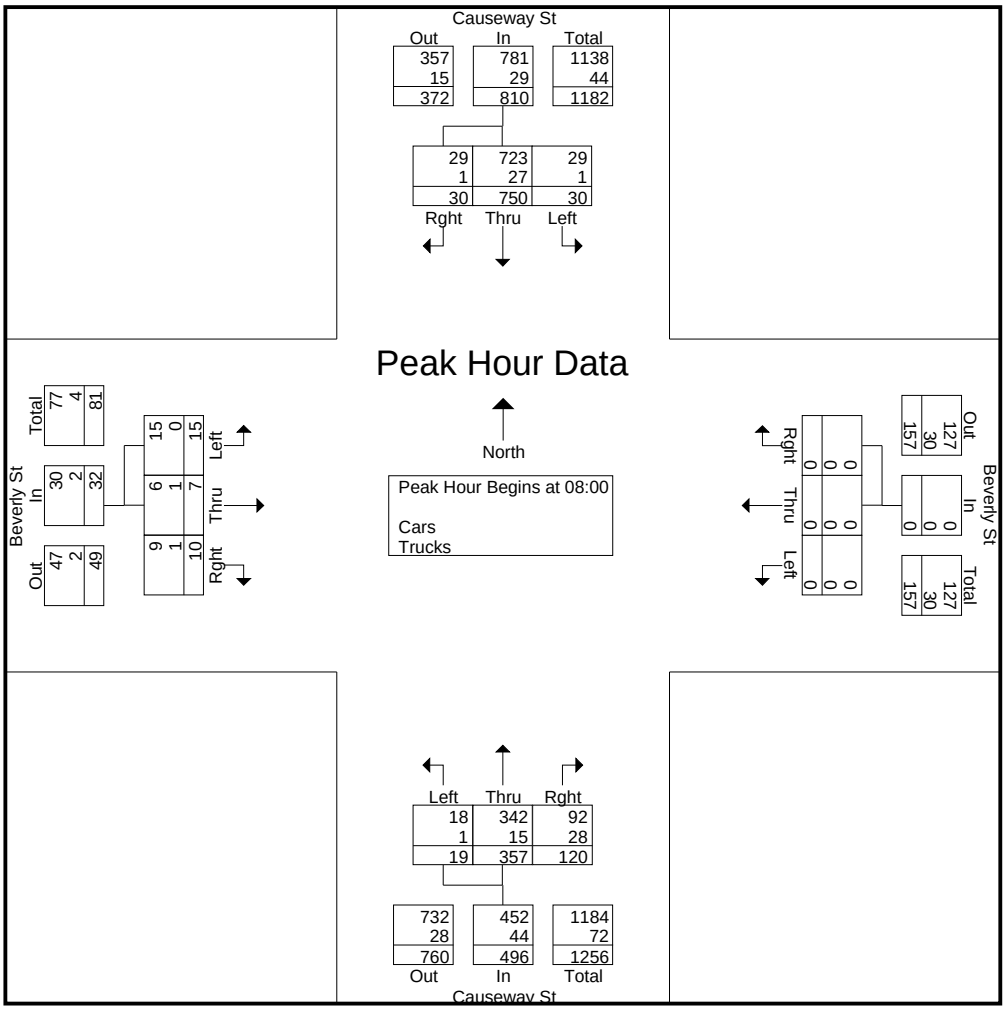
	Causeway St From North			Beverly St From East			Causeway St From South			Beverly St From West			
Start Time	Left	Thru	Rght	Left	Thru	Rght	Left	Thru	Rght	Left	Thru	Rght	Int. Total
07:30	9	152	3	0	0	0	4	90	18	1	1	5	283
07:45	2	184	2	0	0	0	3	81	30	1	0	1	304
Total	11	336	5	0	0	0	7	171	48	2	1	6	587
08:00	4	186	6	0	0	0	5	104	32	1	1	3	342
08:15	8	192	9	0	0	0	4	67	24	9	2	4	319
08:30	10	191	9	0	0	0	7	81	32	5	1	1	337
08:45	8	181	6	0	0	0	3	105	32	0	3	2	340
Total	30	750	30	0	0	0	19	357	120	15	7	10	1338
09:00	11	145	10	0	0	0	2	72	25	4	0	3	272
09:15	13	70	5	0	0	0	7	86	26	5	0	2	214
Grand Total	65	1301	50	0	0	0	35	686	219	26	8	21	2411
Apprch %	4.6	91.9	3.5	0	0	0	3.7	73	23.3	47.3	14.5	38.2	
Total %	2.7	54	2.1	0	0	0	1.5	28.5	9.1	1.1	0.3	0.9	
Cars	62	1249	49	0	0	0	34	644	174	26	7	19	2264
% Cars	95.4	96	98	0	0	0	97.1	93.9	79.5	100	87.5	90.5	93.9
Trucks	3	52	1	0	0	0	1	42	45	0	1	2	147
% Trucks	4.6	4	2	0	0	0	2.9	6.1	20.5	0	12.5	9.5	6.1

	Causeway St From North				Beverly St From East				Causeway St From South				Beverly St From West				
Start Time	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	4	186	6	196	0	0	0	0	5	104	**32**	**141**	1	1	3	5	**342**
08:15	8	**192**	**9**	209	0	0	0	0	4	67	24	95	**9**	2	**4**	**15**	319
08:30	**10**	191	9	**210**	0	0	0	0	**7**	81	32	120	5	1	1	7	337
08:45	8	181	6	195	0	0	0	0	3	**105**	32	140	0	**3**	2	5	340
Total Volume	30	750	30	810	0	0	0	0	19	357	120	496	15	7	10	32	1338
% App. Total	3.7	92.6	3.7		0	0	0		3.8	72	24.2		46.9	21.9	31.2		
PHF	.750	.977	.833	.964	.000	.000	.000	.000	.679	.850	.938	.879	.417	.583	.625	.533	.978
Cars	29	723	29	781	0	0	0	0	18	342	92	452	15	6	9	30	1263
% Cars	96.7	96.4	96.7	96.4	0	0	0	0	94.7	95.8	76.7	91.1	100	85.7	90.0	93.8	94.4
Trucks	1	27	1	29	0	0	0	0	1	15	28	44	0	1	1	2	75
% Trucks	3.3	3.6	3.3	3.6	0	0	0	0	5.3	4.2	23.3	8.9	0	14.3	10.0	6.3	5.6

Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1

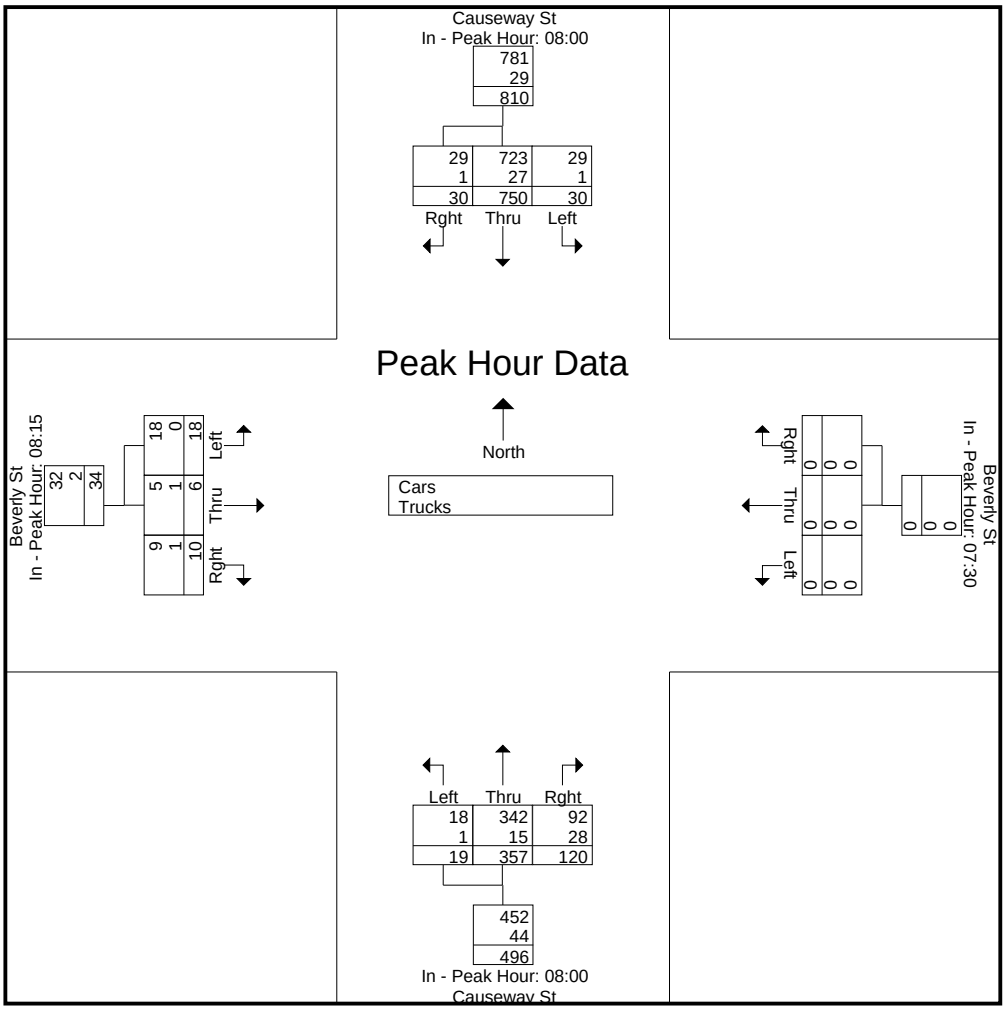
Peak Hour for Each Approach Begins at:

	08:00				07:30				08:00				08:15			
+0 mins.	4	186	6	196	0	0	0	0	5	104	**32**	**141**	**9**	2	**4**	**15**
+15 mins.	8	**192**	**9**	209	0	0	0	0	4	67	24	95	5	1	1	7
+30 mins.	**10**	191	9	**210**	0	0	0	0	**7**	81	32	120	0	**3**	2	5
+45 mins.	8	181	6	195	0	0	0	0	3	**105**	32	140	4	0	3	7
Total Volume	30	750	30	810	0	0	0	0	19	357	120	496	18	6	10	34
% App. Total	3.7	92.6	3.7		0	0	0		3.8	72	24.2		52.9	17.6	29.4	
PHF	.750	.977	.833	.964	.000	.000	.000	.000	.679	.850	.938	.879	.500	.500	.625	.567
Cars	29	723	29	781	0	0	0	0	18	342	92	452	18	5	9	32
% Cars	96.7	96.4	96.7	96.4	0	0	0	0	94.7	95.8	76.7	91.1	100	83.3	90	94.1
Trucks	1	27	1	29	0	0	0	0	1	15	28	44	0	1	1	2
% Trucks	3.3	3.6	3.3	3.6	0	0	0	0	5.3	4.2	23.3	8.9	0	16.7	10	5.9

Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011

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Groups Printed- Cars

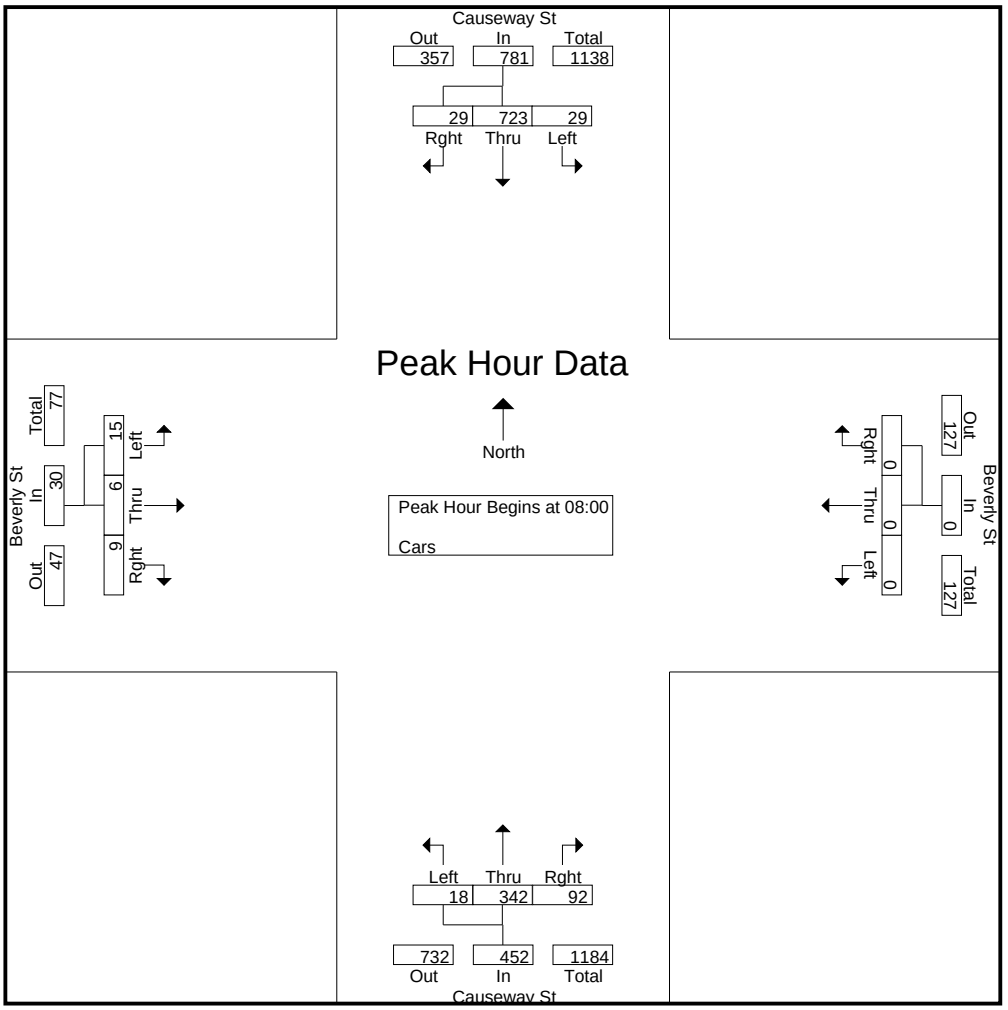
	Causeway St From North			Beverly St From East			Causeway St From South			Beverly St From West			
Start Time	Left	Thru	Rght	Left	Thru	Rght	Left	Thru	Rght	Left	Thru	Rght	Int. Total
07:30	8	145	3	0	0	0	4	85	13	1	1	4	264
07:45	2	174	2	0	0	0	3	76	24	1	0	1	283
Total	10	319	5	0	0	0	7	161	37	2	1	5	547
08:00	4	180	6	0	0	0	5	100	25	1	1	3	325
08:15	7	187	8	0	0	0	3	65	18	9	2	3	302
08:30	10	184	9	0	0	0	7	76	25	5	1	1	318
08:45	8	172	6	0	0	0	3	101	24	0	2	2	318
Total	29	723	29	0	0	0	18	342	92	15	6	9	1263
09:00	11	140	10	0	0	0	2	64	22	4	0	3	256
09:15	12	67	5	0	0	0	7	77	23	5	0	2	198
Grand Total	62	1249	49	0	0	0	34	644	174	26	7	19	2264
Apprch %	4.6	91.8	3.6	0	0	0	4	75.6	20.4	50	13.5	36.5	
Total %	2.7	55.2	2.2	0	0	0	1.5	28.4	7.7	1.1	0.3	0.8	

	Causeway St From North				Beverly St From East				Causeway St From South				Beverly St From West				
Start Time	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	4	180	6	190	0	0	0	0	5	100	**25**	**130**	1	1	**3**	5	**325**
08:15	7	**187**	8	202	0	0	0	0	3	65	18	86	**9**	**2**	3	**14**	302
08:30	**10**	184	**9**	**203**	0	0	0	0	**7**	76	25	108	5	1	1	7	318
08:45	8	172	6	186	0	0	0	0	3	**101**	24	128	0	2	2	4	318
Total Volume	29	723	29	781	0	0	0	0	18	342	92	452	15	6	9	30	1263
% App. Total	3.7	92.6	3.7		0	0	0		4	75.7	20.4		50	20	30		
PHF	.725	.967	.806	.962	.000	.000	.000	.000	.643	.847	.920	.869	.417	.750	.750	.536	.972

Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1

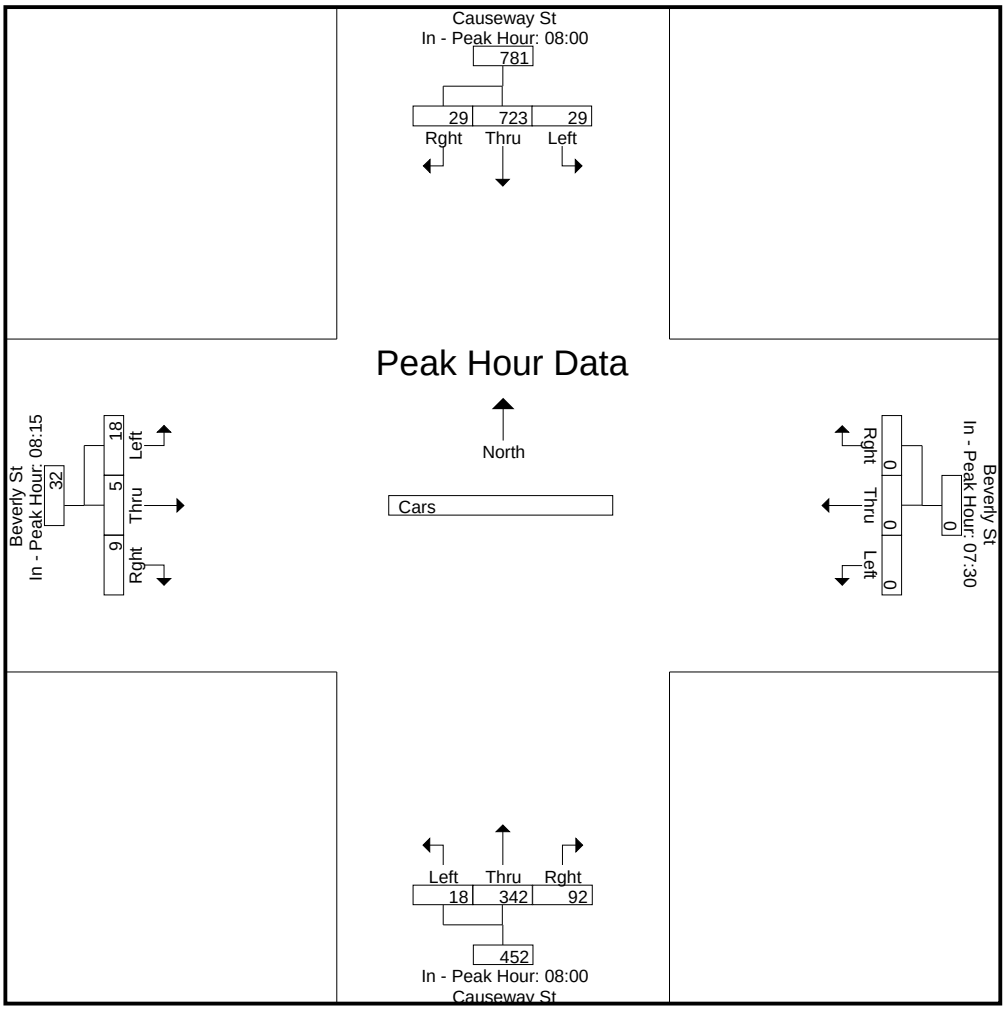
Peak Hour for Each Approach Begins at:

	08:00				07:30				08:00				08:15			
+0 mins.	4	180	6	190	0	0	0	0	5	100	**25**	**130**	**9**	**2**	**3**	**14**
+15 mins.	7	**187**	8	202	0	0	0	0	3	65	18	86	5	1	1	7
+30 mins.	**10**	184	**9**	**203**	0	0	0	0	**7**	76	25	108	0	2	2	4
+45 mins.	8	172	6	186	0	0	0	0	3	**101**	24	128	4	0	3	7
Total Volume	29	723	29	781	0	0	0	0	18	342	92	452	18	5	9	32
% App. Total	3.7	92.6	3.7		0	0	0		4	75.7	20.4		56.2	15.6	28.1	
PHF	.725	.967	.806	.962	.000	.000	.000	.000	.643	.847	.920	.869	.500	.625	.750	.571

Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011

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Groups Printed- Trucks

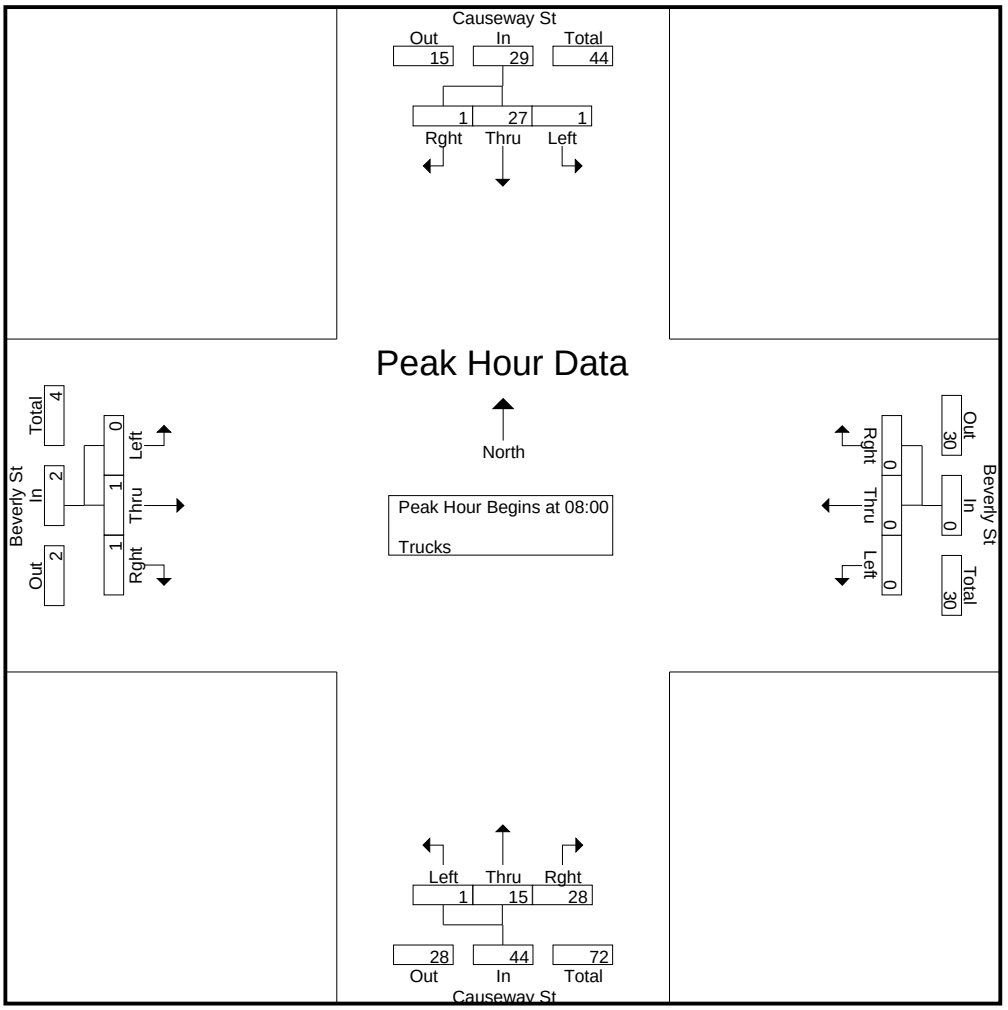
	Causeway St From North			Beverly St From East			Causeway St From South			Beverly St From West			
Start Time	Left	Thru	Rght	Left	Thru	Rght	Left	Thru	Rght	Left	Thru	Rght	Int. Total
07:30	1	7	0	0	0	0	0	5	5	0	0	1	19
07:45	0	10	0	0	0	0	0	5	6	0	0	0	21
Total	1	17	0	0	0	0	0	10	11	0	0	1	40
08:00	0	6	0	0	0	0	0	4	7	0	0	0	17
08:15	1	5	1	0	0	0	1	2	6	0	0	1	17
08:30	0	7	0	0	0	0	0	5	7	0	0	0	19
08:45	0	9	0	0	0	0	0	4	8	0	1	0	22
Total	1	27	1	0	0	0	1	15	28	0	1	1	75
09:00	0	5	0	0	0	0	0	8	3	0	0	0	16
09:15	1	3	0	0	0	0	0	9	3	0	0	0	16
Grand Total	3	52	1	0	0	0	1	42	45	0	1	2	147
Apprch %	5.4	92.9	1.8	0	0	0	1.1	47.7	51.1	0	33.3	66.7	
Total %	2	35.4	0.7	0	0	0	0.7	28.6	30.6	0	0.7	1.4	

	Causeway St From North				Beverly St From East				Causeway St From South				Beverly St From West				
Start Time	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	0	6	0	6	0	0	0	0	0	4	7	11	0	0	0	0	17
08:15	**1**	5	**1**	7	0	0	0	0	**1**	2	6	9	0	0	**1**	**1**	17
08:30	0	7	0	7	0	0	0	0	0	**5**	7	**12**	0	0	0	0	19
08:45	0	**9**	0	**9**	0	0	0	0	0	4	**8**	12	0	**1**	0	1	**22**
Total Volume	1	27	1	29	0	0	0	0	1	15	28	44	0	1	1	2	75
% App. Total	3.4	93.1	3.4		0	0	0		2.3	34.1	63.6		0	50	50		
PHF	.250	.750	.250	.806	.000	.000	.000	.000	.250	.750	.875	.917	.000	.250	.250	.500	.852

Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1

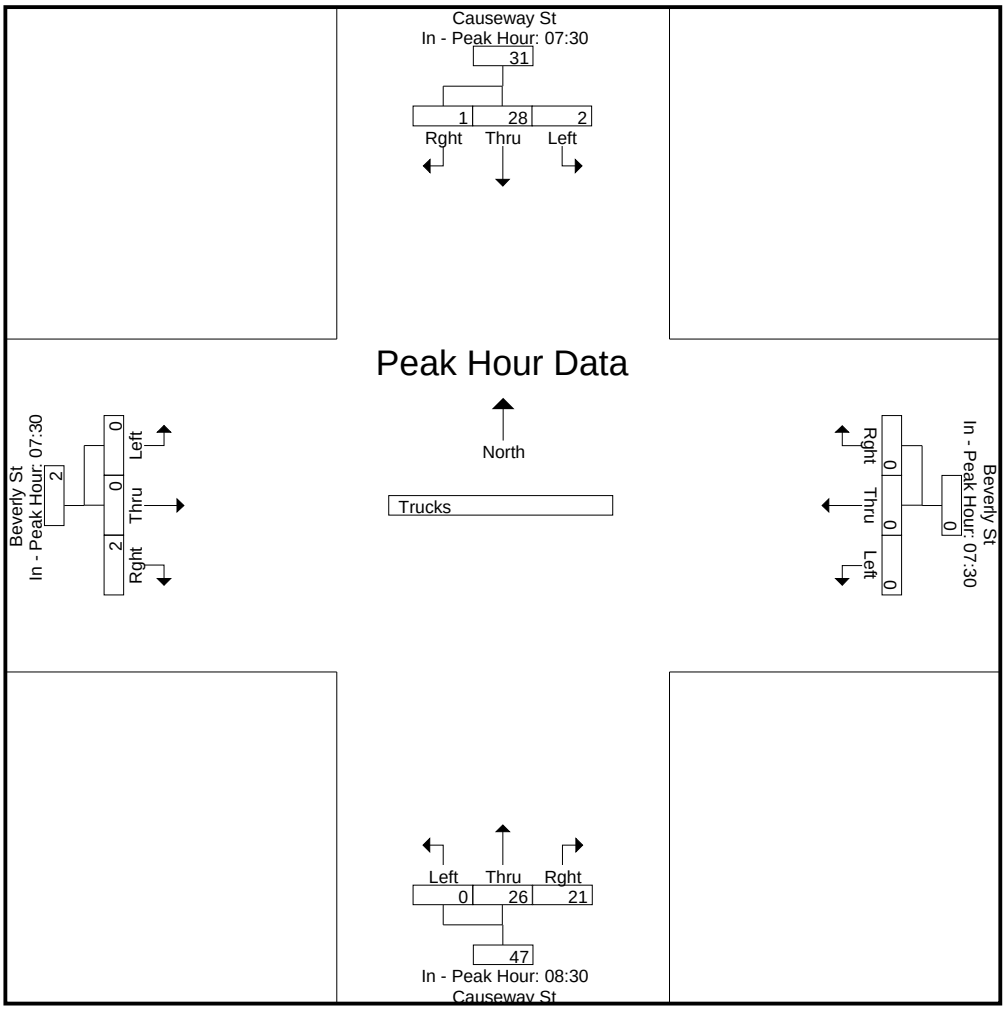
Peak Hour for Each Approach Begins at:

	07:30				07:30				08:30				07:30			
+0 mins.	**1**	7	0	8	0	0	0	0	0	5	7	**12**	0	0	**1**	**1**
+15 mins.	0	**10**	0	**10**	0	0	0	0	0	4	**8**	12	0	0	0	0
+30 mins.	0	6	0	6	0	0	0	0	0	8	3	11	0	0	0	0
+45 mins.	1	5	**1**	7	0	0	0	0	0	**9**	3	12	0	0	1	1
Total Volume	2	28	1	31	0	0	0	0	0	26	21	47	0	0	2	2
% App. Total	6.5	90.3	3.2		0	0	0		0	55.3	44.7		0	0	100	
PHF	.500	.700	.250	.775	.000	.000	.000	.000	.000	.722	.656	.979	.000	.000	.500	.500

Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011

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Groups Printed- Bikes Peds

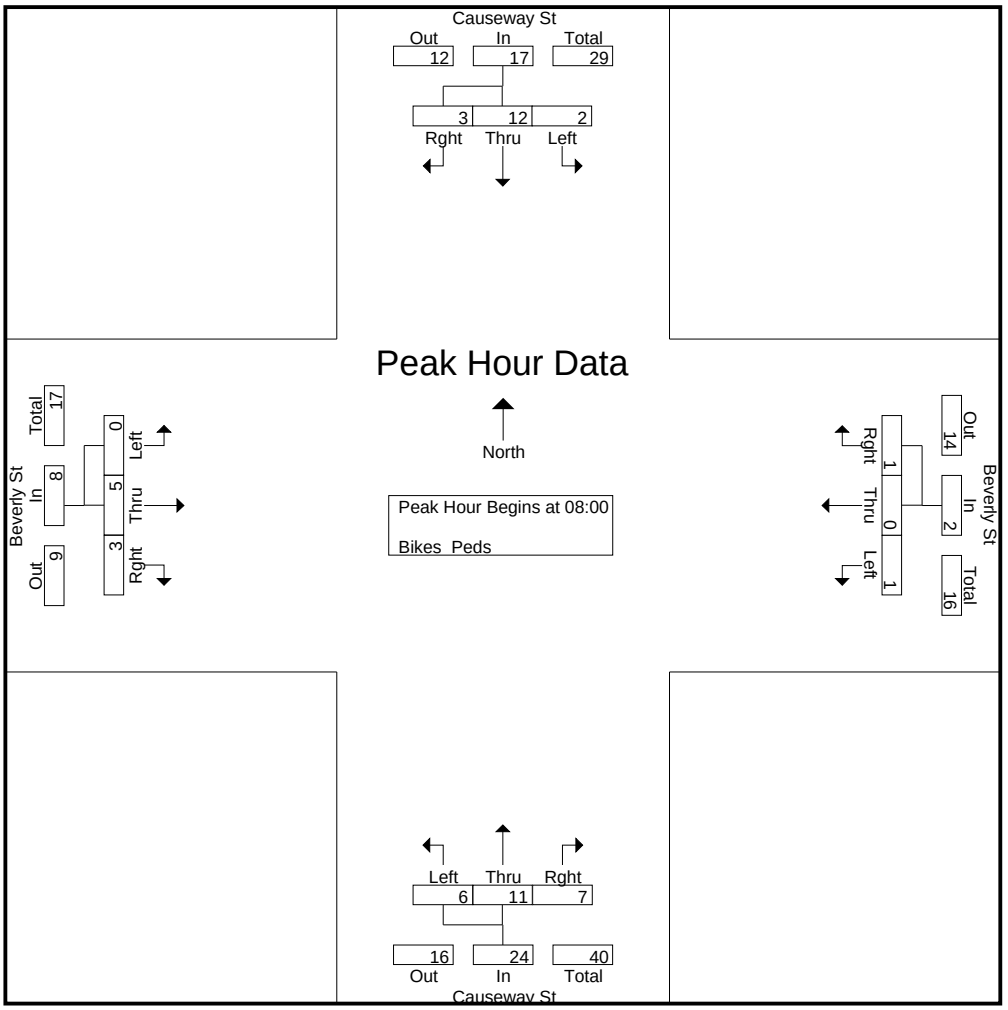
	Causeway St From North				Beverly St From East				Causeway St From South				Beverly St From West						
Start Time	Left	Thru	Rght	Peds	Left	Thru	Rght	Peds	Left	Thru	Rght	Peds	Left	Thru	Rght	Peds	Exclu. Total	Inclu. Total	Int. Total
07:30	1	2	0	16	1	0	0	42	0	3	0	15	0	0	2	25	98	9	107
07:45	0	0	0	13	1	1	0	80	1	2	1	6	2	0	2	42	141	10	151
Total	1	2	0	29	2	1	0	122	1	5	1	21	2	0	4	67	239	19	258
08:00	1	2	0	16	0	0	1	50	0	2	1	13	0	2	2	35	114	11	125
08:15	0	5	0	6	0	0	0	64	1	4	1	12	0	2	0	52	134	13	147
08:30	1	3	1	13	0	0	0	56	3	2	4	7	0	0	0	81	157	14	171
08:45	0	2	2	8	1	0	0	85	2	3	1	6	0	1	1	48	147	13	160
Total	2	12	3	43	1	0	1	255	6	11	7	38	0	5	3	216	552	51	603
09:00	1	3	0	10	0	0	0	98	0	1	0	14	0	1	0	59	181	6	187
09:15	0	1	1	6	0	0	0	55	2	0	0	5	1	0	1	58	124	6	130
Grand Total	4	18	4	88	3	1	1	530	9	17	8	78	3	6	8	400	1096	82	1178
Apprch %	15.4	69.2	15.4		60	20	20		26.5	50	23.5		17.6	35.3	47.1				
Total %	4.9	22	4.9		3.7	1.2	1.2		11	20.7	9.8		3.7	7.3	9.8		93	7	

	Causeway St From North				Beverly St From East				Causeway St From South				Beverly St From West				
Start Time	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	**1**	2	0	3	0	0	**1**	**1**	0	2	1	3	0	**2**	**2**	**4**	11
08:15	0	**5**	0	**5**	0	0	0	0	1	**4**	1	6	0	2	0	2	13
08:30	1	3	1	5	0	0	0	0	**3**	2	**4**	**9**	0	0	0	0	**14**
08:45	0	2	**2**	4	**1**	0	0	1	2	3	1	6	0	1	1	2	13
Total Volume	2	12	3	17	1	0	1	2	6	11	7	24	0	5	3	8	51
% App. Total	11.8	70.6	17.6		50	0	50		25	45.8	29.2		0	62.5	37.5		
PHF	.500	.600	.375	.850	.250	.000	.250	.500	.500	.688	.438	.667	.000	.625	.375	.500	.911

Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
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Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1

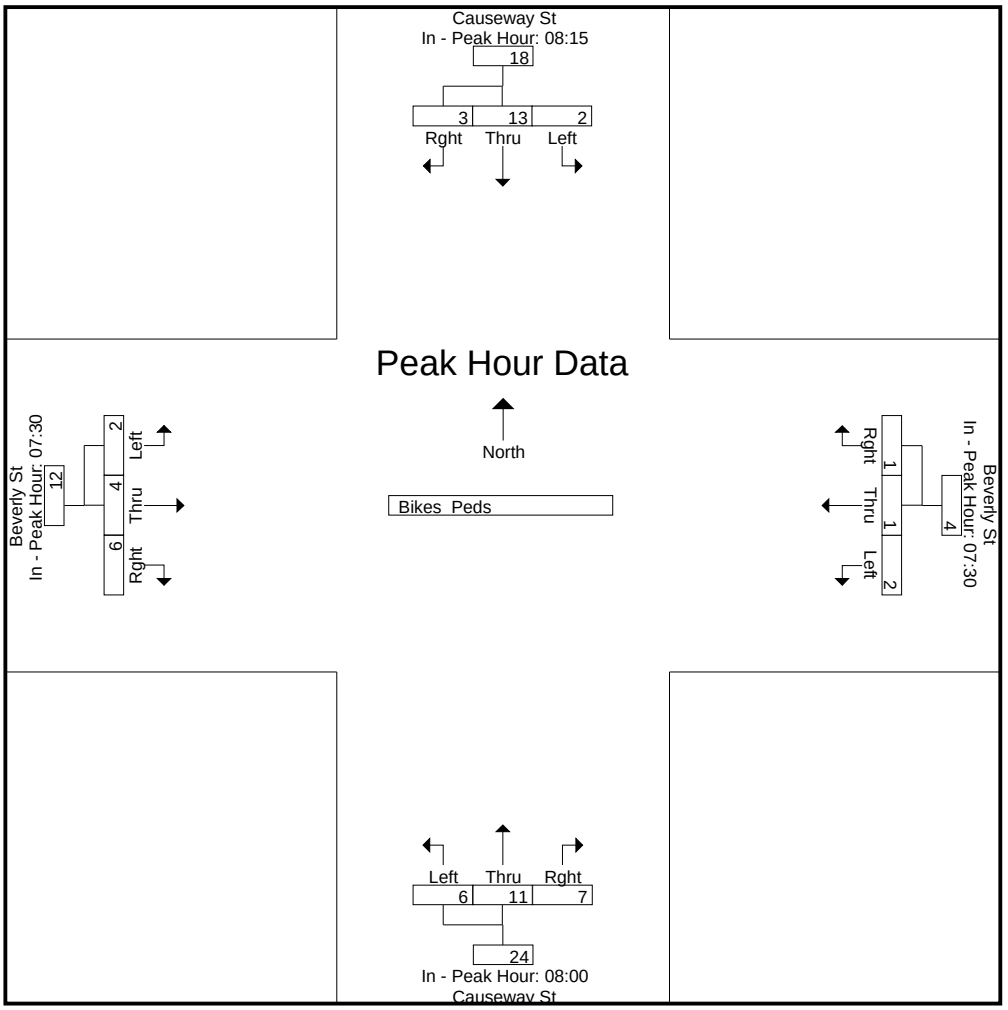
Peak Hour for Each Approach Begins at:

	08:15				07:30				08:00				07:30			
+0 mins.	0	**5**	0	**5**	**1**	0	0	1	0	2	1	3	0	0	**2**	2
+15 mins.	**1**	3	1	5	1	**1**	0	**2**	1	**4**	1	6	**2**	0	2	**4**
+30 mins.	0	2	**2**	4	0	0	**1**	1	**3**	2	**4**	**9**	0	**2**	2	4
+45 mins.	1	3	0	4	0	0	0	0	2	3	1	6	0	2	0	2
Total Volume	2	13	3	18	2	1	1	4	6	11	7	24	2	4	6	12
% App. Total	11.1	72.2	16.7		50	25	25		25	45.8	29.2		16.7	33.3	50	
PHF	.500	.650	.375	.900	.500	.250	.250	.500	.500	.688	.438	.667	.250	.500	.750	.750

Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
Page No : 1

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Groups Printed- Cars - Trucks

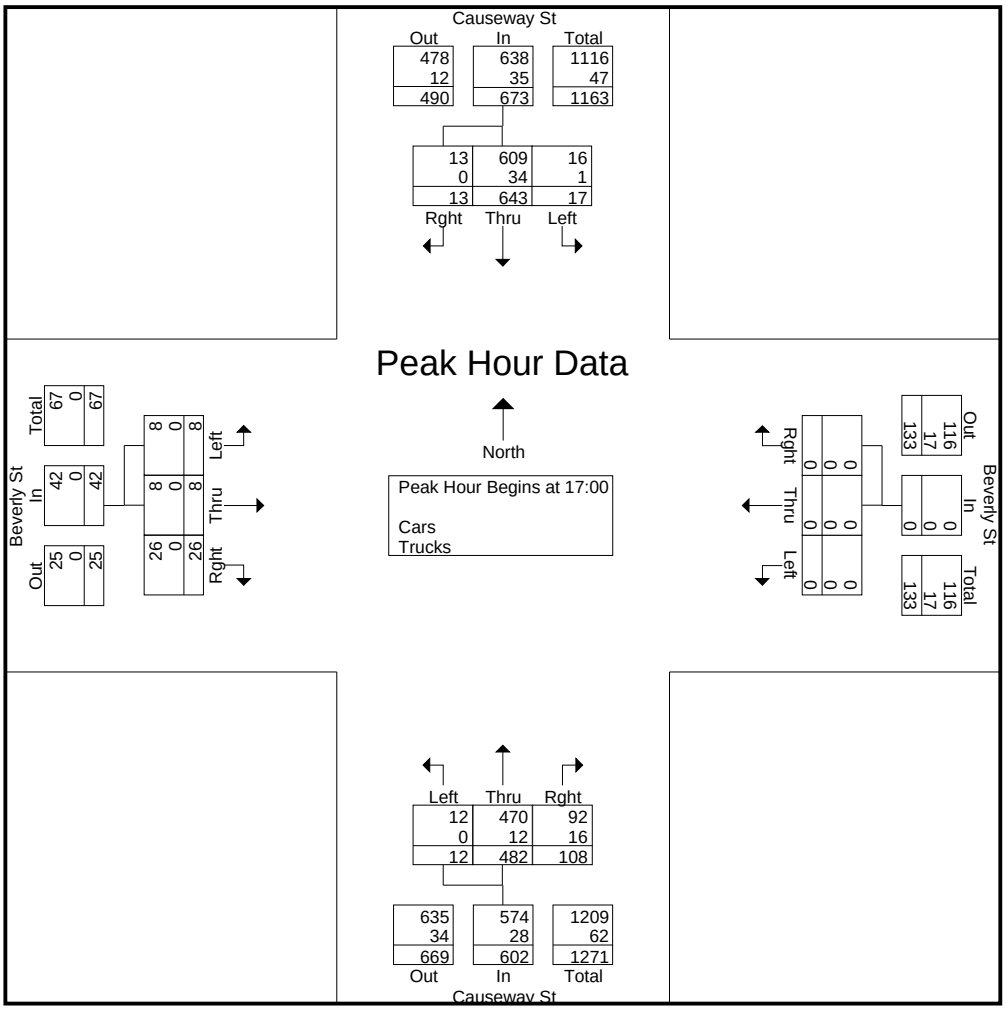
	Causeway St From North			Beverly St From East			Causeway St From South			Beverly St From West			
Start Time	Left	Thru	Rght	Left	Thru	Rght	Left	Thru	Rght	Left	Thru	Rght	Int. Total
16:00	5	119	4	0	0	0	7	124	25	2	3	4	293
16:15	8	137	2	0	0	0	1	118	30	2	1	3	302
16:30	6	132	7	0	0	0	2	129	36	0	3	4	319
16:45	8	143	1	0	0	0	0	119	36	2	2	6	317
Total	27	531	14	0	0	0	10	490	127	6	9	17	1231
17:00	3	173	2	0	0	0	0	114	29	1	4	4	330
17:15	3	117	2	0	0	0	3	124	19	1	2	8	279
17:30	4	161	3	0	0	0	5	128	20	2	1	7	331
17:45	7	192	6	0	0	0	4	116	40	4	1	7	377
Total	17	643	13	0	0	0	12	482	108	8	8	26	1317
Grand Total	44	1174	27	0	0	0	22	972	235	14	17	43	2548
Apprch %	3.5	94.3	2.2	0	0	0	1.8	79.1	19.1	18.9	23	58.1	
Total %	1.7	46.1	1.1	0	0	0	0.9	38.1	9.2	0.5	0.7	1.7	
Cars	37	1098	27	0	0	0	22	933	203	14	17	43	2394
% Cars	84.1	93.5	100	0	0	0	100	96	86.4	100	100	100	94
Trucks	7	76	0	0	0	0	0	39	32	0	0	0	154
% Trucks	15.9	6.5	0	0	0	0	0	4	13.6	0	0	0	6

	Causeway St From North				Beverly St From East				Causeway St From South				Beverly St From West				
Start Time	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	3	173	2	178	0	0	0	0	0	114	29	143	1	**4**	4	9	330
17:15	3	117	2	122	0	0	0	0	3	124	19	146	1	2	**8**	11	279
17:30	4	161	3	168	0	0	0	0	**5**	**128**	20	153	2	1	7	10	331
17:45	**7**	**192**	**6**	**205**	0	0	0	0	4	116	**40**	**160**	**4**	1	7	**12**	**377**
Total Volume	17	643	13	673	0	0	0	0	12	482	108	602	8	8	26	42	1317
% App. Total	2.5	95.5	1.9		0	0	0		2	80.1	17.9		19	19	61.9		
PHF	.607	.837	.542	.821	.000	.000	.000	.000	.600	.941	.675	.941	.500	.500	.813	.875	.873
Cars	16	609	13	638	0	0	0	0	12	470	92	574	8	8	26	42	1254
% Cars	94.1	94.7	100	94.8	0	0	0	0	100	97.5	85.2	95.3	100	100	100	100	95.2
Trucks	1	34	0	35	0	0	0	0	0	12	16	28	0	0	0	0	63
% Trucks	5.9	5.3	0	5.2	0	0	0	0	0	2.5	14.8	4.7	0	0	0	0	4.8

Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

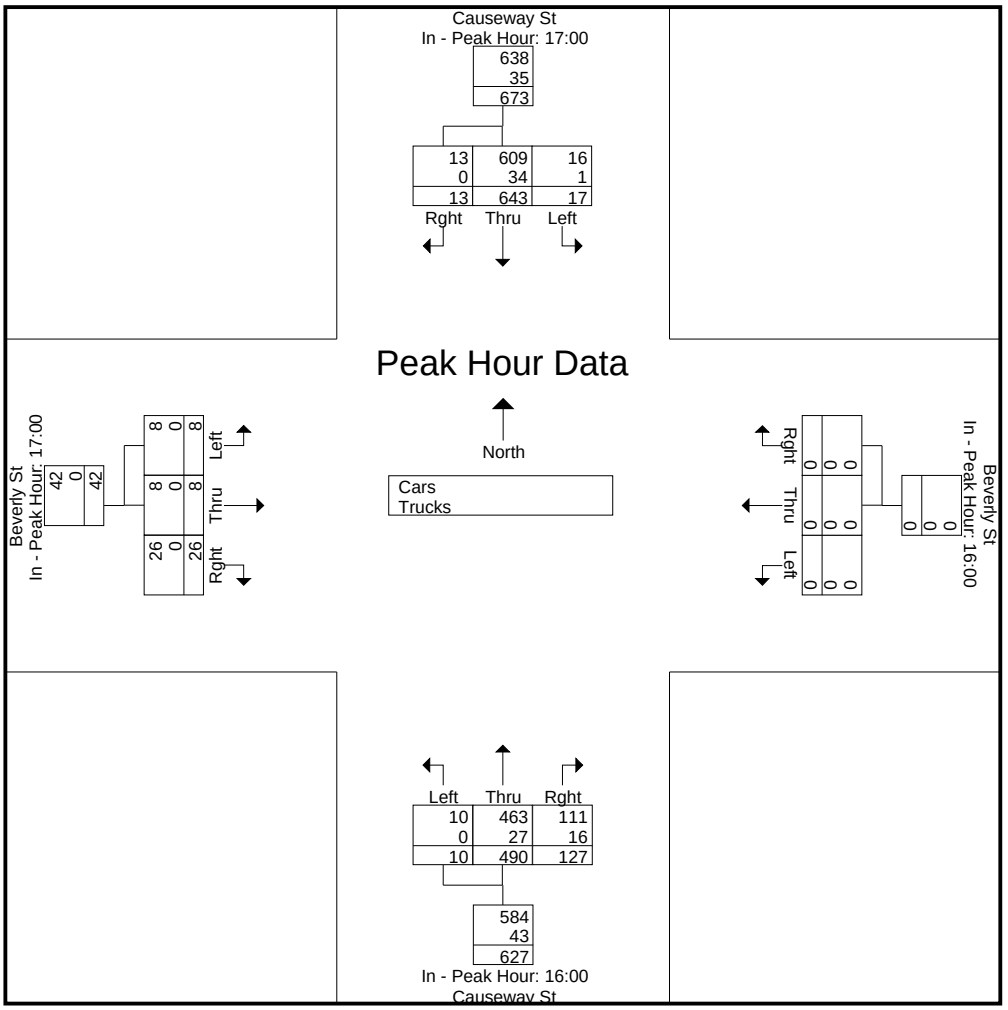
Peak Hour for Each Approach Begins at:

	17:00				16:00				16:00				17:00			
+0 mins.	3	173	2	178	0	0	0	0	**7**	124	25	156	1	**4**	4	9
+15 mins.	3	117	2	122	0	0	0	0	1	118	30	149	1	2	**8**	11
+30 mins.	4	161	3	168	0	0	0	0	2	**129**	**36**	**167**	2	1	7	10
+45 mins.	**7**	**192**	**6**	**205**	0	0	0	0	0	119	36	155	**4**	1	7	**12**
Total Volume	17	643	13	673	0	0	0	0	10	490	127	627	8	8	26	42
% App. Total	2.5	95.5	1.9		0	0	0		1.6	78.1	20.3		19	19	61.9	
PHF	.607	.837	.542	.821	.000	.000	.000	.000	.357	.950	.882	.939	.500	.500	.813	.875
Cars	16	609	13	638	0	0	0	0	10	463	111	584	8	8	26	42
% Cars	94.1	94.7	100	94.8	0	0	0	0	100	94.5	87.4	93.1	100	100	100	100
Trucks	1	34	0	35	0	0	0	0	0	27	16	43	0	0	0	0
% Trucks	5.9	5.3	0	5.2	0	0	0	0	0	5.5	12.6	6.9	0	0	0	0

Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
Page No : 1

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Groups Printed- Cars

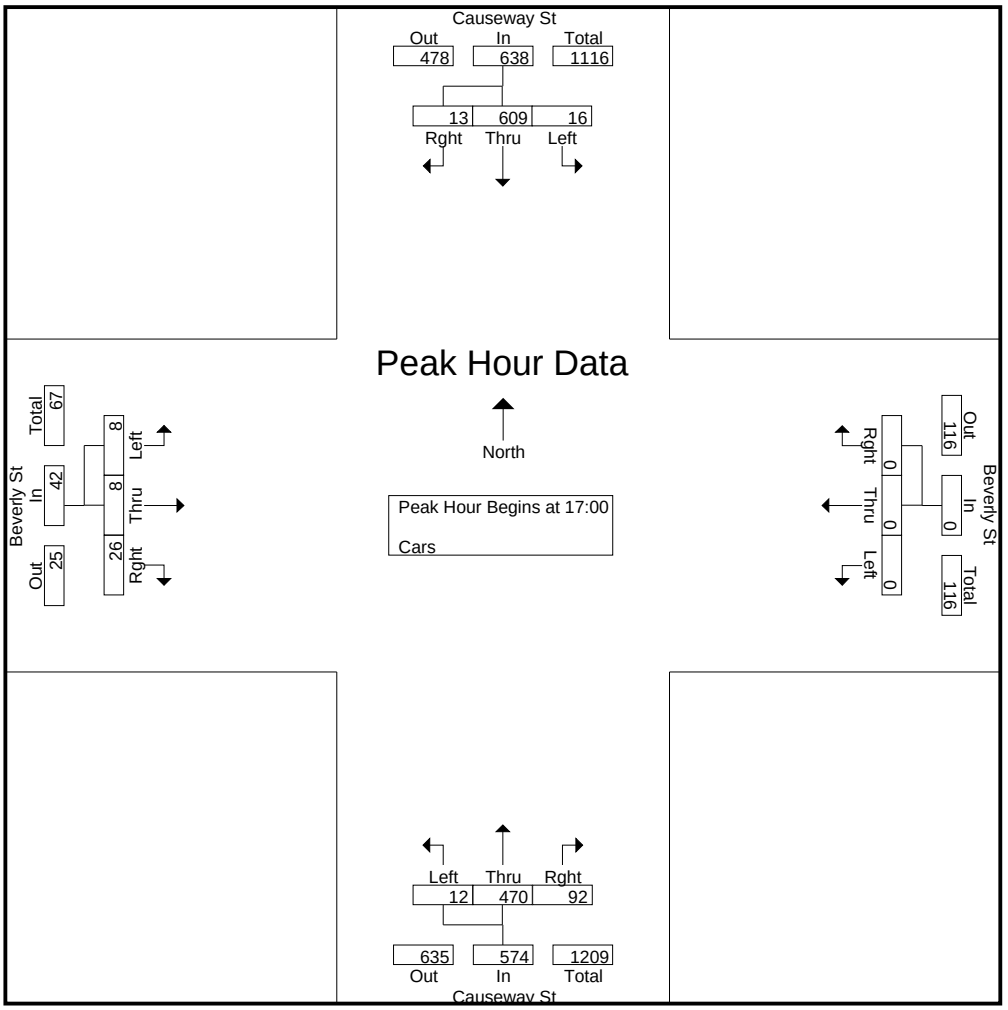
	Causeway St From North			Beverly St From East			Causeway St From South			Beverly St From West			
Start Time	Left	Thru	Rght	Left	Thru	Rght	Left	Thru	Rght	Left	Thru	Rght	Int. Total
16:00	3	110	4	0	0	0	7	116	18	2	3	4	267
16:15	7	128	2	0	0	0	1	110	28	2	1	3	282
16:30	6	121	7	0	0	0	2	120	31	0	3	4	294
16:45	5	130	1	0	0	0	0	117	34	2	2	6	297
Total	21	489	14	0	0	0	10	463	111	6	9	17	1140
17:00	3	166	2	0	0	0	0	113	23	1	4	4	316
17:15	3	109	2	0	0	0	3	118	17	1	2	8	263
17:30	3	150	3	0	0	0	5	127	18	2	1	7	316
17:45	7	184	6	0	0	0	4	112	34	4	1	7	359
Total	16	609	13	0	0	0	12	470	92	8	8	26	1254
Grand Total	37	1098	27	0	0	0	22	933	203	14	17	43	2394
Apprch %	3.2	94.5	2.3	0	0	0	1.9	80.6	17.5	18.9	23	58.1	
Total %	1.5	45.9	1.1	0	0	0	0.9	39	8.5	0.6	0.7	1.8	

	Causeway St From North				Beverly St From East				Causeway St From South				Beverly St From West				
Start Time	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	3	166	2	171	0	0	0	0	0	113	23	136	1	**4**	4	9	316
17:15	3	109	2	114	0	0	0	0	3	118	17	138	1	2	**8**	11	263
17:30	3	150	3	156	0	0	0	0	**5**	**127**	18	**150**	2	1	7	10	316
17:45	**7**	**184**	**6**	**197**	0	0	0	0	4	112	**34**	150	**4**	1	7	**12**	**359**
Total Volume	16	609	13	638	0	0	0	0	12	470	92	574	8	8	26	42	1254
% App. Total	2.5	95.5	2		0	0	0		2.1	81.9	16		19	19	61.9		
PHF	.571	.827	.542	.810	.000	.000	.000	.000	.600	.925	.676	.957	.500	.500	.813	.875	.873

Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

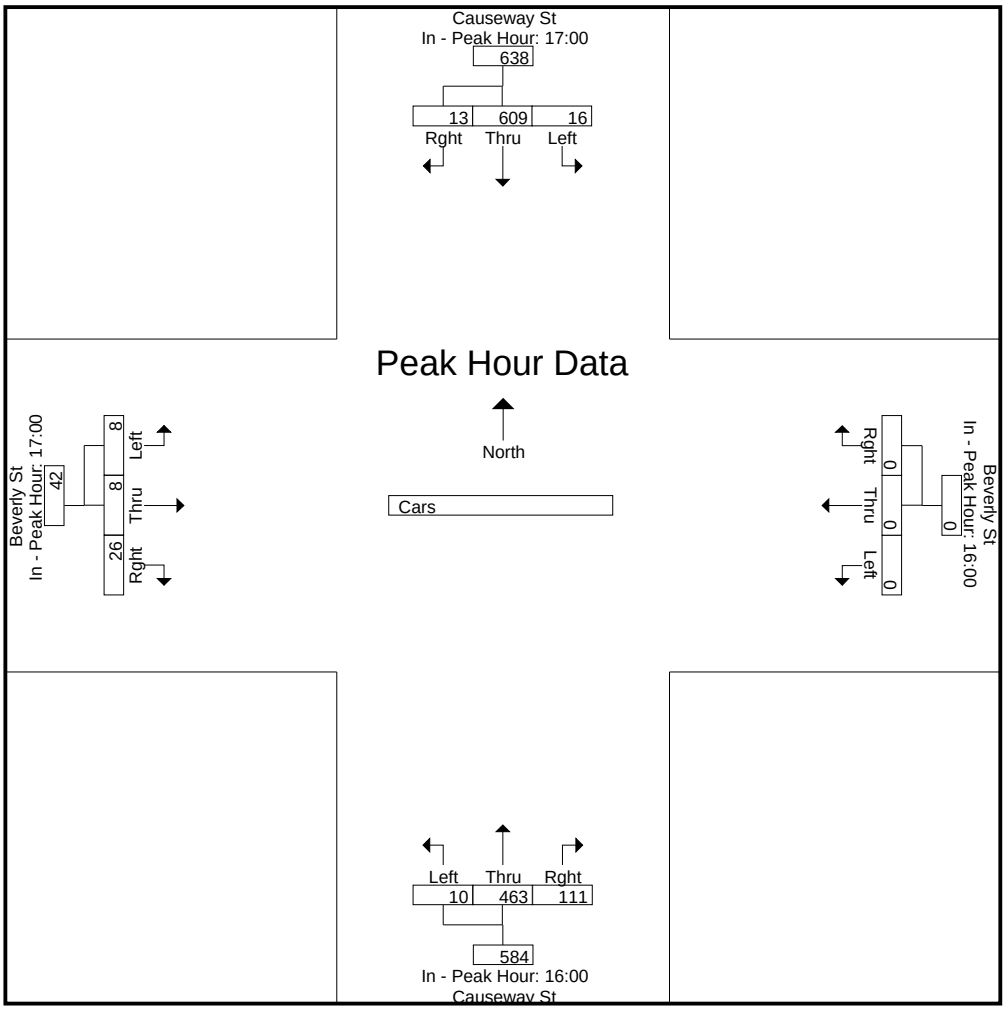
Peak Hour for Each Approach Begins at:

	17:00				16:00				16:00				17:00			
+0 mins.	3	166	2	171	0	0	0	0	**7**	116	18	141	1	**4**	4	9
+15 mins.	3	109	2	114	0	0	0	0	1	110	28	139	1	2	**8**	11
+30 mins.	3	150	3	156	0	0	0	0	2	**120**	31	**153**	2	1	7	10
+45 mins.	**7**	**184**	**6**	**197**	0	0	0	0	0	117	**34**	151	**4**	1	7	**12**
Total Volume	16	609	13	638	0	0	0	0	10	463	111	584	8	8	26	42
% App. Total	2.5	95.5	2		0	0	0		1.7	79.3	19		19	19	61.9	
PHF	.571	.827	.542	.810	.000	.000	.000	.000	.357	.965	.816	.954	.500	.500	.813	.875

Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
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Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
Page No : 1

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Groups Printed- Trucks

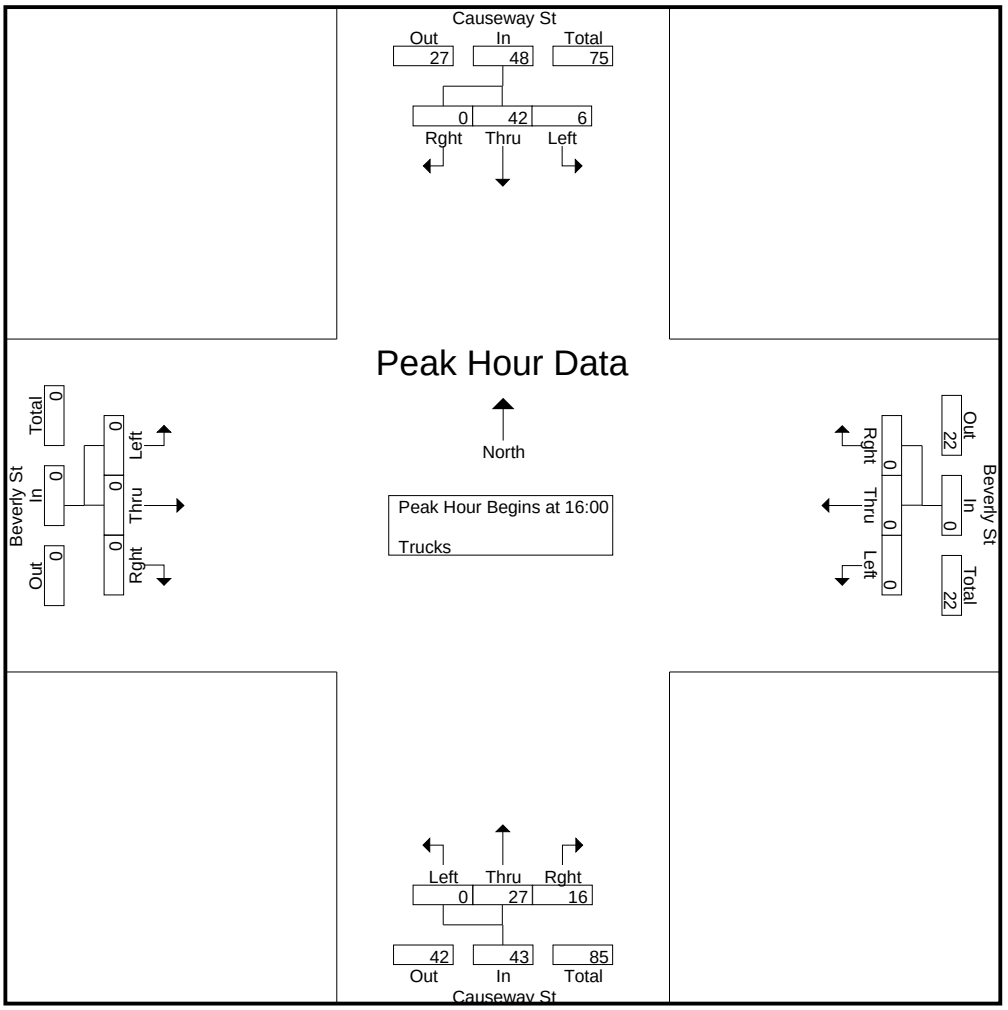
	Causeway St From North			Beverly St From East			Causeway St From South			Beverly St From West			
Start Time	Left	Thru	Rght	Left	Thru	Rght	Left	Thru	Rght	Left	Thru	Rght	Int. Total
16:00	2	9	0	0	0	0	0	8	7	0	0	0	26
16:15	1	9	0	0	0	0	0	8	2	0	0	0	20
16:30	0	11	0	0	0	0	0	9	5	0	0	0	25
16:45	3	13	0	0	0	0	0	2	2	0	0	0	20
Total	6	42	0	0	0	0	0	27	16	0	0	0	91
17:00	0	7	0	0	0	0	0	1	6	0	0	0	14
17:15	0	8	0	0	0	0	0	6	2	0	0	0	16
17:30	1	11	0	0	0	0	0	1	2	0	0	0	15
17:45	0	8	0	0	0	0	0	4	6	0	0	0	18
Total	1	34	0	0	0	0	0	12	16	0	0	0	63
Grand Total	7	76	0	0	0	0	0	39	32	0	0	0	154
Apprch %	8.4	91.6	0	0	0	0	0	54.9	45.1	0	0	0	
Total %	4.5	49.4	0	0	0	0	0	25.3	20.8	0	0	0	

	Causeway St From North				Beverly St From East				Causeway St From South				Beverly St From West				
Start Time	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	2	9	0	11	0	0	0	0	0	8	**7**	**15**	0	0	0	0	**26**
16:15	1	9	0	10	0	0	0	0	0	8	2	10	0	0	0	0	20
16:30	0	11	0	11	0	0	0	0	0	**9**	5	14	0	0	0	0	25
16:45	**3**	**13**	0	**16**	0	0	0	0	0	2	2	4	0	0	0	0	20
Total Volume	6	42	0	48	0	0	0	0	0	27	16	43	0	0	0	0	91
% App. Total	12.5	87.5	0		0	0	0		0	62.8	37.2		0	0	0		
PHF	.500	.808	.000	.750	.000	.000	.000	.000	.000	.750	.571	.717	.000	.000	.000	.000	.875

Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

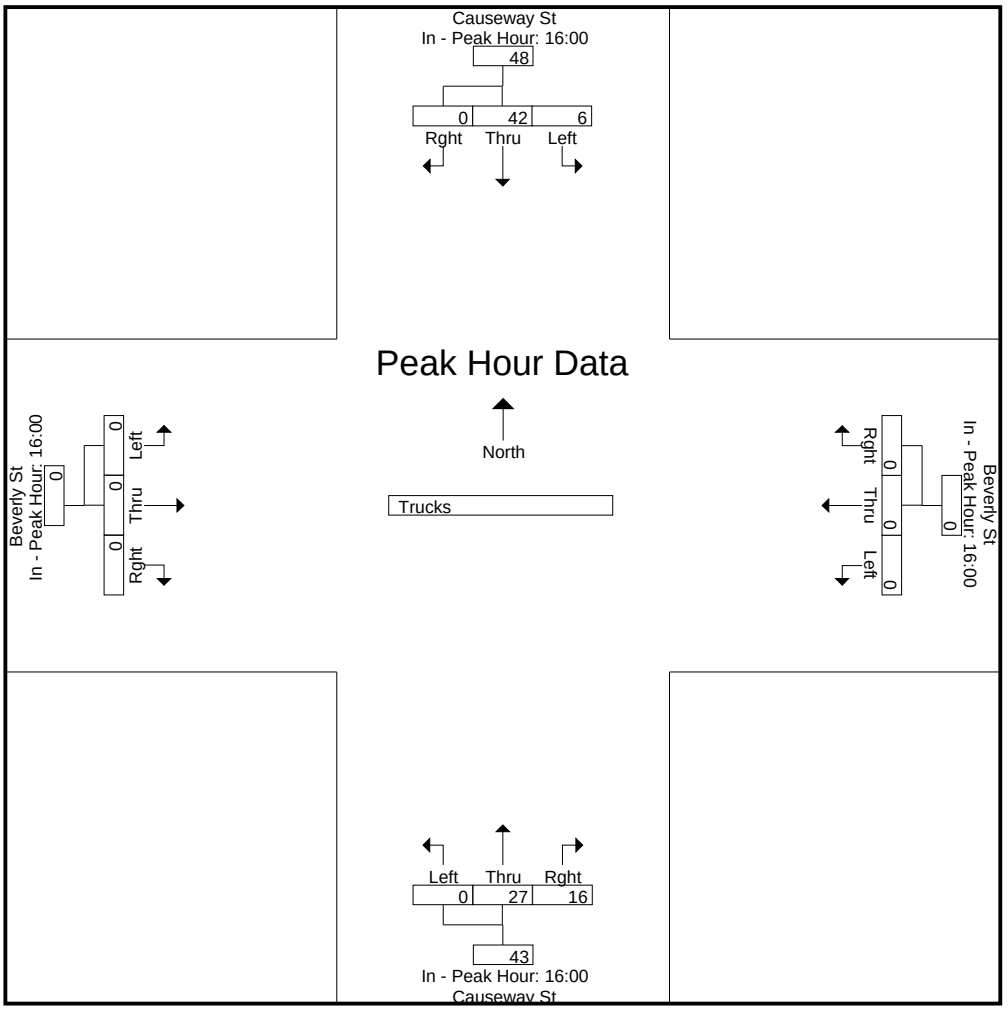
Peak Hour for Each Approach Begins at:

	16:00				16:00				16:00				16:00			
+0 mins.	2	9	0	11	0	0	0	0	0	8	**7**	**15**	0	0	0	0
+15 mins.	1	9	0	10	0	0	0	0	0	8	2	10	0	0	0	0
+30 mins.	0	11	0	11	0	0	0	0	0	**9**	5	14	0	0	0	0
+45 mins.	**3**	**13**	0	**16**	0	0	0	0	0	2	2	4	0	0	0	0
Total Volume	6	42	0	48	0	0	0	0	0	27	16	43	0	0	0	0
% App. Total	12.5	87.5	0		0	0	0		0	62.8	37.2		0	0	0	
PHF	.500	.808	.000	.750	.000	.000	.000	.000	.000	.750	.571	.717	.000	.000	.000	.000

Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
Page No : 1

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Groups Printed- Bikes Peds

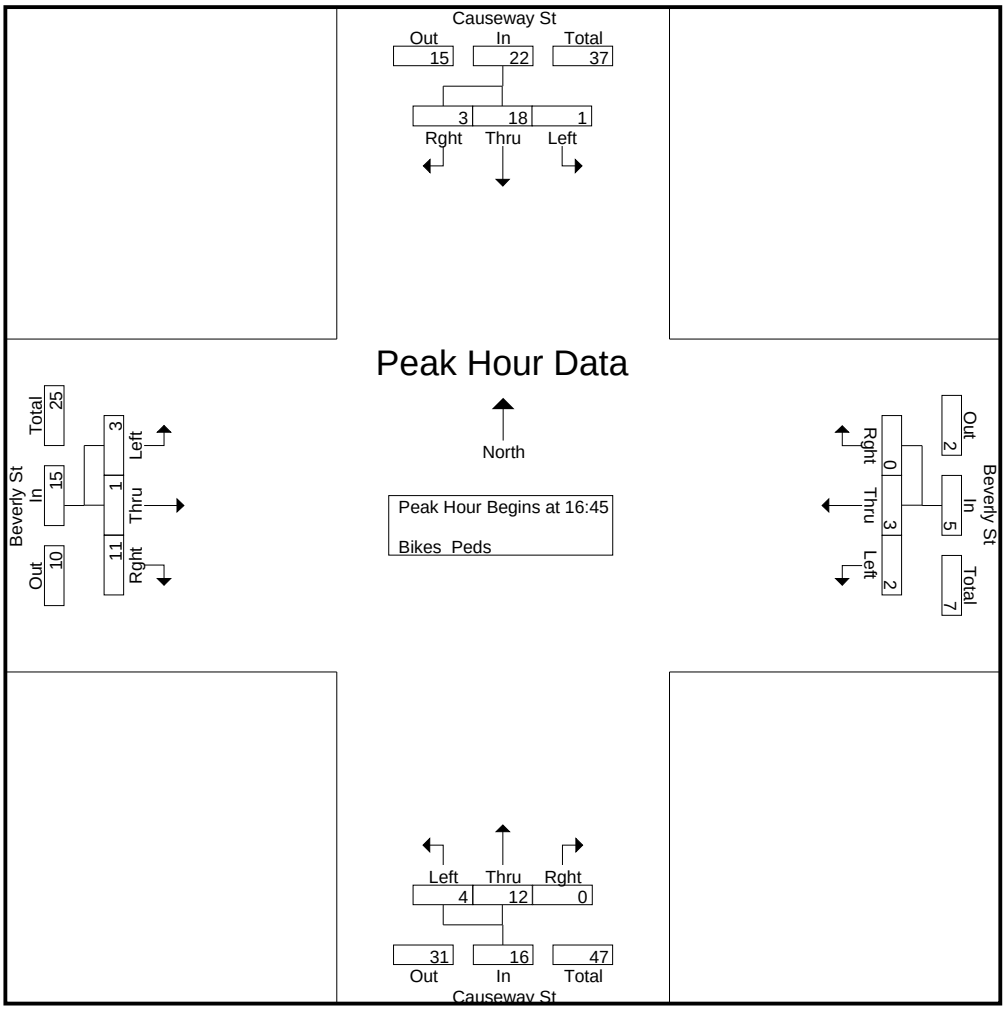
	Causeway St From North				Beverly St From East				Causeway St From South				Beverly St From West						
Start Time	Left	Thru	Rght	Peds	Left	Thru	Rght	Peds	Left	Thru	Rght	Peds	Left	Thru	Rght	Peds	Exclu. Total	Inclu. Total	Int. Total
16:00	0	3	0	4	0	1	0	46	0	0	0	4	0	2	1	45	99	7	106
16:15	1	0	0	5	1	0	0	50	1	0	0	7	0	0	0	50	112	3	115
16:30	1	4	0	4	0	1	0	106	1	6	0	9	0	0	1	60	179	14	193
16:45	1	0	1	8	1	1	0	58	1	3	0	10	1	0	5	66	142	14	156
Total	3	7	1	21	2	3	0	260	3	9	0	30	1	2	7	221	532	38	570
17:00	0	8	0	14	0	0	0	77	0	5	0	14	1	0	2	68	173	16	189
17:15	0	2	2	18	0	0	0	56	1	2	0	6	1	0	0	43	123	8	131
17:30	0	8	0	5	1	2	0	40	2	2	0	3	0	1	4	41	89	20	109
17:45	0	2	1	10	0	0	0	37	0	1	0	1	0	0	0	27	75	4	79
Total	0	20	3	47	1	2	0	210	3	10	0	24	2	1	6	179	460	48	508
Grand Total	3	27	4	68	3	5	0	470	6	19	0	54	3	3	13	400	992	86	1078
Apprch %	8.8	79.4	11.8		37.5	62.5	0		24	76	0		15.8	15.8	68.4				
Total %	3.5	31.4	4.7		3.5	5.8	0		7	22.1	0		3.5	3.5	15.1		92	8	

	Causeway St From North				Beverly St From East				Causeway St From South				Beverly St From West				
Start Time	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	**1**	0	1	2	**1**	1	0	2	1	3	0	4	**1**	0	**5**	**6**	14
17:00	0	**8**	0	**8**	0	0	0	0	0	**5**	0	**5**	1	0	2	3	16
17:15	0	2	**2**	4	0	0	0	0	1	2	0	3	1	0	0	1	8
17:30	0	8	0	8	1	**2**	0	**3**	**2**	2	0	4	0	**1**	4	5	**20**
Total Volume	1	18	3	22	2	3	0	5	4	12	0	16	3	1	11	15	58
% App. Total	4.5	81.8	13.6		40	60	0		25	75	0		20	6.7	73.3		
PHF	.250	.563	.375	.688	.500	.375	.000	.417	.500	.600	.000	.800	.750	.250	.550	.625	.725

Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
Page No : 2



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

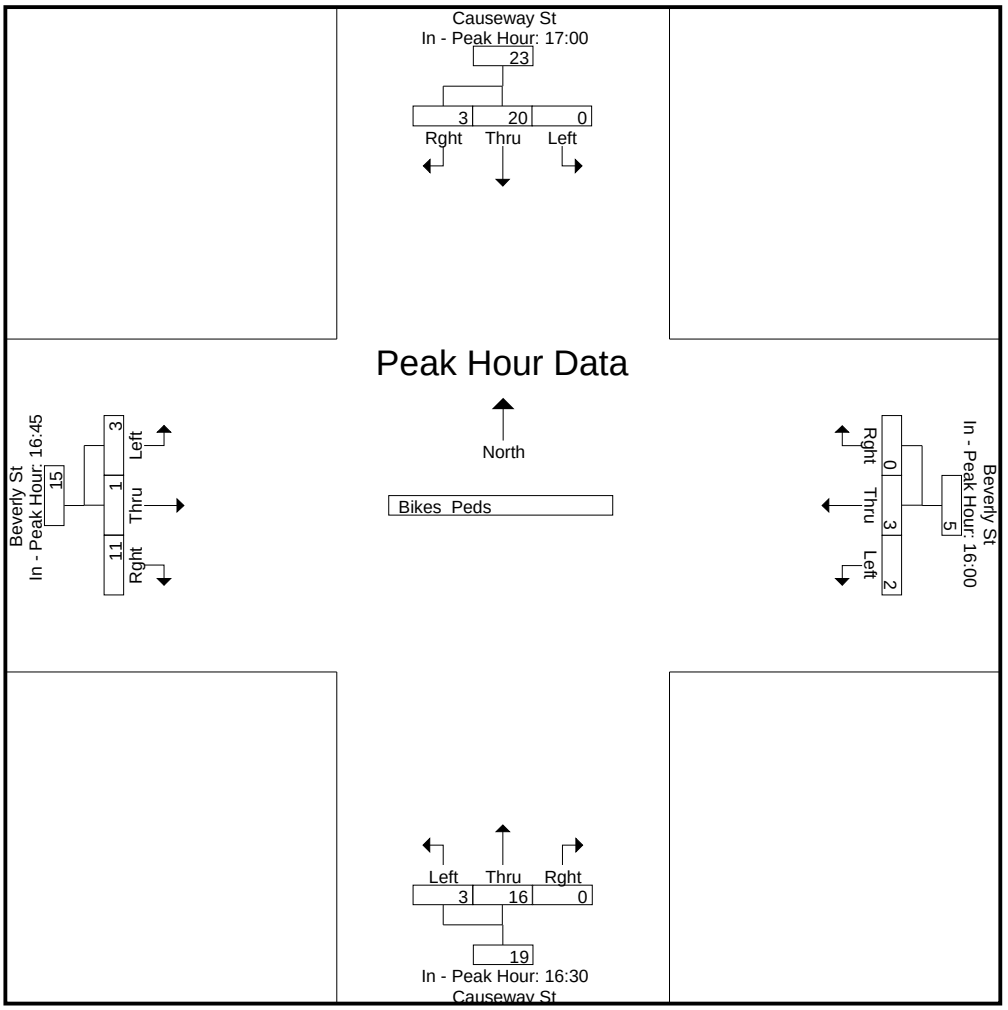
Peak Hour for Each Approach Begins at:

	17:00				16:00				16:30				16:45			
+0 mins.	0	**8**	0	**8**	0	**1**	0	1	**1**	**6**	0	**7**	**1**	0	**5**	**6**
+15 mins.	0	2	**2**	4	**1**	0	0	1	1	3	0	4	1	0	2	3
+30 mins.	0	8	0	8	0	1	0	1	0	5	0	5	1	0	0	1
+45 mins.	0	2	1	3	1	1	0	**2**	1	2	0	3	0	**1**	4	5
Total Volume	0	20	3	23	2	3	0	5	3	16	0	19	3	1	11	15
% App. Total	0	87	13		40	60	0		15.8	84.2	0		20	6.7	73.3	
PHF	.000	.625	.375	.719	.500	.750	.000	.625	.750	.667	.000	.679	.750	.250	.550	.625

Accurate Counts
978-664-2565

N/S Street : Causeway Street
E/W Street: Beverly Street
City/State : Boston, MA
Weather : Clear

File Name : 15410007
Site Code : 15410007
Start Date : 6/16/2011
Page No : 3



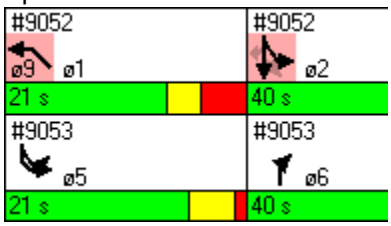
Lane Group	EBT	EBR2	WBT	SBL2	SBT	SBR	NWL	ø5	ø6	ø7	ø9
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900				
Lane Width (ft)	11	12	10	11	11	14	12				
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Leading Detector (ft)	50	50	50	50	50	50	50				
Trailing Detector (ft)	0	0	0	0	0	0	0				
Turning Speed (mph)		9		15		9	15				
Lane Util. Factor	0.95	1.00	0.95	0.95	0.95	1.00	0.97				
Ped Bike Factor						0.85	0.92				
Frt		0.850				0.850					
Flt Protected					0.995		0.950				
Satd. Flow (prot)	3231	1615	3303	0	3451	1511	3502				
Flt Permitted					0.995		0.950				
Satd. Flow (perm)	3231	1615	3303	0	3451	1290	3224				
Right Turn on Red		Yes				No					
Satd. Flow (RTOR)		376									
Headway Factor	1.04	1.00	1.09	1.04	1.04	0.92	1.00				
Link Speed (mph)	30		30		30		30				
Link Distance (ft)	406		163		238		175				
Travel Time (s)	9.2		3.7		5.4		4.0				
Volume (vph)	703	534	426	83	743	222	405				
Confl. Peds. (#/hr)		3				114	19				
Peak Hour Factor	0.86	0.85	0.88	0.87	0.88	0.80	0.88				
Heavy Vehicles (%)	8%	0%	2%	6%	0%	14%	0%				
Adj. Flow (vph)	817	628	484	95	844	278	460				
Lane Group Flow (vph)	817	628	484	0	939	278	460				
Turn Type		Prot		Split		Perm					
Protected Phases	3	3	7 9	2	2		1	5	6	7	9
Permitted Phases						2					
Detector Phases	3	3	7 9	2	2	2	1				
Minimum Initial (s)	10.0	10.0		20.0	20.0	20.0	8.0	10.0	20.0	10.0	2.0
Minimum Split (s)	24.0	24.0		31.0	31.0	31.0	19.0	15.0	26.0	16.0	8.0
Total Split (s)	30.0	30.0	39.0	40.0	40.0	40.0	21.0	21.0	40.0	30.0	9.0
Total Split (%)	30.0%	30.0%	39.0%	40.0%	40.0%	40.0%	21.0%	21%	40%	30%	9%
Maximum Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	16.0	34.0	24.0	3.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	4.0	1.0	2.0	2.0	2.0
Lead/Lag				Lag	Lag	Lag	Lead	Lead	Lag		
Lead-Lag Optimize?											
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None		C-Max	C-Max	C-Max	None	None	C-Max	None	None
Walk Time (s)	10.0	10.0		12.0	12.0	12.0	7.0				
Flash Dont Walk (s)	8.0	8.0		13.0	13.0	13.0	5.0				
Pedestrian Calls (#/hr)	0	0		0	0	0	0				
Act Effct Green (s)	26.0	26.0	35.0		36.2	36.2	16.8				
Actuated g/C Ratio	0.26	0.26	0.35		0.36	0.36	0.17				
v/c Ratio	0.97	0.90	0.42		0.75	0.60	0.78				
Control Delay	62.7	32.0	0.1		34.1	34.5	50.4				
Queue Delay	5.5	0.0	5.4		180.3	26.1	0.0				



Lane Group	EBT	EBR2	WBT	SBL2	SBT	SBR	NWL	ø5	ø6	ø7	ø9
Total Delay	68.2	32.0	5.5		214.4	60.6	50.4				
LOS	E	C	A		F	E	D				
Approach Delay	52.5		5.5		179.3		50.4				
Approach LOS	D		A		F		D				
90th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	0.0	55.0	24.0	3.0
90th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Skip	Coord	Max	Max
70th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	0.0	55.0	24.0	3.0
70th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Skip	Coord	Max	Max
50th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	0.0	55.0	24.0	3.0
50th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Skip	Coord	Max	Max
30th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	0.0	55.0	24.0	3.0
30th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Skip	Coord	Max	Max
10th %ile Green (s)	24.0	24.0		35.2	35.2	35.2	12.8	0.0	55.0	24.0	3.0
10th %ile Term Code	Max	Max		Coord	Coord	Coord	Gap	Skip	Coord	Max	Max
Stops (vph)	623	219	0		653	175	374				
Fuel Used(gal)	15	6	1		11	3	7				
CO Emissions (g/hr)	1023	446	38		760	205	474				
NOx Emissions (g/hr)	199	87	7		148	40	92				
VOC Emissions (g/hr)	237	103	9		176	48	110				
Dilemma Vehicles (#)	0	0	0		0	0	0				
Queue Length 50th (ft)	272	169	0		263	140	145				
Queue Length 95th (ft)	#368	#335	m0		m372	m212	195				
Internal Link Dist (ft)	326		83		158		95				
Turn Bay Length (ft)											
Base Capacity (vph)	840	698	1156		1250	467	595				
Starvation Cap Reductn	0	0	598		578	187	0				
Spillback Cap Reductn	23	0	0		106	0	0				
Storage Cap Reductn	0	0	0		0	0	0				
Reduced v/c Ratio	1.00	0.90	0.87		1.40	0.99	0.77				

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.26			
Intersection Signal Delay: 88.7		Intersection LOS: F	
Intersection Capacity Utilization 63.9%		ICU Level of Service B	
Analysis Period (min) 15			
# 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: 9052: Charles River Dam & Nashua Street





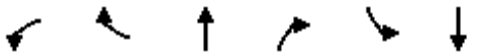
Lane Group	EBL	EBT	NBR	NBR2	SBL2	SBL	SWR	ø1	ø2	ø3	ø9
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900				
Lane Width (ft)	12	12	12	12	12	12	11				
Storage Length (ft)	0		0			0	0				
Storage Lanes	1		3			2	1				
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Leading Detector (ft)	50	50	50		50	50	50				
Trailing Detector (ft)	0	0	0		0	0	0				
Turning Speed (mph)	15		9	9	15	15	9				
Lane Util. Factor	0.95	0.95	0.76	1.00	1.00	0.95	1.00				
Ped Bike Factor											
Frt			0.850				0.865				
Flt Protected	0.950	0.977									
Satd. Flow (prot)	1649	1605	3646	0	1900	1805	1528				
Flt Permitted	0.950	0.977									
Satd. Flow (perm)	1649	1605	3646	0	1900	1805	1528				
Right Turn on Red				Yes							
Satd. Flow (RTOR)			46								
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04				
Link Speed (mph)		30									
Link Distance (ft)		163									
Travel Time (s)		3.7									
Volume (vph)	569	217	1319	316	0	0	426				
Confl. Bikes (#/hr)				9			6				
Peak Hour Factor	0.80	0.86	0.88	0.86	0.92	0.55	0.85				
Heavy Vehicles (%)	4%	15%	1%	1%	0%	0%	4%				
Adj. Flow (vph)	711	252	1499	367	0	0	501				
Lane Group Flow (vph)	493	470	1866	0	0	0	501				
Turn Type	Split		custom		Prot	Prot	custom				
Protected Phases	3 9	3 9	6		5	5	7	1	2	3	9
Permitted Phases											
Detector Phases	3 9	3 9	6		5	5	7				
Minimum Initial (s)			20.0		10.0	10.0	10.0	8.0	20.0	10.0	2.0
Minimum Split (s)			26.0		15.0	15.0	16.0	19.0	31.0	24.0	8.0
Total Split (s)	39.0	39.0	40.0	0.0	21.0	21.0	30.0	21.0	40.0	30.0	9.0
Total Split (%)	39.0%	39.0%	40.0%	0.0%	21.0%	21.0%	30.0%	21%	40%	30%	9%
Maximum Green (s)			34.0		16.0	16.0	24.0	14.0	34.0	24.0	3.0
Yellow Time (s)			4.0		4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)			2.0		1.0	1.0	2.0	4.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	Lead		Lead	Lag		
Lead-Lag Optimize?											
Vehicle Extension (s)			2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode			C-Max		None	None	None	None	C-Max	None	None
Walk Time (s)								7.0	12.0	10.0	
Flash Dont Walk (s)								5.0	13.0	8.0	
Pedestrian Calls (#/hr)								0	0	0	
Act Effct Green (s)	35.0	35.0	57.0				26.0				
Actuated g/C Ratio	0.35	0.35	0.57				0.26				
v/c Ratio	0.85	0.84	0.89				1.26				



Lane Group	EBL	EBT	NBR	NBR2	SBL2	SBL	SWR	ø1	ø2	ø3	ø9
Control Delay	13.6	12.7	25.0				170.1				
Queue Delay	18.1	13.9	0.0				0.0				
Total Delay	31.7	26.5	25.0				170.1				
LOS	C	C	C				F				
Approach Delay		29.2									
Approach LOS		C									
90th %ile Green (s)			55.0		0.0	0.0	24.0	14.0	34.0	24.0	3.0
90th %ile Term Code			Coord		Skip	Skip	Max	Max	Coord	Max	Max
70th %ile Green (s)			55.0		0.0	0.0	24.0	14.0	34.0	24.0	3.0
70th %ile Term Code			Coord		Skip	Skip	Max	Max	Coord	Max	Max
50th %ile Green (s)			55.0		0.0	0.0	24.0	14.0	34.0	24.0	3.0
50th %ile Term Code			Coord		Skip	Skip	Max	Max	Coord	Max	Max
30th %ile Green (s)			55.0		0.0	0.0	24.0	14.0	34.0	24.0	3.0
30th %ile Term Code			Coord		Skip	Skip	Max	Max	Coord	Max	Max
10th %ile Green (s)			55.0		0.0	0.0	24.0	12.8	35.2	24.0	3.0
10th %ile Term Code			Coord		Skip	Skip	Max	Gap	Coord	Max	Max
Stops (vph)	148	143	1313				338				
Fuel Used(gal)	2	2	18				17				
CO Emissions (g/hr)	168	160	1228				1221				
NOx Emissions (g/hr)	33	31	239				237				
VOC Emissions (g/hr)	39	37	285				283				
Dilemma Vehicles (#)	0	0	0				0				
Queue Length 50th (ft)	46	44	418				~403				
Queue Length 95th (ft)	m48	m47	496				#554				
Internal Link Dist (ft)		83									
Turn Bay Length (ft)											
Base Capacity (vph)	577	562	2098				397				
Starvation Cap Reductn	86	83	0				0				
Spillback Cap Reductn	0	0	0				0				
Storage Cap Reductn	0	0	0				0				
Reduced v/c Ratio	1.00	0.98	0.89				1.26				

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.26			
Intersection Signal Delay: 48.1		Intersection LOS: D	
Intersection Capacity Utilization 66.3%		ICU Level of Service C	
Analysis Period (min) 15			
~ 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: 9053: Charles River Dam & I-93 Ramp



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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		9	15	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	0.95
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	3400	0	0	0	0	3406
Flt Permitted	0.950					
Satd. Flow (perm)	3400	0	0	0	0	3406
Right Turn on Red	Yes	Yes		Yes		
Satd. Flow (RTOR)	309					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		30			30
Link Distance (ft)	211		206			903
Travel Time (s)	4.8		4.7			20.5
Volume (vph)	407	0	0	0	0	626
Peak Hour Factor	0.95	0.92	0.92	0.92	0.92	0.93
Heavy Vehicles (%)	3%	0%	0%	0%	0%	6%
Adj. Flow (vph)	428	0	0	0	0	673
Lane Group Flow (vph)	428	0	0	0	0	673
Turn Type						
Protected Phases	2					1
Permitted Phases						
Detector Phases	2					1
Minimum Initial (s)	15.0					15.0
Minimum Split (s)	20.0					20.0
Total Split (s)	23.0	0.0	0.0	0.0	0.0	27.0
Total Split (%)	46.0%	0.0%	0.0%	0.0%	0.0%	54.0%
Maximum Green (s)	18.0					22.0
Yellow Time (s)	4.0					4.0
All-Red Time (s)	1.0					1.0
Lead/Lag	Lag					Lead
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Walk Time (s)	7.0					7.0
Flash Dont Walk (s)	2.0					2.0
Pedestrian Calls (#/hr)	0					0
Act Effct Green (s)	16.0					26.0
Actuated g/C Ratio	0.32					0.52
v/c Ratio	0.33					0.38
Control Delay	4.8					8.4
Queue Delay	0.0					0.0
Total Delay	4.8					8.4
LOS	A					A
Approach Delay	4.8					8.4



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach LOS	A					A
90th %ile Green (s)	15.0					25.0
90th %ile Term Code	Min					Coord
70th %ile Green (s)	15.0					25.0
70th %ile Term Code	Min					Coord
50th %ile Green (s)	15.0					25.0
50th %ile Term Code	Min					Coord
30th %ile Green (s)	15.0					25.0
30th %ile Term Code	Min					Coord
10th %ile Green (s)	15.0					25.0
10th %ile Term Code	Min					Coord
Stops (vph)	91					324
Fuel Used(gal)	2					7
CO Emissions (g/hr)	110					508
NOx Emissions (g/hr)	21					99
VOC Emissions (g/hr)	25					118
Dilemma Vehicles (#)	0					0
Queue Length 50th (ft)	12					61
Queue Length 95th (ft)	37					m74
Internal Link Dist (ft)	131		126			823
Turn Bay Length (ft)						
Base Capacity (vph)	1484					1771
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.29					0.38

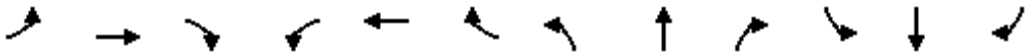
Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 50			
Offset: 0 (0%), Referenced to phase 1:SBT, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.38			
Intersection Signal Delay: 7.0		Intersection LOS: A	
Intersection Capacity Utilization 36.5%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2248: Nashua Street & Lomasney Way

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	10	10	10	10	16	12	11	10	12	12	12
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	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor			0.96		1.00	0.95			0.96	0.97	0.98	
Frt			0.850			0.850			0.850		0.931	
Flt Protected	0.950				0.993		0.950			0.950		
Satd. Flow (prot)	1554	1574	1463	0	3095	1743	1770	1783	1436	1687	3220	0
Flt Permitted	0.261				0.659		0.950			0.950		
Satd. Flow (perm)	427	1574	1406	0	2052	1657	1770	1783	1375	1645	3220	0
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)			231									
Headway Factor	1.09	1.09	1.09	1.09	1.09	0.85	1.00	1.04	1.09	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		429			177			344			347	
Travel Time (s)		9.8			4.0			7.8			7.9	
Volume (vph)	38	206	203	46	346	273	134	115	57	282	297	246
Confl. Peds. (#/hr)			33	9		45			17	17		33
Peak Hour Factor	0.77	0.82	0.88	0.77	0.87	0.76	0.84	0.80	0.65	0.88	0.93	0.91
Heavy Vehicles (%)	3%	7%	3%	22%	6%	5%	2%	3%	5%	7%	1%	3%
Adj. Flow (vph)	49	251	231	60	398	359	160	144	88	320	319	270
Lane Group Flow (vph)	49	251	231	0	458	359	160	144	88	320	589	0
Turn Type	Perm		pm+ov	Perm		pm+ov	Prot		Perm	Prot		
Protected Phases		4	5		4	1	5	2		1	6	
Permitted Phases	4		4	4		4			2			
Detector Phases	4	4	5	4	4	1	5	2	2	1	6	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	20.0	20.0	13.0	20.0	20.0	13.0	13.0	21.0	21.0	13.0	13.0	
Total Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	26.0	26.0	20.0	26.0	0.0
Total Split (%)	22.2%	22.2%	22.2%	22.2%	22.2%	22.2%	22.2%	28.9%	28.9%	22.2%	28.9%	0.0%
Maximum Green (s)	16.0	16.0	15.0	16.0	16.0	15.0	15.0	21.0	21.0	15.0	21.0	
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)	1.0	1.0	2.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lead/Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Recall Mode	None	None	None	None	None	Max	None	C-Max	C-Max	Max	C-Max	
Walk Time (s)								10.0	10.0			
Flash Dont Walk (s)								5.0	5.0			
Pedestrian Calls (#/hr)								50	50			
Act Effct Green (s)	16.0	16.0	29.0		16.0	32.0	13.0	22.0	22.0	16.0	25.0	
Actuated g/C Ratio	0.18	0.18	0.32		0.18	0.36	0.14	0.24	0.24	0.18	0.28	
v/c Ratio	0.64	0.90	0.37		1.25	0.59	0.63	0.33	0.26	1.07	0.66	
Control Delay	73.8	71.0	4.4		154.2	28.2	47.0	30.5	30.0	108.5	33.5	
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Lane Group	ø3
Lane Configurations	
Ideal Flow (vphpl)	
Lane Width (ft)	
Total Lost Time (s)	
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Headway Factor	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phases	
Minimum Initial (s)	7.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	27%
Maximum Green (s)	22.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lead/Lag	Lead
Lead-Lag Optimize?	
Vehicle Extension (s)	2.0
Recall Mode	Ped
Walk Time (s)	10.0
Flash Dont Walk (s)	12.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	



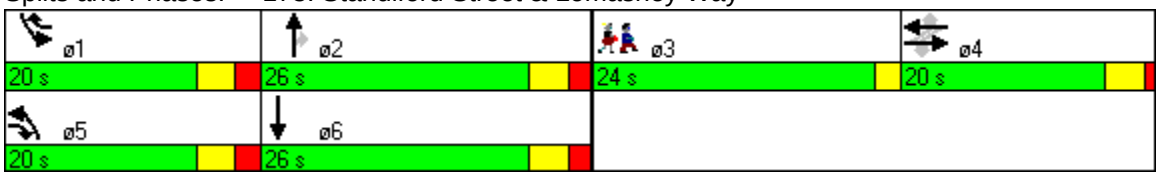
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	73.8	71.0	4.4		154.2	28.2	47.0	30.5	30.0	108.5	33.5	
LOS	E	E	A		F	C	D	C	C	F	C	
Approach Delay		42.3			98.8			37.2			59.9	
Approach LOS		D			F			D			E	
90th %ile Green (s)	16.0	16.0	15.0	16.0	16.0	15.0	15.0	21.0	21.0	15.0	21.0	
90th %ile Term Code	Max	Max	Max	Max	Max	MaxR	Max	Coord	Coord	MaxR	Coord	
70th %ile Green (s)	16.0	16.0	14.4	16.0	16.0	15.0	14.4	21.0	21.0	15.0	21.6	
70th %ile Term Code	Max	Max	Gap	Max	Max	MaxR	Gap	Coord	Coord	MaxR	Coord	
50th %ile Green (s)	16.0	16.0	12.2	16.0	16.0	15.0	12.2	21.0	21.0	15.0	23.8	
50th %ile Term Code	Max	Max	Gap	Max	Max	MaxR	Gap	Coord	Coord	MaxR	Coord	
30th %ile Green (s)	16.0	16.0	10.2	16.0	16.0	15.0	10.2	21.0	21.0	15.0	25.8	
30th %ile Term Code	Max	Max	Gap	Max	Max	MaxR	Gap	Coord	Coord	MaxR	Coord	
10th %ile Green (s)	16.0	16.0	8.0	16.0	16.0	15.0	8.0	21.0	21.0	15.0	28.0	
10th %ile Term Code	Max	Max	Min	Max	Max	MaxR	Min	Coord	Coord	MaxR	Coord	
Stops (vph)	33	177	20		324	272	122	93	46	234	470	
Fuel Used(gal)	1	5	1		15	3	2	2	1	8	8	
CO Emissions (g/hr)	62	325	68		1023	241	162	107	53	579	543	
NOx Emissions (g/hr)	12	63	13		199	47	32	21	10	113	106	
VOC Emissions (g/hr)	14	75	16		237	56	38	25	12	134	126	
Dilemma Vehicles (#)	0	0	0		0	0	0	0	0	0	0	
Queue Length 50th (ft)	27	148	0		~181	224	87	68	41	~203	155	
Queue Length 95th (ft)	#70	#252	40		#269	264	134	105	57	#353	224	
Internal Link Dist (ft)		349			97			264			267	
Turn Bay Length (ft)												
Base Capacity (vph)	76	280	659		365	604	315	436	336	300	896	
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	
Reduced v/c Ratio	0.64	0.90	0.35		1.25	0.59	0.51	0.33	0.26	1.07	0.66	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.25			
Intersection Signal Delay: 65.0		Intersection LOS: E	
Intersection Capacity Utilization 66.8%		ICU Level of Service C	
Analysis Period (min) 15			

~ 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: 173: Standiford Street & Lomasney Way



Lane Group	ø3
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	22.0
90th %ile Term Code	Ped
70th %ile Green (s)	22.0
70th %ile Term Code	Ped
50th %ile Green (s)	22.0
50th %ile Term Code	Ped
30th %ile Green (s)	22.0
30th %ile Term Code	Ped
10th %ile Green (s)	22.0
10th %ile Term Code	Ped
Stops (vph)	
Fuel Used(gal)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
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

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	12	12	12	11	10	12	12	12	10	8
Storage Length (ft)	140		0		0		140	0		0	0	
Storage Lanes	1		0		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	4.0
Leading Detector (ft)	50	50		50		50	50			50	50	
Trailing Detector (ft)	0	0		0		0	0			0	0	
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.86						0.66				0.73	
Frt							0.850			0.865		
Flt Protected	0.950					0.999					0.950	
Satd. Flow (prot)	1636	3171	0	0	0	3344	1409	0	0	1644	1652	0
Flt Permitted	0.950					0.909					0.950	
Satd. Flow (perm)	1406	3171	0	0	0	3043	929	0	0	1644	1210	0
Right Turn on Red			No				Yes			No		
Satd. Flow (RTOR)							180					
Headway Factor	1.09	1.12	1.00	1.00	1.00	1.04	1.09	1.00	1.00	1.00	1.09	1.20
Link Speed (mph)		30				30			30			30
Link Distance (ft)		441				219			396			369
Travel Time (s)		10.0				5.0			9.0			8.4
Volume (vph)	257	490	0	7	0	580	169	0	0	7	256	0
Confl. Peds. (#/hr)	353						353				198	
Peak Hour Factor	0.87	0.94	0.92	0.44	0.92	0.88	0.94	0.92	0.92	0.58	0.86	0.92
Heavy Vehicles (%)	3%	4%	0%	14%	0%	4%	7%	0%	0%	0%	2%	0%
Parking (#/hr)		2										
Adj. Flow (vph)	295	521	0	16	0	659	180	0	0	12	298	0
Lane Group Flow (vph)	295	521	0	0	0	675	180	0	0	12	298	0
Turn Type	Prot			Perm			pm+ov			custom	Prot	
Protected Phases	3	2				6	4				4	
Permitted Phases				6			6			1		
Detector Phases	3	2		6		6	4			1	4	
Minimum Initial (s)	8.0	12.0		12.0		12.0	8.0			4.0	8.0	
Minimum Split (s)	24.0	16.0		20.0		20.0	24.0			8.0	24.0	
Total Split (s)	26.0	26.0	0.0	36.0	0.0	36.0	28.0	0.0	0.0	10.0	28.0	0.0
Total Split (%)	28.9%	28.9%	0.0%	40.0%	0.0%	40.0%	31.1%	0.0%	0.0%	11.1%	31.1%	0.0%
Maximum Green (s)	22.0	22.0		32.0		32.0	24.0			6.0	24.0	
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		1.0	1.0			1.0	1.0	
Lead/Lag	Lead	Lag					Lag			Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0		2.0	2.0			2.0	2.0	
Recall Mode	None	C-Max		C-Max		C-Max	None			None	None	
Walk Time (s)	7.0			7.0		7.0	7.0				7.0	
Flash Dont Walk (s)	13.0			9.0		9.0	13.0				13.0	
Pedestrian Calls (#/hr)	0			0		0	0				0	
Act Effct Green (s)	22.0	34.7				36.7	56.0			5.0	19.3	
Actuated g/C Ratio	0.24	0.39				0.41	0.62			0.06	0.21	



Lane Group	SBR
Lane Configurations	
Ideal Flow (vphpl)	1900
Lane Width (ft)	11
Storage Length (ft)	0
Storage Lanes	1
Total Lost Time (s)	4.0
Leading Detector (ft)	50
Trailing Detector (ft)	0
Turning Speed (mph)	9
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1321
Flt Permitted	
Satd. Flow (perm)	1321
Right Turn on Red	No
Satd. Flow (RTOR)	
Headway Factor	1.23
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	278
Confl. Peds. (#/hr)	700
Peak Hour Factor	0.89
Heavy Vehicles (%)	4%
Parking (#/hr)	4
Adj. Flow (vph)	312
Lane Group Flow (vph)	312
Turn Type	Over
Protected Phases	3
Permitted Phases	
Detector Phases	3
Minimum Initial (s)	8.0
Minimum Split (s)	24.0
Total Split (s)	26.0
Total Split (%)	28.9%
Maximum Green (s)	22.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lead/Lag	Lead
Lead-Lag Optimize?	
Vehicle Extension (s)	2.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	13.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	22.0
Actuated g/C Ratio	0.24



Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
v/c Ratio	0.74	0.43				0.54	0.24			0.13	0.84	
Control Delay	44.0	23.6				23.3	1.7			43.3	54.3	
Queue Delay	0.0	0.0				0.0	0.0			0.0	0.0	
Total Delay	44.0	23.6				23.3	1.7			43.3	54.3	
LOS	D	C				C	A			D	D	
Approach Delay		31.0				18.7						
Approach LOS		C				B						
90th %ile Green (s)	22.0	22.0		32.0		32.0	24.0			6.0	24.0	
90th %ile Term Code	Max	Coord		Coord		Coord	Max			Max	Max	
70th %ile Green (s)	22.0	32.8		32.8		32.8	23.2			0.0	23.2	
70th %ile Term Code	Max	Coord		Coord		Coord	Gap			Skip	Gap	
50th %ile Green (s)	22.0	36.0		36.0		36.0	20.0			0.0	20.0	
50th %ile Term Code	Max	Coord		Coord		Coord	Gap			Skip	Gap	
30th %ile Green (s)	22.0	39.2		39.2		39.2	16.8			0.0	16.8	
30th %ile Term Code	Max	Coord		Coord		Coord	Gap			Skip	Gap	
10th %ile Green (s)	22.0	43.6		43.6		43.6	12.4			0.0	12.4	
10th %ile Term Code	Max	Coord		Coord		Coord	Gap			Skip	Gap	
Stops (vph)	227	359				439	10			8	239	
Fuel Used(gal)	4	6				6	0			0	5	
CO Emissions (g/hr)	311	421				434	28			9	342	
NOx Emissions (g/hr)	60	82				84	5			2	66	
VOC Emissions (g/hr)	72	98				101	7			2	79	
Dilemma Vehicles (#)	0	0				0	0			0	0	
Queue Length 50th (ft)	155	109				152	0			7	162	
Queue Length 95th (ft)	#253	196				217	19			15	228	
Internal Link Dist (ft)		361				139			316			289
Turn Bay Length (ft)	140						140					
Base Capacity (vph)	400	1223				1241	795			110	441	
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	0.74	0.43				0.54	0.23			0.11	0.68	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 7 (8%), Referenced to phase 2:EBT and 6:WBTU, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 35.9 Intersection LOS: D
Intersection Capacity Utilization 54.7% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 121: Cambridge Street & Staniford Street



Lane Group	SBR
v/c Ratio	0.97
Control Delay	78.2
Queue Delay	0.0
Total Delay	78.2
LOS	E
Approach Delay	
Approach LOS	
90th %ile Green (s)	22.0
90th %ile Term Code	Max
70th %ile Green (s)	22.0
70th %ile Term Code	Max
50th %ile Green (s)	22.0
50th %ile Term Code	Max
30th %ile Green (s)	22.0
30th %ile Term Code	Max
10th %ile Green (s)	22.0
10th %ile Term Code	Max
Stops (vph)	234
Fuel Used(gal)	7
CO Emissions (g/hr)	456
NOx Emissions (g/hr)	89
VOC Emissions (g/hr)	106
Dilemma Vehicles (#)	0
Queue Length 50th (ft)	176
Queue Length 95th (ft)	#334
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	323
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.97

Intersection Summary

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBU	NBL2	NBL	NBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	10	12	12	12	12	10	10
Storage Length (ft)	0		0			0		0			0	
Storage Lanes	0		1			1		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	50
Trailing Detector (ft)	0	0	0		0	0	0		0	0	0	0
Turning Speed (mph)	15		9	9	15	15		9	9	15	15	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.91	0.91	0.91	0.95	0.95	0.95	1.00	0.95
Ped Bike Factor		0.96	0.34		0.75		0.91				0.77	
Frt			0.850				0.976					
Flt Protected		0.987			0.950		0.994				0.950	
Satd. Flow (prot)	0	1588	1281	0	1266	0	2863	0	0	0	1493	2944
Flt Permitted		0.987			0.950		0.994				0.950	
Satd. Flow (perm)	0	1527	433	0	945	0	2693	0	0	0	1150	2944
Right Turn on Red				Yes				Yes				
Satd. Flow (RTOR)			14				19					
Headway Factor	1.14	1.14	1.14	1.14	1.25	1.25	1.14	1.14	1.14	1.14	1.25	1.25
Link Speed (mph)		30					30					30
Link Distance (ft)		127					248					378
Travel Time (s)		2.9					5.6					8.6
Volume (vph)	39	131	34	8	227	24	333	75	1	71	316	273
Confl. Peds. (#/hr)	151		226	131	226	131		151	226	131	236	
Peak Hour Factor	0.75	0.86	0.71	0.50	0.96	0.55	0.91	0.94	0.25	0.69	0.93	0.92
Heavy Vehicles (%)	7%	6%	18%	0%	9%	0%	2%	1%	0%	0%	2%	3%
Adj. Flow (vph)	52	152	48	16	236	44	366	80	4	103	340	297
Lane Group Flow (vph)	0	204	64	0	219	0	507	0	0	0	447	297
Turn Type	Split		Perm		Split	Split			Split	Split	Split	
Protected Phases	3	3			2	2	2		1	1	1	1
Permitted Phases			3									
Detector Phases	3	3	3		2	2	2		1	1	1	1
Minimum Initial (s)	8.0	8.0	8.0		8.0	8.0	8.0		7.0	7.0	7.0	7.0
Minimum Split (s)	20.0	20.0	20.0		17.0	17.0	17.0		25.0	25.0	25.0	25.0
Total Split (s)	21.0	21.0	21.0	0.0	26.0	26.0	26.0	0.0	29.0	29.0	29.0	29.0
Total Split (%)	21.0%	21.0%	21.0%	0.0%	26.0%	26.0%	26.0%	0.0%	29.0%	29.0%	29.0%	29.0%
Maximum Green (s)	15.0	15.0	15.0		20.0	20.0	20.0		23.0	23.0	23.0	23.0
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)	3.0	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0
Lead/Lag	Lag	Lag	Lag		Lead	Lead	Lead					
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	2.0
Recall Mode	None	None	None		None	None	None		C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0						7.0	7.0	7.0	7.0
Flash Dont Walk (s)	7.0	7.0	7.0						10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0						0	0	0	0
Act Effct Green (s)		16.1	16.1		21.9		21.9				26.0	26.0
Actuated g/C Ratio		0.16	0.16		0.22		0.22				0.26	0.26
v/c Ratio		0.80	0.79		0.79		0.79				1.15	0.39



Lane Group	NBR	SBL	SBT	SBR	SBR2
Lane Configurations					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Lane Width (ft)	16	11	11	11	16
Storage Length (ft)	75	0		0	
Storage Lanes	1	1		0	
Total Lost Time (s)	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)	9	15		9	9
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.70	0.86		
Frt	0.850		0.948		
Flt Protected		0.950			
Satd. Flow (prot)	1584	1454	2440	0	0
Flt Permitted		0.950			
Satd. Flow (perm)	1584	1011	2440	0	0
Right Turn on Red	No				Yes
Satd. Flow (RTOR)			36		
Headway Factor	0.97	1.19	1.19	1.19	0.97
Link Speed (mph)			30		
Link Distance (ft)			286		
Travel Time (s)			6.5		
Volume (vph)	105	145	253	37	67
Confl. Peds. (#/hr)	624	624		131	236
Peak Hour Factor	0.77	0.85	0.74	0.62	0.54
Heavy Vehicles (%)	4%	8%	6%	0%	6%
Adj. Flow (vph)	136	171	342	60	124
Lane Group Flow (vph)	136	171	526	0	0
Turn Type	pt+ov	Split			
Protected Phases	1 2	4	4		
Permitted Phases					
Detector Phases	1 2	4	4		
Minimum Initial (s)		8.0	8.0		
Minimum Split (s)		22.0	22.0		
Total Split (s)	55.0	24.0	24.0	0.0	0.0
Total Split (%)	55.0%	24.0%	24.0%	0.0%	0.0%
Maximum Green (s)		18.0	18.0		
Yellow Time (s)		3.0	3.0		
All-Red Time (s)		3.0	3.0		
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)		2.0	2.0		
Recall Mode		None	None		
Walk Time (s)		7.0	7.0		
Flash Dont Walk (s)		8.0	8.0		
Pedestrian Calls (#/hr)		0	0		
Act Effct Green (s)	51.9	20.0	20.0		
Actuated g/C Ratio	0.52	0.20	0.20		
v/c Ratio	0.17	0.59	1.02		

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBU	NBL2	NBL	NBT
Control Delay		35.7	67.4		44.7		31.9				112.0	17.7
Queue Delay		1.0	1.8		6.5		7.2				0.0	0.0
Total Delay		36.8	69.2		51.2		39.1				112.0	17.7
LOS		D	E		D		D				F	B
Approach Delay		44.5					42.7					63.7
Approach LOS		D					D					E
90th %ile Green (s)	15.0	15.0	15.0		20.0	20.0	20.0		23.0	23.0	23.0	23.0
90th %ile Term Code	Max	Max	Max		Max	Max	Max		Coord	Coord	Coord	Coord
70th %ile Green (s)	15.0	15.0	15.0		20.0	20.0	20.0		23.0	23.0	23.0	23.0
70th %ile Term Code	Max	Max	Max		Max	Max	Max		Coord	Coord	Coord	Coord
50th %ile Green (s)	15.0	15.0	15.0		20.0	20.0	20.0		23.0	23.0	23.0	23.0
50th %ile Term Code	Max	Max	Max		Max	Max	Max		Coord	Coord	Coord	Coord
30th %ile Green (s)	14.9	14.9	14.9		20.0	20.0	20.0		23.1	23.1	23.1	23.1
30th %ile Term Code	Gap	Gap	Gap		Max	Max	Max		Coord	Coord	Coord	Coord
10th %ile Green (s)	10.7	10.7	10.7		19.5	19.5	19.5		27.8	27.8	27.8	27.8
10th %ile Term Code	Gap	Gap	Gap		Gap	Gap	Gap		Coord	Coord	Coord	Coord
Stops (vph)		75	15		171		417				310	134
Fuel Used(gal)		2	1		3		6				12	3
CO Emissions (g/hr)		127	49		228		425				818	177
NOx Emissions (g/hr)		25	10		44		83				159	34
VOC Emissions (g/hr)		29	11		53		99				190	41
Dilemma Vehicles (#)		0	0		0		0				0	0
Queue Length 50th (ft)		28	2		101		97				~359	27
Queue Length 95th (ft)		#219	#33		#271		#187				#519	m60
Internal Link Dist (ft)		47					168					298
Turn Bay Length (ft)												
Base Capacity (vph)		270	85		279		645				388	765
Starvation Cap Reductn		9	2		31		101				0	0
Spillback Cap Reductn		0	0		0		2				0	0
Storage Cap Reductn		0	0		0		0				0	0
Reduced v/c Ratio		0.78	0.77		0.88		0.93				1.15	0.39

Intersection Summary

Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 60 (60%), Referenced to phase 1:WBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.15
Intersection Signal Delay: 78.8 Intersection LOS: E
Intersection Capacity Utilization 77.5% ICU Level of Service D
Analysis Period (min) 15

~ 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: 311: New Chardon Street & Congress Street



Lane Group	NBR	SBL	SBT	SBR	SBR2
Control Delay	5.6	45.6	82.1		
Queue Delay	0.0	0.0	100.1		
Total Delay	5.6	45.6	182.2		
LOS	A	D	F		
Approach Delay			148.7		
Approach LOS			F		
90th %ile Green (s)		18.0	18.0		
90th %ile Term Code		Max	Max		
70th %ile Green (s)		18.0	18.0		
70th %ile Term Code		Max	Max		
50th %ile Green (s)		18.0	18.0		
50th %ile Term Code		Max	Max		
30th %ile Green (s)		18.0	18.0		
30th %ile Term Code		Max	Max		
10th %ile Green (s)		18.0	18.0		
10th %ile Term Code		Max	Max		
Stops (vph)	25	131	290		
Fuel Used(gal)	1	2	8		
CO Emissions (g/hr)	40	167	585		
NOx Emissions (g/hr)	8	33	114		
VOC Emissions (g/hr)	9	39	136		
Dilemma Vehicles (#)	0	0	0		
Queue Length 50th (ft)	15	100	~172		
Queue Length 95th (ft)	m21	159	#198		
Internal Link Dist (ft)			206		
Turn Bay Length (ft)	75				
Base Capacity (vph)	823	291	517		
Starvation Cap Reductn	0	0	0		
Spillback Cap Reductn	0	0	102		
Storage Cap Reductn	0	0	0		
Reduced v/c Ratio	0.17	0.59	1.27		

Intersection Summary

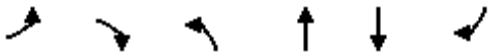
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø1	ø2
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	11	11		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		
Leading Detector (ft)	50			50	50			
Trailing Detector (ft)	0			0	0			
Turning Speed (mph)		9	15		15	9		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00		
Ped Bike Factor					0.75			
Frt					0.902			
Flt Protected					0.987			
Satd. Flow (prot)	3008	0	0	3185	1108	0		
Flt Permitted					0.987			
Satd. Flow (perm)	3008	0	0	3185	1108	0		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)					32			
Headway Factor	1.14	1.14	1.14	1.14	1.19	1.19		
Link Speed (mph)	30			30	30			
Link Distance (ft)	342			127	116			
Travel Time (s)	7.8			2.9	2.6			
Volume (vph)	189	0	0	716	5	23		
Confl. Peds. (#/hr)						236		
Peak Hour Factor	0.89	0.92	0.92	0.92	0.42	0.72		
Heavy Vehicles (%)	8%	0%	0%	2%	0%	0%		
Adj. Flow (vph)	212	0	0	778	12	32		
Lane Group Flow (vph)	212	0	0	778	44	0		
Turn Type								
Protected Phases	3			1 2 3	4		1	2
Permitted Phases								
Detector Phases	3			1 2 3	4			
Minimum Initial (s)	8.0				8.0		7.0	8.0
Minimum Split (s)	20.0				22.0		25.0	17.0
Total Split (s)	21.0	0.0	0.0	76.0	24.0	0.0	29.0	26.0
Total Split (%)	21.0%	0.0%	0.0%	76.0%	24.0%	0.0%	29%	26%
Maximum Green (s)	15.0				18.0		23.0	20.0
Yellow Time (s)	3.0				3.0		3.0	3.0
All-Red Time (s)	3.0				3.0		3.0	3.0
Lead/Lag	Lag							Lead
Lead-Lag Optimize?								
Vehicle Extension (s)	2.0				2.0		2.0	2.0
Recall Mode	None				None		C-Max	None
Walk Time (s)	7.0				7.0		7.0	
Flash Dont Walk (s)	7.0				8.0		10.0	
Pedestrian Calls (#/hr)	0				0		0	
Act Effct Green (s)	16.1			72.0	20.0			
Actuated g/C Ratio	0.16			0.72	0.20			
v/c Ratio	0.44			0.34	0.18			
Control Delay	40.7			2.1	17.5			
Queue Delay	0.3			19.9	0.2			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø1	ø2
Total Delay	40.9			22.0	17.8			
LOS	D			C	B			
Approach Delay	40.9			22.0	17.8			
Approach LOS	D			C	B			
90th %ile Green (s)	15.0				18.0		23.0	20.0
90th %ile Term Code	Max				Max		Coord	Max
70th %ile Green (s)	15.0				18.0		23.0	20.0
70th %ile Term Code	Max				Max		Coord	Max
50th %ile Green (s)	15.0				18.0		23.0	20.0
50th %ile Term Code	Max				Max		Coord	Max
30th %ile Green (s)	14.9				18.0		23.1	20.0
30th %ile Term Code	Gap				Max		Coord	Max
10th %ile Green (s)	10.7				18.0		27.8	19.5
10th %ile Term Code	Gap				Max		Coord	Gap
Stops (vph)	165			105	11			
Fuel Used(gal)	3			2	0			
CO Emissions (g/hr)	208			112	13			
NOx Emissions (g/hr)	41			22	3			
VOC Emissions (g/hr)	48			26	3			
Dilemma Vehicles (#)	0			0	0			
Queue Length 50th (ft)	64			38	6			
Queue Length 95th (ft)	99			m40	7			
Internal Link Dist (ft)	262			47	36			
Turn Bay Length (ft)								
Base Capacity (vph)	511			2299	247			
Starvation Cap Reductn	0			1528	0			
Spillback Cap Reductn	53			0	41			
Storage Cap Reductn	0			0	0			
Reduced v/c Ratio	0.46			1.01	0.21			

Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 60 (60%), Referenced to phase 1:WBT, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.15			
Intersection Signal Delay: 25.7		Intersection LOS: C	
Intersection Capacity Utilization 41.2%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 172: New Chardon Street & Garage



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	10	0	426	796	7
Peak Hour Factor	0.92	0.63	0.50	0.88	0.94	0.58
Hourly flow rate (vph)	0	16	0	484	847	12
Pedestrians					132	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					11	
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				347		
pX, platoon unblocked						
vC, conflicting volume	1227	429	859			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1227	429	859			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	100			
cM capacity (veh/h)	154	579	791			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	16	161	323	565	294
Volume Left	0	0	0	0	0
Volume Right	16	0	0	0	12
cSH	579	791	1700	1700	1700
Volume to Capacity	0.03	0.00	0.19	0.33	0.17
Queue Length 95th (ft)	2	0	0	0	0
Control Delay (s)	11.4	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	11.4	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	499	3	0	407	0	26
Peak Hour Factor	0.86	0.75	0.92	0.92	0.92	0.65
Hourly flow rate (vph)	580	4	0	442	0	40
Pedestrians				5	18	
Lane Width (ft)				12.0	16.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	2	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			602		821	315
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			602		821	315
tC, single (s)			4.1		6.8	7.5
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.6
p0 queue free %			100		100	93
cM capacity (veh/h)			965		310	588

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NW 1
Volume Total	387	197	221	221	40
Volume Left	0	0	0	0	0
Volume Right	0	4	0	0	40
cSH	1700	1700	1700	1700	588
Volume to Capacity	0.23	0.12	0.13	0.13	0.07
Queue Length 95th (ft)	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	11.6
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.6
Approach LOS					B

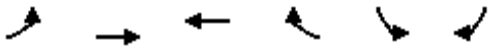
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	25.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	376	120	37	760	0	0
Peak Hour Factor	0.85	0.94	0.75	0.98	0.92	0.92
Hourly flow rate (vph)	442	128	49	776	0	0
Pedestrians	38			43	255	
Lane Width (ft)	12.0			12.0	0.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	3			4	0	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	178			550		
pX, platoon unblocked						
vC, conflicting volume			825		1286	509
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			825		1286	509
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		100	100
cM capacity (veh/h)			795		144	496

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	177	177	216	308	517
Volume Left	0	0	0	49	0
Volume Right	0	0	128	0	0
cSH	1700	1700	1700	795	1700
Volume to Capacity	0.10	0.10	0.13	0.06	0.30
Queue Length 95th (ft)	0	0	0	5	0
Control Delay (s)	0.0	0.0	0.0	2.2	0.0
Lane LOS				A	
Approach Delay (s)	0.0			0.8	
Approach LOS					

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	19	357	780	30	15	17
Peak Hour Factor	0.68	0.85	0.98	0.83	0.40	0.60
Hourly flow rate (vph)	28	420	796	36	38	28
Pedestrians		38	43		216	
Lane Width (ft)		11.0	11.0		10.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		3	3		15	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		271	457			
pX, platoon unblocked						
vC, conflicting volume	1048				1269	670
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1048				1269	670
tC, single (s)	4.2				6.8	7.1
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	95				70	91
cM capacity (veh/h)	546				125	311

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	112	168	168	531	301	66
Volume Left	28	0	0	0	0	38
Volume Right	0	0	0	0	36	28
cSH	546	1700	1700	1700	1700	168
Volume to Capacity	0.05	0.10	0.10	0.31	0.18	0.39
Queue Length 95th (ft)	4	0	0	0	0	43
Control Delay (s)	3.5	0.0	0.0	0.0	0.0	39.5
Lane LOS	A					E
Approach Delay (s)	0.9			0.0		39.5
Approach LOS						E

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	EBR2	WBT	SBL2	SBT	SBR	NWL	ø5	ø6	ø7	ø9
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900				
Lane Width (ft)	11	12	10	11	11	16	12				
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Leading Detector (ft)	50	50	50	50	50	50	50				
Trailing Detector (ft)	0	0	0	0	0	0	0				
Turning Speed (mph)		9		15		9	15				
Lane Util. Factor	0.95	1.00	0.95	0.95	0.95	1.00	0.97				
Ped Bike Factor					1.00	0.85	0.86				
Frt		0.850				0.850					
Flt Protected					0.998		0.950				
Satd. Flow (prot)	3323	1599	3303	0	3469	1664	3502				
Flt Permitted					0.998		0.950				
Satd. Flow (perm)	3323	1599	3303	0	3464	1417	3020				
Right Turn on Red		Yes				No					
Satd. Flow (RTOR)		373									
Headway Factor	1.04	1.00	1.09	1.04	1.04	0.85	1.00				
Link Speed (mph)	30		30		30		30				
Link Distance (ft)	406		163		238		175				
Travel Time (s)	9.2		3.7		5.4		4.0				
Volume (vph)	736	413	405	20	835	290	379				
Confl. Peds. (#/hr)		8		33		116	33				
Peak Hour Factor	0.91	0.88	0.91	0.60	0.93	0.91	0.90				
Heavy Vehicles (%)	5%	1%	2%	11%	0%	10%	0%				
Adj. Flow (vph)	809	469	445	33	898	319	421				
Lane Group Flow (vph)	809	469	445	0	931	319	421				
Turn Type		Prot		Split		Perm					
Protected Phases	3	3	7 9	2	2		1	5	6	7	9
Permitted Phases						2					
Detector Phases	3	3	7 9	2	2	2	1				
Minimum Initial (s)	10.0	10.0		20.0	20.0	20.0	8.0	10.0	20.0	10.0	2.0
Minimum Split (s)	24.0	24.0		31.0	31.0	31.0	19.0	15.0	26.0	16.0	8.0
Total Split (s)	30.0	30.0	39.0	40.0	40.0	40.0	21.0	21.0	40.0	30.0	9.0
Total Split (%)	30.0%	30.0%	39.0%	40.0%	40.0%	40.0%	21.0%	21%	40%	30%	9%
Maximum Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	16.0	34.0	24.0	3.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	4.0	1.0	2.0	2.0	2.0
Lead/Lag				Lag	Lag	Lag	Lead	Lead	Lag		
Lead-Lag Optimize?											
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None		C-Max	C-Max	C-Max	None	None	C-Max	None	None
Walk Time (s)	10.0	10.0		12.0	12.0	12.0	7.0				
Flash Dont Walk (s)	8.0	8.0		13.0	13.0	13.0	5.0				
Pedestrian Calls (#/hr)	0	0		0	0	0	0				
Act Effct Green (s)	26.0	26.0	35.0		36.5	36.5	16.5				
Actuated g/C Ratio	0.26	0.26	0.35		0.36	0.36	0.16				
v/c Ratio	0.94	0.68	0.38		0.74	0.62	0.73				
Control Delay	55.6	12.9	0.1		25.7	25.6	47.6				
Queue Delay	0.6	0.0	3.0		147.8	37.1	0.0				



Lane Group	EBT	EBR2	WBT	SBL2	SBT	SBR	NWL	ø5	ø6	ø7	ø9
Total Delay	56.3	12.9	3.1		173.5	62.8	47.6				
LOS	E	B	A		F	E	D				
Approach Delay	40.4		3.1		145.2		47.6				
Approach LOS	D		A		F		D				
90th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	16.0	34.0	24.0	3.0
90th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Max	Coord	Max	Max
70th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	16.0	34.0	24.0	3.0
70th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Max	Coord	Max	Max
50th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	14.0	36.0	24.0	3.0
50th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Gap	Coord	Max	Max
30th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	11.6	38.4	24.0	3.0
30th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Gap	Coord	Max	Max
10th %ile Green (s)	24.0	24.0		36.4	36.4	36.4	11.6	10.0	40.0	24.0	3.0
10th %ile Term Code	Max	Max		Coord	Coord	Coord	Gap	Min	Coord	Max	Max
Stops (vph)	658	100	0		671	219	350				
Fuel Used(gal)	14	3	1		10	3	6				
CO Emissions (g/hr)	1000	206	36		682	228	428				
NOx Emissions (g/hr)	195	40	7		133	44	83				
VOC Emissions (g/hr)	232	48	8		158	53	99				
Dilemma Vehicles (#)	0	0	0		0	0	0				
Queue Length 50th (ft)	265	48	0		247	159	131				
Queue Length 95th (ft)	#385	148	m0		m290	m193	184				
Internal Link Dist (ft)	326		83		158		95				
Turn Bay Length (ft)											
Base Capacity (vph)	864	692	1156		1266	517	595				
Starvation Cap Reductn	0	0	587		563	210	0				
Spillback Cap Reductn	6	0	0		0	0	0				
Storage Cap Reductn	0	0	0		0	0	0				
Reduced v/c Ratio	0.94	0.68	0.78		1.32	1.04	0.71				

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay: 75.0		Intersection LOS: E	
Intersection Capacity Utilization 64.8%		ICU Level of Service C	
Analysis Period (min) 15			
# 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: 9052: Charles River Dam & Nashua Street





Lane Group	EBL	EBT	NBR	NBR2	SBL2	SBL	SWR	ø1	ø2	ø3	ø9
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900				
Lane Width (ft)	12	12	12	12	12	12	11				
Storage Length (ft)	0		0			0	0				
Storage Lanes	1		3			2	1				
Total Lost Time (s)	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)	15		9	9	15	15	9				
Lane Util. Factor	0.95	0.95	0.76	1.00	1.00	0.95	1.00				
Ped Bike Factor	1.00	1.00			1.00	1.00					
Frt			0.850				0.865				
Flt Protected	0.950	0.982			0.950	0.950					
Satd. Flow (prot)	1665	1631	3682	0	1770	1681	1542				
Flt Permitted	0.950	0.982			0.950	0.950					
Satd. Flow (perm)	1663	1630	3682	0	1766	1675	1542				
Right Turn on Red				Yes							
Satd. Flow (RTOR)			20								
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04				
Link Speed (mph)		30									
Link Distance (ft)		163									
Travel Time (s)		3.7									
Volume (vph)	515	241	1244	148	201	55	405				
Confl. Peds. (#/hr)	1		1	1	1	1					
Peak Hour Factor	0.85	0.88	0.90	0.84	0.80	0.66	0.90				
Heavy Vehicles (%)	3%	12%	0%	0%	2%	2%	3%				
Adj. Flow (vph)	606	274	1382	176	251	83	450				
Lane Group Flow (vph)	447	433	1558	0	171	163	450				
Turn Type	Split		custom		Prot	Prot	custom				
Protected Phases	3 9	3 9	6		5	5	7	1	2	3	9
Permitted Phases											
Detector Phases	3 9	3 9	6		5	5	7				
Minimum Initial (s)			20.0		10.0	10.0	10.0	8.0	20.0	10.0	2.0
Minimum Split (s)			26.0		15.0	15.0	16.0	19.0	31.0	24.0	8.0
Total Split (s)	39.0	39.0	40.0	0.0	21.0	21.0	30.0	21.0	40.0	30.0	9.0
Total Split (%)	39.0%	39.0%	40.0%	0.0%	21.0%	21.0%	30.0%	21%	40%	30%	9%
Maximum Green (s)			34.0		16.0	16.0	24.0	14.0	34.0	24.0	3.0
Yellow Time (s)			4.0		4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)			2.0		1.0	1.0	2.0	4.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	Lead		Lead	Lag		
Lead-Lag Optimize?											
Vehicle Extension (s)			2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode			C-Max		None	None	None	None	C-Max	None	None
Walk Time (s)								7.0	12.0	10.0	
Flash Dont Walk (s)								5.0	13.0	8.0	
Pedestrian Calls (#/hr)								0	0	0	
Act Effct Green (s)	35.0	35.0	38.5		14.5	14.5	26.0				
Actuated g/C Ratio	0.35	0.35	0.38		0.14	0.14	0.26				
v/c Ratio	0.77	0.76	1.09		0.67	0.67	1.12				



Lane Group	EBL	EBT	NBR	NBR2	SBL2	SBL	SWR	ø1	ø2	ø3	ø9
Control Delay	8.5	8.3	83.1		66.7	67.5	118.4				
Queue Delay	5.4	4.9	0.0		2.9	2.1	0.0				
Total Delay	13.9	13.3	83.1		69.7	69.6	118.4				
LOS	B	B	F		E	E	F				
Approach Delay		13.6									
Approach LOS		B									
90th %ile Green (s)			34.0		16.0	16.0	24.0	14.0	34.0	24.0	3.0
90th %ile Term Code			Coord		Max	Max	Max	Max	Coord	Max	Max
70th %ile Green (s)			34.0		16.0	16.0	24.0	14.0	34.0	24.0	3.0
70th %ile Term Code			Coord		Max	Max	Max	Max	Coord	Max	Max
50th %ile Green (s)			36.0		14.0	14.0	24.0	14.0	34.0	24.0	3.0
50th %ile Term Code			Coord		Gap	Gap	Max	Max	Coord	Max	Max
30th %ile Green (s)			38.4		11.6	11.6	24.0	14.0	34.0	24.0	3.0
30th %ile Term Code			Coord		Gap	Gap	Max	Max	Coord	Max	Max
10th %ile Green (s)			40.0		10.0	10.0	24.0	11.6	36.4	24.0	3.0
10th %ile Term Code			Coord		Min	Min	Max	Gap	Coord	Max	Max
Stops (vph)	57	56	1143		134	118	333				
Fuel Used(gal)	1	1	32		3	3	12				
CO Emissions (g/hr)	102	100	2205		200	176	867				
NOx Emissions (g/hr)	20	19	429		39	34	169				
VOC Emissions (g/hr)	24	23	511		46	41	201				
Dilemma Vehicles (#)	0	0	0		0	0	0				
Queue Length 50th (ft)	20	20	~496		115	115	~333				
Queue Length 95th (ft)	m22	m21	#635		m161	136	#524				
Internal Link Dist (ft)		83									
Turn Bay Length (ft)											
Base Capacity (vph)	583	571	1429		301	286	401				
Starvation Cap Reductn	87	85	0		60	46	0				
Spillback Cap Reductn	0	0	0		0	0	0				
Storage Cap Reductn	0	0	0		0	0	0				
Reduced v/c Ratio	0.90	0.89	1.09		0.71	0.68	1.12				

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay: 67.6		Intersection LOS: E	
Intersection Capacity Utilization 70.3%		ICU Level of Service C	
Analysis Period (min) 15			

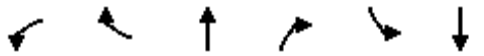
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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: 9053: Charles River Dam & I-93 Ramp





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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		9	15	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	0.95
Ped Bike Factor	0.98					
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	3467	0	0	0	0	3438
Flt Permitted	0.950					
Satd. Flow (perm)	3409	0	0	0	0	3438
Right Turn on Red	Yes	Yes		Yes		
Satd. Flow (RTOR)	417					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		30			30
Link Distance (ft)	238		184			918
Travel Time (s)	5.4		4.2			20.9
Volume (vph)	263	0	0	0	0	537
Confl. Peds. (#/hr)	10					
Peak Hour Factor	0.93	0.92	0.92	0.92	0.92	0.94
Heavy Vehicles (%)	1%	0%	0%	0%	0%	5%
Adj. Flow (vph)	283	0	0	0	0	571
Lane Group Flow (vph)	283	0	0	0	0	571
Turn Type						
Protected Phases	2					1
Permitted Phases						
Detector Phases	2					1
Minimum Initial (s)	15.0					15.0
Minimum Split (s)	20.0					20.0
Total Split (s)	23.0	0.0	0.0	0.0	0.0	27.0
Total Split (%)	46.0%	0.0%	0.0%	0.0%	0.0%	54.0%
Maximum Green (s)	18.0					22.0
Yellow Time (s)	4.0					4.0
All-Red Time (s)	1.0					1.0
Lead/Lag	Lag					Lead
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Walk Time (s)	7.0					7.0
Flash Dont Walk (s)	2.0					2.0
Pedestrian Calls (#/hr)	0					0
Act Effct Green (s)	16.0					26.0
Actuated g/C Ratio	0.32					0.52
v/c Ratio	0.20					0.32
Control Delay	0.7					5.5
Queue Delay	0.0					0.0
Total Delay	0.7					5.5

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	A					A
Approach Delay	0.7					5.5
Approach LOS	A					A
90th %ile Green (s)	15.0					25.0
90th %ile Term Code	Min					Coord
70th %ile Green (s)	15.0					25.0
70th %ile Term Code	Min					Coord
50th %ile Green (s)	15.0					25.0
50th %ile Term Code	Min					Coord
30th %ile Green (s)	15.0					25.0
30th %ile Term Code	Min					Coord
10th %ile Green (s)	15.0					25.0
10th %ile Term Code	Min					Coord
Stops (vph)	6					210
Fuel Used(gal)	1					6
CO Emissions (g/hr)	39					392
NOx Emissions (g/hr)	8					76
VOC Emissions (g/hr)	9					91
Dilemma Vehicles (#)	0					0
Queue Length 50th (ft)	0					34
Queue Length 95th (ft)	5					m48
Internal Link Dist (ft)	158		104			838
Turn Bay Length (ft)						
Base Capacity (vph)	1576					1788
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.18					0.32

Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 50			
Offset: 19 (38%), Referenced to phase 1:SBT, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.32			
Intersection Signal Delay: 3.9		Intersection LOS: A	
Intersection Capacity Utilization 34.0%		ICU Level of Service A	
Analysis Period (min) 15			

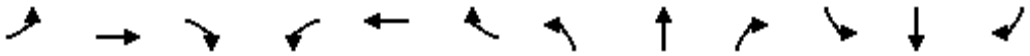
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2248: Nashua Street & Lomasney Way



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	10	10	10	10	16	12	11	10	12	12	12
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	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor	0.73	0.96	0.89		0.99	0.46	0.87		0.87	0.91	0.91	
Frt			0.850			0.850			0.850		0.947	
Flt Protected	0.950	0.993			0.992		0.950			0.950		
Satd. Flow (prot)	1524	1620	1478	0	3066	1679	1805	1801	1370	1671	3081	0
Flt Permitted	0.326	0.709			0.535		0.950			0.950		
Satd. Flow (perm)	380	1111	1313	0	1637	766	1578	1801	1195	1517	3081	0
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)			364									
Headway Factor	1.09	1.09	1.09	1.09	1.09	0.85	1.00	1.04	1.09	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		301			188			403			339	
Travel Time (s)		6.8			4.3			9.2			7.7	
Volume (vph)	121	324	331	69	331	279	101	155	51	193	376	202
Confl. Peds. (#/hr)	566		142	142		566	175		59	59		175
Peak Hour Factor	0.78	0.92	0.91	0.87	0.84	0.85	0.79	0.88	0.75	0.77	0.92	0.91
Heavy Vehicles (%)	5%	3%	2%	39%	3%	9%	0%	2%	10%	8%	1%	2%
Adj. Flow (vph)	155	352	364	79	394	328	128	176	68	251	409	222
Lane Group Flow (vph)	96	411	364	0	473	328	128	176	68	251	631	0
Turn Type	Perm		pm+ov	Perm		pm+ov	Prot		Perm	Prot		
Protected Phases		4	5		4	1	5	2		1	6	
Permitted Phases	4		4	4		4			2			
Detector Phases	4	4	5	4	4	1	5	2	2	1	6	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	21.0	21.0	13.0	13.0	
Total Split (s)	29.0	29.0	21.0	29.0	29.0	21.0	21.0	26.0	26.0	21.0	26.0	0.0
Total Split (%)	29.0%	29.0%	21.0%	29.0%	29.0%	21.0%	21.0%	26.0%	26.0%	21.0%	26.0%	0.0%
Maximum Green (s)	24.0	24.0	16.0	24.0	24.0	16.0	16.0	21.0	21.0	16.0	21.0	
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	2.0	
Lead/Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)								10.0	10.0			
Flash Dont Walk (s)								5.0	5.0			
Pedestrian Calls (#/hr)								50	50			
Act Effct Green (s)	25.0	25.0	37.5		25.0	41.6	12.5	22.4	22.4	16.6	26.5	
Actuated g/C Ratio	0.25	0.25	0.38		0.25	0.42	0.12	0.22	0.22	0.17	0.26	
v/c Ratio	1.01	1.48	0.49		1.65dl	0.70	0.57	0.44	0.25	0.90	0.77	
Control Delay	136.6	264.1	4.3		129.1	46.5	50.5	37.6	35.3	76.4	42.6	
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Lane Group	ø3
Lane Configurations	
Ideal Flow (vphpl)	
Lane Width (ft)	
Total Lost Time (s)	
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Headway Factor	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phases	
Minimum Initial (s)	7.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	24%
Maximum Green (s)	22.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lead/Lag	Lead
Lead-Lag Optimize?	
Vehicle Extension (s)	2.0
Recall Mode	Ped
Walk Time (s)	10.0
Flash Dont Walk (s)	12.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	136.6	264.1	4.3		129.1	46.5	50.5	37.6	35.3	76.4	42.6	
LOS	F	F	A		F	D	D	D	D	E	D	
Approach Delay		141.5			95.3			41.6			52.2	
Approach LOS		F			F			D			D	
90th %ile Green (s)	24.0	24.0	16.0	24.0	24.0	16.0	16.0	21.0	21.0	16.0	21.0	
90th %ile Term Code	Max	Max	Max	Max	Max	Max	Max	Coord	Coord	Max	Coord	
70th %ile Green (s)	24.0	24.0	13.1	24.0	24.0	16.0	13.1	21.0	21.0	16.0	23.9	
70th %ile Term Code	Max	Max	Gap	Max	Max	Max	Gap	Coord	Coord	Max	Coord	
50th %ile Green (s)	24.0	24.0	11.2	24.0	24.0	16.0	11.2	21.0	21.0	16.0	25.8	
50th %ile Term Code	Max	Max	Gap	Max	Max	Max	Gap	Coord	Coord	Max	Coord	
30th %ile Green (s)	24.0	24.0	9.3	24.0	24.0	16.0	9.3	21.0	21.0	16.0	27.7	
30th %ile Term Code	Max	Max	Gap	Max	Max	Max	Gap	Coord	Coord	Max	Coord	
10th %ile Green (s)	24.0	24.0	8.0	24.0	24.0	14.1	8.0	22.9	22.9	14.1	29.0	
10th %ile Term Code	Max	Max	Min	Max	Max	Gap	Min	Coord	Coord	Gap	Coord	
Stops (vph)	56	276	26		342	294	92	130	42	170	494	
Fuel Used(gal)	3	22	1		13	5	2	2	1	4	9	
CO Emissions (g/hr)	180	1558	85		908	327	130	167	53	311	648	
NOx Emissions (g/hr)	35	303	16		177	64	25	33	10	61	126	
VOC Emissions (g/hr)	42	361	20		210	76	30	39	12	72	150	
Dilemma Vehicles (#)	0	0	0		0	0	0	0	0	0	0	
Queue Length 50th (ft)	~65	~382	0		~194	196	78	98	36	158	194	
Queue Length 95th (ft)	#145	#577	49		#271	276	114	159	62	#228	#317	
Internal Link Dist (ft)		221			108			323			259	
Turn Bay Length (ft)												
Base Capacity (vph)	95	278	791		409	477	307	403	268	284	816	
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	
Reduced v/c Ratio	1.01	1.48	0.46		1.16	0.69	0.42	0.44	0.25	0.88	0.77	

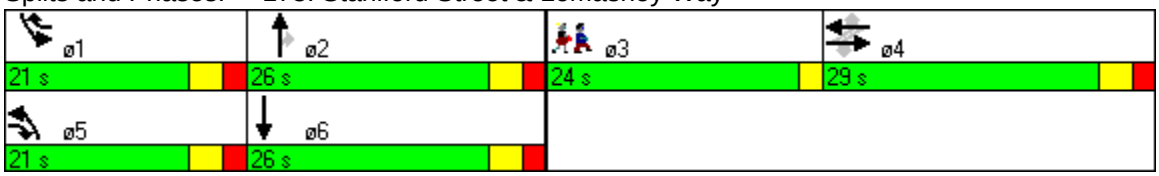
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.48			
Intersection Signal Delay: 89.2		Intersection LOS: F	
Intersection Capacity Utilization 70.2%		ICU Level of Service C	
Analysis Period (min) 15			

~ 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.

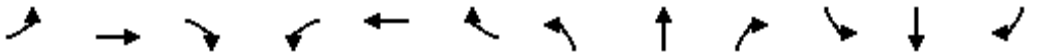
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 173: Staniford Street & Lomasney Way

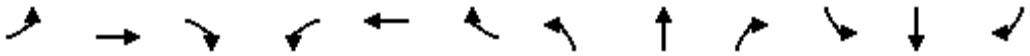


Lane Group	ø3
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	22.0
90th %ile Term Code	Ped
70th %ile Green (s)	22.0
70th %ile Term Code	Ped
50th %ile Green (s)	22.0
50th %ile Term Code	Ped
30th %ile Green (s)	22.0
30th %ile Term Code	Ped
10th %ile Green (s)	22.0
10th %ile Term Code	Ped
Stops (vph)	
Fuel Used(gal)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
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



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	12	12	11	10	12	12	12	10	8	11
Storage Length (ft)	140		0	0		140	0		0	0		0
Storage Lanes	1		0	0		1	0		1	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	4.0
Leading Detector (ft)	50	50			50	50			50	50		50
Trailing Detector (ft)	0	0			0	0			0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.85					0.60				0.72		
Frt						0.850			0.865			0.850
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1685	3202	0	0	3421	1422	0	0	1644	1668	0	1347
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1432	3202	0	0	3421	853	0	0	1644	1198	0	1347
Right Turn on Red			No			Yes			No			No
Satd. Flow (RTOR)						120						
Headway Factor	1.09	1.12	1.00	1.00	1.04	1.09	1.00	1.00	1.00	1.09	1.20	1.23
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		441			219			396			369	
Travel Time (s)		10.0			5.0			9.0			8.4	
Volume (vph)	339	485	0	0	622	180	0	0	1	279	0	249
Confl. Peds. (#/hr)	520					520			188	188		300
Peak Hour Factor	0.88	0.92	0.92	0.92	0.81	0.83	0.92	0.92	0.25	0.90	0.92	0.98
Heavy Vehicles (%)	0%	3%	0%	0%	2%	6%	0%	0%	0%	1%	0%	2%
Parking (#/hr)		2										4
Adj. Flow (vph)	385	527	0	0	768	217	0	0	4	310	0	254
Lane Group Flow (vph)	385	527	0	0	768	217	0	0	4	310	0	254
Turn Type	Prot					pm+ov			custom	Prot		Over
Protected Phases	3	2			6	4			1	4		3
Permitted Phases						6						
Detector Phases	3	2			6	4			1	4		3
Minimum Initial (s)	8.0	12.0			12.0	8.0			4.0	8.0		8.0
Minimum Split (s)	24.0	16.0			20.0	24.0			8.0	24.0		24.0
Total Split (s)	27.0	32.0	0.0	0.0	44.0	29.0	0.0	0.0	12.0	29.0	0.0	27.0
Total Split (%)	27.0%	32.0%	0.0%	0.0%	44.0%	29.0%	0.0%	0.0%	12.0%	29.0%	0.0%	27.0%
Maximum Green (s)	23.0	28.0			40.0	25.0			8.0	25.0		23.0
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	1.0			1.0	1.0		1.0
Lead/Lag	Lead	Lag				Lag			Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0			2.0	2.0			2.0	2.0		2.0
Recall Mode	None	C-Max			C-Max	None			None	None		None
Walk Time (s)	7.0				7.0	7.0				7.0		7.0
Flash Dont Walk (s)	13.0				9.0	13.0				13.0		13.0
Pedestrian Calls (#/hr)	0				0	0				0		0
Act Effct Green (s)	23.0	41.7			43.6	65.0			4.8	21.4		23.0
Actuated g/C Ratio	0.23	0.42			0.44	0.65			0.05	0.21		0.23

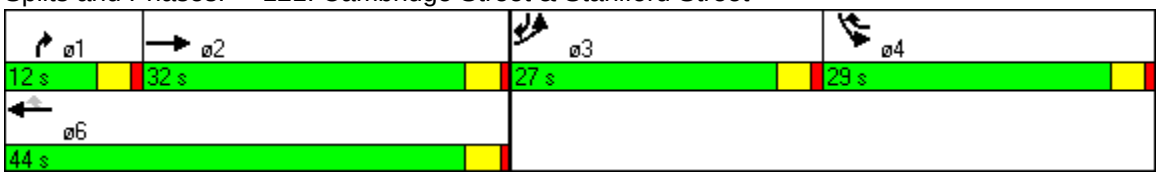


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.99	0.39			0.51	0.30			0.05	0.87		0.82
Control Delay	83.8	23.0			22.8	3.6			46.0	61.8		59.0
Queue Delay	0.0	0.0			0.0	0.0			0.0	0.0		0.0
Total Delay	83.8	23.0			22.8	3.6			46.0	61.8		59.0
LOS	F	C			C	A			D	E		E
Approach Delay		48.7			18.5							
Approach LOS		D			B							
90th %ile Green (s)	23.0	30.4			40.0	25.0			5.6	25.0		23.0
90th %ile Term Code	Max	Coord			Coord	Max			Gap	Max		Max
70th %ile Green (s)	23.0	40.0			40.0	25.0			0.0	25.0		23.0
70th %ile Term Code	Max	Coord			Coord	Max			Skip	Max		Max
50th %ile Green (s)	23.0	42.3			42.3	22.7			0.0	22.7		23.0
50th %ile Term Code	Max	Coord			Coord	Gap			Skip	Gap		Max
30th %ile Green (s)	23.0	45.5			45.5	19.5			0.0	19.5		23.0
30th %ile Term Code	Max	Coord			Coord	Gap			Skip	Gap		Max
10th %ile Green (s)	23.0	50.4			50.4	14.6			0.0	14.6		23.0
10th %ile Term Code	Max	Coord			Coord	Gap			Skip	Gap		Max
Stops (vph)	291	336			442	28			2	257		219
Fuel Used(gal)	9	6			6	1			0	6		5
CO Emissions (g/hr)	598	405			446	42			2	401		344
NOx Emissions (g/hr)	116	79			87	8			0	78		67
VOC Emissions (g/hr)	139	94			103	10			0	93		80
Dilemma Vehicles (#)	0	0			0	0			0	0		0
Queue Length 50th (ft)	246	118			187	18			3	189		154
Queue Length 95th (ft)	#422	200			221	36			4	#304		#287
Internal Link Dist (ft)		361			139			316			289	
Turn Bay Length (ft)	140					140						
Base Capacity (vph)	388	1336			1493	754			132	417		310
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	0.99	0.39			0.51	0.29			0.03	0.74		0.82

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 94 (94%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 39.3 Intersection LOS: D
Intersection Capacity Utilization 61.4% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 121: Cambridge Street & Staniford Street



Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBU	NBL2	NBL	NBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	10	12	12	12	12	10	10
Storage Length (ft)	0		0			0		0			0	
Storage Lanes	0		0			1		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	9	15	15		9	9	15	15	
Lane Util. Factor	0.95	0.95	0.95	0.95	0.91	0.91	0.91	0.95	0.95	0.95	1.00	0.95
Ped Bike Factor		0.88			0.84		0.90				0.76	
Frt		0.973					0.988					
Flt Protected		0.993			0.950		0.985				0.950	
Satd. Flow (prot)	0	2728	0	0	1254	0	2890	0	0	0	1402	2888
Flt Permitted		0.993			0.950		0.985				0.950	
Satd. Flow (perm)	0	2696	0	0	1048	0	2642	0	0	0	1061	2888
Right Turn on Red				Yes				Yes				
Satd. Flow (RTOR)		1					7					
Headway Factor	1.14	1.14	1.14	1.14	1.25	1.25	1.14	1.14	1.14	1.14	1.25	1.25
Link Speed (mph)		30					30					30
Link Distance (ft)		127					248					378
Travel Time (s)		2.9					5.6					8.6
Volume (vph)	58	295	53	6	223	8	187	27	15	25	219	189
Confl. Peds. (#/hr)	74		264	49	264	49		74	264	49	157	
Peak Hour Factor	0.80	0.78	0.58	0.75	0.83	0.40	0.74	0.84	0.42	0.48	0.94	0.70
Heavy Vehicles (%)	2%	2%	2%	0%	10%	0%	2%	0%	60%	0%	2%	5%
Adj. Flow (vph)	72	378	91	8	269	20	253	32	36	52	233	270
Lane Group Flow (vph)	0	549	0	0	170	0	404	0	0	0	321	270
Turn Type	Split				Split	Split			Split	Split	Split	
Protected Phases	3	3			2	2	2		1	1	1	1
Permitted Phases												
Detector Phases	3	3			2	2	2		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
Minimum Split (s)	20.0	20.0			17.0	17.0	17.0		25.0	25.0	25.0	25.0
Total Split (s)	21.0	21.0	0.0	0.0	22.0	22.0	22.0	0.0	32.0	32.0	32.0	32.0
Total Split (%)	21.0%	21.0%	0.0%	0.0%	22.0%	22.0%	22.0%	0.0%	32.0%	32.0%	32.0%	32.0%
Maximum Green (s)	15.0	15.0			16.0	16.0	16.0		26.0	26.0	26.0	26.0
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)	3.0	3.0			3.0	3.0	3.0		3.0	3.0	3.0	3.0
Lead/Lag	Lag	Lag			Lead	Lead	Lead					
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0		2.0	2.0	2.0	2.0
Recall Mode	None	None			None	None	None		C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0							7.0	7.0	7.0	7.0
Flash Dont Walk (s)	7.0	7.0							11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0							0	0	0	0
Act Effct Green (s)		17.0			18.0		18.0				28.8	28.8
Actuated g/C Ratio		0.17			0.18		0.18				0.29	0.29
v/c Ratio		1.18			0.75		0.77				0.79	0.32



Lane Group	NBR	SBL	SBT	SBR	SBR2
Lane Configurations					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Lane Width (ft)	16	11	11	11	16
Storage Length (ft)	25	0		0	
Storage Lanes	1	1		0	
Total Lost Time (s)	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)	9	15		9	9
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.64	0.93		
Frt	0.850		0.968		
Flt Protected		0.950			
Satd. Flow (prot)	1631	1525	2591	0	0
Flt Permitted		0.950			
Satd. Flow (perm)	1631	968	2591	0	0
Right Turn on Red	No				Yes
Satd. Flow (RTOR)			21		
Headway Factor	0.97	1.19	1.19	1.19	0.97
Link Speed (mph)			30		
Link Distance (ft)			263		
Travel Time (s)			6.0		
Volume (vph)	239	238	252	14	32
Confl. Peds. (#/hr)	873	873		49	157
Peak Hour Factor	1.00	0.88	0.83	0.70	0.50
Heavy Vehicles (%)	1%	3%	11%	0%	3%
Adj. Flow (vph)	239	270	304	20	64
Lane Group Flow (vph)	239	270	388	0	0
Turn Type	pt+ov	Split			
Protected Phases	1 2	4	4		
Permitted Phases					
Detector Phases	1 2	4	4		
Minimum Initial (s)		8.0	8.0		
Minimum Split (s)		22.0	22.0		
Total Split (s)	54.0	25.0	25.0	0.0	0.0
Total Split (%)	54.0%	25.0%	25.0%	0.0%	0.0%
Maximum Green (s)		19.0	19.0		
Yellow Time (s)		3.0	3.0		
All-Red Time (s)		3.0	3.0		
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)		2.0	2.0		
Recall Mode		None	None		
Walk Time (s)		7.0	7.0		
Flash Dont Walk (s)		9.0	9.0		
Pedestrian Calls (#/hr)		0	0		
Act Effct Green (s)	50.8	20.2	20.2		
Actuated g/C Ratio	0.51	0.20	0.20		
v/c Ratio	0.29	0.88	0.72		

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBU	NBL2	NBL	NBT
Control Delay		108.8			73.9		63.1				32.2	17.0
Queue Delay		10.0			1.7		8.3				0.0	0.0
Total Delay		118.8			75.5		71.4				32.2	17.0
LOS		F			E		E				C	B
Approach Delay		118.8					72.6					23.0
Approach LOS		F					E					C
90th %ile Green (s)	15.0	15.0			16.0	16.0	16.0		26.0	26.0	26.0	26.0
90th %ile Term Code	Max	Max			Max	Max	Max		Coord	Coord	Coord	Coord
70th %ile Green (s)	15.0	15.0			16.0	16.0	16.0		26.0	26.0	26.0	26.0
70th %ile Term Code	Max	Max			Max	Max	Max		Coord	Coord	Coord	Coord
50th %ile Green (s)	15.0	15.0			16.0	16.0	16.0		26.0	26.0	26.0	26.0
50th %ile Term Code	Max	Max			Max	Max	Max		Coord	Coord	Coord	Coord
30th %ile Green (s)	15.0	15.0			16.0	16.0	16.0		26.0	26.0	26.0	26.0
30th %ile Term Code	Max	Max			Max	Max	Max		Coord	Coord	Coord	Coord
10th %ile Green (s)	15.0	15.0			16.0	16.0	16.0		30.0	30.0	30.0	30.0
10th %ile Term Code	Max	Max			Max	Max	Max		Coord	Coord	Coord	Coord
Stops (vph)		106			135		485				221	134
Fuel Used(gal)		10			3		7				4	2
CO Emissions (g/hr)		706			219		501				258	136
NOx Emissions (g/hr)		137			43		98				50	27
VOC Emissions (g/hr)		164			51		116				60	32
Dilemma Vehicles (#)		0			0		0				0	0
Queue Length 50th (ft)		~185			129		152				178	52
Queue Length 95th (ft)		m#201			#206		167				m#296	m52
Internal Link Dist (ft)		47					168					298
Turn Bay Length (ft)												
Base Capacity (vph)		465			226		526				404	832
Starvation Cap Reductn		9			10		90				0	0
Spillback Cap Reductn		0			0		1				0	0
Storage Cap Reductn		0			0		0				0	0
Reduced v/c Ratio		1.20			0.79		0.93				0.79	0.32

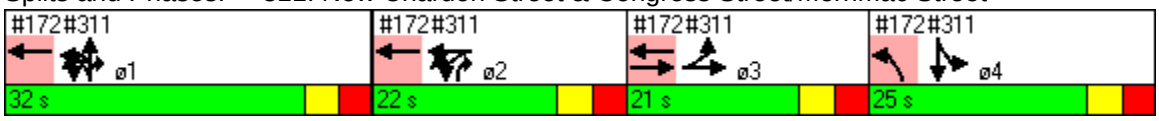
Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 75 (75%), Referenced to phase 1:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 63.0		Intersection LOS: E	
Intersection Capacity Utilization 70.2%		ICU Level of Service C	
Analysis Period (min) 15			

~ 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: 311: New Chardon Street & Congress Street/Merrimac Street





Lane Group	NBR	SBL	SBT	SBR	SBR2
Control Delay	17.5	67.5	43.3		
Queue Delay	0.0	0.0	8.8		
Total Delay	17.5	67.5	52.1		
LOS	B	E	D		
Approach Delay			58.4		
Approach LOS			E		
90th %ile Green (s)		19.0	19.0		
90th %ile Term Code		Max	Max		
70th %ile Green (s)		19.0	19.0		
70th %ile Term Code		Max	Max		
50th %ile Green (s)		19.0	19.0		
50th %ile Term Code		Max	Max		
30th %ile Green (s)		19.0	19.0		
30th %ile Term Code		Max	Max		
10th %ile Green (s)		15.0	15.0		
10th %ile Term Code		Gap	Gap		
Stops (vph)	185	212	259		
Fuel Used(gal)	3	5	5		
CO Emissions (g/hr)	180	345	326		
NOx Emissions (g/hr)	35	67	64		
VOC Emissions (g/hr)	42	80	76		
Dilemma Vehicles (#)	0	0	0		
Queue Length 50th (ft)	108	166	114		
Queue Length 95th (ft)	m141	#293	151		
Internal Link Dist (ft)			183		
Turn Bay Length (ft)	25				
Base Capacity (vph)	829	320	561		
Starvation Cap Reductn	0	0	0		
Spillback Cap Reductn	0	0	138		
Storage Cap Reductn	0	0	0		
Reduced v/c Ratio	0.29	0.84	0.92		

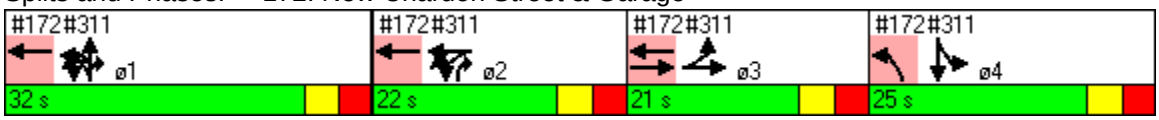
Intersection Summary

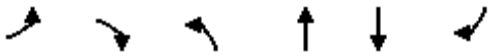
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø1	ø2
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	11	11		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		
Leading Detector (ft)	50			50	50			
Trailing Detector (ft)	0			0	0			
Turning Speed (mph)		9	15		15	9		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00		
Ped Bike Factor					0.87			
Frt					0.940			
Flt Protected					0.973			
Satd. Flow (prot)	3185	0	0	3185	1310	0		
Flt Permitted					0.973			
Satd. Flow (perm)	3185	0	0	3185	1310	0		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)					32			
Headway Factor	1.14	1.14	1.14	1.14	1.19	1.19		
Link Speed (mph)	30			30	30			
Link Distance (ft)	342			127	116			
Travel Time (s)	7.8			2.9	2.6			
Volume (vph)	412	0	0	642	30	23		
Confl. Peds. (#/hr)						157		
Peak Hour Factor	0.79	0.92	0.92	0.92	0.75	0.72		
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%		
Adj. Flow (vph)	522	0	0	698	40	32		
Lane Group Flow (vph)	522	0	0	698	72	0		
Turn Type								
Protected Phases	3			1 2 3	4		1	2
Permitted Phases								
Detector Phases	3			1 2 3	4			
Minimum Initial (s)	8.0				8.0		10.0	8.0
Minimum Split (s)	20.0				22.0		25.0	17.0
Total Split (s)	21.0	0.0	0.0	75.0	25.0	0.0	32.0	22.0
Total Split (%)	21.0%	0.0%	0.0%	75.0%	25.0%	0.0%	32%	22%
Maximum Green (s)	15.0				19.0		26.0	16.0
Yellow Time (s)	3.0				3.0		3.0	3.0
All-Red Time (s)	3.0				3.0		3.0	3.0
Lead/Lag	Lag							Lead
Lead-Lag Optimize?								
Vehicle Extension (s)	2.0				2.0		2.0	2.0
Recall Mode	None				None		C-Max	None
Walk Time (s)	7.0				7.0		7.0	
Flash Dont Walk (s)	7.0				9.0		11.0	
Pedestrian Calls (#/hr)	0				0		0	
Act Effct Green (s)	17.0			71.8	20.2			
Actuated g/C Ratio	0.17			0.72	0.20			
v/c Ratio	0.96			0.31	0.25			
Control Delay	73.2			2.7	22.8			
Queue Delay	94.8			3.8	674.4			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø1	ø2
Total Delay	168.0			6.5	697.2			
LOS	F			A	F			
Approach Delay	168.0			6.5	697.2			
Approach LOS	F			A	F			
90th %ile Green (s)	15.0				19.0		26.0	16.0
90th %ile Term Code	Max				Max		Coord	Max
70th %ile Green (s)	15.0				19.0		26.0	16.0
70th %ile Term Code	Max				Max		Coord	Max
50th %ile Green (s)	15.0				19.0		26.0	16.0
50th %ile Term Code	Max				Max		Coord	Max
30th %ile Green (s)	15.0				19.0		26.0	16.0
30th %ile Term Code	Max				Max		Coord	Max
10th %ile Green (s)	15.0				15.0		30.0	16.0
10th %ile Term Code	Max				Gap		Coord	Max
Stops (vph)	365			98	27			
Fuel Used(gal)	9			2	0			
CO Emissions (g/hr)	647			107	31			
NOx Emissions (g/hr)	126			21	6			
VOC Emissions (g/hr)	150			25	7			
Dilemma Vehicles (#)	0			0	0			
Queue Length 50th (ft)	175			36	21			
Queue Length 95th (ft)	#224			46	46			
Internal Link Dist (ft)	262			47	36			
Turn Bay Length (ft)								
Base Capacity (vph)	541			2287	300			
Starvation Cap Reductn	0			1477	0			
Spillback Cap Reductn	116			0	288			
Storage Cap Reductn	0			0	0			
Reduced v/c Ratio	1.23			0.86	6.00			

Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 75 (75%), Referenced to phase 1:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 110.2		Intersection LOS: F	
Intersection Capacity Utilization 39.7%		ICU Level of Service A	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 172: New Chardon Street & Garage





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	5	0	0	771	6
Peak Hour Factor	0.92	0.63	0.92	0.94	0.96	0.50
Hourly flow rate (vph)	0	8	0	0	803	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				339		
pX, platoon unblocked						
vC, conflicting volume	809	408	815			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	809	408	815			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	322	599	821			

Direction, Lane #	EB 1	SB 1	SB 2
Volume Total	8	535	280
Volume Left	0	0	0
Volume Right	8	0	12
cSH	599	1700	1700
Volume to Capacity	0.01	0.31	0.16
Queue Length 95th (ft)	1	0	0
Control Delay (s)	11.1	0.0	0.0
Lane LOS	B		
Approach Delay (s)	11.1	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	722	3	0	263	0	39
Peak Hour Factor	0.91	0.92	0.92	0.92	0.92	0.98
Hourly flow rate (vph)	793	3	0	286	0	40
Pedestrians				2	32	
Lane Width (ft)				12.0	16.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	4	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			829		970	432
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			829		970	432
tC, single (s)			4.1		6.8	7.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			100		100	92
cM capacity (veh/h)			783		245	517

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NW 1
Volume Total	529	268	143	143	40
Volume Left	0	0	0	0	0
Volume Right	0	3	0	0	40
cSH	1700	1700	1700	1700	517
Volume to Capacity	0.31	0.16	0.08	0.08	0.08
Queue Length 95th (ft)	0	0	0	0	6
Control Delay (s)	0.0	0.0	0.0	0.0	12.5
Lane LOS					B
Approach Delay (s)	0.0		0.0		12.5
Approach LOS					B

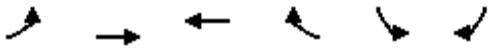
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	30.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	494	108	25	669	0	0
Peak Hour Factor	0.94	0.68	0.61	0.84	0.92	0.92
Hourly flow rate (vph)	526	159	41	796	0	0
Pedestrians					210	
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)	196			550		
pX, platoon unblocked						
vC, conflicting volume			894		1295	465
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			894		1295	465
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			94		100	100
cM capacity (veh/h)			730		148	550

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	210	210	264	306	531
Volume Left	0	0	0	41	0
Volume Right	0	0	159	0	0
cSH	1700	1700	1700	730	1700
Volume to Capacity	0.12	0.12	0.16	0.06	0.31
Queue Length 95th (ft)	0	0	0	4	0
Control Delay (s)	0.0	0.0	0.0	2.0	0.0
Lane LOS				A	
Approach Delay (s)	0.0			0.7	
Approach LOS					

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	12	482	660	13	8	34
Peak Hour Factor	0.60	0.94	0.84	0.54	0.50	0.70
Hourly flow rate (vph)	20	513	786	24	16	49
Pedestrians		24	20		179	
Lane Width (ft)		11.0	11.0		10.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		12	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		294	452			
pX, platoon unblocked	1.00				1.00	1.00
vC, conflicting volume	989				1208	608
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	985				1205	603
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				89	87
cM capacity (veh/h)	619				149	383

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	123	205	205	524	286	65
Volume Left	20	0	0	0	0	16
Volume Right	0	0	0	0	24	49
cSH	619	1700	1700	1700	1700	276
Volume to Capacity	0.03	0.12	0.12	0.31	0.17	0.23
Queue Length 95th (ft)	3	0	0	0	0	22
Control Delay (s)	2.1	0.0	0.0	0.0	0.0	22.0
Lane LOS	A					C
Approach Delay (s)	0.5			0.0		22.0
Approach LOS						C

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR2	WBT	SBL2	SBT	SBR	NWL	ø5	ø6	ø7	ø9
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900				
Lane Width (ft)	11	12	10	11	11	14	12				
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Leading Detector (ft)	50	50	50	50	50	50	50				
Trailing Detector (ft)	0	0	0	0	0	0	0				
Turning Speed (mph)		9		15		9	15				
Lane Util. Factor	0.95	1.00	0.95	0.95	0.95	1.00	0.97				
Ped Bike Factor						0.85					
Frt		0.850				0.850					
Flt Protected					0.999		0.950				
Satd. Flow (prot)	3231	1615	3303	0	3481	1511	3502				
Flt Permitted					0.999		0.950				
Satd. Flow (perm)	3231	1615	3303	0	3481	1290	3502				
Right Turn on Red		Yes				No					
Satd. Flow (RTOR)		374									
Headway Factor	1.04	1.00	1.09	1.04	1.04	0.92	1.00				
Link Speed (mph)	30		30		30		30				
Link Distance (ft)	406		163		238		175				
Travel Time (s)	9.2		3.7		5.4		4.0				
Volume (vph)	722	547	437	21	779	229	415				
Confl. Peds. (#/hr)		3				114					
Peak Hour Factor	0.86	0.85	0.88	0.87	0.88	0.80	0.88				
Heavy Vehicles (%)	8%	0%	2%	6%	0%	14%	0%				
Adj. Flow (vph)	840	644	497	24	885	286	472				
Lane Group Flow (vph)	840	644	497	0	909	286	472				
Turn Type		Prot		Split		Perm					
Protected Phases	3	3	7 9	2	2		1	5	6	7	9
Permitted Phases						2					
Detector Phases	3	3	7 9	2	2	2	1				
Minimum Initial (s)	10.0	10.0		20.0	20.0	20.0	8.0	10.0	20.0	10.0	2.0
Minimum Split (s)	24.0	24.0		31.0	31.0	31.0	19.0	15.0	26.0	16.0	8.0
Total Split (s)	30.0	30.0	39.0	40.0	40.0	40.0	21.0	21.0	40.0	30.0	9.0
Total Split (%)	30.0%	30.0%	39.0%	40.0%	40.0%	40.0%	21.0%	21%	40%	30%	9%
Maximum Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	16.0	34.0	24.0	3.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	4.0	1.0	2.0	2.0	2.0
Lead/Lag				Lag	Lag	Lag	Lead	Lead	Lag		
Lead-Lag Optimize?											
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None		C-Max	C-Max	C-Max	None	None	C-Max	None	None
Walk Time (s)	10.0	10.0		12.0	12.0	12.0	7.0				
Flash Dont Walk (s)	8.0	8.0		13.0	13.0	13.0	5.0				
Pedestrian Calls (#/hr)	0	0		0	0	0	0				
Act Effct Green (s)	26.0	26.0	35.0		36.2	36.2	16.8				
Actuated g/C Ratio	0.26	0.26	0.35		0.36	0.36	0.17				
v/c Ratio	1.00	0.92	0.43		0.72	0.61	0.80				
Control Delay	69.0	35.9	0.1		33.1	34.3	51.4				
Queue Delay	9.1	0.0	6.5		177.2	34.2	0.0				



Lane Group	EBT	EBR2	WBT	SBL2	SBT	SBR	NWL	ø5	ø6	ø7	ø9
Total Delay	78.2	35.9	6.6		210.3	68.5	51.4				
LOS	E	D	A		F	E	D				
Approach Delay	59.9		6.6		176.4		51.4				
Approach LOS	E		A		F		D				
90th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	11.8	38.2	24.0	3.0
90th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Gap	Coord	Max	Max
70th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	10.0	40.0	24.0	3.0
70th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Min	Coord	Max	Max
50th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	10.0	40.0	24.0	3.0
50th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Min	Coord	Max	Max
30th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	10.0	40.0	24.0	3.0
30th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Min	Coord	Max	Max
10th %ile Green (s)	24.0	24.0		34.8	34.8	34.8	13.2	0.0	55.0	24.0	3.0
10th %ile Term Code	Max	Max		Coord	Coord	Coord	Gap	Skip	Coord	Max	Max
Stops (vph)	639	229	0		638	183	381				
Fuel Used(gal)	16	7	1		10	3	7				
CO Emissions (g/hr)	1116	489	39		727	212	490				
NOx Emissions (g/hr)	217	95	8		141	41	95				
VOC Emissions (g/hr)	259	113	9		168	49	114				
Dilemma Vehicles (#)	0	0	0		0	0	0				
Queue Length 50th (ft)	282	186	0		257	148	150				
Queue Length 95th (ft)	#384	#359	m0		m337	m204	#204				
Internal Link Dist (ft)	326		83		158		95				
Turn Bay Length (ft)											
Base Capacity (vph)	840	697	1156		1259	466	595				
Starvation Cap Reductn	0	0	597		605	187	0				
Spillback Cap Reductn	26	0	0		208	0	0				
Storage Cap Reductn	0	0	0		0	0	0				
Reduced v/c Ratio	1.03	0.92	0.89		1.39	1.03	0.79				

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.29			
Intersection Signal Delay: 89.7		Intersection LOS: F	
Intersection Capacity Utilization 63.9%		ICU Level of Service B	
Analysis Period (min) 15			
# 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: 9052: Charles River Dam & Nashua Street





Lane Group	EBL	EBT	NBR	NBR2	SBL2	SBL	SWR	ø1	ø2	ø3	ø9
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900				
Lane Width (ft)	12	12	12	12	12	12	11				
Storage Length (ft)	0		0			0	0				
Storage Lanes	1		3			2	1				
Total Lost Time (s)	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)	15		9	9	15	15	9				
Lane Util. Factor	0.95	0.95	0.76	1.00	1.00	0.95	1.00				
Frt			0.850				0.865				
Flt Protected	0.950	0.977			0.950	0.950					
Satd. Flow (prot)	1649	1605	3646	0	1805	1715	1528				
Flt Permitted	0.950	0.977			0.950	0.950					
Satd. Flow (perm)	1649	1605	3646	0	1805	1715	1528				
Right Turn on Red				Yes							
Satd. Flow (RTOR)			50								
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04				
Link Speed (mph)		30									
Link Distance (ft)		163									
Travel Time (s)		3.7									
Volume (vph)	584	222	1352	343	96	21	437				
Peak Hour Factor	0.80	0.86	0.88	0.86	0.92	0.55	0.85				
Heavy Vehicles (%)	4%	15%	1%	1%	0%	0%	4%				
Adj. Flow (vph)	730	258	1536	399	104	38	514				
Lane Group Flow (vph)	506	482	1935	0	73	69	514				
Turn Type	Split		custom		Prot	Prot	custom				
Protected Phases	3 9	3 9	6		5	5	7	1	2	3	9
Permitted Phases											
Detector Phases	3 9	3 9	6		5	5	7				
Minimum Initial (s)			20.0		10.0	10.0	10.0	8.0	20.0	10.0	2.0
Minimum Split (s)			26.0		15.0	15.0	16.0	19.0	31.0	24.0	8.0
Total Split (s)	39.0	39.0	40.0	0.0	21.0	21.0	30.0	21.0	40.0	30.0	9.0
Total Split (%)	39.0%	39.0%	40.0%	0.0%	21.0%	21.0%	30.0%	21%	40%	30%	9%
Maximum Green (s)			34.0		16.0	16.0	24.0	14.0	34.0	24.0	3.0
Yellow Time (s)			4.0		4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)			2.0		1.0	1.0	2.0	4.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	Lead		Lead	Lag		
Lead-Lag Optimize?											
Vehicle Extension (s)			2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode			C-Max		None	None	None	None	C-Max	None	None
Walk Time (s)								7.0	12.0	10.0	
Flash Dont Walk (s)								5.0	13.0	8.0	
Pedestrian Calls (#/hr)								0	0	0	
Act Effct Green (s)	35.0	35.0	44.6		11.4	11.4	26.0				
Actuated g/C Ratio	0.35	0.35	0.45		0.11	0.11	0.26				
v/c Ratio	0.88	0.86	1.17		0.36	0.35	1.29				
Control Delay	15.8	14.5	110.7		21.4	21.5	183.0				
Queue Delay	22.6	17.6	0.0		0.0	0.0	0.0				



Lane Group	EBL	EBT	NBR	NBR2	SBL2	SBL	SWR	ø1	ø2	ø3	ø9
Total Delay	38.3	32.2	110.7		21.4	21.5	183.0				
LOS	D	C	F		C	C	F				
Approach Delay		35.3									
Approach LOS		D									
90th %ile Green (s)			38.2		11.8	11.8	24.0	14.0	34.0	24.0	3.0
90th %ile Term Code			Coord		Gap	Gap	Max	Max	Coord	Max	Max
70th %ile Green (s)			40.0		10.0	10.0	24.0	14.0	34.0	24.0	3.0
70th %ile Term Code			Coord		Min	Min	Max	Max	Coord	Max	Max
50th %ile Green (s)			40.0		10.0	10.0	24.0	14.0	34.0	24.0	3.0
50th %ile Term Code			Coord		Min	Min	Max	Max	Coord	Max	Max
30th %ile Green (s)			40.0		10.0	10.0	24.0	14.0	34.0	24.0	3.0
30th %ile Term Code			Coord		Min	Min	Max	Max	Coord	Max	Max
10th %ile Green (s)			55.0		0.0	0.0	24.0	13.2	34.8	24.0	3.0
10th %ile Term Code			Coord		Skip	Skip	Max	Gap	Coord	Max	Max
Stops (vph)	128	123	1266		59	43	343				
Fuel Used(gal)	3	2	47		1	1	19				
CO Emissions (g/hr)	176	166	3302		52	38	1331				
NOx Emissions (g/hr)	34	32	643		10	7	259				
VOC Emissions (g/hr)	41	38	765		12	9	309				
Dilemma Vehicles (#)	0	0	0		0	0	0				
Queue Length 50th (ft)	37	35	~671		44	44	~421				
Queue Length 95th (ft)	m37	m36	#780		m49	23	#571				
Internal Link Dist (ft)		83									
Turn Bay Length (ft)											
Base Capacity (vph)	577	562	1655		307	292	397				
Starvation Cap Reductn	83	81	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	1.02	1.00	1.17		0.24	0.24	1.29				

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.29			
Intersection Signal Delay: 96.7		Intersection LOS: F	
Intersection Capacity Utilization 74.9%		ICU Level of Service D	
Analysis Period (min) 15			
~ 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: 9053: Charles River Dam & I-93 Ramp





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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		9	15	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	0.95
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	3400	0	0	0	0	3406
Flt Permitted	0.950					
Satd. Flow (perm)	3400	0	0	0	0	3406
Right Turn on Red	Yes	Yes		Yes		
Satd. Flow (RTOR)	275					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		30			30
Link Distance (ft)	211		206			903
Travel Time (s)	4.8		4.7			20.5
Volume (vph)	427	0	0	0	0	662
Peak Hour Factor	0.85	0.92	0.92	0.92	0.92	0.93
Heavy Vehicles (%)	3%	0%	0%	0%	0%	6%
Adj. Flow (vph)	502	0	0	0	0	712
Lane Group Flow (vph)	502	0	0	0	0	712
Turn Type						
Protected Phases	2					1
Permitted Phases						
Detector Phases	2					1
Minimum Initial (s)	15.0					15.0
Minimum Split (s)	20.0					20.0
Total Split (s)	23.0	0.0	0.0	0.0	0.0	27.0
Total Split (%)	46.0%	0.0%	0.0%	0.0%	0.0%	54.0%
Maximum Green (s)	18.0					22.0
Yellow Time (s)	4.0					4.0
All-Red Time (s)	1.0					1.0
Lead/Lag	Lag					Lead
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Walk Time (s)	7.0					7.0
Flash Dont Walk (s)	2.0					2.0
Pedestrian Calls (#/hr)	0					0
Act Effct Green (s)	16.0					26.0
Actuated g/C Ratio	0.32					0.52
v/c Ratio	0.39					0.40
Control Delay	6.9					9.4
Queue Delay	0.0					0.0
Total Delay	6.9					9.4
LOS	A					A
Approach Delay	6.9					9.4

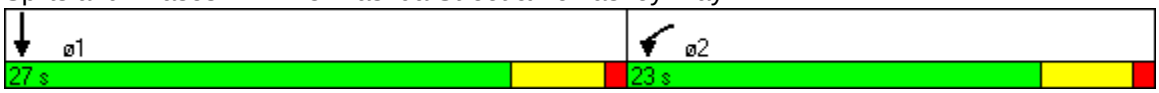


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach LOS	A					A
90th %ile Green (s)	15.0					25.0
90th %ile Term Code	Min					Coord
70th %ile Green (s)	15.0					25.0
70th %ile Term Code	Min					Coord
50th %ile Green (s)	15.0					25.0
50th %ile Term Code	Min					Coord
30th %ile Green (s)	15.0					25.0
30th %ile Term Code	Min					Coord
10th %ile Green (s)	15.0					25.0
10th %ile Term Code	Min					Coord
Stops (vph)	141					406
Fuel Used(gal)	2					8
CO Emissions (g/hr)	145					571
NOx Emissions (g/hr)	28					111
VOC Emissions (g/hr)	34					132
Dilemma Vehicles (#)	0					0
Queue Length 50th (ft)	24					86
Queue Length 95th (ft)	47					m91
Internal Link Dist (ft)	131		126			823
Turn Bay Length (ft)						
Base Capacity (vph)	1463					1771
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.34					0.40

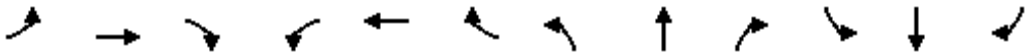
Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 50			
Offset: 0 (0%), Referenced to phase 1:SBT, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay: 8.3		Intersection LOS: A	
Intersection Capacity Utilization 37.5%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2248: Nashua Street & Lomasney Way



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	10	10	10	10	16	12	11	10	12	12	12
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
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor			0.86		1.00		0.95	0.97		0.95		
Frt			0.850			0.850		0.946				0.850
Flt Protected	0.950				0.994		0.950			0.950		
Satd. Flow (prot)	1554	1574	1463	0	3102	1743	1770	1626	0	1687	1787	1490
Flt Permitted	0.950				0.994		0.950			0.950		
Satd. Flow (perm)	1554	1574	1257	0	3093	1743	1687	1626	0	1611	1787	1490
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)			236									
Headway Factor	1.09	1.09	1.09	1.09	1.09	0.85	1.00	1.04	1.09	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		429			177			344			337	
Travel Time (s)		9.8			4.0			7.8			7.7	
Volume (vph)	40	216	208	48	387	314	137	128	58	301	311	261
Confl. Peds. (#/hr)			33	9		45	33		17	17		33
Peak Hour Factor	0.77	0.82	0.88	0.77	0.87	0.76	0.84	0.80	0.65	0.88	0.93	0.91
Heavy Vehicles (%)	3%	7%	3%	22%	6%	5%	2%	3%	5%	7%	1%	3%
Adj. Flow (vph)	52	263	236	62	445	413	163	160	89	342	334	287
Lane Group Flow (vph)	52	263	236	0	507	413	163	249	0	342	334	287
Turn Type	Split		Perm	Split		Over	Split			Split		Prot
Protected Phases	2	2		1	1	6	5	5		6	6	6
Permitted Phases			2									
Detector Phases	2	2	2	1	1	6	5	5		6	6	6
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		8.0	8.0	8.0
Minimum Split (s)	23.0	23.0	23.0	28.0	28.0	15.0	23.0	23.0		15.0	15.0	15.0
Total Split (s)	23.0	23.0	23.0	29.0	29.0	45.0	23.0	23.0	0.0	45.0	45.0	45.0
Total Split (%)	19.2%	19.2%	19.2%	24.2%	24.2%	37.5%	19.2%	19.2%	0.0%	37.5%	37.5%	37.5%
Maximum Green (s)	16.0	16.0	16.0	22.0	22.0	38.0	16.0	16.0		38.0	38.0	38.0
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)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Recall Mode	Ped	Ped	Ped	C-Max	C-Max	None	Ped	Ped		None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0				
Flash Dont Walk (s)	9.0	9.0	9.0	14.0	14.0		9.0	9.0				
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0				
Act Effct Green (s)	19.0	19.0	19.0		31.2	34.8	19.0	19.0		34.8	34.8	34.8
Actuated g/C Ratio	0.16	0.16	0.16		0.26	0.29	0.16	0.16		0.29	0.29	0.29
v/c Ratio	0.21	1.06	0.59		0.63	0.82	0.58	0.97		0.70	0.64	0.66
Control Delay	46.6	121.2	12.4		40.1	56.1	56.1	99.4		45.5	42.7	44.8
Queue Delay	0.0	0.0	0.0		0.2	7.5	0.0	0.0		0.0	0.0	0.0



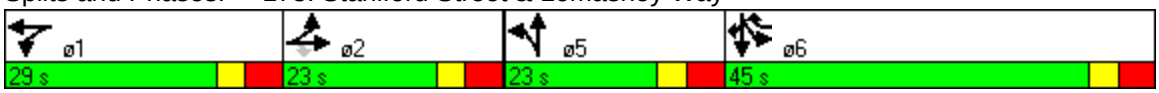
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	46.6	121.2	12.4		40.3	63.5	56.1	99.4		45.5	42.7	44.8
LOS	D	F	B		D	E	E	F		D	D	D
Approach Delay		67.6			50.8			82.3			44.3	
Approach LOS		E			D			F			D	
90th %ile Green (s)	16.0	16.0	16.0	22.0	22.0	38.0	16.0	16.0		38.0	38.0	38.0
90th %ile Term Code	Max	Max	Max	Coord	Coord	Max	Max	Max		Max	Max	Max
70th %ile Green (s)	16.0	16.0	16.0	25.8	25.8	34.2	16.0	16.0		34.2	34.2	34.2
70th %ile Term Code	Max	Max	Max	Coord	Coord	Gap	Max	Max		Gap	Gap	Gap
50th %ile Green (s)	16.0	16.0	16.0	26.1	26.1	33.9	16.0	16.0		33.9	33.9	33.9
50th %ile Term Code	Max	Max	Max	Coord	Coord	Gap	Max	Max		Gap	Gap	Gap
30th %ile Green (s)	16.0	16.0	16.0	30.1	30.1	29.9	16.0	16.0		29.9	29.9	29.9
30th %ile Term Code	Max	Max	Max	Coord	Coord	Gap	Max	Max		Gap	Gap	Gap
10th %ile Green (s)	16.0	16.0	16.0	36.9	36.9	23.1	16.0	16.0		23.1	23.1	23.1
10th %ile Term Code	Max	Max	Max	Coord	Coord	Gap	Max	Max		Gap	Gap	Gap
Stops (vph)	35	181	28		383	264	125	161		261	264	225
Fuel Used(gal)	1	7	1		6	5	3	5		5	5	4
CO Emissions (g/hr)	49	493	96		438	383	183	360		351	348	301
NOx Emissions (g/hr)	10	96	19		85	74	36	70		68	68	59
VOC Emissions (g/hr)	11	114	22		102	89	42	83		81	81	70
Dilemma Vehicles (#)	0	0	0		0	0	0	0		0	0	0
Queue Length 50th (ft)	37	~234	0		192	274	119	194		230	231	200
Queue Length 95th (ft)	66	#356	70		253	279	178	#297		309	320	288
Internal Link Dist (ft)		349			97			264			257	
Turn Bay Length (ft)												
Base Capacity (vph)	246	249	398		806	596	280	257		576	611	509
Starvation Cap Reductn	0	0	0		38	141	0	0		0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0		0	0	0
Reduced v/c Ratio	0.21	1.06	0.59		0.66	0.91	0.58	0.97		0.59	0.55	0.56

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 1:WBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.06			
Intersection Signal Delay: 56.4		Intersection LOS: E	
Intersection Capacity Utilization 74.2%		ICU Level of Service D	
Analysis Period (min) 15			

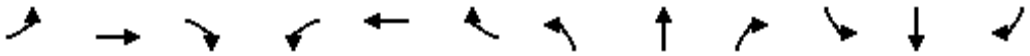
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 173: Staniford Street & Lomasney Way



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	12	12	11	10	12	12	12	10	8	11
Storage Length (ft)	140		0	0		140	0		0	0		0
Storage Lanes	1		0	0		1	0		1	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	4.0
Leading Detector (ft)	50	50			50	50			50	50		50
Trailing Detector (ft)	0	0			0	0			0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.87					0.66				0.73		
Frt						0.850			0.865			0.850
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1636	3171	0	0	3355	1409	0	0	1644	1652	0	1321
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1415	3171	0	0	3355	929	0	0	1644	1210	0	1321
Right Turn on Red			No			Yes			No			No
Satd. Flow (RTOR)						186						
Headway Factor	1.09	1.12	1.00	1.00	1.04	1.09	1.00	1.00	1.00	1.09	1.20	1.23
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		441			219			396			369	
Travel Time (s)		10.0			5.0			9.0			8.4	
Volume (vph)	266	505	0	0	621	175	0	0	7	284	0	315
Confl. Peds. (#/hr)	353					353				198		700
Peak Hour Factor	0.87	0.94	0.92	0.92	0.88	0.94	0.92	0.92	0.58	0.86	0.92	0.89
Heavy Vehicles (%)	3%	4%	0%	0%	4%	7%	0%	0%	0%	2%	0%	4%
Parking (#/hr)		2										4
Adj. Flow (vph)	306	537	0	0	706	186	0	0	12	330	0	354
Lane Group Flow (vph)	306	537	0	0	706	186	0	0	12	330	0	354
Turn Type	Prot					pm+ov			custom	Prot		Over
Protected Phases	3	2			6	4				4		3
Permitted Phases						6			1			
Detector Phases	3	2			6	4			1	4		3
Minimum Initial (s)	8.0	12.0			12.0	8.0			4.0	8.0		8.0
Minimum Split (s)	24.0	16.0			20.0	24.0			8.0	24.0		24.0
Total Split (s)	26.0	26.0	0.0	0.0	36.0	28.0	0.0	0.0	10.0	28.0	0.0	26.0
Total Split (%)	28.9%	28.9%	0.0%	0.0%	40.0%	31.1%	0.0%	0.0%	11.1%	31.1%	0.0%	28.9%
Maximum Green (s)	22.0	22.0			32.0	24.0			6.0	24.0		22.0
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	1.0			1.0	1.0		1.0
Lead/Lag	Lead	Lag				Lag			Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0			2.0	2.0			2.0	2.0		2.0
Recall Mode	None	C-Max			C-Max	None			None	None		None
Walk Time (s)	7.0				7.0	7.0				7.0		7.0
Flash Dont Walk (s)	13.0				9.0	13.0				13.0		13.0
Pedestrian Calls (#/hr)	0				0	0				0		0
Act Effct Green (s)	22.0	33.3			35.3	56.0			5.0	20.7		22.0
Actuated g/C Ratio	0.24	0.37			0.39	0.62			0.06	0.23		0.24



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.76	0.46			0.54	0.25			0.13	0.87		1.10
Control Delay	45.9	24.8			23.7	1.7			43.3	56.1		112.9
Queue Delay	0.0	0.0			0.0	0.0			0.0	0.0		0.0
Total Delay	45.9	24.8			23.7	1.7			43.3	56.1		112.9
LOS	D	C			C	A			D	E		F
Approach Delay		32.5			19.1							
Approach LOS		C			B							
90th %ile Green (s)	22.0	22.0			32.0	24.0			6.0	24.0		22.0
90th %ile Term Code	Max	Coord			Coord	Max			Max	Max		Max
70th %ile Green (s)	22.0	32.0			32.0	24.0			0.0	24.0		22.0
70th %ile Term Code	Max	Coord			Coord	Max			Skip	Max		Max
50th %ile Green (s)	22.0	33.8			33.8	22.2			0.0	22.2		22.0
50th %ile Term Code	Max	Coord			Coord	Gap			Skip	Gap		Max
30th %ile Green (s)	22.0	37.0			37.0	19.0			0.0	19.0		22.0
30th %ile Term Code	Max	Coord			Coord	Gap			Skip	Gap		Max
10th %ile Green (s)	22.0	41.8			41.8	14.2			0.0	14.2		22.0
10th %ile Term Code	Max	Coord			Coord	Gap			Skip	Gap		Max
Stops (vph)	234	381			467	10			8	259		256
Fuel Used(gal)	5	6			7	0			0	5		10
CO Emissions (g/hr)	328	447			464	29			9	384		668
NOx Emissions (g/hr)	64	87			90	6			2	75		130
VOC Emissions (g/hr)	76	104			107	7			2	89		155
Dilemma Vehicles (#)	0	0			0	0			0	0		0
Queue Length 50th (ft)	162	118			164	0			7	177		~230
Queue Length 95th (ft)	#269	203			221	20			15	#259		#393
Internal Link Dist (ft)		361			139			316			289	
Turn Bay Length (ft)	140					140						
Base Capacity (vph)	400	1174			1317	792			110	441		323
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	0.77	0.46			0.54	0.23			0.11	0.75		1.10

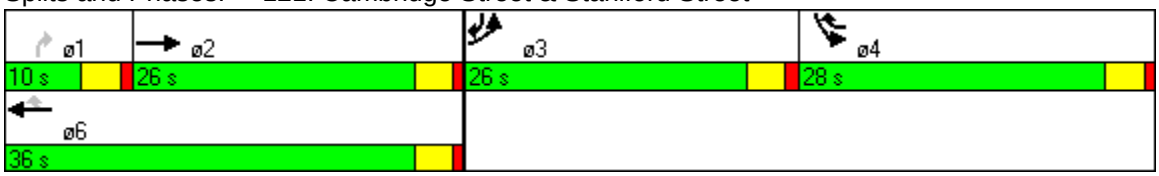
Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 7 (8%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 42.5 Intersection LOS: D
Intersection Capacity Utilization 57.6% ICU Level of Service B
Analysis Period (min) 15

~ 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: 121: Cambridge Street & Staniford Street



Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	10	12	12	12	10	10	16
Storage Length (ft)	0		0			0		0		0		75
Storage Lanes	0		1			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	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	15		9	15	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	0.91	0.91	0.91	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor		0.96	0.34		0.77		0.91			0.82		
Frt			0.850				0.977					0.850
Flt Protected		0.988			0.950		0.993			0.950		
Satd. Flow (prot)	0	1590	1289	0	1266	0	2864	0	0	1495	2944	1584
Flt Permitted		0.988			0.950		0.993			0.950		
Satd. Flow (perm)	0	1532	436	0	972	0	2688	0	0	1226	2944	1584
Right Turn on Red				Yes				Yes				No
Satd. Flow (RTOR)			18				18					
Headway Factor	1.14	1.14	1.14	1.14	1.25	1.25	1.14	1.14	1.14	1.25	1.25	0.97
Link Speed (mph)		30					30				30	
Link Distance (ft)		127					248				378	
Travel Time (s)		2.9					5.6				8.6	
Volume (vph)	50	172	35	10	240	28	341	77	92	324	287	108
Confl. Peds. (#/hr)	151		226	131	226	131		151	131	236		624
Peak Hour Factor	0.75	0.86	0.71	0.50	0.96	0.55	0.91	0.94	0.69	0.93	0.92	0.77
Heavy Vehicles (%)	7%	6%	18%	0%	9%	0%	2%	1%	0%	2%	3%	4%
Adj. Flow (vph)	67	200	49	20	250	51	375	82	133	348	312	140
Lane Group Flow (vph)	0	267	69	0	229	0	529	0	0	481	312	140
Turn Type	Split		Perm		Split	Split			Split	Split		pt+ov
Protected Phases	3	3			2	2	2		1	1	1	1 2
Permitted Phases			3									
Detector Phases	3	3	3		2	2	2		1	1	1	1 2
Minimum Initial (s)	8.0	8.0	8.0		8.0	8.0	8.0		7.0	7.0	7.0	
Minimum Split (s)	20.0	20.0	20.0		17.0	17.0	17.0		25.0	25.0	25.0	
Total Split (s)	21.0	21.0	21.0	0.0	26.0	26.0	26.0	0.0	29.0	29.0	29.0	55.0
Total Split (%)	21.0%	21.0%	21.0%	0.0%	26.0%	26.0%	26.0%	0.0%	29.0%	29.0%	29.0%	55.0%
Maximum Green (s)	15.0	15.0	15.0		20.0	20.0	20.0		23.0	23.0	23.0	
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)	3.0	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	
Lead/Lag	Lag	Lag	Lag		Lead	Lead	Lead					
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	
Recall Mode	None	None	None		None	None	None		C-Max	C-Max	C-Max	
Walk Time (s)	7.0	7.0	7.0						7.0	7.0	7.0	
Flash Dont Walk (s)	7.0	7.0	7.0						10.0	10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0						0	0	0	
Act Effct Green (s)		17.0	17.0		22.0		22.0			25.0	25.0	51.0
Actuated g/C Ratio		0.17	0.17		0.22		0.22			0.25	0.25	0.51
v/c Ratio		0.99	0.78		0.82		0.82			1.29	0.42	0.17

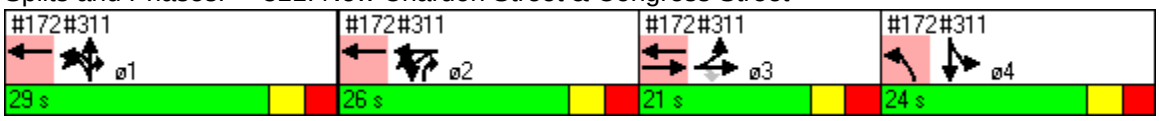


Lane Group	SBL	SBT	SBR	SBR2
Lane Configurations				
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width (ft)	11	11	11	16
Storage Length (ft)	0		0	
Storage Lanes	1		0	
Total Lost Time (s)	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		
Trailing Detector (ft)	0	0		
Turning Speed (mph)	15		9	9
Lane Util. Factor	1.00	0.95	0.95	0.95
Ped Bike Factor	0.70	0.86		
Frt		0.946		
Flt Protected	0.950			
Satd. Flow (prot)	1454	2427	0	0
Flt Permitted	0.950			
Satd. Flow (perm)	1020	2427	0	0
Right Turn on Red				Yes
Satd. Flow (RTOR)		36		
Headway Factor	1.19	1.19	1.19	0.97
Link Speed (mph)		30		
Link Distance (ft)		286		
Travel Time (s)		6.5		
Volume (vph)	150	262	42	70
Confl. Peds. (#/hr)	624		131	236
Peak Hour Factor	0.85	0.74	0.62	0.54
Heavy Vehicles (%)	8%	6%	0%	6%
Adj. Flow (vph)	176	354	68	130
Lane Group Flow (vph)	176	552	0	0
Turn Type	Split			
Protected Phases	4	4		
Permitted Phases				
Detector Phases	4	4		
Minimum Initial (s)	8.0	8.0		
Minimum Split (s)	22.0	22.0		
Total Split (s)	24.0	24.0	0.0	0.0
Total Split (%)	24.0%	24.0%	0.0%	0.0%
Maximum Green (s)	18.0	18.0		
Yellow Time (s)	3.0	3.0		
All-Red Time (s)	3.0	3.0		
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	2.0	2.0		
Recall Mode	None	None		
Walk Time (s)	7.0	7.0		
Flash Dont Walk (s)	8.0	8.0		
Pedestrian Calls (#/hr)	0	0		
Act Effct Green (s)	20.0	20.0		
Actuated g/C Ratio	0.20	0.20		
v/c Ratio	0.60	1.07		

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Control Delay		74.2	61.9		48.1		34.2			166.0	18.3	5.8
Queue Delay		9.0	0.0		8.9		11.2			0.0	0.0	0.0
Total Delay		83.3	61.9		57.0		45.4			166.0	18.3	5.8
LOS		F	E		E		D			F	B	A
Approach Delay		78.9					48.9				92.5	
Approach LOS		E					D				F	
90th %ile Green (s)	15.0	15.0	15.0		20.0	20.0	20.0		23.0	23.0	23.0	
90th %ile Term Code	Max	Max	Max		Max	Max	Max		Coord	Coord	Coord	
70th %ile Green (s)	15.0	15.0	15.0		20.0	20.0	20.0		23.0	23.0	23.0	
70th %ile Term Code	Max	Max	Max		Max	Max	Max		Coord	Coord	Coord	
50th %ile Green (s)	15.0	15.0	15.0		20.0	20.0	20.0		23.0	23.0	23.0	
50th %ile Term Code	Max	Max	Max		Max	Max	Max		Coord	Coord	Coord	
30th %ile Green (s)	15.0	15.0	15.0		20.0	20.0	20.0		23.0	23.0	23.0	
30th %ile Term Code	Max	Max	Max		Max	Max	Max		Coord	Coord	Coord	
10th %ile Green (s)	15.0	15.0	15.0		20.0	20.0	20.0		23.0	23.0	23.0	
10th %ile Term Code	Max	Max	Max		Max	Max	Max		Coord	Coord	Coord	
Stops (vph)		143	13		182		384			327	151	28
Fuel Used(gal)		4	1		4		6			17	3	1
CO Emissions (g/hr)		305	48		251		439			1192	192	42
NOx Emissions (g/hr)		59	9		49		85			232	37	8
VOC Emissions (g/hr)		71	11		58		102			276	45	10
Dilemma Vehicles (#)		0	0		0		0			0	0	0
Queue Length 50th (ft)		173	5		109		102			~406	28	15
Queue Length 95th (ft)		#310	#73		#286		#216			#567	m63	m21
Internal Link Dist (ft)		47					168				298	
Turn Bay Length (ft)												75
Base Capacity (vph)		270	89		279		644			374	736	808
Starvation Cap Reductn		9	0		30		98			0	0	0
Spillback Cap Reductn		0	0		0		2			0	0	0
Storage Cap Reductn		0	0		0		0			0	0	0
Reduced v/c Ratio		1.02	0.78		0.92		0.97			1.29	0.42	0.17

Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 60 (60%), Referenced to phase 1:WBT, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.29			
Intersection Signal Delay: 101.4		Intersection LOS: F	
Intersection Capacity Utilization 81.9%		ICU Level of Service D	
Analysis Period (min) 15			
~ 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: 311: New Chardon Street & Congress Street





Lane Group	SBL	SBT	SBR	SBR2
Control Delay	46.3	97.9		
Queue Delay	0.0	122.1		
Total Delay	46.3	219.9		
LOS	D	F		
Approach Delay		178.0		
Approach LOS		F		
90th %ile Green (s)	18.0	18.0		
90th %ile Term Code	Max	Max		
70th %ile Green (s)	18.0	18.0		
70th %ile Term Code	Max	Max		
50th %ile Green (s)	18.0	18.0		
50th %ile Term Code	Max	Max		
30th %ile Green (s)	18.0	18.0		
30th %ile Term Code	Max	Max		
10th %ile Green (s)	18.0	18.0		
10th %ile Term Code	Max	Max		
Stops (vph)	136	299		
Fuel Used(gal)	3	10		
CO Emissions (g/hr)	175	695		
NOx Emissions (g/hr)	34	135		
VOC Emissions (g/hr)	41	161		
Dilemma Vehicles (#)	0	0		
Queue Length 50th (ft)	103	~196		
Queue Length 95th (ft)	164	#217		
Internal Link Dist (ft)		206		
Turn Bay Length (ft)				
Base Capacity (vph)	291	514		
Starvation Cap Reductn	0	0		
Spillback Cap Reductn	0	108		
Storage Cap Reductn	0	0		
Reduced v/c Ratio	0.60	1.36		

Intersection Summary

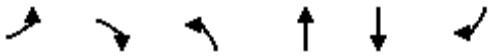
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø1	ø2
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	11	11		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		
Leading Detector (ft)	50			50	50			
Trailing Detector (ft)	0			0	0			
Turning Speed (mph)		9	15		15	9		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00		
Ped Bike Factor					0.76			
Frt					0.904			
Flt Protected					0.986			
Satd. Flow (prot)	3008	0	0	3185	1117	0		
Flt Permitted					0.986			
Satd. Flow (perm)	3008	0	0	3185	1117	0		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)					94			
Headway Factor	1.14	1.14	1.14	1.14	1.19	1.19		
Link Speed (mph)	30			30	30			
Link Distance (ft)	342			127	116			
Travel Time (s)	7.8			2.9	2.6			
Volume (vph)	199	0	0	734	16	68		
Confl. Peds. (#/hr)						236		
Peak Hour Factor	0.89	0.92	0.92	0.92	0.42	0.72		
Heavy Vehicles (%)	8%	0%	0%	2%	0%	0%		
Adj. Flow (vph)	224	0	0	798	38	94		
Lane Group Flow (vph)	224	0	0	798	132	0		
Turn Type								
Protected Phases	3			1 2 3	4		1	2
Permitted Phases								
Detector Phases	3			1 2 3	4			
Minimum Initial (s)	8.0				8.0		7.0	8.0
Minimum Split (s)	20.0				22.0		25.0	17.0
Total Split (s)	21.0	0.0	0.0	76.0	24.0	0.0	29.0	26.0
Total Split (%)	21.0%	0.0%	0.0%	76.0%	24.0%	0.0%	29%	26%
Maximum Green (s)	15.0				18.0		23.0	20.0
Yellow Time (s)	3.0				3.0		3.0	3.0
All-Red Time (s)	3.0				3.0		3.0	3.0
Lead/Lag	Lag							Lead
Lead-Lag Optimize?								
Vehicle Extension (s)	2.0				2.0		2.0	2.0
Recall Mode	None				None		C-Max	None
Walk Time (s)	7.0				7.0		7.0	
Flash Dont Walk (s)	7.0				8.0		10.0	
Pedestrian Calls (#/hr)	0				0		0	
Act Effct Green (s)	17.0			72.0	20.0			
Actuated g/C Ratio	0.17			0.72	0.20			
v/c Ratio	0.44			0.35	0.44			
Control Delay	40.3			2.1	17.5			
Queue Delay	0.2			41.0	3.8			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø1	ø2
Total Delay	40.6			43.1	21.4			
LOS	D			D	C			
Approach Delay	40.6			43.1	21.4			
Approach LOS	D			D	C			
90th %ile Green (s)	15.0				18.0		23.0	20.0
90th %ile Term Code	Max				Max		Coord	Max
70th %ile Green (s)	15.0				18.0		23.0	20.0
70th %ile Term Code	Max				Max		Coord	Max
50th %ile Green (s)	15.0				18.0		23.0	20.0
50th %ile Term Code	Max				Max		Coord	Max
30th %ile Green (s)	15.0				18.0		23.0	20.0
30th %ile Term Code	Max				Max		Coord	Max
10th %ile Green (s)	15.0				18.0		23.0	20.0
10th %ile Term Code	Max				Max		Coord	Max
Stops (vph)	174			111	27			
Fuel Used(gal)	3			2	1			
CO Emissions (g/hr)	218			116	37			
NOx Emissions (g/hr)	43			22	7			
VOC Emissions (g/hr)	51			27	8			
Dilemma Vehicles (#)	0			0	0			
Queue Length 50th (ft)	67			40	20			
Queue Length 95th (ft)	104			m40	5			
Internal Link Dist (ft)	262			47	36			
Turn Bay Length (ft)								
Base Capacity (vph)	511			2293	299			
Starvation Cap Reductn	0			1549	0			
Spillback Cap Reductn	44			0	101			
Storage Cap Reductn	0			0	0			
Reduced v/c Ratio	0.48			1.07	0.67			

Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 60 (60%), Referenced to phase 1:WBT, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.29			
Intersection Signal Delay: 40.1		Intersection LOS: D	
Intersection Capacity Utilization 41.7%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 172: New Chardon Street & Garage





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	10	0	501	844	7
Peak Hour Factor	0.92	0.63	0.92	0.88	0.94	0.58
Hourly flow rate (vph)	0	16	0	569	898	12
Pedestrians					132	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					11	
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				337		
pX, platoon unblocked						
vC, conflicting volume	1321	455	910			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1321	455	910			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	100			
cM capacity (veh/h)	134	558	757			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	16	285	285	599	311
Volume Left	0	0	0	0	0
Volume Right	16	0	0	0	12
cSH	558	1700	1700	1700	1700
Volume to Capacity	0.03	0.17	0.17	0.35	0.18
Queue Length 95th (ft)	2	0	0	0	0
Control Delay (s)	11.6	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	11.6	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	555	3	0	427	0	48
Peak Hour Factor	0.86	0.75	0.92	0.92	0.92	0.65
Hourly flow rate (vph)	645	4	0	464	0	74
Pedestrians				5	18	
Lane Width (ft)				12.0	16.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	2	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			667		897	348
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			667		897	348
tC, single (s)			4.1		6.8	7.5
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.6
p0 queue free %			100		100	87
cM capacity (veh/h)			913		277	558

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NW 1
Volume Total	430	219	232	232	74
Volume Left	0	0	0	0	0
Volume Right	0	4	0	0	74
cSH	1700	1700	1700	1700	558
Volume to Capacity	0.25	0.13	0.14	0.14	0.13
Queue Length 95th (ft)	0	0	0	0	11
Control Delay (s)	0.0	0.0	0.0	0.0	12.4
Lane LOS					B
Approach Delay (s)	0.0		0.0		12.4
Approach LOS					B

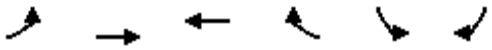
Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	410	206	51	799	0	0
Peak Hour Factor	0.85	0.94	0.75	0.98	0.92	0.92
Hourly flow rate (vph)	482	219	68	815	0	0
Pedestrians					255	
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)	178			550		
pX, platoon unblocked						
vC, conflicting volume			957		1391	606
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			957		1391	606
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			90		100	100
cM capacity (veh/h)			708		123	445

Direction, Lane #	EB 1	EB 2	WB 1	WB 2
Volume Total	322	380	340	544
Volume Left	0	0	68	0
Volume Right	0	219	0	0
cSH	1700	1700	708	1700
Volume to Capacity	0.19	0.22	0.10	0.32
Queue Length 95th (ft)	0	0	8	0
Control Delay (s)	0.0	0.0	3.1	0.0
Lane LOS			A	
Approach Delay (s)	0.0		1.2	
Approach LOS				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	39	371	807	31	18	48
Peak Hour Factor	0.68	0.85	0.98	0.83	0.40	0.60
Hourly flow rate (vph)	57	436	823	37	45	80
Pedestrians		38	43		216	
Lane Width (ft)		11.0	11.0		10.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		3	3		15	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		271	457			
pX, platoon unblocked						
vC, conflicting volume	1077				1434	684
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1077				1434	684
tC, single (s)	4.2				6.8	7.1
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	89				51	74
cM capacity (veh/h)	532				91	304

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	203	291	549	312	125
Volume Left	57	0	0	0	45
Volume Right	0	0	0	37	80
cSH	532	1700	1700	1700	166
Volume to Capacity	0.11	0.17	0.32	0.18	0.76
Queue Length 95th (ft)	9	0	0	0	119
Control Delay (s)	4.6	0.0	0.0	0.0	73.8
Lane LOS	A				F
Approach Delay (s)	1.9		0.0		73.8
Approach LOS					F

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBT	EBR2	WBT	SBL2	SBT	SBR	NWL	ø5	ø6	ø7	ø9
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900				
Lane Width (ft)	11	12	10	11	11	14	12				
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Leading Detector (ft)	50	50	50	50	50	50	50				
Trailing Detector (ft)	0	0	0	0	0	0	0				
Turning Speed (mph)		9		15		9	15				
Lane Util. Factor	0.95	1.00	0.95	0.95	0.95	1.00	0.97				
Ped Bike Factor					1.00	0.85	0.39				
Frt		0.850				0.850					
Flt Protected					0.998		0.950				
Satd. Flow (prot)	3323	1599	3303	0	3469	1566	3502				
Flt Permitted					0.998		0.950				
Satd. Flow (perm)	3323	1599	3303	0	3464	1334	1354				
Right Turn on Red		Yes				No					
Satd. Flow (RTOR)		372									
Headway Factor	1.04	1.00	1.09	1.04	1.04	0.92	1.00				
Link Speed (mph)	30		30		30		30				
Link Distance (ft)	406		163		238		175				
Travel Time (s)	9.2		3.7		5.4		4.0				
Volume (vph)	757	423	415	21	869	300	389				
Confl. Peds. (#/hr)		8		33		116	256				
Peak Hour Factor	0.91	0.88	0.91	0.60	0.93	0.91	0.90				
Heavy Vehicles (%)	5%	1%	2%	11%	0%	10%	0%				
Adj. Flow (vph)	832	481	456	35	934	330	432				
Lane Group Flow (vph)	832	481	456	0	969	330	432				
Turn Type		Prot		Split		Perm					
Protected Phases	3	3	7 9	2	2		1	5	6	7	9
Permitted Phases						2					
Detector Phases	3	3	7 9	2	2	2	1				
Minimum Initial (s)	10.0	10.0		20.0	20.0	20.0	8.0	10.0	20.0	10.0	2.0
Minimum Split (s)	24.0	24.0		31.0	31.0	31.0	19.0	15.0	26.0	16.0	8.0
Total Split (s)	30.0	30.0	39.0	40.0	40.0	40.0	21.0	21.0	40.0	30.0	9.0
Total Split (%)	30.0%	30.0%	39.0%	40.0%	40.0%	40.0%	21.0%	21%	40%	30%	9%
Maximum Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	16.0	34.0	24.0	3.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	4.0	1.0	2.0	2.0	2.0
Lead/Lag				Lag	Lag	Lag	Lead	Lead	Lag		
Lead-Lag Optimize?											
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None		C-Max	C-Max	C-Max	None	None	C-Max	None	None
Walk Time (s)	10.0	10.0		12.0	12.0	12.0	7.0				
Flash Dont Walk (s)	8.0	8.0		13.0	13.0	13.0	5.0				
Pedestrian Calls (#/hr)	0	0		0	0	0	0				
Act Effct Green (s)	26.0	26.0	35.0		36.4	36.4	16.6				
Actuated g/C Ratio	0.26	0.26	0.35		0.36	0.36	0.17				
v/c Ratio	0.96	0.70	0.39		0.77	0.68	0.74				
Control Delay	60.3	14.0	0.1		26.6	27.6	48.3				
Queue Delay	1.7	0.0	3.4		169.0	50.8	0.0				



Lane Group	EBT	EBR2	WBT	SBL2	SBT	SBR	NWL	ø5	ø6	ø7	ø9
Total Delay	62.0	14.0	3.5		195.6	78.4	48.3				
LOS	E	B	A		F	E	D				
Approach Delay	44.4		3.5		165.8		48.3				
Approach LOS	D		A		F		D				
90th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	16.0	34.0	24.0	3.0
90th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Max	Coord	Max	Max
70th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	16.0	34.0	24.0	3.0
70th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Max	Coord	Max	Max
50th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	16.0	34.0	24.0	3.0
50th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Max	Coord	Max	Max
30th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	13.7	36.3	24.0	3.0
30th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Gap	Coord	Max	Max
10th %ile Green (s)	24.0	24.0		36.1	36.1	36.1	11.9	10.0	40.0	24.0	3.0
10th %ile Term Code	Max	Max		Coord	Coord	Coord	Gap	Min	Coord	Max	Max
Stops (vph)	674	109	0		715	235	362				
Fuel Used(gal)	15	3	1		10	4	6				
CO Emissions (g/hr)	1077	220	37		729	247	444				
NOx Emissions (g/hr)	210	43	7		142	48	86				
VOC Emissions (g/hr)	250	51	9		169	57	103				
Dilemma Vehicles (#)	0	0	0		0	0	0				
Queue Length 50th (ft)	275	55	0		262	167	136				
Queue Length 95th (ft)	#402	159	m0		m294	m195	188				
Internal Link Dist (ft)	326		83		158		95				
Turn Bay Length (ft)											
Base Capacity (vph)	864	691	1156		1264	486	595				
Starvation Cap Reductn	0	0	587		558	181	0				
Spillback Cap Reductn	10	0	0		0	0	0				
Storage Cap Reductn	0	0	0		0	0	0				
Reduced v/c Ratio	0.97	0.70	0.80		1.37	1.08	0.73				

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay: 84.6		Intersection LOS: F	
Intersection Capacity Utilization 66.7%		ICU Level of Service C	
Analysis Period (min) 15			
# 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: 9052: Charles River Dam & Nashua Street





Lane Group	EBL	EBT	NBR	NBR2	SBL2	SBL	SWR	ø1	ø2	ø3	ø9
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900				
Lane Width (ft)	12	12	12	12	12	12	11				
Storage Length (ft)	0		0			0	0				
Storage Lanes	1		3			2	1				
Total Lost Time (s)	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)	15		9	9	15	15	9				
Lane Util. Factor	0.95	0.95	0.76	1.00	1.00	0.95	1.00				
Ped Bike Factor	1.00	1.00			1.00	1.00					
Frt			0.850				0.865				
Flt Protected	0.950	0.982			0.950	0.950					
Satd. Flow (prot)	1665	1630	3682	0	1770	1681	1542				
Flt Permitted	0.950	0.982			0.950	0.950					
Satd. Flow (perm)	1663	1630	3682	0	1766	1675	1542				
Right Turn on Red				Yes							
Satd. Flow (RTOR)			24								
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04				
Link Speed (mph)		30									
Link Distance (ft)		163									
Travel Time (s)		3.7									
Volume (vph)	528	249	1275	177	254	56	415				
Confl. Peds. (#/hr)	1		1	1	1	1					
Peak Hour Factor	0.85	0.88	0.90	0.84	0.80	0.66	0.90				
Heavy Vehicles (%)	3%	12%	0%	0%	2%	2%	3%				
Adj. Flow (vph)	621	283	1417	211	318	85	461				
Lane Group Flow (vph)	459	445	1628	0	207	196	461				
Turn Type	Split		custom		Prot	Prot	custom				
Protected Phases	3 9	3 9	6		5	5	7	1	2	3	9
Permitted Phases											
Detector Phases	3 9	3 9	6		5	5	7				
Minimum Initial (s)			20.0		10.0	10.0	10.0	8.0	20.0	10.0	2.0
Minimum Split (s)			26.0		15.0	15.0	16.0	19.0	31.0	24.0	8.0
Total Split (s)	39.0	39.0	40.0	0.0	21.0	21.0	30.0	21.0	40.0	30.0	9.0
Total Split (%)	39.0%	39.0%	40.0%	0.0%	21.0%	21.0%	30.0%	21%	40%	30%	9%
Maximum Green (s)			34.0		16.0	16.0	24.0	14.0	34.0	24.0	3.0
Yellow Time (s)			4.0		4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)			2.0		1.0	1.0	2.0	4.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	Lead		Lead	Lag		
Lead-Lag Optimize?											
Vehicle Extension (s)			2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode			C-Max		None	None	None	None	C-Max	None	None
Walk Time (s)								7.0	12.0	10.0	
Flash Dont Walk (s)								5.0	13.0	8.0	
Pedestrian Calls (#/hr)								0	0	0	
Act Effct Green (s)	35.0	35.0	37.7		15.3	15.3	26.0				
Actuated g/C Ratio	0.35	0.35	0.38		0.15	0.15	0.26				
v/c Ratio	0.79	0.78	1.16		0.76	0.76	1.15				



Lane Group	EBL	EBT	NBR	NBR2	SBL2	SBL	SWR	ø1	ø2	ø3	ø9
Control Delay	8.9	8.7	111.2		70.5	71.1	127.8				
Queue Delay	7.0	6.4	0.0		17.0	11.8	0.0				
Total Delay	15.9	15.1	111.2		87.5	82.8	127.8				
LOS	B	B	F		F	F	F				
Approach Delay		15.5									
Approach LOS		B									
90th %ile Green (s)			34.0		16.0	16.0	24.0	14.0	34.0	24.0	3.0
90th %ile Term Code			Coord		Max	Max	Max	Max	Coord	Max	Max
70th %ile Green (s)			34.0		16.0	16.0	24.0	14.0	34.0	24.0	3.0
70th %ile Term Code			Coord		Max	Max	Max	Max	Coord	Max	Max
50th %ile Green (s)			34.0		16.0	16.0	24.0	14.0	34.0	24.0	3.0
50th %ile Term Code			Coord		Max	Max	Max	Max	Coord	Max	Max
30th %ile Green (s)			36.3		13.7	13.7	24.0	14.0	34.0	24.0	3.0
30th %ile Term Code			Coord		Gap	Gap	Max	Max	Coord	Max	Max
10th %ile Green (s)			40.0		10.0	10.0	24.0	11.9	36.1	24.0	3.0
10th %ile Term Code			Coord		Min	Min	Max	Gap	Coord	Max	Max
Stops (vph)	59	59	1169		160	141	340				
Fuel Used(gal)	2	2	41		4	3	14				
CO Emissions (g/hr)	107	105	2874		250	220	944				
NOx Emissions (g/hr)	21	20	559		49	43	184				
VOC Emissions (g/hr)	25	24	666		58	51	219				
Dilemma Vehicles (#)	0	0	0		0	0	0				
Queue Length 50th (ft)	21	20	~559		137	135	~348				
Queue Length 95th (ft)	m22	m21	#675		m187	154	#541				
Internal Link Dist (ft)		83									
Turn Bay Length (ft)											
Base Capacity (vph)	583	571	1402		301	286	401				
Starvation Cap Reductn	87	85	0		80	67	0				
Spillback Cap Reductn	0	0	0		0	0	0				
Storage Cap Reductn	0	0	0		0	0	0				
Reduced v/c Ratio	0.93	0.92	1.16		0.94	0.89	1.15				

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.16
Intersection Signal Delay: 84.9 Intersection LOS: F
Intersection Capacity Utilization 73.7% ICU Level of Service D
Analysis Period (min) 15

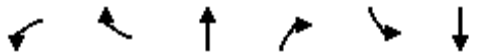
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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: 9053: Charles River Dam & I-93 Ramp





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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		9	15	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	0.95
Ped Bike Factor	0.98					
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	3467	0	0	0	0	3438
Flt Permitted	0.950					
Satd. Flow (perm)	3393	0	0	0	0	3438
Right Turn on Red	Yes	Yes		Yes		
Satd. Flow (RTOR)	438					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		30			30
Link Distance (ft)	184		160			918
Travel Time (s)	4.2		3.6			20.9
Volume (vph)	290	0	0	0	0	578
Confl. Peds. (#/hr)	10					
Peak Hour Factor	0.93	0.92	0.92	0.92	0.92	0.94
Heavy Vehicles (%)	1%	0%	0%	0%	0%	5%
Adj. Flow (vph)	312	0	0	0	0	615
Lane Group Flow (vph)	312	0	0	0	0	615
Turn Type						
Protected Phases	5					1
Permitted Phases						
Detector Phases	5					1
Minimum Initial (s)	8.0					8.0
Minimum Split (s)	18.0					18.0
Total Split (s)	45.0	0.0	0.0	0.0	0.0	55.0
Total Split (%)	45.0%	0.0%	0.0%	0.0%	0.0%	55.0%
Maximum Green (s)	41.0					51.0
Yellow Time (s)	3.0					3.0
All-Red Time (s)	1.0					1.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0					2.0
Recall Mode	Ped					C-Max
Walk Time (s)	8.0					8.0
Flash Dont Walk (s)	6.0					6.0
Pedestrian Calls (#/hr)	0					0
Act Effct Green (s)	14.0					78.0
Actuated g/C Ratio	0.14					0.78
v/c Ratio	0.36					0.23
Control Delay	1.4					5.3
Queue Delay	0.0					0.0
Total Delay	1.4					5.3

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	A					A
Approach Delay	1.4					5.3
Approach LOS	A					A
90th %ile Green (s)	14.0					78.0
90th %ile Term Code	Ped					Coord
70th %ile Green (s)	14.0					78.0
70th %ile Term Code	Ped					Coord
50th %ile Green (s)	14.0					78.0
50th %ile Term Code	Ped					Coord
30th %ile Green (s)	14.0					78.0
30th %ile Term Code	Ped					Coord
10th %ile Green (s)	14.0					78.0
10th %ile Term Code	Ped					Coord
Stops (vph)	2					242
Fuel Used(gal)	1					6
CO Emissions (g/hr)	36					426
NOx Emissions (g/hr)	7					83
VOC Emissions (g/hr)	8					99
Dilemma Vehicles (#)	0					0
Queue Length 50th (ft)	0					81
Queue Length 95th (ft)	0					m76
Internal Link Dist (ft)	104		80			838
Turn Bay Length (ft)						
Base Capacity (vph)	1680					2682
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.19					0.23

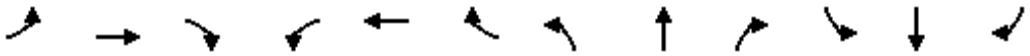
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 10 (10%), Referenced to phase 1:SBT, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 4.0		Intersection LOS: A	
Intersection Capacity Utilization 30.9%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2248: Nashua Street & Lomasney Way



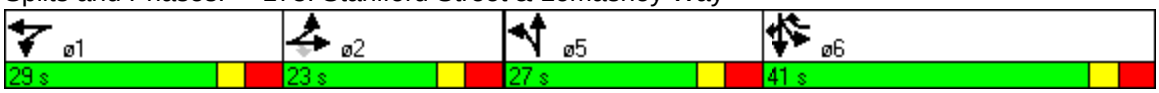
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	16	12	11	10	12	12	12
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor	0.80		0.48		0.95		0.82	0.96		0.91		
Frt			0.850			0.850		0.960				0.850
Flt Protected	0.950				0.992		0.950			0.950		
Satd. Flow (prot)	1524	1636	1478	0	3065	1679	1805	1630	0	1671	1787	1504
Flt Permitted	0.950				0.992		0.950			0.950		
Satd. Flow (perm)	1218	1636	715	0	2910	1679	1488	1630	0	1517	1787	1504
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)			373									
Headway Factor	1.09	1.09	1.09	1.09	1.09	0.85	1.00	1.04	1.09	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		301			188			403			389	
Travel Time (s)		6.8			4.3			9.2			8.8	
Volume (vph)	128	342	339	81	387	337	104	169	52	217	396	214
Confl. Peds. (#/hr)	566		142	142		566	175		59	59		175
Peak Hour Factor	0.78	0.92	0.91	0.87	0.84	0.85	0.79	0.88	0.75	0.77	0.92	0.91
Heavy Vehicles (%)	5%	3%	2%	39%	3%	9%	0%	2%	10%	8%	1%	2%
Adj. Flow (vph)	164	372	373	93	461	396	132	192	69	282	430	235
Lane Group Flow (vph)	164	372	373	0	554	396	132	261	0	282	430	235
Turn Type	Split		Perm	Split		Over	Split			Split		Prot
Protected Phases	2	2		1	1	6	5	5		6	6	6
Permitted Phases			2									
Detector Phases	2	2	2	1	1	6	5	5		6	6	6
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		8.0	8.0	8.0
Minimum Split (s)	23.0	23.0	23.0	28.0	28.0	15.0	23.0	23.0		15.0	15.0	15.0
Total Split (s)	23.0	23.0	23.0	29.0	29.0	41.0	27.0	27.0	0.0	41.0	41.0	41.0
Total Split (%)	19.2%	19.2%	19.2%	24.2%	24.2%	34.2%	22.5%	22.5%	0.0%	34.2%	34.2%	34.2%
Maximum Green (s)	16.0	16.0	16.0	22.0	22.0	34.0	20.0	20.0		34.0	34.0	34.0
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)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Recall Mode	Ped	Ped	Ped	C-Max	C-Max	None	Ped	Ped		None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0				
Flash Dont Walk (s)	9.0	9.0	9.0	14.0	14.0		9.0	9.0				
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0				
Act Effct Green (s)	19.0	19.0	19.0		27.9	34.8	22.2	22.2		34.8	34.8	34.8
Actuated g/C Ratio	0.16	0.16	0.16		0.23	0.29	0.18	0.18		0.29	0.29	0.29
v/c Ratio	0.68	1.44	0.87		0.78	0.81	0.39	0.86		0.58	0.83	0.54
Control Delay	63.0	254.2	26.8		41.1	50.0	46.6	74.4		41.3	54.1	40.4
Queue Delay	0.0	0.0	0.0		0.0	5.0	0.0	0.0		0.0	0.0	0.0

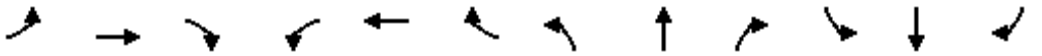


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	63.0	254.2	26.8		41.1	54.9	46.6	74.4		41.3	54.1	40.4
LOS	E	F	C		D	D	D	E		D	D	D
Approach Delay		126.4			46.9			65.1			46.9	
Approach LOS		F			D			E			D	
90th %ile Green (s)	16.0	16.0	16.0	22.0	22.0	34.0	20.0	20.0		34.0	34.0	34.0
90th %ile Term Code	Max	Max	Max	Coord	Coord	Max	Max	Max		Max	Max	Max
70th %ile Green (s)	16.0	16.0	16.0	22.0	22.0	34.0	20.0	20.0		34.0	34.0	34.0
70th %ile Term Code	Max	Max	Max	Coord	Coord	Max	Max	Max		Max	Max	Max
50th %ile Green (s)	16.0	16.0	16.0	22.0	22.0	34.0	20.0	20.0		34.0	34.0	34.0
50th %ile Term Code	Max	Max	Max	Coord	Coord	Max	Max	Max		Max	Max	Max
30th %ile Green (s)	16.0	16.0	16.0	22.9	22.9	33.1	20.0	20.0		33.1	33.1	33.1
30th %ile Term Code	Max	Max	Max	Coord	Coord	Gap	Max	Max		Gap	Gap	Gap
10th %ile Green (s)	16.0	16.0	16.0	35.8	35.8	24.0	16.2	16.2		24.0	24.0	24.0
10th %ile Term Code	Max	Max	Max	Coord	Coord	Gap	Gap	Gap		Gap	Gap	Gap
Stops (vph)	119	255	35		434	249	89	202		181	357	176
Fuel Used(gal)	3	20	3		7	5	2	5		3	8	3
CO Emissions (g/hr)	182	1392	199		489	370	126	361		243	527	237
NOx Emissions (g/hr)	35	271	39		95	72	25	70		47	103	46
VOC Emissions (g/hr)	42	323	46		113	86	29	84		56	122	55
Dilemma Vehicles (#)	0	0	0		0	0	0	0		0	0	0
Queue Length 50th (ft)	127	~411	0		231	203	90	196		181	318	156
Queue Length 95th (ft)	176	#613	#189		#275	310	131	#325		222	#457	243
Internal Link Dist (ft)		221			108			323			309	
Turn Bay Length (ft)												
Base Capacity (vph)	241	259	427		714	518	346	312		515	551	464
Starvation Cap Reductn	0	0	0		0	72	0	0		0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0		0	0	0
Reduced v/c Ratio	0.68	1.44	0.87		0.78	0.89	0.38	0.84		0.55	0.78	0.51

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 1:WBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.44			
Intersection Signal Delay: 71.7		Intersection LOS: E	
Intersection Capacity Utilization 81.8%		ICU Level of Service D	
Analysis Period (min) 15			
~ 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: 173: Staniford Street & Lomasney Way





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	12	12	11	10	12	12	12	10	8	11
Storage Length (ft)	140		0	0		140	0		0	0		0
Storage Lanes	1		0	0		1	0		1	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	4.0
Leading Detector (ft)	50	50			50	50			50	50		50
Trailing Detector (ft)	0	0			0	0			0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.86					0.60				0.72		
Frt						0.850			0.865			0.850
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1685	3202	0	0	3421	1422	0	0	1644	1668	0	1347
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1446	3202	0	0	3421	853	0	0	1644	1198	0	1347
Right Turn on Red			No			Yes			No			No
Satd. Flow (RTOR)						113						
Headway Factor	1.09	1.12	1.00	1.00	1.04	1.09	1.00	1.00	1.00	1.09	1.20	1.23
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		441			219			396			369	
Travel Time (s)		10.0			5.0			9.0			8.4	
Volume (vph)	347	512	0	0	655	185	0	0	1	308	0	279
Confl. Peds. (#/hr)	520					520			188	188		300
Peak Hour Factor	0.88	0.92	0.92	0.92	0.81	0.83	0.92	0.92	0.25	0.90	0.92	0.98
Heavy Vehicles (%)	0%	3%	0%	0%	2%	6%	0%	0%	0%	1%	0%	2%
Parking (#/hr)		2										4
Adj. Flow (vph)	394	557	0	0	809	223	0	0	4	342	0	285
Lane Group Flow (vph)	394	557	0	0	809	223	0	0	4	342	0	285
Turn Type	Prot					pm+ov			custom	Prot		Over
Protected Phases	3	2			6	4			1	4		3
Permitted Phases						6						
Detector Phases	3	2			6	4			1	4		3
Minimum Initial (s)	8.0	12.0			12.0	8.0			4.0	8.0		8.0
Minimum Split (s)	24.0	16.0			20.0	24.0			8.0	24.0		24.0
Total Split (s)	27.0	32.0	0.0	0.0	44.0	29.0	0.0	0.0	12.0	29.0	0.0	27.0
Total Split (%)	27.0%	32.0%	0.0%	0.0%	44.0%	29.0%	0.0%	0.0%	12.0%	29.0%	0.0%	27.0%
Maximum Green (s)	23.0	28.0			40.0	25.0			8.0	25.0		23.0
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	1.0			1.0	1.0		1.0
Lead/Lag	Lead	Lag				Lag			Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0			2.0	2.0			2.0	2.0		2.0
Recall Mode	None	C-Max			C-Max	None			None	None		None
Walk Time (s)	7.0				7.0	7.0				7.0		7.0
Flash Dont Walk (s)	13.0				9.0	13.0				13.0		13.0
Pedestrian Calls (#/hr)	0				0	0				0		0
Act Effct Green (s)	23.0	40.4			42.3	65.0			4.8	22.7		23.0
Actuated g/C Ratio	0.23	0.40			0.42	0.65			0.05	0.23		0.23

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	1.02	0.43			0.56	0.31			0.05	0.90		0.92
Control Delay	89.3	24.1			24.2	3.9			46.0	65.4		73.5
Queue Delay	0.0	0.0			0.0	0.0			0.0	0.0		0.0
Total Delay	89.3	24.1			24.2	3.9			46.0	65.4		73.5
LOS	F	C			C	A			D	E		E
Approach Delay		51.2			19.8							
Approach LOS		D			B							
90th %ile Green (s)	23.0	30.4			40.0	25.0			5.6	25.0		23.0
90th %ile Term Code	Max	Coord			Coord	Max			Gap	Max		Max
70th %ile Green (s)	23.0	40.0			40.0	25.0			0.0	25.0		23.0
70th %ile Term Code	Max	Coord			Coord	Max			Skip	Max		Max
50th %ile Green (s)	23.0	40.0			40.0	25.0			0.0	25.0		23.0
50th %ile Term Code	Max	Coord			Coord	Max			Skip	Max		Max
30th %ile Green (s)	23.0	43.4			43.4	21.6			0.0	21.6		23.0
30th %ile Term Code	Max	Coord			Coord	Gap			Skip	Gap		Max
10th %ile Green (s)	23.0	48.2			48.2	16.8			0.0	16.8		23.0
10th %ile Term Code	Max	Coord			Coord	Gap			Skip	Gap		Max
Stops (vph)	297	365			483	32			2	279		241
Fuel Used(gal)	9	6			7	1			0	7		6
CO Emissions (g/hr)	639	440			490	45			2	456		441
NOx Emissions (g/hr)	124	86			95	9			0	89		86
VOC Emissions (g/hr)	148	102			114	10			0	106		102
Dilemma Vehicles (#)	0	0			0	0			0	0		0
Queue Length 50th (ft)	~259	133			209	21			3	206		178
Queue Length 95th (ft)	#434	212			234	39			4	#353		#336
Internal Link Dist (ft)		361			139			316			289	
Turn Bay Length (ft)	140					140						
Base Capacity (vph)	388	1294			1448	747			132	417		310
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	1.02	0.43			0.56	0.30			0.03	0.82		0.92

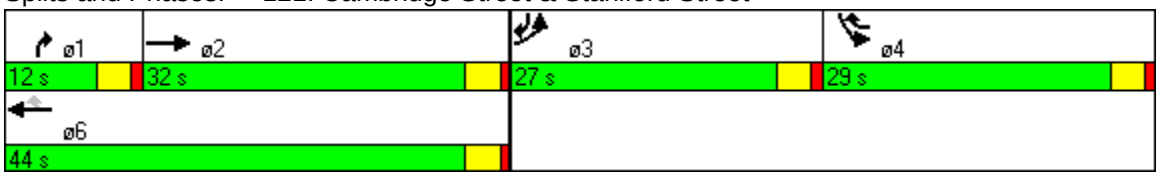
Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 94 (94%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 43.1 Intersection LOS: D
Intersection Capacity Utilization 64.4% ICU Level of Service C
Analysis Period (min) 15

~ 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: 121: Cambridge Street & Staniford Street



Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	10	12	12	12	10	10	16
Storage Length (ft)	0		0			0		0		0		25
Storage Lanes	0		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	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	15		9	15	15		9
Lane Util. Factor	0.95	0.95	0.95	0.95	0.91	0.91	0.91	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor		0.88			0.85		0.90			0.82		
Frt		0.974					0.988					0.850
Flt Protected		0.993			0.950		0.984			0.950		
Satd. Flow (prot)	0	2740	0	0	1254	0	2893	0	0	1500	2888	1631
Flt Permitted		0.993			0.950		0.984			0.950		
Satd. Flow (perm)	0	2706	0	0	1065	0	2641	0	0	1232	2888	1631
Right Turn on Red				Yes				Yes				No
Satd. Flow (RTOR)		2					8					
Headway Factor	1.14	1.14	1.14	1.14	1.25	1.25	1.14	1.14	1.14	1.25	1.25	0.97
Link Speed (mph)		30					30				30	
Link Distance (ft)		127					248				378	
Travel Time (s)		2.9					5.6				8.6	
Volume (vph)	69	327	54	11	235	18	192	30	97	225	219	245
Confl. Peds. (#/hr)	74		264	49	264	49		74	49	157		873
Peak Hour Factor	0.80	0.78	0.58	0.75	0.83	0.40	0.74	0.84	0.48	0.94	0.70	0.82
Heavy Vehicles (%)	2%	2%	2%	0%	10%	0%	2%	0%	0%	2%	5%	1%
Adj. Flow (vph)	86	419	93	15	283	45	259	36	202	239	313	299
Lane Group Flow (vph)	0	613	0	0	184	0	439	0	0	441	313	299
Turn Type	Split				Split	Split			Split	Split		pt+ov
Protected Phases	3	3			2	2	2		1	1	1	1 2
Permitted Phases												
Detector Phases	3	3			2	2	2		1	1	1	1 2
Minimum Initial (s)	8.0	8.0			8.0	8.0	8.0		10.0	10.0	10.0	
Minimum Split (s)	20.0	20.0			17.0	17.0	17.0		25.0	25.0	25.0	
Total Split (s)	21.0	21.0	0.0	0.0	22.0	22.0	22.0	0.0	32.0	32.0	32.0	54.0
Total Split (%)	21.0%	21.0%	0.0%	0.0%	22.0%	22.0%	22.0%	0.0%	32.0%	32.0%	32.0%	54.0%
Maximum Green (s)	15.0	15.0			16.0	16.0	16.0		26.0	26.0	26.0	
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	Lag	Lag			Lead	Lead	Lead					
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0		2.0	2.0	2.0	
Recall Mode	None	None			None	None	None		C-Max	C-Max	C-Max	
Walk Time (s)	7.0	7.0							7.0	7.0	7.0	
Flash Dont Walk (s)	7.0	7.0							11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0							0	0	0	
Act Effct Green (s)		17.0			18.0		18.0			28.6	28.6	50.6
Actuated g/C Ratio		0.17			0.18		0.18			0.29	0.29	0.51
v/c Ratio		1.31			0.81		0.83			1.03	0.38	0.36

Lane Group	SBL	SBT	SBR	SBR2
Lane Configurations				
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width (ft)	11	11	11	16
Storage Length (ft)	0		0	
Storage Lanes	1		0	
Total Lost Time (s)	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		
Trailing Detector (ft)	0	0		
Turning Speed (mph)	15		9	9
Lane Util. Factor	1.00	0.95	0.95	0.95
Ped Bike Factor	0.66	0.92		
Frt		0.964		
Flt Protected	0.950			
Satd. Flow (prot)	1525	2566	0	0
Flt Permitted	0.950			
Satd. Flow (perm)	1000	2566	0	0
Right Turn on Red				Yes
Satd. Flow (RTOR)		20		
Headway Factor	1.19	1.19	1.19	0.97
Link Speed (mph)		30		
Link Distance (ft)		263		
Travel Time (s)		6.0		
Volume (vph)	244	261	23	33
Confl. Peds. (#/hr)	873		49	157
Peak Hour Factor	0.88	0.83	0.70	0.50
Heavy Vehicles (%)	3%	11%	0%	3%
Adj. Flow (vph)	277	314	33	66
Lane Group Flow (vph)	277	413	0	0
Turn Type	Split			
Protected Phases	4	4		
Permitted Phases				
Detector Phases	4	4		
Minimum Initial (s)	8.0	8.0		
Minimum Split (s)	22.0	22.0		
Total Split (s)	25.0	25.0	0.0	0.0
Total Split (%)	25.0%	25.0%	0.0%	0.0%
Maximum Green (s)	19.0	19.0		
Yellow Time (s)	3.0	3.0		
All-Red Time (s)	3.0	3.0		
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	2.0	2.0		
Recall Mode	None	None		
Walk Time (s)	7.0	7.0		
Flash Dont Walk (s)	9.0	9.0		
Pedestrian Calls (#/hr)	0	0		
Act Effct Green (s)	20.4	20.4		
Actuated g/C Ratio	0.20	0.20		
v/c Ratio	0.89	0.77		

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Control Delay		166.5			80.2		67.3			69.3	18.3	19.0
Queue Delay		10.1			2.8		19.3			20.9	0.0	2.8
Total Delay		176.6			82.9		86.6			90.2	18.3	21.9
LOS		F			F		F			F	B	C
Approach Delay		176.6					85.5				49.4	
Approach LOS		F					F				D	
90th %ile Green (s)	15.0	15.0			16.0	16.0	16.0		26.0	26.0	26.0	
90th %ile Term Code	Max	Max			Max	Max	Max		Coord	Coord	Coord	
70th %ile Green (s)	15.0	15.0			16.0	16.0	16.0		26.0	26.0	26.0	
70th %ile Term Code	Max	Max			Max	Max	Max		Coord	Coord	Coord	
50th %ile Green (s)	15.0	15.0			16.0	16.0	16.0		26.0	26.0	26.0	
50th %ile Term Code	Max	Max			Max	Max	Max		Coord	Coord	Coord	
30th %ile Green (s)	15.0	15.0			16.0	16.0	16.0		26.0	26.0	26.0	
30th %ile Term Code	Max	Max			Max	Max	Max		Coord	Coord	Coord	
10th %ile Green (s)	15.0	15.0			16.0	16.0	16.0		29.2	29.2	29.2	
10th %ile Term Code	Max	Max			Max	Max	Max		Coord	Coord	Coord	
Stops (vph)		135			144		362			269	152	195
Fuel Used(gal)		17			4		7			7	2	3
CO Emissions (g/hr)		1176			251		492			488	161	192
NOx Emissions (g/hr)		229			49		96			95	31	37
VOC Emissions (g/hr)		273			58		114			113	37	45
Dilemma Vehicles (#)		0			0		0			0	0	0
Queue Length 50th (ft)		~230			139		164			~320	65	158
Queue Length 95th (ft)		m#232			#230		179			m#464	m64	m182
Internal Link Dist (ft)		47					168				298	
Turn Bay Length (ft)												25
Base Capacity (vph)		467			226		527			430	827	826
Starvation Cap Reductn		8			10		89			24	0	409
Spillback Cap Reductn		0			0		1			0	0	0
Storage Cap Reductn		0			0		0			0	0	0
Reduced v/c Ratio		1.34			0.85		1.00			1.09	0.38	0.72

Intersection Summary

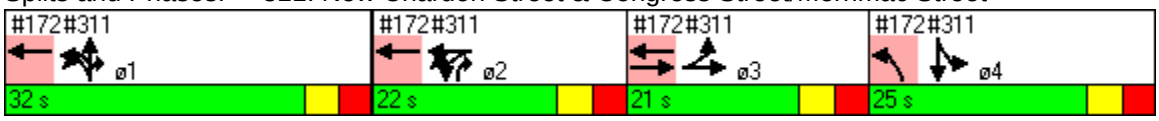
Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 75 (75%), Referenced to phase 1:WBT, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.31
Intersection Signal Delay: 87.0 Intersection LOS: F
Intersection Capacity Utilization 75.3% ICU Level of Service D
Analysis Period (min) 15

~ 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: 311: New Chardon Street & Congress Street/Merrimac Street





Lane Group	SBL	SBT	SBR	SBR2
Control Delay	69.8	46.1		
Queue Delay	0.0	17.6		
Total Delay	69.8	63.7		
LOS	E	E		
Approach Delay		66.1		
Approach LOS		E		
90th %ile Green (s)	19.0	19.0		
90th %ile Term Code	Max	Max		
70th %ile Green (s)	19.0	19.0		
70th %ile Term Code	Max	Max		
50th %ile Green (s)	19.0	19.0		
50th %ile Term Code	Max	Max		
30th %ile Green (s)	19.0	19.0		
30th %ile Term Code	Max	Max		
10th %ile Green (s)	15.8	15.8		
10th %ile Term Code	Gap	Gap		
Stops (vph)	217	278		
Fuel Used(gal)	5	5		
CO Emissions (g/hr)	361	361		
NOx Emissions (g/hr)	70	70		
VOC Emissions (g/hr)	84	84		
Dilemma Vehicles (#)	0	0		
Queue Length 50th (ft)	172	124		
Queue Length 95th (ft)	#304	162		
Internal Link Dist (ft)		183		
Turn Bay Length (ft)				
Base Capacity (vph)	320	555		
Starvation Cap Reductn	0	0		
Spillback Cap Reductn	0	135		
Storage Cap Reductn	0	0		
Reduced v/c Ratio	0.87	0.98		

Intersection Summary



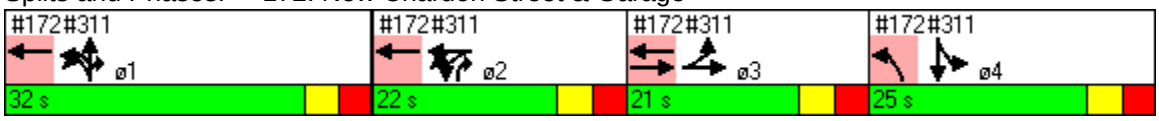
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø1	ø2
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	11	11		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		
Leading Detector (ft)	50			50	50			
Trailing Detector (ft)	0			0	0			
Turning Speed (mph)		9	15		15	9		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00		
Ped Bike Factor					0.82			
Frt					0.920			
Flt Protected					0.980			
Satd. Flow (prot)	3185	0	0	3185	1224	0		
Flt Permitted					0.980			
Satd. Flow (perm)	3185	0	0	3185	1224	0		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)					67			
Headway Factor	1.14	1.14	1.14	1.14	1.19	1.19		
Link Speed (mph)	30			30	30			
Link Distance (ft)	342			127	116			
Travel Time (s)	7.8			2.9	2.6			
Volume (vph)	431	0	0	658	39	55		
Confl. Peds. (#/hr)						157		
Peak Hour Factor	0.79	0.92	0.92	0.92	0.75	0.72		
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%		
Adj. Flow (vph)	546	0	0	715	52	76		
Lane Group Flow (vph)	546	0	0	715	128	0		
Turn Type								
Protected Phases	3			1 2 3	4		1	2
Permitted Phases								
Detector Phases	3			1 2 3	4			
Minimum Initial (s)	8.0				8.0		10.0	8.0
Minimum Split (s)	20.0				22.0		25.0	17.0
Total Split (s)	21.0	0.0	0.0	75.0	25.0	0.0	32.0	22.0
Total Split (%)	21.0%	0.0%	0.0%	75.0%	25.0%	0.0%	32%	22%
Maximum Green (s)	15.0				19.0		26.0	16.0
Yellow Time (s)	3.0				3.0		3.0	3.0
All-Red Time (s)	3.0				3.0		3.0	3.0
Lead/Lag	Lag							Lead
Lead-Lag Optimize?								
Vehicle Extension (s)	2.0				2.0		2.0	2.0
Recall Mode	None				None		C-Max	None
Walk Time (s)	7.0				7.0		7.0	
Flash Dont Walk (s)	7.0				9.0		11.0	
Pedestrian Calls (#/hr)	0				0		0	
Act Effct Green (s)	17.0			71.6	20.4			
Actuated g/C Ratio	0.17			0.72	0.20			
v/c Ratio	1.01			0.31	0.42			
Control Delay	83.4			2.6	22.1			
Queue Delay	121.0			12.5	673.8			

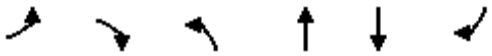


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø1	ø2
Total Delay	204.4			15.1	695.9			
LOS	F			B	F			
Approach Delay	204.4			15.1	695.9			
Approach LOS	F			B	F			
90th %ile Green (s)	15.0				19.0		26.0	16.0
90th %ile Term Code	Max				Max		Coord	Max
70th %ile Green (s)	15.0				19.0		26.0	16.0
70th %ile Term Code	Max				Max		Coord	Max
50th %ile Green (s)	15.0				19.0		26.0	16.0
50th %ile Term Code	Max				Max		Coord	Max
30th %ile Green (s)	15.0				19.0		26.0	16.0
30th %ile Term Code	Max				Max		Coord	Max
10th %ile Green (s)	15.0				15.8		29.2	16.0
10th %ile Term Code	Max				Gap		Coord	Max
Stops (vph)	377			101	43			
Fuel Used(gal)	11			2	1			
CO Emissions (g/hr)	737			109	52			
NOx Emissions (g/hr)	143			21	10			
VOC Emissions (g/hr)	171			25	12			
Dilemma Vehicles (#)	0			0	0			
Queue Length 50th (ft)	~187			37	33			
Queue Length 95th (ft)	#241			m42	64			
Internal Link Dist (ft)	262			47	36			
Turn Bay Length (ft)								
Base Capacity (vph)	541			2281	310			
Starvation Cap Reductn	0			1545	0			
Spillback Cap Reductn	124			0	294			
Storage Cap Reductn	0			0	0			
Reduced v/c Ratio	1.31			0.97	8.00			

Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 75 (75%), Referenced to phase 1:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.31			
Intersection Signal Delay: 152.3		Intersection LOS: F	
Intersection Capacity Utilization 40.2%		ICU Level of Service A	
Analysis Period (min) 15			
~ 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: 172: New Chardon Street & Garage





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	5	0	645	827	6
Peak Hour Factor	0.92	0.63	0.92	0.94	0.96	0.50
Hourly flow rate (vph)	0	8	0	686	861	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				389		
pX, platoon unblocked						
vC, conflicting volume	1211	437	873			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1211	437	873			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	178	573	781			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	8	343	343	574	299
Volume Left	0	0	0	0	0
Volume Right	8	0	0	0	12
cSH	573	1700	1700	1700	1700
Volume to Capacity	0.01	0.20	0.20	0.34	0.18
Queue Length 95th (ft)	1	0	0	0	0
Control Delay (s)	11.4	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	11.4	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	795	3	0	290	0	50
Peak Hour Factor	0.91	0.75	0.92	0.92	0.92	0.98
Hourly flow rate (vph)	874	4	0	315	0	51
Pedestrians				2	32	
Lane Width (ft)				12.0	16.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	4	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			910		1065	473
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			910		1065	473
tC, single (s)			4.1		6.8	7.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			100		100	89
cM capacity (veh/h)			730		213	485

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NW 1
Volume Total	582	295	158	158	51
Volume Left	0	0	0	0	0
Volume Right	0	4	0	0	51
cSH	1700	1700	1700	1700	485
Volume to Capacity	0.34	0.17	0.09	0.09	0.11
Queue Length 95th (ft)	0	0	0	0	9
Control Delay (s)	0.0	0.0	0.0	0.0	13.3
Lane LOS					B
Approach Delay (s)	0.0		0.0		13.3
Approach LOS					B

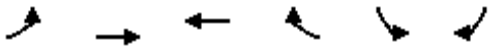
Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	32.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	551	171	41	708	0	0
Peak Hour Factor	0.94	0.68	0.61	0.84	0.92	0.92
Hourly flow rate (vph)	586	251	67	843	0	0
Pedestrians					210	
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)	196			550		
pX, platoon unblocked			0.84		0.84	0.84
vC, conflicting volume			1048		1478	629
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			871		1381	374
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			89		100	100
cM capacity (veh/h)			628		104	531

Direction, Lane #	EB 1	EB 2	WB 1	WB 2
Volume Total	391	447	348	562
Volume Left	0	0	67	0
Volume Right	0	251	0	0
cSH	1700	1700	628	1700
Volume to Capacity	0.23	0.26	0.11	0.33
Queue Length 95th (ft)	0	0	9	0
Control Delay (s)	0.0	0.0	3.4	0.0
Lane LOS			A	
Approach Delay (s)	0.0		1.3	
Approach LOS				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	49	502	683	23	11	66
Peak Hour Factor	0.60	0.94	0.84	0.54	0.50	0.70
Hourly flow rate (vph)	82	534	813	43	22	94
Pedestrians		24	20		179	
Lane Width (ft)		11.0	11.0		10.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		12	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		294	452			
pX, platoon unblocked						
vC, conflicting volume	1035				1464	631
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1035				1464	631
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				76	74
cM capacity (veh/h)	595				90	369

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	260	356	542	314	116
Volume Left	82	0	0	0	22
Volume Right	0	0	0	43	94
cSH	595	1700	1700	1700	233
Volume to Capacity	0.14	0.21	0.32	0.18	0.50
Queue Length 95th (ft)	12	0	0	0	64
Control Delay (s)	5.0	0.0	0.0	0.0	34.9
Lane LOS	A				D
Approach Delay (s)	2.1		0.0		34.9
Approach LOS					D

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR2	WBT	SBL2	SBT	SBR	NWL	ø5	ø6	ø7	ø9
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900				
Lane Width (ft)	11	12	10	11	11	14	12				
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Leading Detector (ft)	50	50	50	50	50	50	50				
Trailing Detector (ft)	0	0	0	0	0	0	0				
Turning Speed (mph)		9		15		9	15				
Lane Util. Factor	0.95	1.00	0.95	0.95	0.95	1.00	0.97				
Ped Bike Factor						0.85					
Frt		0.850				0.850					
Flt Protected					0.999		0.950				
Satd. Flow (prot)	3231	1615	3303	0	3481	1511	3502				
Flt Permitted					0.999		0.950				
Satd. Flow (perm)	3231	1615	3303	0	3481	1290	3502				
Right Turn on Red		Yes				No					
Satd. Flow (RTOR)		374									
Headway Factor	1.04	1.00	1.09	1.04	1.04	0.92	1.00				
Link Speed (mph)	30		30		30		30				
Link Distance (ft)	406		163		238		175				
Travel Time (s)	9.2		3.7		5.4		4.0				
Volume (vph)	722	547	437	21	783	230	415				
Confl. Peds. (#/hr)		3				114					
Peak Hour Factor	0.86	0.85	0.88	0.87	0.88	0.80	0.88				
Heavy Vehicles (%)	8%	0%	2%	6%	0%	14%	0%				
Adj. Flow (vph)	840	644	497	24	890	288	472				
Lane Group Flow (vph)	840	644	497	0	914	288	472				
Turn Type		Prot		Split		Perm					
Protected Phases	3	3	7 9	2	2		1	5	6	7	9
Permitted Phases						2					
Detector Phases	3	3	7 9	2	2	2	1				
Minimum Initial (s)	10.0	10.0		20.0	20.0	20.0	8.0	10.0	20.0	10.0	2.0
Minimum Split (s)	24.0	24.0		31.0	31.0	31.0	19.0	15.0	26.0	16.0	8.0
Total Split (s)	30.0	30.0	39.0	40.0	40.0	40.0	21.0	21.0	40.0	30.0	9.0
Total Split (%)	30.0%	30.0%	39.0%	40.0%	40.0%	40.0%	21.0%	21%	40%	30%	9%
Maximum Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	16.0	34.0	24.0	3.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	4.0	1.0	2.0	2.0	2.0
Lead/Lag				Lag	Lag	Lag	Lead	Lead	Lag		
Lead-Lag Optimize?											
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None		C-Max	C-Max	C-Max	None	None	C-Max	None	None
Walk Time (s)	10.0	10.0		12.0	12.0	12.0	7.0				
Flash Dont Walk (s)	8.0	8.0		13.0	13.0	13.0	5.0				
Pedestrian Calls (#/hr)	0	0		0	0	0	0				
Act Effct Green (s)	26.0	26.0	35.0		36.2	36.2	16.8				
Actuated g/C Ratio	0.26	0.26	0.35		0.36	0.36	0.17				
v/c Ratio	1.00	0.92	0.43		0.73	0.62	0.80				
Control Delay	69.0	35.9	0.1		33.2	34.4	51.4				
Queue Delay	9.1	0.0	6.5		179.7	36.3	0.0				



Lane Group	EBT	EBR2	WBT	SBL2	SBT	SBR	NWL	ø5	ø6	ø7	ø9
Total Delay	78.2	35.9	6.6		212.8	70.6	51.4				
LOS	E	D	A		F	E	D				
Approach Delay	59.9		6.6		178.8		51.4				
Approach LOS	E		A		F		D				
90th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	12.4	37.6	24.0	3.0
90th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Gap	Coord	Max	Max
70th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	10.1	39.9	24.0	3.0
70th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Gap	Coord	Max	Max
50th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	10.0	40.0	24.0	3.0
50th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Min	Coord	Max	Max
30th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	10.0	40.0	24.0	3.0
30th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Min	Coord	Max	Max
10th %ile Green (s)	24.0	24.0		34.8	34.8	34.8	13.2	0.0	55.0	24.0	3.0
10th %ile Term Code	Max	Max		Coord	Coord	Coord	Gap	Skip	Coord	Max	Max
Stops (vph)	639	229	0		641	184	381				
Fuel Used(gal)	16	7	1		10	3	7				
CO Emissions (g/hr)	1116	489	39		731	213	490				
NOx Emissions (g/hr)	217	95	8		142	42	95				
VOC Emissions (g/hr)	259	113	9		170	49	114				
Dilemma Vehicles (#)	0	0	0		0	0	0				
Queue Length 50th (ft)	282	186	0		259	149	150				
Queue Length 95th (ft)	#384	#359	m0		m340	m206	#204				
Internal Link Dist (ft)	326		83		158		95				
Turn Bay Length (ft)											
Base Capacity (vph)	840	697	1156		1259	466	595				
Starvation Cap Reductn	0	0	597		604	187	0				
Spillback Cap Reductn	26	0	0		208	0	0				
Storage Cap Reductn	0	0	0		0	0	0				
Reduced v/c Ratio	1.03	0.92	0.89		1.40	1.03	0.79				

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.29			
Intersection Signal Delay: 90.6		Intersection LOS: F	
Intersection Capacity Utilization 64.1%		ICU Level of Service C	
Analysis Period (min) 15			
# 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: 9052: Charles River Dam & Nashua Street





Lane Group	EBL	EBT	NBR	NBR2	SBL2	SBL	SWR	ø1	ø2	ø3	ø9
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900				
Lane Width (ft)	12	12	12	12	12	12	11				
Storage Length (ft)	0		0			0	0				
Storage Lanes	1		3			2	1				
Total Lost Time (s)	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)	15		9	9	15	15	9				
Lane Util. Factor	0.95	0.95	0.76	1.00	1.00	0.95	1.00				
Frt			0.850				0.865				
Flt Protected	0.950	0.977			0.950	0.950					
Satd. Flow (prot)	1649	1605	3646	0	1805	1715	1528				
Flt Permitted	0.950	0.977			0.950	0.950					
Satd. Flow (perm)	1649	1605	3646	0	1805	1715	1528				
Right Turn on Red				Yes							
Satd. Flow (RTOR)			50								
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04				
Link Speed (mph)		30									
Link Distance (ft)		163									
Travel Time (s)		3.7									
Volume (vph)	584	222	1352	346	110	21	437				
Peak Hour Factor	0.80	0.86	0.88	0.86	0.92	0.55	0.85				
Heavy Vehicles (%)	4%	15%	1%	1%	0%	0%	4%				
Adj. Flow (vph)	730	258	1536	402	120	38	514				
Lane Group Flow (vph)	506	482	1938	0	81	77	514				
Turn Type	Split		custom		Prot	Prot	custom				
Protected Phases	3 9	3 9	6		5	5	7	1	2	3	9
Permitted Phases											
Detector Phases	3 9	3 9	6		5	5	7				
Minimum Initial (s)			20.0		10.0	10.0	10.0	8.0	20.0	10.0	2.0
Minimum Split (s)			26.0		15.0	15.0	16.0	19.0	31.0	24.0	8.0
Total Split (s)	39.0	39.0	40.0	0.0	21.0	21.0	30.0	21.0	40.0	30.0	9.0
Total Split (%)	39.0%	39.0%	40.0%	0.0%	21.0%	21.0%	30.0%	21%	40%	30%	9%
Maximum Green (s)			34.0		16.0	16.0	24.0	14.0	34.0	24.0	3.0
Yellow Time (s)			4.0		4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)			2.0		1.0	1.0	2.0	4.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	Lead		Lead	Lag		
Lead-Lag Optimize?											
Vehicle Extension (s)			2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode			C-Max		None	None	None	None	C-Max	None	None
Walk Time (s)								7.0	12.0	10.0	
Flash Dont Walk (s)								5.0	13.0	8.0	
Pedestrian Calls (#/hr)								0	0	0	
Act Effct Green (s)	35.0	35.0	44.5		11.5	11.5	26.0				
Actuated g/C Ratio	0.35	0.35	0.44		0.12	0.12	0.26				
v/c Ratio	0.88	0.86	1.17		0.39	0.39	1.29				
Control Delay	15.8	14.5	113.0		22.3	22.4	183.0				
Queue Delay	22.6	17.6	0.0		0.0	0.0	0.0				



Lane Group	EBL	EBT	NBR	NBR2	SBL2	SBL	SWR	ø1	ø2	ø3	ø9
Total Delay	38.3	32.2	113.0		22.3	22.4	183.0				
LOS	D	C	F		C	C	F				
Approach Delay		35.3									
Approach LOS		D									
90th %ile Green (s)			37.6		12.4	12.4	24.0	14.0	34.0	24.0	3.0
90th %ile Term Code			Coord		Gap	Gap	Max	Max	Coord	Max	Max
70th %ile Green (s)			39.9		10.1	10.1	24.0	14.0	34.0	24.0	3.0
70th %ile Term Code			Coord		Gap	Gap	Max	Max	Coord	Max	Max
50th %ile Green (s)			40.0		10.0	10.0	24.0	14.0	34.0	24.0	3.0
50th %ile Term Code			Coord		Min	Min	Max	Max	Coord	Max	Max
30th %ile Green (s)			40.0		10.0	10.0	24.0	14.0	34.0	24.0	3.0
30th %ile Term Code			Coord		Min	Min	Max	Max	Coord	Max	Max
10th %ile Green (s)			55.0		0.0	0.0	24.0	13.2	34.8	24.0	3.0
10th %ile Term Code			Coord		Skip	Skip	Max	Gap	Coord	Max	Max
Stops (vph)	126	123	1264		68	51	343				
Fuel Used(gal)	3	2	48		1	1	19				
CO Emissions (g/hr)	176	166	3360		60	45	1331				
NOx Emissions (g/hr)	34	32	654		12	9	259				
VOC Emissions (g/hr)	41	38	779		14	11	309				
Dilemma Vehicles (#)	0	0	0		0	0	0				
Queue Length 50th (ft)	37	35	~673		49	49	~421				
Queue Length 95th (ft)	m37	m36	#788		m57	26	#571				
Internal Link Dist (ft)		83									
Turn Bay Length (ft)											
Base Capacity (vph)	577	562	1650		307	292	397				
Starvation Cap Reductn	83	81	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	1.02	1.00	1.17		0.26	0.26	1.29				

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.29			
Intersection Signal Delay: 97.7		Intersection LOS: F	
Intersection Capacity Utilization 75.2%		ICU Level of Service D	
Analysis Period (min) 15			

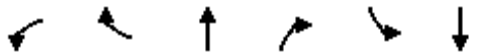
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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: 9053: Charles River Dam & I-93 Ramp





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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		9	15	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	0.95
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	3400	0	0	0	0	3406
Flt Permitted	0.950					
Satd. Flow (perm)	3400	0	0	0	0	3406
Right Turn on Red	Yes	Yes		Yes		
Satd. Flow (RTOR)	297					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		30			30
Link Distance (ft)	211		206			120
Travel Time (s)	4.8		4.7			2.7
Volume (vph)	434	0	0	0	0	639
Peak Hour Factor	0.85	0.92	0.92	0.92	0.92	0.93
Heavy Vehicles (%)	3%	0%	0%	0%	0%	6%
Adj. Flow (vph)	511	0	0	0	0	687
Lane Group Flow (vph)	511	0	0	0	0	687
Turn Type						
Protected Phases	2					1
Permitted Phases						
Detector Phases	2					1
Minimum Initial (s)	15.0					15.0
Minimum Split (s)	20.0					20.0
Total Split (s)	23.0	0.0	0.0	0.0	0.0	27.0
Total Split (%)	46.0%	0.0%	0.0%	0.0%	0.0%	54.0%
Maximum Green (s)	18.0					22.0
Yellow Time (s)	4.0					4.0
All-Red Time (s)	1.0					1.0
Lead/Lag	Lag					Lead
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Walk Time (s)	7.0					7.0
Flash Dont Walk (s)	2.0					2.0
Pedestrian Calls (#/hr)	0					0
Act Effct Green (s)	16.0					26.0
Actuated g/C Ratio	0.32					0.52
v/c Ratio	0.40					0.39
Control Delay	6.5					9.3
Queue Delay	0.0					0.0
Total Delay	6.5					9.3
LOS	A					A
Approach Delay	6.5					9.3

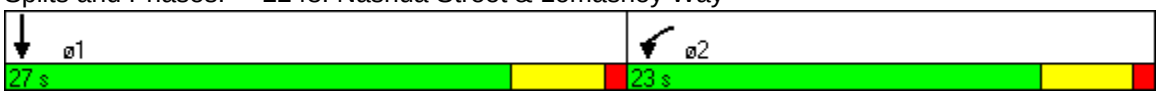


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach LOS	A					A
90th %ile Green (s)	15.0					25.0
90th %ile Term Code	Min					Coord
70th %ile Green (s)	15.0					25.0
70th %ile Term Code	Min					Coord
50th %ile Green (s)	15.0					25.0
50th %ile Term Code	Min					Coord
30th %ile Green (s)	15.0					25.0
30th %ile Term Code	Min					Coord
10th %ile Green (s)	15.0					25.0
10th %ile Term Code	Min					Coord
Stops (vph)	135					392
Fuel Used(gal)	2					4
CO Emissions (g/hr)	142					278
NOx Emissions (g/hr)	28					54
VOC Emissions (g/hr)	33					64
Dilemma Vehicles (#)	0					0
Queue Length 50th (ft)	23					82
Queue Length 95th (ft)	46					m88
Internal Link Dist (ft)	131		126			40
Turn Bay Length (ft)						
Base Capacity (vph)	1476					1771
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.35					0.39

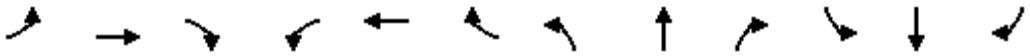
Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 50			
Offset: 0 (0%), Referenced to phase 1:SBT, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay: 8.1		Intersection LOS: A	
Intersection Capacity Utilization 36.8%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2248: Nashua Street & Lomasney Way



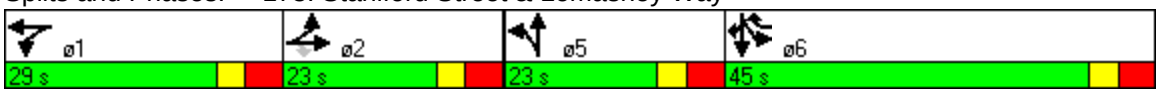
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	16	12	11	10	12	12	12
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor			0.86		1.00		0.95	0.97		0.95		
Frt			0.850			0.850		0.946				0.850
Flt Protected	0.950				0.994		0.950			0.950		
Satd. Flow (prot)	1554	1574	1463	0	3102	1743	1770	1626	0	1687	1787	1490
Flt Permitted	0.950				0.994		0.950			0.950		
Satd. Flow (perm)	1554	1574	1257	0	3093	1743	1687	1626	0	1611	1787	1490
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)			236									
Headway Factor	1.09	1.09	1.09	1.09	1.09	0.85	1.00	1.04	1.09	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		429			177			344			337	
Travel Time (s)		9.8			4.0			7.8			7.7	
Volume (vph)	40	216	208	48	387	314	137	128	58	302	313	262
Confl. Peds. (#/hr)			33	9		45	33		17	17		33
Peak Hour Factor	0.77	0.82	0.88	0.77	0.87	0.76	0.84	0.80	0.65	0.88	0.93	0.91
Heavy Vehicles (%)	3%	7%	3%	22%	6%	5%	2%	3%	5%	7%	1%	3%
Adj. Flow (vph)	52	263	236	62	445	413	163	160	89	343	337	288
Lane Group Flow (vph)	52	263	236	0	507	413	163	249	0	343	337	288
Turn Type	Split		Perm	Split		Over	Split			Split		Prot
Protected Phases	2	2		1	1	6	5	5		6	6	6
Permitted Phases			2									
Detector Phases	2	2	2	1	1	6	5	5		6	6	6
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		8.0	8.0	8.0
Minimum Split (s)	23.0	23.0	23.0	28.0	28.0	15.0	23.0	23.0		15.0	15.0	15.0
Total Split (s)	23.0	23.0	23.0	29.0	29.0	45.0	23.0	23.0	0.0	45.0	45.0	45.0
Total Split (%)	19.2%	19.2%	19.2%	24.2%	24.2%	37.5%	19.2%	19.2%	0.0%	37.5%	37.5%	37.5%
Maximum Green (s)	16.0	16.0	16.0	22.0	22.0	38.0	16.0	16.0		38.0	38.0	38.0
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)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Recall Mode	Ped	Ped	Ped	C-Max	C-Max	None	Ped	Ped		None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0				
Flash Dont Walk (s)	9.0	9.0	9.0	14.0	14.0		9.0	9.0				
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0				
Act Effct Green (s)	19.0	19.0	19.0		31.2	34.8	19.0	19.0		34.8	34.8	34.8
Actuated g/C Ratio	0.16	0.16	0.16		0.26	0.29	0.16	0.16		0.29	0.29	0.29
v/c Ratio	0.21	1.06	0.59		0.63	0.82	0.58	0.97		0.70	0.65	0.67
Control Delay	46.6	121.2	12.4		40.1	56.1	56.1	99.4		45.6	42.9	44.9
Queue Delay	0.0	0.0	0.0		0.2	7.5	0.0	0.0		0.0	0.0	0.0

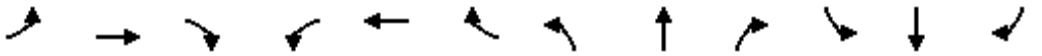


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	46.6	121.2	12.4		40.3	63.5	56.1	99.4		45.6	42.9	44.9
LOS	D	F	B		D	E	E	F		D	D	D
Approach Delay		67.6			50.8			82.3			44.4	
Approach LOS		E			D			F			D	
90th %ile Green (s)	16.0	16.0	16.0	22.0	22.0	38.0	16.0	16.0		38.0	38.0	38.0
90th %ile Term Code	Max	Max	Max	Coord	Coord	Max	Max	Max		Max	Max	Max
70th %ile Green (s)	16.0	16.0	16.0	25.8	25.8	34.2	16.0	16.0		34.2	34.2	34.2
70th %ile Term Code	Max	Max	Max	Coord	Coord	Gap	Max	Max		Gap	Gap	Gap
50th %ile Green (s)	16.0	16.0	16.0	26.1	26.1	33.9	16.0	16.0		33.9	33.9	33.9
50th %ile Term Code	Max	Max	Max	Coord	Coord	Gap	Max	Max		Gap	Gap	Gap
30th %ile Green (s)	16.0	16.0	16.0	30.1	30.1	29.9	16.0	16.0		29.9	29.9	29.9
30th %ile Term Code	Max	Max	Max	Coord	Coord	Gap	Max	Max		Gap	Gap	Gap
10th %ile Green (s)	16.0	16.0	16.0	36.9	36.9	23.1	16.0	16.0		23.1	23.1	23.1
10th %ile Term Code	Max	Max	Max	Coord	Coord	Gap	Max	Max		Gap	Gap	Gap
Stops (vph)	35	181	28		383	264	125	161		261	266	225
Fuel Used(gal)	1	7	1		6	5	3	5		5	5	4
CO Emissions (g/hr)	49	493	96		438	383	183	360		352	351	302
NOx Emissions (g/hr)	10	96	19		85	74	36	70		69	68	59
VOC Emissions (g/hr)	11	114	22		102	89	42	83		82	81	70
Dilemma Vehicles (#)	0	0	0		0	0	0	0		0	0	0
Queue Length 50th (ft)	37	~234	0		192	274	119	194		231	233	201
Queue Length 95th (ft)	66	#356	70		253	279	178	#297		310	323	288
Internal Link Dist (ft)		349			97			264			257	
Turn Bay Length (ft)												
Base Capacity (vph)	246	249	398		806	596	280	257		576	611	509
Starvation Cap Reductn	0	0	0		38	141	0	0		0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0		0	0	0
Reduced v/c Ratio	0.21	1.06	0.59		0.66	0.91	0.58	0.97		0.60	0.55	0.57

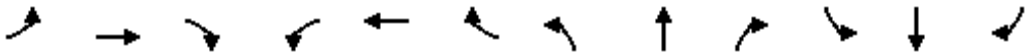
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 1:WBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.06			
Intersection Signal Delay: 56.4		Intersection LOS: E	
Intersection Capacity Utilization 74.2%		ICU Level of Service D	
Analysis Period (min) 15			
~ 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: 173: Staniford Street & Lomasney Way





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	12	12	11	10	12	12	12	10	8	11
Storage Length (ft)	140		0	0		140	0		0	0		0
Storage Lanes	1		0	0		1	0		1	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	4.0
Leading Detector (ft)	50	50			50	50			50	50		50
Trailing Detector (ft)	0	0			0	0			0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.87					0.66				0.73		
Frt						0.850			0.865			0.850
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1636	3171	0	0	3355	1409	0	0	1644	1652	0	1321
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1415	3171	0	0	3355	929	0	0	1644	1210	0	1321
Right Turn on Red			No			Yes			No			No
Satd. Flow (RTOR)						186						
Headway Factor	1.09	1.12	1.00	1.00	1.04	1.09	1.00	1.00	1.00	1.09	1.20	1.23
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		441			219			396			369	
Travel Time (s)		10.0			5.0			9.0			8.4	
Volume (vph)	266	505	0	0	621	175	0	0	7	284	0	316
Confl. Peds. (#/hr)	353					353				198		700
Peak Hour Factor	0.87	0.94	0.92	0.92	0.88	0.94	0.92	0.92	0.58	0.86	0.92	0.89
Heavy Vehicles (%)	3%	4%	0%	0%	4%	7%	0%	0%	0%	2%	0%	4%
Parking (#/hr)		2										4
Adj. Flow (vph)	306	537	0	0	706	186	0	0	12	330	0	355
Lane Group Flow (vph)	306	537	0	0	706	186	0	0	12	330	0	355
Turn Type	Prot					pm+ov			custom	Prot		Over
Protected Phases	3	2			6	4				4		3
Permitted Phases						6			1			
Detector Phases	3	2			6	4			1	4		3
Minimum Initial (s)	8.0	12.0			12.0	8.0			4.0	8.0		8.0
Minimum Split (s)	24.0	16.0			20.0	24.0			8.0	24.0		24.0
Total Split (s)	26.0	26.0	0.0	0.0	36.0	28.0	0.0	0.0	10.0	28.0	0.0	26.0
Total Split (%)	28.9%	28.9%	0.0%	0.0%	40.0%	31.1%	0.0%	0.0%	11.1%	31.1%	0.0%	28.9%
Maximum Green (s)	22.0	22.0			32.0	24.0			6.0	24.0		22.0
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	1.0			1.0	1.0		1.0
Lead/Lag	Lead	Lag				Lag			Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0			2.0	2.0			2.0	2.0		2.0
Recall Mode	None	C-Max			C-Max	None			None	None		None
Walk Time (s)	7.0				7.0	7.0				7.0		7.0
Flash Dont Walk (s)	13.0				9.0	13.0				13.0		13.0
Pedestrian Calls (#/hr)	0				0	0				0		0
Act Effct Green (s)	22.0	33.3			35.3	56.0			5.0	20.7		22.0
Actuated g/C Ratio	0.24	0.37			0.39	0.62			0.06	0.23		0.24



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.76	0.46			0.54	0.25			0.13	0.87		1.10
Control Delay	45.9	24.8			23.7	1.7			43.3	56.1		113.9
Queue Delay	0.0	0.0			0.0	0.0			0.0	0.0		0.0
Total Delay	45.9	24.8			23.7	1.7			43.3	56.1		113.9
LOS	D	C			C	A			D	E		F
Approach Delay		32.5			19.1							
Approach LOS		C			B							
90th %ile Green (s)	22.0	22.0			32.0	24.0			6.0	24.0		22.0
90th %ile Term Code	Max	Coord			Coord	Max			Max	Max		Max
70th %ile Green (s)	22.0	32.0			32.0	24.0			0.0	24.0		22.0
70th %ile Term Code	Max	Coord			Coord	Max			Skip	Max		Max
50th %ile Green (s)	22.0	33.8			33.8	22.2			0.0	22.2		22.0
50th %ile Term Code	Max	Coord			Coord	Gap			Skip	Gap		Max
30th %ile Green (s)	22.0	37.0			37.0	19.0			0.0	19.0		22.0
30th %ile Term Code	Max	Coord			Coord	Gap			Skip	Gap		Max
10th %ile Green (s)	22.0	41.8			41.8	14.2			0.0	14.2		22.0
10th %ile Term Code	Max	Coord			Coord	Gap			Skip	Gap		Max
Stops (vph)	234	381			467	10			8	259		256
Fuel Used(gal)	5	6			7	0			0	5		10
CO Emissions (g/hr)	328	447			464	29			9	384		675
NOx Emissions (g/hr)	64	87			90	6			2	75		131
VOC Emissions (g/hr)	76	104			107	7			2	89		156
Dilemma Vehicles (#)	0	0			0	0			0	0		0
Queue Length 50th (ft)	162	118			164	0			7	177		~231
Queue Length 95th (ft)	#269	203			221	20			15	#259		#393
Internal Link Dist (ft)		361			139			316			289	
Turn Bay Length (ft)	140					140						
Base Capacity (vph)	400	1174			1317	792			110	441		323
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	0.77	0.46			0.54	0.23			0.11	0.75		1.10

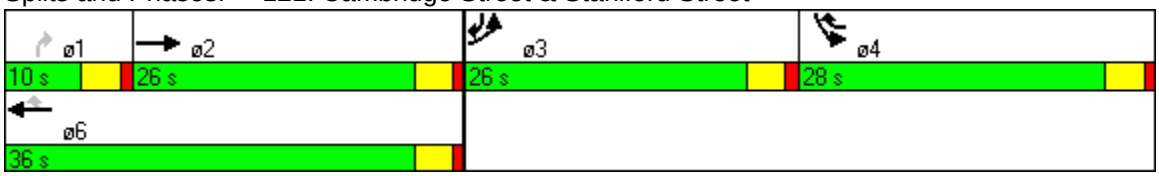
Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 7 (8%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 42.7 Intersection LOS: D
Intersection Capacity Utilization 57.6% ICU Level of Service B
Analysis Period (min) 15

~ 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: 121: Cambridge Street & Staniford Street



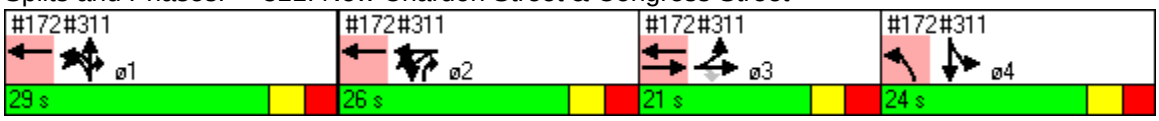
Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	10	12	12	12	10	10	16
Storage Length (ft)	0		0			0		0		0		75
Storage Lanes	0		1			1		0		1		1
Total 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	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	15		9	15	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	0.91	0.91	0.91	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor		0.96	0.34		0.77		0.91			0.82		
Frt			0.850				0.977					0.850
Flt Protected		0.988			0.950		0.993			0.950		
Satd. Flow (prot)	0	1590	1289	0	1266	0	2864	0	0	1495	2944	1584
Flt Permitted		0.988			0.950		0.993			0.950		
Satd. Flow (perm)	0	1532	436	0	972	0	2688	0	0	1226	2944	1584
Right Turn on Red				Yes				Yes				No
Satd. Flow (RTOR)			18				18					
Headway Factor	1.14	1.14	1.14	1.14	1.25	1.25	1.14	1.14	1.14	1.25	1.25	0.97
Link Speed (mph)		30					30				30	
Link Distance (ft)		127					248				378	
Travel Time (s)		2.9					5.6				8.6	
Volume (vph)	50	172	35	10	240	28	341	77	92	324	287	108
Confl. Peds. (#/hr)	151		226	131	226	131		151	131	236		624
Peak Hour Factor	0.75	0.86	0.71	0.50	0.96	0.55	0.91	0.94	0.69	0.93	0.92	0.77
Heavy Vehicles (%)	7%	6%	18%	0%	9%	0%	2%	1%	0%	2%	3%	4%
Adj. Flow (vph)	67	200	49	20	250	51	375	82	133	348	312	140
Lane Group Flow (vph)	0	267	69	0	229	0	529	0	0	481	312	140
Turn Type	Split		Perm		Split	Split			Split	Split		pt+ov
Protected Phases	3	3			2	2	2		1	1	1	1 2
Permitted Phases			3									
Detector Phases	3	3	3		2	2	2		1	1	1	1 2
Minimum Initial (s)	8.0	8.0	8.0		8.0	8.0	8.0		7.0	7.0	7.0	
Minimum Split (s)	20.0	20.0	20.0		17.0	17.0	17.0		25.0	25.0	25.0	
Total Split (s)	21.0	21.0	21.0	0.0	26.0	26.0	26.0	0.0	29.0	29.0	29.0	55.0
Total Split (%)	21.0%	21.0%	21.0%	0.0%	26.0%	26.0%	26.0%	0.0%	29.0%	29.0%	29.0%	55.0%
Maximum Green (s)	15.0	15.0	15.0		20.0	20.0	20.0		23.0	23.0	23.0	
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)	3.0	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	
Lead/Lag	Lag	Lag	Lag		Lead	Lead	Lead					
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	
Recall Mode	None	None	None		None	None	None		C-Max	C-Max	C-Max	
Walk Time (s)	7.0	7.0	7.0						7.0	7.0	7.0	
Flash Dont Walk (s)	7.0	7.0	7.0						10.0	10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0						0	0	0	
Act Effct Green (s)		17.0	17.0		22.0		22.0			25.0	25.0	51.0
Actuated g/C Ratio		0.17	0.17		0.22		0.22			0.25	0.25	0.51
v/c Ratio		0.99	0.78		0.82		0.82			1.29	0.42	0.17

Lane Group	SBL	SBT	SBR	SBR2
Lane Configurations				
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width (ft)	11	11	11	16
Storage Length (ft)	0		0	
Storage Lanes	1		0	
Total Lost Time (s)	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		
Trailing Detector (ft)	0	0		
Turning Speed (mph)	15		9	9
Lane Util. Factor	1.00	0.95	0.95	0.95
Ped Bike Factor	0.70	0.86		
Frt		0.946		
Flt Protected	0.950			
Satd. Flow (prot)	1454	2427	0	0
Flt Permitted	0.950			
Satd. Flow (perm)	1020	2427	0	0
Right Turn on Red				Yes
Satd. Flow (RTOR)		36		
Headway Factor	1.19	1.19	1.19	0.97
Link Speed (mph)		30		
Link Distance (ft)		286		
Travel Time (s)		6.5		
Volume (vph)	151	263	42	70
Confl. Peds. (#/hr)	624		131	236
Peak Hour Factor	0.85	0.74	0.62	0.54
Heavy Vehicles (%)	8%	6%	0%	6%
Adj. Flow (vph)	178	355	68	130
Lane Group Flow (vph)	178	553	0	0
Turn Type	Split			
Protected Phases	4	4		
Permitted Phases				
Detector Phases	4	4		
Minimum Initial (s)	8.0	8.0		
Minimum Split (s)	22.0	22.0		
Total Split (s)	24.0	24.0	0.0	0.0
Total Split (%)	24.0%	24.0%	0.0%	0.0%
Maximum Green (s)	18.0	18.0		
Yellow Time (s)	3.0	3.0		
All-Red Time (s)	3.0	3.0		
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	2.0	2.0		
Recall Mode	None	None		
Walk Time (s)	7.0	7.0		
Flash Dont Walk (s)	8.0	8.0		
Pedestrian Calls (#/hr)	0	0		
Act Effct Green (s)	20.0	20.0		
Actuated g/C Ratio	0.20	0.20		
v/c Ratio	0.61	1.08		

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Control Delay		74.2	61.9		48.1		34.2			166.0	18.3	5.8
Queue Delay		9.0	0.0		8.9		11.2			0.0	0.0	0.0
Total Delay		83.3	61.9		57.0		45.4			166.0	18.3	5.8
LOS		F	E		E		D			F	B	A
Approach Delay		78.9					48.9				92.5	
Approach LOS		E					D				F	
90th %ile Green (s)	15.0	15.0	15.0		20.0	20.0	20.0		23.0	23.0	23.0	
90th %ile Term Code	Max	Max	Max		Max	Max	Max		Coord	Coord	Coord	
70th %ile Green (s)	15.0	15.0	15.0		20.0	20.0	20.0		23.0	23.0	23.0	
70th %ile Term Code	Max	Max	Max		Max	Max	Max		Coord	Coord	Coord	
50th %ile Green (s)	15.0	15.0	15.0		20.0	20.0	20.0		23.0	23.0	23.0	
50th %ile Term Code	Max	Max	Max		Max	Max	Max		Coord	Coord	Coord	
30th %ile Green (s)	15.0	15.0	15.0		20.0	20.0	20.0		23.0	23.0	23.0	
30th %ile Term Code	Max	Max	Max		Max	Max	Max		Coord	Coord	Coord	
10th %ile Green (s)	15.0	15.0	15.0		20.0	20.0	20.0		23.0	23.0	23.0	
10th %ile Term Code	Max	Max	Max		Max	Max	Max		Coord	Coord	Coord	
Stops (vph)		143	13		182		384			327	151	28
Fuel Used(gal)		4	1		4		6			17	3	1
CO Emissions (g/hr)		305	48		251		439			1192	192	42
NOx Emissions (g/hr)		59	9		49		85			232	37	8
VOC Emissions (g/hr)		71	11		58		102			276	45	10
Dilemma Vehicles (#)		0	0		0		0			0	0	0
Queue Length 50th (ft)		173	5		109		102			~406	28	15
Queue Length 95th (ft)		#310	#73		#286		#216			#567	m63	m21
Internal Link Dist (ft)		47					168				298	
Turn Bay Length (ft)												75
Base Capacity (vph)		270	89		279		644			374	736	808
Starvation Cap Reductn		9	0		30		98			0	0	0
Spillback Cap Reductn		0	0		0		2			0	0	0
Storage Cap Reductn		0	0		0		0			0	0	0
Reduced v/c Ratio		1.02	0.78		0.92		0.97			1.29	0.42	0.17

Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 60 (60%), Referenced to phase 1:WBT, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.29			
Intersection Signal Delay: 101.7		Intersection LOS: F	
Intersection Capacity Utilization 81.9%		ICU Level of Service D	
Analysis Period (min) 15			
~ 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: 311: New Chardon Street & Congress Street





Lane Group	SBL	SBT	SBR	SBR2
Control Delay	46.6	98.5		
Queue Delay	0.0	122.4		
Total Delay	46.6	220.9		
LOS	D	F		
Approach Delay		178.5		
Approach LOS		F		
90th %ile Green (s)	18.0	18.0		
90th %ile Term Code	Max	Max		
70th %ile Green (s)	18.0	18.0		
70th %ile Term Code	Max	Max		
50th %ile Green (s)	18.0	18.0		
50th %ile Term Code	Max	Max		
30th %ile Green (s)	18.0	18.0		
30th %ile Term Code	Max	Max		
10th %ile Green (s)	18.0	18.0		
10th %ile Term Code	Max	Max		
Stops (vph)	137	299		
Fuel Used(gal)	3	10		
CO Emissions (g/hr)	177	699		
NOx Emissions (g/hr)	34	136		
VOC Emissions (g/hr)	41	162		
Dilemma Vehicles (#)	0	0		
Queue Length 50th (ft)	104	~197		
Queue Length 95th (ft)	166	#217		
Internal Link Dist (ft)		206		
Turn Bay Length (ft)				
Base Capacity (vph)	291	514		
Starvation Cap Reductn	0	0		
Spillback Cap Reductn	0	108		
Storage Cap Reductn	0	0		
Reduced v/c Ratio	0.61	1.36		

Intersection Summary

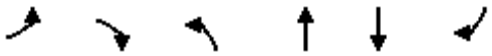
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø1	ø2
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	11	11		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		
Leading Detector (ft)	50			50	50			
Trailing Detector (ft)	0			0	0			
Turning Speed (mph)		9	15		15	9		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00		
Ped Bike Factor					0.76			
Frt					0.904			
Flt Protected					0.986			
Satd. Flow (prot)	3008	0	0	3185	1117	0		
Flt Permitted					0.986			
Satd. Flow (perm)	3008	0	0	3185	1117	0		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)					94			
Headway Factor	1.14	1.14	1.14	1.14	1.19	1.19		
Link Speed (mph)	30			30	30			
Link Distance (ft)	342			127	116			
Travel Time (s)	7.8			2.9	2.6			
Volume (vph)	199	0	0	734	16	68		
Confl. Peds. (#/hr)						236		
Peak Hour Factor	0.89	0.92	0.92	0.92	0.42	0.72		
Heavy Vehicles (%)	8%	0%	0%	2%	0%	0%		
Adj. Flow (vph)	224	0	0	798	38	94		
Lane Group Flow (vph)	224	0	0	798	132	0		
Turn Type								
Protected Phases	3			1 2 3	4		1	2
Permitted Phases								
Detector Phases	3			1 2 3	4			
Minimum Initial (s)	8.0				8.0		7.0	8.0
Minimum Split (s)	20.0				22.0		25.0	17.0
Total Split (s)	21.0	0.0	0.0	76.0	24.0	0.0	29.0	26.0
Total Split (%)	21.0%	0.0%	0.0%	76.0%	24.0%	0.0%	29%	26%
Maximum Green (s)	15.0				18.0		23.0	20.0
Yellow Time (s)	3.0				3.0		3.0	3.0
All-Red Time (s)	3.0				3.0		3.0	3.0
Lead/Lag	Lag							Lead
Lead-Lag Optimize?								
Vehicle Extension (s)	2.0				2.0		2.0	2.0
Recall Mode	None				None		C-Max	None
Walk Time (s)	7.0				7.0		7.0	
Flash Dont Walk (s)	7.0				8.0		10.0	
Pedestrian Calls (#/hr)	0				0		0	
Act Effct Green (s)	17.0			72.0	20.0			
Actuated g/C Ratio	0.17			0.72	0.20			
v/c Ratio	0.44			0.35	0.44			
Control Delay	40.3			2.1	17.5			
Queue Delay	0.2			41.0	3.8			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø1	ø2
Total Delay	40.6			43.1	21.4			
LOS	D			D	C			
Approach Delay	40.6			43.1	21.4			
Approach LOS	D			D	C			
90th %ile Green (s)	15.0				18.0		23.0	20.0
90th %ile Term Code	Max				Max		Coord	Max
70th %ile Green (s)	15.0				18.0		23.0	20.0
70th %ile Term Code	Max				Max		Coord	Max
50th %ile Green (s)	15.0				18.0		23.0	20.0
50th %ile Term Code	Max				Max		Coord	Max
30th %ile Green (s)	15.0				18.0		23.0	20.0
30th %ile Term Code	Max				Max		Coord	Max
10th %ile Green (s)	15.0				18.0		23.0	20.0
10th %ile Term Code	Max				Max		Coord	Max
Stops (vph)	174			111	27			
Fuel Used(gal)	3			2	1			
CO Emissions (g/hr)	218			116	37			
NOx Emissions (g/hr)	43			22	7			
VOC Emissions (g/hr)	51			27	8			
Dilemma Vehicles (#)	0			0	0			
Queue Length 50th (ft)	67			40	20			
Queue Length 95th (ft)	104			m40	5			
Internal Link Dist (ft)	262			47	36			
Turn Bay Length (ft)								
Base Capacity (vph)	511			2293	299			
Starvation Cap Reductn	0			1549	0			
Spillback Cap Reductn	44			0	101			
Storage Cap Reductn	0			0	0			
Reduced v/c Ratio	0.48			1.07	0.67			

Intersection Summary	
Area Type:	CBD
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 60 (60%), Referenced to phase 1:WBT, Start of Green	
Natural Cycle: 115	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.29	
Intersection Signal Delay: 40.1	Intersection LOS: D
Intersection Capacity Utilization 41.7%	ICU Level of Service A
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 172: New Chardon Street & Garage





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	10	0	500	848	7
Peak Hour Factor	0.92	0.63	0.92	0.88	0.94	0.58
Hourly flow rate (vph)	0	16	0	568	902	12
Pedestrians					132	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					11	
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				337		
pX, platoon unblocked						
vC, conflicting volume	1324	457	914			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1324	457	914			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	100			
cM capacity (veh/h)	133	556	754			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	16	284	284	601	313
Volume Left	0	0	0	0	0
Volume Right	16	0	0	0	12
cSH	556	1700	1700	1700	1700
Volume to Capacity	0.03	0.17	0.17	0.35	0.18
Queue Length 95th (ft)	2	0	0	0	0
Control Delay (s)	11.7	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	11.7	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	33.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	574	3	0	0	0	48
Peak Hour Factor	0.86	0.75	0.92	0.92	0.92	0.65
Hourly flow rate (vph)	667	4	0	0	0	74
Pedestrians				5	18	
Lane Width (ft)				0.0	16.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	2	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			689		687	359
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			689		687	359
tC, single (s)			4.1		6.8	7.5
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.6
p0 queue free %			100		100	87
cM capacity (veh/h)			896		377	550

Direction, Lane #	NB 1	NB 2	NW 1
Volume Total	445	226	74
Volume Left	0	0	0
Volume Right	0	4	74
cSH	1700	1700	550
Volume to Capacity	0.26	0.13	0.13
Queue Length 95th (ft)	0	0	12
Control Delay (s)	0.0	0.0	12.6
Lane LOS			B
Approach Delay (s)	0.0		12.6
Approach LOS			B

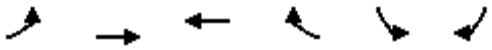
Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	27.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	411	206	51	799	0	0
Peak Hour Factor	0.85	0.94	0.75	0.98	0.92	0.92
Hourly flow rate (vph)	484	219	68	815	0	0
Pedestrians					255	
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)	178			550		
pX, platoon unblocked						
vC, conflicting volume			958		1392	606
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			958		1392	606
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			90		100	100
cM capacity (veh/h)			708		122	445

Direction, Lane #	EB 1	EB 2	WB 1	WB 2
Volume Total	322	380	340	544
Volume Left	0	0	68	0
Volume Right	0	219	0	0
cSH	1700	1700	708	1700
Volume to Capacity	0.19	0.22	0.10	0.32
Queue Length 95th (ft)	0	0	8	0
Control Delay (s)	0.0	0.0	3.1	0.0
Lane LOS			A	
Approach Delay (s)	0.0		1.2	
Approach LOS				

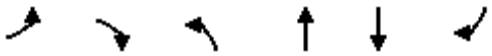
Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	39	372	807	31	18	48
Peak Hour Factor	0.68	0.85	0.98	0.83	0.40	0.60
Hourly flow rate (vph)	57	438	823	37	45	80
Pedestrians		38	43		216	
Lane Width (ft)		11.0	11.0		10.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		3	3		15	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		271	457			
pX, platoon unblocked						
vC, conflicting volume	1077				1435	684
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1077				1435	684
tC, single (s)	4.2				6.8	7.1
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	89				51	74
cM capacity (veh/h)	532				91	304

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	203	292	549	312	125
Volume Left	57	0	0	0	45
Volume Right	0	0	0	37	80
cSH	532	1700	1700	1700	165
Volume to Capacity	0.11	0.17	0.32	0.18	0.76
Queue Length 95th (ft)	9	0	0	0	119
Control Delay (s)	4.6	0.0	0.0	0.0	73.9
Lane LOS	A				F
Approach Delay (s)	1.9		0.0		73.9
Approach LOS					F

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	9	0	0	630	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	10	0	0	685	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				120	784	
pX, platoon unblocked						
vC, conflicting volume	704	361	723			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	704	361	723			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	98	100			
cM capacity (veh/h)	376	641	889			

Direction, Lane #	EB 1	SB 1	SB 2
Volume Total	10	457	266
Volume Left	0	0	0
Volume Right	10	0	38
cSH	641	1700	1700
Volume to Capacity	0.02	0.27	0.16
Queue Length 95th (ft)	1	0	0
Control Delay (s)	10.7	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.7	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	28.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR2	WBT	SBL2	SBT	SBR	NWL	ø5	ø6	ø7	ø9
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900				
Lane Width (ft)	11	12	10	11	11	14	12				
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Leading Detector (ft)	50	50	50	50	50	50	50				
Trailing Detector (ft)	0	0	0	0	0	0	0				
Turning Speed (mph)		9		15		9	15				
Lane Util. Factor	0.95	1.00	0.95	0.95	0.95	1.00	0.97				
Ped Bike Factor					1.00	0.85	0.39				
Frt		0.850				0.850					
Flt Protected					0.998		0.950				
Satd. Flow (prot)	3323	1599	3303	0	3469	1566	3502				
Flt Permitted					0.998		0.950				
Satd. Flow (perm)	3323	1599	3303	0	3464	1334	1354				
Right Turn on Red		Yes				No					
Satd. Flow (RTOR)		372									
Headway Factor	1.04	1.00	1.09	1.04	1.04	0.92	1.00				
Link Speed (mph)	30		30		30		30				
Link Distance (ft)	406		163		238		175				
Travel Time (s)	9.2		3.7		5.4		4.0				
Volume (vph)	758	423	415	21	872	301	389				
Confl. Peds. (#/hr)		8		33		116	256				
Peak Hour Factor	0.91	0.88	0.91	0.60	0.93	0.91	0.90				
Heavy Vehicles (%)	5%	1%	2%	11%	0%	10%	0%				
Adj. Flow (vph)	833	481	456	35	938	331	432				
Lane Group Flow (vph)	833	481	456	0	973	331	432				
Turn Type		Prot		Split		Perm					
Protected Phases	3	3	7 9	2	2		1	5	6	7	9
Permitted Phases						2					
Detector Phases	3	3	7 9	2	2	2	1				
Minimum Initial (s)	10.0	10.0		20.0	20.0	20.0	8.0	10.0	20.0	10.0	2.0
Minimum Split (s)	24.0	24.0		31.0	31.0	31.0	19.0	15.0	26.0	16.0	8.0
Total Split (s)	30.0	30.0	39.0	40.0	40.0	40.0	21.0	21.0	40.0	30.0	9.0
Total Split (%)	30.0%	30.0%	39.0%	40.0%	40.0%	40.0%	21.0%	21%	40%	30%	9%
Maximum Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	16.0	34.0	24.0	3.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	4.0	1.0	2.0	2.0	2.0
Lead/Lag				Lag	Lag	Lag	Lead	Lead	Lag		
Lead-Lag Optimize?											
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None		C-Max	C-Max	C-Max	None	None	C-Max	None	None
Walk Time (s)	10.0	10.0		12.0	12.0	12.0	7.0				
Flash Dont Walk (s)	8.0	8.0		13.0	13.0	13.0	5.0				
Pedestrian Calls (#/hr)	0	0		0	0	0	0				
Act Effct Green (s)	26.0	26.0	35.0		36.4	36.4	16.6				
Actuated g/C Ratio	0.26	0.26	0.35		0.36	0.36	0.17				
v/c Ratio	0.96	0.70	0.39		0.77	0.68	0.74				
Control Delay	60.5	14.0	0.1		26.7	27.6	48.3				
Queue Delay	1.8	0.0	3.4		170.6	52.0	0.0				



Lane Group	EBT	EBR2	WBT	SBL2	SBT	SBR	NWL	ø5	ø6	ø7	ø9
Total Delay	62.3	14.0	3.5		197.3	79.5	48.3				
LOS	E	B	A		F	E	D				
Approach Delay	44.6		3.5		167.4		48.3				
Approach LOS	D		A		F		D				
90th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	16.0	34.0	24.0	3.0
90th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Max	Coord	Max	Max
70th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	16.0	34.0	24.0	3.0
70th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Max	Coord	Max	Max
50th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	16.0	34.0	24.0	3.0
50th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Max	Coord	Max	Max
30th %ile Green (s)	24.0	24.0		34.0	34.0	34.0	14.0	14.2	35.8	24.0	3.0
30th %ile Term Code	Max	Max		Coord	Coord	Coord	Max	Gap	Coord	Max	Max
10th %ile Green (s)	24.0	24.0		36.1	36.1	36.1	11.9	10.3	39.7	24.0	3.0
10th %ile Term Code	Max	Max		Coord	Coord	Coord	Gap	Gap	Coord	Max	Max
Stops (vph)	674	109	0		719	236	362				
Fuel Used(gal)	15	3	1		10	4	6				
CO Emissions (g/hr)	1081	220	37		733	248	444				
NOx Emissions (g/hr)	210	43	7		143	48	86				
VOC Emissions (g/hr)	251	51	9		170	58	103				
Dilemma Vehicles (#)	0	0	0		0	0	0				
Queue Length 50th (ft)	276	55	0		263	167	136				
Queue Length 95th (ft)	#403	159	m0		m295	m196	188				
Internal Link Dist (ft)	326		83		158		95				
Turn Bay Length (ft)											
Base Capacity (vph)	864	691	1156		1264	486	595				
Starvation Cap Reductn	0	0	587		557	181	0				
Spillback Cap Reductn	10	0	0		0	0	0				
Storage Cap Reductn	0	0	0		0	0	0				
Reduced v/c Ratio	0.98	0.70	0.80		1.38	1.09	0.73				

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.17			
Intersection Signal Delay: 85.4		Intersection LOS: F	
Intersection Capacity Utilization 66.8%		ICU Level of Service C	
Analysis Period (min) 15			
# 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: 9052: Charles River Dam & Nashua Street





Lane Group	EBL	EBT	NBR	NBR2	SBL2	SBL	SWR	ø1	ø2	ø3	ø9
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900				
Lane Width (ft)	12	12	12	12	12	12	11				
Storage Length (ft)	0		0			0	0				
Storage Lanes	1		3			2	1				
Total Lost Time (s)	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)	15		9	9	15	15	9				
Lane Util. Factor	0.95	0.95	0.76	1.00	1.00	0.95	1.00				
Ped Bike Factor	1.00	1.00			1.00	1.00					
Frt			0.850				0.865				
Flt Protected	0.950	0.982			0.950	0.950					
Satd. Flow (prot)	1665	1630	3682	0	1770	1681	1542				
Flt Permitted	0.950	0.982			0.950	0.950					
Satd. Flow (perm)	1663	1629	3682	0	1766	1675	1542				
Right Turn on Red				Yes							
Satd. Flow (RTOR)			24								
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04				
Link Speed (mph)		30									
Link Distance (ft)		163									
Travel Time (s)		3.7									
Volume (vph)	528	250	1275	182	266	56	415				
Confl. Peds. (#/hr)	1		1	1	1	1					
Peak Hour Factor	0.85	0.88	0.90	0.84	0.80	0.66	0.90				
Heavy Vehicles (%)	3%	12%	0%	0%	2%	2%	3%				
Adj. Flow (vph)	621	284	1417	217	332	85	461				
Lane Group Flow (vph)	460	445	1634	0	214	203	461				
Turn Type	Split		custom		Prot	Prot	custom				
Protected Phases	3 9	3 9	6		5	5	7	1	2	3	9
Permitted Phases											
Detector Phases	3 9	3 9	6		5	5	7				
Minimum Initial (s)			20.0		10.0	10.0	10.0	8.0	20.0	10.0	2.0
Minimum Split (s)			26.0		15.0	15.0	16.0	19.0	31.0	24.0	8.0
Total Split (s)	39.0	39.0	40.0	0.0	21.0	21.0	30.0	21.0	40.0	30.0	9.0
Total Split (%)	39.0%	39.0%	40.0%	0.0%	21.0%	21.0%	30.0%	21%	40%	30%	9%
Maximum Green (s)			34.0		16.0	16.0	24.0	14.0	34.0	24.0	3.0
Yellow Time (s)			4.0		4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)			2.0		1.0	1.0	2.0	4.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	Lead		Lead	Lag		
Lead-Lag Optimize?											
Vehicle Extension (s)			2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode			C-Max		None	None	None	None	C-Max	None	None
Walk Time (s)								7.0	12.0	10.0	
Flash Dont Walk (s)								5.0	13.0	8.0	
Pedestrian Calls (#/hr)								0	0	0	
Act Effct Green (s)	35.0	35.0	37.5		15.5	15.5	26.0				
Actuated g/C Ratio	0.35	0.35	0.38		0.16	0.16	0.26				
v/c Ratio	0.79	0.78	1.17		0.78	0.78	1.15				



Lane Group	EBL	EBT	NBR	NBR2	SBL2	SBL	SWR	ø1	ø2	ø3	ø9
Control Delay	9.0	8.7	115.0		71.5	72.4	127.8				
Queue Delay	7.2	6.4	0.0		22.0	14.5	0.0				
Total Delay	16.1	15.1	115.0		93.5	86.9	127.8				
LOS	B	B	F		F	F	F				
Approach Delay		15.6									
Approach LOS		B									
90th %ile Green (s)			34.0		16.0	16.0	24.0	14.0	34.0	24.0	3.0
90th %ile Term Code			Coord		Max	Max	Max	Max	Coord	Max	Max
70th %ile Green (s)			34.0		16.0	16.0	24.0	14.0	34.0	24.0	3.0
70th %ile Term Code			Coord		Max	Max	Max	Max	Coord	Max	Max
50th %ile Green (s)			34.0		16.0	16.0	24.0	14.0	34.0	24.0	3.0
50th %ile Term Code			Coord		Max	Max	Max	Max	Coord	Max	Max
30th %ile Green (s)			35.8		14.2	14.2	24.0	14.0	34.0	24.0	3.0
30th %ile Term Code			Coord		Gap	Gap	Max	Max	Coord	Max	Max
10th %ile Green (s)			39.7		10.3	10.3	24.0	11.9	36.1	24.0	3.0
10th %ile Term Code			Coord		Gap	Gap	Max	Gap	Coord	Max	Max
Stops (vph)	60	59	1172		163	144	340				
Fuel Used(gal)	2	2	42		4	3	14				
CO Emissions (g/hr)	108	105	2962		260	230	944				
NOx Emissions (g/hr)	21	20	576		51	45	184				
VOC Emissions (g/hr)	25	24	686		60	53	219				
Dilemma Vehicles (#)	0	0	0		0	0	0				
Queue Length 50th (ft)	21	20	~562		141	141	~348				
Queue Length 95th (ft)	m22	m21	#679		m192	158	#541				
Internal Link Dist (ft)		83									
Turn Bay Length (ft)											
Base Capacity (vph)	583	571	1396		301	286	401				
Starvation Cap Reductn	87	85	0		80	66	0				
Spillback Cap Reductn	0	0	0		0	0	0				
Storage Cap Reductn	0	0	0		0	0	0				
Reduced v/c Ratio	0.93	0.92	1.17		0.97	0.92	1.15				

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.17
Intersection Signal Delay: 87.4 Intersection LOS: F
Intersection Capacity Utilization 74.2% ICU Level of Service D
Analysis Period (min) 15

~ 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: 9053: Charles River Dam & I-93 Ramp





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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		9	15	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	0.95
Ped Bike Factor	0.98					
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	3467	0	0	0	0	3438
Flt Permitted	0.950					
Satd. Flow (perm)	3393	0	0	0	0	3438
Right Turn on Red	Yes	Yes		Yes		
Satd. Flow (RTOR)	370					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		30			30
Link Distance (ft)	184		160			130
Travel Time (s)	4.2		3.6			3.0
Volume (vph)	308	0	0	0	0	638
Confl. Peds. (#/hr)	10					
Peak Hour Factor	0.93	0.92	0.92	0.92	0.92	0.94
Heavy Vehicles (%)	1%	0%	0%	0%	0%	5%
Adj. Flow (vph)	331	0	0	0	0	679
Lane Group Flow (vph)	331	0	0	0	0	679
Turn Type						
Protected Phases	5					1
Permitted Phases						
Detector Phases	5					1
Minimum Initial (s)	8.0					8.0
Minimum Split (s)	18.0					18.0
Total Split (s)	45.0	0.0	0.0	0.0	0.0	55.0
Total Split (%)	45.0%	0.0%	0.0%	0.0%	0.0%	55.0%
Maximum Green (s)	41.0					51.0
Yellow Time (s)	3.0					3.0
All-Red Time (s)	1.0					1.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0					2.0
Recall Mode	Ped					C-Max
Walk Time (s)	8.0					8.0
Flash Dont Walk (s)	6.0					6.0
Pedestrian Calls (#/hr)	0					0
Act Effct Green (s)	14.0					78.0
Actuated g/C Ratio	0.14					0.78
v/c Ratio	0.41					0.25
Control Delay	4.3					5.2
Queue Delay	0.0					0.0
Total Delay	4.3					5.2



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	A					A
Approach Delay	4.3					5.2
Approach LOS	A					A
90th %ile Green (s)	14.0					78.0
90th %ile Term Code	Ped					Coord
70th %ile Green (s)	14.0					78.0
70th %ile Term Code	Ped					Coord
50th %ile Green (s)	14.0					78.0
50th %ile Term Code	Ped					Coord
30th %ile Green (s)	14.0					78.0
30th %ile Term Code	Ped					Coord
10th %ile Green (s)	14.0					78.0
10th %ile Term Code	Ped					Coord
Stops (vph)	20					257
Fuel Used(gal)	1					3
CO Emissions (g/hr)	57					191
NOx Emissions (g/hr)	11					37
VOC Emissions (g/hr)	13					44
Dilemma Vehicles (#)	0					0
Queue Length 50th (ft)	0					87
Queue Length 95th (ft)	26					m83
Internal Link Dist (ft)	104		80			50
Turn Bay Length (ft)						
Base Capacity (vph)	1640					2682
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.20					0.25

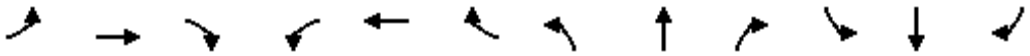
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 10 (10%), Referenced to phase 1:SBT, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.41			
Intersection Signal Delay: 4.9		Intersection LOS: A	
Intersection Capacity Utilization 33.1%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2248: Nashua Street & Lomasney Way



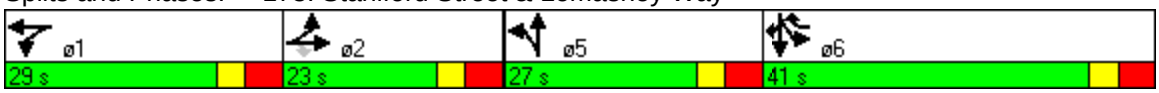
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	16	12	11	10	12	12	12
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor	0.80		0.48		0.95		0.83	0.96		0.91		
Frt			0.850			0.850		0.960				0.850
Flt Protected	0.950				0.992		0.950			0.950		
Satd. Flow (prot)	1524	1636	1478	0	3065	1679	1805	1630	0	1671	1787	1504
Flt Permitted	0.950				0.992		0.950			0.950		
Satd. Flow (perm)	1218	1636	715	0	2910	1679	1490	1630	0	1517	1787	1504
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)			373									
Headway Factor	1.09	1.09	1.09	1.09	1.09	0.85	1.00	1.04	1.09	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		301			188			403			389	
Travel Time (s)		6.8			4.3			9.2			8.8	
Volume (vph)	129	342	339	81	387	338	104	170	52	218	398	216
Confl. Peds. (#/hr)	566		142	142		566	175		59	59		175
Peak Hour Factor	0.78	0.92	0.91	0.87	0.84	0.85	0.79	0.88	0.75	0.77	0.92	0.91
Heavy Vehicles (%)	5%	3%	2%	39%	3%	9%	0%	2%	10%	8%	1%	2%
Adj. Flow (vph)	165	372	373	93	461	398	132	193	69	283	433	237
Lane Group Flow (vph)	165	372	373	0	554	398	132	262	0	283	433	237
Turn Type	Split		Perm	Split		Over	Split			Split		Prot
Protected Phases	2	2		1	1	6	5	5		6	6	6
Permitted Phases			2									
Detector Phases	2	2	2	1	1	6	5	5		6	6	6
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		8.0	8.0	8.0
Minimum Split (s)	23.0	23.0	23.0	28.0	28.0	15.0	23.0	23.0		15.0	15.0	15.0
Total Split (s)	23.0	23.0	23.0	29.0	29.0	41.0	27.0	27.0	0.0	41.0	41.0	41.0
Total Split (%)	19.2%	19.2%	19.2%	24.2%	24.2%	34.2%	22.5%	22.5%	0.0%	34.2%	34.2%	34.2%
Maximum Green (s)	16.0	16.0	16.0	22.0	22.0	34.0	20.0	20.0		34.0	34.0	34.0
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)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Recall Mode	Ped	Ped	Ped	C-Max	C-Max	None	Ped	Ped		None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0				
Flash Dont Walk (s)	9.0	9.0	9.0	14.0	14.0		9.0	9.0				
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0				
Act Effct Green (s)	19.0	19.0	19.0		27.8	34.9	22.3	22.3		34.9	34.9	34.9
Actuated g/C Ratio	0.16	0.16	0.16		0.23	0.29	0.19	0.19		0.29	0.29	0.29
v/c Ratio	0.68	1.44	0.87		0.78	0.81	0.39	0.87		0.58	0.83	0.54
Control Delay	63.2	254.2	26.8		41.4	49.8	46.6	74.8		41.3	54.3	40.5
Queue Delay	0.0	0.0	0.0		0.0	5.2	0.0	0.0		0.0	0.0	0.0



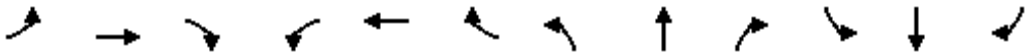
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	63.2	254.2	26.8		41.4	54.9	46.6	74.8		41.3	54.3	40.5
LOS	E	F	C		D	D	D	E		D	D	D
Approach Delay		126.4			47.1			65.3			47.0	
Approach LOS		F			D			E			D	
90th %ile Green (s)	16.0	16.0	16.0	22.0	22.0	34.0	20.0	20.0		34.0	34.0	34.0
90th %ile Term Code	Max	Max	Max	Coord	Coord	Max	Max	Max		Max	Max	Max
70th %ile Green (s)	16.0	16.0	16.0	22.0	22.0	34.0	20.0	20.0		34.0	34.0	34.0
70th %ile Term Code	Max	Max	Max	Coord	Coord	Max	Max	Max		Max	Max	Max
50th %ile Green (s)	16.0	16.0	16.0	22.0	22.0	34.0	20.0	20.0		34.0	34.0	34.0
50th %ile Term Code	Max	Max	Max	Coord	Coord	Max	Max	Max		Max	Max	Max
30th %ile Green (s)	16.0	16.0	16.0	22.6	22.6	33.4	20.0	20.0		33.4	33.4	33.4
30th %ile Term Code	Max	Max	Max	Coord	Coord	Gap	Max	Max		Gap	Gap	Gap
10th %ile Green (s)	16.0	16.0	16.0	35.4	35.4	24.3	16.3	16.3		24.3	24.3	24.3
10th %ile Term Code	Max	Max	Max	Coord	Coord	Gap	Gap	Gap		Gap	Gap	Gap
Stops (vph)	119	255	35		435	249	89	203		181	358	178
Fuel Used(gal)	3	20	3		7	5	2	5		3	8	3
CO Emissions (g/hr)	183	1392	199		492	370	126	363		244	530	239
NOx Emissions (g/hr)	36	271	39		96	72	25	71		47	103	46
VOC Emissions (g/hr)	42	323	46		114	86	29	84		57	123	55
Dilemma Vehicles (#)	0	0	0		0	0	0	0		0	0	0
Queue Length 50th (ft)	128	~411	0		231	204	90	197		182	322	158
Queue Length 95th (ft)	177	#613	#189		#275	311	131	#327		224	#465	245
Internal Link Dist (ft)		221			108			323			309	
Turn Bay Length (ft)												
Base Capacity (vph)	241	259	427		710	518	346	312		515	551	464
Starvation Cap Reductn	0	0	0		0	72	0	0		0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0		0	0	0
Reduced v/c Ratio	0.68	1.44	0.87		0.78	0.89	0.38	0.84		0.55	0.79	0.51

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 1:WBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.44			
Intersection Signal Delay: 71.8		Intersection LOS: E	
Intersection Capacity Utilization 82.0%		ICU Level of Service D	
Analysis Period (min) 15			
~ 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: 173: Staniford Street & Lomasney Way



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	12	12	11	10	12	12	12	10	8	11
Storage Length (ft)	140		0	0		140	0		0	0		0
Storage Lanes	1		0	0		1	0		1	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	4.0
Leading Detector (ft)	50	50			50	50			50	50		50
Trailing Detector (ft)	0	0			0	0			0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.86					0.60				0.72		
Frt						0.850			0.865			0.850
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1685	3202	0	0	3421	1422	0	0	1644	1668	0	1347
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1446	3202	0	0	3421	853	0	0	1644	1198	0	1347
Right Turn on Red			No			Yes			No			No
Satd. Flow (RTOR)						113						
Headway Factor	1.09	1.12	1.00	1.00	1.04	1.09	1.00	1.00	1.00	1.09	1.20	1.23
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		441			219			396			369	
Travel Time (s)		10.0			5.0			9.0			8.4	
Volume (vph)	348	512	0	0	655	185	0	0	1	308	0	281
Confl. Peds. (#/hr)	520					520			188	188		300
Peak Hour Factor	0.88	0.92	0.92	0.92	0.81	0.83	0.92	0.92	0.25	0.90	0.92	0.98
Heavy Vehicles (%)	0%	3%	0%	0%	2%	6%	0%	0%	0%	1%	0%	2%
Parking (#/hr)		2										4
Adj. Flow (vph)	395	557	0	0	809	223	0	0	4	342	0	287
Lane Group Flow (vph)	395	557	0	0	809	223	0	0	4	342	0	287
Turn Type	Prot					pm+ov			custom	Prot		Over
Protected Phases	3	2			6	4			1	4		3
Permitted Phases						6						
Detector Phases	3	2			6	4			1	4		3
Minimum Initial (s)	8.0	12.0			12.0	8.0			4.0	8.0		8.0
Minimum Split (s)	24.0	16.0			20.0	24.0			8.0	24.0		24.0
Total Split (s)	27.0	32.0	0.0	0.0	44.0	29.0	0.0	0.0	12.0	29.0	0.0	27.0
Total Split (%)	27.0%	32.0%	0.0%	0.0%	44.0%	29.0%	0.0%	0.0%	12.0%	29.0%	0.0%	27.0%
Maximum Green (s)	23.0	28.0			40.0	25.0			8.0	25.0		23.0
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	1.0			1.0	1.0		1.0
Lead/Lag	Lead	Lag				Lag			Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0			2.0	2.0			2.0	2.0		2.0
Recall Mode	None	C-Max			C-Max	None			None	None		None
Walk Time (s)	7.0				7.0	7.0				7.0		7.0
Flash Dont Walk (s)	13.0				9.0	13.0				13.0		13.0
Pedestrian Calls (#/hr)	0				0	0				0		0
Act Effct Green (s)	23.0	40.4			42.3	65.0			4.8	22.7		23.0
Actuated g/C Ratio	0.23	0.40			0.42	0.65			0.05	0.23		0.23



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	1.02	0.43			0.56	0.31			0.05	0.90		0.93
Control Delay	90.0	24.1			24.2	3.9			46.0	65.4		74.7
Queue Delay	0.0	0.0			0.0	0.0			0.0	0.0		0.0
Total Delay	90.0	24.1			24.2	3.9			46.0	65.4		74.7
LOS	F	C			C	A			D	E		E
Approach Delay		51.5			19.8							
Approach LOS		D			B							
90th %ile Green (s)	23.0	30.4			40.0	25.0			5.6	25.0		23.0
90th %ile Term Code	Max	Coord			Coord	Max			Gap	Max		Max
70th %ile Green (s)	23.0	40.0			40.0	25.0			0.0	25.0		23.0
70th %ile Term Code	Max	Coord			Coord	Max			Skip	Max		Max
50th %ile Green (s)	23.0	40.0			40.0	25.0			0.0	25.0		23.0
50th %ile Term Code	Max	Coord			Coord	Max			Skip	Max		Max
30th %ile Green (s)	23.0	43.4			43.4	21.6			0.0	21.6		23.0
30th %ile Term Code	Max	Coord			Coord	Gap			Skip	Gap		Max
10th %ile Green (s)	23.0	48.2			48.2	16.8			0.0	16.8		23.0
10th %ile Term Code	Max	Coord			Coord	Gap			Skip	Gap		Max
Stops (vph)	297	365			483	32			2	279		242
Fuel Used(gal)	9	6			7	1			0	7		6
CO Emissions (g/hr)	644	440			490	45			2	456		449
NOx Emissions (g/hr)	125	86			95	9			0	89		87
VOC Emissions (g/hr)	149	102			114	10			0	106		104
Dilemma Vehicles (#)	0	0			0	0			0	0		0
Queue Length 50th (ft)	~261	133			209	21			3	206		180
Queue Length 95th (ft)	#435	212			234	39			4	#353		#339
Internal Link Dist (ft)		361			139			316			289	
Turn Bay Length (ft)	140					140						
Base Capacity (vph)	388	1294			1448	747			132	417		310
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	1.02	0.43			0.56	0.30			0.03	0.82		0.93

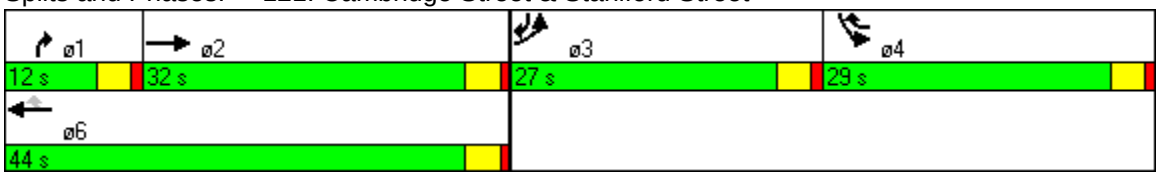
Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 94 (94%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 43.3 Intersection LOS: D
Intersection Capacity Utilization 64.4% ICU Level of Service C
Analysis Period (min) 15

~ 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: 121: Cambridge Street & Staniford Street



Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	10	12	12	12	10	10	16
Storage Length (ft)	0		0			0		0		0		25
Storage Lanes	0		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	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	15		9	15	15		9
Lane Util. Factor	0.95	0.95	0.95	0.95	0.91	0.91	0.91	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor		0.88			0.85		0.90			0.82		
Frt		0.974					0.988					0.850
Flt Protected		0.993			0.950		0.984			0.950		
Satd. Flow (prot)	0	2740	0	0	1254	0	2893	0	0	1500	2888	1631
Flt Permitted		0.993			0.950		0.984			0.950		
Satd. Flow (perm)	0	2706	0	0	1065	0	2641	0	0	1233	2888	1631
Right Turn on Red				Yes				Yes				No
Satd. Flow (RTOR)		2					8					
Headway Factor	1.14	1.14	1.14	1.14	1.25	1.25	1.14	1.14	1.14	1.25	1.25	0.97
Link Speed (mph)		30					30				30	
Link Distance (ft)		127					248				378	
Travel Time (s)		2.9					5.6				8.6	
Volume (vph)	69	327	54	11	235	18	192	30	97	225	220	245
Confl. Peds. (#/hr)	74		264	49	264	49		74	49	157		873
Peak Hour Factor	0.80	0.78	0.58	0.75	0.83	0.40	0.74	0.84	0.48	0.94	0.70	0.82
Heavy Vehicles (%)	2%	2%	2%	0%	10%	0%	2%	0%	0%	2%	5%	1%
Adj. Flow (vph)	86	419	93	15	283	45	259	36	202	239	314	299
Lane Group Flow (vph)	0	613	0	0	184	0	439	0	0	441	314	299
Turn Type	Split				Split	Split			Split	Split		pt+ov
Protected Phases	3	3			2	2	2		1	1	1	1 2
Permitted Phases												
Detector Phases	3	3			2	2	2		1	1	1	1 2
Minimum Initial (s)	8.0	8.0			8.0	8.0	8.0		10.0	10.0	10.0	
Minimum Split (s)	20.0	20.0			17.0	17.0	17.0		25.0	25.0	25.0	
Total Split (s)	21.0	21.0	0.0	0.0	22.0	22.0	22.0	0.0	32.0	32.0	32.0	54.0
Total Split (%)	21.0%	21.0%	0.0%	0.0%	22.0%	22.0%	22.0%	0.0%	32.0%	32.0%	32.0%	54.0%
Maximum Green (s)	15.0	15.0			16.0	16.0	16.0		26.0	26.0	26.0	
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	Lag	Lag			Lead	Lead	Lead					
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0		2.0	2.0	2.0	
Recall Mode	None	None			None	None	None		C-Max	C-Max	C-Max	
Walk Time (s)	7.0	7.0							7.0	7.0	7.0	
Flash Dont Walk (s)	7.0	7.0							11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0							0	0	0	
Act Effct Green (s)		17.0			18.0		18.0			28.6	28.6	50.6
Actuated g/C Ratio		0.17			0.18		0.18			0.29	0.29	0.51
v/c Ratio		1.31			0.81		0.83			1.03	0.38	0.36



Lane Group	SBL	SBT	SBR	SBR2
Lane Configurations				
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width (ft)	11	11	11	16
Storage Length (ft)	0		0	
Storage Lanes	1		0	
Total Lost Time (s)	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		
Trailing Detector (ft)	0	0		
Turning Speed (mph)	15		9	9
Lane Util. Factor	1.00	0.95	0.95	0.95
Ped Bike Factor	0.66	0.92		
Frt		0.964		
Flt Protected	0.950			
Satd. Flow (prot)	1525	2567	0	0
Flt Permitted	0.950			
Satd. Flow (perm)	1001	2567	0	0
Right Turn on Red				Yes
Satd. Flow (RTOR)		20		
Headway Factor	1.19	1.19	1.19	0.97
Link Speed (mph)		30		
Link Distance (ft)		263		
Travel Time (s)		6.0		
Volume (vph)	245	262	23	33
Confl. Peds. (#/hr)	873		49	157
Peak Hour Factor	0.88	0.83	0.70	0.50
Heavy Vehicles (%)	3%	11%	0%	3%
Adj. Flow (vph)	278	316	33	66
Lane Group Flow (vph)	278	415	0	0
Turn Type	Split			
Protected Phases	4	4		
Permitted Phases				
Detector Phases	4	4		
Minimum Initial (s)	8.0	8.0		
Minimum Split (s)	22.0	22.0		
Total Split (s)	25.0	25.0	0.0	0.0
Total Split (%)	25.0%	25.0%	0.0%	0.0%
Maximum Green (s)	19.0	19.0		
Yellow Time (s)	3.0	3.0		
All-Red Time (s)	3.0	3.0		
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	2.0	2.0		
Recall Mode	None	None		
Walk Time (s)	7.0	7.0		
Flash Dont Walk (s)	9.0	9.0		
Pedestrian Calls (#/hr)	0	0		
Act Effct Green (s)	20.4	20.4		
Actuated g/C Ratio	0.20	0.20		
v/c Ratio	0.89	0.77		

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Control Delay		166.5			80.2		67.3			69.5	18.3	19.0
Queue Delay		10.1			2.8		19.3			21.2	0.0	2.8
Total Delay		176.6			82.9		86.6			90.7	18.3	21.9
LOS		F			F		F			F	B	C
Approach Delay		176.6					85.5				49.6	
Approach LOS		F					F				D	
90th %ile Green (s)	15.0	15.0			16.0	16.0	16.0		26.0	26.0	26.0	
90th %ile Term Code	Max	Max			Max	Max	Max		Coord	Coord	Coord	
70th %ile Green (s)	15.0	15.0			16.0	16.0	16.0		26.0	26.0	26.0	
70th %ile Term Code	Max	Max			Max	Max	Max		Coord	Coord	Coord	
50th %ile Green (s)	15.0	15.0			16.0	16.0	16.0		26.0	26.0	26.0	
50th %ile Term Code	Max	Max			Max	Max	Max		Coord	Coord	Coord	
30th %ile Green (s)	15.0	15.0			16.0	16.0	16.0		26.0	26.0	26.0	
30th %ile Term Code	Max	Max			Max	Max	Max		Coord	Coord	Coord	
10th %ile Green (s)	15.0	15.0			16.0	16.0	16.0		29.1	29.1	29.1	
10th %ile Term Code	Max	Max			Max	Max	Max		Coord	Coord	Coord	
Stops (vph)		135			144		362			270	154	195
Fuel Used(gal)		17			4		7			7	2	3
CO Emissions (g/hr)		1176			251		492			489	162	192
NOx Emissions (g/hr)		229			49		96			95	32	37
VOC Emissions (g/hr)		273			58		114			113	38	45
Dilemma Vehicles (#)		0			0		0			0	0	0
Queue Length 50th (ft)		~230			139		164			~320	66	158
Queue Length 95th (ft)		m#232			#230		179			m#464	m64	m184
Internal Link Dist (ft)		47					168				298	
Turn Bay Length (ft)												25
Base Capacity (vph)		467			226		527			429	827	826
Starvation Cap Reductn		8			10		89			24	0	409
Spillback Cap Reductn		0			0		1			0	0	0
Storage Cap Reductn		0			0		0			0	0	0
Reduced v/c Ratio		1.34			0.85		1.00			1.09	0.38	0.72

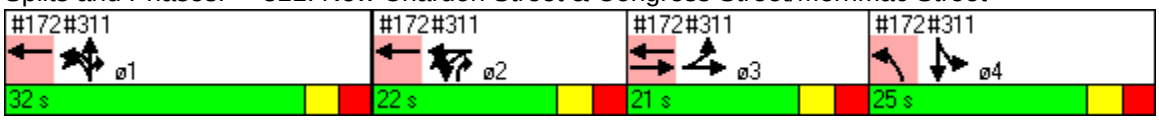
Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 75 (75%), Referenced to phase 1:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.31			
Intersection Signal Delay: 87.2		Intersection LOS: F	
Intersection Capacity Utilization 75.3%		ICU Level of Service D	
Analysis Period (min) 15			

~ 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: 311: New Chardon Street & Congress Street/Merrimac Street





Lane Group	SBL	SBT	SBR	SBR2
Control Delay	70.1	46.3		
Queue Delay	0.0	18.6		
Total Delay	70.1	64.8		
LOS	E	E		
Approach Delay		66.9		
Approach LOS		E		
90th %ile Green (s)	19.0	19.0		
90th %ile Term Code	Max	Max		
70th %ile Green (s)	19.0	19.0		
70th %ile Term Code	Max	Max		
50th %ile Green (s)	19.0	19.0		
50th %ile Term Code	Max	Max		
30th %ile Green (s)	19.0	19.0		
30th %ile Term Code	Max	Max		
10th %ile Green (s)	15.9	15.9		
10th %ile Term Code	Gap	Gap		
Stops (vph)	217	279		
Fuel Used(gal)	5	5		
CO Emissions (g/hr)	363	363		
NOx Emissions (g/hr)	71	71		
VOC Emissions (g/hr)	84	84		
Dilemma Vehicles (#)	0	0		
Queue Length 50th (ft)	173	125		
Queue Length 95th (ft)	#307	163		
Internal Link Dist (ft)		183		
Turn Bay Length (ft)				
Base Capacity (vph)	320	555		
Starvation Cap Reductn	0	0		
Spillback Cap Reductn	0	135		
Storage Cap Reductn	0	0		
Reduced v/c Ratio	0.87	0.99		

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø1	ø2
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	11	11		
Total Lost Time (s)	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)		9	15		15	9		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00		
Ped Bike Factor					0.82			
Frt					0.920			
Flt Protected					0.980			
Satd. Flow (prot)	3185	0	0	3185	1224	0		
Flt Permitted					0.980			
Satd. Flow (perm)	3185	0	0	3185	1224	0		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)					67			
Headway Factor	1.14	1.14	1.14	1.14	1.19	1.19		
Link Speed (mph)	30			30	30			
Link Distance (ft)	342			127	116			
Travel Time (s)	7.8			2.9	2.6			
Volume (vph)	431	0	0	658	39	55		
Confl. Peds. (#/hr)						157		
Peak Hour Factor	0.79	0.92	0.92	0.92	0.75	0.72		
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%		
Adj. Flow (vph)	546	0	0	715	52	76		
Lane Group Flow (vph)	546	0	0	715	128	0		
Turn Type								
Protected Phases	3			1 2 3	4		1	2
Permitted Phases								
Detector Phases	3			1 2 3	4			
Minimum Initial (s)	8.0				8.0		10.0	8.0
Minimum Split (s)	20.0				22.0		25.0	17.0
Total Split (s)	21.0	0.0	0.0	75.0	25.0	0.0	32.0	22.0
Total Split (%)	21.0%	0.0%	0.0%	75.0%	25.0%	0.0%	32%	22%
Maximum Green (s)	15.0				19.0		26.0	16.0
Yellow Time (s)	3.0				3.0		3.0	3.0
All-Red Time (s)	3.0				3.0		3.0	3.0
Lead/Lag	Lag							Lead
Lead-Lag Optimize?								
Vehicle Extension (s)	2.0				2.0		2.0	2.0
Recall Mode	None				None		C-Max	None
Walk Time (s)	7.0				7.0		7.0	
Flash Dont Walk (s)	7.0				9.0		11.0	
Pedestrian Calls (#/hr)	0				0		0	
Act Effct Green (s)	17.0			71.6	20.4			
Actuated g/C Ratio	0.17			0.72	0.20			
v/c Ratio	1.01			0.31	0.42			
Control Delay	83.4			2.6	22.1			
Queue Delay	121.0			12.5	673.8			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø1	ø2
Total Delay	204.4			15.1	695.9			
LOS	F			B	F			
Approach Delay	204.4			15.1	695.9			
Approach LOS	F			B	F			
90th %ile Green (s)	15.0				19.0		26.0	16.0
90th %ile Term Code	Max				Max		Coord	Max
70th %ile Green (s)	15.0				19.0		26.0	16.0
70th %ile Term Code	Max				Max		Coord	Max
50th %ile Green (s)	15.0				19.0		26.0	16.0
50th %ile Term Code	Max				Max		Coord	Max
30th %ile Green (s)	15.0				19.0		26.0	16.0
30th %ile Term Code	Max				Max		Coord	Max
10th %ile Green (s)	15.0				15.9		29.1	16.0
10th %ile Term Code	Max				Gap		Coord	Max
Stops (vph)	377			101	43			
Fuel Used(gal)	11			2	1			
CO Emissions (g/hr)	737			109	52			
NOx Emissions (g/hr)	143			21	10			
VOC Emissions (g/hr)	171			25	12			
Dilemma Vehicles (#)	0			0	0			
Queue Length 50th (ft)	~187			37	33			
Queue Length 95th (ft)	#241			m42	64			
Internal Link Dist (ft)	262			47	36			
Turn Bay Length (ft)								
Base Capacity (vph)	541			2281	310			
Starvation Cap Reductn	0			1545	0			
Spillback Cap Reductn	124			0	294			
Storage Cap Reductn	0			0	0			
Reduced v/c Ratio	1.31			0.97	8.00			

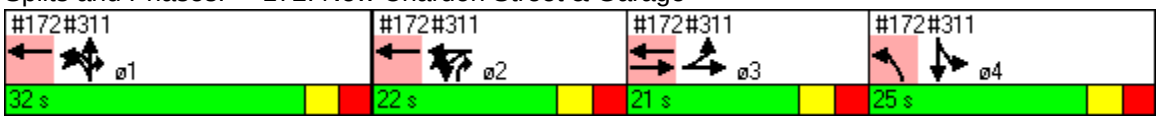
Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 75 (75%), Referenced to phase 1:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.31			
Intersection Signal Delay: 152.3		Intersection LOS: F	
Intersection Capacity Utilization 40.2%		ICU Level of Service A	
Analysis Period (min) 15			

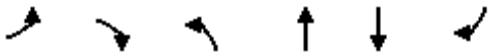
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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: 172: New Chardon Street & Garage





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	5	0	648	832	6
Peak Hour Factor	0.92	0.63	0.92	0.94	0.96	0.50
Hourly flow rate (vph)	0	8	0	689	867	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				389		
pX, platoon unblocked						
vC, conflicting volume	1217	439	879			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1217	439	879			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	176	571	777			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	8	345	345	578	301
Volume Left	0	0	0	0	0
Volume Right	8	0	0	0	12
cSH	571	1700	1700	1700	1700
Volume to Capacity	0.01	0.20	0.20	0.34	0.18
Queue Length 95th (ft)	1	0	0	0	0
Control Delay (s)	11.4	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	11.4	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	811	3	0	0	0	50
Peak Hour Factor	0.91	0.75	0.92	0.92	0.92	0.98
Hourly flow rate (vph)	891	4	0	0	0	51
Pedestrians				2	32	
Lane Width (ft)				0.0	16.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	4	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			927		925	482
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			927		925	482
tC, single (s)			4.1		6.8	7.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			100		100	89
cM capacity (veh/h)			719		262	480

Direction, Lane #	NB 1	NB 2	NW 1
Volume Total	594	301	51
Volume Left	0	0	0
Volume Right	0	4	51
cSH	1700	1700	480
Volume to Capacity	0.35	0.18	0.11
Queue Length 95th (ft)	0	0	9
Control Delay (s)	0.0	0.0	13.4
Lane LOS			B
Approach Delay (s)	0.0		13.4
Approach LOS			B

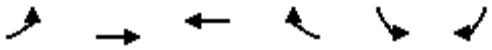
Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization		33.2%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	552	171	41	708	0	0
Peak Hour Factor	0.94	0.68	0.61	0.84	0.92	0.92
Hourly flow rate (vph)	587	251	67	843	0	0
Pedestrians					210	
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)	196			550		
pX, platoon unblocked						
vC, conflicting volume			1049		1479	531
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1049		1479	531
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			89		100	100
cM capacity (veh/h)			636		106	498

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	235	235	369	348	562
Volume Left	0	0	0	67	0
Volume Right	0	0	251	0	0
cSH	1700	1700	1700	636	1700
Volume to Capacity	0.14	0.14	0.22	0.11	0.33
Queue Length 95th (ft)	0	0	0	9	0
Control Delay (s)	0.0	0.0	0.0	3.3	0.0
Lane LOS				A	
Approach Delay (s)	0.0			1.3	
Approach LOS					

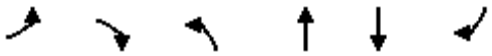
Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	49	503	683	23	11	66
Peak Hour Factor	0.60	0.94	0.84	0.54	0.50	0.70
Hourly flow rate (vph)	82	535	813	43	22	94
Pedestrians		24	20		179	
Lane Width (ft)		11.0	11.0		10.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		12	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		294	452			
pX, platoon unblocked						
vC, conflicting volume	1035				1464	631
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1035				1464	631
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				76	74
cM capacity (veh/h)	595				90	369

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	260	357	542	314	116
Volume Left	82	0	0	0	22
Volume Right	0	0	0	43	94
cSH	595	1700	1700	1700	233
Volume to Capacity	0.14	0.21	0.32	0.18	0.50
Queue Length 95th (ft)	12	0	0	0	64
Control Delay (s)	5.0	0.0	0.0	0.0	35.0
Lane LOS	A				D
Approach Delay (s)	2.1		0.0		35.0
Approach LOS					D

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	62	0	0	578	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	67	0	0	628	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				130	787	
pX, platoon unblocked						
vC, conflicting volume	633	318	637			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	633	318	637			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	90	100			
cM capacity (veh/h)	417	683	956			

Direction, Lane #	EB 1	SB 1	SB 2
Volume Total	67	419	218
Volume Left	0	0	0
Volume Right	67	0	9
cSH	683	1700	1700
Volume to Capacity	0.10	0.25	0.13
Queue Length 95th (ft)	8	0	0
Control Delay (s)	10.8	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.8	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		

Garden Garage Redevelopment

Detailed Trip Generation Estimation - Proposed Project

Howard/Stein-Hudson Associates
August 26, 2011
Equation-high rise apt, shopping center

Component	Size	Category	Trip Rates (Trips/ksf or unit)	Unadjusted Vehicle Trips	National vehicle occupancy rate[1]	**Converted to Person trips**	Capture Rate	Person Trips less Capture Rate	Transit Share[2]	**Transit Trips**	Walk/Bike/ Other Share[2]	**Walk/ Bike/ Other Trips**	Vehicle Share[2]	Vehicle Person Trips	Local vehicle occupancy rate[3]	**Total Adjusted Vehicle Trips**
Daily Trip Generation																
Residential [4]	500	Total	4.24	2118	1.2	**2,542**	0%	2,542	14%	**356**	65%	**1,652**	21%	534	1.1	**485**
	units	In	2.12	1059	1.2	**1,271**	0%	1271	14%	**178**	65%	**826**	21%	267	1.1	**243**
		Out	2.12	1059	1.2	**1,271**	0%	1271	14%	**178**	65%	**826**	21%	267	1.1	**243**
Retail [5]	3	Total	42.94	129	1.8	**232**	25%	174	15%	**35**	54%	**125**	31%	72	1.8	**40**
	KSF	In	21.67	65	1.8	**117**	25%	88	15%	**18**	54%	**63**	31%	36	1.8	**20**
		Out	21.27	64	1.8	**115**	25%	86	15%	**17**	54%	**62**	31%	36	1.8	**20**
Daily		Total		2,118		**2,542**		2,542		**356**		**1,652**				**525**
Total		In		1,059		**1,271**		1,271		**178**		**826**				**263**
		Out		1,059		**1,271**		1,271		**178**		**826**				**263**
AM Peak-hour Trip Generation																
Residential [4]	500	Total	0.30	150	1.2	**180**	0%	180		**24**		**125**		31	1.1	**28**
	units	In	0.08	38	1.2	**46**	0%	46	15%	**7**	68%	**31**	17%	8	1.1	**7**
		Out	0.22	112	1.2	**134**	0%	134	13%	**17**	70%	**94**	17%	23	1.1	**21**
Retail [5]	3	Total	6.33	19	1.8	**34**	25%	26		**6**		**21**		10	1.8	**6**
	KSF	In	4.00	12	1.8	**22**	25%	17	16%	**4**	57%	**13**	27%	6	1.8	**3**
		Out	2.33	7	1.8	**13**	25%	10	13%	**2**	60%	**8**	27%	4	1.8	**2**
AM Peak		Total		150		**180**		180		**24**		**125**				**34**
Total		In		38		**46**		46		**7**		**31**				**10**
		Out		112		**134**		134		**17**		**94**				**23**
PM Peak-hour Trip Generation																
Residential [4]	500	Total	0.34	172	1.2	**206**	0%	206		**28**		**142**		35	1.1	**32**
	units	In	0.21	105	1.2	**126**	0%	126	13%	**16**	70%	**88**	17%	21	1.1	**19**
		Out	0.13	67	1.2	**80**	0%	80	15%	**12**	68%	**54**	17%	14	1.1	**13**
Retail [5]	3	Total	20.33	61	1.8	**110**	25%	83		**16**		**69**		30	1.8	**17**
	KSF	In	10.00	30	1.8	**54**	25%	41	13%	**7**	60%	**32**	27%	15	1.8	**8**
		Out	10.33	31	1.8	**56**	25%	42	16%	**9**	57%	**37**	27%	15	1.8	**8**
PM Peak		Total		172		**206**		206		**28**		**142**				**49**
Total		In		105		**126**		126		**16**		**88**				**27**
		Out		67		**80**		80		**12**		**54**				**21**

Notes:

1. National vehicle occupancy rates based on the 2001 National Household Travel Survey
2. Mode shares based on BTD data for Area 1
3. Local vehicle occupancy rates based on 2000 Census
4. ITE Trip Generation, 8th Edition, LUC 222 (High-Rise Apartment)
5. ITE Trip Generation, 8th Edition, LUC 820 (Shopping Center)

Attachment B

Wind Tunnel Analysis

Table 2: 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	DATA NOT AVAILABLE					
		Summer	DATA NOT AVAILABLE					
		Fall	DATA NOT AVAILABLE					
		Winter	DATA NOT AVAILABLE					
		Annual	DATA NOT AVAILABLE					
	B	Spring	12		Sitting	19		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	19		Acceptable
	C	Spring	17		Walking	25		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
2	A	Spring	15		Standing	22		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	16		Walking	22		Acceptable
		Annual	15		Standing	21		Acceptable
	B	Spring	18	+20%	Walking	25	+14%	Acceptable
		Summer	13	+18%	Standing	18	+13%	Acceptable
		Fall	16	+14%	Walking	23	+15%	Acceptable
		Winter	19	+19%	Walking	26	+18%	Acceptable
		Annual	17	+13%	Walking	24	+14%	Acceptable
	C	Spring	17	+13%	Walking	27	+23%	Acceptable
		Summer	13	+18%	Standing	20	+25%	Acceptable
		Fall	16	+14%	Walking	25	+25%	Acceptable
		Winter	18	+13%	Walking	29	+32%	Acceptable
		Annual	17	+13%	Walking	26	+24%	Acceptable
3	A	Spring	15		Standing	22		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	22	+47%	Uncomfortable	29	+32%	Acceptable
		Summer	16	+45%	Walking	21	+31%	Acceptable
		Fall	20	+54%	Uncomfortable	26	+30%	Acceptable
		Winter	22	+47%	Uncomfortable	29	+32%	Acceptable
		Annual	20	+43%	Uncomfortable	27	+29%	Acceptable
	C	Spring	17	+13%	Walking	26	+18%	Acceptable
		Summer	13	+18%	Standing	19	+19%	Acceptable
		Fall	16	+23%	Walking	23	+15%	Acceptable
		Winter	18	+20%	Walking	27	+23%	Acceptable
		Annual	16	+14%	Walking	24	+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 – Alternate Massing
C – 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 2: 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	13		Standing	21		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	12		Sitting	20		Acceptable
		Winter	14		Standing	23		Acceptable
		Annual	13		Standing	21		Acceptable
	B	Spring	18	+38%	Walking	26	+24%	Acceptable
		Summer	14	+56%	Standing	20	+33%	Acceptable
		Fall	17	+42%	Walking	24	+20%	Acceptable
		Winter	18	+29%	Walking	26	+13%	Acceptable
		Annual	17	+31%	Walking	24	+14%	Acceptable
	C	Spring	15	+15%	Standing	23	+10%	Acceptable
		Summer	12	+33%	Sitting	17	+13%	Acceptable
		Fall	14	+17%	Standing	22	+10%	Acceptable
		Winter	16	+14%	Walking	24		Acceptable
		Annual	15	+15%	Standing	22		Acceptable
5	A	Spring	14		Standing	22		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	22	+57%	Uncomfortable	30	+36%	Acceptable
		Summer	17	+55%	Walking	23	+44%	Acceptable
		Fall	21	+62%	Uncomfortable	28	+40%	Acceptable
		Winter	23	+52%	Uncomfortable	31	+35%	Acceptable
		Annual	21	+50%	Uncomfortable	29	+38%	Acceptable
	C	Spring	21	+50%	Uncomfortable	30	+36%	Acceptable
		Summer	16	+45%	Walking	22	+38%	Acceptable
		Fall	20	+54%	Uncomfortable	28	+40%	Acceptable
		Winter	23	+52%	Uncomfortable	32	+39%	Unacceptable
		Annual	21	+50%	Uncomfortable	29	+38%	Acceptable
6	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	8		Sitting	12		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	9		Sitting	15		Acceptable
	C	Spring	10		Sitting	17		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	19		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

A – No Build
B – Alternate Massing
C – 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 2: 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	9		Sitting	15		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	8		Sitting	14		Acceptable
		Winter	9		Sitting	17		Acceptable
		Annual	8		Sitting	15		Acceptable
	B	Spring	13	+44%	Standing	20	+33%	Acceptable
		Summer	10	+43%	Sitting	15	+25%	Acceptable
		Fall	12	+50%	Sitting	18	+29%	Acceptable
		Winter	13	+44%	Standing	20	+18%	Acceptable
		Annual	12	+50%	Sitting	18	+20%	Acceptable
	C	Spring	11	+22%	Sitting	18	+20%	Acceptable
		Summer	8	+14%	Sitting	14	+17%	Acceptable
		Fall	10	+25%	Sitting	17	+21%	Acceptable
		Winter	12	+33%	Sitting	20	+18%	Acceptable
		Annual	11	+38%	Sitting	18	+20%	Acceptable
8	A	Spring	11		Sitting	17		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	16		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	13	+18%	Standing	20	+18%	Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	18	+13%	Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	19	+12%	Acceptable
	C	Spring	13	+18%	Standing	20	+18%	Acceptable
		Summer	11	+10%	Sitting	16		Acceptable
		Fall	12		Sitting	19	+19%	Acceptable
		Winter	14	+17%	Standing	22	+16%	Acceptable
		Annual	13	+18%	Standing	20	+18%	Acceptable
9	A	Spring	11		Sitting	17		Acceptable
		Summer	11		Sitting	15		Acceptable
		Fall	11		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	16		Acceptable
	B	Spring	14	+27%	Standing	23	+35%	Acceptable
		Summer	11		Sitting	18	+20%	Acceptable
		Fall	13	+18%	Standing	21	+31%	Acceptable
		Winter	16	+33%	Walking	24	+33%	Acceptable
		Annual	14	+27%	Standing	22	+38%	Acceptable
	C	Spring	17	+55%	Walking	26	+52%	Acceptable
		Summer	13	+18%	Standing	19	+27%	Acceptable
		Fall	16	+45%	Walking	24	+50%	Acceptable
		Winter	18	+50%	Walking	28	+56%	Acceptable
		Annual	17	+55%	Walking	26	+63%	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 – Alternate Massing
C – 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 2: 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	DATA NOT AVAILABLE					
		Summer	DATA NOT AVAILABLE					
		Fall	DATA NOT AVAILABLE					
		Winter	DATA NOT AVAILABLE					
		Annual	DATA NOT AVAILABLE					
	B	Spring	18		Walking	27		Acceptable
		Summer	13		Standing	21		Acceptable
		Fall	16		Walking	25		Acceptable
		Winter	19		Walking	30		Acceptable
		Annual	18		Walking	27		Acceptable
	C	Spring	19		Walking	28		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	18		Walking	27		Acceptable
		Winter	21		Uncomfortable	31		Acceptable
		Annual	19		Walking	28		Acceptable
11	A	Spring	DATA NOT AVAILABLE					
		Summer	DATA NOT AVAILABLE					
		Fall	DATA NOT AVAILABLE					
		Winter	DATA NOT AVAILABLE					
		Annual	DATA NOT AVAILABLE					
	B	Spring	17		Walking	26		Acceptable
		Summer	13		Standing	21		Acceptable
		Fall	16		Walking	25		Acceptable
		Winter	18		Walking	29		Acceptable
		Annual	17		Walking	26		Acceptable
	C	Spring	14		Standing	22		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	14		Standing	22		Acceptable
12	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	11		Sitting	16		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
	C	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

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 – Alternate Massing
C – 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 2: 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	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	15	+88%	Standing	23	+64%	Acceptable
		Summer	12	+71%	Sitting	18	+64%	Acceptable
		Fall	14	+75%	Standing	22	+69%	Acceptable
		Winter	16	+78%	Walking	25	+67%	Acceptable
		Annual	14	+75%	Standing	23	+64%	Acceptable
	C	Spring	9	+13%	Sitting	15		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	8		Sitting	14		Acceptable
		Winter	10	+11%	Sitting	16		Acceptable
		Annual	9	+13%	Sitting	14		Acceptable
14	A	Spring	8		Sitting	13		Acceptable
		Summer	7		Sitting	11		Acceptable
		Fall	8		Sitting	12		Acceptable
		Winter	8		Sitting	14		Acceptable
		Annual	8		Sitting	13		Acceptable
	B	Spring	15	+88%	Standing	23	+77%	Acceptable
		Summer	11	+57%	Sitting	18	+64%	Acceptable
		Fall	13	+63%	Standing	22	+83%	Acceptable
		Winter	16	+100%	Walking	25	+79%	Acceptable
		Annual	14	+75%	Standing	23	+77%	Acceptable
	C	Spring	12	+50%	Sitting	19	+46%	Acceptable
		Summer	8	+14%	Sitting	14	+27%	Acceptable
		Fall	11	+38%	Sitting	17	+42%	Acceptable
		Winter	13	+63%	Standing	21	+50%	Acceptable
		Annual	11	+38%	Sitting	19	+46%	Acceptable
15	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	17		Acceptable
		Summer	8		Sitting	14		Acceptable
		Fall	9		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	17		Acceptable
	C	Spring	20		Uncomfortable	26		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	18		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 – Alternate Massing
C – 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 2: 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	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					
	C	Spring	13		Standing	21		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	14		Standing	23		Acceptable
		Annual	13		Standing	21		Acceptable
17	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					
	C	Spring	17		Walking	27		Acceptable
		Summer	13		Standing	21		Acceptable
		Fall	16		Walking	26		Acceptable
		Winter	19		Walking	30		Acceptable
		Annual	17		Walking	27		Acceptable
18	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					
	C	Spring	14		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	13		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	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Alternate Massing	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: 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	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					
	C	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	14		Standing	23		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	15		Standing	24		Acceptable
20	A	Spring	DATA NOT AVAILABLE					
		Summer	DATA NOT AVAILABLE					
		Fall	DATA NOT AVAILABLE					
		Winter	DATA NOT AVAILABLE					
		Annual	DATA NOT AVAILABLE					
	B	Spring	23		Uncomfortable	31		Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	21		Uncomfortable	28		Acceptable
		Winter	23		Uncomfortable	31		Acceptable
		Annual	21		Uncomfortable	29		Acceptable
	C	Spring	19		Walking	28		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	20		Uncomfortable	29		Acceptable
		Annual	18		Walking	27		Acceptable
21	A	Spring	16		Walking	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	21		Acceptable
	B	Spring	18	+13%	Walking	26	+18%	Acceptable
		Summer	14	+17%	Standing	19	+12%	Acceptable
		Fall	17	+13%	Walking	23	+10%	Acceptable
		Winter	19	+19%	Walking	26	+13%	Acceptable
		Annual	17	+13%	Walking	24	+14%	Acceptable
	C	Spring	18	+13%	Walking	26	+18%	Acceptable
		Summer	13		Standing	19	+12%	Acceptable
		Fall	16		Walking	24	+14%	Acceptable
		Winter	19	+19%	Walking	28	+22%	Acceptable
		Annual	17	+13%	Walking	25	+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 – Alternate Massing
C – 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 2: 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	11		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	16	+45%	Walking	24	+41%	Acceptable
		Summer	12	+50%	Sitting	18	+38%	Acceptable
		Fall	15	+50%	Standing	22	+47%	Acceptable
		Winter	17	+55%	Walking	26	+52%	Acceptable
		Annual	16	+60%	Walking	23	+44%	Acceptable
	C	Spring	21	+91%	Uncomfortable	29	+71%	Acceptable
		Summer	15	+88%	Standing	21	+62%	Acceptable
		Fall	19	+90%	Walking	26	+73%	Acceptable
		Winter	21	+91%	Uncomfortable	29	+71%	Acceptable
		Annual	19	+90%	Walking	27	+69%	Acceptable
23	A	Spring	14		Standing	21		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	16	+14%	Walking	23	+10%	Acceptable
		Summer	12	+20%	Sitting	18	+20%	Acceptable
		Fall	14		Standing	22	+16%	Acceptable
		Winter	16	+14%	Walking	25	+14%	Acceptable
		Annual	15	+15%	Standing	23	+15%	Acceptable
	C	Spring	19	+36%	Walking	26	+24%	Acceptable
		Summer	14	+40%	Standing	20	+33%	Acceptable
		Fall	18	+38%	Walking	24	+26%	Acceptable
		Winter	20	+43%	Uncomfortable	27	+23%	Acceptable
		Annual	18	+38%	Walking	25	+25%	Acceptable
24	A	Spring	13		Standing	20		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	14		Standing	22	+10%	Acceptable
		Summer	10	+11%	Sitting	16	+14%	Acceptable
		Fall	13		Standing	20	+11%	Acceptable
		Winter	15		Standing	23	+10%	Acceptable
		Annual	14	+17%	Standing	21	+11%	Acceptable
	C	Spring	15	+15%	Standing	22	+10%	Acceptable
		Summer	12	+33%	Sitting	18	+29%	Acceptable
		Fall	13		Standing	20	+11%	Acceptable
		Winter	15		Standing	23	+10%	Acceptable
		Annual	14	+17%	Standing	21	+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 – Alternate Massing
C – 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 2: 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	11		Sitting	18		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	17		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	14	+27%	Standing	23	+28%	Acceptable
		Summer	11	+38%	Sitting	17	+31%	Acceptable
		Fall	13	+30%	Standing	21	+24%	Acceptable
		Winter	15	+25%	Standing	24	+20%	Acceptable
		Annual	14	+27%	Standing	22	+22%	Acceptable
	C	Spring	12		Sitting	19		Acceptable
		Summer	10	+25%	Sitting	15	+15%	Acceptable
		Fall	11	+10%	Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
26	A	Spring	13		Standing	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	16	+23%	Walking	24	+26%	Acceptable
		Summer	12	+20%	Sitting	18	+20%	Acceptable
		Fall	15	+25%	Standing	23	+28%	Acceptable
		Winter	17	+31%	Walking	26	+24%	Acceptable
		Annual	16	+33%	Walking	24	+26%	Acceptable
	C	Spring	15	+15%	Standing	22	+16%	Acceptable
		Summer	12	+20%	Sitting	17	+13%	Acceptable
		Fall	14	+17%	Standing	21	+17%	Acceptable
		Winter	16	+23%	Walking	24	+14%	Acceptable
		Annual	14	+17%	Standing	22	+16%	Acceptable
27	A	Spring	18		Walking	25		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	23	+28%	Uncomfortable	30	+20%	Acceptable
		Summer	17	+31%	Walking	23	+15%	Acceptable
		Fall	21	+31%	Uncomfortable	28	+22%	Acceptable
		Winter	24	+33%	Uncomfortable	31	+19%	Acceptable
		Annual	22	+29%	Uncomfortable	29	+21%	Acceptable
	C	Spring	18		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	17		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 – Alternate Massing
C – 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 2: 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	11		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	23	+109%	Uncomfortable	32	+100%	Unacceptable
		Summer	17	+113%	Walking	23	+77%	Acceptable
		Fall	21	+110%	Uncomfortable	29	+93%	Acceptable
		Winter	23	+109%	Uncomfortable	32	+88%	Unacceptable
		Annual	21	+110%	Uncomfortable	30	+88%	Acceptable
	C	Spring	16	+45%	Walking	22	+38%	Acceptable
		Summer	12	+50%	Sitting	17	+31%	Acceptable
		Fall	14	+40%	Standing	21	+40%	Acceptable
		Winter	16	+45%	Walking	23	+35%	Acceptable
		Annual	15	+50%	Standing	21	+31%	Acceptable
29	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	19	+90%	Walking	28	+87%	Acceptable
		Summer	14	+75%	Standing	21	+75%	Acceptable
		Fall	17	+89%	Walking	26	+86%	Acceptable
		Winter	19	+90%	Walking	29	+81%	Acceptable
		Annual	18	+100%	Walking	27	+80%	Acceptable
	C	Spring	13	+30%	Standing	21	+40%	Acceptable
		Summer	9	+13%	Sitting	15	+25%	Acceptable
		Fall	12	+33%	Sitting	19	+36%	Acceptable
		Winter	15	+50%	Standing	23	+44%	Acceptable
		Annual	13	+44%	Standing	21	+40%	Acceptable
30	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	15	+50%	Standing	23	+52%	Acceptable
		Summer	11	+38%	Sitting	17	+42%	Acceptable
		Fall	14	+56%	Standing	22	+57%	Acceptable
		Winter	16	+60%	Walking	25	+56%	Acceptable
		Annual	14	+56%	Standing	23	+52%	Acceptable
	C	Spring	10		Sitting	15		Acceptable
		Summer	7	-12%	Sitting	11		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	11	+10%	Sitting	17		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 – Alternate Massing
C – 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 2: 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	9		Sitting	14		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	8		Sitting	13		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	8		Sitting	14		Acceptable
	B	Spring	15	+67%	Standing	24	+71%	Acceptable
		Summer	12	+50%	Sitting	18	+50%	Acceptable
		Fall	14	+75%	Standing	22	+69%	Acceptable
		Winter	16	+78%	Walking	25	+67%	Acceptable
		Annual	15	+88%	Standing	23	+64%	Acceptable
	C	Spring	12	+33%	Sitting	19	+36%	Acceptable
		Summer	9	+13%	Sitting	15	+25%	Acceptable
		Fall	11	+38%	Sitting	17	+31%	Acceptable
		Winter	13	+44%	Standing	21	+40%	Acceptable
		Annual	11	+38%	Sitting	18	+29%	Acceptable
32	A	Spring	DATA NOT AVAILABLE					
		Summer	DATA NOT AVAILABLE					
		Fall	DATA NOT AVAILABLE					
		Winter	DATA NOT AVAILABLE					
		Annual	DATA NOT AVAILABLE					
	B	Spring	19		Walking	26		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	18		Walking	24		Acceptable
	C	Spring	21		Uncomfortable	29		Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	19		Walking	28		Acceptable
		Winter	22		Uncomfortable	32		Unacceptable
		Annual	20		Uncomfortable	29		Acceptable
33	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	11		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	14		Standing	22		Acceptable
	C	Spring	22		Uncomfortable	29		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	20		Uncomfortable	27		Acceptable
		Winter	23		Uncomfortable	30		Acceptable
		Annual	21		Uncomfortable	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

A – No Build
B – Alternate Massing
C – 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 2: 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	12		Sitting	18		Acceptable
		Summer	10		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	16	+33%	Walking	25	+39%	Acceptable
		Summer	12	+20%	Sitting	19	+36%	Acceptable
		Fall	15	+50%	Standing	23	+44%	Acceptable
		Winter	17	+42%	Walking	26	+44%	Acceptable
		Annual	15	+36%	Standing	24	+41%	Acceptable
	C	Spring	12		Sitting	19		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11	+10%	Sitting	18	+13%	Acceptable
		Winter	12		Sitting	20	+11%	Acceptable
		Annual	11		Sitting	18		Acceptable
35	A	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	15	+15%	Standing	24	+20%	Acceptable
		Summer	12	+20%	Sitting	18	+13%	Acceptable
		Fall	14	+27%	Standing	23	+28%	Acceptable
		Winter	16	+23%	Walking	26	+24%	Acceptable
		Annual	14	+17%	Standing	24	+26%	Acceptable
	C	Spring	15	+15%	Standing	23	+15%	Acceptable
		Summer	12	+20%	Sitting	18	+13%	Acceptable
		Fall	14	+27%	Standing	21	+17%	Acceptable
		Winter	15	+15%	Standing	23	+10%	Acceptable
		Annual	14	+17%	Standing	22	+16%	Acceptable
36	A	Spring	13		Standing	21		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	20		Acceptable
		Winter	14		Standing	23		Acceptable
		Annual	12		Sitting	21		Acceptable
	B	Spring	14		Standing	24	+14%	Acceptable
		Summer	11	+10%	Sitting	18	+13%	Acceptable
		Fall	13		Standing	22	+10%	Acceptable
		Winter	15		Standing	25		Acceptable
		Annual	14	+17%	Standing	23	+10%	Acceptable
	C	Spring	13		Standing	20		Acceptable
		Summer	11	+10%	Sitting	16		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	20	-12%	Acceptable
		Annual	12		Sitting	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 – Alternate Massing
C – 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 2: 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	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	18		Walking	26		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	18	+13%	Walking	26		Acceptable
	C	Spring	16		Walking	25		Acceptable
		Summer	11	-14%	Sitting	18		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17		Walking	27		Acceptable
		Annual	15		Standing	24		Acceptable
38	A	Spring	14		Standing	22		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	15		Standing	24		Acceptable
		Annual	14		Standing	22		Acceptable
	B	Spring	15		Standing	24		Acceptable
		Summer	13		Standing	20	+11%	Acceptable
		Fall	14		Standing	23	+10%	Acceptable
		Winter	16		Walking	26		Acceptable
		Annual	15		Standing	23		Acceptable
	C	Spring	16	+14%	Walking	25	+14%	Acceptable
		Summer	13		Standing	20	+11%	Acceptable
		Fall	15	+15%	Standing	23	+10%	Acceptable
		Winter	17	+13%	Walking	27	+13%	Acceptable
		Annual	15		Standing	24		Acceptable
39	A	Spring	16		Walking	25		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	14		Standing	23		Acceptable
		Winter	16		Walking	26		Acceptable
		Annual	15		Standing	24		Acceptable
	B	Spring	16		Walking	25		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	14		Standing	23		Acceptable
		Winter	16		Walking	26		Acceptable
		Annual	15		Standing	24		Acceptable
	C	Spring	16		Walking	25		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	14		Standing	23		Acceptable
		Winter	16		Walking	26		Acceptable
		Annual	15		Standing	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

A – No Build
B – Alternate Massing
C – 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 2: 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	15		Standing	23		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	15		Standing	24		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	16		Walking	25		Acceptable
		Annual	15		Standing	23	+10%	Acceptable
	C	Spring	15		Standing	23		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	24		Acceptable
		Annual	14		Standing	22		Acceptable
41	A	Spring	19		Walking	26		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	18		Walking	26		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	17		Walking	24		Acceptable
	C	Spring	18		Walking	25		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable
42	A	Spring	14		Standing	22		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	13		Standing	21		Acceptable
	B	Spring	13		Standing	21		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	12		Sitting	20		Acceptable
		Winter	13	-12%	Standing	22		Acceptable
		Annual	12		Sitting	20		Acceptable
	C	Spring	13		Standing	21		Acceptable
		Summer	10		Sitting	17		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13	-12%	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 – Alternate Massing
C – 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 2: 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	18		Walking	26		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	18		Walking	26		Acceptable
	B	Spring	19		Walking	26		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	18		Walking	26		Acceptable
	C	Spring	19		Walking	26		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	21	+11%	Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
44	A	Spring	11		Sitting	18		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	17		Acceptable
		Winter	11		Sitting	19		Acceptable
		Annual	10		Sitting	17		Acceptable
	B	Spring	10		Sitting	17		Acceptable
		Summer	7	-12%	Sitting	12		Acceptable
		Fall	9		Sitting	15	-11%	Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	16		Acceptable
	C	Spring	10		Sitting	17		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	17		Acceptable
45	A	Spring	17		Walking	26		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	18		Walking	28		Acceptable
		Annual	17		Walking	25		Acceptable
	B	Spring	16		Walking	25		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	18		Walking	28		Acceptable
		Annual	16		Walking	25		Acceptable
	C	Spring	17		Walking	26		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	18		Walking	28		Acceptable
		Annual	16		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 – Alternate Massing
C – 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 2: 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	14		Standing	21		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	13		Standing	20		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	12		Sitting	20		Acceptable
	C	Spring	14		Standing	23	+10%	Acceptable
		Summer	11	+10%	Sitting	17	+13%	Acceptable
		Fall	13		Standing	21	+11%	Acceptable
		Winter	15		Standing	24		Acceptable
		Annual	14		Standing	22	+10%	Acceptable
47	A	Spring	15		Standing	23		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	16		Walking	25		Acceptable
		Annual	15		Standing	23		Acceptable
	B	Spring	15		Standing	23		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	22		Acceptable
		Winter	16		Walking	25		Acceptable
		Annual	14		Standing	23		Acceptable
	C	Spring	16		Walking	25		Acceptable
		Summer	13	+18%	Standing	19	+12%	Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17		Walking	27		Acceptable
		Annual	16		Walking	25		Acceptable
48	A	Spring	13		Standing	20		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	13		Standing	22	+10%	Acceptable
		Summer	10	+11%	Sitting	16		Acceptable
		Fall	12		Sitting	20		Acceptable
		Winter	14		Standing	23		Acceptable
		Annual	13		Standing	21		Acceptable
	C	Spring	17	+31%	Walking	26	+30%	Acceptable
		Summer	13	+44%	Standing	19	+27%	Acceptable
		Fall	15	+25%	Standing	23	+21%	Acceptable
		Winter	18	+29%	Walking	28	+27%	Acceptable
		Annual	16	+23%	Walking	25	+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 – Alternate Massing
C – 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 2: 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	12		Sitting	21		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	19		Acceptable
		Winter	13		Standing	22		Acceptable
		Annual	12		Sitting	20		Acceptable
	B	Spring	14	+17%	Standing	23	+10%	Acceptable
		Summer	10	+11%	Sitting	16		Acceptable
		Fall	12		Sitting	20		Acceptable
		Winter	14		Standing	23		Acceptable
		Annual	13		Standing	21		Acceptable
	C	Spring	13		Standing	22		Acceptable
		Summer	9		Sitting	16		Acceptable
		Fall	12		Sitting	20		Acceptable
		Winter	13		Standing	22		Acceptable
		Annual	12		Sitting	21		Acceptable
50	A	Spring	14		Standing	22		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	13		Standing	22		Acceptable
	B	Spring	14		Standing	22		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	13		Standing	21		Acceptable
	C	Spring	13		Standing	21		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	12		Sitting	20		Acceptable
		Winter	14		Standing	23		Acceptable
		Annual	13		Standing	21		Acceptable
51	A	Spring	23		Uncomfortable	31		Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	21		Uncomfortable	29		Acceptable
		Winter	25		Uncomfortable	34		Unacceptable
		Annual	23		Uncomfortable	31		Acceptable
	B	Spring	24		Uncomfortable	32		Unacceptable
		Summer	17		Walking	23		Acceptable
		Fall	22		Uncomfortable	29		Acceptable
		Winter	26		Uncomfortable	34		Unacceptable
		Annual	23		Uncomfortable	31		Acceptable
	C	Spring	23		Uncomfortable	31		Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	21		Uncomfortable	28		Acceptable
		Winter	24		Uncomfortable	33		Unacceptable
		Annual	22		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

A – No Build
B – Alternate Massing
C – 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 2: 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	23		Uncomfortable	32		Unacceptable
		Summer	18		Walking	25		Acceptable
		Fall	21		Uncomfortable	30		Acceptable
		Winter	25		Uncomfortable	35		Unacceptable
		Annual	22		Uncomfortable	32		Unacceptable
	B	Spring	23		Uncomfortable	32		Unacceptable
		Summer	18		Walking	24		Acceptable
		Fall	21		Uncomfortable	30		Acceptable
		Winter	24		Uncomfortable	35		Unacceptable
		Annual	22		Uncomfortable	31		Acceptable
	C	Spring	21		Uncomfortable	30		Acceptable
		Summer	16	-10%	Walking	22	-11%	Acceptable
		Fall	20		Uncomfortable	28		Acceptable
		Winter	23		Uncomfortable	33		Unacceptable
		Annual	21		Uncomfortable	30		Acceptable
53	A	Spring	14		Standing	22		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	14		Standing	22		Acceptable
	B	Spring	14		Standing	22		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	14		Standing	21		Acceptable
	C	Spring	14		Standing	22		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable
54	A	Spring	23		Uncomfortable	32		Unacceptable
		Summer	16		Walking	23		Acceptable
		Fall	21		Uncomfortable	30		Acceptable
		Winter	25		Uncomfortable	35		Unacceptable
		Annual	22		Uncomfortable	32		Unacceptable
	B	Spring	23		Uncomfortable	32		Unacceptable
		Summer	16		Walking	23		Acceptable
		Fall	21		Uncomfortable	30		Acceptable
		Winter	25		Uncomfortable	35		Unacceptable
		Annual	23		Uncomfortable	32		Unacceptable
	C	Spring	23		Uncomfortable	32		Unacceptable
		Summer	16		Walking	22		Acceptable
		Fall	21		Uncomfortable	29		Acceptable
		Winter	25		Uncomfortable	35		Unacceptable
		Annual	22		Uncomfortable	31		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 – Alternate Massing
C – 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 2: 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	20		Uncomfortable	26		Acceptable
		Summer	14		Standing	18		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
	B	Spring	20		Uncomfortable	26		Acceptable
		Summer	14		Standing	18		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	22		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
	C	Spring	19		Walking	26		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	19		Walking	25		Acceptable
56	A	Spring	20		Uncomfortable	28		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	17		Walking	26		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	18		Walking	27		Acceptable
	B	Spring	21		Uncomfortable	29		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	20		Uncomfortable	29		Acceptable
		Annual	19		Walking	27		Acceptable
	C	Spring	20		Uncomfortable	29		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	18		Walking	27		Acceptable
57	A	Spring	16		Walking	22		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	16		Walking	23		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	16		Walking	22		Acceptable
	C	Spring	15		Standing	22		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	16		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

A – No Build
B – Alternate Massing
C – 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 2: 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	11		Sitting	17		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	11		Sitting	18		Acceptable
		Summer	8		Sitting	14		Acceptable
		Fall	11	+10%	Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11	+10%	Sitting	18	+13%	Acceptable
	C	Spring	16	+45%	Walking	25	+47%	Acceptable
		Summer	11	+38%	Sitting	18	+38%	Acceptable
		Fall	14	+40%	Standing	22	+38%	Acceptable
		Winter	18	+64%	Walking	27	+50%	Acceptable
		Annual	16	+60%	Walking	24	+50%	Acceptable
59	A	Spring	13		Standing	20		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	17	+31%	Walking	26	+30%	Acceptable
		Summer	12	+33%	Sitting	19	+27%	Acceptable
		Fall	15	+25%	Standing	24	+26%	Acceptable
		Winter	17	+31%	Walking	27	+29%	Acceptable
		Annual	16	+33%	Walking	25	+32%	Acceptable
	C	Spring	18	+38%	Walking	29	+45%	Acceptable
		Summer	13	+44%	Standing	21	+40%	Acceptable
		Fall	16	+33%	Walking	26	+37%	Acceptable
		Winter	20	+54%	Uncomfortable	32	+52%	Unacceptable
		Annual	18	+50%	Walking	28	+47%	Acceptable
60	A	Spring	9		Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	9		Sitting	15		Acceptable
	B	Spring	12	+33%	Sitting	18	+13%	Acceptable
		Summer	9	+13%	Sitting	14		Acceptable
		Fall	11	+22%	Sitting	17	+21%	Acceptable
		Winter	13	+30%	Standing	20	+25%	Acceptable
		Annual	12	+33%	Sitting	18	+20%	Acceptable
	C	Spring	18	+100%	Walking	28	+75%	Acceptable
		Summer	13	+63%	Standing	20	+54%	Acceptable
		Fall	16	+78%	Walking	25	+79%	Acceptable
		Winter	21	+110%	Uncomfortable	31	+94%	Acceptable
		Annual	18	+100%	Walking	27	+80%	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 – Alternate Massing
C – 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 2: 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	8		Sitting	14		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	8		Sitting	13		Acceptable
		Winter	8		Sitting	15		Acceptable
		Annual	8		Sitting	13		Acceptable
	B	Spring	12	+50%	Sitting	21	+50%	Acceptable
		Summer	8	+14%	Sitting	15	+25%	Acceptable
		Fall	11	+38%	Sitting	19	+46%	Acceptable
		Winter	13	+63%	Standing	23	+52%	Acceptable
		Annual	11	+38%	Sitting	20	+54%	Acceptable
	C	Spring	20	+150%	Uncomfortable	31	+121%	Acceptable
		Summer	14	+100%	Standing	22	+83%	Acceptable
		Fall	17	+113%	Walking	28	+115%	Acceptable
		Winter	22	+175%	Uncomfortable	34	+127%	Unacceptable
		Annual	19	+138%	Walking	30	+131%	Acceptable
62	A	Spring	6		Sitting	10		Acceptable
		Summer	5		Sitting	8		Acceptable
		Fall	6		Sitting	9		Acceptable
		Winter	6		Sitting	11		Acceptable
		Annual	6		Sitting	10		Acceptable
	B	Spring	7	+17%	Sitting	12	+20%	Acceptable
		Summer	5		Sitting	8		Acceptable
		Fall	7	+17%	Sitting	11	+22%	Acceptable
		Winter	8	+33%	Sitting	13	+18%	Acceptable
		Annual	7	+17%	Sitting	11	+10%	Acceptable
	C	Spring	11	+83%	Sitting	18	+80%	Acceptable
		Summer	8	+60%	Sitting	13	+63%	Acceptable
		Fall	10	+67%	Sitting	16	+78%	Acceptable
		Winter	13	+116%	Standing	20	+82%	Acceptable
		Annual	11	+83%	Sitting	17	+70%	Acceptable
63	A	Spring	8		Sitting	12		Acceptable
		Summer	6		Sitting	9		Acceptable
		Fall	7		Sitting	11		Acceptable
		Winter	8		Sitting	12		Acceptable
		Annual	7		Sitting	12		Acceptable
	B	Spring	8		Sitting	13		Acceptable
		Summer	6		Sitting	10	+11%	Acceptable
		Fall	7		Sitting	12		Acceptable
		Winter	8		Sitting	13		Acceptable
		Annual	8	+14%	Sitting	12		Acceptable
	C	Spring	8		Sitting	13		Acceptable
		Summer	6		Sitting	10	+11%	Acceptable
		Fall	7		Sitting	12		Acceptable
		Winter	8		Sitting	13		Acceptable
		Annual	8	+14%	Sitting	12		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 – Alternate Massing
C – 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 2: 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	13		Standing	22		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	23		Acceptable
		Annual	13		Standing	21		Acceptable
	B	Spring	14		Standing	22		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	20		Acceptable
		Winter	14		Standing	23		Acceptable
		Annual	13		Standing	21		Acceptable
	C	Spring	13		Standing	21		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	22		Acceptable
		Annual	12		Sitting	20		Acceptable
65	A	Spring	15		Standing	23		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	15		Standing	23		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	15		Standing	22		Acceptable
	C	Spring	13	-12%	Standing	21		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12	-13%	Sitting	19		Acceptable
		Winter	14	-17%	Standing	22	-11%	Acceptable
		Annual	13	-12%	Standing	20		Acceptable
66	A	Spring	14		Standing	21		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	20		Acceptable
	B	Spring	16	+14%	Walking	23	+10%	Acceptable
		Summer	12	+20%	Sitting	18	+20%	Acceptable
		Fall	14		Standing	22	+16%	Acceptable
		Winter	17	+13%	Walking	25	+14%	Acceptable
		Annual	15		Standing	23	+15%	Acceptable
	C	Spring	14		Standing	22		Acceptable
		Summer	11	+10%	Sitting	17	+13%	Acceptable
		Fall	13		Standing	21	+11%	Acceptable
		Winter	15		Standing	24		Acceptable
		Annual	14		Standing	22	+10%	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 – Alternate Massing
C – 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 2: 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	13		Standing	20		Acceptable
		Summer	10		Sitting	14		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	13		Standing	19		Acceptable
	B	Spring	15	+15%	Standing	23	+15%	Acceptable
		Summer	11	+10%	Sitting	17	+21%	Acceptable
		Fall	13		Standing	21	+17%	Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	22	+16%	Acceptable
	C	Spring	16	+23%	Walking	24	+20%	Acceptable
		Summer	12	+20%	Sitting	18	+29%	Acceptable
		Fall	15	+25%	Standing	23	+28%	Acceptable
		Winter	16		Walking	25	+14%	Acceptable
		Annual	15	+15%	Standing	23	+21%	Acceptable
68	A	Spring	15		Standing	22		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	18	+20%	Walking	26	+18%	Acceptable
		Summer	13	+18%	Standing	19	+19%	Acceptable
		Fall	16	+14%	Walking	23	+10%	Acceptable
		Winter	17		Walking	26	+13%	Acceptable
		Annual	16		Walking	24		Acceptable
	C	Spring	18	+20%	Walking	26	+18%	Acceptable
		Summer	13	+18%	Standing	19	+19%	Acceptable
		Fall	16	+14%	Walking	23	+10%	Acceptable
		Winter	18	+13%	Walking	26	+13%	Acceptable
		Annual	17	+13%	Walking	24		Acceptable
69	A	Spring	17		Walking	27		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	16		Walking	25		Acceptable
		Winter	19		Walking	30		Acceptable
		Annual	17		Walking	27		Acceptable
	B	Spring	20	+18%	Uncomfortable	29		Acceptable
		Summer	15	+15%	Standing	22	+10%	Acceptable
		Fall	18	+13%	Walking	27		Acceptable
		Winter	22	+16%	Uncomfortable	32		Unacceptable
		Annual	19	+12%	Walking	29		Acceptable
	C	Spring	15	-11%	Standing	24	-10%	Acceptable
		Summer	11	-14%	Sitting	17	-14%	Acceptable
		Fall	14	-12%	Standing	22	-11%	Acceptable
		Winter	16	-15%	Walking	26	-12%	Acceptable
		Annual	14	-17%	Standing	24	-10%	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 – Alternate Massing
C – 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 2: 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	19		Walking	27		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	29		Acceptable
		Annual	18		Walking	26		Acceptable
	B	Spring	18		Walking	26		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable
	C	Spring	16	-15%	Walking	24	-10%	Acceptable
		Summer	12	-13%	Sitting	18		Acceptable
		Fall	15	-16%	Standing	22	-11%	Acceptable
		Winter	17	-14%	Walking	25	-13%	Acceptable
		Annual	16	-10%	Walking	23	-11%	Acceptable
71	A	Spring	15		Standing	23		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	14		Standing	22		Acceptable
	B	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	14		Standing	22		Acceptable
	C	Spring	13	-12%	Standing	21		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12	-13%	Sitting	20		Acceptable
		Winter	14	-12%	Standing	22		Acceptable
		Annual	13		Standing	21		Acceptable
72	A	Spring	22		Uncomfortable	30		Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	20		Uncomfortable	28		Acceptable
		Winter	23		Uncomfortable	32		Unacceptable
		Annual	21		Uncomfortable	29		Acceptable
	B	Spring	22		Uncomfortable	30		Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	21		Uncomfortable	29		Acceptable
		Winter	23		Uncomfortable	32		Unacceptable
		Annual	21		Uncomfortable	30		Acceptable
	C	Spring	21		Uncomfortable	29		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	20		Uncomfortable	27		Acceptable
		Winter	22		Uncomfortable	31		Acceptable
		Annual	20		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.

Configurations

A – No Build
B – Alternate Massing
C – 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 2: 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	18		Walking	27		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	17		Walking	26		Acceptable
		Winter	20		Uncomfortable	29		Acceptable
		Annual	18		Walking	27		Acceptable
	B	Spring	21	+17%	Uncomfortable	30	+11%	Acceptable
		Summer	16	+23%	Walking	22	+10%	Acceptable
		Fall	19	+12%	Walking	28		Acceptable
		Winter	22	+10%	Uncomfortable	32	+10%	Unacceptable
		Annual	20	+11%	Uncomfortable	29		Acceptable
	C	Spring	19		Walking	27		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	20		Uncomfortable	29		Acceptable
		Annual	18		Walking	26		Acceptable
74	A	Spring	15		Standing	24		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	16		Walking	25		Acceptable
		Annual	14		Standing	23		Acceptable
	B	Spring	15		Standing	24		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	14		Standing	23		Acceptable
		Winter	16		Walking	26		Acceptable
		Annual	15		Standing	24		Acceptable
	C	Spring	15		Standing	24		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	23		Acceptable
		Winter	16		Walking	26		Acceptable
		Annual	15		Standing	23		Acceptable
75	A	Spring	14		Standing	23		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	15		Standing	24		Acceptable
		Annual	14		Standing	22		Acceptable
	B	Spring	14		Standing	23		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	15		Standing	25		Acceptable
		Annual	14		Standing	22		Acceptable
	C	Spring	15		Standing	24		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	17	+13%	Walking	26		Acceptable
		Annual	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

A – No Build
B – Alternate Massing
C – 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 2: 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	26		Uncomfortable	34		Unacceptable
		Summer	19		Walking	25		Acceptable
		Fall	24		Uncomfortable	32		Unacceptable
		Winter	28		Dangerous	37		Unacceptable
		Annual	26		Uncomfortable	34		Unacceptable
	B	Spring	27		Uncomfortable	35		Unacceptable
		Summer	19		Walking	25		Acceptable
		Fall	24		Uncomfortable	32		Unacceptable
		Winter	29		Dangerous	37		Unacceptable
		Annual	26		Uncomfortable	34		Unacceptable
	C	Spring	26		Uncomfortable	33		Unacceptable
		Summer	18		Walking	24		Acceptable
		Fall	24		Uncomfortable	31		Acceptable
		Winter	28		Dangerous	36		Unacceptable
		Annual	25		Uncomfortable	33		Unacceptable
77	A	Spring	18		Walking	27		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	18		Walking	26		Acceptable
	B	Spring	18		Walking	27		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	18		Walking	26		Acceptable
	C	Spring	18		Walking	26		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	17		Walking	25		Acceptable
78	A	Spring	22		Uncomfortable	32		Unacceptable
		Summer	16		Walking	23		Acceptable
		Fall	21		Uncomfortable	29		Acceptable
		Winter	25		Uncomfortable	35		Unacceptable
		Annual	22		Uncomfortable	31		Acceptable
	B	Spring	25	+14%	Uncomfortable	34		Unacceptable
		Summer	18	+13%	Walking	25		Acceptable
		Fall	23	+10%	Uncomfortable	32	+10%	Unacceptable
		Winter	27		Uncomfortable	37		Unacceptable
		Annual	24		Uncomfortable	34	+10%	Unacceptable
	C	Spring	25	+14%	Uncomfortable	34		Unacceptable
		Summer	18	+13%	Walking	24		Acceptable
		Fall	23	+10%	Uncomfortable	31		Acceptable
		Winter	27		Uncomfortable	37		Unacceptable
		Annual	24		Uncomfortable	33		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 – Alternate Massing
C – 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 2: 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	23		Uncomfortable	33		Unacceptable
		Summer	17		Walking	24		Acceptable
		Fall	21		Uncomfortable	30		Acceptable
		Winter	24		Uncomfortable	35		Unacceptable
		Annual	22		Uncomfortable	32		Unacceptable
	B	Spring	24		Uncomfortable	34		Unacceptable
		Summer	18		Walking	25		Acceptable
		Fall	22		Uncomfortable	31		Acceptable
		Winter	26		Uncomfortable	36		Unacceptable
		Annual	23		Uncomfortable	33		Unacceptable
	C	Spring	24		Uncomfortable	33		Unacceptable
		Summer	18		Walking	24		Acceptable
		Fall	22		Uncomfortable	31		Acceptable
		Winter	26		Uncomfortable	36		Unacceptable
		Annual	23		Uncomfortable	32		Unacceptable
80	A	Spring	12		Sitting	19		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	11		Sitting	19		Acceptable
	B	Spring	12		Sitting	19		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	18		Acceptable
	C	Spring	12		Sitting	18		Acceptable
		Summer	8	-10%	Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	18		Acceptable
81	A	Spring	21		Uncomfortable	30		Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	20		Uncomfortable	28		Acceptable
		Winter	23		Uncomfortable	32		Unacceptable
		Annual	21		Uncomfortable	29		Acceptable
	B	Spring	19		Walking	26	-12%	Acceptable
		Summer	15		Standing	20	-12%	Acceptable
		Fall	17	-14%	Walking	24	-13%	Acceptable
		Winter	20	-12%	Uncomfortable	28	-12%	Acceptable
		Annual	18	-13%	Walking	25	-13%	Acceptable
	C	Spring	16	-23%	Walking	23	-22%	Acceptable
		Summer	13	-18%	Standing	18	-21%	Acceptable
		Fall	14	-29%	Standing	21	-24%	Acceptable
		Winter	16	-29%	Walking	24	-24%	Acceptable
		Annual	15	-28%	Standing	22	-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 – Alternate Massing
C – 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 2: 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	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	11		Sitting	17		Acceptable
		Annual	9		Sitting	16		Acceptable
	C	Spring	10		Sitting	16		Acceptable
		Summer	7	-12%	Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	9		Sitting	16		Acceptable
83	A	Spring	19		Walking	27		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	21		Uncomfortable	30		Acceptable
		Annual	19		Walking	27		Acceptable
	B	Spring	18		Walking	25		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	17	-10%	Walking	25		Acceptable
	C	Spring	14	-25%	Standing	21	-21%	Acceptable
		Summer	10	-28%	Sitting	15	-24%	Acceptable
		Fall	12	-28%	Sitting	19	-23%	Acceptable
		Winter	15	-28%	Standing	23	-22%	Acceptable
		Annual	13	-31%	Standing	21	-21%	Acceptable
84	A	Spring	16		Walking	25		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	16		Walking	24		Acceptable
	B	Spring	14	-12%	Standing	21	-15%	Acceptable
		Summer	11		Sitting	17	-10%	Acceptable
		Fall	13	-12%	Standing	20	-12%	Acceptable
		Winter	15	-16%	Standing	23	-14%	Acceptable
		Annual	14	-12%	Standing	21	-12%	Acceptable
	C	Spring	13	-18%	Standing	19	-23%	Acceptable
		Summer	11		Sitting	16	-15%	Acceptable
		Fall	12	-19%	Sitting	18	-21%	Acceptable
		Winter	13	-27%	Standing	20	-25%	Acceptable
		Annual	12	-24%	Sitting	19	-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 – Alternate Massing
C – 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 2: 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
85	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	17		Acceptable
		Summer	9	+13%	Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	16		Acceptable
	C	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
86	A	Spring	16		Walking	24		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	16		Walking	23		Acceptable
	B	Spring	16		Walking	23		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	C	Spring	15		Standing	22		Acceptable
		Summer	11		Sitting	16	-10%	Acceptable
		Fall	13	-12%	Standing	20		Acceptable
		Winter	15	-16%	Standing	23	-11%	Acceptable
		Annual	14	-12%	Standing	21		Acceptable
87	A	Spring	19		Walking	28		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	21		Uncomfortable	30		Acceptable
		Annual	19		Walking	27		Acceptable
	B	Spring	20		Uncomfortable	29		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	19		Walking	27		Acceptable
		Winter	22		Uncomfortable	31		Acceptable
		Annual	20		Uncomfortable	28		Acceptable
	C	Spring	19		Walking	28		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	21		Uncomfortable	30		Acceptable
		Annual	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

A – No Build
B – Alternate Massing
C – 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 2: 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
88	A	Spring	16		Walking	24		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	B	Spring	21	+31%	Uncomfortable	28	+17%	Acceptable
		Summer	15	+25%	Standing	21	+24%	Acceptable
		Fall	18	+20%	Walking	26	+18%	Acceptable
		Winter	21	+24%	Uncomfortable	29	+16%	Acceptable
		Annual	19	+19%	Walking	27	+17%	Acceptable
	C	Spring	17		Walking	24		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	16		Walking	23		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	17		Acceptable
	B	Spring	16	+45%	Walking	22	+22%	Acceptable
		Summer	12	+33%	Sitting	17	+21%	Acceptable
		Fall	15	+36%	Standing	20	+18%	Acceptable
		Winter	16	+33%	Walking	23	+21%	Acceptable
		Annual	15	+36%	Standing	21	+24%	Acceptable
	C	Spring	16	+45%	Walking	23	+28%	Acceptable
		Summer	12	+33%	Sitting	17	+21%	Acceptable
		Fall	15	+36%	Standing	21	+24%	Acceptable
		Winter	17	+42%	Walking	24	+26%	Acceptable
		Annual	15	+36%	Standing	22	+29%	Acceptable
90	A	Spring	12		Sitting	19		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	17		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	19		Acceptable
	C	Spring	12		Sitting	20		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	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 – Alternate Massing
C – 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 2: 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
91	A	Spring	13		Standing	21		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	14		Standing	23		Acceptable
		Annual	13		Standing	21		Acceptable
	B	Spring	14		Standing	21		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
	C	Spring	12		Sitting	20		Acceptable
		Summer	11	-14%	Sitting	18		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	19		Acceptable
92	A	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	13	+18%	Standing	20	+11%	Acceptable
		Summer	10	+11%	Sitting	15		Acceptable
		Fall	12	+20%	Sitting	18	+13%	Acceptable
		Winter	13		Standing	21	+11%	Acceptable
		Annual	12		Sitting	19	+12%	Acceptable
	C	Spring	10		Sitting	17		Acceptable
		Summer	8	-10%	Sitting	14		Acceptable
		Fall	9		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	16		Acceptable
93	A	Spring	15		Standing	23		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	15		Standing	23		Acceptable
	B	Spring	15		Standing	23		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	C	Spring	15		Standing	22		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		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

A – No Build
B – Alternate Massing
C – 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 2: 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
94	A	Spring	18		Walking	27		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	20		Uncomfortable	29		Acceptable
		Annual	18		Walking	26		Acceptable
	B	Spring	18		Walking	27		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	20		Uncomfortable	29		Acceptable
		Annual	18		Walking	26		Acceptable
	C	Spring	18		Walking	26		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	18		Walking	26		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 – Alternate Massing
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Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
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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

Attachment C

Air Quality

80701 Garden Garage/Emerson Place - Calculation of Stationary Source Emissions

Heating Boilers

				Notes
Source Name		NTB1-3	STB1-3	
Make		N/A	N/A	
Model		N/A	N/A	
Qty.		3	3	3x3.33=10, 3x2=6 mmbtu/hr from Mech Report
Boiler Heat Input	MMBTU/hr (ea.):	3.333	2.000	assumed
Boiler Emission Rates	lb/MMBTU	g/s (ea.)	g/s (ea.)	
NOx	0.035	0.01470	0.00882	ERP limits
CO	0.080	0.03360	0.02016	ERP limits
VOC	0.030	0.01260	0.00756	ERP limits
PM-2.5	0.010	0.00420	0.00252	ERP limits Assume PM10=PM2.5
PM-10	0.010	0.00420	0.00252	ERP limits Assume PM10=PM2.5
SO2	0.0006	0.00024	0.00015	AP42 Table 1.4-2 (assuming 1040 Btu/scf)
CO2	115.385	48.45562	29.07628	AP42 Table 1.4-2 (assuming 1040 Btu/scf)
Gas Exit Temp (°F)	°F	170	170	Assumed
Exhaust air (CFM)	CFM	1651.44	990.96	Assumed
Gas Exit Velocity (fps)	fps	50.46	47.27	calculated, 40 fps minimum
Roof Height	feet	255.00	333.25	from site plans
Stack height	feet above roofline	10	10	ERP minimum
Stack height	feet	265	343.25	calculated
Stack Diameter	feet	0.833	0.667	Assumed

Cooling Towers

				Notes
Designation		NTCT	STCT	
Make		BAC	BAC	from Mech report
Model		1500	3000	from Mech report
Cooling Tower Rate	tons	550	850	Mfg data
Tower Overall Dimensions	feet			Mfg data
CT Stack Height (above roofline)	feet	14.5	11	Mfg data
Primary Building Height (ft)	feet	230.00	308.00	from Architect A-62 site plan
CT Stack Height (ft)	feet	245	319	calculated
Number of cells (per tower)	#	2	2	from Mech report
Cooling Tower Specs				
Cooling Tower Exhaust Flow	CFM	154880	237740	Mfg data
Cooling Tower Cell Exhaust Flow	CFM	77440	118870	per cell
Cooling Tower Cell Exhaust Flow	kg/s	40.7	62.5	calculated
Cooling Tower Exhaust Temp	°F	78	78	assumed
Cooling Tower Cell Diameter	feet	5.5	10	Mfg data (5.5), Est. (10')
Cooling Tower Stack Velocity	fps	54.32	25.22	calculated
Cooling Tower Drift				
Drift Rate	% of circ water	0.001	0.001	assumed
Circulating Water Rate	gpm	1,650	2,550	assumed 3gpm/ton cooling
Circulating Water Rate	gph	99,000	153,000	calculated
TDS+TSS concentration in drift	mg/L	1,500	1,500	assumed
PM emission rate in drift (per cell)	lb/hr	0.006	0.010	calculated
PM emission rate in drift (per cell)	g/s	0.00078	0.00121	calculated

Emergency Generator

					Notes
Designation		EG-ST	EG-NT	EG-Garage	
Number		1	1	1	
Electrical output	kilowatts	500	500	750	from Mech report
Make		CAT	CAT	CAT	from Mech report
model		C15 Standby	C15 Standby	C27 Standby	from Mech report
Engine Horsepower	BHP	762.00	762.00	1141.00	Mfg data
Engine power	kilowatts	568.22	568.22	850.84	calculated
Fuel consumption @full load	gph	36.59	36.59	53.50	Mfg data
Heat Input	MMBTU/hr:	5.01283	5.01283	7.3295	calculated
Stack Parameters					
Exhaust Temperature	°F	942.08	942.08	949.8	Mfg data
Exhaust Temperature	°K	778.8	778.8	783.0	calculated
Total Exhaust Flow	ACFM	3842.24	3842.24	5646.8	Mfg data
Flange Diameter	in.	6	6	8	Mfg data
Maximum Backpressure	in. H2O	27.3	27.3	40.2	Mfg data
Maximum velocity	fpm	16607.63	16607.63	20208.39	calculated
Flow area required	sq. ft	0.231	0.231	0.279	calculated
Number of exhausts (typ. 1 or 2)	#	1	1	1	assumed
Selected silencer diameter	in	8	8	10	assumed
Actual silencer opening area	sq. ft each	0.349	0.349	0.545	calculated
Actual velocity	fpm each	11007.207	11007.207	10353.210	calculated
Actual velocity	fps each	183.453	183.453	172.553	calculated
Single Stack Effective Diameter	ft	0.667	0.667	0.833	calculated
Single Stack Effective Diameter	m	0.203	0.203	0.254	calculated
Single Stack Effective Velocity	fps	183.453	183.453	172.553	calculated
Single Stack Effective Velocity	mps	55.917	55.917	52.594	calculated
Primary Building Height	ft	308.25	230.00	97.00	
Stack Height (10' above roofline)	ft	*318.25*	*240.00*	*107.00*	calculated
Stack Height	m	*97.00*	*73.15*	*32.61*	calculated
Pollutant	Emission factor unit	Emission factor	Emission factor	Emission factor	
NOx	g/BHP-h	5.73	5.73	5.32	"Nominal" EF from mfg data
CO	g/BHP-h	0.40	0.40	0.24	"Nominal" EF from mfg data
VOC	g/BHP-h	0.01	0.01	0.03	"Nominal" EF from mfg data
PM10	g/BHP-h	0.02	0.02	0.020	"Nominal" EF from mfg data
PM2.5	g/BHP-h	0.02	0.02	0.020	"Nominal" EF from mfg data
SO2	lb/MMBTU	0.001515	0.001515	0.001515	emission factor from EPA AP-42 (Table 3.4-1)
HAPs	lb/MMBTU	0.00149	0.00149	0.00149	emission factor from EPA AP-42 (Table 3.4-3&4)
CO2	lb/hr	800.4	800.4	1168.3	"Nominal" EF from mfg data
Short Term Emission Rate					
NOx	g/s	0.0416	0.0416	0.0577	uses EPA 'intermittent" factor
CO	g/s	0.0844	0.0844	0.0761	calculated
PM10	g/s	0.0038	0.0038	0.0063	calculated
PM2.5	g/s	0.0038	0.0038	0.0063	calculated
SO2	g/s	0.0010	0.0010	0.0014	calculated
Long Term (300 hr/yr) Emission Rate					
NOx	g/s	0.0416	0.0416	0.0577	calculated
CO	g/s	0.0029	0.0029	0.0026	calculated
PM10	g/s	0.0001	0.0001	0.0002	calculated
PM2.5	g/s	0.0001	0.0001	0.0002	calculated
SO2	g/s	0.00003	0.00003	0.00005	calculated

Garage Exhaust Vents

Description	850 spaces under bldg.	
total spaces	850	from project description
Residential spaces	440	from project description
Retail/commercial spaces	410	from project description
# vehicles entering garage/hr	390	assume peak turnover of 75% of total spaces
Levels	4	from project description
Garage Area (sq ft)	390000	from project description
Number of vents	2	from project description
Stack Exhaust Flow (acfm)	585000	1.5 cfm/sq ft.
Stack Exhaust Temperature (°F)	*70*	Assumed underground temp remains consistent
outlet area per vent (sqft)	50	Assumed
effective diameter (ft)	*7.97885*	Vents are covered Louvers. Thus model as BETA
Stack Velocity (fpm)	5850.00000	
Stack Velocity (fps)	97.50000	
Stack height (ft)	*0*	Ground level vents
Garage Distance Traveled (ft)	1100	Approximate distance to center of garage
Hourly garage mileage (VMT)	81.250	

Total Emissions

	Per Vent Emission Rates		2013 10mph Emission Factors M6.2 g/mile
Composite VOC (g/s):	0.00539	Composite VOC (g/mile):	0.478
Composite CO (g/s):	0.12131	Composite CO (g/mile):	10.750
Composite NOX (g/s):	0.00455	Composite NOX (g/mile):	0.403
Total PM2.5 (g/s):	0.00013	Total PM2.5 (g/mile):	0.011
Total PM10 (g/s):	0.00013	Total PM10 (g/mile):	0.011
SO2 (g/s):	0.00009	SO2 (g/mile):	0.008

Example Emissions Assumption.

Example Emissions Assumption: 4 levels underground, 1000 spaces

Of the 1000 spaces, assume 750 residential, 250 commercial. It is assumed that the garage is on average 75% full. Residential spaces are assumed to turn over 25% per hour, while commercial spaces turn over hourly.

(750 x 0.25) + (250 x 1.0) x 0.75 = 328 vehicles per hour

It is assumed that the vehicles travel halfway, on average, into the garage at any time (travel to midpoint of mid level). Some travel through all 4 levels. Some find parking on the uppermost level. In this example, the distance to the center of the garage is assumed to be approximately 500 feet.

Using this assumption, a total VMT of 31.1 miles is traveled (500 feet/level x 328 cars / 5,280 feet per mile).

Emission factor is assumed to be weighted average of 10 mph LDGV, LDGT<6000gvw, LDDV, and MC. Higher of summer/winter values.

Since traffic in/out of garage will not be at peak hour for all 24 hrs per day, the following factors were assumed to account for fluctuating usage

Hour	Factor
1 AM to 5 AM	0.25
6 AM to 8 AM	1.00
9 AM to 5 PM	0.50
6 PM to 7 PM	1.00
8 PM to 12 AM	0.25

summer 2013 10 mph

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2983	0.4117	0.162		0.0369	0.0001	0.0015	0.0857	0.0038	1
Fuel Economy (mpg):	24.1	18.5	14.2	17.1	9.9	32.5	18.4	7.3	50	16.2
Composite Emission	Factors (g/ mi):									
Composite VOC :	0.493	0.421	0.511	0.446	0.751	0.328	0.289	0.664	5.49	0.509
Composite CO :	5.15	5.06	5.45	5.17	14.65	2.605	0.831	2.319	32.38	5.365
Composite NOX :	0.4	0.37	0.534	0.417	0.742	0.526	0.267	5.053	1	0.823
Composite CO2 :	368	479.1	624.1	520	895.1	313.1	553.5	1400.1	177.4	562.7
Total PM2.5:	0.0113	0.0113	0.0113	0.0113	0.0259	0.0961	0.0285	0.0917	0.0207	0.0188
Total PM10:	0.0113	0.0113	0.0113	0.0113	0.0259	0.0961	0.0285	0.0917	0.0207	0.0188
SO2:	0.0066	0.0087	0.0115	0.0095	0.0163	0.0029	0.0052	0.013	0.0033	0.0092

Winter 2013 10 mph

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3031	0.4092	0.1608		0.0365	0.0002	0.0015	0.0851	0.0037	1
Fuel Economy (mpg):	24.1	18.5	14.2	17.1	9.9	32.5	18.4	7.3	50	16.2
Composite Emission	Factors (g/ mi):									
Composite VOC :	0.495	0.418	0.552	0.456	0.867	0.321	0.3	0.678	5.04	0.518
Composite CO :	11.08	10.35	10.62	10.42	17.95	2.565	0.844	2.479	28.31	10.271
Composite NOX :	0.377	0.414	0.619	0.472	0.843	0.521	0.285	5.47	1.32	0.885
Composite CO2 :	368	479	624	519.9	895.2	313.1	553.5	1401.2	177.4	561.34
Total PM2.5:	0.0113	0.0113	0.0113	0.0113	0.0271	0.0961	0.0297	0.0974	0.0207	0.0193
Total PM10:	0.0113	0.0113	0.0113	0.0113	0.0271	0.0961	0.0297	0.0974	0.0207	0.0193
SO2:	0.0066	0.0087	0.0115	0.0095	0.0164	0.0029	0.0052	0.0131	0.0033	0.0092

Summer garage vehicles :

	LDGV	LDGT12	LDDV	MC	SUM
actual fraction	0.2983	0.4117	0.0001	0.0038	0.7139
garage fraction	0.4178	0.5767	0.0001	0.0053	1
					Composite EF
Composite VOC :	0.493	0.421	0.328	5.49	0.478
Composite CO :	5.15	5.06	2.605	32.38	5.243
Composite NOX :	0.4	0.37	0.526	1	0.386
Composite CO2 :	368	479.1	313.1	177.4	431.048
Total PM2.5:	0.0113	0.0113	0.0961	0.0207	0.011
Total PM10:	0.0113	0.0113	0.0961	0.0207	0.011
SO2:	0.0066	0.0087	0.0029	0.0033	0.008

Winter garage vehicles :

	LDGV	LDGT12	LDDV	MC	SUM
actual fraction	0.3031	0.4092	0.0002	0.0037	0.7162
garage fraction	0.4232	0.5713	0.0003	0.0052	1
					Composite EF
Composite VOC :	0.495	0.418	0.321	5.04	0.474
Composite CO :	11.08	10.35	2.565	28.31	10.750
Composite NOX :	0.377	0.414	0.521	1.32	0.403
Composite CO2 :	368	479	313.1	177.4	430.420
Total PM2.5:	0.0113	0.0113	0.0961	0.0207	0.011
Total PM10:	0.0113	0.0113	0.0961	0.0207	0.011
SO2:	0.0066	0.0087	0.0029	0.0033	0.008