

14 WEST BROADWAY, SOUTH BOSTON
Project Notification Form

Submitted Pursuant to Article 80B of the Boston Zoning Code

Submitted by:
CPC Cornerstone Development, LLC
546 East Broadway
South Boston, MA 02127

Submitted to:
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Prepared by:
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In Association With:
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Adams & Morancy, P.C.
Howard/Stein-Hudson Asssociates, Inc.
Tech Environmental, Inc.
Vanasse Hangen Brustlin, Inc.
Rowan Williams Davies & Irwin Inc.
Soden Sustainability
Cooperstown Environmental
William Fleming Associates, Inc.

December 17, 2014

MLF CONSULTING LLC

RCA, LLC
Architects – Designers – Planners

December 17, 2014

Mr. Brian Golden, Director
Boston Redevelopment Authority
Boston City Hall, 9th Floor
Boston, MA 02201
Attn: Tyler Norod, Senior Project Manager

Re: 14 West Broadway, South Boston
Project Notification Form (PNF)

Dear Director Golden:

CPC Cornerstone Development, LLC (the "Proponent") is submitting this Project Notification Form ("PNF"), in accordance with the Article 80B Large Project Review requirements of the Boston Zoning Code ("Code") to redevelop the property located at 14 West Broadway in South Boston. The redevelopment proposes the replacement of an existing restaurant and bar with a new mixed-use development consisting of approximately 47 residential units, and commercial space to include offices, retail and a ground-floor restaurant, all served by accessory garage parking spaces ("Proposed Project"). The site, across West Broadway from the MBTA's Broadway Redline Line Rapid Transit Station, comprises approximately 14,326 square feet of land on ten parcels bordered by West Broadway, Dorchester Avenue. West Second Street, Athens Street, and the 22-26 West Broadway mixed-use development currently under construction.

In accordance with Boston Redevelopment Authority ("BRA") requirements, please find attached 10 copies of the PNF plus a CD disk for placing the PNF filing on the BRA website for public review.

The Proposed Project will lead to new construction and since the gross floor area is more than 50,000 gsf, Article 80 requirements will be triggered and preparation of filing(s) under the City of Boston / BRA Large Project Review required, pursuant to Article 80B of the Code. A Letter of Intent to File a Project Notification Form was filed with the Boston Redevelopment Authority for the Proposed Project on August 4, 2014 (attached as **Appendix A** to the PNF).

The project team has had an opportunity to present its plans for the new residences with the BRA project and urban design staffs, the Mayor's Office of Neighborhood Services, and other city departments, South Boston elected officials, the West Broadway Neighborhood Association, and the St. Vincent / Lower End Neighborhood Association. The public notice for the PNF is scheduled to appear in the December 19, 2014 issue of the *Boston Herald*.

On behalf of the entire project team, we would like to thank you and the BRA staff assigned to the 14 West Broadway Project, particularly the BRA Senior Project Manager, Tyler Norod, for invaluable assistance provided allowing the Proponent to achieve this comprehensive PNF filing. We believe that the Proposed Project will be a significant addition to South Boston to help address the need for additional apartments.

Sincerely,

CPC CORNERSTONE DEVELOPMENT, LLC

Ryan P. Sillery, Manager

Attachment: 14 West Broadway, Project Notification Form
(10 Copies Plus CD Disk)

Cc: Erico Lopez, BRA
George Morancy, Adams and Morancy, P.C.
Mitchell Fischman, Mitchell L. Fischman Consulting, LLC

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

CPC Cornerstone Development, LLC ("The Proponent") is submitting, this Project Notification Form ("PNF") for the 14 West Broadway Mixed-Use Development Project in accordance with the Article 80 requirements of the Boston Zoning Code ("Code"). The Project involves the replacement of an existing restaurant and bar with a new 120,164 gross square feet ("gsf") mixed-use development consisting of a minimum of 47 residential units plus supporting residential uses including a gymnasium, pool, and media room, approximately 6,315 gsf of ground floor restaurant space, and 4,836 gsf of second floor commercial space including office and retail space, all served by 70 accessory garage parking spaces ("Proposed Project").

The Site compromises 14,326± square feet of land on ten parcels bordered by West Broadway, Dorchester Avenue, West Second Street, Athens Street and the 22-26 West Broadway Mixed-Use Development currently under construction. Please see **Figures 1-1, 1-2,** and **1-3**.

A Letter of Intent ("LOI") to File a Project Notification Form was filed with the Boston Redevelopment Authority for the proposed mixed-use development project on August 4, 2014 (See **Appendix A**). After discussions with the BRA's urban design and project staffs, the submitted Proposed Project differs from the LOI project description as zoning height to the top of the highest occupiable floor has been reduced from approximately 120 feet to 113 feet, and total height from approximately 130 feet to 122 feet to the top of the rooftop elevator penthouse.

The Site, currently occupied by The Cornerstone Restaurant/Bar and parking lot for over 30 years, is located at 14 West Broadway in South Boston within a highly commercialized area and is in the midst of a very active transportation node that includes a major MBTA Redline station. The Site is located directly across West Broadway from the MBTA's Broadway Red Line rapid transit station. In addition, the Fitzgerald Expressway (I-93) is located just to the west of the Site. Nearby uses include the Gillette (Procter & Gamble) Company complex to the north, as well as ground level commercial and retail uses along Dorchester Avenue and Broadway. A number of older brick buildings – many of them dating back to the 19th and early 20th century – are in the vicinity and they belie the significance of the South Boston community in the city's manufacturing history. The Site also abuts the previously mentioned 22-26 West Broadway Mixed-Use Development currently under construction, which was developed by the Proponent, an approved new hotel to be developed by Sun Condos LLC at 6 Dorchester Avenue, and several recent mixed use residential buildings along Dorchester Avenue and West Broadway.

1.2 Proposed Project

1.2.1 Project Site and Surroundings

The Project Site, located in a mixed use residential and commercial area, is also in the midst of a very active transportation node. The Fitzgerald Expressway is just to the west of the Site and the Massachusetts Bay Transportation Authority's Red Line runs parallel to its western boundary. The Broadway subway station is directly across from the Project Site at the West Broadway/Dorchester Avenue intersection. Surrounding uses include the Gillette complex to the north, the mixed-use development currently under construction to the west, as well as ground level commercial and retail uses along Dorchester Avenue and Broadway. See **Figure 1-4** thru **Figure 1-6** for existing photographs of the site and its surroundings.

1.2.2 Detailed Project Description

The Proposed Project consists of the construction of approximately 109,013 gsf of residential space (47 units) and 11,151 gsf of commercial and restaurant space (4 units).

The Site circulation plan is designed to create a safe and pleasant entry to the Proposed Project from West Broadway (main entry), and via a porte-cochère drop-off from Athens Street (rear or secondary entry). The access will include pedestrian amenities to strengthen the relationship between the Proposed Project and the Broadway MBTA station across West Broadway. Additional service vehicle access will be provided from Athens Street. Off-site parking is expected to be by arrangements with the Procter & Gamble /Gillette Company's land within the vicinity of the site.

Table 1-1 Approximate Project Dimensions of Proposed Project

Lot Area	0.33 acres / 14,326 square feet
Gross Building Footprint Area	14,326 square feet
Gross FAR Square Feet:	120,164 gsf
Gross Residential Space	109,013 gsf
Gross Retail/Restaurant Space	11,151 gsf
FAR:	8.4
Floors	10
Height	113 +/- feet (Zoning Height) 122 +/- feet (To the Top of Elevator Penthouse)

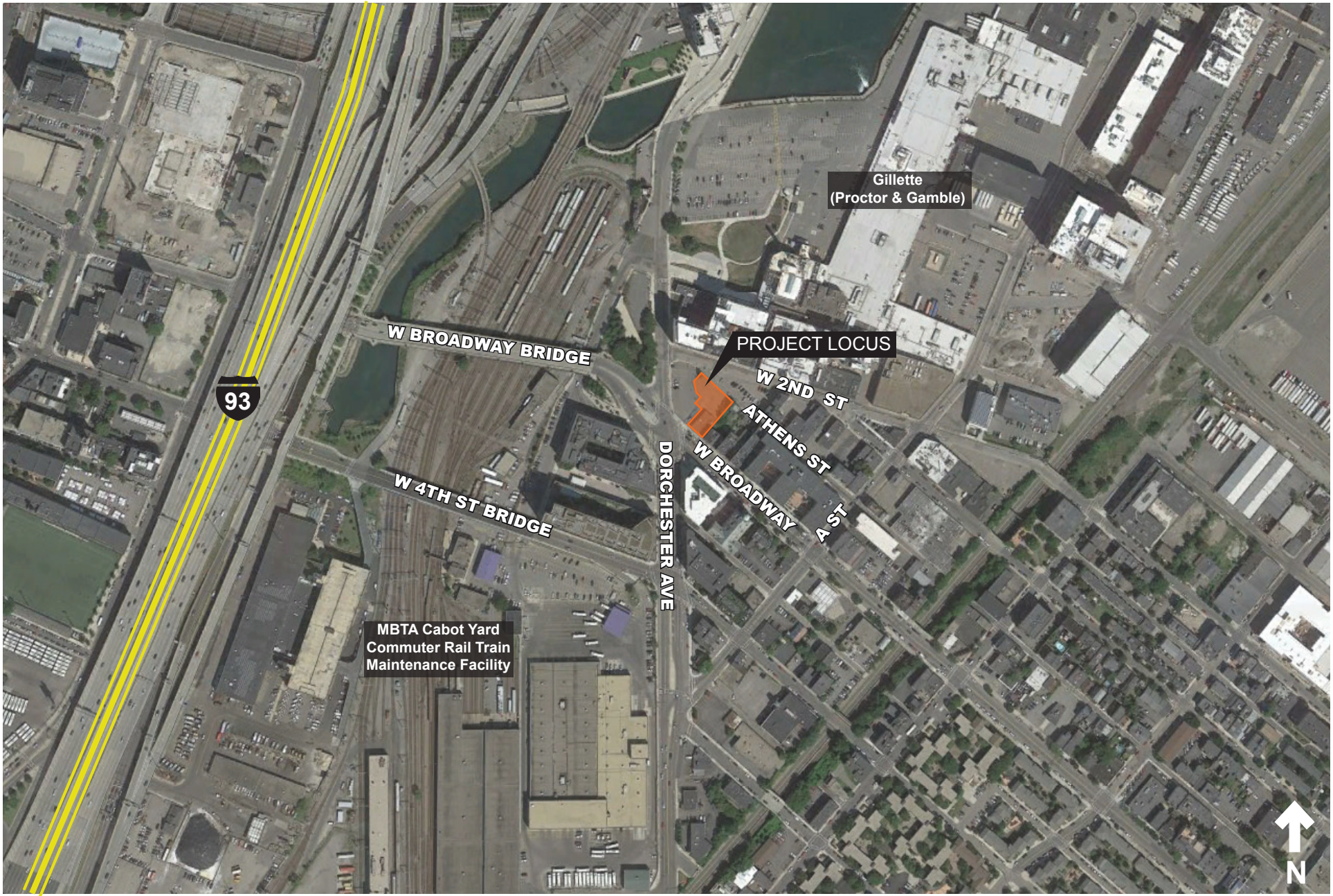
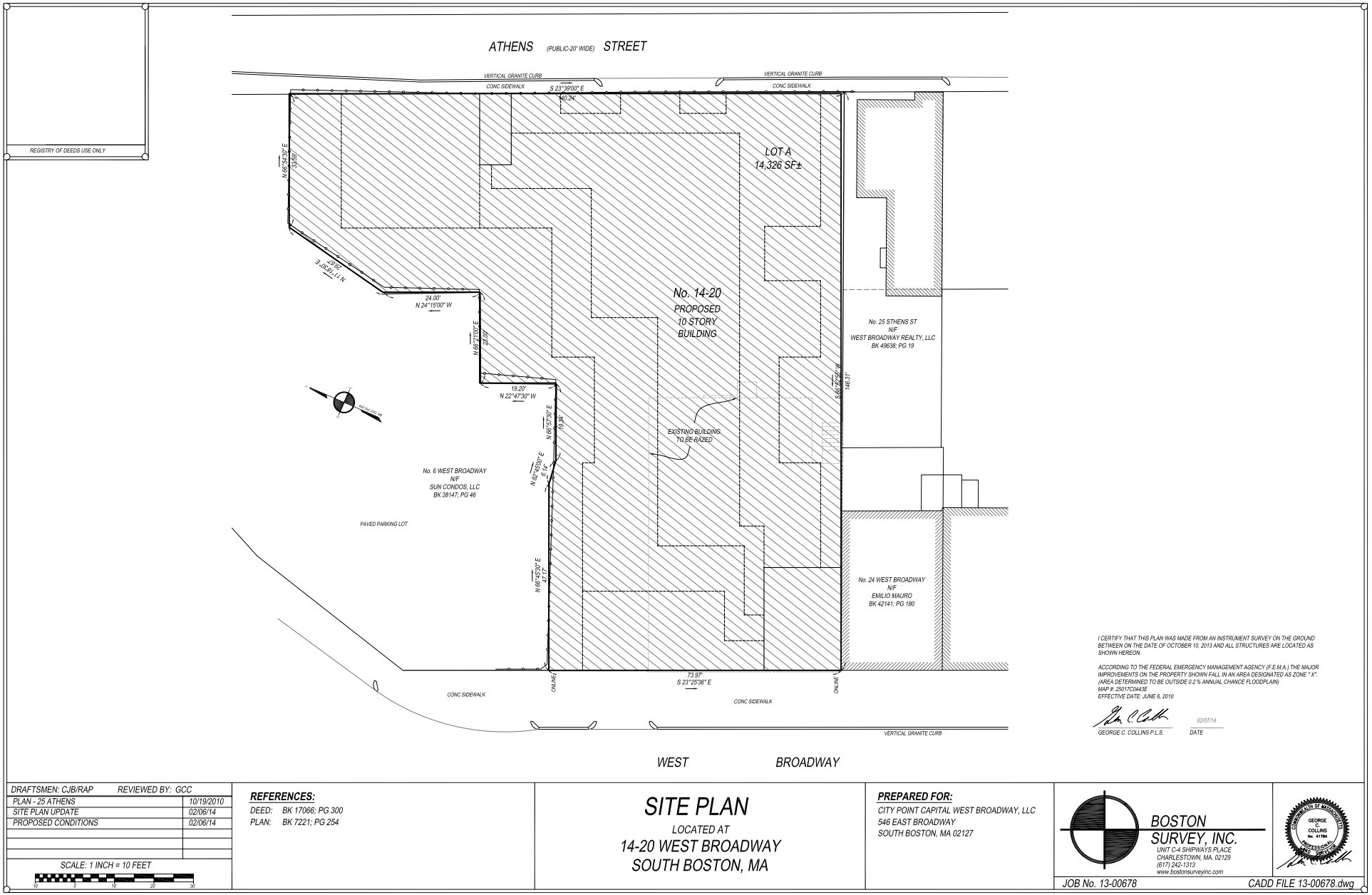


Figure 1-1
Project Locus



Figure 1-2
USGS Map



I CERTIFY THAT THIS PLAN WAS MADE FROM AN INSTRUMENT SURVEY ON THE GROUND BETWEEN ON THE DATE OF OCTOBER 10, 2013 AND ALL STRUCTURES ARE LOCATED AS SHOWN HEREON.

ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (F.E.M.A.) THE MAJOR IMPROVEMENTS ON THE PROPERTY SHOWN FALL IN AN AREA DESIGNATED AS ZONE "X". (AREA DETERMINED TO BE OUTSIDE 0.2 % ANNUAL CHANCE FLOODPLAIN)
MAP #: 25017C0043E
EFFECTIVE DATE: JUNE 6, 2010

GEORGE C. COLLINS P.L.S. — DATE 02/07/14

DRAFTSMEN: CJB/RAP	REVIEWED BY: GCC
PLAN - 25 ATHENS	10/19/2010
SITE PLAN UPDATE	02/06/14
PROPOSED CONDITIONS	02/06/14

SCALE: 1 INCH = 10 FEET

REFERENCES:
DEED: BK 17066; PG 300
PLAN: BK 7221; PG 254

SITE PLAN
LOCATED AT
14-20 WEST BROADWAY
SOUTH BOSTON, MA

PREPARED FOR:
CITY POINT CAPITAL WEST BROADWAY, LLC
546 EAST BROADWAY
SOUTH BOSTON, MA 02127

BOSTON SURVEY, INC.
UNIT C-4 SHIPWAYS PLACE
CHARLESTOWN, MA. 02129
(617) 242-1313
www.bostonsurveyinc.com

GEORGE C. COLLINS No. 41784 REGISTERED PROFESSIONAL LAND SURVEYOR COMMONWEALTH OF MASSACHUSETTS

JOB No. 13-00678 — CADD FILE 13-00678.dwg

Figure 1 - 3
Existing Conditions and Site Plan



View from Athens Street



View of Athens and West 2nd streets

Figure 1 - 4
Existing Context Photographs



View of Existing Site Building and Broadway T Station



View of Site and Broadway T Station from Dorchester Avenue

Figure 1 - 5
Existing Site and Context Photographs



View of Mixed Use Residential Buildings on Dorchester Avenue Across from Site

Figure 1 - 6
Existing Context Photograph

1.2.3 Summary of Project Impacts and Mitigation

1.2.4 Urban Design

The proposed 14 West Broadway Project is an eleven-story residential building incorporating a total of 47 residential and 4 commercial units. In addition to the residential units, the building includes a tenant-leased restaurant and retail space, office space, film screening room, outdoor terrace, gym with lap pool and rooftop decks. Located between West Broadway and Athens Street with its main façade along West Broadway, the building's massing negotiates between the small-scale buildings of South Boston and the larger urban context of Boston's Downtown Financial District. The Proponent has already made a number of presentations of the Proposed Project's conceptual design to the neighborhood and Boston Redevelopment Authority as it has continued to modify its schematic design plans. The most recent building design modification has been to reduce overall height from 130 feet to the top of the elevator penthouse to 120 feet to insure that the Proposed Project better relates to the existing neighborhood context.

1.2.5 Sustainable Design

Sustainability informs every design decision. Enduring and efficient buildings conserve embodied energy and preserve natural resources. We are working to minimize our energy use as much as possible by evaluating every possible efficiency measure.

The 14 West Broadway project embraces the opportunity to positively influence the urban environment. Its urban location takes advantage of existing infrastructure while convenient access to mass transportation will reduce dependence on single occupant vehicle trips and minimize transportation impacts. Ample bicycle storage will be provided on-site along with many nearby public transportation alternatives.

The 14 West Broadway project is using the LEED for New Construction 2009 rating systems and will meet BRA Certifiability Requirements (See **Appendix H. Draft Green Building Report** for a detailed evaluation of the LEED points targeted for the Proposed Project).

The LEED rating system tracks the sustainable features of the project by achieving points in following categories: Sustainable Sites; Water Efficiency; Energy & Atmosphere; Materials and Resources; Indoor Environmental Quality; and Innovation & Design Process.

Soden Sustainability Consulting, the Project's sustainability consultant, currently is tracking 61 YES credits and 15 study credits. The project currently is projected to earn a LEED Gold Certifiability level.

1.2.6 Pedestrian Wind Assessment

RWDI, Inc., the Project's wind engineer, provided a pedestrian wind assessment that is contained in **Appendix E.** The proposed building will largely be sheltered by the existing and approved

surrounding buildings from the prevailing northwest, northeast and southwest winds. Recessed entrances and vestibules are positive wind control features that reduce the potential impact of winds downwashing off the façade of the proposed mixed use development. As a result, suitable wind conditions are predicted at the building entrances and along the sidewalks along West Broadway and Athens Street. The proposed development will not negatively affect wind conditions further away from the site.

Suitable wind conditions are also predicted for the outdoor decks at the 2nd and 9th floors during the summer when these areas are typically in use. If frequent usage is anticipated for the roof-top area, wind control measures such as tall parapets and screens should be included in the design to improve the wind conditions to an appropriate level.

1.2.7 Shadow Impact Analysis

VHB, the Project's daylight consultant, prepared a shadow study to assess the potential shadow impacts of the Project on the surrounding area (see **Section 4.2**). Even with the proposed height extending to 10 floors, the Project's shadow impacts are generally not extensive. New shadow is generally limited to the streets surrounding the Site with morning hour shadows extending to the James M. Kelly (Broadway) Bridge. Although late afternoon and evening shadows will extend in an easterly/northeasterly direction toward the Procter & Gamble/Gillette Building and to surface/open lots, most of these lots and areas are currently impacted by current shadow patterns from existing buildings. Overall, the Project's shadow impacts will be consistent with current patterns and will not adversely impact the Project Site and surroundings.

1.2.8 Daylight Analysis

VHB also performed a daylight study to determine the extent to which the Project restricts the amount of daylight reaching streets or pedestrian ways in the immediate vicinity of the Project Site. Under Build Conditions, the obstruction of the skyplane is increased from both viewpoints. This is to be expected given that the proposed building is taller, wider, and is located very close to the street edges of West Broadway and Athens Street. The proposed mixed-use nature of the Project will, by design, build on and increase the pedestrian activity generated by recent mixed use projects along the adjacent sidewalks of West Broadway and Athens Street. Pedestrian enjoyment of the urban experience in this area will be further enhanced through public realm improvements and the net effect of the Project will be a substantial improvement of the public realm in this area.

1.2.9 Air Quality Analysis

Tech Environmental, Inc., the Project's air quality consultant, conducted analyses to evaluate the existing air quality in the Project area, predict the worst-case air quality impacts from the Project's parking garage, and evaluate the potential impacts of Project-generated traffic on the air quality at the most congested local intersections (See **Section 4.4**).

Recent representative air quality measurements from the Massachusetts Department of Environmental Protection (DEP) monitors reveal that the existing air quality in the Project area is in compliance with Massachusetts and National Ambient Air Quality Standards (NAAQS) for all of the criteria air pollutants.

The worst-case air quality impacts from the Project's parking garage will not have an adverse impact on air quality. The maximum one-hour and eight-hour ambient CO impacts from the parking garage, at all locations around the Project site, including background CO concentrations, are predicted to be safely in compliance with the NAAQS for CO.

A microscale CO air quality analysis was conducted for the three intersections in the Project area that meet the Boston Redevelopment Authority (BRA)/DEP selection criteria. Three cases were analyzed: 2014 Existing, 2019 No-Build, and 2019 Build. The microscale air quality analysis indicates that the worst-case air quality impacts from motor vehicles operating at the three analyzed intersections will improve in 2019, for both the Build and No-Build cases, compared to the 2014 Existing case. The analysis shows that with mitigation the worst-case CO impacts for the 2019 Build case are lower than those predicted for the 2019 No-Build case and the worst-case impacts for all three cases are safely in compliance with the NAAQS for CO at all modeled receptors.

1.2.10 Noise Analysis

Tech Environmental, Inc., the Project's noise consultant, conducted a noise study to determine whether the operation of the proposed Project will comply with the Massachusetts DEP Noise Policy and City of Boston Noise Regulations (See **Section 4.5**).

This acoustical analysis involved five steps: (1) establishment of pre-construction ambient sound levels in the vicinity of the Site; (2) identification of potential major noise sources; (3) development of noise source terms based on manufacturer specifications (where available) and similar project designs; (4) conservative predictions of maximum sound level impacts at sensitive locations using industry standard acoustic methodology; and (5) the incorporation of mitigation measures to ensure compliance with applicable City of Boston noise regulations, ordinances and guidelines and with the DEP Noise Policy.

Nighttime ambient baseline sound level (L_{90}) monitoring was conducted at two locations deemed to be representative of the nearby residential areas, during the time period when human activity is at a minimum and any future noise would be most noticeable. The lowest nighttime L_{90} measured in the Project area was 54 dBA.

The mechanical systems for the Proposed Project are in the early design stage. Typical sound power data for the equipment of the expected size and type for the Project have been used in the acoustic model to represent the Project's mechanical equipment. The sound levels from the potential significant Project noise sources are discussed in this section.

The design for the Proposed Project is expected to include as many as fifty-four (54) individual air handling units on the first story roof of the Proposed Project. This equipment, to be located between the Proposed Project's elevated stories and the elevated stories of the future abutting new hotel, were included in the noise impact analysis.

Noise Mitigation

To minimize the sound level at nearby residences, the following noise mitigation specification will be incorporated into the final engineering design of the Proposed Project, as necessary, to comply with the applicable sound level criteria:

- **Specification of low-noise mechanical equipment:** The air handling units will be of a low-noise design.

With the mitigation outlined in this PNF, the 14 West Broadway project will not create a noise nuisance condition and will fully comply with the most stringent sound level limits set by the Massachusetts DEP Noise Policy, City of Boston Noise Regulations, and HUD's Residential Site Acceptability Standards.

1.2.11 Stormwater Management and Water Quality

The Proposed Project is expected to reduce the volume of stormwater runoff leaving the site as well as substantially improve the water quality (See **Section 6.4**).

The volume of stormwater runoff leaving the site will be reduced. The rooftop of the building will incorporate a green roof system. It is expected stormwater overflow from the green roof will be collected and conveyed to a subsurface infiltration system. The infiltration system will have an overflow tied into the storm drain currently being constructed beneath West Broadway. If feasible the equivalent of 1 inch over the site's impervious area will be recharged as prescribed in BWSC's Site Plan Requirements.

An operation and maintenance plan will be developed to support the long-term functionality of the proposed stormwater management system.

Erosion and sediment controls will be used during construction to protect adjacent properties, the municipal storm drain system and the on-site storm drain system. A pollution prevention plan, if required, will be prepared for use during construction including during demolition activity.

1.2.12 Solid and Hazardous Waste

Solid Waste

In order to meet the requirements for the Boston Environmental Department and the LEED rating system, the Project will include space dedicated to the storage and collection of recyclables. The recycling program will meet or exceed the City's guidelines, and provide areas for waste paper and newspaper, metal, glass, and plastics (*21* through *27*, co-mingled).

Hazardous Waste

Cooperstown Environmental, the Project's environmental consultant, completed soil characterization testing during February of 2014 at the Site. Cooperstown will manage this soil excavation, transportation and disposal process as a Licensed Site Professional (LSP) on the Project.

The results of this soil characterization study indicated that parts of the upper layer of the fill exhibited concentrations of PAHs and Lead above RCS-1 reporting thresholds. Another boring location showed slightly elevated arsenic concentration in the native/silt/clay level. Although the fill in the area exceeded certain RCS-1 concentrations, the fill meets the criteria for disposal to an in-state landfill. Additional samples that will be needed to meet disposal facility requirements will be collected closer to the date of excavation.

1.2.13 Geotechnical/Groundwater Impacts Analysis

It is anticipated that there will be little or no impact to the groundwater table due to this Project. It is expected that the excavation will be no more than 20 feet below West Broadway, with the groundwater levels expected to be below 20 feet. Limited dewatering will be required inside the excavation to remove groundwater and surface water runoff or rainwater during construction. The proposed construction is not anticipated to have adverse effects on long-term groundwater levels because the entire property has historically been capped and because the lowest floor level is above the groundwater level. Any groundwater removed from the excavation will be discharged under a NPDES general or exclusion permit. Construction mitigation measures will be incorporated into the Project to avoid the potential for ground movement and settlement during excavation, and potential impacts on adjacent buildings, utility lines and the roadways.

The Construction Management Plan for the Project will include measures to ensure groundwater levels will not be lowered during or after construction (See **Section 4.8).**

1.2.14 Construction Impacts Analysis

Section 4.9 presents impacts likely to result from the construction of the Proposed Project and the steps that will be taken to avoid or minimize environmental and transportation-related impacts. Construction methodologies and scheduling will aim to minimize impacts on the surrounding

environment. The Proponent will ensure that the general contractors will be responsible for developing construction phasing and staging plans and for coordinating construction activities with all appropriate regulatory agencies. The Project's geotechnical consultant will also provide consulting services associated with foundation design recommendations, prepare geotechnical specifications, and review the construction contractor's proposed procedures.

The construction period for the Proposed Project is expected to extend for approximately 18-24 months, beginning in the 2nd Quarter 2015 and reaching completion in the 2nd Quarter 2017

1.2.15 Wetlands/Flood Hazard Zones

The existing Project Site is a not a part of a wetland resource area regulated by the Massachusetts Wetland Protection Act.

Based on the Preliminary Flood Insurance Rate Maps (FIRM) for Suffolk County, the Project site is located outside of any special flood hazard area or Floodway areas in Zone AE, which is the 100-year base flood zone (i.e. the flood has a 1% annual chance of occurring in any given year).

1.2.16 Response to Climate Change Resiliency and Adaptability Questionnaire

The Proponent's response to the Climate Change Resiliency and Adaptability Questionnaire is contained in **Appendix F.**

1.2.17 Historic Resources Component

According to files at the Massachusetts Historical Commission, there are no structures listed in the National or State Register of Historic Places, or the Inventory of Historical and Archaeological Assets of the Commonwealth on-site. It is expected that the Project will cause no adverse impacts on the historic or architectural elements of nearby historic resources outside the Project Site (see **Section 5.0**).

1.2.18 Infrastructure Systems Component

An infrastructure system's analysis (**Section 6.0**) was completed by Howard/Stein-Hudson Associates ("HSH"), the Project's Civil Engineer. The existing infrastructure surrounding the site appears sufficient to service the needs of the Proposed Project. This section describes the existing sewer, water, and drainage systems surrounding the site and explains how these systems will service the development. This analysis also discusses any anticipated Project-related impacts on the utilities and identifies mitigation measures to address these potential impacts.

1.2.19 Transportation Component

Section 7.0 presents the comprehensive transportation study completed by HSH for the proposed Project in conformance with the BTD Transportation Access Plan Guidelines (2001). The study analyzes existing conditions within the Project study area, as well as conditions forecast to be in place under the five-year planning horizon of 2019.

Vehicular access/egress will be provided by a porte-cochère that will access Athens Street in two locations. The entrance will be located along Athens Street approximately 115 feet east of the West Second Street intersection. The exit will be located at a realigned West Second Street/Athens Street intersection. The porte-cochère will be 15 feet in width and approximately 150 feet in length, providing enough space for six parked vehicles, intended for HP and temporary parking, and allowing uninterrupted circulation.

The analysis employs mode use data for the area surrounding the Project site based on 2000 U.S. Census data and BTD data for Area 8, and identifies the number of trips generated by the Project. Based on published data, it is expected that approximately 50 percent of the residential trips and 60 percent of the trip associated with the commercial use will be vehicle trips.

The Project will add up to 456 vehicle trips on a daily basis, with 17 trips during the a.m. peak hour (8 entering/9 exiting) and 41 trips during the p.m. peak hour (26 entering/15 exiting) during the p.m. peak hour.

The Project will provide 70 parking spaces in a below grade garage with 6 additional spaces located in a porte-cochère, which is accessed off of Athens Street. The parking level will be accessed by two vehicle elevators.

Loading and service operations will occur on-site within the porte-cochère, including trash truck activity. Residential move-in/move-out activity will take place along West Broadway.

The Proponent is committed to implementing a transportation demand management ("TDM") program that supports the City's efforts to reduce dependency on the automobile by encouraging alternatives to driving alone, especially during peak travel periods. Proposed measures include, but are not limited to, providing transit information (schedules, maps, and fare information) to guests and visitors and on-site bicycle storage, providing a guaranteed ride home program to employees, and providing a transit pass program to the employees. The transportation coordinator will oversee all transportation issues including managing vehicular and valet operations, service and loading, valet parking, and TDM programs.

1.2.20 Response to Accessibility Guidelines

The Proponent's response to the City of Boston Accessibility Guidelines is contained in **Appendix G.**

2.0 GENERAL INFORMATION

2.1 Applicant Information

2.1.1 Project Proponent

The Proponent, CPC Cornerstone Development, LLC, is a Massachusetts limited liability company formed for the express purpose of completing the 14 Broadway Mixed-Use Development Project. Its manager and Principal, Ryan P. Sillery, has over a decade of experience successfully developing residential projects in Boston, particularly in the South Boston market.

As the principal of City Point Capital, LP, a private equity fund that produces superior risk-adjusted returns, principally through investments in residential real estate in Greater Boston, Mr. Sillery has assembled a strong team of experienced professional in CPC Cornerstone Development, LLC. The strength and experience of this team will ensure the timely and successful completion of this exciting and dynamic project, which will further serve to transform and revitalize this gateway to South Boston from the South End and Downtown Boston.

The Proponent has a strong and established working relationship with several major local lenders, a record of proven financial security, and intends to finance the construction and development of the Project using traditional institutional lender financing, with an initial financing commitment from the Mansfield Bank.

2.1.2 Project Team

Project Name	14 West Broadway
Property Owner/Developer	**CPC Cornerstone Development, LLC** 546 East Broadway South Boston, MA 02127 Tel: 857-496-0309 Ryan P. Sillery, Manager rsillery@citypointcapital.com
Article 80 Permitting	**Mitchell L. Fischman Consulting ("MLF Consulting") LLC** 41 Brush Hill Road Newton, MA 02461 Tel : 781-760-1726 Mitch Fischman mitchfischman@gmail.com

Legal Counsel/Outreach	**Adams & Morancy, P.C.** 350 West Broadway South Boston, MA 02127 Tel: 617-269-5800 George Morancy gmorancy@admorlaw.com
Architect	**RCA, LLC** 415 Neponset Avenue Dorchester, MA 02112 Tel: 612-282-0030 Chris Drew cdrew@roche-christopher.com James Christopher jchristoper@roche-christopher.com
Sustainability Consultant	**Soden Sustainability Consulting** 19 Richardson Street Winchester, MA 01890 Tel: 617-372-7857 Colleen Ryan Soden, LEED AP BD+C **colleen@sodensustainability.com**
Landscape Architect	**William Fleming Associates, Inc.** 375 Main Street, Suite No. 3 Stoneham, MA 02180 Tel: 781-738-3088 William Fleming wffleming@williamfleming.com
Transportation Planner/Engineer	**Howard/Stein-Hudson Associates, Inc.** 11 Beacon Street, Suite 1010 Boston, MA 02108 Tel: 617-482-7080 Guy Busa, P.E., rlatini@hshassoc.com Brian Beisel, bbeisel@hshassoc.com

Civil Engineer	**Howard/Stein-Hudson Associates, Inc.** 11 Beacon Street, Suite 1010 Boston, MA 02108 Tel: 617- 482-7080 Richard Latini, P.E., rlatini@hshassoc.com James Downing, jdowning@hshassoc.com
Construction Manager	**West Side Real Estate Services** 546 East Broadway South Boston, MA 0212 Tel: 857-496-0309 Ryan P. Sillery rsillery@citypointcapital.com
Wind Engineer	**Rowan Williams Davies & Irwin Inc.** 650 Woodlawn Road West Guelph, Ontario, Canada N1K 1B8 Tel: 519-823-1311 Hanging Wu, Ph.D, hanging.wu@rwdi.com Bill Smeaton, bill.smeaton@rwdi.com
Daylight/Shadow Consultant	**Vanasse Hangen Brustlin, Inc.** 99 High Street 10th Floor Boston, MA 02110 Tel: 617-728-7777 Chris Gervais, cgervais@vhb.com
Noise and Air Consultant	**Tech Environmental, Inc.** Hobbs Brook Office Park 303 Wyman Street, Suite 295 Waltham, MA 02451 Tel: 781-890-2220 Marc C. Wallace, QEP, MWallace@techenv.com
Hazardous Waste Consultant	**Cooperstown Environmental** 21 Main Street Andover, MA 01810 Tel: 978-470-4755 James T. Curtis, President, PE, LSP www.cooperstownenv.com

Construction Commencement	2nd Quarter 2015
Construction Completion	2nd Quarter 2017
Status of Project Design	Schematic

2.2 Legal Information

Legal Judgments or Actions Pending Concerning the Proposed Project

None.

History of Tax Arrears on Property Owned in Boston by the Applicant

There is no current or past history of tax arrears on property owned by the Applicant.

Nature and Extent of Any and All Public Easements

The Site is bounded by utility easements for sewer, electric, telephone and gas. Additionally, there are utilities that cross the Site.

2.3 Public Benefits

The Project will provide the following substantial benefits to the City and its residents:

- The mixed use residential development will complement and enhance a very active transportation node that includes the major MBTA Redline station at West Broadway and Dorchester Avenue, and the Fitzgerald Expressway (I-93) located just to the west of the Project Site;
- The new residents will utilize the nearby commercial and retail uses along Dorchester Avenue and West Broadway thereby improving the local economy;
- The Project will improve the view from the residential uses across Dorchester Avenue and West Broadway that includes an adjacent recently approved new hotel and new residence (under construction), Court Square Press and Macallen Building residences, and other nearby residential buildings.
- The pedestrian landscape and experience will be enhanced with street trees and other streetscape amenities;
- The project will create approximately 100 new construction jobs over a 18-24 month construction period;

- The project will create at least 47 new residential units, including at least 6 affordable units in accordance with the Mayor's Executive Order on Inclusionary Development, as well as ground-floor restaurant space and other commercial uses serving the local neighborhood; and
- The project will generate hundreds of thousands of dollars in new revenue annually to the City of Boston in the form of real property tax payments.

2.4 Regulatory Controls and Permits

The Proposed Project is located within the Neighborhood Shopping Subdistrict (NS) of the Saint Vincent Neighborhood District, Article 57 of the Boston Zoning Code. The Proposed Project also lies within a restricted overlay parking district. After conducting preliminary community outreach with neighbors and abutters of the Property, the Applicant filed a permit application with the City of Boston Inspectional Services Department ("ISD"). The Project will require approval from the City of Boston Board of Appeal (the "Board") for a conditional use for the multi-family dwelling use; dimensional relief for the floor area ratio, maximum building height, minimum rear yard requirements, off-street loading facilities, off street parking, and off street parking design. The Proponent received a refusal letter from the Boston Inspectional Services (ISD) Department on April 16, 2014 on the Permit Application (**ERT325051**), which refusal letter has been appealed to the Zoning Board of Appeal for action after anticipated BRA approval.

2.5 Boston Zoning Code – Use Requirements

The Project's uses for Boston Zoning Code purposes consist of a multifamily dwelling, a ground-floor restaurant, and second-floor commercial uses, most likely to consist of office space and local retail and/or service uses, as well as accessory parking for both the residential and restaurant/commercial uses.

A multifamily dwelling is a conditional use pursuant to the provision of Article 57, Section 11, of the Zoning Code, and will require approval by the Zoning Board of Appeal. In the applicable restricted parking overlay district, off-street parking facilities, including parking lots, parking garages, and parking accessory or ancillary to any use other than Use Items numbered 1 through 15 in Article 8 of the Code (i.e., dwelling uses, including dormitories, hotels and motels), are conditional uses which may be granted only by the Zoning Board of Appeal in conformance with the provisions of Section 6-3A as well as Sections 6-2, 6-3 and 6-4 of the Zoning Code.

2.6 Boston Zoning Code – Dimensional Requirements

Table 2-1 below summarizes the dimensional requirements in the Saint Vincent Neighborhood District, as set forth in Tables D of Article 57 of the Boston Zoning Code, and compares the requirements to the dimensions for the Proposed Project. Dimensional variances will be sought for: excessive floor area ratio, excessive building height, insufficient rear yard setback, insufficient off-street parking and loading facilities, and for design of off-street parking facilities (design and maneuverability, owing to vehicle elevators and a hydraulic stacking system).

For a project that is subject to Large Project Review, it is noted that required off-street parking spaces and off-street loading facilities are determined as a part of the Large Project Review process with the Boston Redevelopment Authority, in accordance with the provisions of Article 80 of the Boston Zoning Code. Design elements of the Project will also be reviewed pursuant to Large Project Review, with final design review approval being provided by the BRA.

Table 2-1 14 West Broadway - Dimensional Requirements

Dimensional Element	NS Subdistrict	Proposed Project[1]
Maximum Floor Area Ratio	1.0	8.4
Maximum Building Height	35'-0"	113 +/- feet (Zoning Height) 122 +/- feet (To the Top of Rooftop Elevator Penthouse) (10-Floors)
Minimum Lot Size	None	0.33 Acres (14,326 SF)
Minimum Lot Width	None	73.97 ft
Minimum Lot Area Per Dwelling Unit	None	N/A
Minimum Lot Frontage	None	73.97 ft
Minimum Usable Open Space (Square Feet Per Dwelling Unit)	50 sf/unit	8,200 sf (164 st/unit)
Minimum Front Yard	(Align with Existing Abutters per §57-23.1)	At Property Line
Minimum Side Yard	None	At Property Line
Minimum Rear Yard	20 ft	At Property Line

1. The dimensions described in this above table may change as the Proposed Project undergoes design review with the BRA.

N/A = Not Applicable

2.7 Preliminary List of Permits or Other Approvals Which May be Sought

Agency Name	Permit or Action*
Federal Agencies	
Federal Aviation Administration	Determination of No Hazard to Navigation (Crane Determination To Be Made if over 200 feet)
U.S. Environmental Protection Agency	Notice of Intent for EPA Construction Activities General Discharge Permit with associated SWPPP, If Required
State Agencies	
MA Department of Environmental Protection Division of Water Pollution Control	Sewer Connection Self Certification
MA Department of Environmental Protection Division of Air Quality Control	Fossil Fuel Permit, If Required
Local Agencies	
Boston Redevelopment Authority	Article 80 Review and Execution of Related Agreements
Boston Transportation Department	Transportation Access Plan Agreement; Construction Management Plan
Boston Department of Public Works Public Improvements Commission	Street/Sidewalk Repair Plan; Curb-Cut Permit; Street/Sidewalk Occupancy Permit; Earth Retention System Plan
Boston Landmarks Commission	Article 85 - Demolition Delay, If Required
Boston Zoning Board of Appeal	Variances / Conditional Use Permits
Boston Air Pollution Control Commission	Application for Exempt Spaces, If Required
Boston Public Safety Commission Committee on Licenses	Permit for Storage of Fuel in (Emergency Storage) Tanks, If Required
Boston Fire Department	Approval of Fire Safety Equipment
Boston Water and Sewer Commission	Approval for Sewer and Water and Connections; Construction Site Dewatering; and Storm Drainage
Boston Department of Inspectional Services	Building Permits; Certificates of Occupancy; Other Construction-Related Permits

*This is a preliminary list based on project information currently available. It is possible that not all of these permits or actions will be required, or that additional permits may be needed.

2.8 Public Review Process and Agency Coordination

Preliminary plans for the Proposed Project have been presented to South Boston's elected officials, and in several meetings to the West Broadway Neighborhood Association and the St. Vincent/Lower End Neighborhood Association.

The Proponent has also discussed the Proposed Project with representatives of the Boston Redevelopment Authority ("BRA") prior to filing this Project Notification Form in order to identify issues/concerns as well as design requirements related to the Project.

In accordance with Article 80 requirements, an Impact Advisory Committee ("IAG") has been formed and neighborhood meetings will be scheduled to review the PNF and to receive community comments on the Project during the PNF public review period.

The Proponent will continue to meet with public agencies, neighborhood residents and elected officials, local business organizations, abutting property owners, and other interested parties, and will diligently follow the requirements of Article 80 pertaining to the public review process.

2.9 Development Impact Payment ("DIP") Status

Based on current schematic design plans, it is not anticipated that Development Impact Payments ("DIP"), in accordance with Article 80B-7 of the Code, will be required as the Proposed Project's DIP qualifying uses are expected to be below the 100,000 gsf threshold where DIP are required.

3.0 URBAN DESIGN AND SUSTAINABILITY COMPONENT

3.1 Urban Design Overview

Playing a pivotal role in the continued revitalization of South Boston, the design of the building requires an innovative design that is also financially feasible. Occupying a transitional site that mediates between I-93, the older and traditional "Lower End" of South Boston, where dramatic new residential projects have been completed during the past decade, and a historical industrial zone, the building's design is required to negotiate different scales, urban configurations, and architectural vernaculars. To the north and south, the building faces the Procter & Gamble/Gillette manufacturing facility and the Broadway MBTA Redline station. To the west, the building faces I-93, the Downtown Financial District, and the James M. Kelly (Broadway) Bridge gateway to South Boston. To the east, it faces the start of South Boston residential neighborhood that stretches over two miles to City Point and the Dorchester border.

The building design addresses multiple scales and the different edge conditions of the surrounding neighborhood context, different ways of reacting to public space, and accompanying material and façade articulations to reinforce the scales of these interactions. The west side of the building responds with a building face composed of brick and glass surfaces that provides expansive views of the Boston skyline and an innovative, yet refined, façade which serves to greet those entering South Boston by way of the Kelly Bridge. The inflected surfaces of the west façade align with the Procter & Gamble/Gillette building to the north and bend slightly to respond to the street edge on the east side of Athens Street to the north of the site. The textured and articulated brick, glass, and metal surface extend to the narrower façades. The materials will be maintained, providing a consistent yet varied surface of further visual interest on the inner block elevation of the building. Reflecting the pedestrian scale, the lower street frontage extends the concept of the storefront and pedestrian scale elements on the prominent West Broadway façade.

In order to maximize ceiling heights, large windows, and open floor plans, the economic ramifications of various structural systems were assessed in close collaboration with contractors and consultant members of the team. This effort resulted in a straightforward, post-tension concrete structural system. Given the slender proportion of the building, the floors span between rows of columns, allowing flexibility on the lower, more public levels. The mechanical solution avoids ventilation louvers on the exterior façades and the plumbing stacks are aligned vertically, addressing the necessary economy and efficiency of this building type. The efficiency of the building design not only provides a larger budget for interesting architectural elements, but also sets aside funds for addressing sustainable design within the building.

The Urban Design and Sustainability figures, including the 2009 LEED Checklist, are included at the end of this section (**Figures 3.5-1** thru **3.5-24**)

3.2 Building Design

The proposed 14 West Broadway Project is an eleven-story residential building incorporating a total of 47± residential units. In addition to the residential units, the building includes a tenant-leased restaurant, and office/retail/service space, film screening room, outdoor terrace, gym with lap pool and rooftop decks. Located between West Broadway and Athens Street with its main façade along West Broadway, the building's massing negotiates between the small-scale buildings of South Boston and the larger urban context of Boston's Downtown Financial District. The Proponent has already made a number of presentations of the Proposed Project's schematic design to the neighborhood, its elected officials, and to the Boston Redevelopment Authority, and has continued to modify these plans in response to public commentary. The most recent building design modification, at the request of the Boston Redevelopment Authority has been to reduce overall height from 130 feet to the top of the rooftop elevator penthouse to 122 feet to insure that the Proposed Project better relates to the existing neighborhood context.

The porte-cochère driveway entrance to the building mitigates further vehicle congestion where Athens Street abuts the rear of the site. The tall, open entrance will be landscaped to create a pleasant environment for residents and visitors, and an attractive feature for other pedestrians in the neighborhood. The ground surface and ceiling materials will extend through to the interior of the building lobby and the restaurant space. The rear vehicle entrance and the two pedestrian entrances will help to animate the street level area with arrivals/departures of residents and visitors on Athens Street. Street trees and crosswalks will also add to the pedestrian-friendly nature of the interior driveway. The loading dock is located on the Athens Street side and will provide for full interior access for delivery and other service vehicles.

The roof decks above the penthouse units and will overlook both West Broadway and Athens Street. The landscape design of this area, to include thoughtfully calibrated planting densities, elevation transitions, and carefully-situated garden furniture, will add to the aesthetic experience of residents and to neighborhood views, and will establish a gradient of privacy with respect to use. This urban terrace will be visible from the streets surrounding the building and will add a pocket of green for the surrounding neighborhood. The rooftop decks will provide an exciting view of the Boston skyline from building residences.

The Proponent is committed to using building and finish materials that are complimentary of the surrounding neighborhood environment. The West Broadway elevation has been designed to match the height and scale of other buildings in the surrounding streetscape. The use of brick, potentially glazed white, as the primary building material, is in harmony with traditional building materials of the surrounding neighborhood. Further, rooftop decks for residents of the building will provide a unique amenity among the roofscapes of the neighborhood. The West Broadway elevation will incorporate a more open enclosure to the street, with the remaining building mass providing large window openings and brick.

3.3 Landscape Design

The proposed landscape plan for the Project will address two conditions of the urban landscape: the street/ground plane and public realm at the restaurant entry, and a green roof garden terrace. While varied in texture and form, each landscape element will allow for individually-scaled and -crafted spaces to respond articulately to their immediate adjacencies, creating varied and interesting places to be, while also providing a cohesive urban landscape.

3.3.1 Street / Ground Plane Landscape Treatment

The street landscape plan will create a unified and cohesive space that responds to the scale and activity along the West Broadway corridor. Through tree plantings, lighting, and a composition of paving materials, scale and structure will be provided at the sidewalk level to help define vehicular and pedestrian areas. The landscape proposed here will create a unified and cohesive space that emphasizes the indoor-outdoor connectivity between the streetscape and the ground-floor restaurant interior. By using a consistent paving treatment both inside and out, the consistency of the ground plane will serve to blur the boundaries of the entry area with the interior, so as to minimize the transition from the public realm into the semi-private one.

3.3.2 Green Roof Garden Terrace

The green roof terrace landscape proposes a contemporary, sophisticated urban terrace, designed as an amenity for guests, visitors, and residents alike. A key feature of this green roof terrace landscape is a common dog park area. Potential heating elements such as non-combustible fire features and heating lamps will help to extend the indoor/outdoor experience into the shoulder seasons. Eco-friendly materials such as composite lumber and light-colored concrete pavers will help define the space and will relate back into the building through a consistent ground plane, while helping to reduce the heat island effect.

William Fleming Associates, the Project's Landscape Architect, has chosen an extensive vegetative green roof system for the building. Extensive vegetative green roof systems are 6 inches or shallower in depth and are frequently designed to satisfy specific engineering goals. Extensive design typically gives the owner the highest benefit-to-cost ratio. In most climates, a properly designed extensive vegetative green roof cover will provide a durable, low-maintenance system that can realize the many benefits that vegetative roofs have to offer. Extensive vegetative green roofs are designed to be virtually self-sustaining and should require only a minimum of maintenance: a yearly application of slow-release fertilizer to boost growth and occasional weeding. Extensive roofs are usually accessed only for maintenance purposes.

The extensive vegetative green roof is the sun/shade sedum mats and will consist of the following plant materials:

- *Sedum album 'Coral Carpet',* Coral Carpet Stonecrop
- *Sedum album 'Murale'*, Murale Stonecrop

- *Sedum floriferum 'Weihenstephaner Gold',* Bailey's Gold
- *Sedum kamtschaticum,* Kamtschaticum Stonecrop

3.4 Sustainable Design/Energy Conservation

3.4.1 Introduction

Sustainability informs every design decision of the Proposed Project. Enduring and efficient buildings conserve embodied energy and preserve natural resources. The Proponent has committed to minimize overall energy use as much as possible by evaluating every possible efficiency measure.

3.4.2 Overview

The 14 West Broadway Mixed-Use Development Project embraces the opportunity to positively influence the urban environment. Its urban location takes advantage of existing infrastructure while convenient access to mass transportation will reduce dependence on single occupant vehicle trips and minimize transportation impacts. Ample bicycle storage will be provided on-site along with many nearby public transportation alternatives.

The project is using the LEED for New Construction 2009 rating systems and will meet BRA Certifiability Requirements (See **Appendix H. DRAFT Green Building Report** for a detail evaluation of the LEED points targeted for the Proposed Project and **Figure 3.5-24**. **LEED 2009 Checklist for New Construction and Major Renovations** at the end of this section).

The LEED rating system tracks the sustainable features of the project by achieving points in following categories: Sustainable Sites; Water Efficiency; Energy & Atmosphere; Materials and Resources; Indoor Environmental Quality; and Innovation & Design Process.

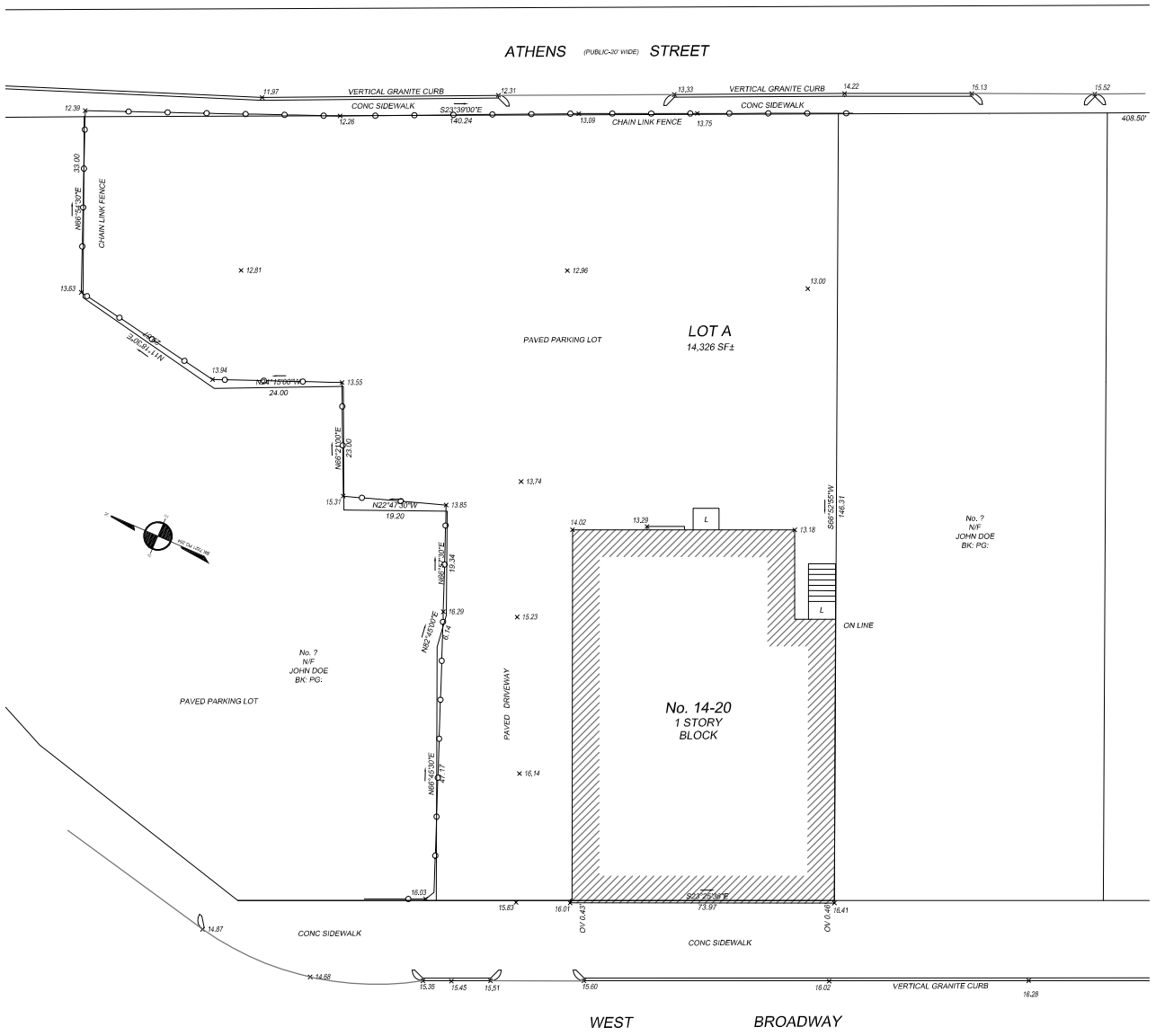
Soden Sustainability Consulting, the Project's sustainability consultant, currently is tracking 61 YES credits and 15 study credits. The project currently is projected to earn a LEED Gold Certifiability level.

3.5 Urban Design Drawings and LEED Checklist

Urban design drawings and renderings depicting the Project and LEED Checklist include:

Figure 3.5-1: Site Plan – Existing Condition
Figure 3.5-2: Site Plan – Proposed Condition
Figure 3.5-3: Proposed Site Use Plan
Figure 3.5-4: Proposed Basement Plan
Figure 3.5-5: Proposed First Floor Plan
Figure 3.5-6: Proposed Second Floor Plan
Figure 3.5-7: Proposed Third Thru Fifth Floor Plan
Figure 3.5-8: Proposed Sixth Thru Eighth Floor Plan
Figure 3.5-9: Proposed Ninth Floor Plan
Figure 3.5-10: Proposed Tenth Floor Plan
Figure 3.5-11: Proposed Roof Plan
Figure 3.5-12: Proposed Green Roof Plan
Figure 3.5-13: Proposed Elevation 1
Figure 3.5-14: Proposed Elevation 2
Figure 3.5-15: Proposed Elevation 3
Figure 3.5-16: Proposed Elevation 4
Figure 3.5-17: Elevation Along West Broadway
Figure 3.5-18: Elevation Along West Broadway
Figure 3.5-19: Elevation Along Athens Street
Figure 3.5-20: Elevation Along Athens Street
Figure 3.5-21: Aerial View
Figure 3.5-22: View From The Bridge
Figure 3.5-23: View From West Broadway
Figure 3.5-24: LEED 2009 Checklist for New Construction and Major Renovations

REGISTRY OF DEEDS USE ONLY



LEGEND:

■	BWSC HANDHOLE
■	CATCH BASIN
◉	DRAIN MANHOLE
◉	ELECTRIC MANHOLE
□	ELECTRIC HANDHOLE
⋈	GAS GATE
⋈	HYDRANT
☼	LIGHT POLE
◎	SEWER MANHOLE
⋈	UTILITY POLE
⋈	WATER GATE
BB	BOTTOM BELL
DH	DRILL HOLE
FND	FOUND
I	INVERT
M	MAPLE
O	OAK
R	RIM
SB	STONE BOUND
VGC	VERTICAL GRANITE CURB

CERTIFICATION

I CERTIFY THAT THIS PLAN WAS MADE FROM AN INSTRUMENT SURVEY ON THE GROUND BETWEEN ON THE DATE OF OCTOBER 10, 2013 AND ALL STRUCTURES ARE LOCATED AS SHOWN HEREON.

ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (F.E.M.A.) THE MAJOR IMPROVEMENTS ON THE PROPERTY SHOWN FALL IN AN AREA DESIGNATED AS ZONE " ". (AREA DETERMINED TO BE OUTSIDE 0.2% ANNUAL CHANCE FLOODPLAIN)
MAP #: 250
EFFECTIVE DATE:

GEORGE C. COLLINS P.L.S. DATE

DATE:

REVISION	DATE

SCALE: 1 INCH = 10 FEET

REFERENCES:
DEED:
PLAN:

Figure 3.5-1: Existing Site Plan

LOCATED AT
14-20 WEST BROADWAY
SOUTH BOSTON, MA

PREPARED FOR:
-
-
-

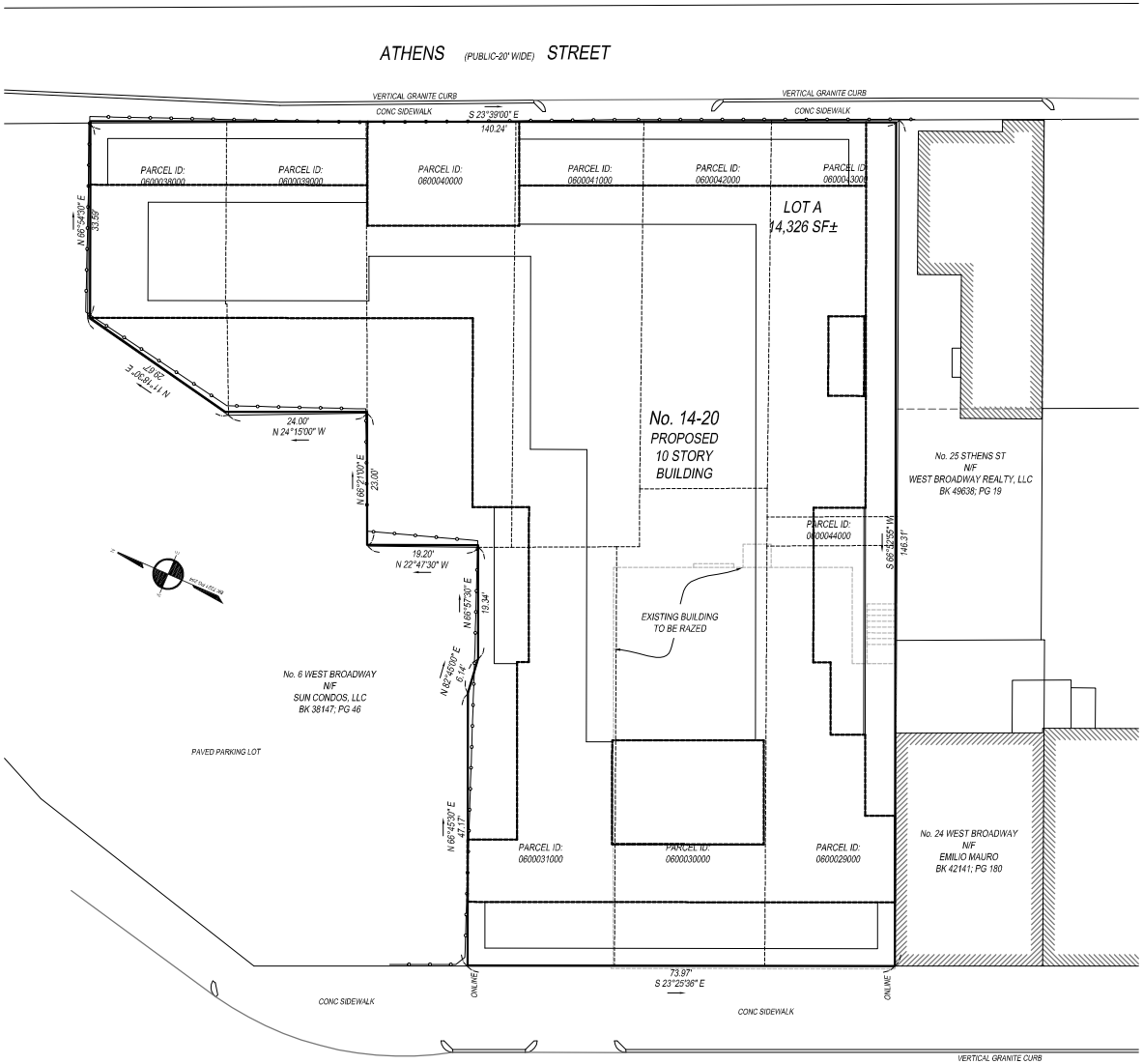
BOSTON SURVEY, INC.
UNIT C-4 SHIPWAYS PLACE
CHARLESTOWN, MA. 02129
(617) 242-1313
www.bostonsurveyinc.com

JOB No. 13-00678 CADD FILE 13-00678.dwg

I CERTIFY THAT THIS PLAN WAS MADE FROM AN INSTRUMENT SURVEY ON THE GROUND BETWEEN ON THE DATE OF OCTOBER 10, 2013 AND ALL STRUCTURES ARE LOCATED AS SHOWN HEREON.

ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (F.E.M.A.) THE MAJOR IMPROVEMENTS ON THE PROPERTY SHOWN FALL IN AN AREA DESIGNATED AS ZONE "X". (AREA DETERMINED TO BE OUTSIDE 0.2% ANNUAL CHANCE FLOODPLAIN)
MAP #: 25017C0443E
EFFECTIVE DATE: JUNE 6, 2010

ZONING
DISTRICT: ST VINCENT
SUB-DISTRICT: NS (NEIBORHOOD SHOPPING)
OVERLAYS: RESTRICTED PARKING



DRAFTSMEN: CJB/RAP	REVIEWED BY: GCC
PLAN - 25 ATHENS	10/19/2010
SITE PLAN UPDATE	02/06/14
PROPOSED CONDITIONS	02/06/14
PROPOSED CONDITIONS #2	11/07/14

SCALE: 1 INCH = 10 FEET

REFERENCES:
DEED: BK 17066; PG 300
PLAN: BK 7221; PG 254

Figure 3.5-2: Proposed Site Plan

LOCATED AT
14-20 WEST BROADWAY
SOUTH BOSTON, MA

PREPARED FOR:
CITY POINT CAPITAL WEST BROADWAY, LLC
546 EAST BROADWAY
SOUTH BOSTON, MA 02127

BOSTON SURVEY, INC.
UNIT C-4 SHIPWAYS PLACE
CHARLESTOWN, MA. 02129
(617) 242-1313
www.bostonsurveyinc.com

JOB No. 13-00678 CADD FILE 13-00678.dwg

REV.	DATE	DESCRIPTION
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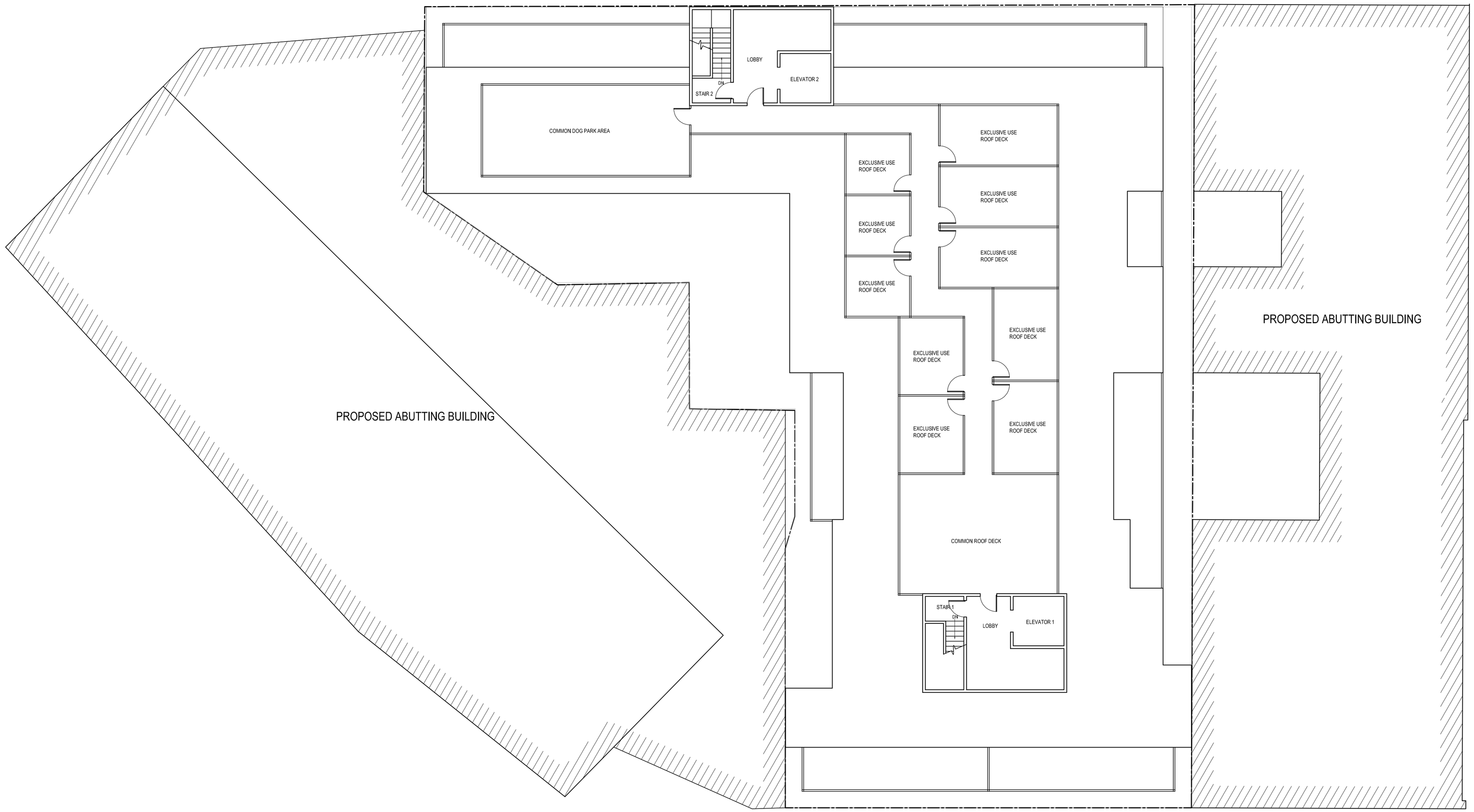


Figure 3.5-3: Proposed Site Use Plan

GENERAL NOTE:

VERIFY AND CONFIRM ALL CONDITIONS AND/OR DIMENSIONS SHOWN PRIOR TO COMMENCING CONSTRUCTION OR ORDERING MATERIALS. NOTIFY ARCHITECT OF ANY INCONSISTENCIES FOR REVIEW AND APPROVAL BEFORE PROCEEDING WITH CONSTRUCTION.

RCA, LLC
415 Neponset Ave.
Dorchester, Massachusetts 02122
www.roche-christopher.com
Telephone: 617-282-0930
Fax: 617-282-1880

Ryan Sillery
14-20 West Broadway
South Boston, Ma 02127

PROJECT # 13-157
DATE: 12-1-14 REV:
SCALE: 1" = 10'
DRAWN BY: CD
CHECKED BY: R.P.B.

REV.	DATE	DESCRIPTION
1	X-XX-XX	XXX



Figure 3.5-4: Proposed Basement Plan

GENERAL NOTE:

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DATE: 12-1-14 REV:
SCALE: 1/8" = 1'-0"
DRAWN BY: CD
CHECKED BY: R.P.B.

REV.	DATE	DESCRIPTION
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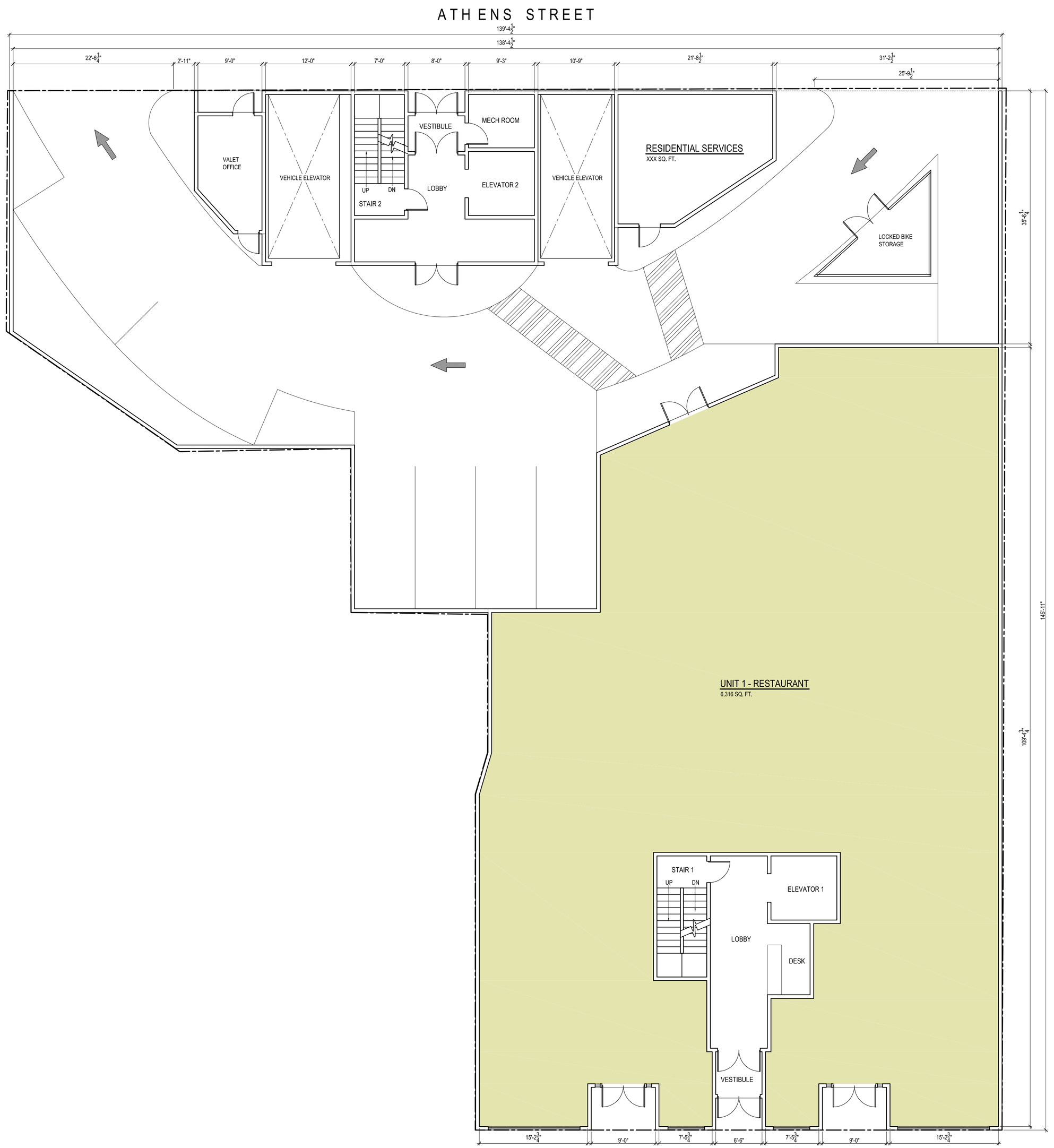


Figure 3.5-5: Proposed First Floor Plan

GENERAL NOTE:

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South Boston, Ma 02127

PROJECT # 13-157
DATE: 12-1-14 REV:
SCALE: 1/8" = 1'-0"
DRAWN BY: CD
CHECKED BY: R.P.B.

REV.	DATE	DESCRIPTION
1	X-XX-XX	XXX



Figure 3.5-6: Proposed Second Floor Plan

GENERAL NOTE:

VERIFY AND CONFIRM ALL CONDITIONS AND/OR DIMENSIONS SHOWN PRIOR TO COMMENCING CONSTRUCTION OR ORDERING MATERIALS. NOTIFY ARCHITECT OF ANY INCONSISTENCIES FOR REVIEW AND APPROVAL BEFORE PROCEEDING WITH CONSTRUCTION.

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Telephone: 617-282-0930
Fax: 617-282-1880

Ryan Sillery
14-20 West Broadway
South Boston, Ma 02127

PROJECT # 13-157
DATE: 12-1-14 REV:
SCALE: 1/8" = 1'-0"
DRAWN BY: CD
CHECKED BY: R.P.B.

REV.	DATE	DESCRIPTION
1	X-XX-XX	XXX



Figure 3.5-7: Proposed Third Thru Fifth Floor Plan

GENERAL NOTE:

VERIFY AND CONFIRM ALL CONDITIONS AND/OR DIMENSIONS SHOWN PRIOR TO COMMENCING CONSTRUCTION OR ORDERING MATERIALS. NOTIFY ARCHITECT OF ANY INCONSISTENCIES FOR REVIEW AND APPROVAL BEFORE PROCEEDING WITH CONSTRUCTION.

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Telephone: 617-282-0930
Fax: 617-282-1880

Ryan Sillery
14-20 West Broadway
South Boston, Ma 02127

PROJECT #	13-157
DATE:	12-1-14
REV:	
SCALE:	1/8" = 1'-0"
DRAWN BY:	CD
CHECKED BY:	R.P.B.

REV.	DATE	DESCRIPTION
1	X-XX-XX	XXX



Figure 3.5-8: Proposed Sixth Thru Eighth Floor Plan

GENERAL NOTE:

VERIFY AND CONFIRM ALL CONDITIONS AND/OR DIMENSIONS SHOWN PRIOR TO COMMENCING CONSTRUCTION OR ORDERING MATERIALS. NOTIFY ARCHITECT OF ANY INCONSISTENCIES FOR REVIEW AND APPROVAL BEFORE PROCEEDING WITH CONSTRUCTION.

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PROJECT # 13-157
DATE: 12-1-14 REV:
SCALE: 1/8" = 1'-0"
DRAWN BY: CD
CHECKED BY: R.P.B.

REV.	DATE	DESCRIPTION
1	X-XX-XX	XXX



Figure 3.5-9: Proposed Ninth Floor Plan

GENERAL NOTE:

VERIFY AND CONFIRM ALL CONDITIONS AND/OR DIMENSIONS SHOWN PRIOR TO COMMENCING CONSTRUCTION OR ORDERING MATERIALS. NOTIFY ARCHITECT OF ANY INCONSISTENCIES FOR REVIEW AND APPROVAL BEFORE PROCEEDING WITH CONSTRUCTION.

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14-20 West Broadway
South Boston, Ma 02127

PROJECT # 13-157
DATE: 12-1-14 REV:
SCALE: 1/8" = 1'-0"
DRAWN BY: CD
CHECKED BY: R.P.B.

REV.	DATE	DESCRIPTION
1	X-XX-XX	XXX



Figure 3.5-10: Proposed Tenth Floor Plan

GENERAL NOTE:

VERIFY AND CONFIRM ALL CONDITIONS AND/OR DIMENSIONS SHOWN PRIOR TO COMMENCING CONSTRUCTION OR ORDERING MATERIALS. NOTIFY ARCHITECT OF ANY INCONSISTENCIES FOR REVIEW AND APPROVAL BEFORE PROCEEDING WITH CONSTRUCTION.

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14-20 West Broadway
South Boston, Ma 02127

PROJECT # 13-157
DATE: 12-1-14 REV:
SCALE: 1/8" = 1'-0"
DRAWN BY: CD
CHECKED BY: R.P.B.

REV.	DATE	DESCRIPTION
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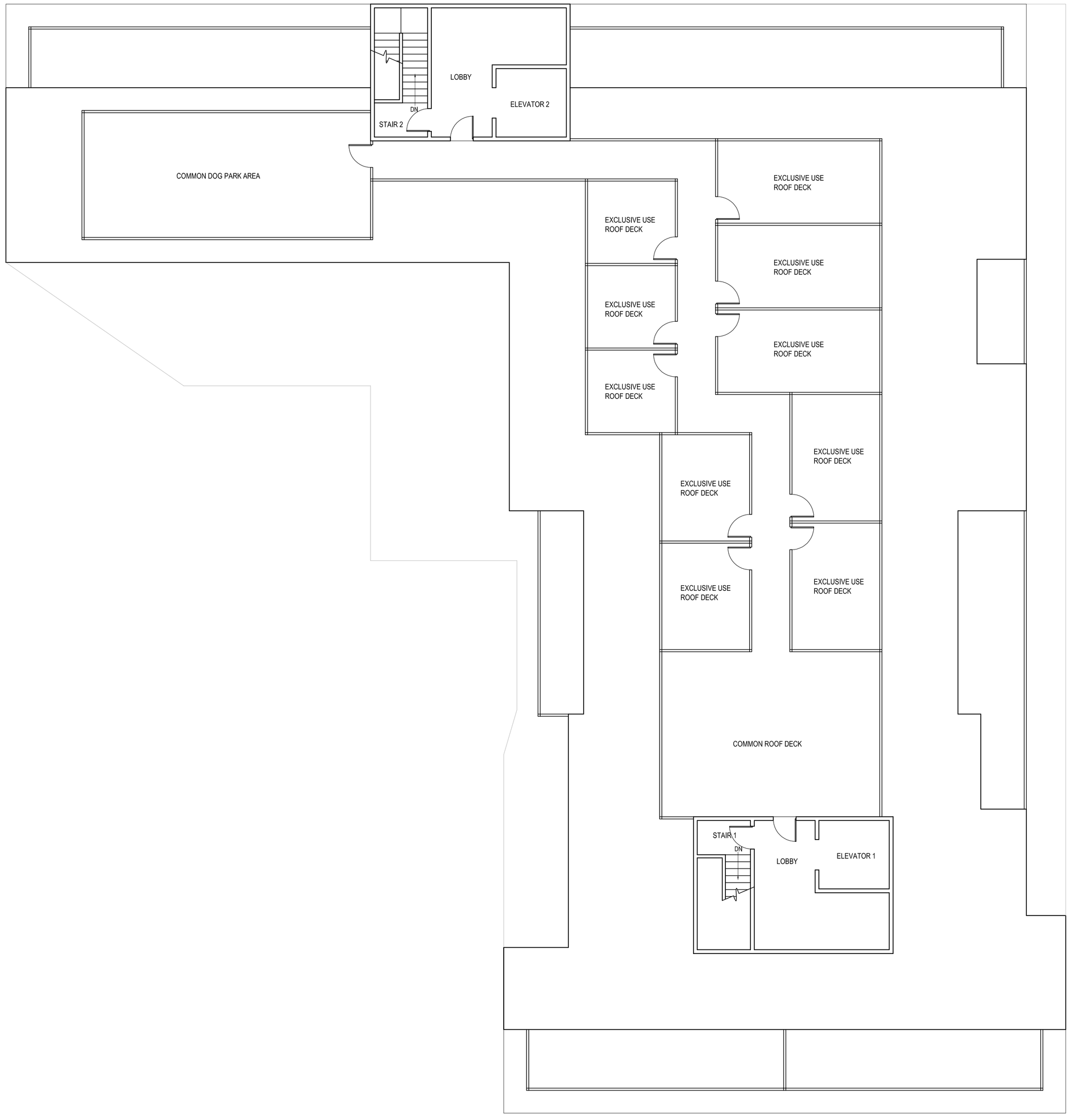


Figure 3.5-11: Proposed Roof Plan

GENERAL NOTE:

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South Boston, Ma 02127

PROJECT # 13-157
DATE: 12-1-14 REV:
SCALE: 1/8" = 1'-0"
DRAWN BY: CD
CHECKED BY: R.P.B.

GENERAL NOTES

1. All contractors shall inspect site prior to bidding to verify existing conditions for themselves.
2. STANDARDS SET FORTH IN 'AMERICAN STANDARD FOR NURSERY STOCK' REPRESENT GUIDELINE SPECIFICATIONS ONLY AND SHALL CONSTITUTE MINIMUM QUALITY REQUIREMENTS FOR PLANT MATERIAL.
3. ALL PLANT MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY "THE AMERICAN STANDARD FOR NURSERY STOCK", PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC. ANSI Z60.1-CURRENT EDITION.
4. ALL PLANT MATERIAL SHALL BE CONTAINER GROWN OR BALLED & BUR LAPPED AS INDICATED IN THE PLANT LIST.
5. ALL PLANT MATERIAL SHALL BE HEALTHY, VIGOROUS AND FREE OF PESTS AND DISEASE.
6. ALL MATERIALS ARE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT BEFORE, DURING AND AFTER INSTALLATION.
7. ALL PLANTING AREAS SHALL BE COMPLETELY MULCHED AS SPECIFIED.
8. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES AND SHALL AVOID DAMAGE TO ALL UTILITIES DURING THE COURSE OF THE WORK. LOCATIONS OF EISTING UTILITY LINES SHOWN ON THE PLANS ARE BASED UPON BEST AVAILABLE INFORMATION AND ARE TO BE CONSIDERED APPROXIMATE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO 1) TO VERIFY THE LOCATIONS OF UTILITY LINES AND ADJACENT TO THE WORK AREA 2) TO PROTECT ALL UTILITY LINES DURING THE CONSTRUCTION PERIOD 3) TO REPAIR ANY AND ALL DAMAGE TO UTILITIES, STRUCTURES, SITE APPURTENANCES, ETC. WHICH OCCURS AS A RESULT OF THE CONSTRUCTION.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL QUANTITIES SHOWN ON THESE PLANS BEFORE PRICING THE WORK. ALL PLANT MATERIAL QUANTITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETE COVERAGE OF ALL PLANTING BEDS AT SPACING SHOWN.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR DELIVERY SCHEDULE AND PROTECTION BETWEEN DELIVERY AND PLANTING PER SPECIFICATIONS TO MAINTAIN HEALTHY PLANT CONDITIONS.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FULLY MAINTAINING (INCLUDING BUT NOT LIMITED TO: WATERING, SPRAYING, MULCHING, FERTILIZING, ETC.) ALL OF THE PLANT MATERIALS FOR THE PERIOD OF TIME SHOWN IN THE SPECIFICATION.
12. ANY PLANT MATERIAL WHICH IS DISEASED, DISTRESSED, DEAD OR REJECTED (PRIOR TO SUBSTANTIAL COMPLETION) SHALL BE PROMPTLY REMOVED FROM THE SITE AND REPLACED WITH MATERIAL OF THE SAME SPECIES, QUANTITY, SIZE AND MEETING ALL PLANT LIST SPECIFICATIONS. CONTRACTOR IS RESPONSIBLE FOR ALL REPLACEMENT PLANT MATERIAL.
13. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIALS FOR ONE (1) FULL YEAR FROM DATE OF ACCEPTANCE. THE CONTRACTOR SHALL PROMPTLY MAKE ALL REPLACEMENTS THAT NEED TO BE MADE DURING THE 1) YEAR GUARANTEE PERIOD DURING THE NORMAL PLANTING SEASON.
14. WHERE SHOWN ON THE PLANS AND DETAILS, PLANTING BEDS ARE TO BE COMPLETELY COVERED WITH A FINELY PROCESSED PINE / HEMLOCK BARK MULCH FROM A LOCAL SOURCE HARVESTED IN A SUSTAINABLE MANNER TO A MINIMUM DEPTH OF TWO INCHES.
15. Stake location of all proposed plant material for approval of Landscape Architect prior to commencement of planting.

NOTE: CONTACT GREEN GRID ROOFS NORTHEAST CONACT REP. JAMES MARKHAM @ 1.860.368.3204 FOR GREEN GRID ROOFS PLANT MATERIAL MODULES AND GREEN GRID ROOFS RECOMMENDED INSTALLED

GREEN ROOF PLANT MATERIAL LIST						*INSTALL PER NURSERY / GROWERS RECOMMENDATIONS
SYM.	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	REMARKS
LIVE ROOF MODULES						
	4,400 SQ.'	*SUN/ SHADE SEDUM MATS 4IX	SUN / SHADE MIX	MODULE	MODULE	4" +/- HIGH, MIXED COLORS

GRAPHIC LEGEND

- COMMON ROOF DECK
- GREEN GRID ROOFS: EXTENSIVE SUN / SHADE SHALLOW DEPTH MODULE
- LAWN GRASS

LANDSCAPE NOTES:

LOAM DEPTHS SHALL BE AS FOLLOWS:

A. GREEN GRID ROOF BEDS - 6" VERMACULITE DEPTH IN THE PLANTED AREA OR AS RECOMMENDED BY GREEN GRID
B. PROVIDE (60) DAYS OF MAINTENANCE AFTER ACCEPTANCE BY THE LANDSCAPE ARCHITECT & OWNER TYP.
C. COORDINATE GREEN GRID ROOF SUBCONTRACTOR W/ DRAINAGE I ROOFING SUBCONTRACTORS.
D. LAWN AREAS - 6" ROLLED THICKNESS

LAWN GRASS
VALLEY GREEN SEED LTD. WILMINGTON, MAJ
LANDSCAPE/UTILITY MIXTURE FOR SUN/SHADE:
ENCHANTED PERENNIAL RYEGRASS
CREEPING RED FESCUE
GOLDRUSH KENTUCKY BLUEGRASS

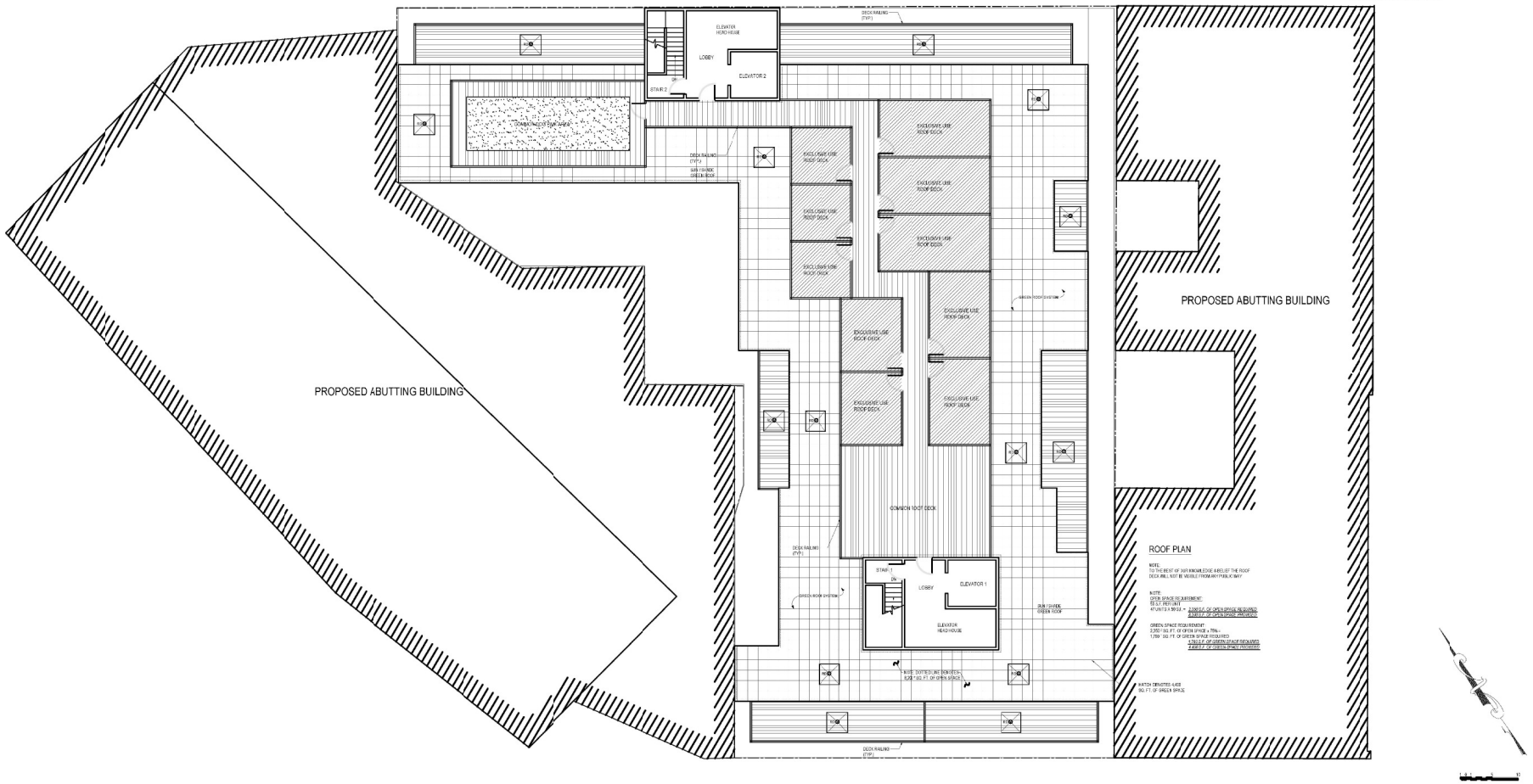


Figure 3.5-12: Proposed Green Roof Plan

GENERAL NOTE:
VERIFY AND CONFIRM ALL CONDITIONS AND/OR DIMENSIONS SHOWN PRIOR TO COMMENCING CONSTRUCTION OR ORDERING MATERIALS. NOTIFY ARCHITECT OF ANY INCONSISTENCIES FOR REVIEW AND APPROVAL BEFORE PROCEEDING WITH CONSTRUCTION.

RCA, LLC
415 Neponset Ave. Dorchester, Massachusetts 02122
Telephone: 617-282-0930
Fax: 617-282-1080
www.rodb-thinkoplus.com

WILLIAM FLEMING ASSOCIATES
LANDSCAPE ARCHITECTS LLC
PLANNING
295 MAIN ST.
STOW MA
978 897 9191

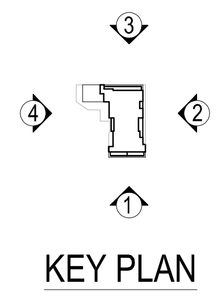
Ryan Sillery
14-20 West Broadway
South Boston, Ma 02127

PROJECT #	13-157
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REV:	
SCALE:	1" = 10'
DRAWN BY:	WFF
CHECKED BY:	WFF

REV.	DATE	DESCRIPTION
1	X-XX-XX	XXX



Figure 3.5-13: Proposed Elevation 1



KEY PLAN

GENERAL NOTE:

VERIFY AND CONFIRM ALL CONDITIONS AND/OR DIMENSIONS SHOWN PRIOR TO COMMENCING CONSTRUCTION OR ORDERING MATERIALS. NOTIFY ARCHITECT OF ANY INCONSISTENCIES FOR REVIEW AND APPROVAL BEFORE PROCEEDING WITH CONSTRUCTION.

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Fax: 617-282-1880

Ryan Sillery
14-20 West Broadway
South Boston, Ma 02127

PROJECT # 13-157
DATE: 12-1-14 REV:
SCALE: 1/8" = 1'-0"
DRAWN BY: CD
CHECKED BY: R.P.B.

REV.	DATE	DESCRIPTION
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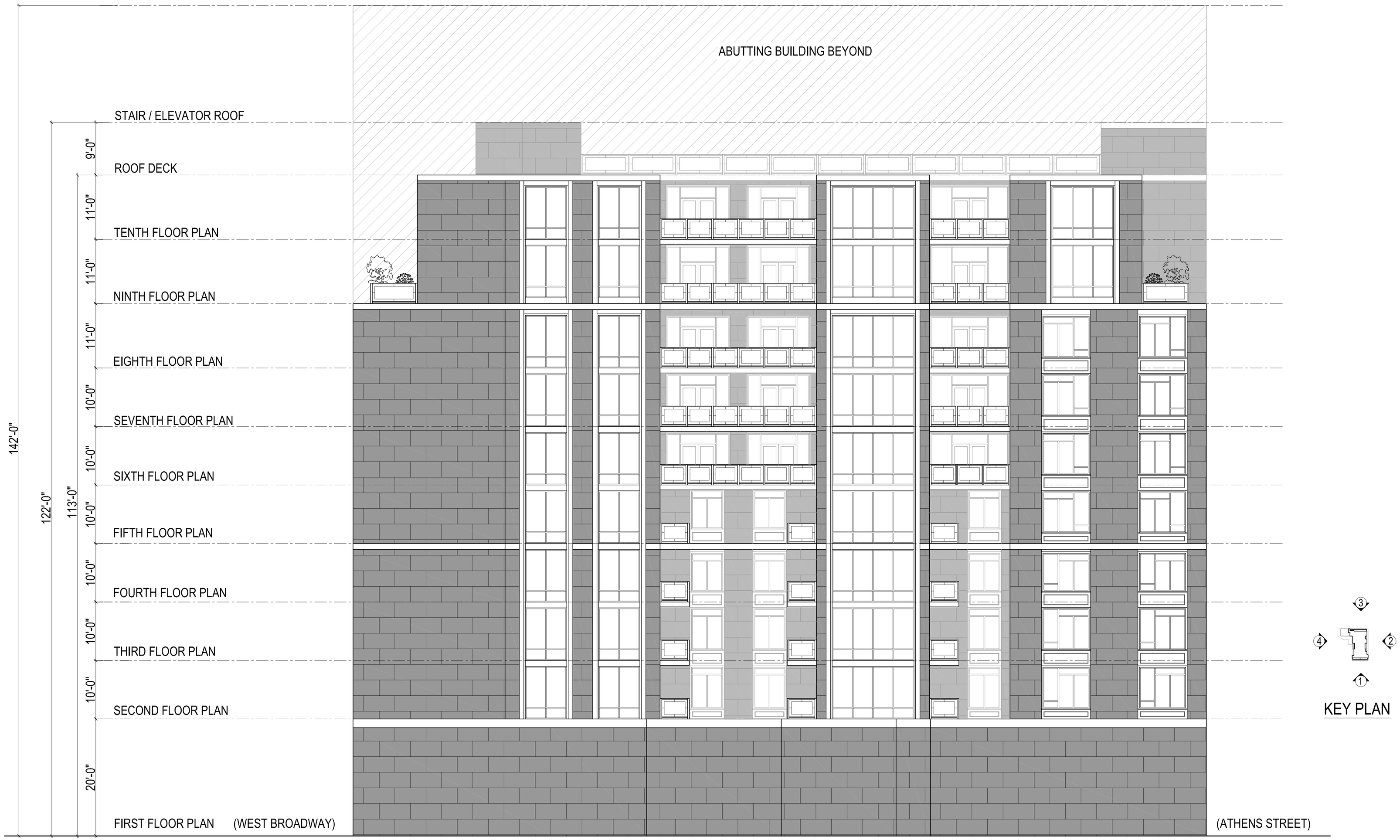


Figure 3.5-14: Proposed Elevation 2

GENERAL NOTE:

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South Boston, Ma 02127

PROJECT # 13-157
DATE: 12-1-14 REV:
SCALE: 1/8" = 1'-0"
DRAWN BY: CD
CHECKED BY: R.P.B.

REV.	DATE	DESCRIPTION
1	X-XX-XX	XXX



Figure 3.5-15: Proposed Elevation 3

GENERAL NOTE:

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DRAWN BY: CD
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REV.	DATE	DESCRIPTION
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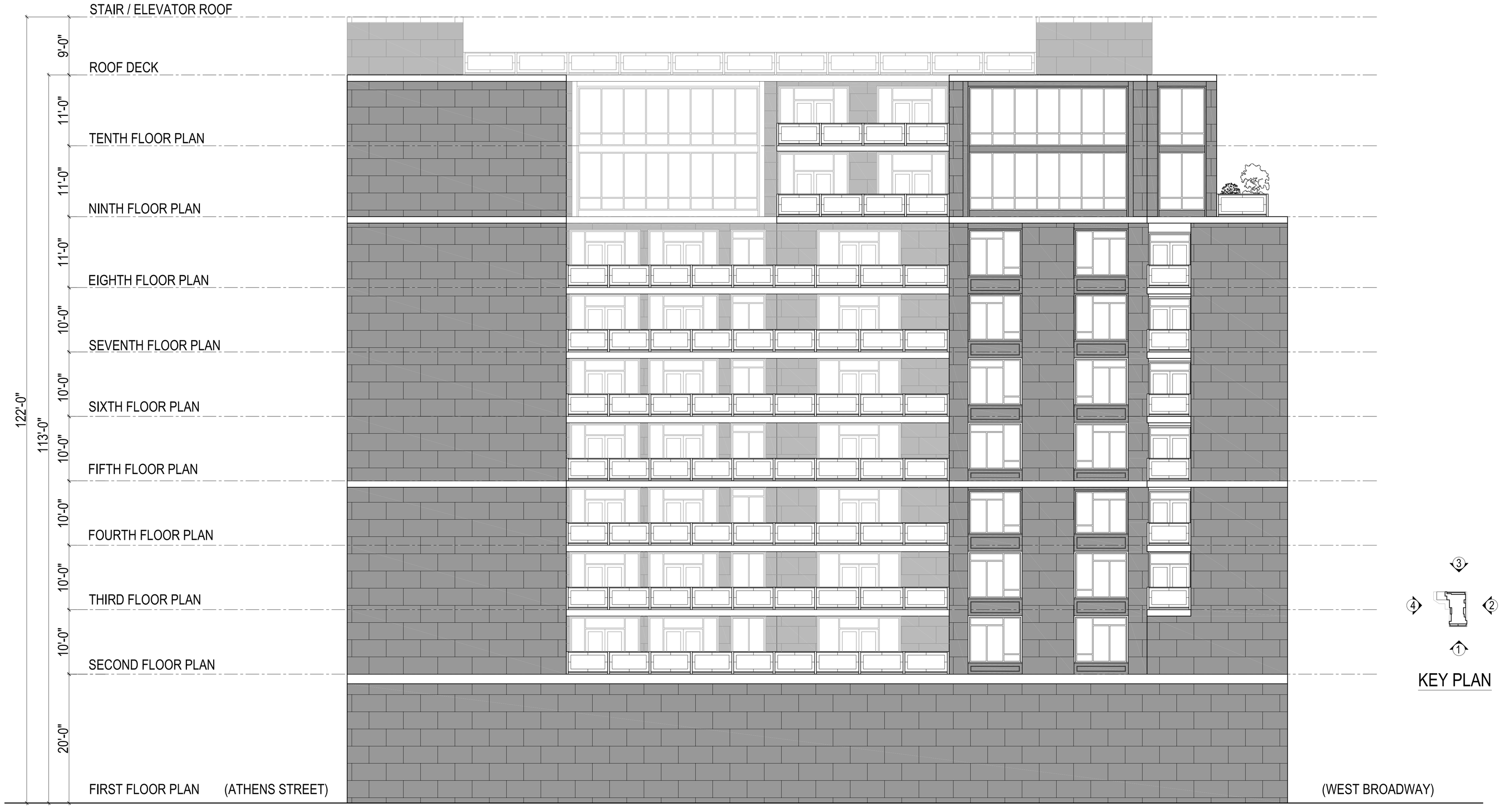


Figure 3.5-16: Proposed Elevation 4

GENERAL NOTE:

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Ryan Sillery
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South Boston, Ma 02127

PROJECT # 13-157
DATE: 12-1-14 REV:
SCALE: 1/8" = 1'-0"
DRAWN BY: CD
CHECKED BY: R.P.B.



Figure 3.5-17

Elevation Along West Broadway
14-20 West Broadway
South Boston, Ma

RCA, LLC
Architects – Designers – Planners

415 Neponset Ave.
Dorchester, Ma



Figure 3.5-18

Elevation Along West Broadway
14-20 West Broadway
South Boston, Ma

RCA, LLC
Architects – Designers – Planners

415 Neponset Ave.
Dorchester, Ma



Figure 3.5-19

Elevation Along Athens Street
14-20 West Broadway
South Boston, Ma

RCA, LLC
Architects – Designers – Planners

415 Neponset Ave.
Dorchester, Ma



Figure 3.5-20

Elevation Along Athens Street
14-20 West Broadway
South Boston, Ma

RCA, LLC
Architects – Designers – Planners

415 Neponset Ave.
Dorchester, Ma

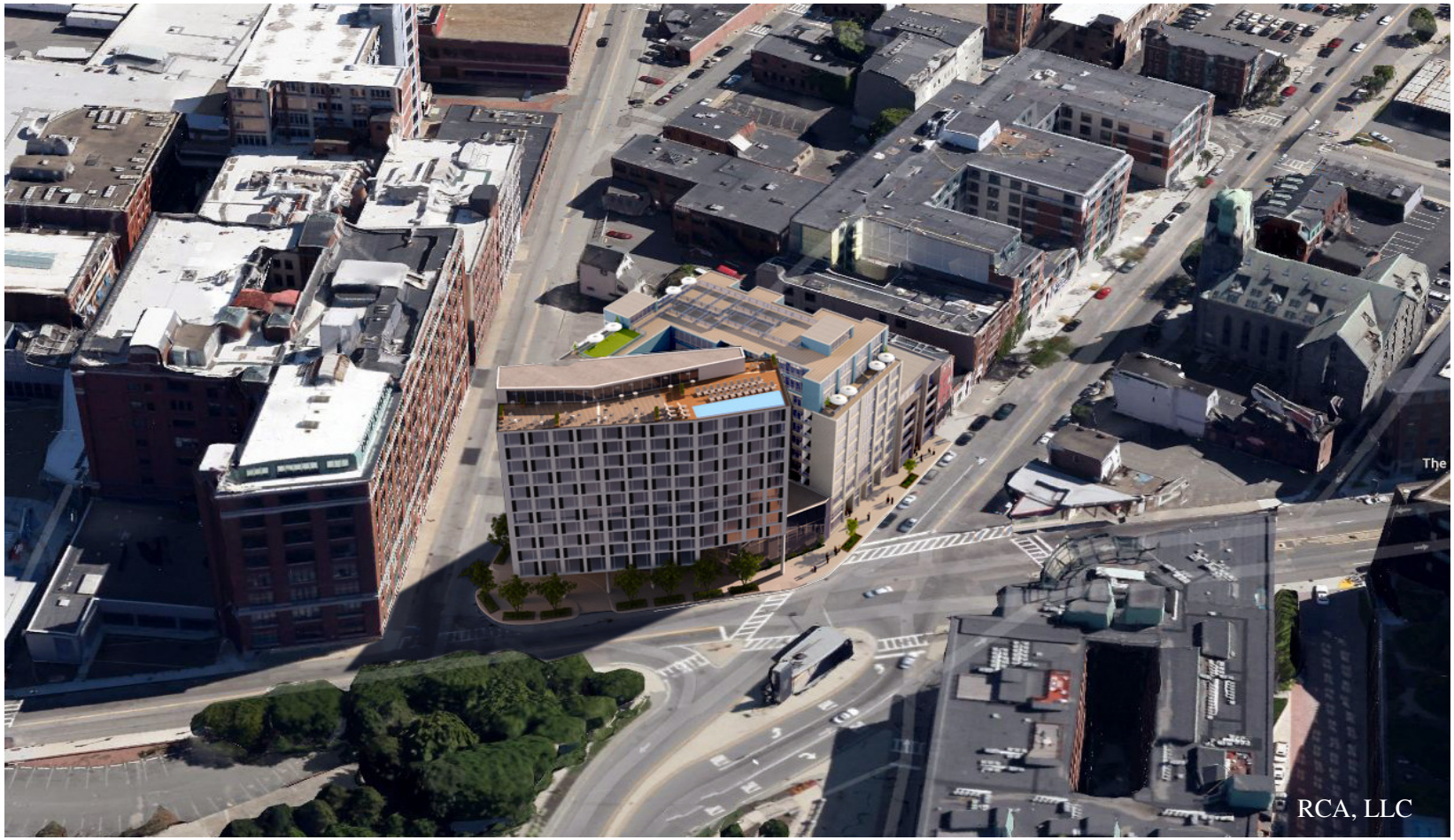


Figure 3.5-21

Aerial View
14-20 West Broadway
South Boston, Ma

RCA, LLC
Architects – Designers – Planners

415 Neponset Ave.
Dorchester, Ma



Figure 3.5-22

View From The Bridge
14-20 West Broadway
South Boston, Ma

RCA, LLC
Architects – Designers – Planners

415 Neponset Ave.
Dorchester, Ma



Figure 3.5-23

View From West Broadway
14-20 West Broadway
South Boston, Ma

RCA, LLC
Architects – Designers – Planners

415 Neponset Ave.
Dorchester, Ma

LEED 2009 for New Construction and Major Renovations

Project Checklist

14 West Broadway Boston

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

Energy and Atmosphere — Possible Points: 35

Y	?	N			
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
5	3	11	Credit 1	Optimize Energy Performance	1 to 19
	1	6	Credit 2	On-Site Renewable Energy	1 to 7
	2		Credit 3	Enhanced Commissioning	2
	2		Credit 4	Enhanced Refrigerant Management	2
1		2	Credit 5	Measurement and Verification	3
	2		Credit 6	Green Power	2

Materials and Resources — Possible Points: 14

Y	?	N			
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
		2	Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	?	N			
1	1		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	?	N			
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
		1	Credit 1	Outdoor Air Delivery Monitoring	1
	1		Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
1			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
	1		Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7.1	Thermal Comfort—Design	1
1			Credit 7.2	Thermal Comfort—Verification	1
	1		Credit 8.1	Daylight and Views—Daylight	1
1			Credit 8.2	Daylight and Views—Views	1

Innovation and Design Process — Possible Points: 6

Y	?	N			
1			Credit 1.1	Innovation in Design: Green Houskeeeping	1
1			Credit 1.2	Innovation in Design: Exemplary Perf SS 4.1	1
1			Credit 1.3	Innovation in Design: Energy Star Appliances	1
1			Credit 1.4	Innovation in Design: Exemplary SS7.1	1
1			Credit 1.5	Innovation in Design:Education Plan	1
1			Credit 2	LEED Accredited Professional	1

Regional Priority Credits — Possible Points: 4

Y	?	N			
1			Credit 1.1	Regional Priority: SS c3	1
1			Credit 1.2	Regional Priority: Heat Island 7.1	1
1			Credit 1.3	Regional Priority:Heat Island 7.2	1
1			Credit 1.4	Regional Priority: SS 6.1	1

Total — Possible Points: 110

Y	?	N
56	20	34

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

Figure 3.5 - 24
LEED 2009 Checklist for New Construction and Major Renovations

4.0 ENVIRONMENTAL PROTECTION COMPONENT

4.1 Pedestrian Wind Assessment

Based on a pedestrian wind assessment completed by RWDI, Inc., Wind Engineers, the proposed building will largely be sheltered by the existing and approved surrounding buildings from the prevailing northwest, northeast and southwest winds. Recessed entrances and vestibules are positive wind control features that reduce the potential impact of winds downwashing off the façade of the proposed mixed use development. As a result, suitable wind conditions are predicted at the building entrances and along the sidewalks along West Broadway and Athens Street. The proposed development will not negatively affect wind conditions further away from the site.

Suitable wind conditions are also predicted for the outdoor decks at the 2nd and 9th floors during the summer when these areas are typically in use. If frequent usage is anticipated for the roof-top area, wind control measures such as tall parapets and screens should be included in the design to improve the wind conditions to an appropriate level.

It is RWDI's opinion that no further wind study is required for the proposed development. Please see **Appendix E** for the detailed pedestrian wind assessment.

4.2 Shadow Impacts Analysis

4.2.1 Introduction

The following shadow study describes and graphically depicts anticipated new shadow impacts from the Project compared to shadows from existing buildings. The study presents the existing and built conditions for the proposed Project for the hours 9:00 AM, 12:00 Noon, and 3:00 PM for the vernal equinox, summer solstice, autumnal equinox, and winter solstice. In addition, shadows are depicted for 6:00 PM during the summer solstice and autumnal equinox.

4.2.2 Vernal Equinox (March 21)

Figure 4.2-1 through **Figure 4.2-3** depict shadows on March 21.

At 9:00 AM, minimal shadows from the Project are cast in a westerly direction onto portions of Dorchester Avenue and West Broadway. Minimal shadows are cast onto the head house of the MBTA station.

At 12:00 Noon, new shadow from the Project is cast in a northerly direction mostly onto the intersection of Athens Street and West Second Street.

At 3:00 PM, new shadow from the Project is cast in a northeasterly direction onto West Second Street, Athens Street, and onto a portion of the empty lots to the east of the Project.

4.2.3 Summer Solstice (June 21)

Figure 4.2-4 through **Figure 4.2-8** depict shadow impacts on June 21.

At 9:00 AM, shadows are cast in a westerly direction onto portions of Dorchester Avenue, and West Broadway. New Shadow is cast onto the head house of the West Broadway MBTA station.

At 12:00 Noon, new shadow is cast in a northerly direction minimally onto the intersection of Athens Street and West Second Street.

At 3:00 PM, new shadow from the Project is cast in a northeasterly direction onto a portion of the empty lots to the east of the project and Athens Street, and minimally onto West Second Street.

At 6:00 PM, minimal additional new shadow from the Project is cast in an easterly direction onto the empty lots to the east of the project and Athens Street, and minimally onto West Second Street. Much of the existing buildings already cover this area with shadows.

4.2.4 Autumnal Equinox (September 21)

Figure 4.2-9 through **Figure 4.2-11** depict shadow impacts on September 21.

At 9:00 AM, minimal shadows are cast in a westerly direction onto portions of Dorchester Avenue, West Broadway, the Kelly Bridge, and the wooded/open space parcel that lies west of the Site, across Dorchester Avenue. Minimal shadows are onto the head house of the West Broadway MBTA station.

At 12:00 Noon, new shadow from the Project is cast in a northerly direction mostly onto the intersection of Athens Street and West Second Street.

At 3:00 PM, new shadow from the Project is cast in a northeasterly direction onto West Second Street, Athens Street, and onto a portion of the empty lots to the northeast of the Project

At 6:00 PM, minimal additional new shadow from the Project is cast in an easterly direction onto the empty lots to the east of the project and West Second Street and Athens Street. Many of the existing nearby buildings already cover this area with shadows.

4.2.5 Winter Solstice (December 21)

Figure 4.2-12 through **Figure 4.2-14** depict shadow impacts on December 21. Winter sun casts the longest shadows of the year.

At 9:00 AM, minimal additional new shadows are cast in a westerly direction onto Dorchester Avenue, the Kelly Bridge, and the wooded/open space parcel owned by Procter & Gamble that lies west of the Site. Many of the existing nearby buildings already cover this area with shadows.

At 12:00 Noon, new shadow is cast in a northerly direction onto West Second Street and the intersection of Athens Street and West Second Street.

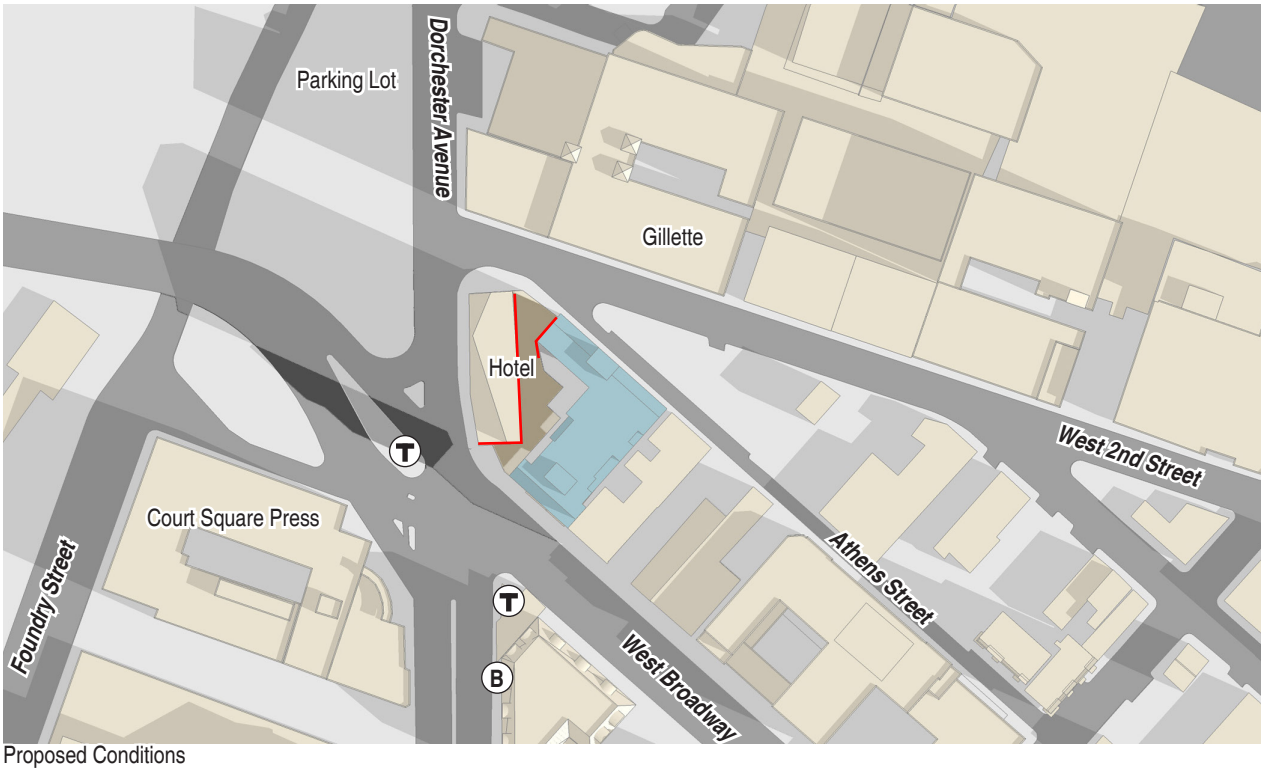
At 3:00 PM, new shadow from the Project is cast in a northeasterly direction mostly onto West Second Street and the façade of the Procter & Gamble/Gillette Building.

4.2.5 Summary

Even with the proposed height extending to 10 floors, the Project's shadow impacts are generally non-extensive. New shadow is generally limited to the streets surrounding the Site with morning hour shadows extending to the Kelly Bridge. Although late afternoon and evening shadows will extend in an easterly/northeasterly direction toward the Procter & Gamble/Gillette Building and to surface/open lots, most of these lots and areas are currently impacted by shadow patterns from existing buildings. Overall, the Project's shadow impacts will be consistent with current patterns and will not adversely impact the Project Site or surroundings.



Existing Conditions



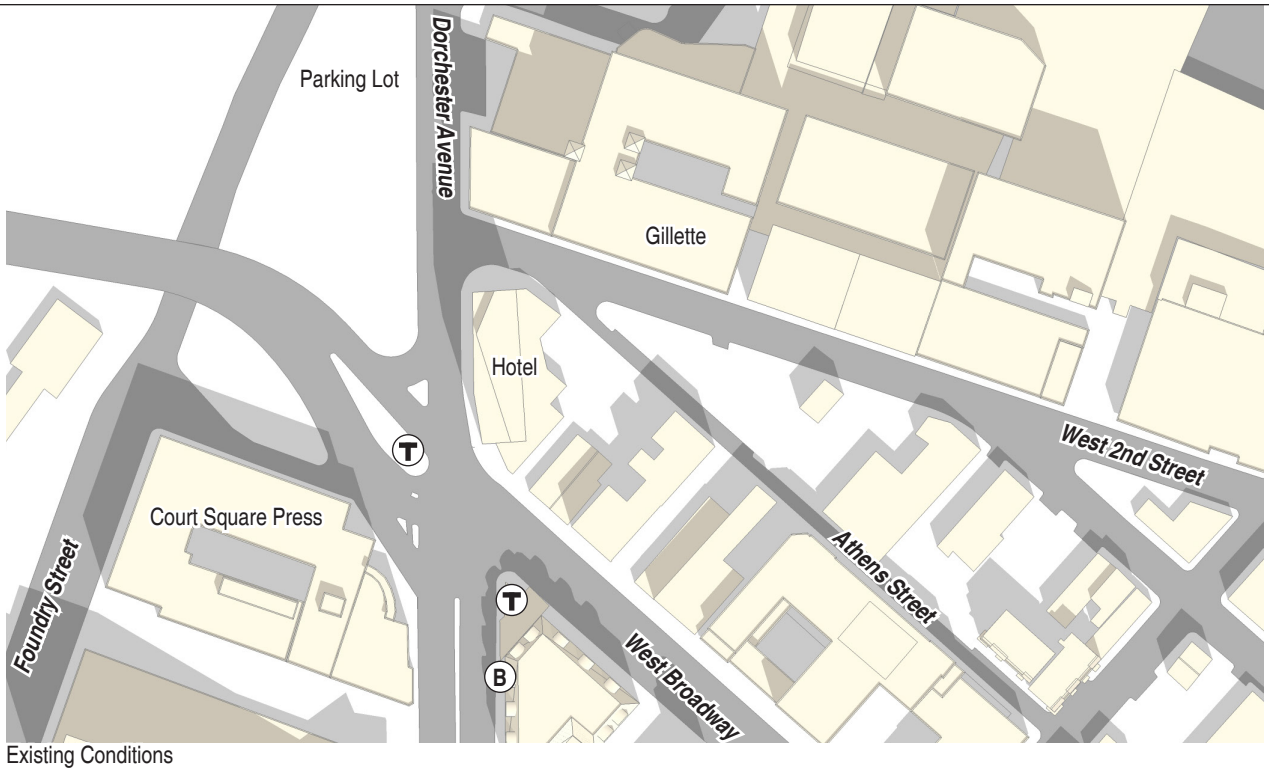
Proposed Conditions

Proposed Building | Existing Shadow | Proposed Shadow | New Shadow on Facade | (T) Rapid Transit | (B) Bus Stop

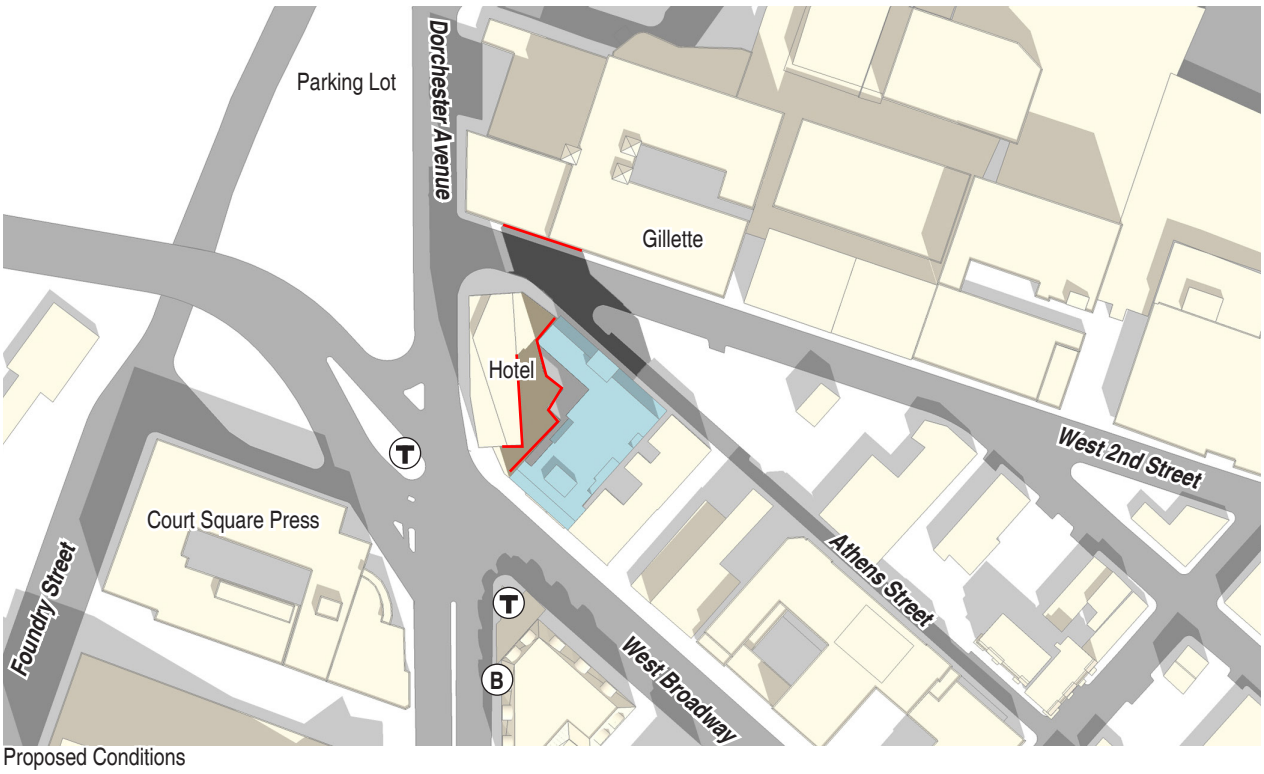
Vanasse Hangen Brustlin, Inc.

March 21st - 9 AM
Azimuth 125.7, Altitude 33.2

Figure 4.2-1



Existing Conditions



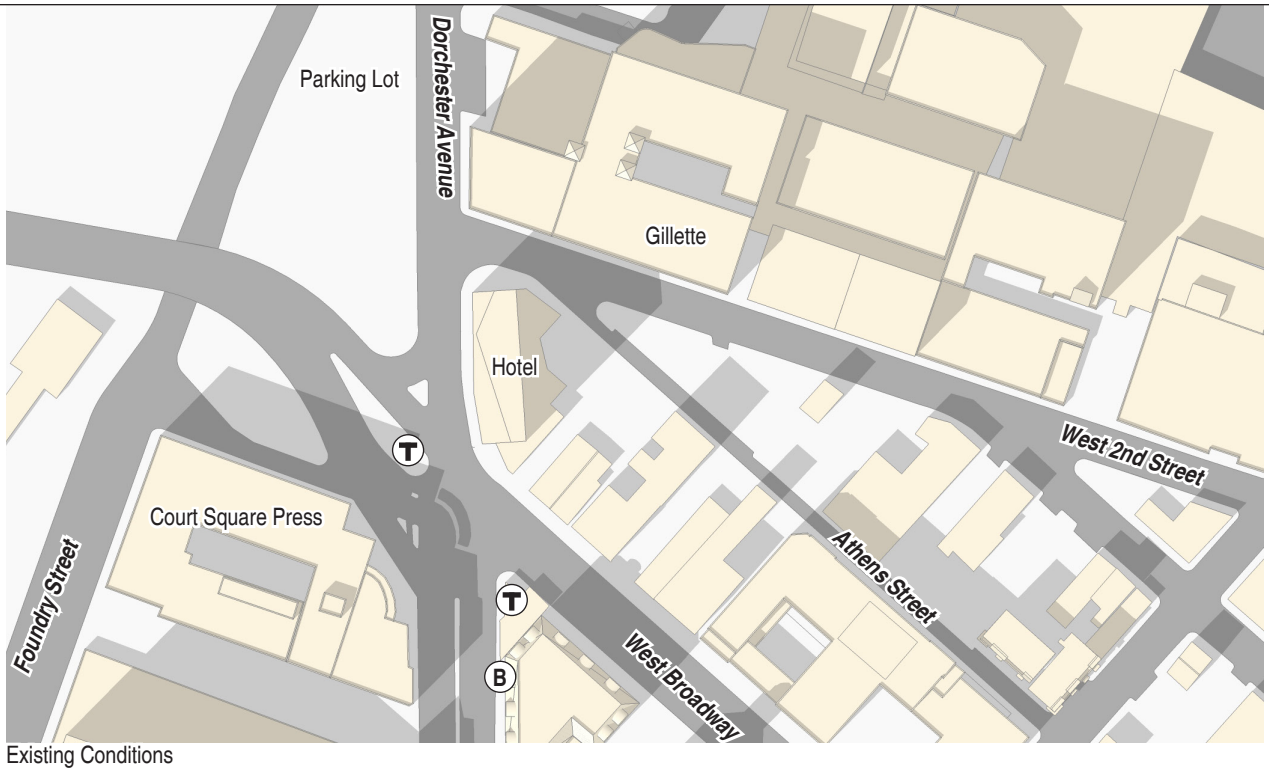
Proposed Conditions

Proposed Building | Existing Shadow | Proposed Shadow | New Shadow on Facade | (T) Rapid Transit | (B) Bus Stop

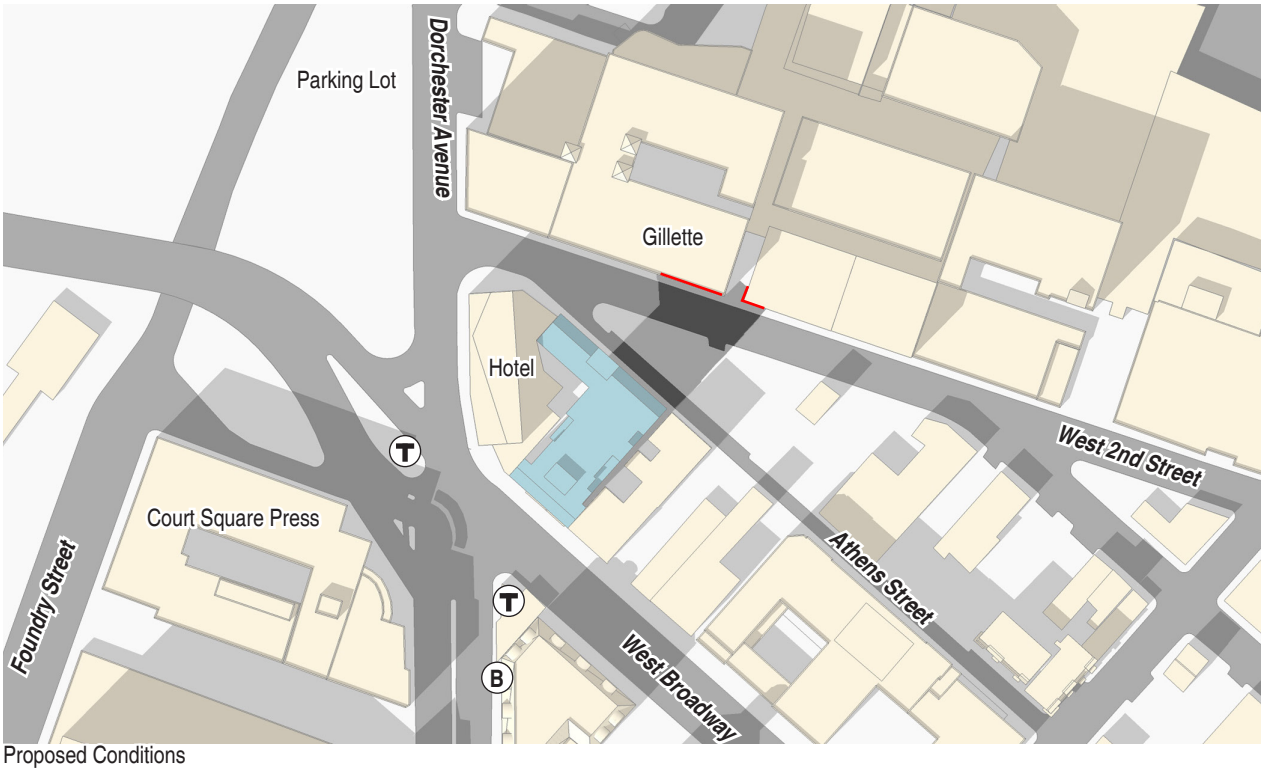
Vanasse Hangen Brustlin, Inc.

March 21st -12 PM
Azimuth 183.3, Altitude 48.1

Figure 4.2-2



Existing Conditions



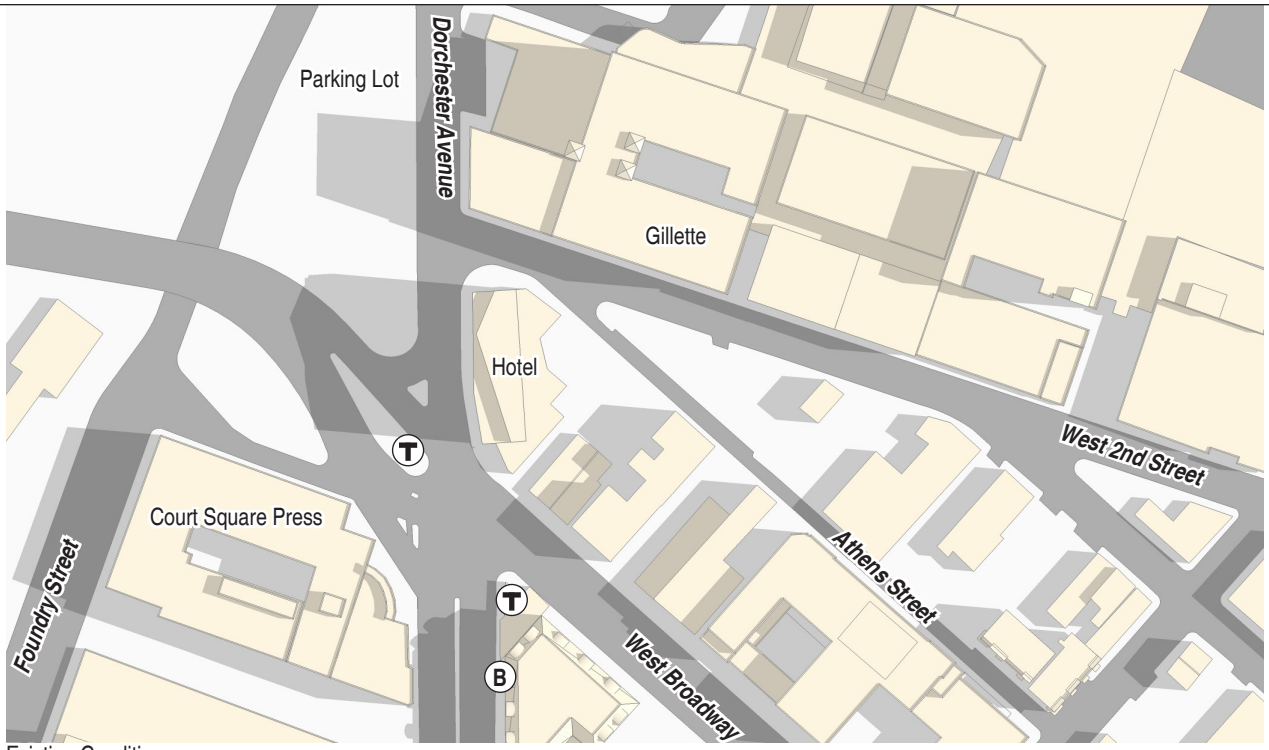
Proposed Conditions

Proposed Building | Existing Shadow | Proposed Shadow | New Shadow on Facade | (T) Rapid Transit | (B) Bus Stop

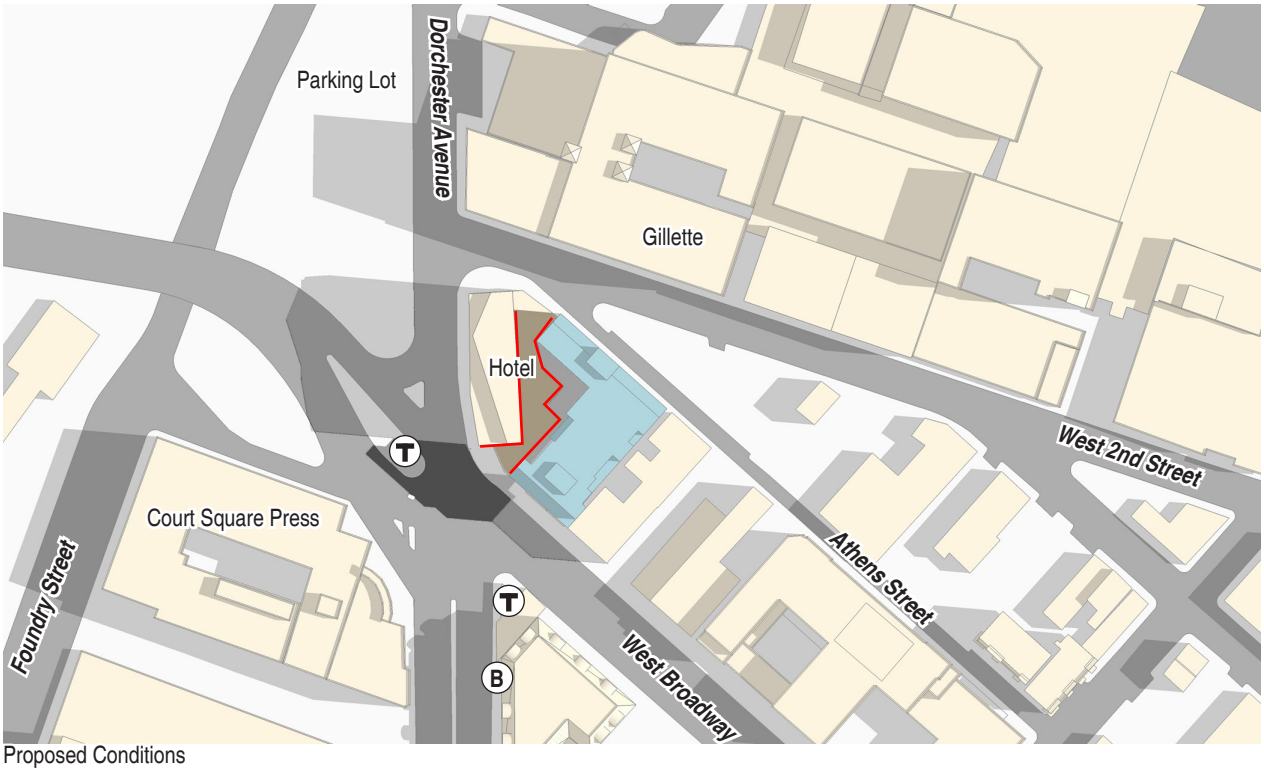
Vanasse Hangen Brustlin, Inc.

March 21st -3 PM
Azimuth 238.4, Altitude 30.6

Figure 4.2-3



Existing Conditions



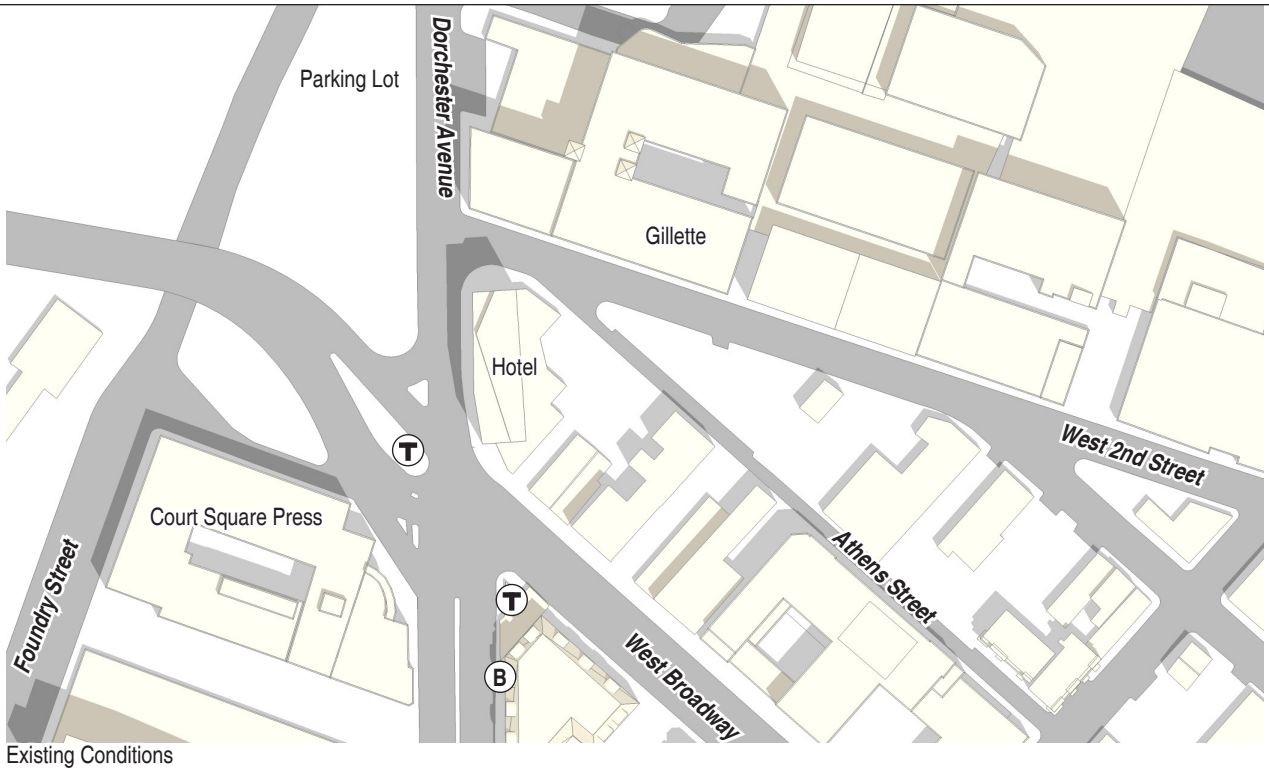
Proposed Conditions

Proposed Building | Existing Shadow | Proposed Shadow | New Shadow on Facade | (T) Rapid Transit | (B) Bus Stop

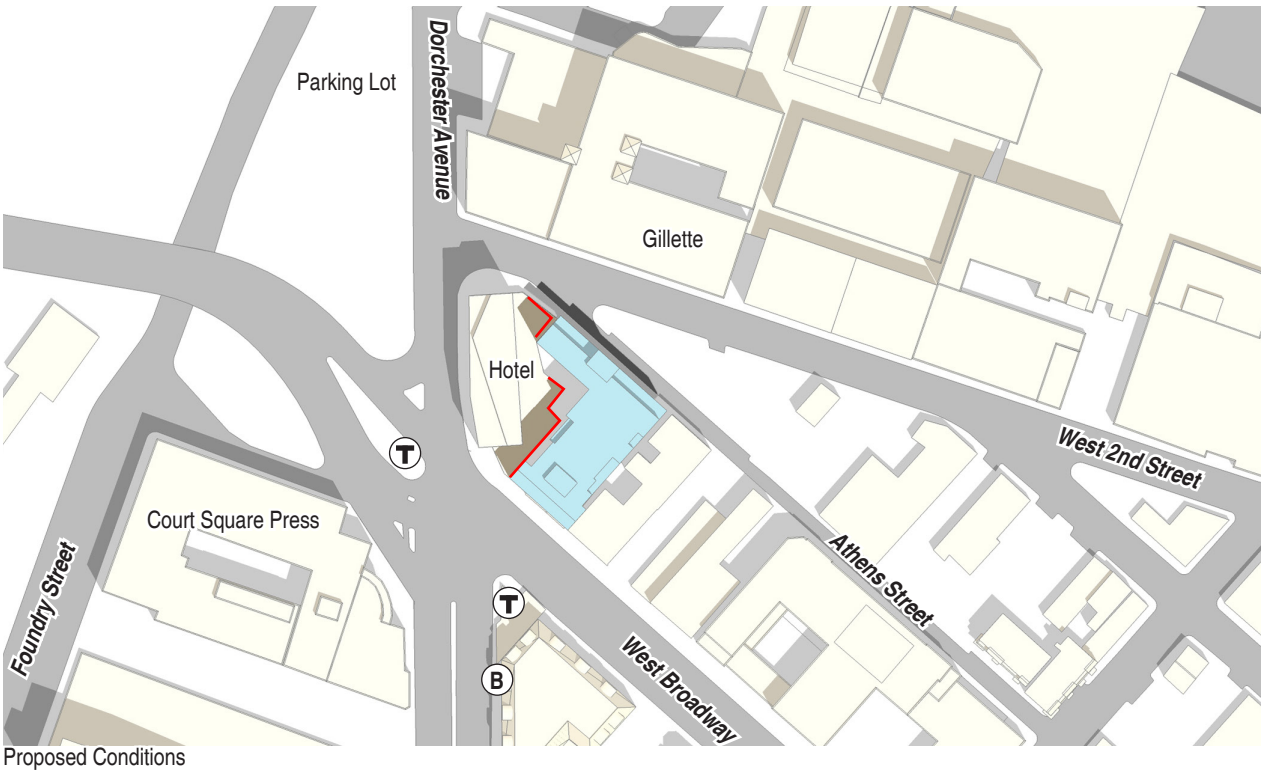
Vanasse Hangen Brustlin, Inc.

June 21st - 9 AM
Azimuth 105.9, Altitude 50.9

Figure 4.2-4



Existing Conditions



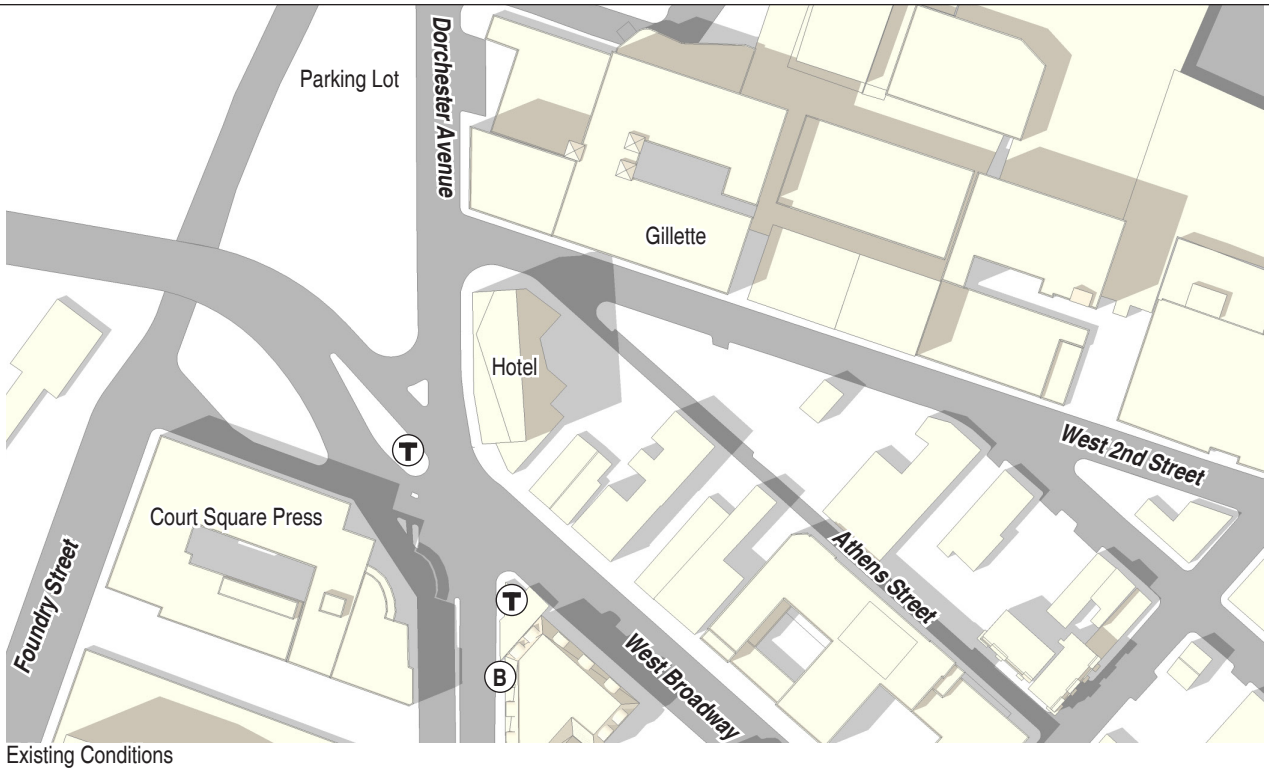
Proposed Conditions

Proposed Building | Existing Shadow | Proposed Shadow | New Shadow on Facade | (T) Rapid Transit | (B) Bus Stop

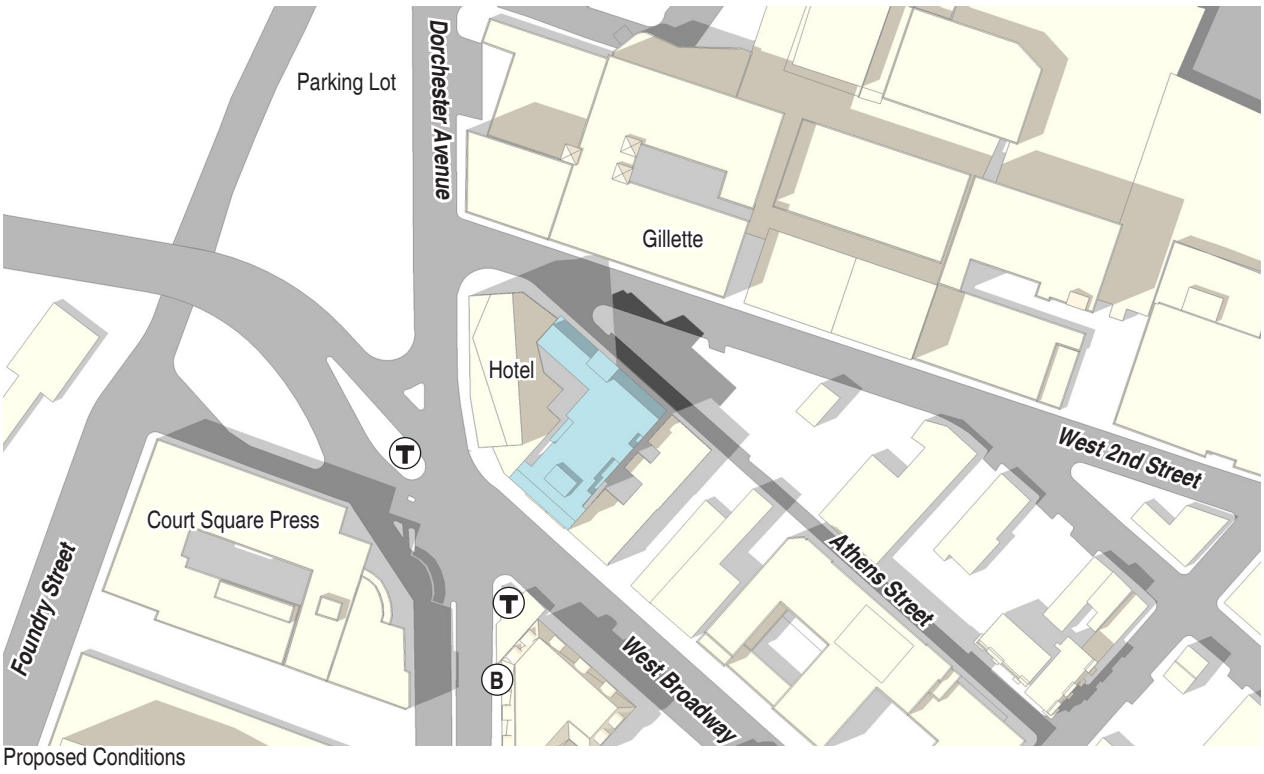
Vanasse Hangen Brustlin, Inc.

June 21st - 12 PM
Azimuth 189.7, Altitude 70.9

Figure 4.2-5



Existing Conditions



Proposed Conditions

Proposed Building | Existing Shadow | Proposed Shadow | New Shadow on Facade | (T) Rapid Transit | (B) Bus Stop

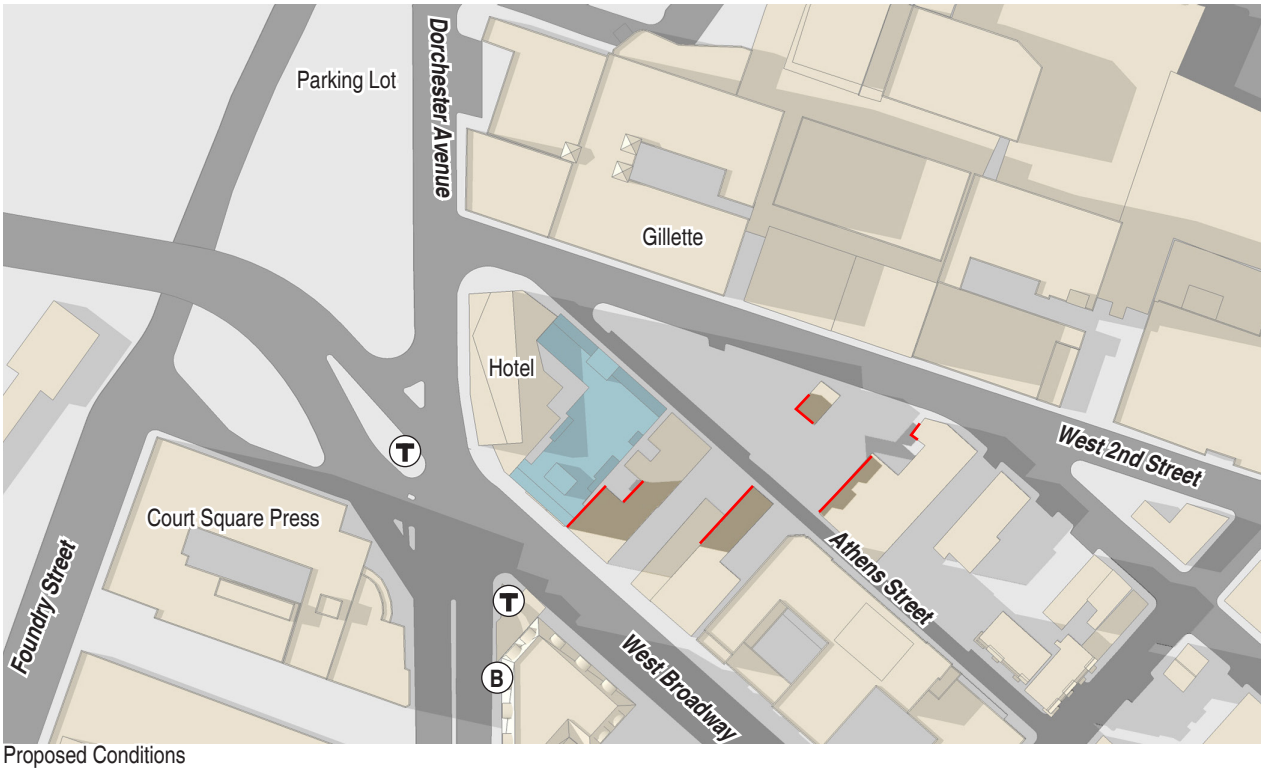
Vanasse Hangen Brustlin, Inc.

June 21st - 3 PM
Azimuth 260.4, Altitude 45.9

Figure 4.2-6



Existing Conditions



Proposed Conditions

Proposed Building | Existing Shadow | Proposed Shadow | New Shadow on Facade | (T) Rapid Transit | (B) Bus Stop

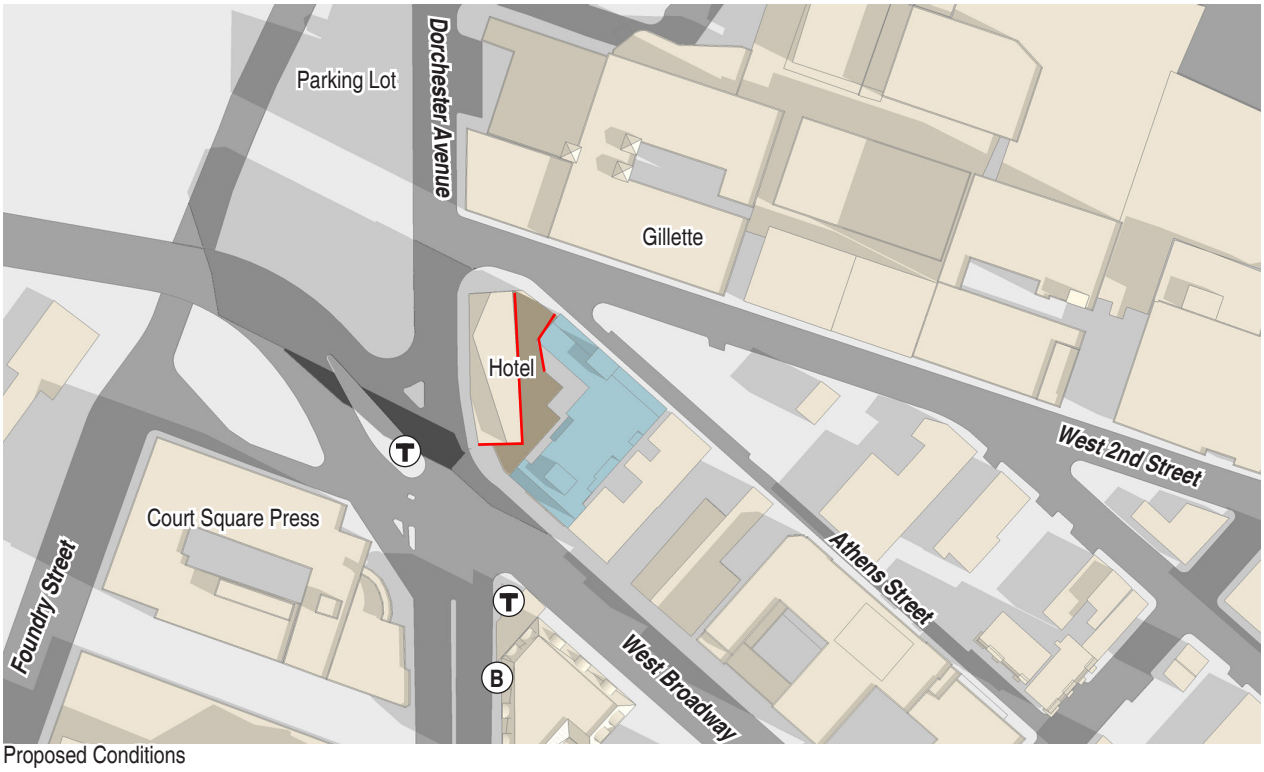
Vanasse Hangen Brustlin, Inc.

June 21st - 6 PM
Azimuth 289.9, Altitude 13.1

Figure 4.2-7



Existing Conditions



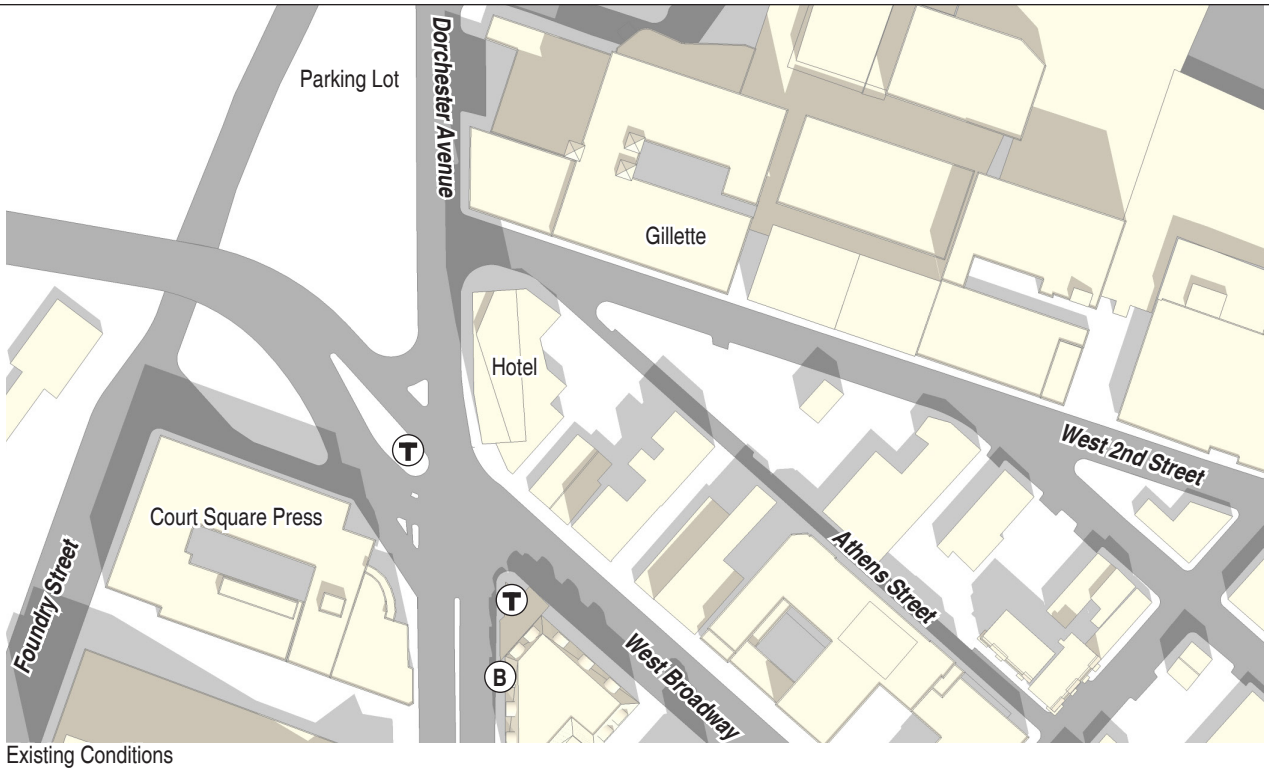
Proposed Conditions

Proposed Building | Existing Shadow | Proposed Shadow | New Shadow on Facade | (T) Rapid Transit | (B) Bus Stop

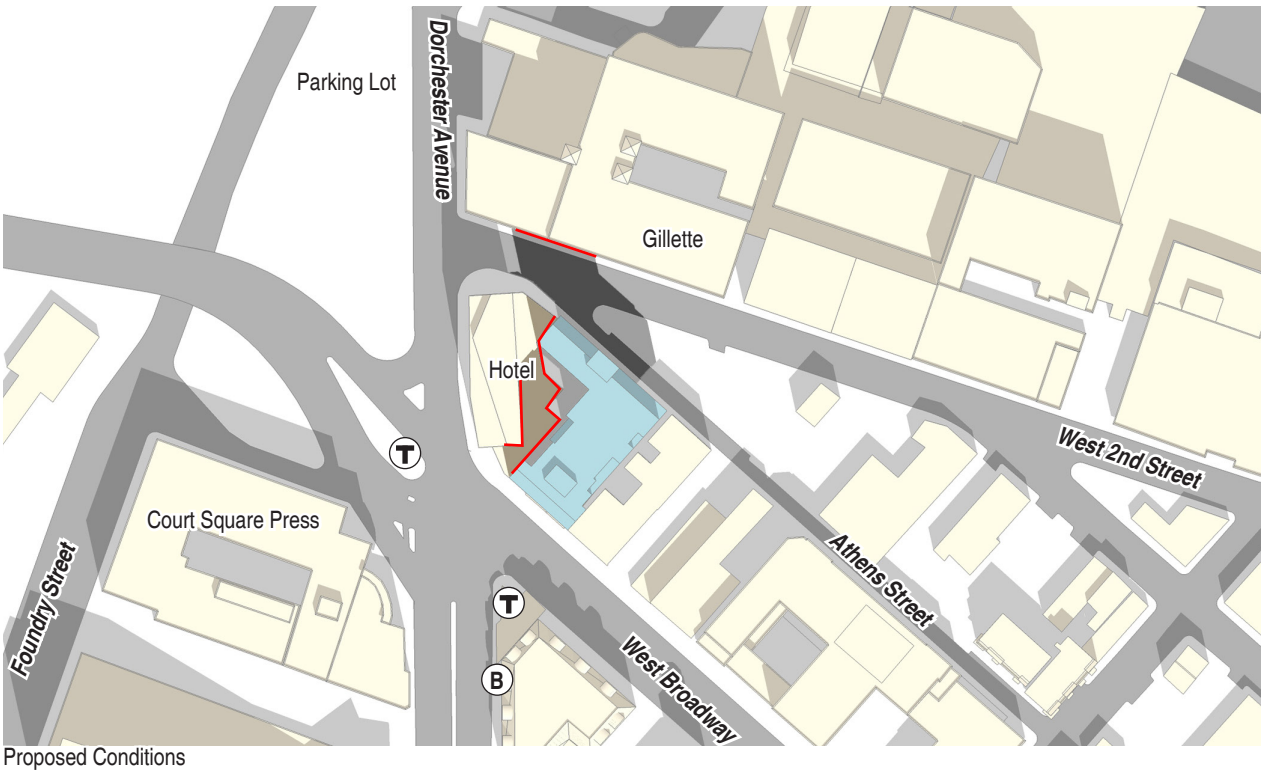
Vanasse Hangen Brustlin, Inc.

September 21st - 9 AM
Azimuth 129.1, Altitude 35.3

Figure 4.2-8



Existing Conditions



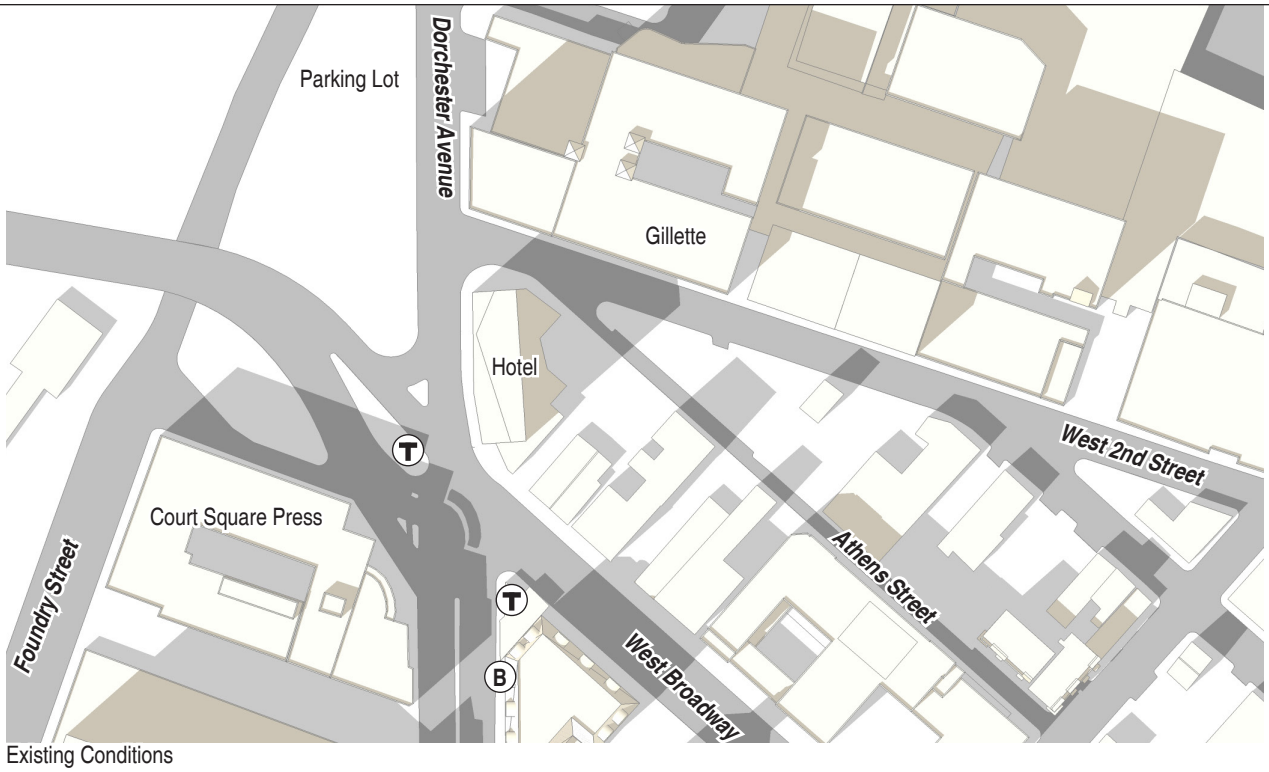
Proposed Conditions

Proposed Building | Existing Shadow | Proposed Shadow | New Shadow on Facade | (T) Rapid Transit | (B) Bus Stop

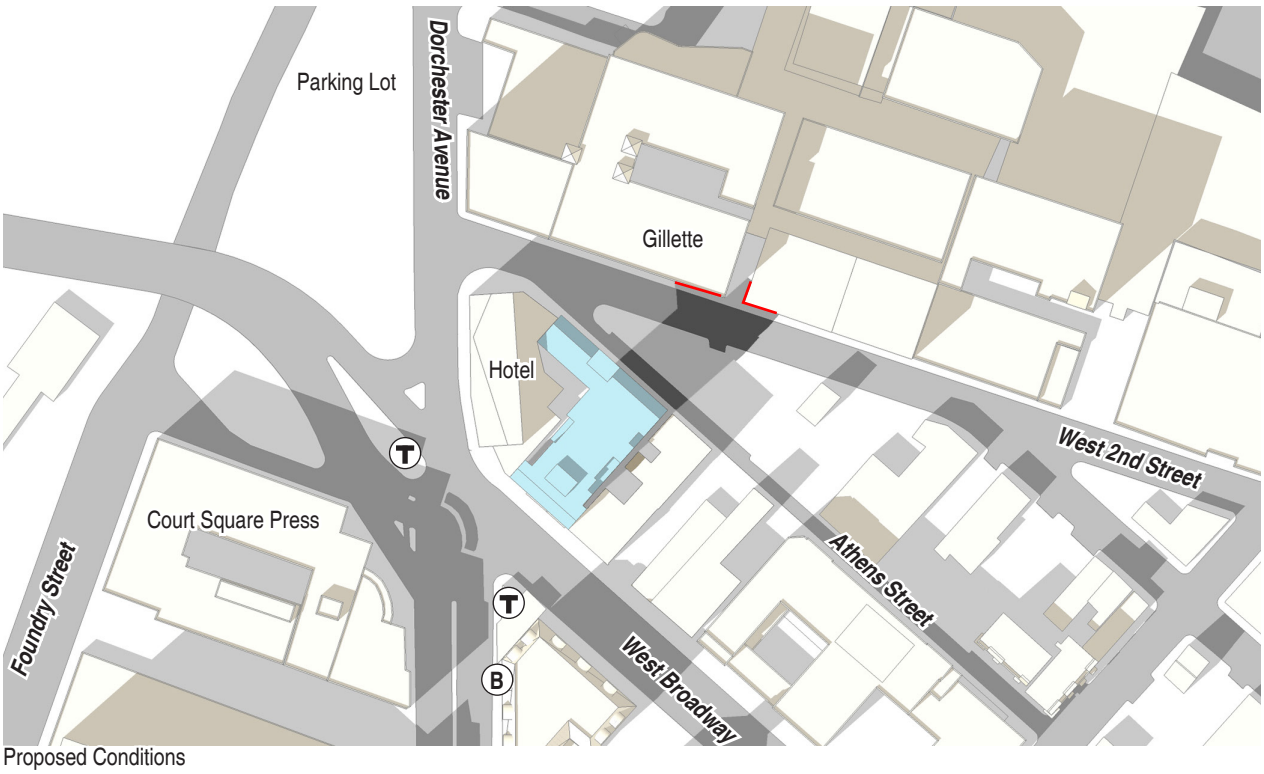
Vanasse Hangen Brustlin, Inc.

September 21st - 12 PM
Azimuth 188.5, Altitude 47.8

Figure 4.2-9



Existing Conditions



Proposed Conditions

Proposed Building | Existing Shadow | Proposed Shadow | New Shadow on Facade | (T) Rapid Transit | (B) Bus Stop

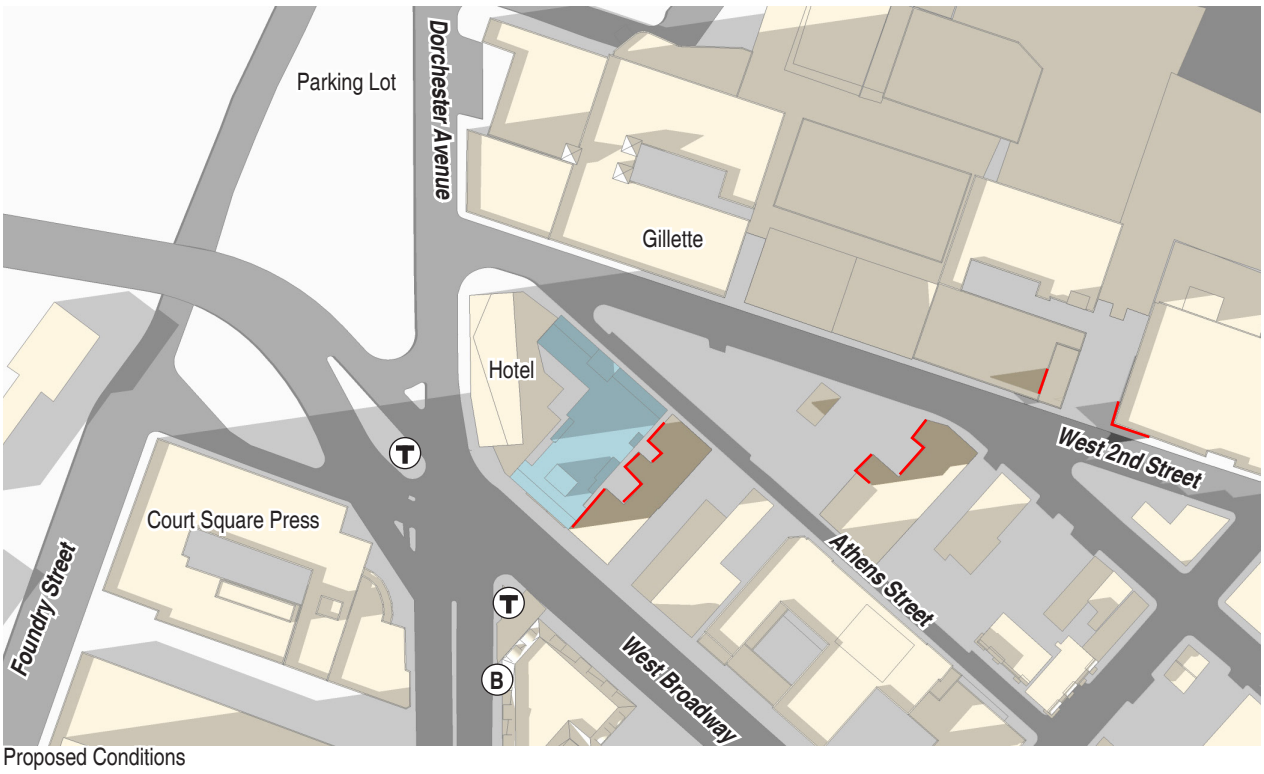
Vanasse Hangen Brustlin, Inc.

September 21st - 3 PM
Azimuth 24.4, Altitude 28.2

Figure 4.2-10



Existing Conditions



Proposed Conditions

Proposed Building | Existing Shadow | Proposed Shadow | New Shadow on Facade | (T) Rapid Transit | (B) Bus Stop

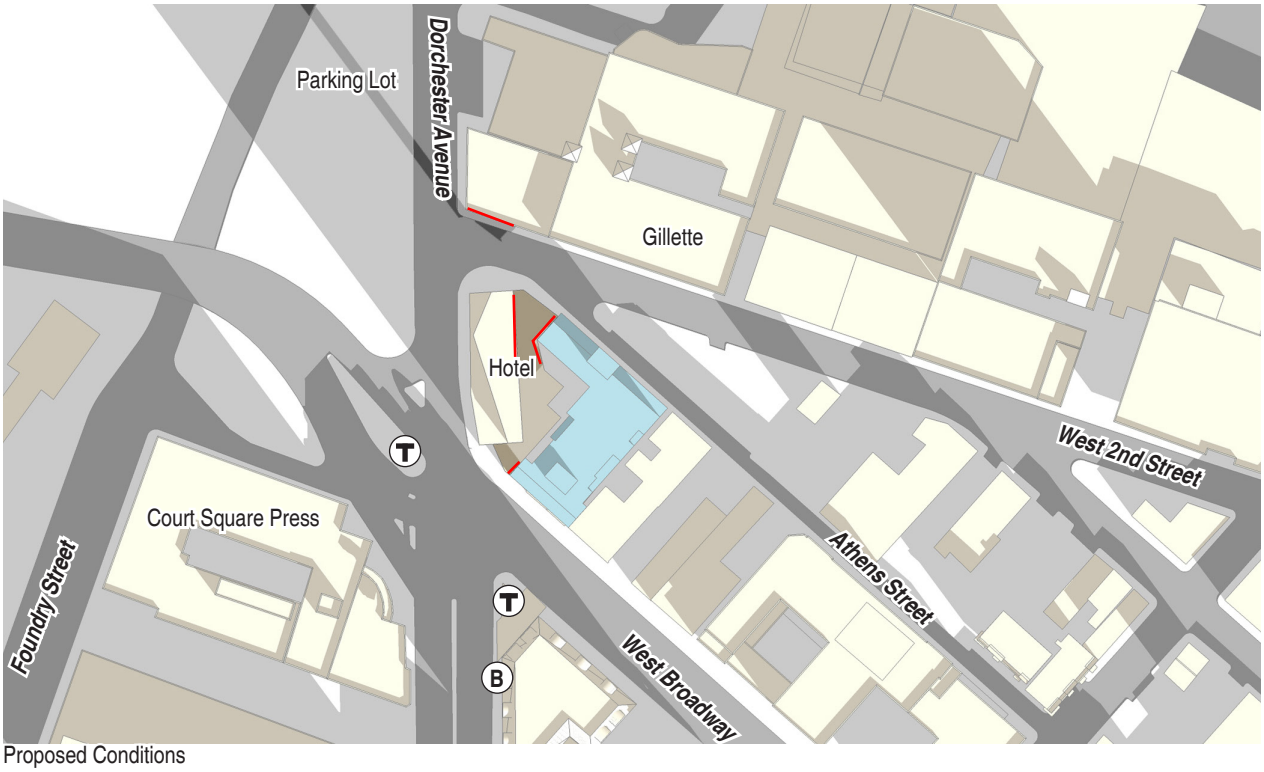
Vanasse Hangen Brustlin, Inc.

September 21st - 6 PM
Azimuth 274.1, Altitude -4

Figure 4.2-11



Existing Conditions



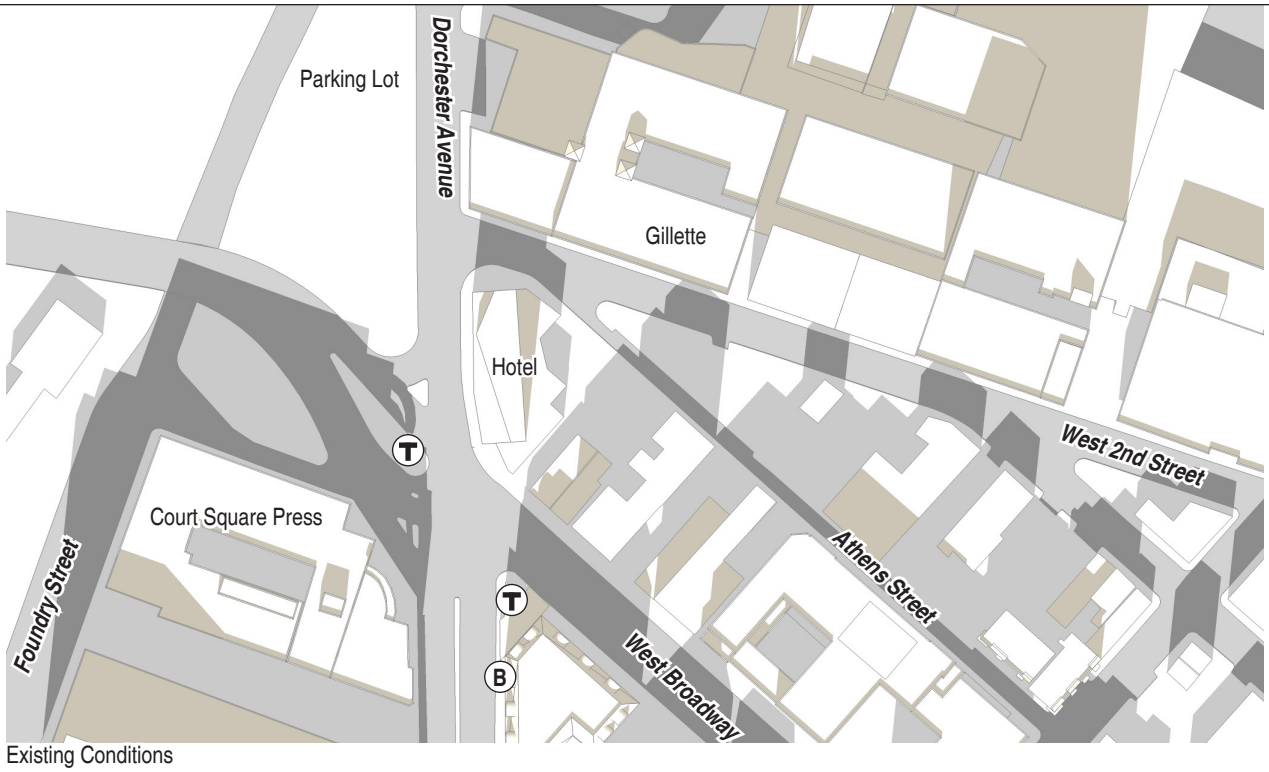
Proposed Conditions

Proposed Building | Existing Shadow | Proposed Shadow | New Shadow on Facade | (T) Rapid Transit | (B) Bus Stop

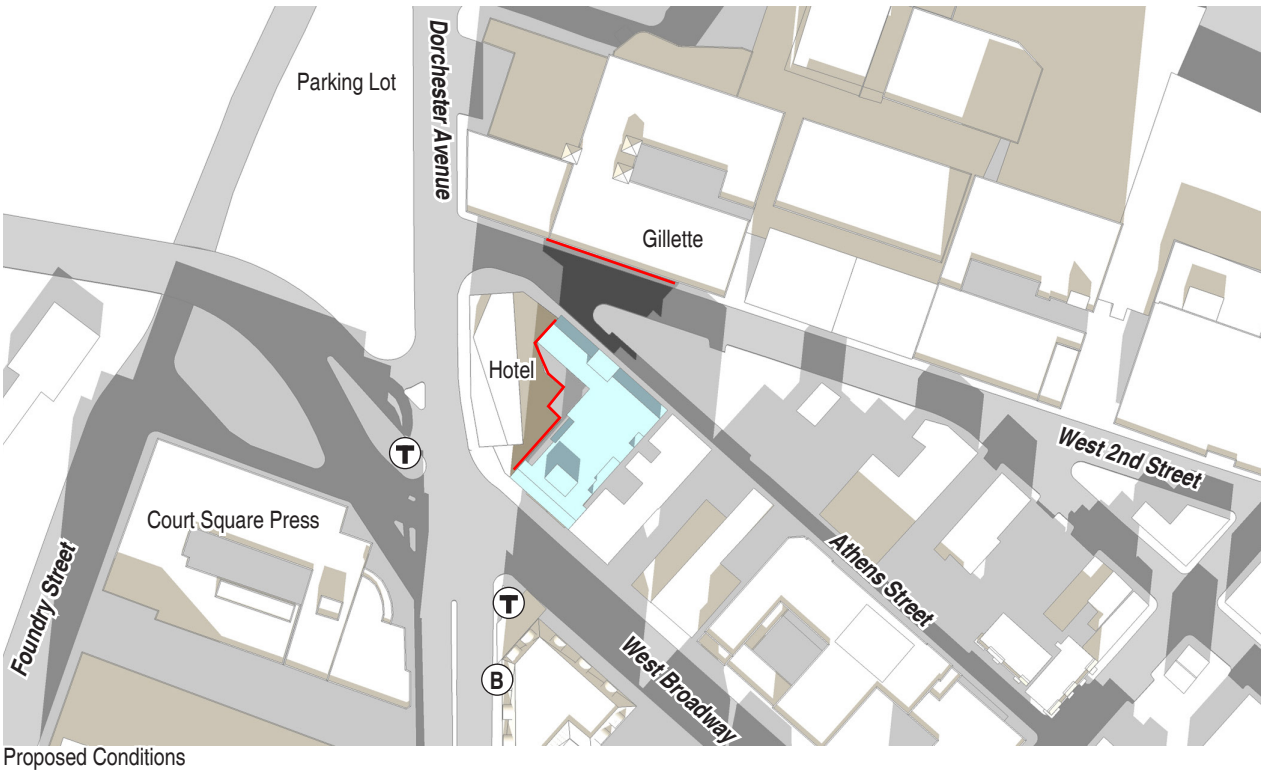
Vanasse Hangen Brustlin, Inc.

December 21st - 9 AM
Azimuth 142.0, Altitude 14.3

Figure 4.2-12



Existing Conditions



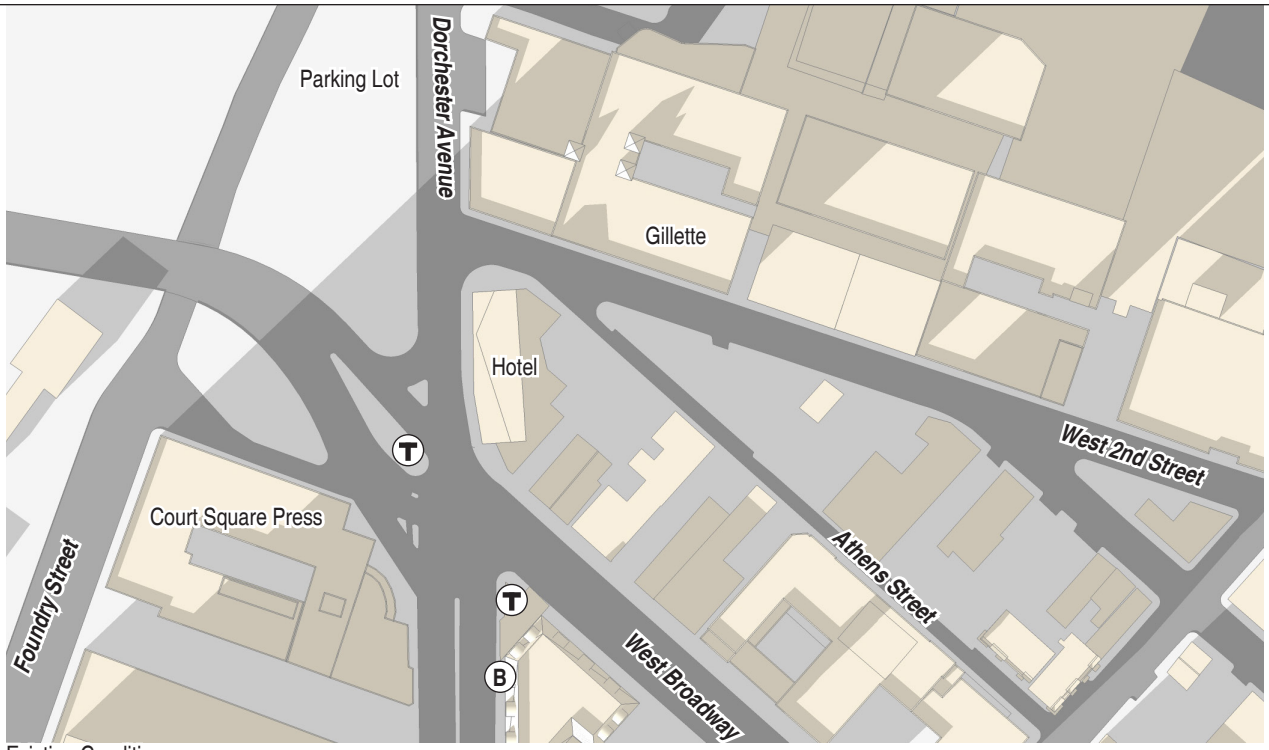
Proposed Conditions

Proposed Building | Existing Shadow | Proposed Shadow | New Shadow on Facade | (T) Rapid Transit | (B) Bus Stop

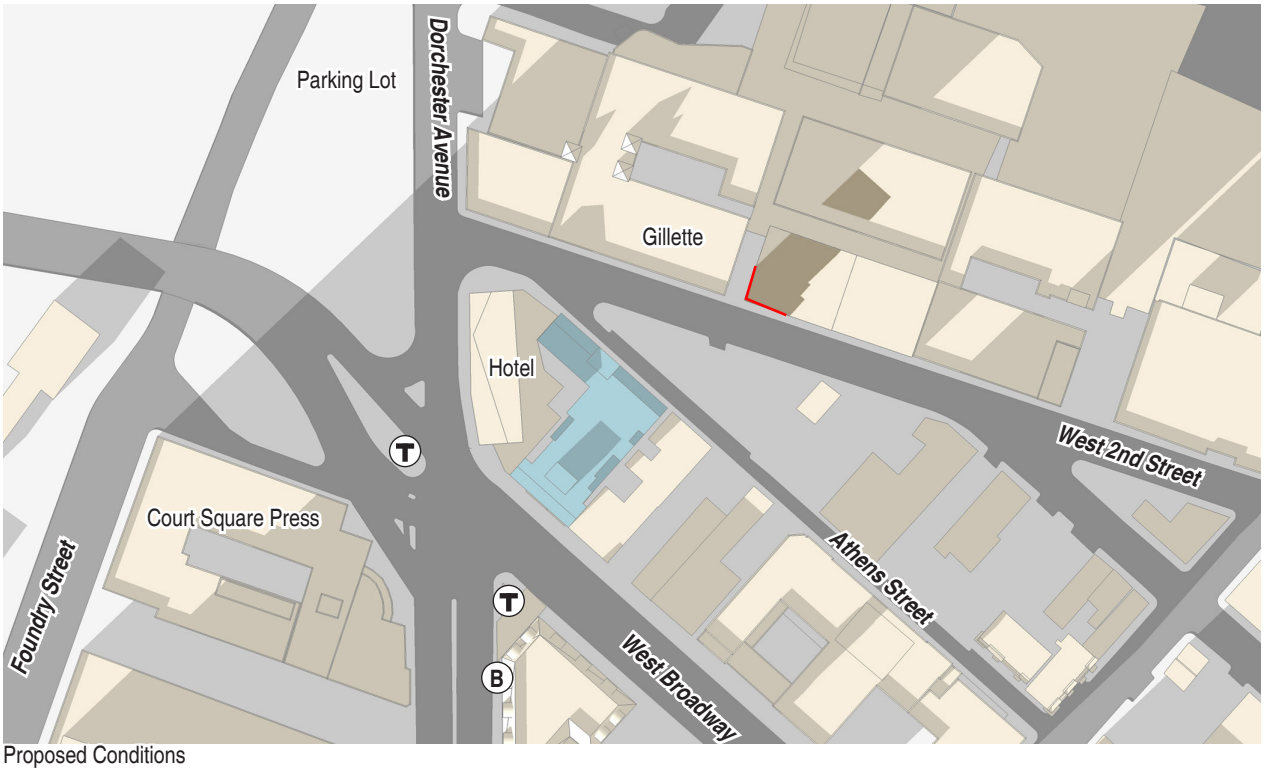
Vanasse Hangen Brustlin, Inc.

December 21st - 12 PM
Azimuth 184.4, Altitude 24.1

Figure 4.2-13



Existing Conditions



Proposed Conditions

Proposed Building | Existing Shadow | Proposed Shadow | New Shadow on Facade | (T) Rapid Transit | (B) Bus Stop

Vanasse Hangen Brustlin, Inc.

December 21st - 3 PM
Azimuth 225.0, Altitude 10.0

Figure 4.2-14

4.3 Daylight Analysis

The following section describes the anticipated effect on daylight coverage at the Project Site as a result of the Proposed Project. An analysis of the obstruction of skyplane under the Existing and Build conditions is a requirement of the Article 80 Large Project Review (Section 80B-2(c) of the City of Boston Zoning Code). The daylight analysis was prepared using the BRA's Daylight Analysis Program (BRADA) and has been completed in accordance with the requirements of Article 80.

4.3.1 Methodology

The Project was analyzed using the BRADA and by comparing the Existing and Build Condition. This section provides a description of the methodology used for the analysis.

The BRADA program was developed in 1985 by the Massachusetts Institute of Technology to estimate the pedestrian's view of the skydome taking into account the massing and building materials used. The software approximates a pedestrian's view of a site based on input parameters such as location of viewpoint, length and height of buildings, and the relative reflectivity of the building façades. The model typically uses the midpoint of an adjacent right-of-way or sidewalk as the analysis viewpoint. Based on these data, the model calculates the perceived skyplane obstruction and provides a graphic depicting the analysis conditions.

The model inputs were taken from a combination of the BRA City model, an existing conditions survey, and schematic design plans prepared by RCA Architects dated July 2014. As described above, the BRADA software considers the relative reflectivity of building façades when calculating perceived daylight obstruction. Highly reflective materials are thought to reduce the perceived skyplane obstruction when compared to non-reflective materials. For the purposes of this daylight analysis, the building façades are considered non-reflective, resulting in a conservative estimate of daylight obstruction.

4.3.2 Viewpoints

The daylight analysis encompassed consideration of two viewpoints around the Project Site including:

- West Broadway: This viewpoint is located on the centerline of West Broadway, centered on the southern façade of the building
- Athens Street: This viewpoint is located on the centerline of Athens Street, centered on the northern façade of the building

These points represent one viewpoint for each building façade when viewed from the adjacent pubic way, sidewalk or property line, as appropriate. **Figure 4.3-1** depicts the location of these two analysis points.

4.3.3 Daylight - Existing Condition

Under the Existing Condition, there are is minimal obstructions from both of the viewpoints, because the site is currently occupied by a one-story building, occupying a small portion of the overall site. The obstruction from West Broadway is currently 21.2 percent, being that the existing building is in close proximity to the street and occupies more than half of the overall property line width. The obstruction from Athens Street is currently 2.0 percent due to the fact that the building is much further from the street edge and occupies a smaller portion of the overall property line width.

4.3.4 Daylight - Building Conditions

The Project-related daylight impacts for the viewpoints from West Broadway and Athens Street are presented in **Figures 4.3-2** and **4.3-3**. Under the Build Condition, both viewpoints are expected to experience an increase in skyplane obstruction (76.1 percent obstruction along West Broadway and 92.3 percent along Athens Street) due to the increased height and width of the proposed building. This effect is to be expected and cannot be avoided when replacing a small building with a much taller building.

4.3.5 Results

Under Build Conditions, the obstruction of the skyplane is increased from both viewpoints. This is to be expected given that the proposed building is taller, wider, and is located very close to the street edges of West Broadway and Athens Street. The proposed mixed-use nature of the Project will, by design, build on and increase the pedestrian activity generated by recent mixed-use projects along the adjacent sidewalks of West Broadway and Athens Street. Pedestrian enjoyment of the urban experience in this area will be further enhanced through public realm improvements, and the net effect of the Project will be a substantial improvement of the public realm experience in the neighborhood.

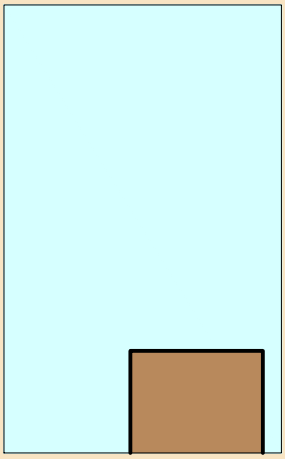


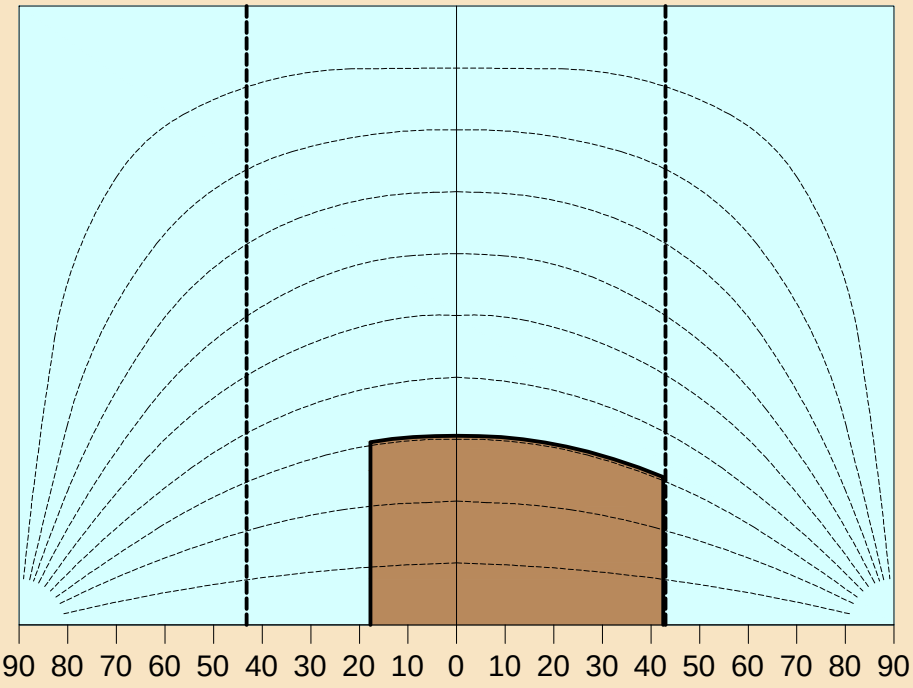
Vanasse Hangen Brustlin, Inc.

Daylight Analysis Study Viewpoints Figure 4.3.1

Existing

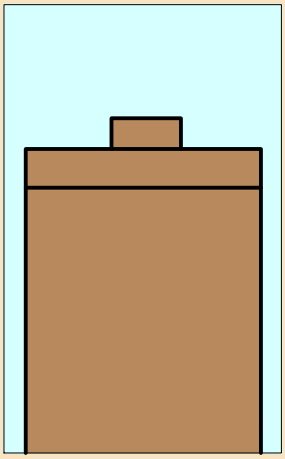
Obstruction of
Skyplane = 21.2%

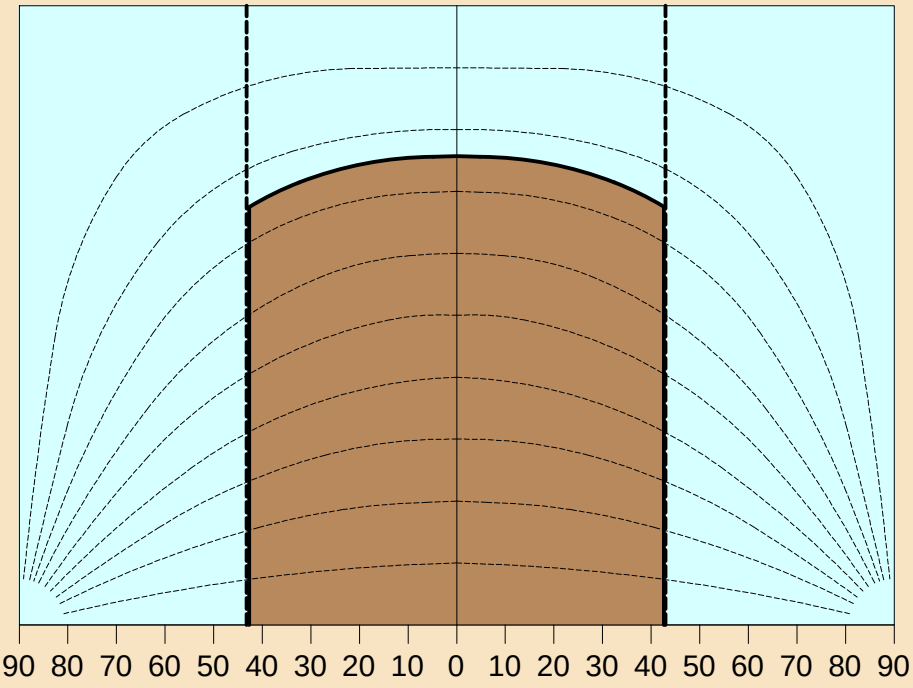




Proposed

Obstruction of
Skyplane = 76.1%





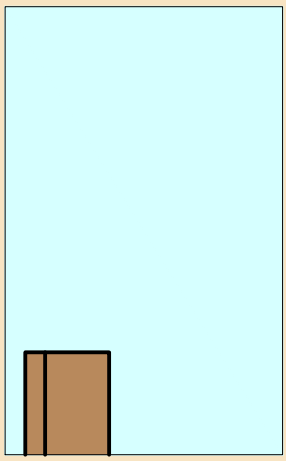
Vanasse Hangen Brustlin, Inc.

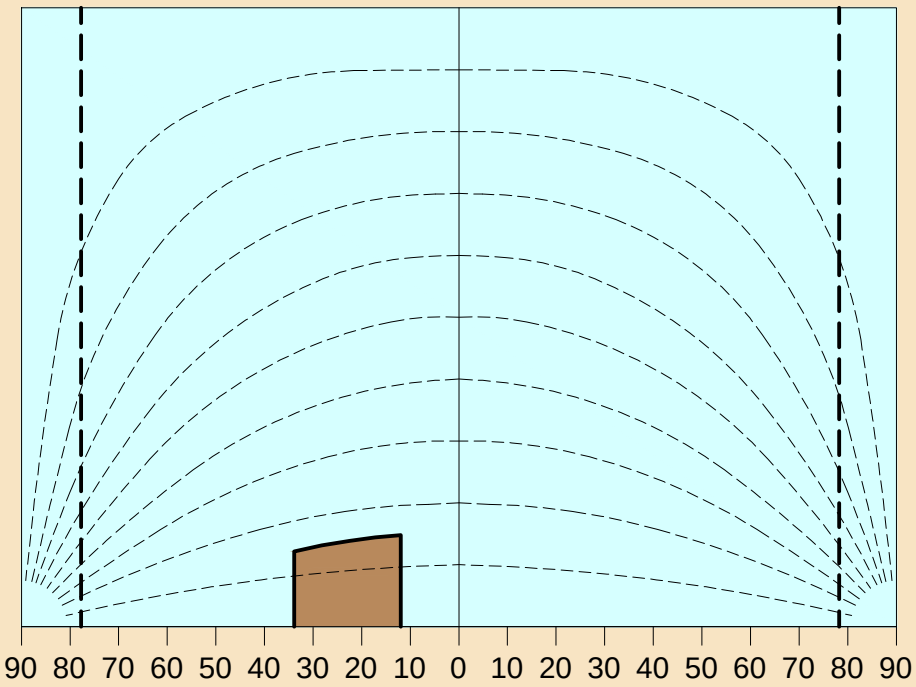
Boston Redevelopment Authority
Daylight Analysis
Center of West Bradway

Figure 4.3.2

Existing

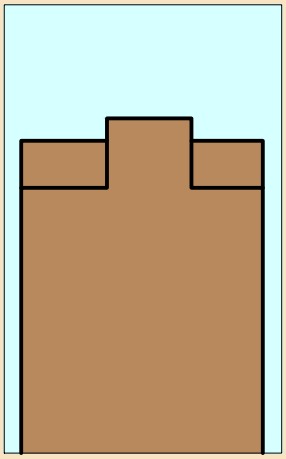
Obstruction of
Skyplane = 2.0%

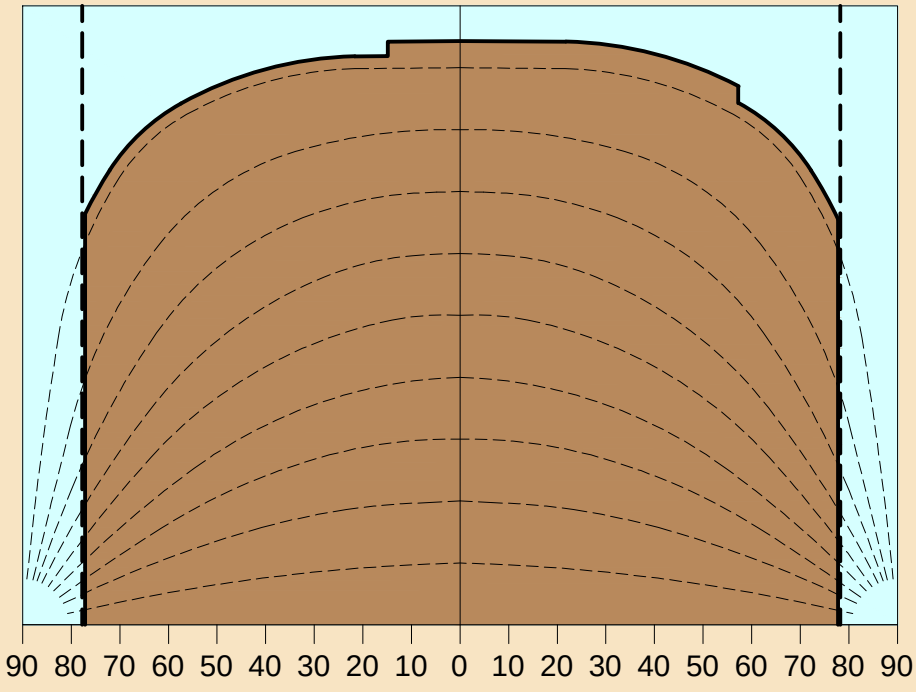




Proposed

Obstruction of
Skyplane = 92.3%





Vanasse Hangen Brustlin, Inc.

Boston Redevelopment Authority
Daylight Analysis
Center of Athens Street

Figure 4.3.3

4.4 Air Quality

Tech Environmental, Inc. performed air quality analyses for the proposed mixed-use development consisting of a minimum of 47 residential units plus commercial space including offices, retail, and/or service uses, and a ground-floor restaurant, all served by 70 accessory garage parking spaces. These analyses consisted of: 1) an evaluation of existing air quality; 2) an evaluation of potential carbon monoxide (CO) impacts from the operation of the Project's heating system and emergency generator; and 3) a microscale CO analysis for intersections in the Project area that meet the BRA criteria for requiring such an analysis.

4.4.1 Existing Air Quality

The City of Boston is currently classified as being in attainment of the Massachusetts and National Ambient Air Quality Standards ("NAAQS") for all of the criteria air pollutants except ozone (see **Table 4.4-1**). These air quality standards have been established to protect the public health and welfare in ambient air, with a margin for safety.

The Massachusetts Department of Environmental Protection ("DEP") currently operates air monitors in various locations throughout the city. The closest, most representative, DEP monitors for carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), fine particulate matter ($PM_{2.5}$), coarse particulate matter (PM_{10}), and lead are located at Dudley Square (Harrison Avenue). The closest, most representative DEP monitor for ozone is also located at Dudley Square (Harrison Avenue).

Table 4.4-2 summarizes the DEP air monitoring data for the most recently available complete three-year period (2010-2012) that are considered to be representative of the project area. **Table 4.4-2** shows that the existing air quality in the Project area is generally much better than the NAAQS. The highest impacts relative to a NAAQS are for ozone and $PM_{2.5}$. Ozone is a regional air pollutant on which the small amount of additional traffic generated by this Project will have an insignificant impact. The Project's operations will not have a significant impact on local $PM_{2.5}$ concentrations.

Table 4.4-1. Massachusetts and National Ambient Air Quality Standards (NAAQS)

Pollutant	Averaging Time	NAAQS (µg/m^3)
SO_2	1-hour^P	196[a]
CO	1-hour^P 8-hour^P	40,000[b] 10,000[b]
NO_2	1-hour^P Annual$^{P/S}$ (Arithmetic Mean)	188[c] 100
PM_{10}	24-hour$^{P/S}$	150
$PM_{2.5}$	24-hour$^{P/S}$ Annual$^{P/S}$ (Arithmetic Mean)	35[d] 12[e,f]
O_3	8-hour$^{P/S}$	147[g]
Pb	Rolling 3-Month Avg.$^{P/S}$ Calendar Quarter$^{P/S}$ (Arithmetic Mean)	0.15 1.5

P = primary standard; S = secondary standard.
[a] 99th percentile 1-hour concentrations in a year (average over three years).
[b] One exceedance per year is allowed.
[c] 98th percentile 1-hour concentrations in a year (average over three years).
[d] 98th percentile 24-hour concentrations in a year (average over three years).
[e] Three-year average of annual arithmetic means.
[f] As of March 18, 2013, the U.S. EPA lowered the $PM_{2.5}$ annual standard from 15 ug/m^3 to 12 ug/m^3.
[g] Three-year average of the annual 4th-highest daily maximum 8-hour ozone concentration must not exceed 0.075 ppm (147 ug/m^3) (effective May 27, 2008) and the annual PM_{10} standard was revoked in 2006.

Table 4.4-2. Representative Existing Air Quality in the Project Area

Pollutant, Averaging Period	Monitor Location	Value ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Percent of NAAQS
CO, 1-hour	Harrison Avenue, Boston	2,519	40,000	6%
CO, 8-hour	Harrison Avenue, Boston	1,832	10,000	18%
NO_2, 1-hour	Harrison Avenue, Boston	91.5	188	49%
NO_2, Annual	Harrison Avenue, Boston	34.8	100	35%
Ozone, 8-hour	Harrison Avenue, Boston	129	147	86%
PM_{10}, 24-hour	Harrison Avenue, Boston	41	150	27%
$PM_{2.5}$, 24-hour	Harrison Avenue, Boston	19.2	35	46%
$PM_{2.5}$, Annual	Harrison Avenue, Boston	8.1	12	62%
Lead, Quarterly	Harrison Avenue, Boston	0.003	0.15	2.0%
SO_2, 1-hour	Harrison Avenue, Boston	40.1	196	20%

Source: MassDEP, http://www.mass.gov/dep/air/priorities/aqreports.htm., downloaded July 22, 2013.

Notes:

(1) Annual averages are highest measured during the most recent three-year period for which data are available (2010 - 2012). Values for periods of 24-hours or less are highest, second-highest over the three-year period unless otherwise noted.

(2) The eight-hour ozone value is the 3-year average of the annual fourth-highest values, the 24-hour $PM_{2.5}$ value is the 3-year average of the 98th percentile values, the annual $PM_{2.5}$ value is the 3-year average of the annual values – these are the values used to determine compliance with the NAAQS for these air pollutants.

(3) The one-hour NO_2 value is the -year average of the 98th percentile values and the one-hour SO_2 value is the -year average of the 99th percentile values

(4) The one-hour ozone standard was revoked by the US EPA in 2005; the annual PM_{10} standard was revoked in 2006 and the 3-hour SO_2 standard was revoked by the US EPA in 2010.

4.4.2 Impacts from Parking Garage Ventilation

The Proposed Project includes an underground garage intended to provide parking spaces for 70 vehicles. An analysis of the worst-case air quality impacts from the proposed parking garage was performed (see **Appendix B**). The procedures used for this analysis are consistent with U.S. EPA's Volume 9 guidance.[1] The objective of this analysis was to determine the maximum CO concentrations inside the garage and at the closest sensitive receptors surrounding the Project. These closest sensitive receptors include air intakes located on the proposed building and nearby existing buildings, and pedestrians at ground level anywhere near the Project. Projected CO emissions from motor vehicles operating inside the garage were calculated, with the CO

[1] US EPA, "Guidelines for Air Quality Maintenance Planning and Analysis Volume 9 (Revised): Evaluating Indirect Sources," EPA-450/4-78-001, September 1978.

concentrations inside the garage and surrounding the Project being based on morning and afternoon peak traffic periods. The garage exhaust CO emissions were modeled using an U.S. EPA-approved air model.

Garage Ventilation System

The proposed parking garage will require mechanical ventilation. The garage ventilation system will be designed to provide adequate dilution of the motor vehicle emissions before they are vented outside. The design of the garage ventilation system will meet all building code requirements. Full ventilation of the garage will require a maximum flow of approximately 28,500 cubic feet per minute (cfm) of fresh air. This quantity of air is designed to meet the building code and will be more than adequate to dilute the emissions inside the parking garage to safe levels before they are vented outside. The garage ventilation exhausts will likely be located at two side vents.

Peak Garage Traffic Volumes

Virtually all parking for the Proposed Project will be provided in an underground garage. The peak morning and afternoon one-hour entering and exiting traffic volumes for the garage are shown in **Table 4.4-3**.

Table 4.4-3. Peak-Hour Garage Traffic Volumes

Period	Entering (vehicles/hour)	Exiting (vehicles/hour)	Total (vehicles/hour)
Morning Peak Hour	8	9	17
Afternoon Peak Hour	15	26	41

Source: Howard-Stein Hudson, Inc.

Motor Vehicle Emission Rates

The U.S. Environmental Protection Agency (EPA) MOVES2010b emission factor model was used to calculate single vehicle CO emissions rates, for a vehicle speed of 5 mph. The inputs to the MOVES2010b model followed the latest guidance from the Massachusetts Department of Environmental Protection (DEP) and were performed for the future traffic year of 2019. The CO emission rate calculated by MOVES2010b, for idling vehicles, was 0.51 grams per hour (gph) for each entering and exiting vehicle. These emission rates apply to wintertime conditions when

motor vehicle CO emissions are greatest due to cold temperatures. MOVES2010b model output is provided in the **Appendix B.**

To determine the maximum one-hour CO emissions inside the garage it was necessary to estimate the amount of time each motor vehicle would be in the parking garage with its engine running. To be conservative, it was assumed that every car entering or leaving the garage would be operating during that peak hour. The calculations in **Appendix B** show how long each vehicle would be operating in the garage for both the morning and afternoon peak periods.

Peak Garage CO Emission Rate and CO Concentration Inside the Garage

The peak one-hour CO emission rate for the parking garage was calculated to be 0.14 grams per minute for the morning peak hour and 0.35 grams per minute for the afternoon peak hour. Applying the maximum volumetric garage ventilation flow rate for the parking garage, the peak one-hour CO concentration inside the garage was calculated to be 0.16 parts of CO per million parts of air (ppm) for the morning peak hour and 0.38 ppm for the afternoon peak hour. Therefore, the peak one-hour CO concentration inside the garage would be 0.38 ppm with a peak one-hour emission rate of 0.35 grams/minute (0.0058 grams/second), corresponding to the afternoon peak period. These predictions represent conservative estimates of the peak garage CO emissions and concentrations.

Peak Ambient CO Concentration

Worst-case concentrations of CO from the parking garage were predicted for locations around the building with using AERMOD model (Version 14134) in screening-mode. The results of the air quality analysis for locations outside and around the building are summarized in **Table 4.2-4**. The results in **Table 4.4-4** represent all outside locations on and near the Project Site, including nearby building air intakes and nearby residences. **Appendix B** contains the AERMOD model output.

The AERMOD model in screening-mode was used to predict the maximum concentration of CO by modeling the garage emissions as a volume source with aerodynamic building downwash using worst-case meteorological conditions for an urban area. The screening-mode option simulates modeling results predicted by AERSCREEN. AERMOD was used to predict the total maximum concentration of CO by modeling the garage emissions as one volume source with the total peak morning CO emissions (0.0058 grams/sec). The predicted concentrations presented represent the worst-case air quality impacts from the garage at all locations on and around the Project. AERMOD predicted one-hour average concentrations of air pollutants.

AERMOD predicted that the maximum one-hour CO concentration from the garage exhausts would be 0.006 ppm (6.42 $\mu g/m^3$). This concentration represents the maximum CO concentration at any location surrounding the Project.

The maximum predicted eight-hour CO concentration at any ambient (outside) location would be significantly smaller than the one-hour prediction. This is because: 1) the average number of vehicles entering and exiting the garage over the peak eight-hour period will be significantly less than the peak one-hour values used to predict the peak one-hour CO impact; and 2) the worst-case meteorological conditions used to predict the peak one-hour impact will not persist for eight consecutive hours. AERSCREEN guidance allows the maximum eight-hour CO impact to be conservatively estimated by multiplying the maximum one-hour impact by a factor of 0.9 (i.e. the eight-hour impact is 90% of the one-hour impact). The maximum predicted eight-hour CO concentration was determined to be approximately 0.005 ppm (0.006 ppm x 0.9).

The U.S. EPA has established National Ambient Air Quality Standards (NAAQS) to protect the public health and welfare in ambient air, with a margin for safety. The NAAQS for CO are 35 ppm for a one-hour average and 9 ppm for an eight-hour average. The Commonwealth of Massachusetts has established the same standards for CO. Conservative, urban CO background values of 1.8 ppm for a one-hour period and 1.5 ppm for an eight-hour period were added to the maximum predicted garage ambient impacts to represent the CO contribution from other, more distant, sources. With the conservative background concentration added, the peak, total, one-hour and eight-hour CO impacts from the garage, at any location around the building, would be no larger than 1.50 ppm and 1.80 ppm, respectively. These maximum predicted total CO concentrations (garage exhaust impacts plus background) are safely in compliance with the NAAQS. This analysis demonstrates that the operation of the parking garage will not have an adverse impact on air quality.

Table 4.4-4. Peak Predicted Parking Garage Air Quality Impacts

Location	Peak Predicted One-Hour Impact (ppm)	One-Hour NAAQS (ppm)	Peak Predicted Eight-Hour Impact (ppm)	Eight-Hour NAAQS (ppm)
Outside – Surrounding the Building* (Parking Garage)	1.80**	35 (NAAQS)	1.50**	9 (NAAQS)

NAAQS = Massachusetts and National Ambient Air Quality Standards for CO (ppm = parts per million)
* Representative of maximum CO impact at all nearby residences, buildings, and sidewalks.
** Includes background concentrations of 1.8 ppm for the one-hour period and 1.5 ppm for the eight-hour period.

Conclusions

A conservative air quality analysis demonstrates that there will be no adverse air quality impacts from the operation of the Project's proposed parking garage.

4.4.3 Microscale CO Analysis for Selected Intersections

The Boston Redevelopment Authority (BRA) and the Massachusetts DEP typically require a microscale air quality analysis for any intersection in the Project study area where the level of service (LOS) is expected to deteriorate to D and the proposed project causes a 10% increase in traffic, or where the level of service is E or F and the project contributes to a reduction in LOS. For such intersections, a microscale air quality analysis is required to examine the carbon monoxide (CO) concentrations at sensitive receptors near the intersection.

A microscale CO air quality analysis was performed to predict the maximum one-hour and eight-hour CO concentrations for sensitive receptors at the three intersections in the Project area that meet the BRA selection criteria. The analysis was performed for three cases: 2014 Existing, 2019 No-Build, and 2019 Build. Estimation of CO levels at the intersections that meet the BRA/DEP selection criteria under the 2019 Build scenario provides a good indication of whether the project will interfere with the maintenance of the NAAQS for CO. Since CO levels are highest near intersections where the worst traffic congestion occurs, compliance with the NAAQS at these intersections and receptors protects public health elsewhere in the community.

Dispersion Model

The latest version of the U.S. EPA CAL3QHC model[2] (Version 2.0, dated October 1995) was used to predict maximum one-hour CO concentrations at each intersection from both moving and idling vehicles. This model includes the U.S. EPA CALINE-3 dispersion model[3] along with methods for estimating queue lengths and the contribution of emissions from idling vehicles at intersections. The Air Quality Appendix (**Appendix B)** contains the CAL3QHC model output.

[2] U.S. EPA, User's Guide to CAL3QHC Version 2.0: A Modeling Methodology for Predicting Pollution Concentrations Near Roadway Intersections, Office of Air Quality Planning and Standards, September 1995.
[3] California Department of Transportation, CALINE-3, A Versatile Dispersion Model for Predicting Air Pollutant Levels Near Highways and Arterial Streets, FHWA/CA/TL-79/23, Sacramento, CA, November 1979.

Meteorological Inputs

The following meteorological parameters were selected for the CAL3QHC modeling, in accordance with U.S. EPA and Massachusetts DEP guidance:

- Roughness Length: 321 cm (central business district)
- Mixing Height: 1,000 meters
- Wind Speed: 1.0 m/s (minimum)
- Wind Direction: 360° in 10° increments
- Stability Class: Class D.

Intersections

Eight intersections were included in the transportation study area, and each of these intersections was considered for a microscale CO air quality analysis. **Table 4.5-5** shows a summary of the 2019 Build LOS analysis for each intersection. The Project will generate a total of 17 motor vehicle trips during the morning peak traffic period and 41 motor vehicle trips during the afternoon peak traffic period. Based on data presented in Section (summarized in **Table 4.4-4**), two intersections meet the DEP/BRA criteria for a microscale analysis:

1. A Street at West Fourth Street
2. Dorchester Avenue/West Second Street
3. West Second Street/Athens Street

Table 4.4-4. Summary of Build Case Level of Service

Intersection	Build LOS (AM/PM)	Requires Analysis?
Dorchester Avenue at A Street-signalized	B/B	NO
Dorchester Avenue at West Fourth Street-signalized	D/D	NO
A Street at West Fourth Street – signalized	D/E	YES
Dorchester Avenue at West Broadway-signalized	E/D	NO
A Street at West Broadway– signalized	D/D	NO
Dorchester Avenue/West Second Street – unsignalized	C/E	YES
West Second Street/Athens Street– unsignalized	B/E	YES
A Street at Athens Street – unsignalized	C/C	NO

The LOS shown represents the overall delay at each signalized intersection and the worst approach at the unsignalized intersection. Percentages shown for LOS D are percent increase in traffic from the Project.
*Project does not contribute to reduction in level of service.

Source: Howard/Stein-Hudson Associates, Inc.

Receptors

Receptors are the locations where the CAL3QHC model predicts CO concentrations. Receptors were placed at regular intervals along each modeled roadway, where the public could have access. These receptors conservatively cover all of the locations where the general public may have frequent and prolonged access to the ambient air at each intersection. Figures 1 and 2 in the **Appendix B** show the locations of the receptors that were modeled at each of the three analyzed intersections. Following U.S. EPA guidance, all receptors were placed at a height of 1.8 meters and were located at least 3 meters from roadway curbsides.

Modeled Roadways

Each roadway approach was modeled as a 1,000 meter, free-flow (moving vehicles), line source. The width of each free-flow link was set equal to the roadway width (excluding the parking areas) plus 3 meters on each side. Composite CO emission rates, in units of grams per mile, were applied to each free-flow link.

Each roadway approach with traffic signal control was also modeled as a queue link (vehicles waiting for a traffic signal to turn green). The width of each queue link was modeled as the actual approach lane width. The length of each queue was calculated by the CAL3QHC model. An idle CO emission factor, in grams per hour, was applied to each queue link.

The CAL3QHC model requires the input of signal timing for signalized intersections. One intersection was modeled as signalized intersection (A Street at West Fourth Street) Signal timings were provided by Howard/Stein-Hudson Associates, Inc., the Project's transportation consultant, and are shown in the **Appendix B** for the peak periods that were modeled. The two other intersections were modeled as unsignalized intersections. As a result, queue lengths and idling emissions were calculated to represent delay conditions for unsignalized intersections.

Eight-Hour Average CO Concentrations

Peak eight-hour CO concentrations from roadway traffic were calculated by multiplying the model predicted one-hour CO values (without an added background concentration) by a persistence factor of 0.7.[4] The persistence factor takes into account that the intensity of the traffic during the peak eight-hour period will be less than that which will occur during the peak one-hour period. It also takes into account that the worst-case meteorological conditions (i.e. low wind speed blowing directly from the source to the receptor), corresponding to the peak one-hour concentrations, will not persist for an entire eight-hour period.

Background CO Concentrations

The one-hour and eight-hour traffic-related CO concentrations predicted by the CAL3QHC model were added to conservative one-hour and eight-hour background CO concentrations of 2.5 parts of CO ppm and 1.8 ppm, respectively, for the existing case. Background concentrations for the year 2019 will likely be lower than the existing background CO concentrations. To be conservative, the same background concentrations were used for the 2019 No-Build and Build cases. The sums of the CAL3QHC modeled CO concentrations plus background were compared to the NAAQS for CO.

The one-hour and eight-hour traffic-related CO concentrations predicted by the CAL3QHC model were added to conservative one-hour and eight-hour background CO concentrations of 1.8 parts of CO ppm and 1.5 ppm, respectively, for the existing case. Background concentrations for the year 2019 will likely be lower than the existing background CO concentrations. To be conservative, the same background concentrations were used for the 2019 No-Build and Build cases. The sums of the CAL3QHC modeled CO concentrations plus background were compared to the NAAQS for CO.

CO Emission Factors

The U.S. Environmental Protection Agency (EPA) MOVES2010b emission factor model was used to calculate CO emissions factors. The inputs to the MOVES2010b model followed the latest guidance from the Massachusetts Department of Environmental Protection (DEP) and were performed for the existing (2014) and future (2019) traffic years. Both free flow and idling

[4] U.S. EPA, Guideline for Modeling Carbon Monoxide from Roadway Intersections, EPA-454/R-92-005, Office of Air Quality Planning and Standards, November 1992.

emissions factors were calculated for each traffic year. The free flow emission rate for vehicles traveling on the roadways was based on a vehicle speed of 30 mph for all of the modeled roadways. The free flow CO emission rates for a traffic speed of 30 mph were predicted to be 4.00 grams/mile in 2014 and 3.22 grams/mile in 2019. The CO emission rate calculated by MOVES2010b, for idling vehicles, was 22.30 grams per hour (gph) in 2014 and 12.21 in 2019. These emission rates apply to wintertime conditions when motor vehicle CO emissions are greatest due to cold temperatures. MOVES2010b model output is provided in the **Appendix B.**

Traffic Information

Traffic volume data were available for the peak weekday morning and afternoon periods. Traffic data for the period with the worst LOS (i.e. largest traffic congestion and vehicle delays) at each intersection were modeled to reflect the potential worst-case air quality impacts.

Predicted Project Impacts

The microscale air quality analysis predicted maximum one-hour and eight-hour CO concentrations for sensitive receptors for three intersections in the project area which meet the BRA/DEP selection criteria. The highest predicted CO concentrations for the one-hour and eight-hour periods, which consist of the sum of the maximum predicted impacts from intersection traffic and a conservative background CO concentration, are summarized in Tables **4.4-5 and 4.4-6**. The results in these tables do not represent typical air pollution levels in the project area. Rather, they represent the highest concentrations that could exist during the joint occurrence of worst-case meteorology and peak roadway traffic.

2014 Existing Case: The maximum predicted one-hour and eight-hour CO concentrations, including conservative background concentrations of CO, for the 2014 Existing case are 2.1 ppm and 1.7 ppm, respectively. These maximum air quality impacts are predicted to occur at receptor #10 to the north of the intersection of West Second Street and Athens Street (see the Figure in the **Appendix B**), and are in compliance with the NAAQS for CO.

2019 No-Build Case: For the 2019 No-Build case, the maximum predicted one-hour and eight-hour CO concentrations, including conservative background concentrations of CO, are 2.1 ppm and 1.7 ppm, respectively. These maximum air quality impacts are predicted to occur at receptor #10 to the north of the intersection of West Second Street and Athens Street (see the Figure in the **Appendix B**). These maximum concentrations are less are equivalent to those predicted for the 2014 Existing case and comply with the one-hour and eight-hour NAAQS for CO.

2019 Build Case: For the 2019 Build case, the maximum predicted one-hour and eight-hour CO concentrations, including conservative background concentrations of CO, are 2.1 and 1.7 ppm, respectively. These maximum concentrations are equivalent to those predicted for the 2014 Existing case and the 2019 No-Build case. The predicted CO impacts at all receptors are safely in compliance with the one-hour and eight-hour NAAQS for CO. These maximum air quality

impacts are also predicted to occur at receptor #10 to the north of the intersection of West Second Street and Athens Street (see the Figure in the **Appendix B**). These results demonstrate that the project will not have an adverse impact on air quality at the most congested intersections in the project area.

Table 4.4-5. Maximum Predicted One-Hour CO Concentrations at Sensitive Receptors (ppm)

Intersection	2014 Existing	2019 No-Build	2019 Build
A Street at West Fourth Street	2.0	1.9	1.9
Dorchester Avenue at West Second Street	1.9	1.8	1.8
West Second Street at Athens Street	2.1	2.1	2.1
NAAQS	**35**	**35**	**35**

Note: Maximum predicted one-hour concentrations include background concentrations. The added one-hour average background CO concentration is 1.8 ppm in 2014 and 2019.

Table 4.4-6. Maximum Predicted Eight-Hour CO Concentrations at Sensitive Receptors (ppm)

Intersection	2014 Existing	2019 No-Build	2019 Build
A Street at West Fourth Street	1.6	1.6	1.6
Dorchester Avenue at West Second Street	1.6	1.5	1.5
West Second Street at Athens Street	1.7	1.7	1.7
NAAQS	**9**	**9**	**9**

Note: Maximum predicted eight-hour concentrations include background concentrations. The added eight-hour average background CO concentration is 1.5 ppm in 2014 and 2019.

The maximum predicted CO impacts for the 2019 No-Build and Build cases are less than, or equal to those predicted for the 2014 Existing Case. This is a result of the lower CO emission rates for motor vehicles predicted by the MOBILE6.2 model for 2019, compared to 2014. The reduction in motor vehicle CO emission rates is primarily a result of the improved motor vehicle emission controls, and occurs as newer vehicles with lower CO emissions replace older vehicles on the road. The maximum predicted CO impacts for the 2019 Build case is less than those predicted for the 2019 No-Build Case due to proposed Travel Demand Management (TDM)

measures presented in **Section 7.0.** The results show that the project will not have a significant impact on the air quality at the analyzed intersections.

The worst-case air quality impacts at the Project site can be conservatively represented by the highest predicted CO concentration at the intersection of West Second Street/Athens Street, which is adjacent to the Project site. Adding in the impacts from the underground parking garage and background concentration, the conservative estimate of the worst-case total one-hour and eight-hour CO impacts at the Project site will be 2.4 ppm and 1.9 ppm, respectively. These values are safely in compliance with the NAAQS for CO and indicate that the Project will not have an adverse impact on local air quality.

Conclusions

The microscale CO air quality dispersion modeling analysis clearly indicates that the worst-case traffic generated by the Proposed Project will not cause or contribute to any violations of the NAAQS for CO, and will not significantly affect air quality. Total CO impacts at the intersections with the largest delays and at the Project site, including the impacts from the parking garage, are predicted to be safely in compliance with the NAAQS for CO.

4.5 Noise Impacts

Tech Environmental, Inc., performed a noise study to determine whether the operation of the proposed Project will comply with the City of Boston Noise Regulations and the Massachusetts Department of Environmental Protection ("DEP") Noise Policy.

4.5.1 Common Measures of Community Noise

The unit of sound pressure is the decibel (dB). The decibel scale is logarithmic to accommodate the wide range of sound intensities to which the human ear is subjected. A property of the decibel scale is that the sound pressure levels of two separate sounds are not directly additive. For example, if a sound of 70 dB is added to another sound of 70 dB, the total is only a 3-decibel increase (or 73 dB), not a doubling to 140 dB. Thus, every 3 dB increase represents a doubling of sound energy. For broadband sounds, a 3 dB change is the minimum change perceptible to the human ear. Table 4.5-1 gives the perceived change in loudness of different changes in sound pressure levels.5

[5] American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc., 1989 ASHRAE Handbook--Fundamentals (I-P) Edition, Atlanta, GA, 1989.

Table 4.5-1. Subjective Effects of Changes in Sound Pressure Levels

Change in Sound Level	Apparent Change in Loudness
3 dB	Just perceptible
5 dB	Noticeable
10 dB	Twice (or half) as loud

Non-steady noise exposure in a community is commonly expressed in terms of the A-weighted sound level (dBA). A-weighting approximates the frequency response of the human ear. Levels of many sounds change from moment to moment. Some are sharp impulses lasting 1 second or less, while others rise and fall over much longer periods of time. There are various measures of sound pressure designed for different purposes. To establish the background ambient sound level in an area, the L_{90} metric, which is the sound level exceeded 90 percent of the time, is typically used. The L_{90} can also be thought of as the level representing the quietest 10 percent of any time period. Similarly, the L_{10} can also be thought of as the level representing the quietest 90 percent of any time period. The L_{10} and L_{90} are broadband sound pressure measures, i.e., they include sounds at all frequencies.

Sound level measurements typically include an analysis of the sound spectrum into its various frequency components to determine tonal characteristics. The unit of frequency is Hertz (Hz), measuring the cycles per second of the sound pressure waves, and typically the frequency analysis examines nine octave bands from 32 Hz to 8,000 Hz. A source is said to create a pure tone if acoustic energy is concentrated in a narrow frequency range and one octave band has a sound level 3 dB greater than both adjacent octave bands.

The acoustic environment in an urban area such as the Project area results from numerous sources. Observations show that major contributors to the background sound level in the Project area include motor vehicle traffic on local and distant streets, trains/train station, pedestrians, mechanical equipment on nearby buildings and in the rail yard, and general city noises such as emergency vehicle sirens. Typical sound levels associated with various activities and environments are presented in **Table 4.5-2**.

4.5.2 Noise Regulations

Commonwealth Noise Policy

The DEP regulates noise through 310 CMR 7.00, "Air Pollution Control." In these regulations "air contaminant" is defined to include sound and a condition of "air pollution" includes the presence of an air contaminant in such concentration and duration as to "cause a nuisance" or "unreasonably interfere with the comfortable enjoyment of life and property."

Regulation 7.10 prohibits "unnecessary emissions" of noise. The DEP DAQC Policy Statement 90-001 (February 1, 1990) interprets a violation of this noise regulation to have occurred if the noise source causes either:

1. An increase in the broadband sound pressure level of more than 10 dBA above the ambient level; or
2. A "pure tone" condition.

The ambient background level is defined as the L_{90} level as measured during equipment operating hours. A "pure tone" condition occurs when any octave band sound pressure level exceeds both of the two adjacent octave band sound pressure levels by 3 dB or more.

The DEP does not regulate noise from motor vehicles accessing a site or the equipment backup notification alarms. Therefore, the provisions described above only apply to a portion of the sources that may generate sound following construction of the Project.

Local Regulations

The City of Boston Environment Department regulates noise through the Regulations for the Control of Noise as administered by the Air Pollution Control Commission. The Project is located in an area consisting of commercial and residential uses. The Project will have low-rise residential uses to the north, east, and south. The Project must comply with Regulation 2.2 for noise levels in Residential Zoning Districts at these residential locations**. Table 4.5-3** lists the maximum allowable octave band and broadband sound pressure levels for residential and business districts. Daytime is defined by the City of Boston Noise Regulations as occurring between the hours of 7:00 a.m. and 6:00 p.m. daily except Sunday. Compliance with the most restrictive nighttime residential limits will ensure compliance for other land uses with equal or higher noise limits.

Table 4.5-2. Common Indoor and Outdoor Sound Levels

Outdoor Sound Levels	Sound Pressure (μPa)	Sound Level (dBA)	Indoor Sound Levels
	6,324,555	110	Rock Band at 5 m
Jet Over-Flight at 300 m		105	
	2,000,000	100	Inside New York Subway Train
Gas Lawn Mower at 1 m		95	
	632,456	90	Food Blender at 1 m
Diesel Truck at 15 m		85	
Noisy Urban Area—Daytime	200,000	80	Garbage Disposal at 1 m
		75	Shouting at 1 m
Gas Lawn Mower at 30 m	63,246	70	Vacuum Cleaner at 3 m
Suburban Commercial Area		65	Normal Speech at 1 m
	20,000	60	
Quiet Urban Area—Daytime		55	Quiet Conversation at 1m
	6,325	50	Dishwasher Next Room
Quiet Urban Area—Nighttime		45	
	2,000	40	Empty Theater or Library
Quiet Suburb—Nighttime		35	
	632	30	Quiet Bedroom at Night
Quiet Rural Area—Nighttime		25	Empty Concert Hall
Rustling Leaves	200	20	Average Whisper
		15	Broadcast and Recording Studios
	63	10	
		5	Human Breathing
Reference Pressure Level	20	0	Threshold of Hearing

Notes: μPa, or micro-Pascals, describes sound pressure levels (force/area). DBA, or A-weighted decibels, describes sound pressure on a logarithmic scale with respect to 20 μPa (reference pressure level).

Table 4.5-3. Maximum Allowable Sound Pressure Levels (dB)
City of Boston

Octave Band (Hz)	Zoning District		
	Residential (Daytime)	Residential (All Other Times)	Business (anytime)
32 Hz	76	68	79
63 Hz	75	67	78
125 Hz	69	61	73
250 Hz	62	52	68
500 Hz	56	46	62
1000 Hz	50	40	56
2000 Hz	45	33	51
4000 Hz	40	28	47
8000 Hz	38	26	44
Broadband (dBA)	**60**	**50**	**65**

4.5.3 Pre-Construction Sound Level Measurements

Existing baseline sound levels in the Project area were measured during the quietest overnight period when human activity and street traffic were at a minimum, and when the Project's mechanical equipment (the principal sound sources) could be operating. Since the Project's mechanical equipment may operate at any time during a 24-hour day, a weekday between 11:30 p.m. and 4:00 a.m. was selected as the worst-case time period, i.e., the time period when Project-related sounds may be most noticeable due to the quieter background sound levels. Establishing an existing background (L_{90}) during the quietest hours of the facility operation is a conservative approach for noise impact assessment and is required by the DEP Noise Policy.

The nighttime noise measurement locations are as follows (see the Figure 1 in the **Appendix C**):

Monitoring Location #1: West Second Street at Athens Street

Monitoring Location #2: Dorchester Avenue at Traveler Street

Broadband (dBA) and octave band sound level measurements were made with a Larson and Davis Model 831 environmental sound level analyzer, at each monitoring location, for a duration of approximately thirty minutes. The full octave band frequency analysis was performed on the frequencies spanning 16 to 16,000 Hertz. A time-integrated statistical analysis of the data used to quantify the sound variation was also performed, including the calculation of the L_{90}, which is used to set the ambient background sound level.

The Larson and David model 831 is equipped with a ½" precision condenser microphone and has an operating range of 5 dB to 140 dB and an overall frequency range of 3.5 Hz to 20,000 Hz. This meter meets or exceeds all requirements set forth in the ANSI S1.4-1983 Standards for Type 1 quality and accuracy and the State and City requirements for sound level instrumentation. Prior to any measurements, this sound analyzer was calibrated with an ANSI Type 1 calibrator that has an accuracy traceable to the National Institute of Standards and Technology (NIST). During all measurements, the Larson and Davis 831 was tripod-mounted at approximately five feet above the ground in open areas away from vertical reflecting surfaces.

The sound level monitoring was conducted on Monday, October 27, 2014, and Tuesday, October 28, 2014. Weather conditions during the sound survey were conducive to accurate sound level monitoring. The temperature ranged from 54°F to 57°F, the skies were mostly clear, and the winds were 5 to 10 mph. The microphone of the sound level analyzer was fitted with a 3-inch windscreen to negate any effects of wind-generated noise.

The nighttime sound level measurements taken in the vicinity of the Project Site reveal sound levels that are typical for an urban area. A significant source of existing sound at all locations is motor vehicle traffic on nearby highways and local streets, residential and commercial air handling equipment, pedestrians, construction equipment, the MBTA train station/commuter trains, and emergency vehicle noise.

The results of the nighttime baseline sound level measurements are presented in **Table 4.5-4**, and the complete measurement printouts are provided in **Appendix C**. The nighttime background L_{90} level was 54.3 dBA at Location #2 and 56.5 dBA at Location #1. The octave band data in **Table 4.5-4** show that no pure tones were detected in the nighttime noise measurements.

Table 4.5-4. Nighttime Baseline Sound Level Measurements, October 27-28, 2014

Sound Level Measurement	(Location #1) West Second and Athens Street 11:48 p.m. - 12:18 a.m.	(Location #2) Macallen Building 12:24- 12:54 a.m.
Broadband (dBA)		
Background (L_{90})	56.5	54.3
Octave Band L_{90} (dB)		
16 Hz	60.6	56.7
32 Hz	61.9	62.9
63 Hz	60.5	61.7
125 Hz	58.8	58.8
250 Hz	55.2	56.3
500 Hz	52.5	50.9
1000 Hz	52.9	49.2
2000 Hz	47.3	43.1
4000 Hz	35.2	32.7
8000 Hz	25.6	21.0
16000 Hz	15.5	14.3
Pure Tone?	No	No

Noise monitoring at the Project Site during the afternoon peak traffic period was used to evaluate the existing ambient sound levels and to evaluate conformance with the Site Acceptability Standards established by HUD for residential development. The purpose of the HUD guidelines is to provide standards for determining the acceptability of residential project locations with regards to existing sound levels. The HUD criteria regarding the day-night average sound level (L_{dn}) are listed below. These standards apply to L_{dn} measurements taken several feet from the building in the direction of the predominant source of noise.

- Normally Acceptable – L_{dn} not exceeding 65 dBA
- Normally Unacceptable – L_{dn} above 65 dBA but not exceeding 75 dBA
- Unacceptable – L_{dn} above 75 dBA

These HUD standards do not apply to this Project, but are used as guidance regarding the suitability of the Project area with regard to background sound levels.

Daytime sound level measurements were taken to help estimate the L_{dn} for the Project Site. A 30-minute sound level measurement was taken at Location #1 listed above during the afternoon, on Tuesday, October 21, 2014, between 5:04 p.m. and 5:34 p.m., representing the closest location to the Project Site. The microphone of the sound level analyzer was fitted with a 3-inch windscreen to negate any effects of wind-generated noise.

The daytime sound level measurement taken in the vicinity of the Project Site reveals a sound level that is typical for an urban area. The main sources of noise during the peak afternoon traffic period sound level measurement were motor vehicle traffic on nearby local streets, cars idling, pedestrian traffic, construction equipment, and emergency sirens/ police sirens. The L_{eq} measured during the afternoon period at location #1 was 68 dBA. The L_{eq} sound level measured during the nighttime at the same location was 65 dBA. Using both the daytime and nighttime L_{eq} sound levels, the calculated L_{dn} for location #1 is 72 dBA. The L_{dn} for location #1 is above the HUD guideline noise limit of 65 dBA.

It is assumed that standard building construction practices will result in at least a 20 dBA reduction of sound from outdoor sound levels. The Proponent will incorporate sound mitigation, as necessary, to ensure that motor vehicle sound sources do not result in noise impacts greater than 45 dBA inside the residential units closest to the neighboring streets.

4.5.4 Reference Data and Candidate Mitigation Measures

The mechanical systems for the Proposed Project are in the early design stage. Typical sound power data for the equipment of the expected size and type for the Project have been used in the acoustic model to represent the Project's mechanical equipment. The sound levels from the potential significant Project noise sources are discussed in this section.

The design for the Proposed Project is expected to include as many as fifty-four (54) individual air handling units on the first story roof of the Proposed Project. This equipment, to be located between the Proposed Project's elevated stories and the elevated stories of the future abutting new hotel, were included in the noise impact analysis. The Project's traffic was not included in the noise analysis because motor vehicles are exempt under both the City of Boston and Massachusetts DEP noise regulations.

The sound generation profiles for the mechanical equipment noise sources operating concurrently under full-load conditions were used to determine the maximum possible resultant sound levels from the Project Site as a whole, to define a worst-case scenario. To be in compliance with City and DEP regulations, the resultant sound level must not exceed the allowable octave band limits in the City of Boston noise regulation and must be below the allowable incremental noise increase, relative to existing noise levels, as required in the DEP Noise Policy.

This sound level impact analysis was performed using sound generation data for representative equipment to demonstrate compliance with noise regulations. As the building design evolves, the sound generation for the actual equipment selected may differ from the values that were utilized for the analysis.

To minimize the sound level at nearby residences, the following noise mitigation specifications will be incorporated into the final engineering design of the Proposed Project, as necessary, to comply with the applicable sound level criteria:

- **Specification of low-noise mechanical equipment:** The air handling units will be of a low-noise design.

4.5.5 Calculated Future Sound Levels

Methodology

Future maximum sound levels at the upper floors of all existing residences bordering the Project were calculated with acoustic modeling software assuming simultaneous operation of all mechanical equipment at their maximum loads.

The Cadna-A computer program, a comprehensive 3-dimensional acoustical modeling software package was used to calculate Project-generated sound propagation and attenuation.[6] The model is based on ISO 9613, an internationally recognized standard specifically developed to ensure the highly accurate calculation of environmental noise in an outdoor environment. ISO 9613 standard incorporates the propagation and attenuation of sound energy due to divergence with distance, surface and building reflections, air and ground absorption, and sound wave diffraction and shielding effects caused by barriers, buildings, and ground topography.

Receptors

The closest/worst-case sensitive (residential) location is to the southwest of the project area at 141 Dorchester Avenue (Macallen Building). This location was selected based on the proximity of the equipment (smaller distances correspond to larger noise impacts) and the amount of shielding from the Proposed Project (other nearby residential locations will experience more shielding from the Project's rooftop mechanical equipment, which will result in smaller potential noise impacts from the Project). This location is expected to receive the largest sound level impacts from the Project's rooftop mechanical equipment. It can be classified as a residential zone.

The sound level impacts from the building's mechanical equipment were also predicted at the residential building to the east of the Project at 37 West Second Street. Figure 1 in Appendix C shows the locations of the modeled noise receptors. Noise impacts at other nearby noise-sensitive locations (residences, parks, etc.) farther from the Project Site will be less than those predicted for these receptors.

4.5.6 Compliance with State and Local Noise Standards

The City of Boston and DEP noise standards apply to the operation of the mechanical equipment at the proposed Project. The details of the noise predictions are presented in **Tables 4.5-6** through **4.5-7**. The sound impact analysis includes the simultaneous operation of the Project's rooftop HVAC equipment. The predicted sound levels are worst-case predictions that represent all hours of the day, as the analysis assumes full operation of the mechanical equipment 24-hours a day.

[6]Cadna-A Computer Aided Noise Abatement Program, Version 4.3

The typical sound level impacts from the mechanical equipment will likely be lower than what is presented here, since most of the mechanical equipment will operate at full-load only during certain times of the day and during the warmer months of the year. It is unlikely that all of the mechanical equipment will operate at the same time. Sound level impacts at locations farther from the Project (e.g. other residences, etc.) will be lower than those presented in this report.

City of Boston Noise Standards

The noise impact analysis results, presented in **Tables 4.5-6** through **4.5-7**, reveal that the largest sound level impact at the worst-case residence (Macallen Building) will be 42 dBA. The smallest sound level impact of 22 dBA is predicted to occur at 37 West Second Street. Noise impacts predicted at all locations are in compliance with the City of Boston's nighttime noise limit (50 dBA) for a residential area. Note that sound levels from the Project will be below the residential nighttime limits at all times. The results also demonstrate compliance with the City of Boston, residential, non-daytime, octave band noise limits at both closest locations.

The City of Boston noise limits for business areas are significantly higher than the nighttime noise limits for residential areas (see **Table 4.5-3**). The Project will also easily comply with the City of Boston business area noise limits at all surrounding commercial properties.

Massachusetts DEP Noise Regulations

The predicted sound level impacts at the worst-case property line and the worst-case residential locations were added to the measured L_{90} value of the quietest daily hour to test compliance with DEP's noise criteria. Assuming the Project's mechanical noise is constant throughout the day, the Project will cause the largest increase in sound levels during the period when the lowest background noise occurs. Minimum background sound levels (diurnal) typically occur between 12:00 a.m. and 5:00 a.m.

The predicted sound level impacts at the worst-case residences were added to the L_{90} values measured during the period with the least amount of background noise to test compliance with DEP's noise criteria. The predicted noise impacts at the property line and the closest residences were added to the most-representative measured L_{90} values to determine the largest possible increase in the sound level at each location during the quietest hour at the Project Site.

As shown in **Tables 4.5-6** through **4.5-7**, the Project is predicted to produce a less than 1 dBA change in the background sound levels at all modeled locations. Therefore, the Project's worst-case sound level impacts during the quietest nighttime periods will be in compliance with the Massachusetts DEP allowed noise increase of 10 dBA. The noise predictions for each octave band indicate that the mechanical equipment will not create a pure tone condition at any location.

Table 4.5-6. Estimated Future Sound Level Impacts – Anytime, 141 Dorchester Avenue, 4th Floor (Worst-Case Residence)

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	42
63 Hz	67	42
125 Hz	61	41
250 Hz	52	41
500 Hz	46	40
1000 Hz	40	38
2000 Hz	33	33
4000 Hz	28	26
8000 Hz	26	18
Broadband (dBA)	**50**	**42**
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L_{90} (Location # 2)	54.3
14 West Broadway Project*	42.0
Calculated Combined Future Sound Level	54.5
Calculated Incremental Increase	+0.2
Compliance with DEP Noise Policy?	Yes

* Assumes full-load operation of all mechanical equipment.
Note: DEP Policy allows a sound level increase of up to 10 dBA

Table 4.5-7. Estimated Future Sound Level Impacts – Anytime, 37 West Second Street, 4th Floor

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	35
63 Hz	67	32
125 Hz	61	24
250 Hz	52	21
500 Hz	46	20
1000 Hz	40	18
2000 Hz	33	13
4000 Hz	28	6
8000 Hz	26	0
Broadband (dBA)	**50**	**22**
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L_{90} (Location # 1)	56.5
14 West Broadway Project*	22.1
Calculated Combined Future Sound Level	56.5
Calculated Incremental Increase	+0.0
Compliance with DEP Noise Policy?	Yes

*Assumes full-load operation of all mechanical equipment.
Note: DEP Policy allows a sound level increase of up to 10 dBA.

4.5.7 Conclusions

Sound levels at all nearby sensitive locations and at all property lines will fully comply with the most stringent City of Boston and DEP daytime and nighttime sound level limits, and HUD's Residential Site Acceptability Standards. This acoustic analysis demonstrates that the Project's design will meet the applicable acoustic criteria.

This acoustic analysis demonstrates that the Project's design will meet the applicable acoustic criteria.

4.6 Wetlands/Flood Hazard Zones

The existing Project Site is a not a part of a wetland resource area regulated by the Massachusetts Wetland Protection Act.

Based on the Preliminary Flood Insurance Rate Maps (FIRM) for Suffolk County, the Project site is located outside of any special flood hazard area or Floodway areas in Zone AE, which is the 100-year base flood zone (i.e. the flood has a 1% annual chance of occurring in any given year) (See **Figure 4.6-1** Wetlands/Flood Hazard Zones).

4.7 Stormwater Management and Water Quality

The Project is expected to reduce the volume of stormwater runoff leaving the site as well as substantially improve the water quality. The project will meet the Department of Environmental Protection's (DEP) Stormwater Management Standards for redevelopment.

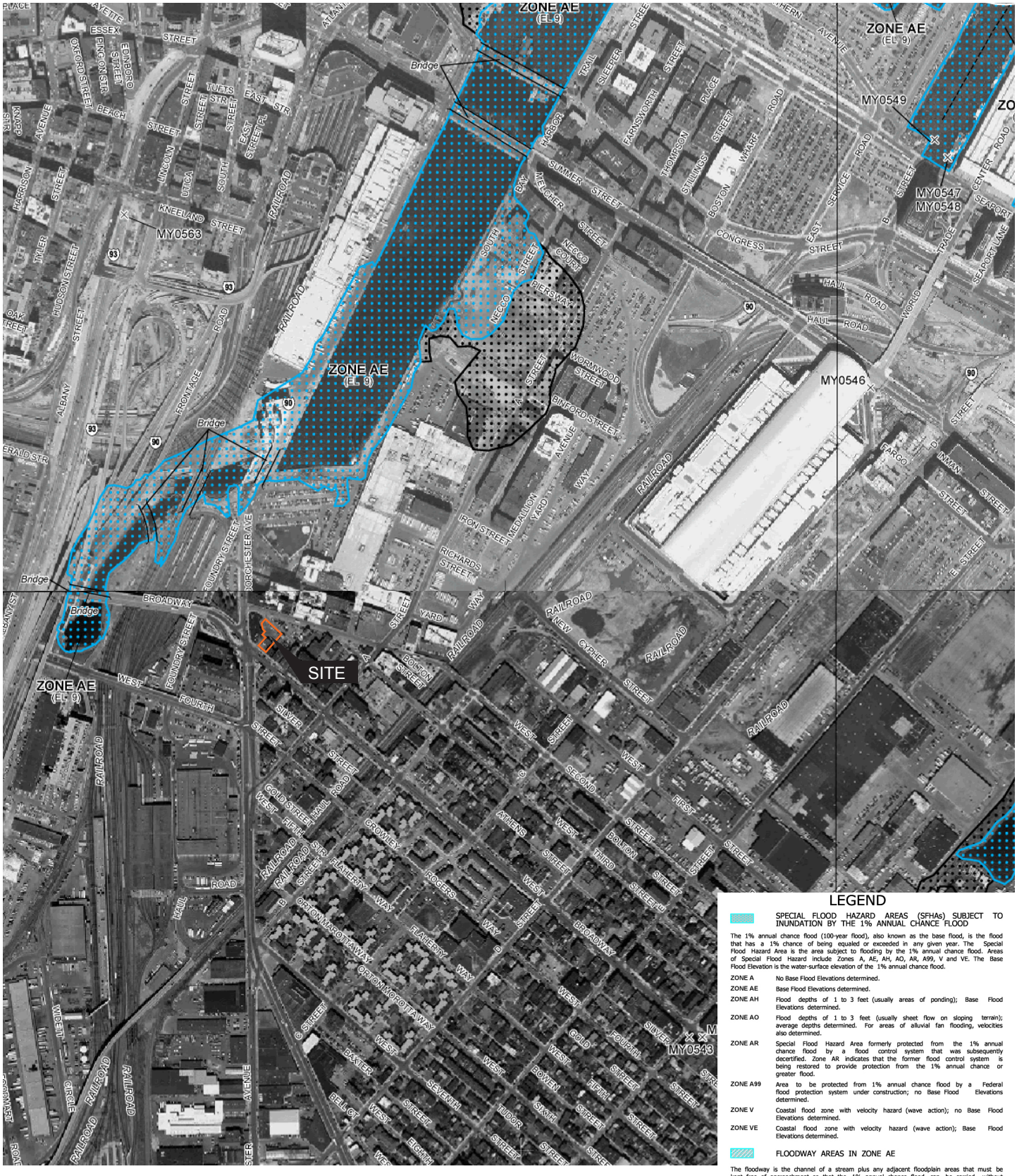
The Project will improve both the quality and quantity of stormwater runoff. Quality will be improved through on-site infiltration system. The volume of stormwater runoff leaving the site is expected to be reduced by the proposed stormwater management system which also includes a green roof. Stormwater overflow from the rooftop will be collected and conveyed to a subsurface infiltration system. The infiltration system will have an overflow tied into the storm drain currently being constructed beneath West Broadway that will be used during large storm events. The infiltration system provides groundwater recharge and preserves the natural water balance of the site. It is anticipated that the equivalent of 1 inch over the site's impervious area can be recharged as prescribed in BWSC's Site Plan Requirements.

An operation and maintenance plan will be developed to support the long-term functionality of the proposed stormwater management system. Erosion and sediment controls will be used during construction to protect adjacent properties, the municipal storm drain system and the on-site storm drain system. A pollution prevention plan will be prepared if necessary for use during construction including during demolition activity.

4.8 Solid and Hazardous Waste Materials

4.8.1 Solid Waste

Upon completion of construction, the Proposed Project will generate approximately 469 tons of solid waste per year, based on the assumption that each of the 47 residential unit will generate 8 lbs of solid waste per day - translating into approximately 69 tons per year for the residential uses - and the retail uses will generate .02 lb/sf/day per square feet - translating into approximately 400 tons per year for the retail uses. The restaurant waste is expected to be contained in a trash compactor and removed by a licensed waste hauler contracted by building management. A significant portion of the waste will be recycled. The project will also include ambitious goals for construction waste management in order to meet the requirements for the LEED rating system.



Source:
Preliminary Flood Insurance Rate Maps for Suffolk County
https://msc.fema.gov/portal

Figure 4.6 - 1
Wetlands/Flood Hazard Zones

This strategy will divert demolition and construction waste by reusing and recycling materials.

In order to meet the requirements for the Boston Environmental Department and the LEED rating system, the Project will include space dedicated to the storage and collection of recyclables. The recycling program will meet or exceed the City's guidelines, and provide areas for waste paper and newspaper, metal, glass, and plastics (*21* through *27*, co-mingled).

4.8.2 Hazardous Waste Materials

During the preparation of the Site, debris from the existing parking lot will be removed from the Project Site. The Proponent will ensure that waste removal and disposal during construction and operation will be in conformance with the City and DEP's Regulations for Solid Waste.

Cooperstown Environmental, the Project's environmental consultant, during February of 2014, completed soil characterization testing at the Project site. Cooperstown's understanding was that the entire site (approximately 14,000 sf) would be excavated to a depth of 20 feet as a part of the site redevelopment. This excavation will generate approximately 10,000 cubic yards of excess materials that will require off-site transport and disposal (T&D). To meet the regulations and the requirements of the selected disposal facilities, Cooperstown will manage this soil excavation, transportation and disposal process as a Licensed Site Professional (LSP) on the Project.

The results of this soil characterization study indicated that parts of the upper layer of the fill exhibited concentrations of PAHs and Lead above RCS-1 reporting thresholds. Another boring location showed slightly elevated arsenic concentration in the native/silt/clay level. Although the fill in the area exceeded certain RCS-1 concentrations, the fill meets the criteria for disposal to an in-state landfill. Additional samples that will be needed to meet disposal facility requirements will be collected closer to the date of excavation.

Additional information on the reports prepared for the Proponent related to subsurface investigations is available on request.

4.9 Geotechnical/Groundwater Impacts Analysis

It is anticipated that there will be little or no impact to the groundwater table due to this Project. It is expected that the excavation will be no more than 20 feet below West Broadway, with the groundwater levels expected to be below 20 feet. Limited dewatering will be required inside the excavation to remove groundwater and surface water runoff or rainwater during construction. The proposed construction is not anticipated to have adverse effects on long-term groundwater levels because the entire property has historically been capped and because the lowest floor level is above the groundwater level. Any groundwater removed from the excavation will be discharged under a NPDES general or exclusion permit. Construction mitigation measures will be incorporated into the Project to avoid the potential for ground movement and settlement during excavation, and potential impacts on adjacent buildings, utility lines and the roadways.

The geotechnical analysis for the Project will also include a description of foundation construction methodology and amount and method of excavation with particular attention on measures to ensure groundwater levels will not be lowered during or after construction.

4.9.1 Groundwater Control

It is anticipated that limited dewatering during construction will be accomplished using filtered sumps. Effluent will either be recharged to the ground on site, or will be discharged under a NPDES general or exclusion permit. Effluent will be treated before discharge as required by the permit.

4.9.2 Probable Project Impacts and Mitigation Measures

It is anticipated that there will be little or no impact to groundwater levels due to this Project. However, the excavation during construction may result in limited settlements of the adjacent ground surface and utilities. Mitigation measures will include the use of appropriate excavation support to minimize potential settlements of roadways and utilities.

4.10 Construction Impact

The following section describes impacts likely to result from the adjacent hotel project's construction and the steps that will be taken to avoid or minimize environmental and transportation-related impacts. The Proponent will employ a construction manager that will be responsible for developing a construction phasing and staging plan and for coordinating construction activities with all appropriate regulatory agencies. The Project's geotechnical consultant will provide consulting services associated with foundation design recommendations, prepare geotechnical specifications, and review the construction contractor's proposed procedures.

4.10.1 Construction Management Plan

The Proponent will comply with applicable state and local regulations governing construction of the Project. The Proponent will require that the general contractor comply with the Construction Management Plan ("CMP"), developed in consultation with and approved by the Boston Transportation Department ("BTD"), prior to the commencement of construction. The construction manager will be bound by the CMP, which will establish the guidelines for the duration of the Project and will include specific mitigation measures and staging plans to minimize impacts on abutters.

Proper pre-construction planning with the neighborhood will be essential to the successful construction of this Project. Construction methodologies that will ensure safety will be employed, signage will include construction manager contact information with emergency contact numbers.

The Proponent will also coordinate construction with other ongoing projects in the neighborhood.

4.10.2 Proposed Construction Program

Construction Activity Schedule

The construction period for the proposed Project is expected to last approximately 18-24 months, beginning in the 2nd Quarter 2015 and reaching completion in the 2nd Quarter 2017. The City of Boston Noise and Work Ordinances will dictate the normal work hours, which will be from 7:00 AM to 6:00 PM, Monday through Friday.

Perimeter Protection/Public Safety

The CMP will describe any necessary sidewalk closures, pedestrian re-routings, and barrier placements and/or fencing deemed necessary to ensure safety around the Site perimeter. If possible, the sidewalk will remain open to pedestrian traffic during the construction period. Barricades and secure fencing will be used to isolate construction areas from pedestrian traffic. In addition, sidewalk areas and walkways near construction activities will be well marked and lighted to ensure pedestrian safety.

Proper signage will be placed at every corner of the Project as well as those areas that may be confusing to pedestrians and automobile traffic.

The Proponent will continue to coordinate with all pertinent regulatory agencies and representatives of the surrounding neighborhoods to ensure they are informed of any changes in construction activities.

4.10.3 Construction Traffic Impacts

Construction Vehicle Routes

Estimated truck deliveries and routes are identified in at the end of this section. Specific truck routes will be established with BTD through the CMP. These established truck routes will prohibit travel on any residential side streets. Construction contracts will include clauses restricting truck travel to BTD requirements. Maps showing approved truck routes will be provided to all suppliers, contractors, and subcontractors. It is anticipated that all deliveries will be via I-93, across the Kelly Bridge direct to the site, not passing through any residential areas.

Construction Worker Parking

The number of workers required for construction of the Project will vary during the construction period. However, it is anticipated that all construction workers will arrive and depart prior to peak traffic periods.

Limited parking in designated areas of the Project Site and lay-down area(s) will be allowed. Parking will be discouraged in the immediate neighborhood. Further, public transit use will be encouraged with the Proponent and construction manager working to ensure the construction workers are informed of the public transportation options serving the area. Terms and conditions related to worker parking will be written into each subcontractor's contract. The contractor will provide a weekly orientation with all new personnel to ensure enforcement of this policy.

Pedestrian Traffic

The Site abuts sidewalks on three streets. Pedestrian traffic may be temporarily impacted in these areas. The Construction Manager will minimize the impact the construction of the proposed building will have and the adjacent sidewalks. The contractor will implement a plan that will clearly denote all traffic patterns. Safety measures such as jersey barriers, fencing, and signage will be used to direct pedestrian traffic around the construction site and to secure the work area.

4.10.4 Construction Environmental Impacts and Mitigation

Construction Air Quality

Construction activities may generate fugitive dust, which will result in a localized increase of airborne particle levels. Fugitive dust emission from construction activities will depend on such factors as the properties of the emitting surface (e.g. moisture content), meteorological variables, and construction practices employed.

To reduce the emission of fugitive dust and minimize impacts on the local environment the construction contractor will adhere to a number of strictly enforceable mitigation measures. These measures may include:

- Using wetting agents to control and suppress dust from construction debris;
- Ensuring that all trucks traveling to and from the Project Site will be fully covered;
- Removing construction debris regularly;
- Monitoring construction practices closely to ensure any emissions of dust are negligible;
- Cleaning streets and sidewalks to minimize dust and dirt accumulation;
- Monitoring construction activities by the job site superintendent and safety officer; and
- Wheel-washing trucks before they leave the Project Site during the excavation phase.

Construction Noise Impacts

To reduce the noise impacts of construction on the surrounding neighborhood, a number of noise mitigation measures will be included in the CMP. Some of the measures that may be taken to ensure a low level of noise emissions include:

- Initiating a proactive program for compliance to the City of Boston's noise limitation impact;
- Scheduling of work during regular working hours as much as possible;
- Using mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;
- Muffling enclosures on continuously operating equipment, such as air compressors and welding generators;
- Scheduling construction activities so as to avoid the simultaneous operation of the noisiest construction activities;
- Turning off all idling equipment;
- Reminding truck drivers that trucks cannot idle more than five (5) minutes unless the engine is required to operate lifts of refrigeration units;
- Locating noisy equipment at locations that protect sensitive locations and neighborhoods through shielding or distance;
- Installing a site barricade at certain locations;
- Identifying and maintaining truck routes to minimize traffic and noise throughout the project;
- Replacing specific construction techniques by less noisy ones where feasible - e.g., using vibration pile driving instead of impact driving if practical and mixing concrete off-site instead of on-site; and
- Maintaining all equipment to have proper sound attenuation devices.

4.10.5 Rodent Control

The City of Boston enforces the requirements established under Massachusetts State Sanitary Code, Chapter 11, 105 CMR 410.550. This policy establishes that the elimination of rodents is required for issuance of any building permits. During construction, rodent control service visits will be made by a certified rodent control firm to monitor the situation.

5.0 HISTORIC RESOURCES COMPONENT

The following section provides a discussion of the existing buildings on the Project Site and the historic districts in the Project vicinity.

5.1 Project Site and Existing Buildings

Much of the area known today as the Seaport was initially tidal marsh. Originally a peninsula of approximately 579 acres, South Boston separated Boston Harbor and South Bay from Dorchester Bay. A rural area of little activity, South Boston during the 17th and 18th centuries served Dorchester as pasturage. In 1804, South Boston was annexed to Boston and legislation was passed allowing for landfill to create new sites for commercial development. In 1805, the South Boston toll bridge opened, providing access from South Boston to the center of the city and the Dorchester Turnpike was established, connecting the growing district to Dorchester. A commercial axis developed along Broadway with residential uses clustering around West Fourth Street. Industrial activities began to appear around Fort Point Channel, including iron and glass foundries and shipyards. The Old Colony Railroad was laid along Old Colony Avenue in 1845. During the period between 1830 and 1850, the population of South Boston had increased from 2,200 to 13,000 and by 1870 it stood at over 39,000. By 1910, South Boston' land area had increased in size to 1,333 acres. During the early industrial era of the first half of the 19th century, iron foundries and machine shops formed the area's economic base. The next phase of industrialism focused on the area's premier intermodal transportation access (by rail and water) and manufacturing for transport took the lead as the singular most important industry.

According to files at the Massachusetts Historical Commission, the on-site structure is not listed in the National or State Register of Historic Places, or the Inventory of Historical and Archaeological Assets of the Commonwealth. It is not expected that the Proposed Project will cause adverse impacts on any historic or architectural elements of nearby historic resources outside the Project Site (see **Figure 5-1** at the end of this section for historic resources in the Project vicinity).

5.2 Project Site at West Broadway/ Near Dorchester Avenue Intersection

According to the Sanborn Maps from 1899 and 1923, the property, located at the intersection of West Broadway and near Dorchester Avenue, consisted of several lots, which appear to be improved with residential structures. A historic map from 1900 also shows that there may have been a school on portions of the property. According to the City of Boston Inspectional Services Department records, the property has been operated as a restaurant and pub with adjoining parking lot for at least 12 years.

5.3 Historic Districts and Resources

The Project Site is not within, nor does it directly abut, any listed historic districts or resources. The area surrounding the Project Site is a busy commercial district. Retail and commercial uses characterize much

of the area along Dorchester Avenue and Broadway. North of the Project Site, the Gillette Company factory complex and other industrial uses are present.

While there are no buildings or districts within a quarter mile of the Project Site that are presently on the National Register of Historic Places, there are eight sites listed on the Massachusetts Cultural Resource Information System's Inventory of Historic Places. These sites within one-quarter-mile radius of the Proposed Project are summarized in **Table 5-1** that follows.

Table 5-1 Historic Resources in the Vicinity of the Project Site

Key to Historic Resources Figure (Figure 5-1)	Historic Resource	Address
Inventory of Historic Places		
1	Jacob Pike-Timothy Abbott Double House	94-96 B Street
2	Boston Fire Department Hose Company #9	116 B Street
3	Lawrence School	125 B Street
4	MacAllen Electric Railway Material Co. Building	135-137 Dorchester Avenue
5	Saints Peter & Paul Roman Catholic Church	45 W Broadway
6	Saints Peter & Paul Roman Catholic Rectory	55 W Broadway
7	York House - South Boston Hotel	99-101 W 4th Street
8	Harry and Joseph Hausman Building	142 W 4th Street

In addition, several sites and districts within one-quarter mile of the Project Site are recommended for National Register historic designation. A discussion of these sites is provided below.

5.4 Church of Saints Peter and Paul and Parochial Residence

Located at 45 West Broadway a block away from the Project Site, this church was designed by Boston architect Gridley J. F. Bryant in the early 19th century. Constructed of Quincy granite, the building was begun in 1842 and completed in 1845. A severe fire in 1848 destroyed the interior leaving only the outer walls, but the structure was rebuilt and was rededicated in 1853.

Located at 55 West Broadway, the parish house is a large 3-story red brick building with double swell bowed façade, sandstone trim, and a porch with a single arched entry. Between 1891 and 1899 the building was connected to the Church.

Both buildings are recommended for inclusion on the National Register of Historic Places and for recognition as Boston Landmarks. The church has recently undergone a residential conversion.

5.5 Fort Point Historic District

Lying north of the proposal Site, just east of the Fort Point Channel, this area is composed of large, ornamental brick warehouses constructed by the Boston Wharf Company during the latter half of the 19th century and early 20th century. Renovated and rehabilitated over time, these structures now house a variety of uses. Many of the buildings house commercial uses such as financial, architectural, and computer office space, while there also exists a residential base, with many artists residing in the renovated warehouses. A portion of this area, consisting of 98 industrial, commercial, and civic buildings in addition to five bridges, has been determined eligible for inclusion on the National Register of Historic Places.

5.6 Archaeological Resources

Upon researching the Site on the Boston Inventory Map at Massachusetts Historic Commission, it was determined that there are no existing pre-historic or historic archaeological sites on the Site, nor are there any within a quarter mile of the Project Site.



= 1/4 mile buffer

= Project Site

= Property on Inventory of Historic Places

1 = Jacob Pike-Timothy Abbott Double House (94-96 B St)
2 = Boston Fire Department Hose Company #9 (116 B St)
3 = Lawrence School (125 B St)
4 = MacAllen Electric Railway Material Co. Building (135-137 Dorchester Ave)
5 = Saints Peter & Paul Roman Catholic Church (45 W Broadway)
6 = Saints Peter & Paul Roman Catholic Rectory (55 W Broadway)
7 = York House - South Boston Hotel (99-101 W 4th St)
8 = Harry and Joseph Hausman Building (142 W 4th St)

Figure 5 - 1
Historic Resources

6.0 INFRASTRUCTURE SYSTEMS COMPONENT

The existing infrastructure surrounding the site appears sufficient to service the needs of the Proposed Project. The following sections describe the existing sewer, water, and drainage systems surrounding the site and explain how these systems will service the development. The analysis also discusses any anticipated Project-related impacts on the utilities and identifies mitigation measures to address these potential impacts.

A detailed infrastructure analysis will be performed when the Project proceeds into the Design Development Phase. The Project's team will coordinate with the appropriate utilities to address the capacity of the area utilities to provide services for the new building. A Boston Water and Sewer Commission (BWSC) Site Plan and General Service Application is required for the new water, sanitary sewer, and storm drain connections.

A Drainage Discharge Permit Application is required from BWSC for any construction dewatering. The appropriate approvals from the Massachusetts Water Resource Authority (MWRA), Massachusetts Department of Environmental Protection (MassDEP), and the U.S. Environmental Protection Agency (EPA) will also be sought.

6.1 Sanitary Sewer System

6.1.1 Existing Sewer System

The Boston Water and Sewer Commission owns and maintains the sewer system adjacent to the site (See **Figure 6-1**). There is an ongoing BWSC sewer separation project (#12-309-009) (See **Figure 6-2**) in the area around the Project Site. The existing 20" x 24" combined sewer located beneath West Broadway will be maintained as a separate sanitary sewer. This sewer ties into a new 36-inch separated sewer located beneath Dorchester Avenue. There is also a new 18-inch separated sewer beneath Athens Street located to the north of the Project site that ties into a new 24-inch separated sewer beneath West Second Street. The existing site contains a one-story building currently used as a restaurant with a bar and the sanitary sewer is connected to the 20" x 24" combined sewer located beneath West Broadway.

6.1.2 Project-Generated Sewage Flow

The Project will generate an estimated 15,104 gallons per day (gpd) based on design sewer flows provided in 310 CMR 15.00-Title 5; System Sewage Flow Design as summarized in **Table 6-1.**

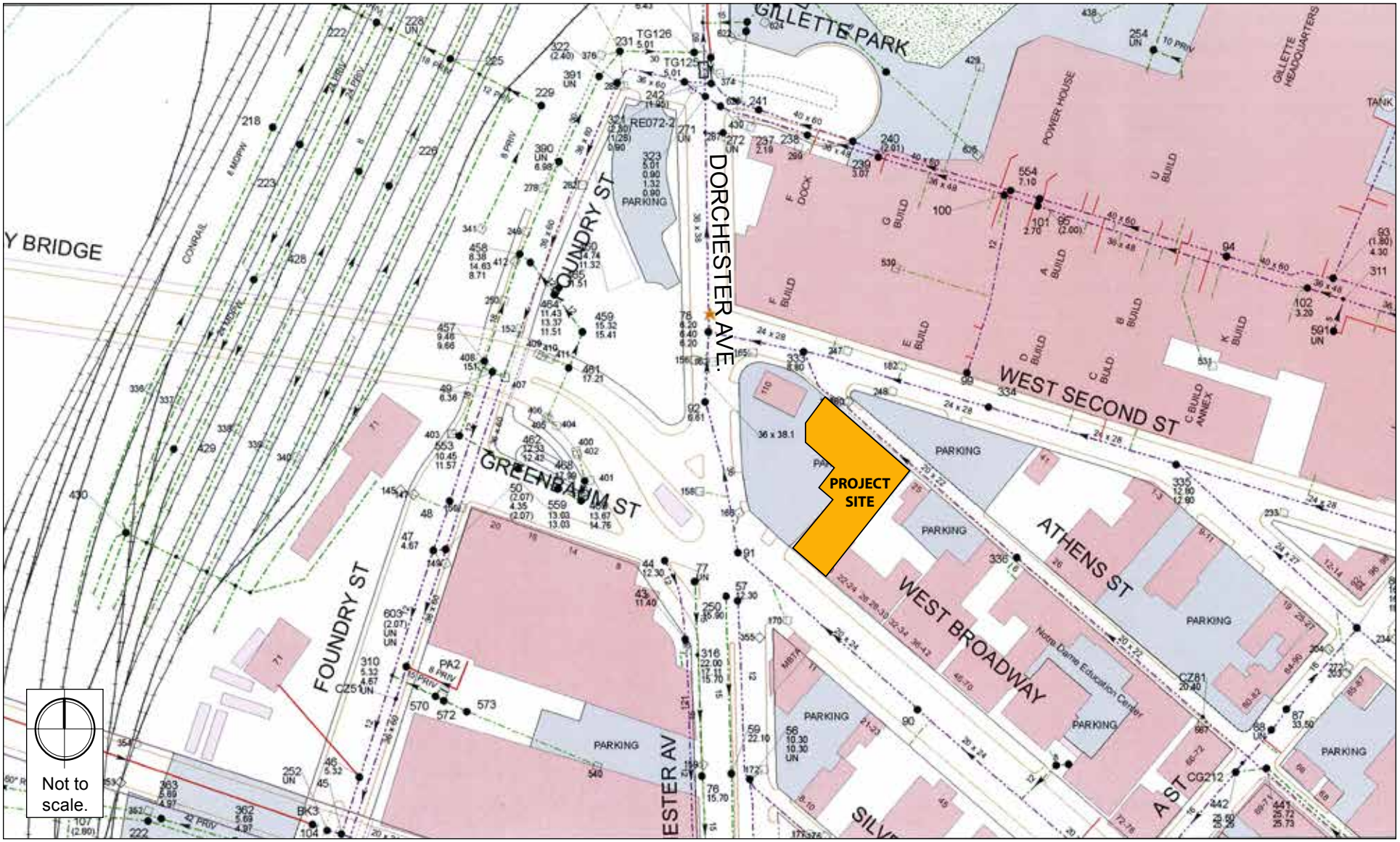


Figure 6-1.
BWSC Sewer System Map

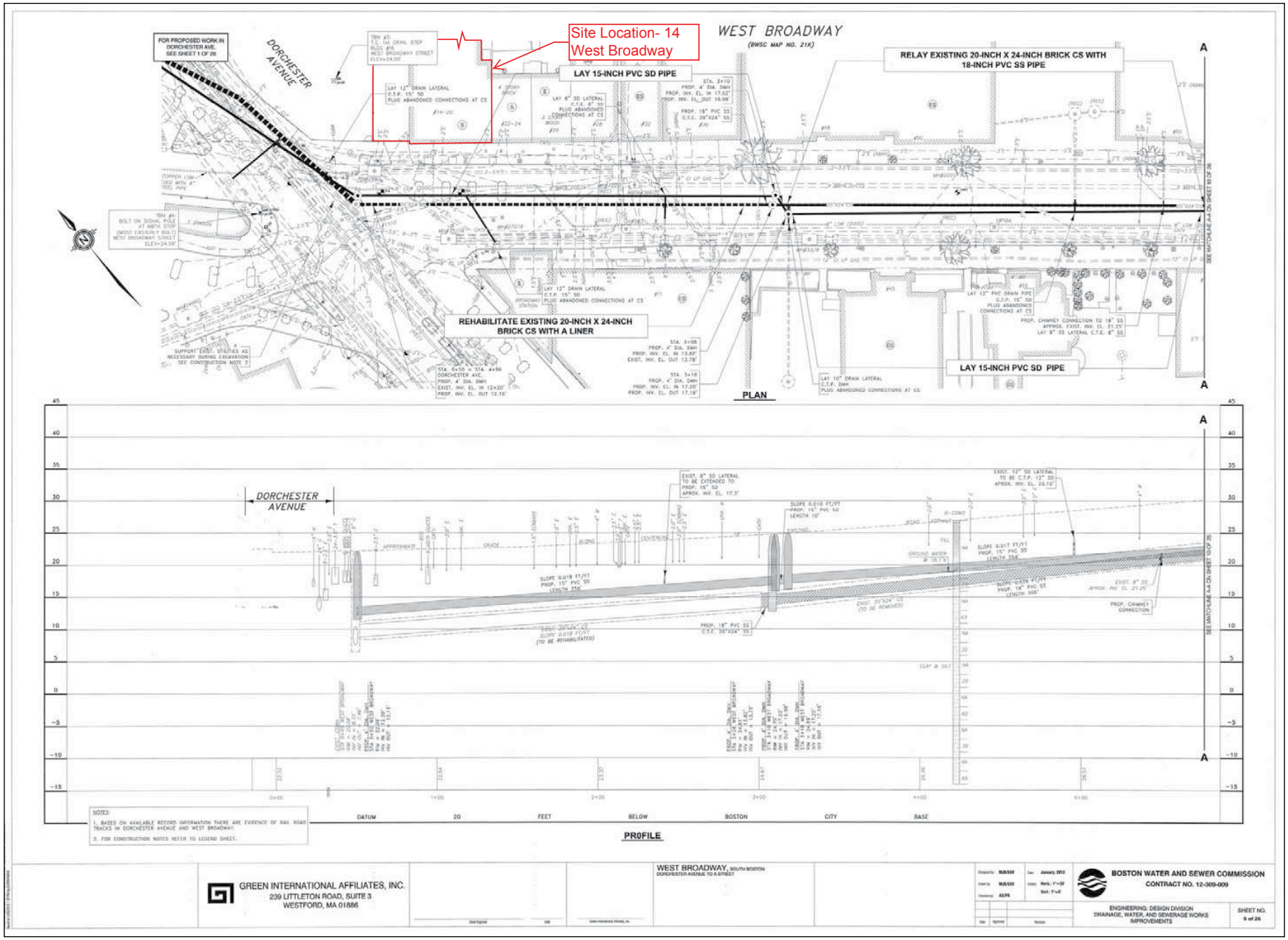


Figure 6-2.
West Broadway BWSC Sewer Separation Project

Table 6-1. Projected Sanitary Sewer Flows, 14 West Broadway

Use*	Quantity	Unit Flow Rate	Estimated Maximum Daily Flow (gpd)
6 (1) Bed Units 31 (2) Bed Units 10 (3) Bed Units	98 beds	110 gpd/bedroom	10,780 gpd
Restaurant	110 seats (6,316 sf)	35 gpd/seat	3,850 gpd
Condo Office	1,475 sf	75 gpd/1000sf	111 gpd
Office/Retail	4,836 sf	75 gpd/1000sf	363 gpd
Total			**15,104 gpd**

*Uses identified are preliminary and subject to change in the final plans

6.1.3 Sanitary Sewage Connection

It is anticipated that the proposed building's sanitary services will tie into the 20" x 24" sewer beneath West Broadway. It is expected that the building will have one 10-inch sanitary service. The Proponent will submit a Site Plan to the BWSC for review and approval.

6.1.4 Sewer System Mitigation

The environmental design goals for the Proposed Project include reducing wastewater volumes by incorporating efficient fixtures into the design. Low-flow faucets, aerated shower-heads, and dual-flush toilets are being considered to reduce water usage and sewer generation.

6.2 Water System

6.2.1 Existing Water Service

The water mains in the vicinity of the Project Site are owned and maintained by BWSC (see **Figure 6-3**). There is an 8-inch cement-lined ductile iron (CLDI) water main located beneath West Broadway, and an 8-inch CLDI beneath Athens Street that are all part of the Southern Low service network. The mains were installed in 2000 and 2003, respectively.

According to BWSC's records, there is a 2-inch domestic & 4-inch fire service to the site that are connected to the 8-inch water main beneath West Broadway. The services are not expected to be reused and will be cut and capped at the main.

The site is within the service radius of two hydrants. There is one hydrant to the west, on Athens Street (H 191). There is also a hydrant to the south (H170), on West Broadway. The Proponent will confirm that the hydrants are sufficient for the development and will coordinate any proposed changes in locations with BWSC and the Boston Fire Department (BFD) during the detailed design phase.

6.2.2 Anticipated Water Consumption

The maximum daily water demand is estimated to be 16,614 gpd based on the sewage flow estimate and an added factor for system losses including the average requirements for the Project's cooling system. A more detailed water use estimate, including estimates for any air conditioning make-up water, and meter sizing calculations will be submitted to BWSC as part of the Site Plan approval process.

6.2.3 Proposed Water Service

It is anticipated that separate domestic water and fire protection services for the Project will be directly tapped from the 8-inch low service main beneath West Broadway. The water supply systems servicing the building will be gated so as to minimize public hazard or inconvenience in the event of a water main break. Final locations and sizes of the services will be provided on a Site Plan during the detailed design phase and submitted to BWSC for review and approval.

Water service to the building will be metered in accordance with BWSC's requirements. The property owner will provide a suitable location for a Meter Transmission Unit (MTU) as part of BWSC's Automatic Meter Reading System. Water meters over 3 inches will be provided with a bypass to allow BWSC testing without service interruption. A backflow preventer will be installed on the fire protection service and will be coordinated with BWSC's Cross Connection Control Department.

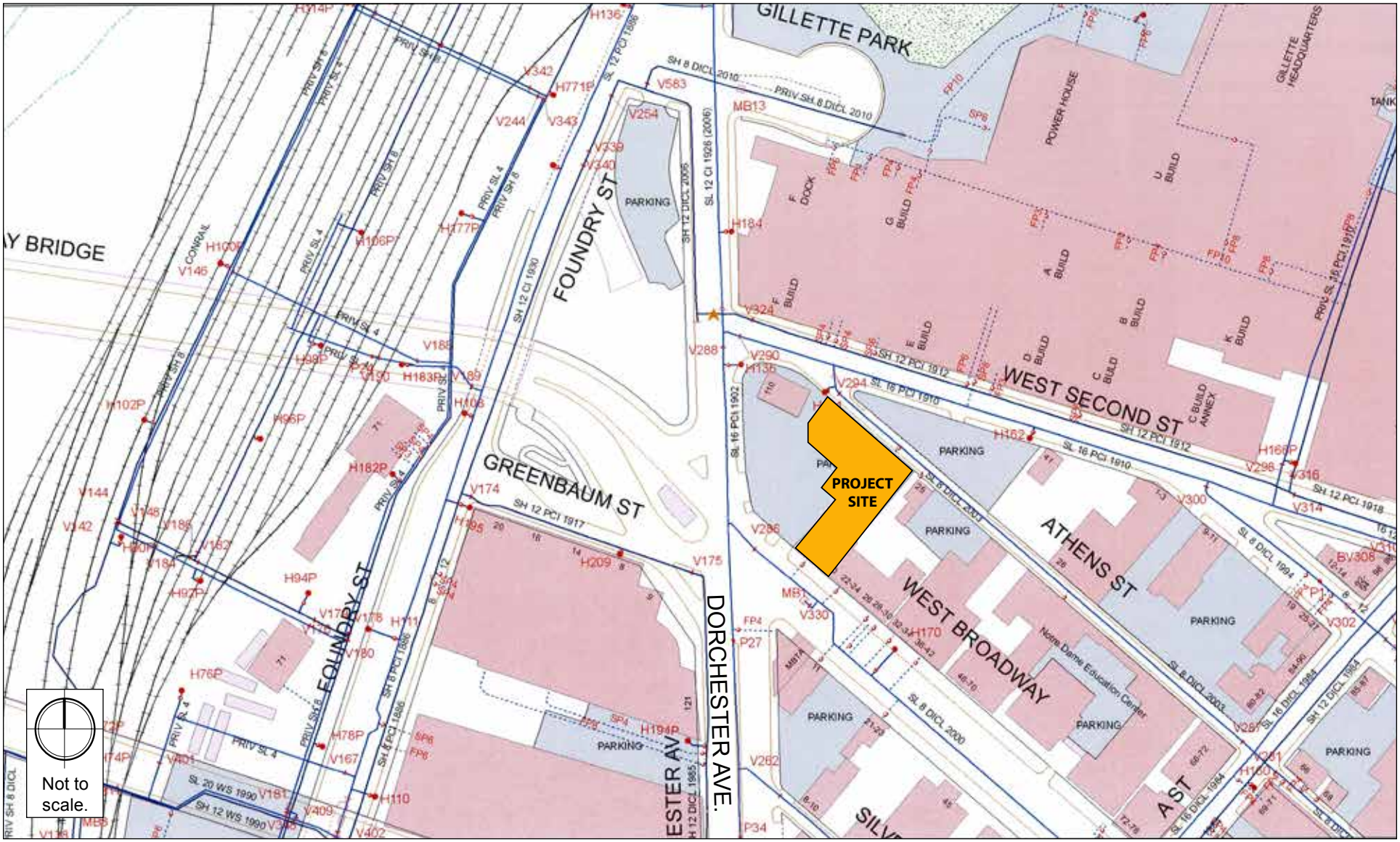


Figure 6-3.
BWSC Water System Map

6.3 Water Supply System Mitigation

As discussed in the Sewer System Mitigation Section, water conservation measures such as low-flow fixtures, aerated showerheads, and dual-flush toilets are being considered to reduce potable water usage.

6.4 Storm Drainage System

6.4.1 Existing Drainage Conditions

The existing site consists of a one story brick building with surface parking in the rear of the property. The existing site is entirely impervious. The existing roof leaders discharge onto the surface parking lot and the rear of the building. Stormwater runoff from the surface parking area flows overland to the adjacent catch basins beneath West Broadway and Athens Street.

6.4.2 Proposed Drainage Systems

The proposed building occupies almost the entire Project site, leaving little opportunity to infiltrate stormwater on-site. The rooftop of the building will incorporate a green roof. The stormwater overflow from the green roof will be connected to an underground infiltration system. The project team will investigate the feasibility of providing a rainwater tank in the building that could be pumped to an injection well in the sidewalk, or other means to provide some infiltration of stormwater. The proposed stormwater management system will be designed to improve existing conditions. A stormwater infiltration system will assist in reducing the peak rate of runoff from the Project site as well as increasing groundwater recharge. An overflow pipe will be designed to convey runoff from larger storm events to the surrounding municipal system

After construction, the Project site will continue to consist primarily of impervious surfaces, associated with building roofs and the paved sidewalks surrounding the Project site. The existing drainage patterns will not change significantly as the runoff will continue to drain to surrounding municipal storm drain systems.

All storm drain system improvements will be designed in accordance with BWSC's design standards and the BWSC "Requirements for Site Plans." A Site Plan will be submitted for BWSC approval and a General Service Application will be completed prior to any off-site storm drain work. Any storm drain connections terminated as a result of construction will be cut and capped at the storm drain in the street in accordance with BWSC standards.

Erosion and sediment controls will be used during construction to protect adjacent properties and the municipal storm drain system. An operation and maintenance plan will be developed to support the long-term functionality of the proposed stormwater management system. A Drainage Discharge Permit Application, if required, will be obtained from BWSC for any construction dewatering construction including during demolition activity.

6.5 Water Quality

The development is expected to result in improved stormwater quality through the installation of an infiltration system, possibly an injection well, which will infiltrate the first flush of runoff. The Project and is not expected to have negative impacts on the water quality of nearby Fort Point Channel and Boston Harbor.

6.6 Electric Systems

The electrical, heating and energy systems for the proposed Project have not yet been designed. Information on these systems will be made available to the appropriate utilities as Project design progresses.

6.6.1 Existing Electric Systems

NSTAR owns and maintains the electrical transmission system in the vicinity of the project. The street lighting system adjacent to the site consists of acorn luminaires in good condition.

6.6.2 Proposed Electric Connections

The primary feed to service the development is expected to be pulled from an NSTAR manhole in West Broadway. The electric load will be determined during the detailed design phase and coordinated with NSTAR.

The proponent will work the Public Works Department, Street Lighting Section, to determine the adequacy of street lighting in the area and coordinate any temporary or permanent relocations of the street lighting.

6.7 Telephone and Cable Systems

Verizon has telephone and internet services in the Project area. Their facilities in this area are underground. Telephone systems will be reviewed with Verizon as the design progresses.

Comcast/XFINITY has infrastructure in the area and offers cable television, telephone and internet services. All cable lines in this area are underground. The project will be reviewed with Comcast/XFINITY as the design progresses.

6.8 Steam and Gas Systems

Veolia has infrastructure in Dorchester Avenue and West Second Street. Neither system is currently in service.

National Grid owns and maintains a 6-inch, cast iron, low pressure gas main beneath West Broadway. There is also a 2-inch, wrought iron, low pressure gas main beneath Athens Street. The project is expected

to use natural gas for heating and domestic hot water. The actual size and location of the building services will be coordinated with National Grid.

6.9 Utility Protection During Construction

The Contractor will notify utility companies and call "Dig Safe" prior to excavation. During construction, infrastructure will be protected using sheeting and shoring, temporary relocations, and construction staging as required. The Construction Contractor will be required to coordinate all protection measures, temporary supports, and temporary shutdowns of all utilities with the appropriate utility owners and/or agencies. The Construction Contractor will also be required to provide adequate notification to the utility owner prior to any work commencing on their utility. Also, in the event a utility cannot be maintained in service during switch over to a temporary or permanent system, the Construction Contractor will be required to coordinate the shutdown with the utility owners and project abutters to minimize impacts and inconveniences.

7.0 TRANSPORTATION COMPONENT

7.1 Introduction

7.1.1 Purpose of the Transportation Component

Howard/Stein-Hudson Associates, Inc. (HSH) has conducted an evaluation of the transportation impacts of the proposed redevelopment of the Project site. This transportation study adheres to the Boston Transportation Department (BTD) Transportation Access Plan Guidelines and the Article 80 development review process. This study includes an evaluation of existing conditions, future conditions with and without the Project, projected parking demand, loading operations, transit services, and pedestrian activity.

7.1.2 Project Description

The Project consists of demolishing the existing building and parking lot that are on the site and constructing a new 109,000 square foot building containing 47 residential units, approximately 5,315 square feet of restaurant space, and 3,400 square feet of office/retail space. The Project will also provide 70 parking spaces in an underground garage, with 6 additional spaces located in a porte-cochère accessed from Athens Street.

7.1.3 Study Area

The transportation study area is generally bounded by Dorchester Avenue to the west, West Fifth Street to the south, West Second Street to the north, and A Street to the east. The study area consists of the following eight intersections in the vicinity of the Project site, also shown on **Figure 7-1**:

- A Street/West Fourth Street;
- Dorchester Avenue/A Street;
- Dorchester Avenue/West Fourth Street;
- Dorchester Avenue/West Broadway;
- A Street/West Broadway;
- Dorchester Avenue/West Second Street;
- West Second Street/Athens Street; and
- A Street/Athens Street

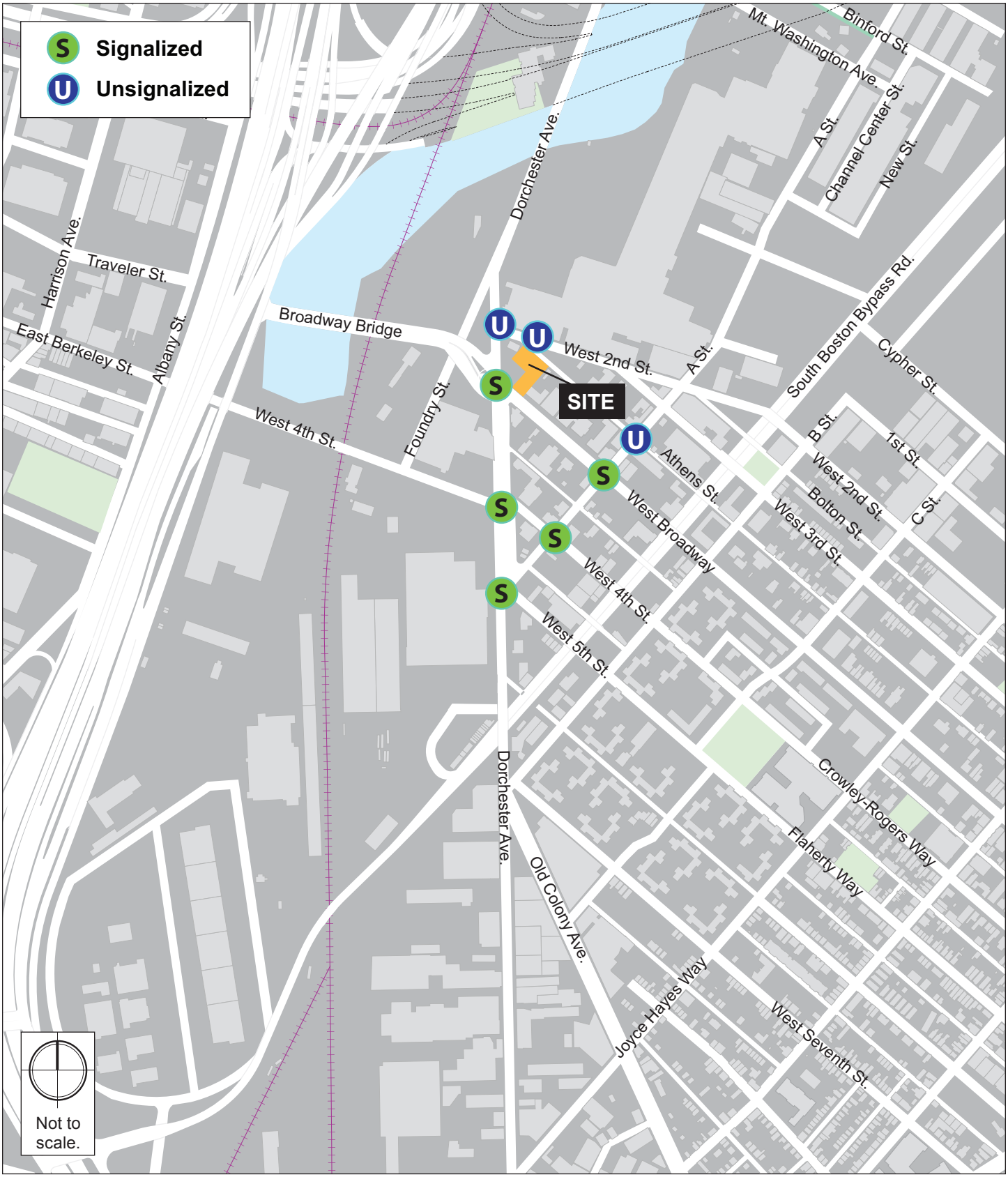


Figure 7-1.
Study Area Intersections

7.1.4 Study Methodology

This transportation study and supporting analyses were conducted in accordance with BTD guidelines and is described below.

The existing conditions analysis includes an inventory of the existing (2014) transportation conditions such as traffic characteristics, parking, curb usage, transit, pedestrian circulation, bicycle facilities, loading, and site conditions. Existing counts for vehicles, bicycles, and pedestrians were collected at the study area intersections. A traffic data collection effort forms the basis for the transportation analysis conducted as part of this evaluation.

The future transportation conditions analysis evaluates potential transportation impacts associated with the Project. Long-term impacts are evaluated for the year 2019, based on a five-year horizon from the year of the filing of this traffic study.

The 2019 No-Build Condition scenario includes both general background traffic growth, traffic growth associated with specific developments (not including this Project), and transportation improvements that are planned in the vicinity of the Project site.

The 2019 Build Condition scenario includes a net increase due to Project-generated traffic volume estimates added to the traffic volumes developed as part of the 2019 No-Build Condition scenario. Expected roadway, parking, transit, pedestrian, bicycle accommodation, and loading capabilities and deficiencies are identified.

The final part of the transportation study identifies measures to mitigate Project-related impacts and to address any traffic, pedestrian, bicycle, transit, safety, or construction-related issues that are necessary to accommodate the Project.

An evaluation of short-term traffic impacts associated with construction activities is also provided.

7.2 Existing Condition

This section includes descriptions of existing study area roadway geometries, intersection traffic control, peak-hour vehicular and pedestrian volumes, average daily traffic volumes, transit availability, parking and curb usage, and loading conditions.

7.2.1 Existing Roadway Conditions

The study area includes the following roadways, which are categorized according to the Massachusetts Department of Transportation (MassDOT) Office of Transportation Planning functional classifications:

West Broadway borders the Project site to the south, is classified as an urban minor arterial, and generally runs in a northwest-southeast direction throughout the study area. West Broadway provides access to the South End neighborhood of Boston to the west via the Kelly Bridge and South Boston to the east. It also provides direct access to the regional highway network (I-93 and I-90) as well as access to the Leather District/South Station area and downtown Boston beyond. In the vicinity of the Project site, West Broadway consists of a single lane of travel in each direction, with on-street parking provided along both sides. Sidewalks are provided along both sides of West Broadway.

Dorchester Avenue borders the Project site to the west, is classified as an urban principal arterial roadway south of West Broadway and an urban minor arterial north of West Broadway, and generally runs in a north-south direction throughout the study area. North of West Broadway, Dorchester Avenue provides access to the Gillette headquarters and the United States Postal Service (USPS) General Mail Facility. Public access along Dorchester Avenue is currently not allowed through the USPS facility, although there are long-term as yet undefined planning efforts to relocate and then redevelop the USPS facility and open Dorchester Avenue to general traffic from West Broadway to Summer Street. South of West Broadway, Dorchester Avenue continues through Dorchester to the Milton Town Line. Between the USPS General Mail Facility and West Broadway, Dorchester Avenue generally consists of a single lane in each direction with parking prohibited on each side of the roadway. Between West Broadway and West Fourth Street, Dorchester Avenue generally consists of two lanes in each direction with additional turning lanes provided at the major intersections. Metered on-street parking is provided on the southbound side of the roadway between West Broadway and West Fourth Street. Sidewalks are provided along both sides of Dorchester Avenue.

Athens Street is adjacent to the Project site to the north, is classified as a local roadway, and generally runs in a northwest-southeast direction throughout the study area. Athens Street consists of an approximately 12-foot wide lane that accommodates one-way travel in the westbound direction (towards West Second Street), with no on-street parking. Sidewalks are provided along both sides of Athens Street.

West Second Street is located to the north of the Project site, is classified as an urban minor arterial, and generally runs in an east-west direction throughout the study area. West Second Street provides access to South Boston to the east and terminates at its intersection with Dorchester Avenue to the west. In the vicinity of the Project site, West Second Street consists of a single lane of travel in each direction. On-street parking is prohibited along West Second Street in the vicinity of the Project site. Sidewalks are provided along both sides of West Second Street. West Second Street is a primary truck route for USPS facilities north of the Project site.

A Street is located east of the Project site, is classified as an urban minor arterial, and generally runs in a north-south direction throughout the study area. A Street provides access to the Fort Point Channel and Seaport District areas to the north and terminates at Dorchester Avenue to the south, south of the Project site. In the vicinity of the Project site, A Street consists of a single

lane of travel in each direction and additional turn lanes provided at some intersections. On-street parking is prohibited along A Street in the vicinity of the Project site. Sidewalks are provided along both sides of A Street.

7.2.2 Existing Intersection Conditions

The existing study area intersections are described below. Intersection characteristics such as traffic control, lane usage, pedestrian facilities, pavement markings, and adjacent land use are described.

Dorchester Avenue at A Street and West Fifth Street is a four-legged, four-approach, signalized intersection.

The Dorchester Avenue northbound approach consists of two travel lanes with right turns to A Street and West Fifth Street allowed from the right lane. Arrows are marked in the right lane. The stop line for this approach is past the intersection with West Fifth Street; thus, queues on this approach may block traffic from West Fifth Street. The Dorchester Avenue southbound approach consists of two through-only lanes and a six-foot-wide bike lane with a three-foot buffer. A median barrier prevents vehicles from turning onto West Fifth Street from Dorchester Avenue southbound.

The West Fifth Street northwestbound approach consists of a single bear-right/hard-right lane with an adjacent on-street parking lane and no marked centerline. There is no stop or yield sign on this approach, and the traffic from West Fifth Street essentially merges with Dorchester Avenue just before the stop line on the Dorchester Avenue northbound approach. A median barrier prevents vehicles from turning left onto Dorchester Avenue southbound from West Fifth Street.

The A Street southwestbound approach consists of a single bear-left/ hard-right lane. The same median barrier which prevents left turns to West Fifth Street from Dorchester Avenue southbound prevents turns from A Street to West Fifth Street. Six-foot-wide bike lanes are provided along both sides of A Street. In addition, a 12-foot long bike box is painted ahead of the stop line on the A Street southwest-bound approach. A short median separates the two directions of A Street at this intersection.

Sidewalks are provided along both sides of each intersection leg. Crosswalks are provided across all approaches except the Dorchester Avenue northbound approach. The north and northeast pedestrian crossings have crossing islands and pedestrian signals. The southeast pedestrian crossing across West Fifth Street is not as affected by the traffic at the signalized intersection and operates without a signal. On-street parking is not permitted on any approach except the West Fifth Street northwest-bound approach.

Dorchester Avenue at West Fourth Street is a four-legged, four-approach, signalized intersection.

The West Fourth Street eastbound approach consists of a left/through lane and a right-turn only lane. Field observations in October 2014 showed that at times when left-turning vehicles are unable to do so and block the through lane, vehicles going through will go around this queue by using the right-turn only lane. The West Fourth Street westbound approach consists of a single left/through/right lane with an adjacent on-street parking lane.

The Dorchester Avenue northbound approach consists of a left-turn only lane, two through-only lanes, a five-foot-wide pocket bike lane, a right-turn only lane, and a parking lane. A set of two dashed lines marks a path for northbound bikes through the intersection although the bike lane does not continue past West Fourth Street. The Dorchester Avenue southbound approach consists of three travel lanes. Left turns and through travel are served by the left-most lane and the right-most lane effectively only serves right turns. The right lane has a limited storage length of 35 feet since it serves as a parking lane further upstream. Arrows are marked on this approach. On both Dorchester Avenue approaches, the two directions are separated by a five to six-foot-wide raised median.

Sidewalks are provided along both sides of each intersection leg. Crosswalks are provided across all approaches although no center crossing islands are provided on the crosswalks across Dorchester Avenue, the longest of which is approximately 100 feet long. All pedestrian crossings operate with pedestrian signals. On-street parking is permitted only on the Dorchester Avenue northbound and West Fourth Street westbound approaches.

A Street at West Fourth Street is a four-legged, four-approach, signalized intersection.

The West Fourth Street eastbound approach consists of a single left/through/right lane with a marked, double-yellow centerline. The West Fourth Street westbound approach consists of a single left/through/right lane with no marked centerline.

The A Street northbound approach consists of a single left/through/right lane and a six-foot-wide bike lane. The A Street southbound approach consists of a single left/through/right lane with a six-foot-wide bike lane. Both A Street approaches have double-yellow centerlines.

Sidewalks are provided along both sides of each intersection leg. Crosswalks and pedestrian signals are provided across each approach. On-street parking is not permitted on any intersection approach except the West Fourth Street westbound approach, where overnight and weekend-only parking is allowed.

Dorchester Avenue at West Broadway is a four-legged, signalized intersection with four approaches.

The West Broadway eastbound approach consists of an exclusive left-turn lane, a through lane, and an exclusive, channelized right-turn lane. The directions of travel along the West Broadway eastbound approach are separated by an approximately 34-foot wide island that contains an entrance to Broadway MBTA Red Line station. The West Broadway westbound approach consists of a shared left-turn/through lane and a shared through/right-turn lane. The directions of travel along the West Broadway westbound approach are separated by a double-yellow centerline. On-street parking is provided along the West Broadway westbound approach.

The Dorchester Avenue northbound approach consists of an exclusive left-turn lane, a shared through/right-turn lane, and a lane exclusively for an MBTA bus stop. This right-most lane can be utilized by right-turning vehicles if there are no buses stopped. The directions of travel along the Dorchester Avenue northbound approach are separated by a raised median. The Dorchester Avenue southbound approach consists of a shared left-turn/through lane and a channelized right-turn lane under yield-sign control. The directions of travel along the Dorchester Avenue southbound approach are separated by a double-yellow centerline.

Sidewalks are provided along both sides of all approaches to the intersection and marked crosswalks with pedestrian signals are provided across all legs of the intersection. On-street parking is only provided on the West Broadway westbound approach.

A Street at West Broadway is a four-legged, signalized intersection with four approaches. The West Broadway eastbound and westbound approaches both consist of a single left/through/right lane and a parking lane. The directions of travel along West Broadway are separated by a double-yellow centerline.

The A Street northbound approach consists of a single left/through/right lane and a six-foot wide bike lane. The directions of travel along A Street northbound are separated by a double-yellow centerline. The A Street southbound approach consists of an exclusive left-turn lane and a shared through/right lane, and a five-foot wide bike lane with a 12-foot long bike box painted ahead of the stop line. The directions of travel along A Street southbound are separated by a double-yellow centerline. A guide sign on the A Street southbound approach shows that a truck route can be taken by either continuing straight on A Street or turning right onto West Broadway westbound. On-street parking is not permitted on either the northbound or southbound approaches.

Sidewalks are provided along both sides of all approaches to the intersection and crosswalks with pedestrian signals are provided across all legs of the intersection.

Dorchester Avenue at West Second Street is a three-legged, unsignalized intersection with three approaches.

The West Second Street westbound approach consists of a single travel lane under stop-sign control. The directions of travel along West Second Street are not separated by a centerline.

The Dorchester Avenue approaches consist of single-travel lanes separated by a double-yellow centerline. The northbound and southbound movements are both free.

Sidewalks are provided along both sides of all three approaches to the intersection, with a crosswalk across the West Second Street approach. Pedestrian crossing signs are provided on the Dorchester Avenue approaches but there are no marked crosswalks across Dorchester Avenue at this intersection. On-street parking is prohibited along all legs of the intersection.

West Second Street at Athens Street is a three-legged, unsignalized intersection with three approaches. The intersection is located approximately 70 feet to the east of the intersection of Dorchester Avenue and West Second Street.

The West Second Street approaches consist of single travel lanes. The directions of travel along West Second Street are not separated by a centerline. Vehicles are not permitted to turn from West Second Street onto Athens Street. On-street parking is not permitted on either the eastbound or westbound approaches.

The Athens Street northwest-bound approach accommodates one-way travel entering the intersection and consists of a single left/right-turn lane operating under stop-sign control.

Sidewalks are provided along both sides of West Second Street to the intersection. On Athens Street, the low-volume roadway effectively serves pedestrians better than the narrow curbs. Crosswalks are not provided at this intersection.

During field observations in October 2014, numerous construction-related vehicles were parked at or near the intersection.

A Street at Athens Street is a four-legged, unsignalized intersection with four approaches.

The Athens Street eastbound approach consists of a single travel lane under stop control although there are no stop signs. It is only available for vehicles exiting the garage below 50 West Broadway to turn onto A Street. The roadway at this approach is flared out to from 16 feet wide to a total width of 24 feet to allow this. The widened roadway also makes it easier for trucks to turn onto this segment of Athens Street. The Athens Street westbound approach consists of a single travel lane under stop control although there are no stop signs. The 13-foot-wide roadway only has enough width to allow one vehicle to pass through at a time.

The A Street northbound approach consists of a single left/through/right lane and a six-foot-wide bike lane. The A Street southbound approach consists of a single left/through/right lane and a five-foot-wide bike lane. Both bike lanes are marked through the intersection with a dashed line.

Sidewalks are provided along both sides of each intersection leg. However, the sidewalks along the Athens Street westbound approach are only four feet wide. Although there are pedestrian

curb ramps at each corner of the intersection, there are no marked crosswalks. On-street parking is not permitted on any approach to this intersection.

7.2.3 Existing Parking and Curb Use

An inventory of the on street parking in the vicinity of the Project was collected. On-street parking is generally allowed along West Broadway and the westerly side of Dorchester Avenue in the vicinity of the Project site, with 15-minute and two-hour time restrictions. On-street parking is not allowed along West Second Street, Athens Street, A Street, or the Kelly Bridge. There are no public commercial off-street parking lots or garages within a quarter-mile of the Project site. Bus stops are located along the Dorchester Avenue northbound and West Broadway eastbound adjacent to Broadway Station. The on-street parking regulations within the study area are shown in **Figure 7-2**.

Car Sharing Services

Car sharing enables easy access to short term vehicular transportation. Vehicles are rented on an hourly or daily basis, and all vehicle costs (gas, maintenance, insurance, and parking), are included in the rental fee. Vehicles are checked out for a specific time period and returned to their designated location.

Car sharing, predominantly served by Zipcar in the Boston area, provides easy access to vehicular transportation for those who do not own cars. A total of seven Zipcar vehicles are located at 170 West Broadway (Liberty Roast Beef), approximately one-quarter mile east of the Project site. The nearby car sharing locations are shown in **Figure 7-3.**

7.2.4 Existing Traffic Data

Traffic volume data have been collected at the study area intersections. Turning Movement Counts (TMCs) and vehicle classification counts were conducted during the weekday a.m. and p.m. peak periods (7:00 – 9:00 a.m. and 4:00 – 6:00 p.m., respectively). The traffic classification counts included car, truck, pedestrian, and bicycle movements.

The traffic volume data had been previously collected at five of the eight intersections during 2013. The traffic volume data from the remaining three intersections were collected in October 2014. To standardize the count data to Year 2014 conditions, a conservatively high annual growth factor of one percent per year was applied to the previously collected data to estimate year 2014 volumes. The detailed traffic counts are provided in the Appendix (in separate cover). Based on the TMCs, the peak hours of vehicular traffic throughout the study area are 8:00 – 9:00 a.m. and 5:00 – 6:00 p.m.

Seasonal Adjustment

In order to account for seasonal variation in traffic volumes throughout the year, data provided by MassDOT were reviewed. The most recent (2011) MassDOT Weekday Seasonal Factors were used to determine the need for seasonal adjustments to the April 2013, September 2013, and October 2014 TMCs. The 2011 seasonal adjustment factors for April, September, and October for roadways similar to the study area (Group 6) are 0.92, 0.93, and 0.92, respectively. This indicates that average month traffic volumes are approximately seven and eight percent less than traffic volumes that were collected. The traffic counts were not adjusted downward to reflect average month conditions in order to provide a conservatively high analysis consistent with the peak season traffic volumes. The MassDOT 2011 Weekday Seasonal Factors table is provided in **Appendix D**.

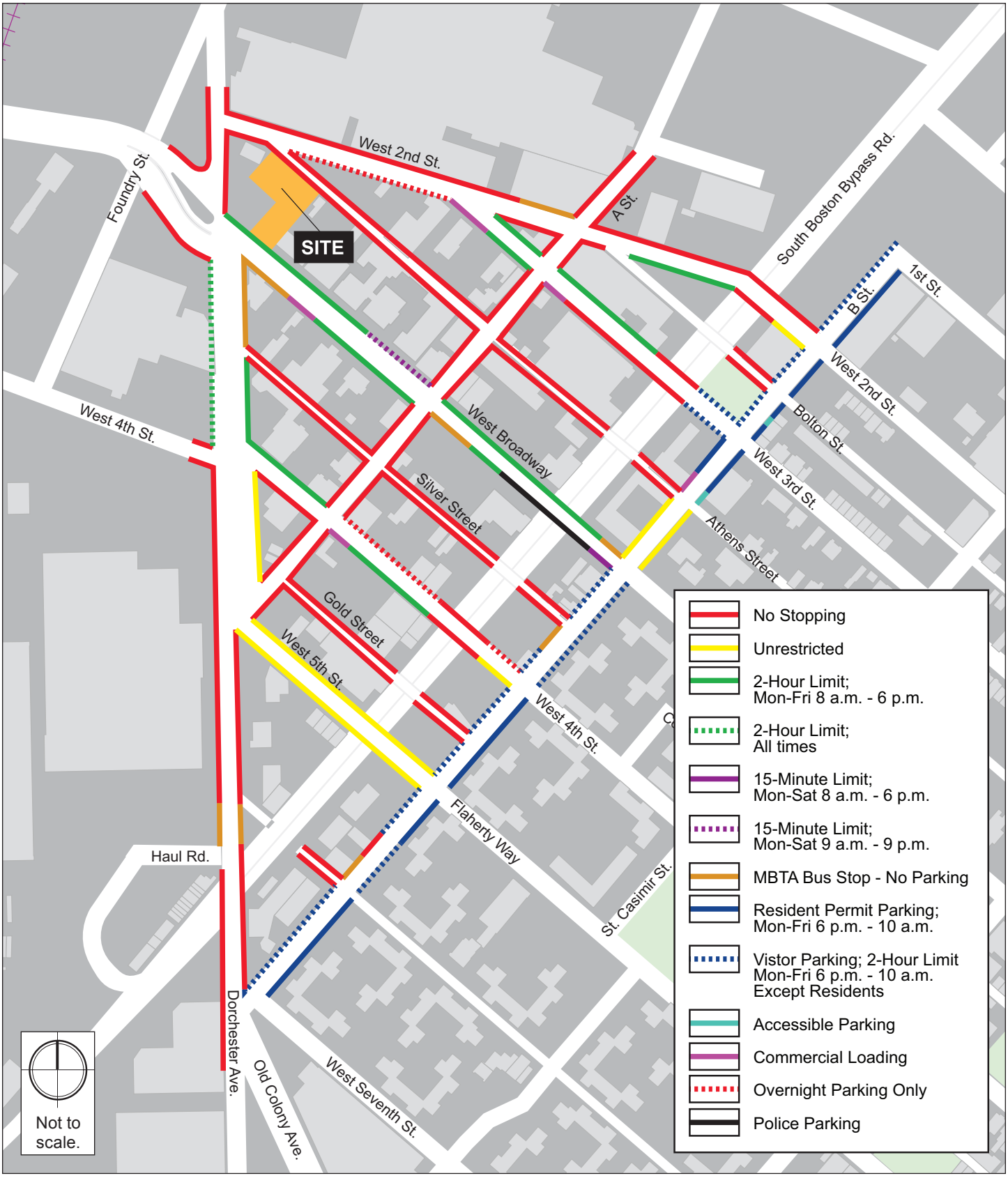


Figure 7-2.
On-Street Parking Regulations



Figure 7-3.
Car Sharing Locations

7.2.5 Existing Traffic Volumes

All of the existing vehicular traffic volumes were balanced with the intersections counted in 2014 to develop the 2014 Existing Condition vehicular traffic volumes. The 2014 Existing weekday morning and evening peak hour traffic volumes are shown in **Figure 7-4** and **Figure 7-5**, respectively.

7.2.6 Existing Bicycle Volumes and Accommodations

In recent years, bicycle use has increased dramatically throughout the City of Boston. The Project site is conveniently located in close proximity to several bicycle facilities. The City of Boston's "Bike Routes of Boston" map indicates that Dorchester Avenue and West Broadway are designated as advanced routes suitable for traffic-confident cyclists with on-road experience. A Street and West Second Street are designated as intermediate routes suitable for riders with some on-road experience. Within the past year, exclusive bicycle lanes have been installed along A Street in both the northbound and southbound directions through the study area, allowing for a safer and more attractive option for bicyclists throughout the Seaport, Fort Point, and West Broadway neighborhoods of South Boston.

Bicycle counts were conducted concurrent with the vehicular TMCs, and are presented in **Figure 7-6**. As shown in the figure, bicycle volumes are heaviest along Dorchester Avenue during the peak periods.

The Project site is also located in close proximity to a bicycle sharing station provided by Hubway. Hubway is the bicycle sharing system in the Boston area, which was launched in 2011 and consists of over 140 stations and 1,300 bicycles. The nearest Hubway station is located near the intersection of Dorchester Avenue at Gillette Park near the Dorchester Avenue/West Second Street intersection. **Figure 7-7** shows the Hubway stations within a quarter mile radius.

7.2.7 Existing Pedestrian Volumes and Accommodations

In general, sidewalks are provided along all roadways and are in good condition. Crosswalks and pedestrian signal equipment are also provided at the study area intersections. Adjacent to the Project site, the sidewalks are approximately 14 feet in width along West Broadway and approximately 9 feet in width along Dorchester Avenue. A Street provides pedestrian access between the West Broadway neighborhood, including Broadway Station, and the Fort Point and Seaport areas of South Boston. The sidewalks along A Street supply adequate capacity, being approximately 6 to 10 feet in width, and are generally in good condition. The sidewalks along Athens Street are approximately 4 to 5 feet in width, and are generally in good condition. The pedestrian activity along Athens Street is minimal.

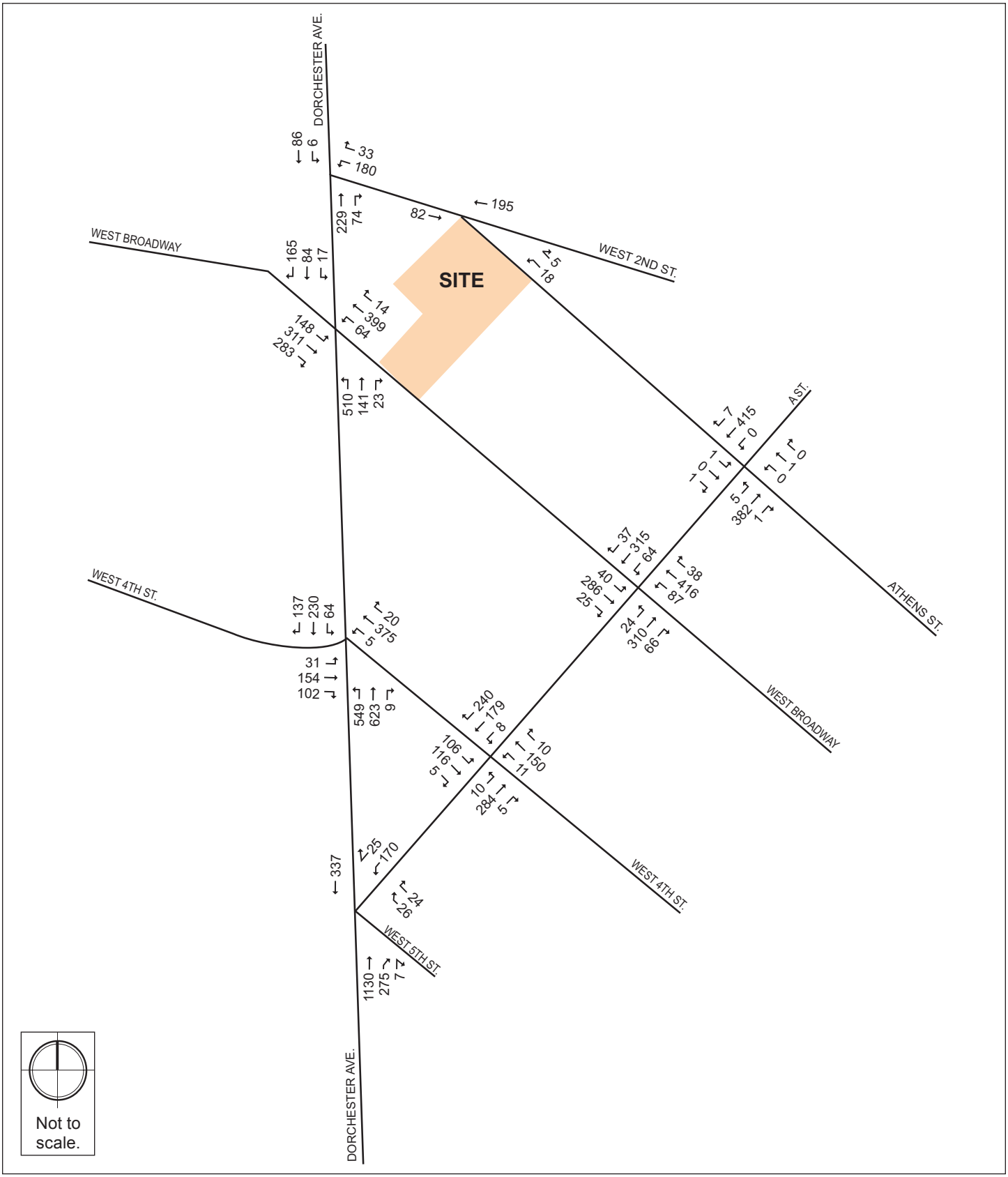


Figure 7-4.
Existing Condition (2014) Vehicular Traffic Volumes, a.m. Peak Hour

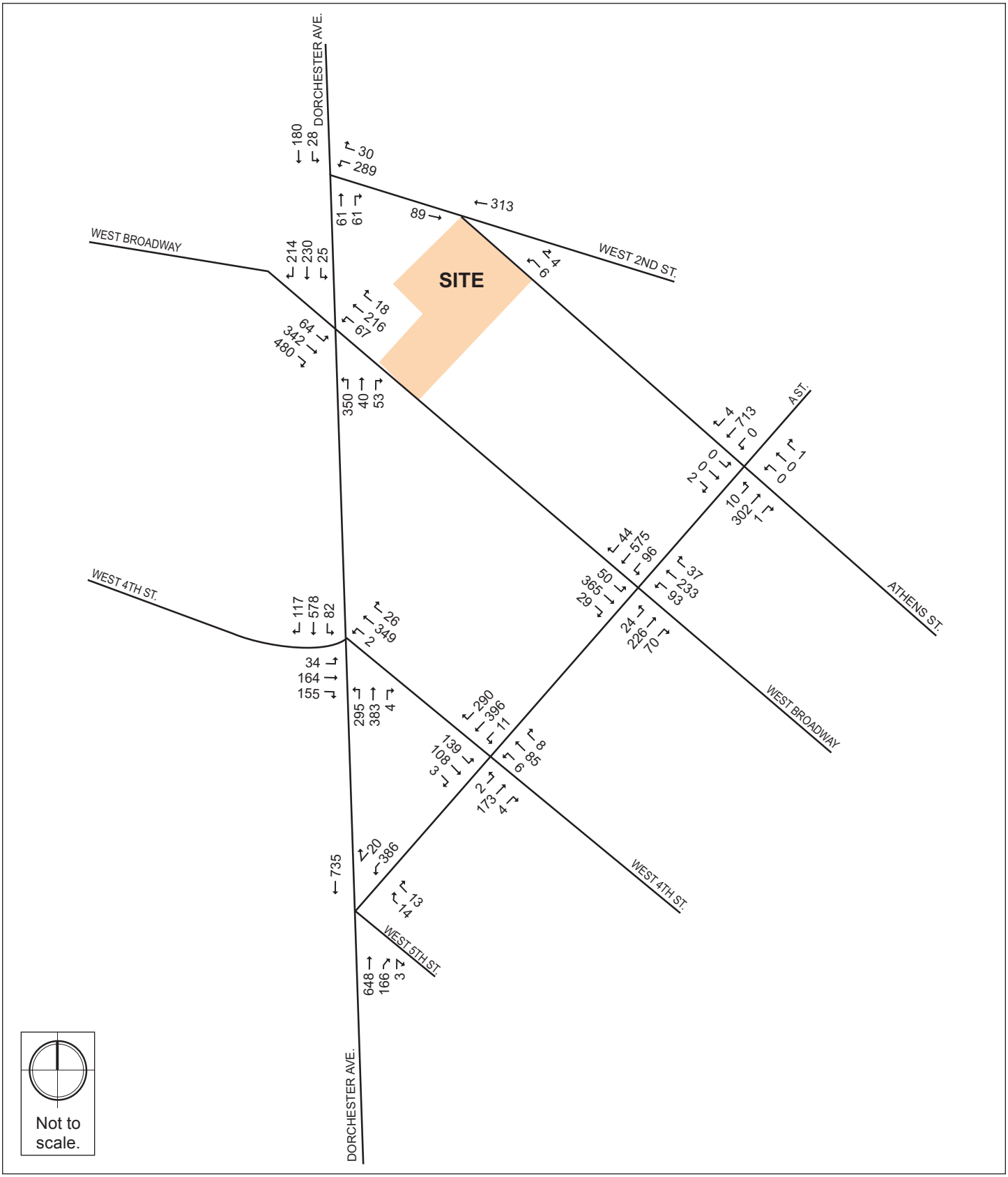


Figure 7-5.
Existing Condition (2014) Vehicular Traffic Volumes, p.m. Peak Hour

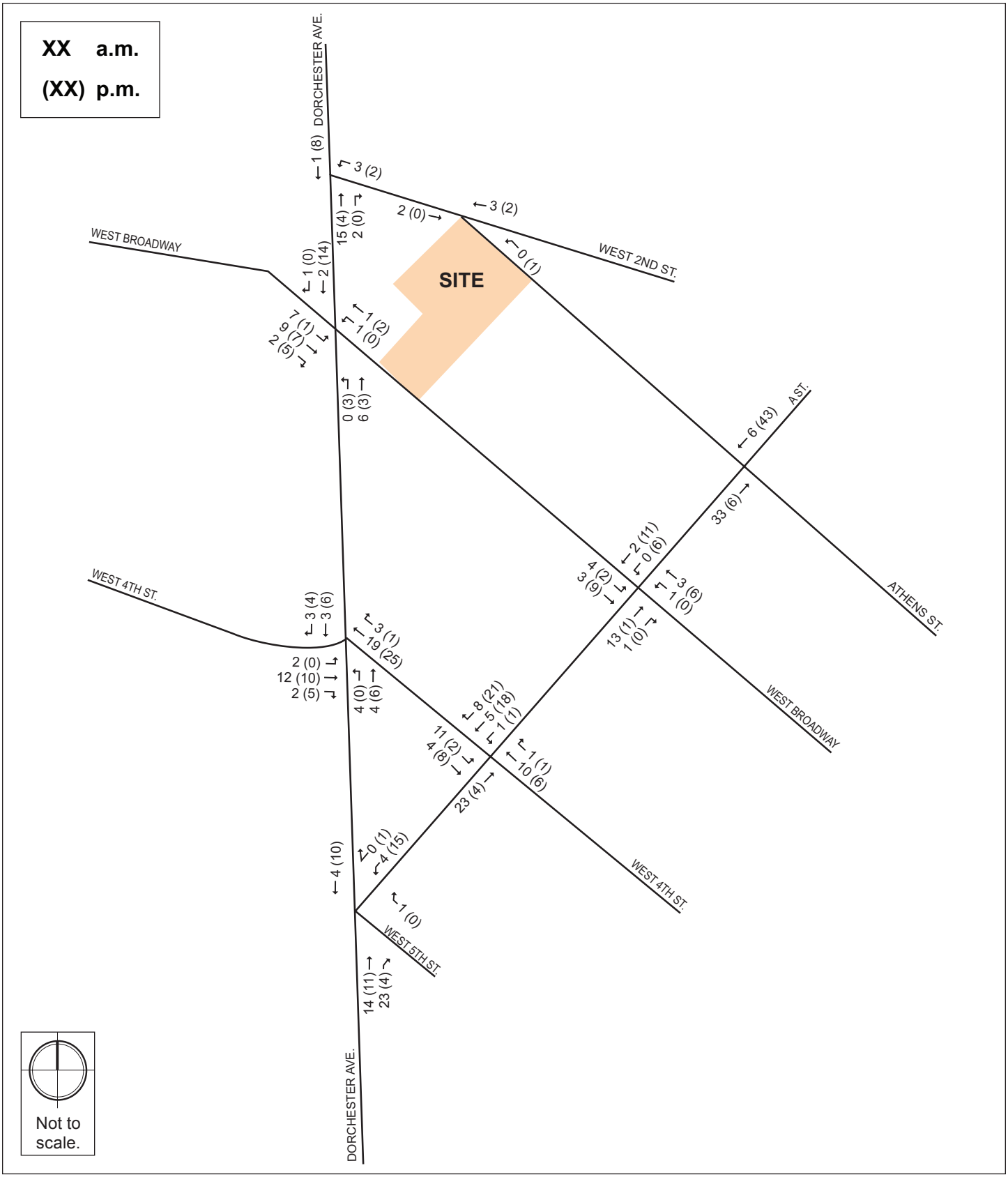


Figure 7-6.
Existing Condition (2014) Bicycle Volumes, a.m. and p.m. Peak Hour

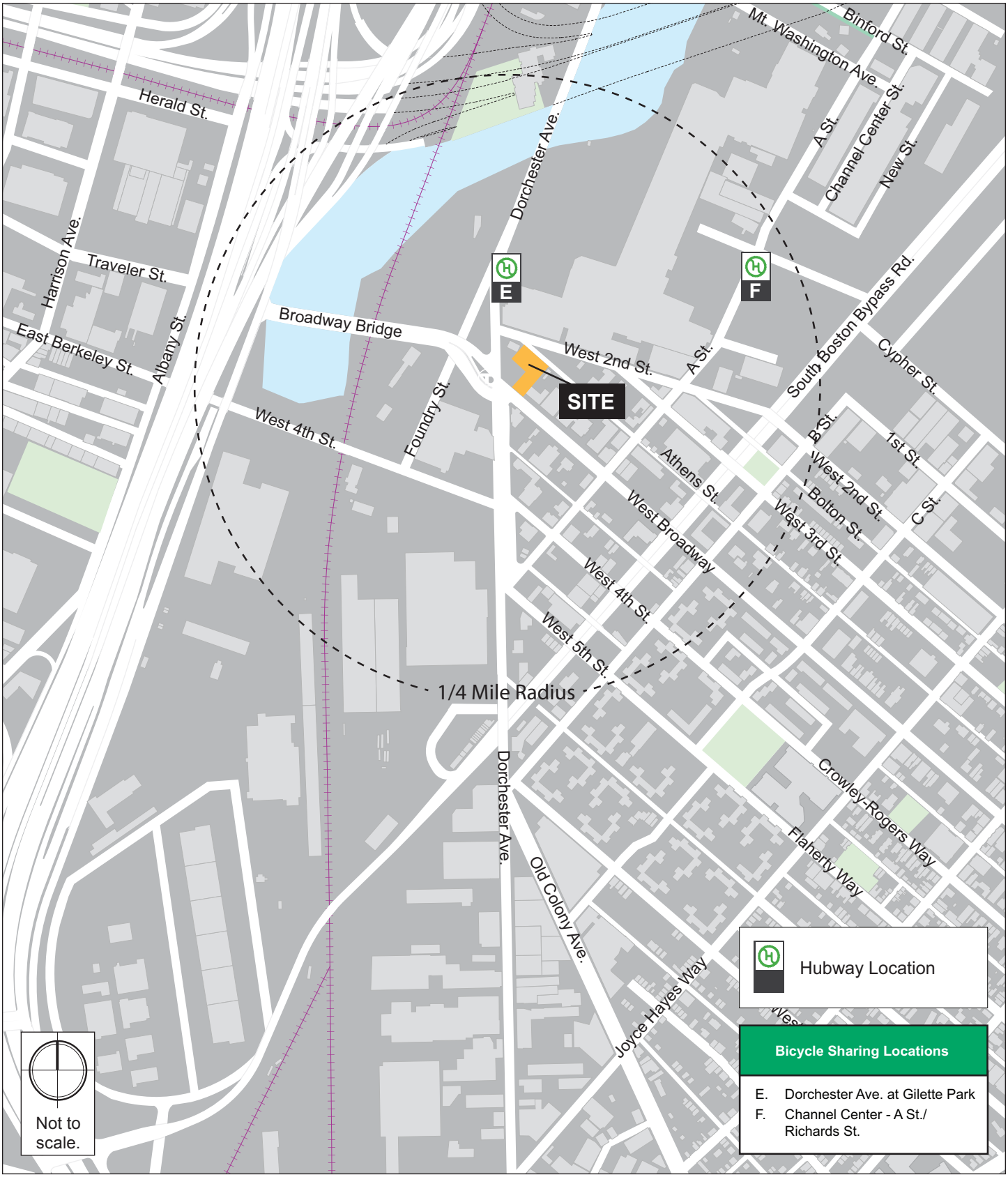


Figure 7-7.
Bicycle Sharing Locations

To determine the amount of pedestrian activity within the study area, pedestrian counts were conducted concurrent with the TMCs at the study area intersection and are presented in **Figure 7-8**. As shown in the figure, pedestrian activity is heavy throughout the study area.

7.2.8 Existing Transit Services

The Project site is located directly across West Broadway from the Broadway MBTA station. The Broadway Station provides access to the MBTA Red Line and three MBTA bus routes. The following section describes each public transportation route served by the Broadway MBTA station. **Figure 7-9** shows a map of all public transportation service located in close proximity of the Project Site.

MBTA Red Line – The Red Line branch of the MBTA subway system stops at Broadway Station. The Red Line provides access between Alewife Station to the north and both Ashmont Station and Braintree Station to the south. The Red Line also provides convenient access to downtown Boston, Cambridge, and Quincy. South Station, which provides access to bus terminals, commuter rail lines, regional rail lines, and Logan Airport via the MBTA Silver Line is one stop north of Broadway Station on the Red Line. The Red Line operates with headways of approximately 9 to 16 minutes.

MBTA Bus Route 9 – This route provides service between the City Point bus terminal in South Boston and Copley Square in the Back Bay. Weekday and Saturday service run from approximately 5:10 AM to 1:15 AM, with Sunday service running from approximately 6:00 AM to 1:15 AM. Headways range from approximately 5 minutes to 30 minutes.

MBTA Bus Route 11 – This route provides service between the City Point bus terminal in South Boston and downtown Boston. Weekday and Saturday service run from approximately 5:10 AM to 1:25 AM, with Sunday service running from approximately 6:15 AM to 1:30 AM. Headways range from approximately 10 minutes to 50 minutes.

MBTA Bus Route 47 – This route provides service between Broadway Station in South Boston and Central Square in Cambridge via Ruggles Station and the Fenway area. Weekday service runs from approximately 6:00 AM to 1:00 AM with headways of approximately 10 to 45 minutes. Saturday service runs from approximately 5:35 AM to 1:10 AM with headways of approximately 25 to 40 minutes. Sunday service runs from approximately 8:00 AM to 1:10 AM with headways of approximately 40 minutes to one hour.

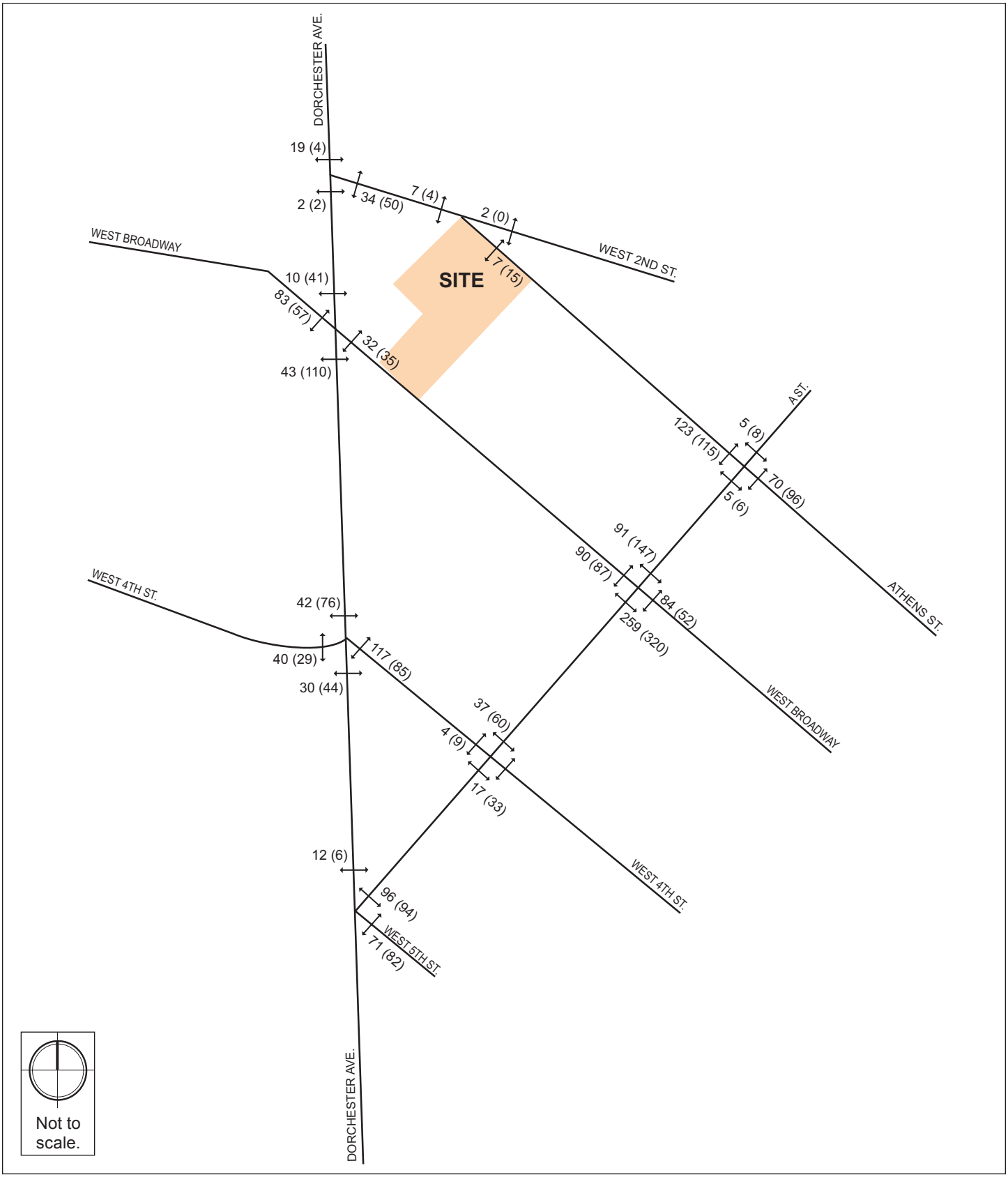


Figure 7-8.
Existing Condition (2014) Pedestrian Volumes, a.m. and p.m. Peak Hour

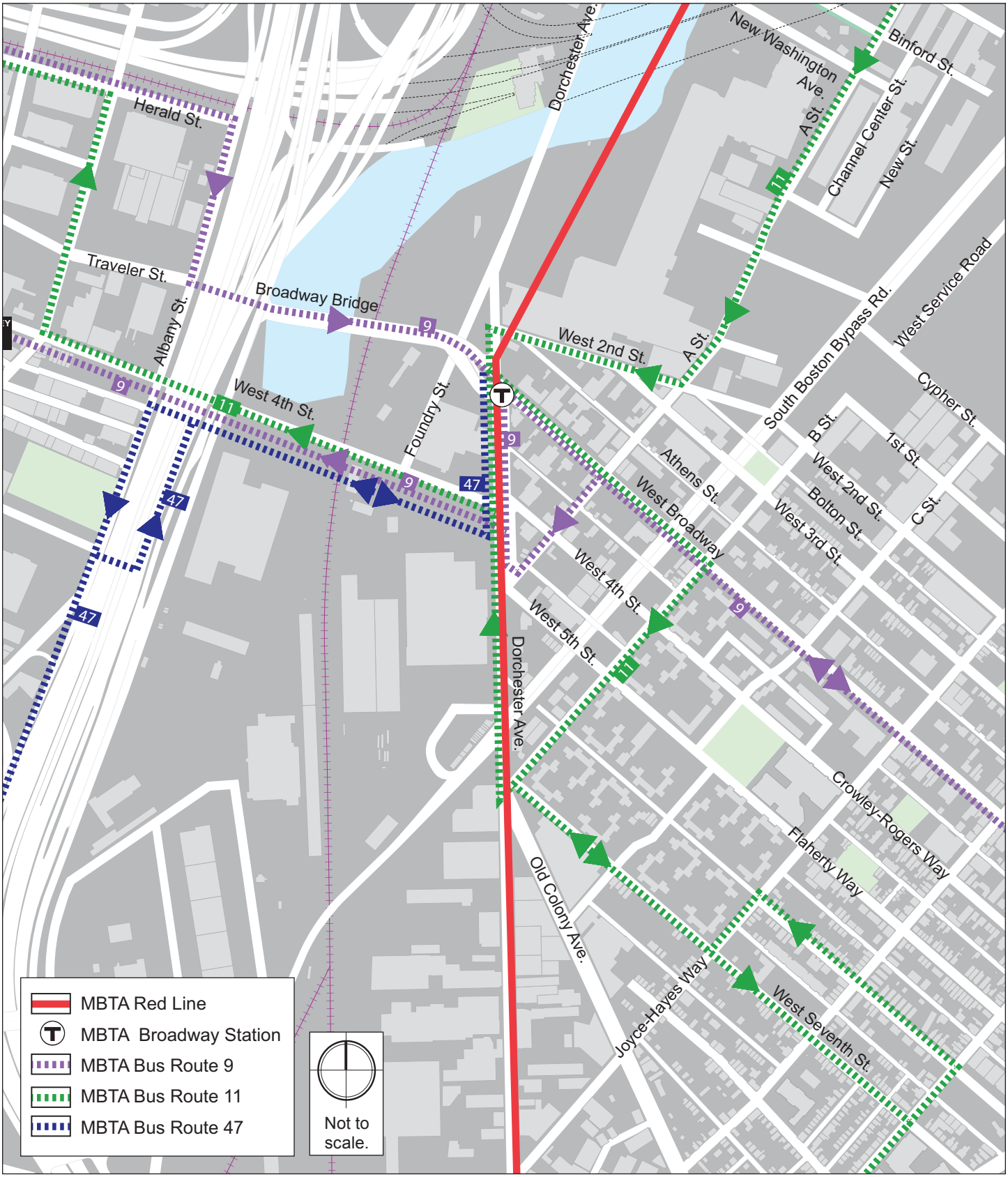


Figure 7-9.
Existing Transit Services

7.2.9 Existing Condition Traffic Operations Analysis

The criterion for evaluating traffic operations is level of service (LOS). The LOS for the vehicle operations and pedestrian operations in the 2014 Existing Condition have been calculated.

Trafficware's Synchro (version 8) software package was used to calculate average delay and associated LOS at the study area intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board's 2000 Highway Capacity Manual (HCM). Field observations were performed by HSH to collect intersection geometry such as number of turning lanes, lane length, and lane width that were then incorporated into the operations analysis.

LOS designations are based on average delay per vehicle for all vehicles entering an intersection. **Table 7-1** displays the intersection LOS criteria. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst (unacceptable) condition, with significant traffic delay. LOS D or better is typically considered acceptable in an urban area. However, LOS E or F is often typical for a stop-controlled minor street that intersects a major roadway.

Table 7-1. Vehicle Level of Service Criteria

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

Source: 2000 Highway Capacity Manual, Transportation Research Board.

In addition to delay and LOS, the operational capacity and vehicular queues are calculated and used to further quantify traffic operations at intersections. The following describes these other calculated measures.

The volume-to-capacity (v/c) ratio is a measure of congestion at an intersection approach. A v/c ratio below one indicates that the intersection approach has adequate capacity to process the arriving traffic volumes over the course of an hour. A v/c ratio of one or greater indicates that the traffic volume on the intersection approach exceeds capacity.

The 50th percentile queue length, measured in feet, represents the maximum queue length during a cycle of the traffic signal with typical (or median) entering traffic volumes.

The 95th percentile queue length, measured in feet, represents the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line during five percent of all signal cycles. The 95th percentile queue will not be seen during each cycle. The queue would be this long only five percent of the time and would typically not occur during off-peak hours. Since volumes fluctuate throughout the hour, the 95th percentile queue represents what can be considered a "worst case" scenario. Queues at the intersection are generally below the 95th percentile queue throughout the course of the peak hour. It is also unlikely that the 95th percentile queues for each approach to the intersection will occur simultaneously.

Table 7-2 and **Table 7-3** summarize the 2014 Existing Condition vehicle operations analysis for the study area intersection during the a.m. and p.m. peak hours, respectively. The detailed analysis sheets are provided in **Appendix D**.

Table 7-2. Existing Condition (2014), Level Of Service Summary, a.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Dorchester Avenue at A Street	**B**	**11.0**	**-**	**-**	**-**
Dorchester Avenue NB thru | thru	B	13.7	0.61	248	306
Dorchester Avenue NB right	A	0.3	0.21	0	0
Dorchester Avenue SB thru | thru	A	2.2	0.18	14	14
A Street SWB left/right	C	27.1	0.51	133	208
Dorchester Avenue at West Fourth Street	**C**	**31.2**	**-**	**-**	**-**
West Fourth Street EB left/thru	C	28.5	0.38	96	159
West Fourth Street EB right	A	5.5	0.18	0	37
West Fourth Street WB left/thru/right	D	37.9	0.68	138	283
Dorchester Avenue NB left	D	45.8	0.86	328	#476
Dorchester Avenue NB thru | thru	B	17.7	0.36	142	200
Dorchester Avenue NB right	A	6.9	0.01	0	m1
Dorchester Avenue SB left/thru | thru	D	43.1	0.60	108	153
Dorchester Avenue SB right	B	13.0	0.37	5	72
A Street at West Fourth Street	**D**	**47.4**	**-**	**-**	**-**
West Fourth Street EB left/thru/right	C	30.1	0.39	133	188
West Fourth Street WB left/thru/right	B	14.8	0.22	68	104
A Street NB left/thru/right	C	26.9	0.44	146	223
A Street SB left/thru/right	F	87.2	0.65	251	354
Dorchester Avenue at West Broadway	**E**	**62.3**	**-**	**-**	**-**
West Broadway EB left	D	41.5	0.61	100	#220
West Broadway EB thru	C	28.0	0.47	194	289
West Broadway EB right	A	2.2	0.28	0	40
West Broadway WB left	C	21.5	0.20	37	m57
West Broadway WB thru/right	C	25.5	0.54	271	#385
Dorchester Avenue NB left	F	197.2	1.35	~315	#547
Dorchester Avenue NB left/thru | thru/right	B	15.4	0.18	34	m64
Dorchester Avenue SB left/thru	D	47.5	0.52	62	116
Dorchester Avenue SB right	A	0.2	0.13	0	0
A Street at West Broadway	**D**	**38.2**	**-**	**-**	**-**
West Broadway EB left/thru | thru/right	C	22.8	0.21	118	167
West Broadway WB left/thru/right	B	18.9	0.60	207	398
A Street NB left/thru/right	E	70.9	0.90	293	378
A Street SB left	C	33.6	0.43	34	67
A Street SB thru/right	D	45.3	0.70	203	265

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Unsignalized Intersections					
Dorchester Avenue at West Second Street	**-**	**-**	**-**	**-**	**-**
West Second Street WB left/right	C	15.5	0.41	-	50
Dorchester Avenue NB thru/right	A	0.0	0.20	-	0
Dorchester Avenue SB left	A	8.3	0.01	-	1
Dorchester Avenue SB thru	A	0.0	0.06	-	0
West Second Street at Athens Street	**-**	**-**	**-**	**-**	**-**
West Second Street EB thru	A	0.0	0.10	-	0
West Second Street WB thru	A	0.0	0.13	-	0
Athens Street NB left/right	B	11.0	0.06	-	5
A Street at Athens Street	**-**	**-**	**-**	**-**	**-**
Athens Street EB left/thru/right	B	14.6	0.01	-	0
Athens Street WB left/thru/right	C	18.1	0.01	-	1
A Street NB left/thru/right	A	0.2	0.01	-	0
A Street SB left/thru/right	A	0.0	0.00	-	0

95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after two cycles.

~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is the maximum after two cycles.

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

Table 7-3. Existing Condition (2014), Level Of Service Summary, p.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Dorchester Avenue at A Street	**B**	**13.4**	**-**	**-**	**-**
Dorchester Avenue NB thru | thru	B	17.2	0.49	180	187
Dorchester Avenue NB right	A	0.2	0.15	0	0
Dorchester Avenue SB thru | thru	B	13.2	0.46	266	286
A Street SWB left/right	B	13.2	0.67	120	m170
Dorchester Avenue at West Fourth Street	**D**	**38.9**	**-**	**-**	**-**
West Fourth Street EB left/thru	C	32.2	0.48	117	183
West Fourth Street EB right	A	5.3	0.29	0	43
West Fourth Street WB left/thru/right	F	92.9	0.68	221	m287
Dorchester Avenue NB left	D	42.8	0.71	199	287
Dorchester Avenue NB thru | thru	C	23.1	0.21	114	164
Dorchester Avenue NB right	A	7.0	0.00	0	m0
Dorchester Avenue SB left/thru | thru	C	31.8	0.61	222	282
Dorchester Avenue SB right	B	13.1	0.20	27	m51
A Street at West Fourth Street	**C**	**29.7**	**-**	**-**	**-**
West Fourth Street EB left/thru/right	D	36.7	0.45	133	218
West Fourth Street WB left/thru/right	C	25.5	0.15	42	76
A Street NB left/thru/right	B	16.1	0.24	78	112
A Street SB left/thru/right	C	31.8	0.84	176	#426
Dorchester Avenue at West Broadway	**C**	**34.4**	**-**	**-**	**-**
West Broadway EB left	D	36.0	0.29	35	79
West Broadway EB thru	D	41.8	0.68	229	#407
West Broadway EB right	A	2.8	0.43	0	53
West Broadway WB left	D	47.8	0.53	50	m#84
West Broadway WB thru/right	D	36.1	0.51	170	m244
Dorchester Avenue NB left	E	67.7	0.97	~289	#416
Dorchester Avenue NB left/thru | thru/right	B	12.9	0.09	11	m31
Dorchester Avenue SB left/thru	E	60.6	0.84	170	#278
Dorchester Avenue SB right	A	0.2	0.16	0	0
A Street at West Broadway	**C**	**32.4**	**-**	**-**	**-**
West Broadway EB left/thru | thru/right	C	20.3	0.35	146	211
West Broadway WB left/thru/right	D	39.3	0.69	197	#379
A Street NB left/thru/right	C	34.3	0.67	189	116
A Street SB left	B	19.3	0.29	40	72
A Street SB thru/right	D	37.9	0.87	362	472

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Unsignalized Intersections					
Dorchester Avenue at West Second Street	-	-	-	-	-
West Second Street WB left/right	C	24.1	0.69	-	133
Dorchester Avenue NB thru/right	A	0.0	0.08	-	0
Dorchester Avenue SB left	A	7.8	0.03	-	2
Dorchester Avenue SB thru	A	0.0	0.13	-	0
West Second Street at Athens Street	-	-	-	-	-
West Second Street EB thru	A	0.0	0.07	-	0
West Second Street WB thru	A	0.0	0.74	-	0
Athens Street NB left/right	C	21.2	0.05	-	4
A Street at Athens Street	-	-	-	-	-
Athens Street EB left/thru/right	B	14.0	0.01	-	1
Athens Street WB left/thru/right	A	9.7	0.01	-	0
A Street NB left/thru/right	A	0.4	0.01	-	1
A Street SB left/thru/right	A	0.0	0.00	-	0

The intersection of Dorchester Avenue at A Street currently operates at LOS B during both the weekday a.m. and p.m. peak hours. The longest queues at the intersection occur in the Dorchester Avenue northbound through lanes during the a.m. peak hour and in the southbound through lanes during the p.m. peak hour.

The intersection of Dorchester Avenue at West Fourth Street currently operates at LOS C during the weekday a.m. peak hour and at LOS D during the weekday p.m. peak hour. The West Fourth Street westbound approach currently operates at LOS F during the p.m. peak hour. The longest queues at the intersection occur in the Dorchester Avenue northbound left-turn lane during the a.m. peak hour and along both the West Fourth Street westbound approach and the Dorchester Avenue southbound approach during the p.m. peak hour.

The intersection of A Street at West Fourth Street currently operates at LOS D during the weekday a.m. peak hour and at LOS C during the weekday p.m. peak hour. The A Street southbound approach currently operates at LOS F during the a.m. peak hour. The longest queues at the intersection occur along the A Street southbound approach during both the a.m. and p.m. peak hours.

The intersection of Dorchester Avenue at West Broadway currently operates at LOS E during the weekday a.m. peak hour and at LOS C during the weekday p.m. peak hour. The Dorchester Avenue northbound left-turn lane currently operates at LOS F during the a.m. peak hour and at LOS E during the p.m. peak hour. The Dorchester Avenue southbound left/through movement group currently operates at LOS E during the p.m. peak hour. The longest queues at the

intersection occur in the Dorchester Avenue northbound left-turn lane during both the a.m. and p.m. peak hour.

The intersection of A Street at West Broadway currently operates at LOS D during the weekday a.m. peak hour and at LOS C during the weekday p.m. peak hour. The A Street northbound approach currently operates at LOS E during the a.m. peak hour. The longest average queues at the intersection occur along the A Street northbound approach during the a.m. peak hour and along the A Street southbound through/right movement during the p.m. peak hour.

At the intersection of Dorchester Avenue at West Second Street, all movement groups currently operate at LOS C or better during both the weekday a.m. and p.m. peak hours.

At the intersection of West Second Street at Athens Street, all movement groups currently operate at LOS B or better during the weekday a.m. peak hour and at LOS C or better during the weekday p.m. peak hour.

At the intersection of A Street at Athens Street, all movement groups currently operate at LOS C or better during the weekday a.m. peak hour and at LOS B or better during the weekday p.m. peak hour.

7.3 No-Build Condition

The No-Build Condition reflects a future scenario that incorporates anticipated traffic volume changes associated with background traffic growth independent of any specific project, traffic associated with other planned specific developments, and planned infrastructure improvements that will affect travel patterns throughout the study area. These infrastructure improvements include roadway, public transportation, pedestrian and bicycle improvements.

7.3.1 Background Traffic Growth

The methodology to account for generic future background traffic growth (vehicular and pedestrian), independent of this Project, may be affected by changes in demographics, smaller scale development projects, or projects unforeseen at this time. Based on a review of recent and historic traffic data collected recently and to account for any additional unforeseen traffic growth, a one percent per year annual traffic growth rate was used.

7.3.2 Specific Development Traffic Growth

Traffic volumes associated with the larger or closer known development projects that will affect traffic patterns throughout the study area within the future analysis time horizon were specifically accounted for in the future scenarios. The following projects are located in the vicinity of the study area (the locations of these projects are shown in **Figure 7-10)**.



Figure 7-10.
Background Project Locations

45 West Third – This project is located about a quarter-mile from the Broadway Station and consists of 164 residential units, approximately 2,200 square feet of ground floor retail, a mezzanine, and 115 parking spaces. This project has not been approved by the BRA.

South Boston Boutique Hotel – This project is across the street from Broadway Station at 6 West Broadway and will be a hotel consisting of 156 rooms. The project has been approved by the BRA, but construction has not begun.

181-185 West First Street and 184, 190, and 206 West Second Street – This mixed-use project consists of 97 residential rental units, approximately 5,010 square feet of ground floor commercial space, and 115 parking spaces. It has been approved by the BRA, but construction has not begun.

D Street Development – This project is being developed in conjunction with the Convention Center and includes 500 hotel rooms, 26,300 square feet of retail space, and a 1,350 space garage. This project is currently under construction.

275 Albany Street – This project will consist of up to 380 residential units and up to 180 parking spaces. This project has been approved by the BRA and is expected to begin construction in late 2013/early 2014.

11 West Broadway – This project is adjacent to Broadway Station and consists of 50 residential units, 8,000 square feet of retail space, and parking spaces located underneath the 6-story building. This project has been approved by the BRA and is currently completed.

Ink Block (300 Harrison Avenue) – This project consists of 471 residential units, approximately 85,000 square feet of retail space (including a supermarket), and 411 parking spaces. This project has been approved by the BRA and is currently under construction.

345 Harrison Avenue – 345 Harrison – This mixed-use development is located less than a half-mile from the Broadway Station and consists of 610 residential units, approximately 30,000 square feet of retail/restaurant space, and approximately 260 parking spaces within two buildings. This project has been approved by the BRA.

7.4 Proposed Infrastructure Improvements

A review of planned improvements to roadway, transit, bicycle, and pedestrian facilities was conducted to determine if there are any nearby improvement projects in the vicinity of the study area. Based on this review, the following improvements are proposed within the study area:

West Second Street/A Street – Improvements are proposed at this intersection as part of the Channel Center development. New traffic signal equipment, signage, and pavement markings

will be provided at the intersection. Pedestrian signal equipment will also be added at the intersection.

West Broadway/A Street – Improvements are proposed at this intersection as part of the Channel Center development. New traffic signal equipment, signage, and pavement markings will be provided at the intersection. Pedestrian signal equipment will also be added at the intersection.

7.4.1 No-Build Traffic Volumes

The one-percent per year annual growth rate was applied to the 2014 Existing Condition traffic volumes, then the traffic volumes associated with the background development projects listed above were added to develop the 2019 No-Build Condition traffic volumes. The 2019 No-Build weekday morning and evening peak hour traffic volumes are shown on **Figure 7-11** and **Figure 7-12**, respectively.

7.4.2 No-Build Condition Traffic Operations Analysis

The 2019 No-Build Condition analysis uses the same methodology as the 2014 Existing Condition analysis. **Table 7-4** and **Table 7-5** present the 2019 No-Build Condition operations analysis for the a.m. and p.m. peak hours, respectively. The shaded cells in the tables indicate a worsening in LOS between the 2014 Existing Condition and the 2019 No-Build Condition. The detailed analysis sheets are provided in **Appendix D**.

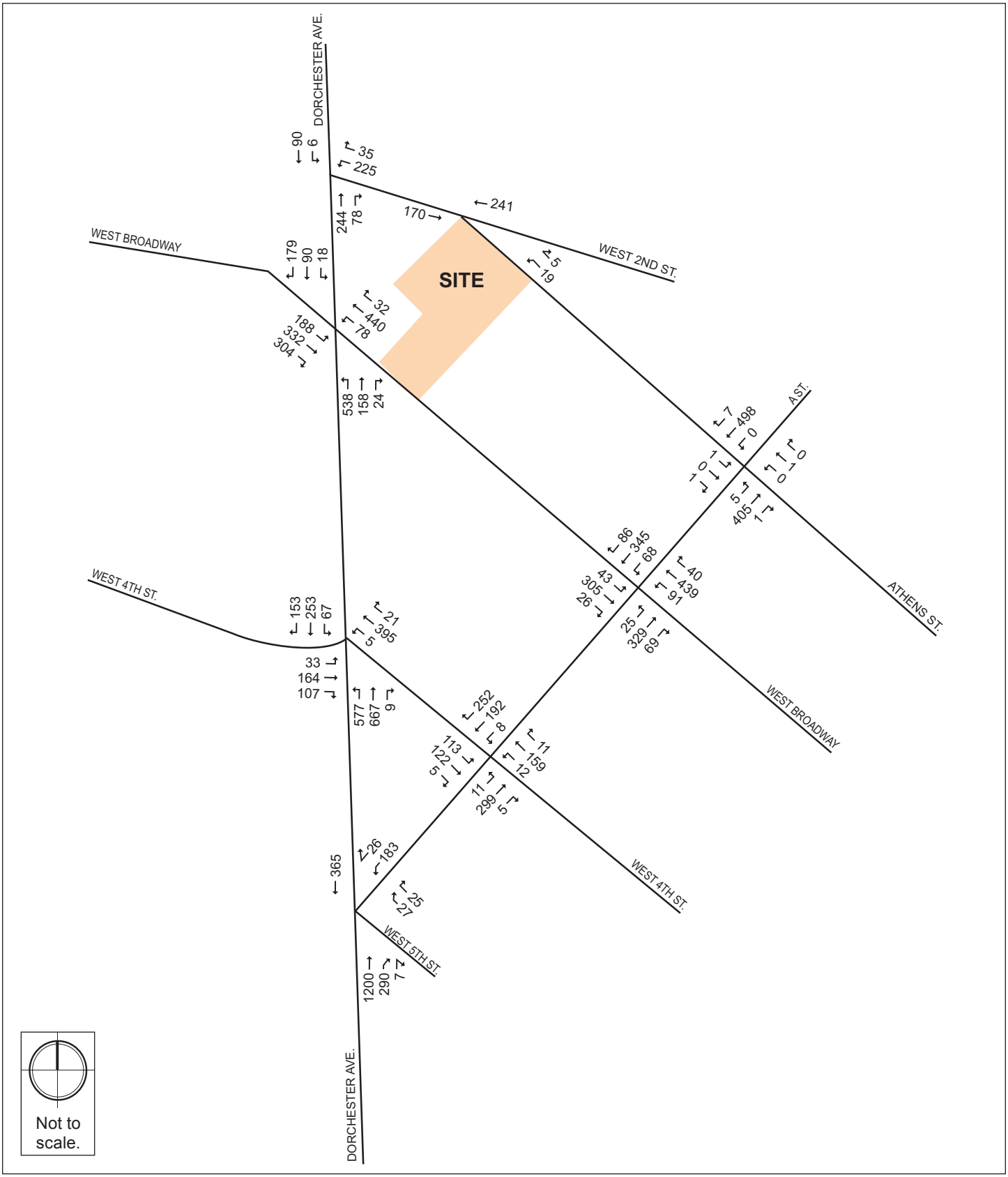


Figure 7-11.
No-Build Condition (2019) Vehicular Traffic Volumes, a.m. Peak Hour

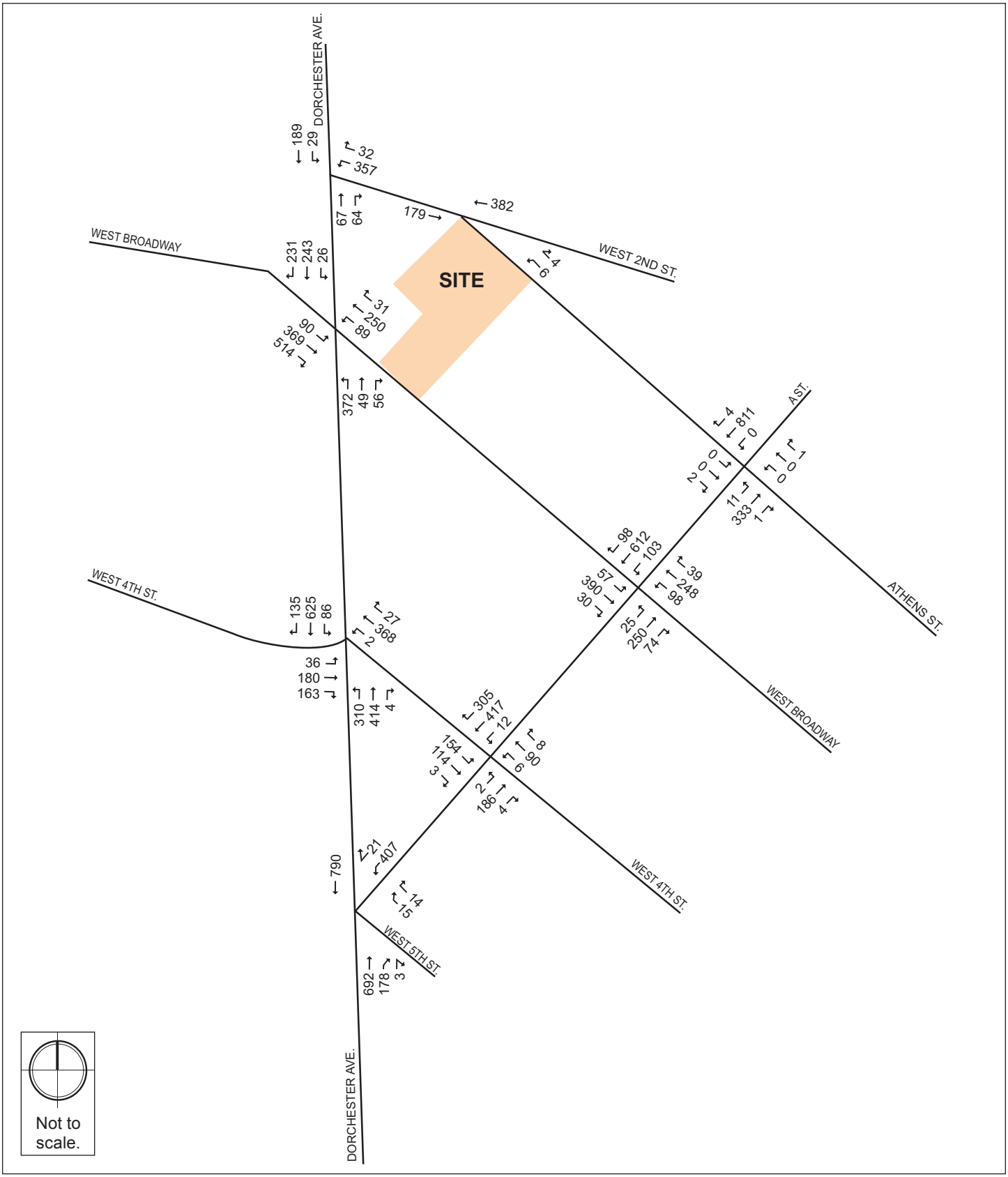


Figure 7-12.
No-Build Condition (2019) Vehicular Traffic Volumes, p.m. Peak Hour

Table 7-4. No-Build Condition (2019) Level of Service Summary, a.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Dorchester Avenue at A Street	**B**	**11.5**	**-**	**-**	**-**
Dorchester Avenue NB thru | thru	B	14.4	0.64	274	336
Dorchester Avenue NB right	A	0.3	0.23	0	0
Dorchester Avenue SB thru | thru	A	2.2	0.19	14	14
A Street SWB left/right	C	28.3	0.54	138	m219
Dorchester Avenue at West Fourth Street	**D**	**35.9**	**-**	**-**	**-**
West Fourth Street EB left/thru	C	29.4	0.42	103	170
West Fourth Street EB right	A	5.5	0.19	0	37
West Fourth Street WB left/thru/right	D	49.0	0.72	165	317
Dorchester Avenue NB left	D	54.1	0.92	357	#503
Dorchester Avenue NB thru | thru	B	19.3	0.38	159	218
Dorchester Avenue NB right	A	7.2	0.01	0	m1
Dorchester Avenue SB left/thru | thru	D	45.6	0.68	120	167
Dorchester Avenue SB right	B	14.5	0.42	27	84
A Street at West Fourth Street	**D**	**38.8**	**-**	**-**	**-**
West Fourth Street EB left/thru/right	C	32.2	0.42	142	202
West Fourth Street WB left/thru/right	B	14.8	0.24	73	110
A Street NB left/thru/right	C	26.0	0.47	156	237
A Street SB left/thru/right	E	62.7	0.68	207	326
Dorchester Avenue at West Broadway	**E**	**74.5**	**-**	**-**	**-**
West Broadway EB left	F	84.8	0.95	~175	#314
West Broadway EB thru	C	28.8	0.51	210	312
West Broadway EB right	A	2.3	0.30	0	41
West Broadway WB left	C	28.1	0.26	40	84
West Broadway WB thru/right	C	31.6	0.62	291	#473
Dorchester Avenue NB left	F	235.5	1.44	~374	#608
Dorchester Avenue NB left/thru | thru/right	B	16.1	0.20	41	m73
Dorchester Avenue SB left/thru	D	49.4	0.56	68	124
Dorchester Avenue SB right	A	0.2	0.14	0	0
A Street at West Broadway	**D**	**45.3**	**-**	**-**	**-**
West Broadway EB left/thru | thru/right	B	11.2	0.25	55	92
West Broadway WB left/thru/right	C	20.5	0.68	229	405
A Street NB left/thru/right	F	114.3	1.03	252	#416
A Street SB left/thru	C	36.0	0.42	31	68
A Street SB right	D	39.7	0.83	226	321

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Unsignalized Intersections					
Dorchester Avenue at West Second Street	**-**	**-**	**-**	**-**	**-**
West Second Street WB left/right	C	17.9	0.52	-	74
Dorchester Avenue NB thru/right	A	0.0	0.21	-	0
Dorchester Avenue SB left	A	8.3	0.01	-	1
Dorchester Avenue SB thru	A	0.0	0.07	-	0
West Second Street at Athens Street	**-**	**-**	**-**	**-**	**-**
West Second Street EB thru	A	0.0	0.20	-	0
West Second Street WB thru	A	0.0	0.16	-	0
Athens Street NB left/right	B	13.3	0.09	-	7
A Street at Athens Street	**-**	**-**	**-**	**-**	**-**
Athens Street EB left/thru/right	C	16.7	0.01	-	1
Athens Street WB left/thru/right	C	20.9	0.01	-	1
A Street NB left/thru/right	A	0.2	0.01	-	0
A Street SB left/thru/right	A	0.0	0.00	-	0

95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after two cycles.

~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is the maximum after two cycles.

dr Defacto Right Lane. The shared lane operates as an exclusive right-turn lane.

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

Table 7-5. No-Build Condition (2019) Level of Service Summary, p.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Dorchester Avenue at A Street	**B**	**14.0**	**-**	**-**	**-**
Dorchester Avenue NB thru | thru	B	17.7	0.52	197	202
Dorchester Avenue NB right	A	0.2	0.16	0	0
Dorchester Avenue SB thru | thru	B	13.1	0.50	292	288
A Street SWB left/right	B	16.2	0.70	165	m169
Dorchester Avenue at West Fourth Street	**D**	**41.4**	**-**	**-**	**-**
West Fourth Street EB left/thru	C	33.8	0.54	130	201
West Fourth Street EB right	A	5.2	0.30	0	43
West Fourth Street WB left/thru/right	F	101.8	0.71	237	m290
Dorchester Avenue NB left	D	47.1	0.78	213	#319
Dorchester Avenue NB thru | thru	C	23.8	0.23	127	177
Dorchester Avenue NB right	A	6.8	0.00	0	m0
Dorchester Avenue SB left/thru | thru	C	33.1	0.67	238	311
Dorchester Avenue SB right	B	14.1	0.24	35	m59
A Street at West Fourth Street	**E**	**65.6**	**-**	**-**	**-**
West Fourth Street EB left/thru/right	D	39.9	0.49	151	238
West Fourth Street WB left/thru/right	F	102.4	0.15	44	78
A Street NB left/thru/right	B	16.3	0.26	85	121
A Street SB left/thru/right	F	85.2	0.89	403	#653
Dorchester Avenue at West Broadway	**D**	**46.9**	**-**	**-**	**-**
West Broadway EB left	D	40.3	0.42	53	#126
West Broadway EB thru	D	38.7	0.63	236	#412
West Broadway EB right	A	2.9	0.46	0	55
West Broadway WB left	D	49.1	0.57	65	#150
West Broadway WB thru/right	D	36.0	0.56	200	#304
Dorchester Avenue NB left	F	138.5	1.19	~330	#464
Dorchester Avenue NB left/thru | thru/right	B	13.7	0.11	15	m39
Dorchester Avenue SB left/thru	E	62.4	0.86	179	#303
Dorchester Avenue SB right	A	0.2	0.17	0	0
A Street at West Broadway	**D**	**36.2**	**-**	**-**	**-**
West Broadway EB left/thru | thru/right	B	19.7	0.44	105	151
West Broadway WB left/thru/right	D	42.3	0.86	220	#401
A Street NB left/thru/right	D	41.1	0.77	160	#294
A Street SB left/thru	B	17.0	0.29	36	74
A Street SB right	D	44.2	0.94	378	#624

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Unsignalized Intersections					
Dorchester Avenue at West Second Street	-	-	-	-	-
West Second Street WB left/right	E	40.2	0.87	-	238
Dorchester Avenue NB thru/right	A	0.0	0.09	-	0
Dorchester Avenue SB left	A	7.8	0.03	-	2
Dorchester Avenue SB thru	A	0.0	0.13	-	0
West Second Street at Athens Street	-	-	-	-	-
West Second Street EB thru	A	0.0	0.14	-	0
West Second Street WB thru	A	0.0	0.90	-	0
Athens Street NB left/right	D	33.4	0.09	-	7
A Street at Athens Street	-	-	-	-	-
Athens Street EB left/thru/right	C	15.3	0.01	-	1
Athens Street WB left/thru/right	A	10.0	0.01	-	0
A Street NB left/thru/right	A	0.5	0.02	-	1
A Street SB left/thru/right	A	0.0	0.00	-	0

The intersection of Dorchester Avenue at A Street will continue to operate at LOS B during both the weekday a.m. and p.m. peak hours under the No-Build Condition. The longest queues at the intersection will continue to occur in the Dorchester Avenue northbound through lanes during the a.m. peak hour and in the southbound through lanes during the p.m. peak hour.

The intersection of Dorchester Avenue at West Fourth Street will decline from LOS C to LOS D during the weekday a.m. peak hour and will continue to operate at LOS D during the weekday p.m. peak hour under the No-Build Condition. The West Fourth Street westbound approach will continue to operate at LOS F during the a.m. peak hour. The longest queues at the intersection will continue to occur in the Dorchester Avenue northbound left-turn lane during the a.m. peak hour and along both the West Fourth Street westbound approach and the Dorchester Avenue southbound approach during the p.m. peak hour.

The intersection of A Street at West Fourth Street will continue to operate at LOS D during the weekday a.m. peak hour and will decline from LOS C to LOS E during the weekday p.m. peak hour under the No-Build Condition. The A Street southbound approach will improve from LOS F to LOS E during the a.m. peak hour. The West Fourth Street westbound approach and the A Street southbound approach will both decline from LOS C to LOS F during the p.m. peak hour. The longest queues at the intersection will continue to occur along the A Street southbound approach during both the a.m. and p.m. peak hours.

The intersection of Dorchester Avenue at West Broadway will continue to operate at LOS E during the weekday a.m. peak hour and will decline from LOS C to LOS D during the weekday p.m. peak hour under the No-Build Condition. The West Broadway eastbound left-turn lane will decline from LOS D to LOS F during the a.m. peak hour. The Dorchester Avenue northbound left-turn lane will continue to operate at LOS F during the a.m. peak hour and will decline from LOS E to LOS F during the p.m. peak hour. The Dorchester Avenue southbound left/through movement group will continue to operate at LOS E during the p.m. peak hour. The longest queues at the intersection will continue to occur in the Dorchester Avenue northbound left-turn lane during both the a.m. and p.m. peak hour.

The intersection of A Street at West Broadway will continue to operate at LOS D during the weekday a.m. peak hour and will decline from LOS C to LOS D during the weekday p.m. peak hour under the No-Build Condition. The West Broadway eastbound approach will improve from LOS C to LOS B during both the a.m. and p.m. peak hours. The West Broadway westbound approach will decline from LOS B to LOS C during the a.m. peak hour. The A Street northbound approach will decline from LOS E to LOS F during the a.m. peak hour and will decline from LOS C to LOS D during the p.m. peak hour. The longest average queues at the intersection will continue to occur along the A Street northbound approach during the a.m. peak hour and along the A Street southbound through/right movement during the p.m. peak hour.

At the intersection of Dorchester Avenue at West Second Street, operations for the West Second Street westbound approach will decline from LOS C to LOS E during the weekday p.m. peak hour under the No-Build Condition. Operations at this intersection will remain the same for all other approaches at this intersection during both the a.m. and p.m. peak hours.

At the intersection of West Second Street at Athens Street, operations for the Athens Street northbound approach will decline from LOS C to LOS D during the weekday p.m. peak hour under the No-Build Condition. Operations at this intersection will remain the same for all other approaches at this intersection during both the a.m. and p.m. peak hours.

At the intersection of A Street at Athens Street, operations on the Athens Street eastbound approach will decline from LOS B to LOS C during both the weekday a.m. and p.m. peak hours under the No-Build Condition. Operations at this intersection will remain the same for all other approaches at this intersection during both the a.m. and p.m. peak hours.

7.5 Build Condition

The Project consists of demolishing the existing building and parking lot that are on-site and constructing a new 109,000 square foot building containing 47 residential units, approximately 5,500 square feet of restaurant space, and 3,400 square feet of office/retail space. The 2019 Build conditions reflect a future scenario that adds anticipated Project-generated trips to the 2019 No-Build conditions traffic volumes.

7.5.1 Vehicle Site Access and Circulation

Vehicular access/egress will be provided by a porte-cochère that will access Athens Street in two locations as shown in **Figure 7-13**. The entrance will be located along Athens Street approximately 115 feet east of the West Second Street intersection. The exit will be located at a realigned West Second Street/Athens Street intersection. The porte-cochère will be 15 feet in width and approximately 150 feet in length, providing enough space for six parked vehicles and allowing uninterrupted circulation.

7.5.2 Parking

The Project will provide 70 parking spaces in an underground garage with 6 additional spaces located in a porte-cochère, which would be accessed from Athens Street. The parking level will be accessed by a vehicle elevator.

The parking ratio of 1.25 spaces per residential unit and 1.25 spaces per 1,000 square feet of commercial space (retail/office and restaurant) is consistent with the district-based parking goals. The parking goals developed by the BTD for South Boston are 0.75-1.25 parking spaces per residential unit/1,000 square feet of commercial space for developments near an MBTA station.

7.5.3 Loading and Service Accommodations

Loading and service operations will occur on-site within the porte-cochère, including trash truck activity. Residential move-in/move-out activity will take place along West Broadway.

Truck trip estimates for both the hotel and the storefront retail Project elements were based on data provided in the Truck Trip Generation Rates by Land Use in the Central Artery/Tunnel Project Study Area report[7]. Deliveries to the Project site will be limited to SU-36 trucks and smaller delivery vehicles.

Residential units primarily generate delivery trips related to small packages and prepared food. Based on the CTPS report, residential uses generate approximately 0.01 light truck trips per 1,000 square feet of gross floor area and 0.001 medium/heavy truck trips per 1,000 square feet of gross floor area.

Restaurant deliveries include primarily linens and specialty food vendors. Based on the CTPS report, the restaurant space generate approximately 0.70 light truck trips per 1,000 square feet and 0.07 heavy trucks per 1,000 square feet.

[7] *Truck Trip Generation Rates by Land Use in the Central Artery/Tunnel Project Study Area*; Central Transportation Planning Staff; September 1993.



Figure 7-13.
Site Access Plan

Retail/Commercial uses depend on more frequent deliveries from smaller trucks. Based on the CTPS report, retail/commercial uses generate approximately 0.15 light truck trips per 1,000 sf of floor area and 0.15 medium/heavy truck trips per 1,000 sf of gross floor area. A summary of anticipated loading/service activity by land use is presented in **Table 7-6**.

Table 7-6. Expected Delivery Activity

Land Use	Number of Deliveries	General Delivery Times
Residential	2	10% before 7:00 a.m. 70% between 7:00 a.m. and 1:00 p.m. 20% after 1:00 p.m.
Restaurant	4	
Retail/Office	1	
Total	**7**	

The Project is expected to generate approximately seven deliveries per day. It is anticipated that the majority of these deliveries will occur between 7:00 a.m. and 1:00 p.m. These numbers do not include trash truck trips. For this area, trash truck trips generally occur between 5:00 a.m. and 7:00 a.m. and do not coincide with the regular delivery activities. The low number of anticipated deliveries will have minimal impact on the vehicular operations in the study area

7.5.5 Trip Generation Methodology

Determining the future trip generation of the Project is a complex, multi-step process that produces an estimate of vehicle trips, transit trips, walk trips, and bicycle trips associated with a proposed development and a specific land use program. A project's location and proximity to different travel modes determines how people will travel to and from a project site.

To estimate the number of trips expected to be generated by the Project, data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual*[8] were used. ITE provides data to estimate the total number of unadjusted vehicular trips associated with the Project. In an urban setting well-served by transit, adjustments are necessary to account for other travel mode shares such as walking, bicycling, and transit.

To estimate the unadjusted number of vehicular trips for the Project, the following ITE land use code (LUCs) was used:

Land Use Code 230 – Residential Condominium. This land use code refers to units with single-family ownership that have at least one other single-family-owned unit within the same building structure. Calculation of the number of trips uses ITE's average rate per dwelling unit.

Land Use Code 931 – Quality Restaurant. This land use consists of high quality, full-service eating establishments with typical duration of stay of at least one hour. Quality restaurants generally do not serve breakfast and may not serve lunch, but all serve dinner. Customers at

[8] *Trip Generation Manual*, 9th Edition; Institute of Transportation Engineers; Washington, D.C.; 2012.

these restaurants generally wait to be seated and are served by a waiter/waitress. Calculations of the number of trips use ITE's average rate per 1,000 square feet.

Land Use Code 710 – General Office. General office is defined as an office building containing multiple tenants. An office building typically contains a mixture of professional services. Calculations of the number of trips use ITE's average rate per 1,000 sf. At this time, the tenants of the two retail/office spaces are not known. HSH has utilized LUC 710 as it represents a conservatively high estimate for the trip generation of the potential uses.

7.5.6 Mode Share

The BTD provides vehicle, transit, and walking mode split rates for different areas of Boston. The Project is located in the northerly portion of designated Area 8, which also includes areas of Dorchester along the MBTA Red Line and Dorchester Avenue, south of the Project site. The unadjusted vehicular trips were converted to person trips by using vehicle occupancy rates published by the Federal Highway Administration (FHWA)[9]. The person trips were then distributed to different modes according to the mode shares shown in **Table 7-7**.

Table 7-7. Travel Mode Shares

Time Period		Vehicle Occupancy Rate [a]	Walk/Bike Share [b]	Transit Share [b]	Vehicle Share [b]
Residential	In	1.13	24%	23%	53%
	Out	1.13	24%	23%	53%
Commercial	In	1.78	29%	11%	60%
	Out	1.78	29%	11%	60%

a Based on Table 16 from "Summary of Travel Trends: 2009 National Household Travel Survey" (FHWA,2011).

b Based on rates published by the Boston Transportation Department for Area 8.

7.5.7 Project Trip Generation

The mode share percentages shown in **Table 7-7** were applied to the number of person trips to develop walk/bicycle, transit, and vehicle trip generation estimates. The existing uses on the Project site currently generate minimal vehicular traffic volumes and were not accounted for in the trip generation estimates. The trip generation for the Project by mode is shown in **Table 7-8**. The detailed trip generation information is provided in **Appendix D**.

[9] *Summary of Travel Trends: 2009 National Household Travel Survey*; FHWA; Washington, D.C.; June 2011.

Table 7-8. Trip Generation Summary

Time Period		Walk/Bicycle Trips	Transit Trips	Vehicle Trips
Daily				
Residential [a]	In	37	36	73
	Out	37	36	73
	Total	**74**	**72**	**146**
Restaurant [b]	In	123	47	143
	Out	123	47	143
	Total	**246**	**94**	**286**
Retail/Office [c]	In	6	2	12
	Out	6	2	12
	Total	**12**	**4**	**24**
Total	In	**166**	**85**	**228**
	Out	**166**	**85**	**228**
	Total	**332**	**170**	**456**
a.m. Peak Hour				
Residential	In	1	1	3
	Out	4	4	8
	Total	**5**	**5**	**11**
Restaurant	In	1	0	2
	Out	1	1	1
	Total	**2**	**1**	**3**
Retail/Office	In	2	1	3
	Out	0	0	0
	Total	**2**	**1**	**3**
Total	In	**4**	**2**	**8**
	Out	**5**	**5**	**9**
	Total	**9**	**7**	**17**
p.m. Peak Hour				
Residential	In	4	4	9
	Out	3	2	4
	Total	**7**	**6**	**13**
Restaurant	In	14	5	16
	Out	7	3	8
	Total	**21**	**8**	**24**
Retail/Office	In	0	0	1
	Out	1	1	3
	Total	**1**	**1**	**4**
Total	In	**18**	**9**	**15**
	Out	**11**	**6**	**26**
	Total	**29**	**15**	**41**

a Based on 47 units of ITE LUC 230 – Residential Condominiums.
b Based on 5,500 square feet of ITE LUC 931 – Quality Restaurant.
c. Based on 3,400 square feet of ITE LUC 710 – General Office Building

7.5.8 Trip Distribution

The trip distribution identifies the various travel paths for vehicles arriving and leaving the Project site. Trip distribution patterns for the Project were based on BTD's origin-destination data for Area 8 and trip distribution patterns presented in traffic studies for nearby projects. The trip distribution patterns for the Project are illustrated in **Figure 7-14**.

7.5.9 Build Traffic Volumes

The vehicle trips were distributed through the study area. The project-generated trips for the a.m. and p.m. peak hours are shown in **Figure 7-15** and **Figure 7-16**, respectively. The trip assignments were added to the 2019 No-Build Condition vehicular traffic volumes to develop the 2019 Build Condition vehicular traffic volumes. The 2019 Build a.m. and p.m. peak hour traffic volumes are shown on **Figure 7-17** and **Figure 7-18**, respectively.

7.5.10 Build Condition Traffic Operations Analysis

The 2019 Build Condition analysis uses the same methodology as the 2014 Existing Condition and 2019 No-Build Condition analysis. **Table 7-9** and **Table 7-10** present the 2019 Build Condition operations analysis for the a.m. and p.m. peak hours, respectively. The shaded cells in the tables indicate a worsening in LOS between the 2019 No-Build Condition and the 2019 Build Condition. The detailed analysis sheets are provided in **Appendix D**.

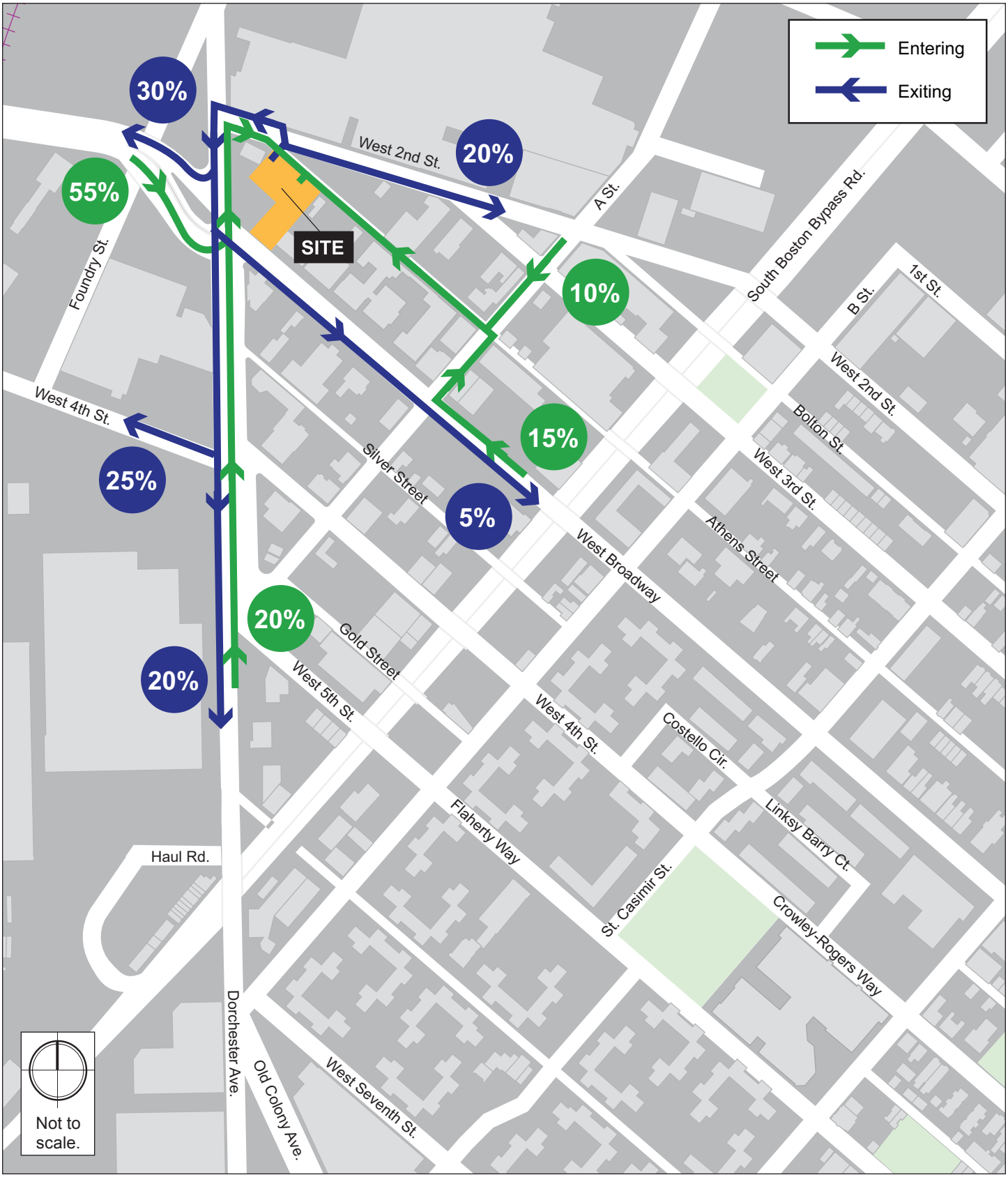


Figure 7-14.
Vehicle Trip Distribution

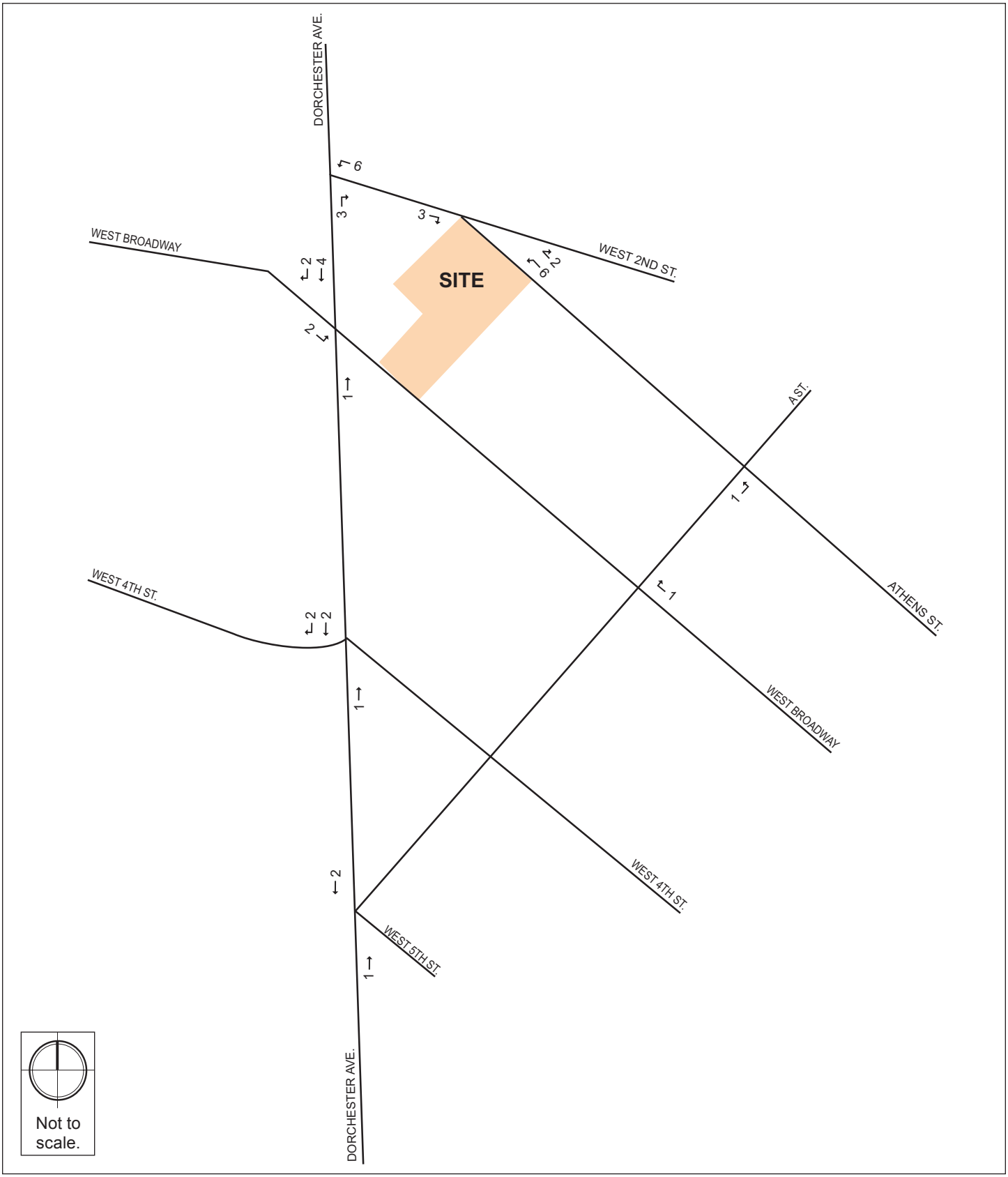


Figure 7-15.
Vehicle Trip Assignment, a.m. Peak Hour

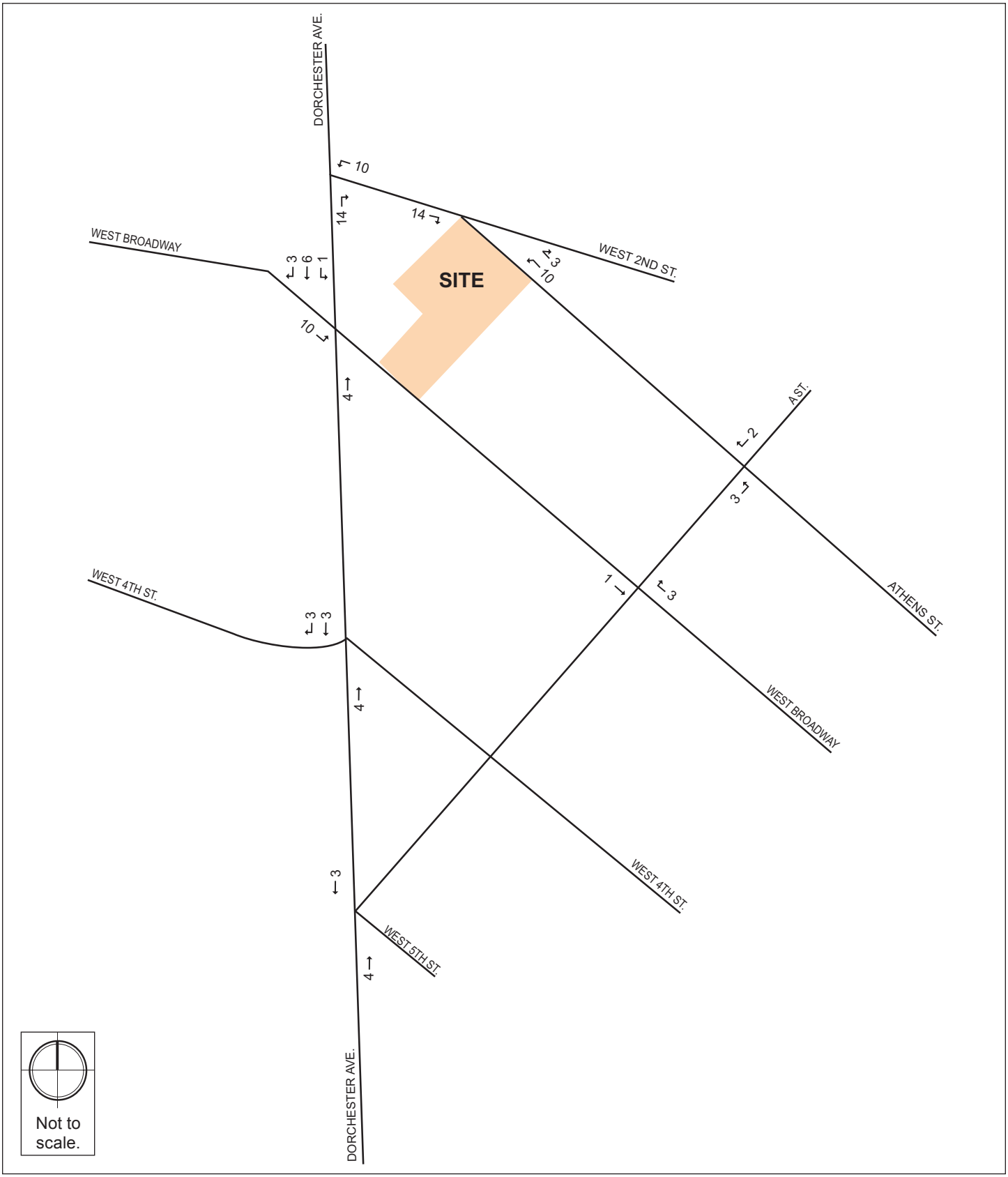


Figure 7-16.
Vehicle Trip Assignment, p.m. Peak Hour

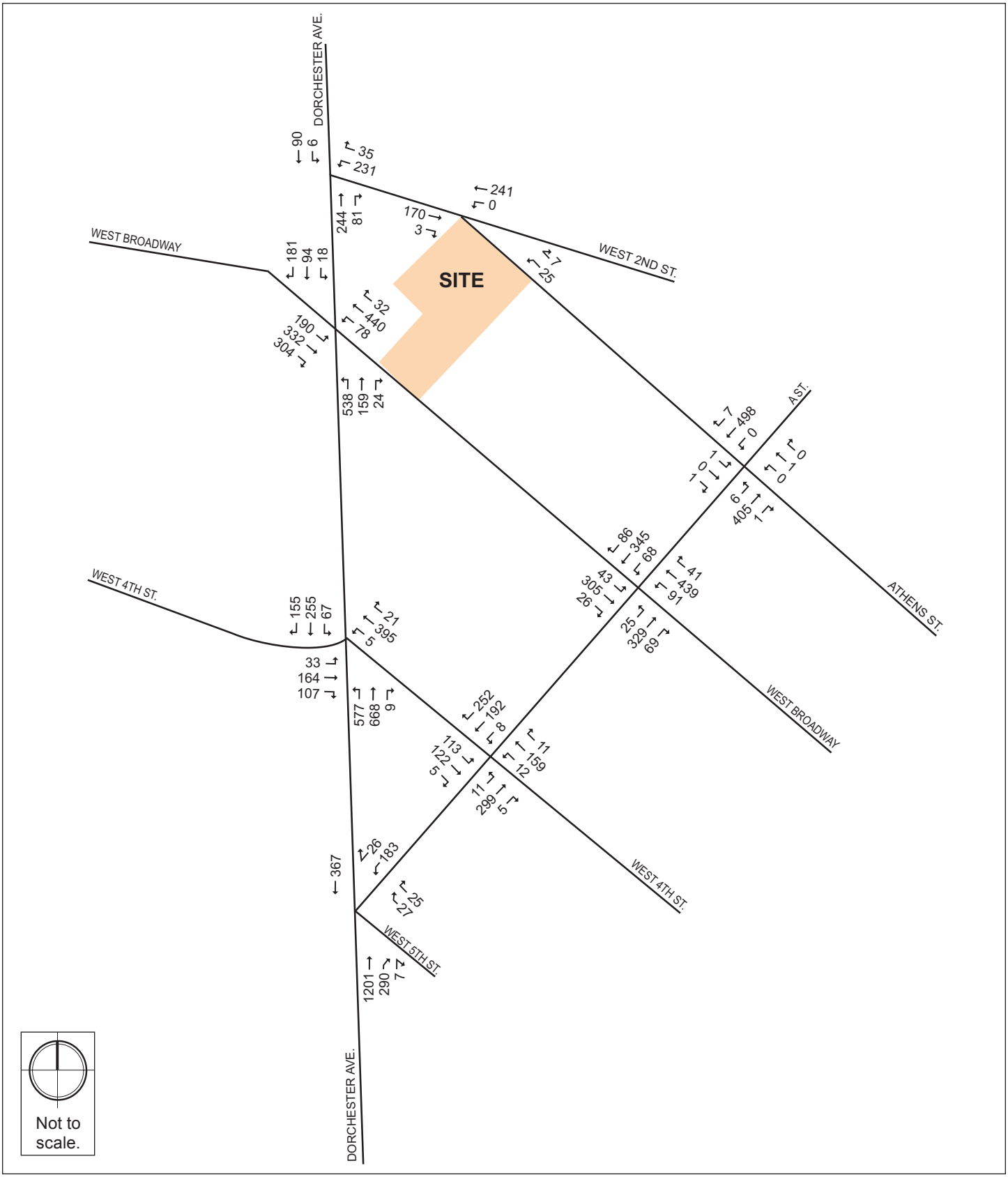


Figure 7-17.
Build Condition (2019) Vehicular Traffic Volumes, a.m. Peak Hour

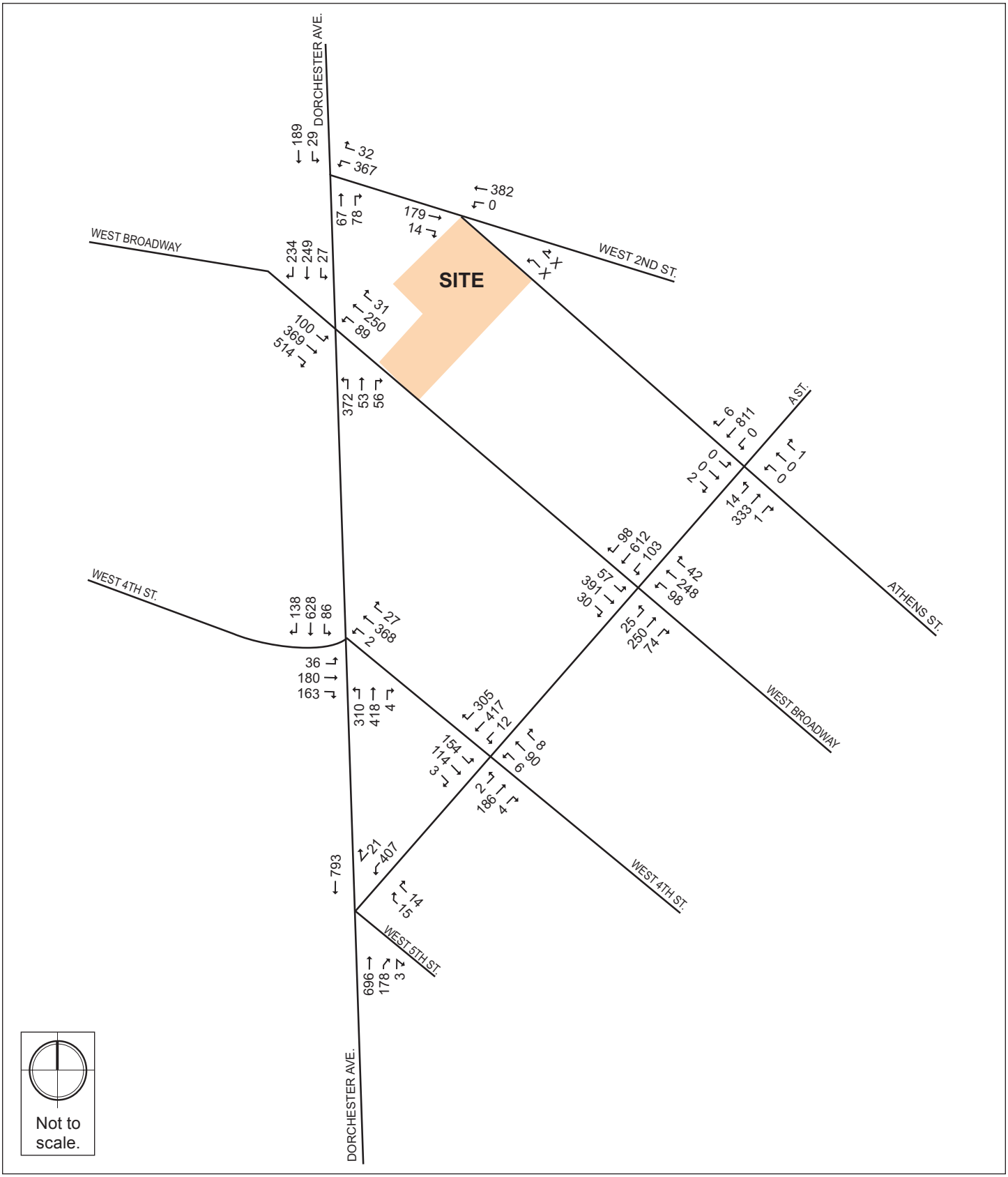


Figure 7-18.
Build Condition (2019) Vehicular Traffic Volumes, p.m. Peak Hour

Table 7-9. Build Condition (2019) Level of Service Summary, a.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Dorchester Avenue at A Street	**B**	**11.5**	**-**	**-**	**-**
Dorchester Avenue NB thru | thru	B	14.4	0.65	274	337
Dorchester Avenue NB right	A	0.3	0.23	0	0
Dorchester Avenue SB thru | thru	A	2.2	0.19	14	14
A Street SWB left/right	C	28.4	0.54	138	m219
Dorchester Avenue at West Fourth Street	**D**	**36.0**	**-**	**-**	**-**
West Fourth Street EB left/thru	C	29.4	0.42	103	170
West Fourth Street EB right	A	5.5	0.19	0	37
West Fourth Street WB left/thru/right	D	49.0	0.72	165	317
Dorchester Avenue NB left	D	54.4	0.92	358	#504
Dorchester Avenue NB thru | thru	B	19.4	0.38	160	218
Dorchester Avenue NB right	A	7.2	0.01	0	m1
Dorchester Avenue SB left/thru | thru	D	46.0	0.69	121	168
Dorchester Avenue SB right	B	14.7	0.43	28	85
A Street at West Fourth Street	**D**	**38.8**	**-**	**-**	**-**
West Fourth Street EB left/thru/right	C	32.2	0.42	142	203
West Fourth Street WB left/thru/right	B	14.8	0.24	73	110
A Street NB left/thru/right	C	26.0	0.47	156	237
A Street SB left/thru/right	E	62.7	0.68	207	326
Dorchester Avenue at West Broadway	**E**	**75.9**	**-**	**-**	**-**
West Broadway EB left	F	92.5	0.98	~185	#326
West Broadway EB thru	C	28.8	0.51	210	312
West Broadway EB right	A	2.3	0.30	0	41
West Broadway WB left	C	28.1	0.26	40	84
West Broadway WB thru/right	C	31.6	0.62	291	#473
Dorchester Avenue NB left	F	239.6	1.45	~379	#615
Dorchester Avenue NB left/thru | thru/right	B	16.2	0.20	41	m73
Dorchester Avenue SB left/thru	D	50.0	0.58	70	128
Dorchester Avenue SB right	A	0.2	0.14	0	0
A Street at West Broadway	**D**	**45.3**	**-**	**-**	**-**
West Broadway EB left/thru | thru/right	B	11.2	0.25	55	92
West Broadway WB left/thru/right	C	20.6	0.68	230	407
A Street NB left/thru/right	F	114.3	1.03	252	#416
A Street SB left/thru	C	30.0	0.42	31	68
A Street SB right	D	39.7	0.83	226	321

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Unsignalized Intersections					
Dorchester Avenue at West Second Street	**-**	**-**	**-**	**-**	**-**
West Second Street WB left/right	C	18.4	0.53	-	78
Dorchester Avenue NB thru/right	A	0.0	0.21	-	0
Dorchester Avenue SB left	A	8.4	0.01	-	1
Dorchester Avenue SB thru	A	0.0	0.07	-	0
West Second Street at Athens Street	**-**	**-**	**-**	**-**	**-**
West Second Street EB thru/right	A	0.0	0.21	-	0
West Second Street WB left/thru	A	0.0	0.00	-	0
Athens Street NB left/right	B	13.7	0.12	-	10
A Street at Athens Street	**-**	**-**	**-**	**-**	**-**
Athens Street EB left/thru/right	C	16.7	0.01	-	1
Athens Street WB left/thru/right	C	20.9	0.01	-	1
A Street NB left/thru/right	A	0.2	0.01	-	0
A Street SB left/thru/right	A	0.0	0.00	-	0

95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after two cycles.

~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is the maximum after two cycles.

dr Defacto Right Lane. The shared lane operates as an exclusive right-turn lane.

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

Table 7-10. Build Condition (2019) Level of Service Summary, p.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Dorchester Avenue at A Street	**B**	**14.0**	**-**	**-**	**-**
Dorchester Avenue NB thru | thru	B	17.7	0.52	197	202
Dorchester Avenue NB right	A	0.2	0.16	0	0
Dorchester Avenue SB thru | thru	B	13.1	0.50	292	288
A Street SWB left/right	B	16.2	0.70	165	m169
Dorchester Avenue at West Fourth Street	**D**	**41.4**	**-**	**-**	**-**
West Fourth Street EB left/thru	C	33.8	0.54	130	201
West Fourth Street EB right	A	5.2	0.30	0	43
West Fourth Street WB left/thru/right	F	101.8	0.71	237	m290
Dorchester Avenue NB left	D	47.1	0.78	213	#319
Dorchester Avenue NB thru | thru	C	23.8	0.23	127	177
Dorchester Avenue NB right	A	6.8	0.00	0	m0
Dorchester Avenue SB left/thru | thru	C	33.1	0.67	238	311
Dorchester Avenue SB right	B	14.1	0.24	35	m59
A Street at West Fourth Street	**E**	**65.6**	**-**	**-**	**-**
West Fourth Street EB left/thru/right	D	39.9	0.49	151	238
West Fourth Street WB left/thru/right	F	102.4	0.15	44	78
A Street NB left/thru/right	B	16.3	0.26	85	121
A Street SB left/thru/right	F	85.2	0.89	403	#653
Dorchester Avenue at West Broadway	**D**	**46.9**	**-**	**-**	**-**
West Broadway EB left	D	40.3	0.42	53	#126
West Broadway EB thru	D	38.7	0.63	236	#412
West Broadway EB right	A	2.9	0.46	0	55
West Broadway WB left	D	49.1	0.57	65	#150
West Broadway WB thru/right	D	36.0	0.56	200	#304
Dorchester Avenue NB left	F	138.5	1.19	~330	#464
Dorchester Avenue NB left/thru | thru/right	B	13.7	0.11	15	m39
Dorchester Avenue SB left/thru	E	62.4	0.86	179	#303
Dorchester Avenue SB right	A	0.2	0.17	0	0
A Street at West Broadway	**D**	**36.2**	**-**	**-**	**-**
West Broadway EB left/thru | thru/right	B	19.7	0.44	105	151
West Broadway WB left/thru/right	D	42.3	0.86	220	#401
A Street NB left/thru/right	D	41.1	0.77	160	#294
A Street SB left/thru	B	17.0	0.29	36	74
A Street SB right	D	44.2	0.94	378	#624

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Unsignalized Intersections					
Dorchester Avenue at West Second Street	-	-	-	-	-
West Second Street WB left/right	E	40.5	0.87	-	238
Dorchester Avenue NB thru/right	A	0.0	0.09	-	0
Dorchester Avenue SB left	A	7.8	0.03	-	2
Dorchester Avenue SB thru	A	0.0	0.13	-	0
West Second Street at Athens Street	-	-	-	-	-
West Second Street EB thru/right	A	0.0	0.16	-	0
West Second Street WB left/thru	A	0.0	0.00	-	0
Athens Street NB left/right	E	48.1	0.30	-	29
A Street at Athens Street	-	-	-	-	-
Athens Street EB left/thru/right	C	15.3	0.01	-	1
Athens Street WB left/thru/right	A	10.0	0.01	-	0
A Street NB left/thru/right	A	0.5	0.02	-	1
A Street SB left/thru/right	A	0.0	0.00	-	0

Operations at the intersection of Dorchester Avenue at A Street will remain at LOS B during both the weekday a.m. and p.m. peak hours under the Build Condition, as compared to the No-Build Condition. All movement groups will operate at the same LOS as they did in the No-Build Condition.

Operations at the intersection of Dorchester Avenue at West Fourth Street will remain at LOS D during both the weekday a.m. and p.m. peak hours under the Build Condition, as compared to the No-Build Condition. All movement groups will operate at the same LOS as they did in the No-Build Condition.

Operations at the intersection of A Street at West Fourth Street will remain at LOS D during the weekday a.m. peak hour and will remain at LOS E during the weekday p.m. peak hour under the Build Condition, as compared to the No-Build Condition. All movement groups will operate at the same LOS as they did in the No-Build Condition.

Operations at the intersection of Dorchester Avenue at West Broadway will remain at LOS E during the weekday a.m. peak hour and will remain at LOS during the weekday p.m. peak hour under the Build Condition, as compared to the No-Build Condition. All movement groups will operate at the same LOS as they did in the No-Build Condition.

Operations at the intersection of A Street at West Broadway will remain at LOS D during both the weekday a.m. and p.m. peak hours under the Build Condition, as compared to the No-Build

Condition. All movement groups will operate at the same LOS as they did in the No-Build Condition.

At the intersection of Dorchester Avenue at West Second Street, all movement groups will operate at the same LOS under the Build Condition as they did in the No-Build Condition.

At the intersection of West Second Street at Athens Street, the Athens Street northbound approach will decline from LOS D under the No-Build Condition to LOS E under the Build Condition during the weekday p.m. peak hour. All other movement groups will operate at the same LOS under the Build Condition as they did in the No-Build Condition.

At the intersection of A Street at Athens Street, all movement groups will operate at the same LOS under the Build Condition as they did in the No-Build Condition.

7.6 Transportation Demand Management

The Proponent is committed to implementing Transportation Demand Management (TDM) measures to minimize automobile usage and Project related traffic impacts. TDM will be facilitated by the nature of the Project (which does not generate significant peak hour trips) and its proximity to numerous public transit alternatives.

On-site management will keep a supply of transit information (schedules, maps, and fare information) to be made available to the residents and patrons of the site. The Proponent will work with the City to develop a TDM program appropriate to the Project and consistent with its level of impact.

The Proponent is prepared to take advantage of good transit access in marketing the site to future residents by working with them to implement the following TDM measures to encourage the use of non-vehicular modes of travel.

The TDM measures for the Project may include but are not limited to the following:

- Orientation Packets: The Proponent will provide orientation packets to new residents and tenants containing information on available transportation choices, including transit routes/schedules and nearby vehicle sharing and bicycle sharing locations. On-site management will work with residents and tenants as they move in to help facilitate transportation for new arrivals.
- Provide an annual (or more frequent) newsletter or bulletin summarizing transit, ridesharing, bicycling, alternative work schedules, and other travel options.
- Transportation Coordinator: The Proponent will designate a transportation coordinator to oversee transportation issues, including parking, service and loading, and deliveries, and will work with residents as they move in to raise awareness of public transportation, bicycling, and walking opportunities.

- Provide information on travel alternatives for employees and visitors via the Internet and in the building lobby.
- Electric Vehicle Charging: The Proponent will explore the feasibility of providing electric vehicle charging stations within the garage.
- Vehicle Sharing Program: The Proponent will explore the feasibility of providing spaces in the garage for a car sharing service.
- There is a Hubway station located just north of the Project site, which will provide residents, employees, and visitors with convenient bicycling opportunities to travel to other parts of Boston.

7.7 Transportation Mitigation Measures

While the traffic impacts associated with the new trips are minimal, the Proponent will continue to work with the City of Boston to create a Project that efficiently serves vehicle trips, improves the pedestrian environment, and encourages transit and bicycle use. As part of the Project, the Proponent will bring all abutting sidewalks and pedestrian ramps to the City of Boston standards in accordance with the Boston Complete Streets design guidelines. This will include the reconstruction and widening of the sidewalks where possible, the installation of new, accessible ramps, improvements to street lighting where necessary, planting of street trees, and providing bicycle storage racks surrounding the site, where appropriate.

The Proponent is responsible for preparation of the Transportation Access Plan Agreement (TAPA), a formal legal agreement between the Proponent and the BTD. The TAPA formalizes the findings of the transportation study, mitigation commitments, elements of access and physical design, travel demand management measures, and any other responsibilities that are agreed to by both the Proponent and the BTD. Because the TAPA must incorporate the results of the technical analysis, it must be executed after these other processes have been completed. The proposed measures listed above and any additional transportation improvements to be undertaken as part of this Project will be defined and documented in the TAPA.

The Proponent will also produce a Construction Management Plan (CMP) for review and approval by BTD. The CMP will detail the schedule, staging, parking, delivery, and other associated impacts of the construction of the Project. See **Section 2.8** for additional information related to the CMP.

7.7.1 Bicycle Accommodations

BTD has established guidelines requiring projects subject to Transportation Access Plan Agreements to provide secure bicycle parking for residents and short-term bicycle racks for visitors. Based on BTD guidelines, the Project will supply a minimum of 47 secure bicycle parking/storage spaces within the building for employees.

7.8 Evaluation of Short-Term Construction Impacts

Most construction activities will be accommodated within the current 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 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 considered for the Construction Management Plan:

- Limited construction worker parking on-site;
- Encouragement of worker carpooling;
- Consideration of a subsidy for MBTA passes for full-time employees; and
- Providing secure spaces on-site for workers' supplies and tools so they do not have to be brought to the site each day.

The Construction Management Plan to be executed with the City prior to commencement of construction will document all committed measures.

8.0 COORDINATION WITH GOVERNMENTAL AGENCIES

8.1 Architectural Access Board Requirements

This Project will comply with the requirements of the Architectural Access Board. The Project will also be designed to comply with the Standards of the Americans with Disabilities Act.

8.2 Massachusetts Environmental Policy Act

Based on information currently available, development of the Proposed Project will not result in a state permit/state agency action and meet a review threshold that would require MEPA review by the MEPA Office of the Executive Office of Energy and Environmental Affairs.

8.3 Boston Civic Design Commission

The Project exceeds the 100,000 gross square feet size threshold requirement for review by the Boston Civic Design Commission.

9.0 PROJECT CERTIFICATION

This form has been circulated to the Boston Redevelopment Authority as required by Article 80 of the Boston Zoning Code.

CPC Cornerstone Development, LLC

Signature of Proponent
Ryan P. Sillery, Manager

12/10/14
Date

Mitchell L. Fischman Consulting LLC

Signature of Preparer
Mitchell L. Fischman, AICP

12/10/14
Date

APPENDIX A – LETTER OF INTENT TO FILE PNF

Cornerstone Development, LLC

August 4, 2014

2014 AUG -5 P 4:08
B.R.A.

Brian Golden, Acting Director
Boston Redevelopment Authority
Boston City Hall
Boston, MA 02201-1007

Re: Letter of Intent (LOI) to File Project Notification Form (PNF)
- *14 West Broadway Mixed-Use Development, 14 West Broadway, South Boston*

Dear Mr. Golden:

This letter shall serve to notify the Boston Redevelopment Authority of the intent of Cornerstone Development, LLC, to filed a Project Notification Form (PNF) with the BRA, pursuant to Article 80 of the Boston Zoning Code, for the redevelopment of the property located at 14 West Broadway in South Boston. The redevelopment proposal calls for the replacement of an existing restaurant and bar with a new mixed-use development consisting of at least 47 residential units, and commercial space to include offices, retail, and a ground-floor restaurant, all served by 70 accessory garage parking spaces.

The site comprises 14,326± square feet of land on ten parcels bordered by West Broadway, Dorchester Street, West Second Street, Athens Street, and the 22-26 West Broadway Mixed Use Development currently under construction. It is located directly across West Broadway from the MBTA's Broadway Red Line rapid transit station.

The project is situated within an NS (Neighborhood Shopping) zoning sub-district of the St. Vincent Neighborhood zoning district, Article 57 of the Boston Zoning Code, and also lies within a restricted parking district. It will require zoning relief from the provisions of Article 3-1A(c), and Article 57, Sections 11, 12 and 26.

We have had positive initial meetings about the project with BRA staff, South Boston's elected officials, the West Broadway Neighborhood Association, and the St. Vincent/Lower End Neighborhood Association. Accordingly, we would like to begin Large Project Review pursuant to the provisions of Article 80B and to continue to work with the BRA and the community in presenting greater details about the development plan.

We look forward to working cooperatively with BRA staff on this exciting development project, which we are confident will set a new standard for mixed-use buildings in South Boston and the City of Boston.

Very truly yours,

Ryan P. Sillery, Manager

cc: *Heather Campisano*
Erico Lopez
Tyler Norod

APPENDIX B – AIR QUALITY APPENDIX

APPENDIX B
AIR QUALITY

14 WEST BROADWAY
PROJECT NOTIFICATION FORM

Pages	Contents
2	MOVES2010b Modeling Output
3	Garage Emissions Analysis Calculations - AM and PM Peak Hour
4 - 7	AERMOD Model Output
8 - 36	CAL3QHC 2014 and 2019 Output for CO Microscale Analysis
37 - 39	Figures 1, 2 and 3: CAL3QHC Existing, No-Build and Build Conditions

MOVES2010b 2014 and 2019 CO Emission Rates

Model Year: 2014

linkID	countyID	zoneID	roadTypeID	linklength	linkVolume	linkAvgSpeed	linkDescription	linkAvgGrade	Pollutant	Queue Emission Factor (Grams/Hr)	Total Dist (mi	Gr/mi-hr	Gr/veh-hr
1	25025	250250	5	0.11382576	817	30	Approach	0	CO	372.31	92.9956	4.0036	
7	25025	250250	5	0.09867424	1753	0	Queue	0	CO	39086.00			22.2966

Model Year: 2019

linkID	countyID	zoneID	roadTypeID	linklength	linkVolume	linkAvgSpeed	linkDescription	linkAvgGrade	Pollutant	Queue Emission Factor (Grams/Hr)	Total Dist (mi)	Gr/mi-hr	Gr/veh-hr
1	25025	250250	5	0.11382576	877	30	Approach	0	CO	321.74	99.8252	3.2230	
7	25025	250250	5	0.09867424	1753	0	Queue	0	CO	21406.50			12.2114

INDOOR GARAGE ANALYSIS PROGRAM

PROJECT: 14 WEST BROADWAY PARKING GARAGE PEAK AM HOUR - YEAR: 2014

TOTAL EXIT VOLUME: 17 VEH/HOUR

CO RATE: 22.3 GRAMS CO/HR

VENT CFM: 28,500 CFM

TOTAL CO EMISSIONS = 6.3 GRAMS/MIN = 0.105 GRAMS/SEC
TOTAL VENTILATION = 807 CU. M/MIN

PEAK 1-HOUR CO CONCENTRATION FROM VEHICLES: 6.83 PPM

****

PROJECT: 14 WEST BROADWAY PARKING GARAGE PEAK PM HOUR - YEAR: 2014

TOTAL EXIT VOLUME: 41 VEH/HOUR

CO RATE: 22.3 GRAMS CO/HR

VENT CFM: 28,500 CFM

TOTAL CO EMISSIONS = 15.2 GRAMS/MIN = 0.254 GRAMS/SEC
TOTAL VENTILATION = 807 CU. M/MIN

PEAK 1-HOUR CO CONCENTRATION FROM VEHICLES: 16.48 PPM

```
*** AERMOD - VERSION  14134 ***   *** 14 West Broadway                                                ***
11/07/14
 *** AERMET - VERSION 14134  ***   *** Garage CO Screening Modeling Analysis                          ***
11:00:43
                                                                                                       PAGE
1
 **MODELOPTs:   NonDFAULT CONC      FLAT      FLGPOL    NOCHKD    SCREEN    NODRYDPLT NOWETDPLT

                                            ***     MODEL SETUP OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for     1 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =      3240.0 ;  Urban Roughness Length =  1.000 m

 **Model Allows User-Specified Options:
         1. Stack-tip Downwash.
         2. Model Assumes Receptors on FLAT Terrain.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.
         6. Urban Roughness Length of 1.0 Meter Used.

 **Other Options Specified:
         NOCHKD   - Suppresses checking of date sequence in meteorology files
         SCREEN   - Use screening option
 which forces calculation of centerline values

 **Model Accepts FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  OTHER

 **Model Calculates  1 Short Term Average(s) of:   1-HR

 **This Run Includes:      1 Source(s);       1 Source Group(s); and     354 Receptor(s)

 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date: 14134

 **Output Options Selected:
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and Missing Hours
```

```
 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     5.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =
0.0
                  Emission Units = GRAMS/SEC                              ;  Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      3.5 MB of RAM.

 **Input Runstream File:          CO_5yrs_OTHER.DTA
 **Output Print File:             CO_5yrs_OTHER.LST

 **File for Summary of Results:   W:\Apps\aermod\3933\CO_5yrs_OTHER.SUM
 *** AERMOD - VERSION  14134 ***   *** 14 West Broadway                                                    ***
11/07/14
 *** AERMET - VERSION 14134  ***   *** Garage CO Screening Modeling Analysis                               ***
11:00:43
                                                                                                          PAGE
2
 **MODELOPTs:   NonDFAULT CONC      FLAT      FLGPOL    NOCHKD    SCREEN    NODRYDPLT NOWETDPLT

                                        *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                    (1=YES; 0=NO)

          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

```
                                  *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                  (METERS/SEC)

                                                1.54,   3.09,   5.14,   8.23,  10.80,
 *** AERMOD - VERSION  14134 ***   *** 14 West Broadway                                                    ***
11/07/14
 *** AERMET - VERSION 14134  ***   *** Garage CO Screening Modeling Analysis                               ***
11:00:43
                                                                                                          PAGE
3
 **MODELOPTs:   NonDFAULT CONC      FLAT      FLGPOL    NOCHKD    SCREEN    NODRYDPLT NOWETDPLT

                                    *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

   Surface file:   Urban.sfc                                                              Met Version: 14134
   Profile file:   Urban.PFL
   Surface format: FREE
   Profile format: FREE
   Surface station no.:    11111                 Upper air station no.:    22222
                  Name: UNKNOWN                                   Name: UNKNOWN
                  Year:   2010                                    Year:   2010
```

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
10	01	01	1	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	10.	10.0	255.2	2.0
10	01	02	2	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	20.	10.0	255.2	2.0
10	01	03	3	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	30.	10.0	255.2	2.0
10	01	04	4	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	40.	10.0	255.2	2.0
10	01	05	5	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	50.	10.0	255.2	2.0
10	01	06	6	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	60.	10.0	255.2	2.0
10	01	07	7	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	70.	10.0	255.2	2.0
10	01	08	8	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	80.	10.0	255.2	2.0
10	01	09	9	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	90.	10.0	255.2	2.0
10	01	10	10	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	100.	10.0	255.2	2.0
10	01	11	11	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	110.	10.0	255.2	2.0
10	01	12	12	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	120.	10.0	255.2	2.0
10	01	13	13	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	130.	10.0	255.2	2.0
10	01	14	14	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	140.	10.0	255.2	2.0
10	01	15	15	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	150.	10.0	255.2	2.0
10	01	16	16	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	160.	10.0	255.2	2.0
10	01	17	17	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	170.	10.0	255.2	2.0
10	01	18	18	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	180.	10.0	255.2	2.0
10	01	19	19	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	190.	10.0	255.2	2.0
10	01	20	20	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	200.	10.0	255.2	2.0
10	01	21	21	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	210.	10.0	255.2	2.0
10	01	22	22	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	220.	10.0	255.2	2.0
10	01	23	23	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	230.	10.0	255.2	2.0
10	01	24	24	01	-1.2	0.043	-9.000	0.020	-999.	21.	5.5	1.00	1.62	0.21	0.50	240.	10.0	255.2	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
10	01	01	01	10.0	1	10.	0.50	255.3	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

*** AERMOD - VERSION 14134 *** *** 14 West Broadway ***
11/07/14
*** AERMET - VERSION 14134 *** *** Garage CO Screening Modeling Analysis ***
11:00:43

**MODELOPTs: NonDFAULT CONC FLAT FLGPOL NOCHKD SCREEN NODRYDPLT NOWETDPLT

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

NETWORK GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE GRID-ID
ALL	HIGH 1ST HIGH VALUE IS 281.17301	ON 10112101:	AT (236544.35, 899250.55, 5.00, 5.00, 18.29)	DC

```
 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION  14134 ***   *** 14 West Broadway                                                    ***
11/07/14
 *** AERMET - VERSION 14134  ***   *** Garage CO Screening Modeling Analysis                               ***
11:00:43
                                                                                                          PAGE
5
 **MODELOPTs:   NonDFAULT CONC      FLAT      FLGPOL    NOCHKD    SCREEN    NODRYDPLT NOWETDPLT

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            2 Warning Message(s)
 A Total of            0 Informational Message(s)

 A Total of        18504 Hours Were Processed

 A Total of            0 Calm Hours Identified

 A Total of            0 Missing Hours Identified (  0.00 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***
```

JOB: 14 W BROADWAY - A ST & WEST 4TH RUN: 2014 EXISTING 1-HR PEAK PM

DATE : 11/ 6/14
TIME : 12:17: 4

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT) X1	Y1	X2	Y2	*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. W 4TH EB (1) QUEUE	*	775975.3	********	776042.7	********	*	88.	130.	AG	35.	100.0	0.0	15.0	0.42	4.5
2. W 4TH EB (2) FRE FLO	*	776342.3	********	776109.9	********	*	306.	311.	AG	136.	4.0	0.0	25.0		
3. W 4TH WB (1) QUEUE	*	776145.2	********	776172.5	********	*	36.	130.	AG	35.	100.0	0.0	10.0	0.17	1.8
4. W 4TH WB (2) FRE FLO	*	775969.3	********	776118.6	********	*	195.	130.	AG	401.	4.0	0.0	25.0		
5. A ST SB (1) QUEUE	*	776138.8	********	776293.7	********	*	240.	40.	AG	31.	100.0	0.0	12.0	0.93	12.2
6. A ST SB (2) FRE FLO	*	776112.1	********	775984.1	********	*	193.	221.	AG	422.	4.0	0.0	22.0		
7. A ST NB (1) QUEUE	*	776096.8	********	776056.6	********	*	62.	220.	AG	31.	100.0	0.0	12.0	0.28	3.1
8. A ST NB (2) FRE FLO	*	776317.3	********	776122.4	********	*	300.	221.	AG	374.	4.0	0.0	22.0		

JOB: 14 W BROADWAY - A ST & WEST 4TH RUN: 2014 EXISTING 1-HR PEAK PM

DATE : 11/ 6/14
TIME : 12:17: 4

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
1. W 4TH EB (1) QUEUE	100	58	5.0	277	1900	22.30	2	3
3. W 4TH WB (1) QUEUE	100	58	5.0	113	1900	22.30	2	3
5. A ST SB (1) QUEUE	100	52	5.0	725	1900	22.30	2	3
7. A ST NB (1) QUEUE	100	52	5.0	218	1900	22.30	2	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. 3A	776084.2	********	5.9
2. 3B	776056.7	********	5.9
3. 3C	776029.6	********	5.9
4. 3D	776062.8	********	5.9
5. 3E	776091.8	********	5.9
6. 3F	776117.1	********	5.9
7. 3G	776161.6	********	5.9
8. 3H	776208.6	********	5.9
9. 3I	776233.0	********	5.9
10. 3J	776188.3	********	5.9
11. 3K	776148.4	********	5.9
12. 3L	776186.1	********	5.9
13. 3M	776222.6	********	5.9
14. 3N	776189.2	********	5.9
15. 3O	776153.9	********	5.9
16. 3P	776113.6	********	5.9
17. 3Q	776060.3	********	5.9
18. 3R	776013.8	********	5.9
19. 3S	775985.4	********	5.9
20. 3T	776036.0	********	5.9

JOB: 14 W BROADWAY - A ST & WEST 4TH RUN: 2014 EXISTING 1-HR PEAK PM

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	* 0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1
10.	* 0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1
20.	* 0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1
30.	* 0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
40.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1
50.	* 0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.0
60.	* 0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.0
70.	* 0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.0
80.	* 0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0
90.	* 0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0
100.	* 0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0
110.	* 0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0
120.	* 0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0
130.	* 0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.0
140.	* 0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0
150.	* 0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0
160.	* 0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.0	0.0
170.	* 0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.0	0.0
180.	* 0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.0	0.0
190.	* 0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.0	0.0
200.	* 0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.0	0.0
210.	* 0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.1	0.2	0.0	0.0
220.	* 0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.0	0.0
230.	* 0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.2	0.0	0.0
240.	* 0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.2	0.2	0.0	0.0
250.	* 0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.0	0.0	0.1	0.2	0.1	0.0	0.0
260.	* 0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.0	0.0	0.1	0.2	0.1	0.0	0.0
270.	* 0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.0	0.0	0.1	0.2	0.1	0.0	0.0
280.	* 0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.2	0.0	0.0	0.1	0.2	0.1	0.0	0.0
290.	* 0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0
300.	* 0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1
310.	* 0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.1
320.	* 0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1
330.	* 0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2
340.	* 0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.2
350.	* 0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1
360.	* 0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1
MAX	* 0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.2
DEGR.	* 180	110	80	0	0	30	0	0	0	250	0	0	0	40	40	210	230	160	0	330

THE HIGHEST CONCENTRATION OF 0.20 PPM OCCURRED AT RECEPTOR REC11.

JOB: 14 W BROADWAY - A ST & WEST 4TH RUN: 2019 NO BUILD 1-HR PEAK PM

DATE : 11/ 6/14
TIME : 12:17:32

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT) X1	Y1	X2	Y2	*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. W 4TH EB (1) QUEUE	*	775975.3	********	776048.5	********	*	95.	130.	AG	19.	100.0	0.0	15.0	0.45	4.8
2. W 4TH EB (2) FRE FLO	*	776342.3	********	776109.9	********	*	306.	311.	AG	144.	3.2	0.0	25.0		
3. W 4TH WB (1) QUEUE	*	776145.2	********	776173.8	********	*	37.	130.	AG	19.	100.0	0.0	10.0	0.18	1.9
4. W 4TH WB (2) FRE FLO	*	775969.3	********	776118.6	********	*	195.	130.	AG	422.	3.2	0.0	25.0		
5. A ST SB (1) QUEUE	*	776138.8	********	776327.9	********	*	293.	40.	AG	17.	100.0	0.0	12.0	0.98	14.9
6. A ST SB (2) FRE FLO	*	776112.1	********	775984.1	********	*	193.	221.	AG	444.	3.2	0.0	22.0		
7. A ST NB (1) QUEUE	*	776096.8	********	776053.7	********	*	67.	220.	AG	17.	100.0	0.0	12.0	0.30	3.4
8. A ST NB (2) FRE FLO	*	776317.3	********	776122.4	********	*	300.	221.	AG	407.	3.2	0.0	22.0		

JOB: 14 W BROADWAY - A ST & WEST 4TH RUN: 2019 NO BUILD 1-HR PEAK PM

DATE : 11/ 6/14
TIME : 12:17:32

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
1. W 4TH EB (1) QUEUE	100	58	5.0	301	1900	12.21	2	3
3. W 4TH WB (1) QUEUE	100	58	5.0	118	1900	12.21	2	3
5. A ST SB (1) QUEUE	100	52	5.0	764	1900	12.21	2	3
7. A ST NB (1) QUEUE	100	52	5.0	234	1900	12.21	2	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. 3A	776084.2	********	5.9
2. 3B	776056.7	********	5.9
3. 3C	776029.6	********	5.9
4. 3D	776062.8	********	5.9
5. 3E	776091.8	********	5.9
6. 3F	776117.1	********	5.9
7. 3G	776161.6	********	5.9
8. 3H	776208.6	********	5.9
9. 3I	776233.0	********	5.9
10. 3J	776188.3	********	5.9
11. 3K	776148.4	********	5.9
12. 3L	776186.1	********	5.9
13. 3M	776222.6	********	5.9
14. 3N	776189.2	********	5.9
15. 3O	776153.9	********	5.9
16. 3P	776113.6	********	5.9
17. 3Q	776060.3	********	5.9
18. 3R	776013.8	********	5.9
19. 3S	775985.4	********	5.9
20. 3T	776036.0	********	5.9

JOB: 14 W BROADWAY - A ST & WEST 4TH RUN: 2019 NO BUILD 1-HR PEAK PM

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
10.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
20.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
30.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
40.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
50.	* 0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1
60.	* 0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0
70.	* 0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0
80.	* 0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0
90.	* 0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0
100.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
110.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
120.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
130.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
150.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
160.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
170.	* 0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0
180.	* 0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0
190.	* 0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
200.	* 0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
210.	* 0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
230.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
270.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0
280.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
290.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
300.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
310.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
320.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
330.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
340.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
350.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
360.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
MAX	* 0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
DEGR.	* 170	70	50	0	0	0	0	0	0	0	0	0	0	50	50	50	140	140	0	0

THE HIGHEST CONCENTRATION OF 0.10 PPM OCCURRED AT RECEPTOR REC11.

JOB: 14 W BROADWAY - A ST & WEST 4TH RUN: 2019 BUILD 1-HR PEAK PM

DATE : 11/ 6/14
TIME : 12:17:43

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT) X1	Y1	X2	Y2	*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. W 4TH EB (1) QUEUE	*	775975.3	********	776048.5	********	*	95.	130.	AG	19.	100.0	0.0	15.0	0.45	4.8
2. W 4TH EB (2) FRE FLO	*	776342.3	********	776109.9	********	*	306.	311.	AG	144.	3.2	0.0	25.0		
3. W 4TH WB (1) QUEUE	*	776145.2	********	776173.8	********	*	37.	130.	AG	19.	100.0	0.0	10.0	0.18	1.9
4. W 4TH WB (2) FRE FLO	*	775969.3	********	776118.6	********	*	195.	130.	AG	422.	3.2	0.0	25.0		
5. A ST SB (1) QUEUE	*	776138.8	********	776327.9	********	*	293.	40.	AG	17.	100.0	0.0	12.0	0.98	14.9
6. A ST SB (2) FRE FLO	*	776112.1	********	775984.1	********	*	193.	221.	AG	444.	3.2	0.0	22.0		
7. A ST NB (1) QUEUE	*	776096.8	********	776053.7	********	*	67.	220.	AG	17.	100.0	0.0	12.0	0.30	3.4
8. A ST NB (2) FRE FLO	*	776317.3	********	776122.4	********	*	300.	221.	AG	407.	3.2	0.0	22.0		

JOB: 14 W BROADWAY - A ST & WEST 4TH RUN: 2019 BUILD 1-HR PEAK PM

DATE : 11/ 6/14
TIME : 12:17:43

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
1. W 4TH EB (1) QUEUE	100	58	5.0	301	1900	12.21	2	3
3. W 4TH WB (1) QUEUE	100	58	5.0	118	1900	12.21	2	3
5. A ST SB (1) QUEUE	100	52	5.0	764	1900	12.21	2	3
7. A ST NB (1) QUEUE	100	52	5.0	234	1900	12.21	2	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. 3A	776084.2	********	5.9
2. 3B	776056.7	********	5.9
3. 3C	776029.6	********	5.9
4. 3D	776062.8	********	5.9
5. 3E	776091.8	********	5.9
6. 3F	776117.1	********	5.9
7. 3G	776161.6	********	5.9
8. 3H	776208.6	********	5.9
9. 3I	776233.0	********	5.9
10. 3J	776188.3	********	5.9
11. 3K	776148.4	********	5.9
12. 3L	776186.1	********	5.9
13. 3M	776222.6	********	5.9
14. 3N	776189.2	********	5.9
15. 3O	776153.9	********	5.9
16. 3P	776113.6	********	5.9
17. 3Q	776060.3	********	5.9
18. 3R	776013.8	********	5.9
19. 3S	775985.4	********	5.9
20. 3T	776036.0	********	5.9

JOB: 14 W BROADWAY - A ST & WEST 4TH RUN: 2019 BUILD 1-HR PEAK PM

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
10.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
20.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
30.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
40.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
50.	* 0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1
60.	* 0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0
70.	* 0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0
80.	* 0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0
90.	* 0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0
100.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
110.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
120.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
130.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
150.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
160.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
170.	* 0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0
180.	* 0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0
190.	* 0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
200.	* 0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
210.	* 0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
230.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
270.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0
280.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
290.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
300.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
310.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
320.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
330.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
340.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
350.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
360.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
MAX	* 0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
DEGR.	* 170	70	50	0	0	0	0	0	0	0	0	0	0	50	50	50	140	140	0	0

THE HIGHEST CONCENTRATION OF 0.10 PPM OCCURRED AT RECEPTOR REC11.

JOB: 14 W BROADWAY - DOT AVE & WEST 2ND RUN: 2014 EXISTING 1-HR PEAK PM

DATE : 11/ 6/14
TIME : 12:20:11

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = .0 CM/S VD = .0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = .0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. W 2ND WB (1) QUEUE	*	775908.3	********	775922.9	********	*	15.	107.	AG	29.	100.0	.0	15.0	.28	.8
2. DOT SB (1) FRE FLO	*	775868.6	********	775852.1	********	*	372.	357.	AG	217.	4.0	.0	30.0		
3. DOT SB (2) QUEUE	*	775868.4	********	775867.3	********	*	20.	357.	AG	2.	100.0	.0	20.0	.03	1.0
4. DOT NB (1) FRE FLO	*	775868.5	********	775884.3	********	*	388.	178.	AG	71.	4.0	.0	25.0		
5. DOT NB (2) FRE FLO	*	775885.0	********	775891.6	********	*	163.	178.	AG	71.	4.0	.0	25.0		
6. W 2ND EB (1) FRE FLO	*	776180.7	********	775882.0	********	*	313.	287.	AG	105.	4.0	.0	25.0		

JOB: 14 W BROADWAY - DOT AVE & WEST 2ND RUN: 2014 EXISTING 1-HR PEAK PM

DATE : 11/ 6/14
TIME : 12:20:11

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	APPROACH VOL (VPH)	CAPACITY (VPH)	IDLE EM FAC (gm/hr)
1. W 2ND WB (1) QUEUE	389	1409.	22.30
3. DOT SB (2) QUEUE	34	1328.	22.30

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. 6A	775905.2	********	5.9
2. 6B	775961.2	********	5.9
3. 6C	776035.8	********	5.9
4. 6D	776046.3	********	5.9
5. 6E	775971.2	********	5.9
6. 6F	775896.1	********	5.9
7. 6G	775893.5	********	5.9
8. 6H	775893.0	********	5.9
9. 6I	775843.4	********	5.9
10. 6J	775844.5	********	5.9
11. 6K	775845.4	********	5.9
12. 6L	775848.0	********	5.9
13. 6M	775847.5	********	5.9
14. 6N	775902.4	********	5.9
15. 6O	775899.8	********	5.9

JOB: 14 W BROADWAY - DOT AVE & WEST 2ND RUN: 2014 EXISTING 1-HR PEAK PM

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)														
	* REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15
0.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
40.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
50.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
60.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
70.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
80.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
90.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
100.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
110.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
120.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
130.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
140.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
150.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
160.	* .0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0
170.	* .0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0
180.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
190.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
200.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
210.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
220.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
230.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
240.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
250.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
260.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
270.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
280.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
290.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
300.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
310.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
320.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
330.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
340.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
350.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
360.	* .0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
MAX DEGR.	* .0 0	.0 0	.0 0	.0 0	.0 0	.0 0	.0 0	.0 0	.1 160	.0 0	.0 0	.0 0	.0 0	.0 0	.0 0

THE HIGHEST CONCENTRATION OF .10 PPM OCCURRED AT RECEPTOR REC9 .

JOB: 14 W BROADWAY - DOT AVE & WEST 2ND RUN: 2019 NO BUILD 1-HR PEAK PM

DATE : 11/ 6/14
TIME : 12:20:33

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = .0 CM/S VD = .0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = .0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. W 2ND WB (1) QUEUE	*	775908.3	********	775922.9	********	*	15.	107.	AG	22.	100.0	.0	15.0	.34	.8
2. DOT SB (1) FRE FLO	*	775868.6	********	775852.1	********	*	372.	357.	AG	228.	3.2	.0	30.0		
3. DOT SB (2) QUEUE	*	775868.4	********	775867.3	********	*	20.	357.	AG	1.	100.0	.0	20.0	.03	1.0
4. DOT NB (1) FRE FLO	*	775868.5	********	775884.3	********	*	388.	178.	AG	78.	3.2	.0	25.0		
5. DOT NB (2) FRE FLO	*	775885.0	********	775891.6	********	*	163.	178.	AG	74.	3.2	.0	25.0		
6. W 2ND EB (1) FRE FLO	*	776180.7	********	775882.0	********	*	313.	287.	AG	109.	3.2	.0	25.0		

JOB: 14 W BROADWAY - DOT AVE & WEST 2ND RUN: 2019 NO BUILD 1-HR PEAK PM

DATE : 11/ 6/14
TIME : 12:20:33

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	APPROACH VOL (VPH)	CAPACITY (VPH)	IDLE EM FAC (gm/hr)
1. W 2ND WB (1) QUEUE	474	1383.	12.21
3. DOT SB (2) QUEUE	35	1317.	12.21

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. 6A	775905.2	********	5.9
2. 6B	775961.2	********	5.9
3. 6C	776035.8	********	5.9
4. 6D	776046.3	********	5.9
5. 6E	775971.2	********	5.9
6. 6F	775896.1	********	5.9
7. 6G	775893.5	********	5.9
8. 6H	775893.0	********	5.9
9. 6I	775843.4	********	5.9
10. 6J	775844.5	********	5.9
11. 6K	775845.4	********	5.9
12. 6L	775848.0	********	5.9
13. 6M	775847.5	********	5.9
14. 6N	775902.4	********	5.9
15. 6O	775899.8	********	5.9

JOB: 14 W BROADWAY - DOT AVE & WEST 2ND RUN: 2019 NO BUILD 1-HR PEAK PM

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15
0.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
40.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
50.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
60.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
70.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
80.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
90.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
100.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
110.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
120.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
130.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
140.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
150.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
160.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
170.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
180.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
190.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
200.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
210.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
220.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
230.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
240.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
250.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
260.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
270.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
280.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
290.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
300.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
310.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
320.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
330.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
340.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
350.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
360.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
MAX	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
DEGR.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

THE HIGHEST CONCENTRATION OF .00 PPM OCCURRED AT RECEPTOR BCDEF.

JOB: 14 W BROADWAY - DOT AVE & WEST 2ND RUN: 2019 BUILD 1-HR PEAK PM

DATE : 11/ 6/14
TIME : 12:20:44

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = .0 CM/S VD = .0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = .0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. W 2ND WB (1) QUEUE	*	775908.3	********	775922.9	********	*	15.	107.	AG	22.	100.0	.0	15.0	.34	.8
2. DOT SB (1) FRE FLO	*	775868.6	********	775852.1	********	*	372.	357.	AG	228.	3.2	.0	30.0		
3. DOT SB (2) QUEUE	*	775868.4	********	775867.3	********	*	20.	357.	AG	1.	100.0	.0	20.0	.03	1.0
4. DOT NB (1) FRE FLO	*	775868.5	********	775884.3	********	*	388.	178.	AG	78.	3.2	.0	25.0		
5. DOT NB (2) FRE FLO	*	775885.0	********	775891.6	********	*	163.	178.	AG	74.	3.2	.0	25.0		
6. W 2ND EB (1) FRE FLO	*	776180.7	********	775882.0	********	*	313.	287.	AG	109.	3.2	.0	25.0		

JOB: 14 W BROADWAY - DOT AVE & WEST 2ND RUN: 2019 BUILD 1-HR PEAK PM

DATE : 11/ 6/14
TIME : 12:20:44

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	APPROACH VOL (VPH)	CAPACITY (VPH)	IDLE EM FAC (gm/hr)
1. W 2ND WB (1) QUEUE	474	1383.	12.21
3. DOT SB (2) QUEUE	35	1317.	12.21

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. 6A	775905.2	********	5.9
2. 6B	775961.2	********	5.9
3. 6C	776035.8	********	5.9
4. 6D	776046.3	********	5.9
5. 6E	775971.2	********	5.9
6. 6F	775896.1	********	5.9
7. 6G	775893.5	********	5.9
8. 6H	775893.0	********	5.9
9. 6I	775843.4	********	5.9
10. 6J	775844.5	********	5.9
11. 6K	775845.4	********	5.9
12. 6L	775848.0	********	5.9
13. 6M	775847.5	********	5.9
14. 6N	775902.4	********	5.9
15. 6O	775899.8	********	5.9

JOB: 14 W BROADWAY - DOT AVE & WEST 2ND RUN: 2019 BUILD 1-HR PEAK PM

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15
0.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
40.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
50.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
60.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
70.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
80.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
90.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
100.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
110.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
120.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
130.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
140.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
150.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
160.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
170.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
180.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
190.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
200.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
210.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
220.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
230.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
240.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
250.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
260.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
270.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
280.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
290.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
300.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
310.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
320.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
330.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
340.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
350.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
360.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
MAX	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
DEGR.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

THE HIGHEST CONCENTRATION OF .00 PPM OCCURRED AT RECEPTOR BCDEF.

JOB: 14 W BROADWAY - WEST 2ND & ATHENS RUN: 2014 EXISTING 1-HR PEAK PM

DATE : 11/ 6/14
TIME : 12:20:54

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = .0 CM/S VD = .0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = .0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. W 2ND WB (1) FRE FLO	*	776005.4	********	776241.4	********	*	247.	107.	AG	1252.	4.0	.0	25.0		
2. W 2ND WB (2) FRE FLO	*	775908.0	********	776005.1	********	*	101.	107.	AG	1260.	4.0	.0	25.0		
3. W 2ND EB (1) FRE FLO	*	776000.5	********	775883.7	********	*	122.	287.	AG	119.	4.0	.0	25.0		
4. W 2ND EB (2) FRE FLO	*	776236.6	********	776000.7	********	*	247.	288.	AG	124.	4.0	.0	25.0		
5. ATHENS NB (1) QUEUE	*	775993.3	********	776003.2	********	*	15.	140.	AG	1.	100.0	.0	15.0	.01	.8

JOB: 14 W BROADWAY - WEST 2ND & ATHENS RUN: 2014 EXISTING 1-HR PEAK PM

DATE : 11/ 6/14
TIME : 12:20:54

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	APPROACH VOL (VPH)	CAPACITY (VPH)	IDLE EM FAC (gm/hr)
5. ATHENS NB (1) QUEUE	13	1066.	22.30

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. 7A	775905.2	********	5.9
2. 7B	775961.2	********	5.9
3. 7C	775989.8	********	5.9
4. 7D	776017.3	********	5.9
5. 7E	776037.0	********	5.9
6. 7F	776096.2	********	5.9
7. 7G	776171.4	********	5.9
8. 7H	776180.6	********	5.9
9. 7I	776113.7	********	5.9
10. 7J	776046.3	********	5.9
11. 7K	775971.2	********	5.9
12. 7L	775896.1	********	5.9

JOB: 14 W BROADWAY - WEST 2ND & ATHENS RUN: 2014 EXISTING 1-HR PEAK PM

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) * REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12
0.	* .0	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
10.	* .1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
20.	* .1	.1	.0	.1	.1	.1	.1	.0	.0	.0	.0	.0
30.	* .1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
40.	* .1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
50.	* .1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
60.	* .1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
70.	* .1	.2	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
80.	* .1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
90.	* .1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
100.	* .1	.1	.1	.0	.1	.1	.0	.1	.1	.2	.2	.1
110.	* .0	.1	.0	.0	.0	.0	.0	.2	.2	.2	.2	.2
120.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.3	.3	.3
130.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.3	.3	.2
140.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.3	.1
150.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.1
160.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.1
170.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
180.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
190.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
200.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
210.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
220.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
230.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
240.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
250.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
260.	* .0	.0	.0	.0	.0	.0	.0	.3	.2	.3	.2	.0
270.	* .0	.0	.0	.0	.0	.0	.0	.3	.2	.3	.2	.0
280.	* .0	.0	.0	.0	.0	.0	.0	.3	.2	.2	.2	.0
290.	* .0	.0	.0	.0	.0	.0	.1	.2	.2	.2	.1	.0
300.	* .0	.0	.0	.0	.1	.1	.1	.1	.1	.2	.1	.0
310.	* .0	.1	.1	.0	.1	.1	.1	.1	.0	.0	.0	.0
320.	* .0	.1	.1	.1	.2	.1	.1	.0	.0	.0	.0	.0
330.	* .0	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
340.	* .0	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
350.	* .0	.1	.1	.0	.1	.1	.1	.0	.0	.0	.0	.0
360.	* .0	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
MAX	* .1	.2	.1	.1	.2	.1	.1	.3	.2	.3	.3	.3
DEGR.	* 10	70	0	0	320	0	0	260	110	120	120	120

THE HIGHEST CONCENTRATION OF .30 PPM OCCURRED AT RECEPTOR REC10.

JOB: 14 W BROADWAY - WEST 2ND & ATHENS RUN: 2019 NO BUILD 1-HR PEAK PM

DATE : 11/ 6/14
TIME : 12:21: 4

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = .0 CM/S VD = .0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = .0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT) X1	Y1	X2	Y2	*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. W 2ND WB (1) FRE FLO	*	776005.4	********	776241.4	********	*	247.	107.	AG	1528.	3.2	.0	25.0		
2. W 2ND WB (2) FRE FLO	*	775908.0	********	776005.1	********	*	101.	107.	AG	1536.	3.2	.0	25.0		
3. W 2ND EB (1) FRE FLO	*	776000.5	********	775883.7	********	*	122.	287.	AG	239.	3.2	.0	25.0		
4. W 2ND EB (2) FRE FLO	*	776236.6	********	776000.7	********	*	247.	288.	AG	244.	3.2	.0	25.0		
5. ATHENS NB (1) QUEUE	*	775993.3	********	776003.2	********	*	15.	140.	AG	1.	100.0	.0	15.0	.01	.8

JOB: 14 W BROADWAY - WEST 2ND & ATHENS RUN: 2019 NO BUILD 1-HR PEAK PM

DATE : 11/ 6/14
TIME : 12:21: 4

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	APPROACH VOL (VPH)	CAPACITY (VPH)	IDLE EM FAC (gm/hr)
5. ATHENS NB (1) QUEUE	13	870.	12.21

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. 7A	775905.2	********	5.9
2. 7B	775961.2	********	5.9
3. 7C	775989.8	********	5.9
4. 7D	776017.3	********	5.9
5. 7E	776037.0	********	5.9
6. 7F	776096.2	********	5.9
7. 7G	776171.4	********	5.9
8. 7H	776180.6	********	5.9
9. 7I	776113.7	********	5.9
10. 7J	776046.3	********	5.9
11. 7K	775971.2	********	5.9
12. 7L	775896.1	********	5.9

JOB: 14 W BROADWAY - WEST 2ND & ATHENS RUN: 2019 NO BUILD 1-HR PEAK PM

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) * REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12
0.	* .0	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
10.	* .1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
20.	* .1	.1	.0	.1	.1	.1	.1	.0	.0	.0	.0	.0
30.	* .1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
40.	* .1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
50.	* .1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
60.	* .1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
70.	* .1	.2	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
80.	* .1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
90.	* .1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
100.	* .1	.1	.1	.0	.1	.1	.0	.1	.1	.2	.2	.1
110.	* .0	.1	.0	.0	.0	.0	.0	.2	.2	.2	.2	.2
120.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.3	.3	.3
130.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.3	.3	.1
140.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.3	.1
150.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.1
160.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.1
170.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
180.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
190.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
200.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
210.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
220.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
230.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
240.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
250.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
260.	* .0	.0	.0	.0	.0	.0	.0	.3	.2	.3	.2	.0
270.	* .0	.0	.0	.0	.0	.0	.0	.3	.2	.3	.2	.0
280.	* .0	.0	.0	.0	.0	.0	.0	.3	.2	.2	.2	.0
290.	* .0	.0	.0	.0	.0	.0	.1	.2	.1	.2	.1	.0
300.	* .0	.0	.0	.0	.1	.1	.1	.1	.1	.1	.1	.0
310.	* .0	.1	.1	.0	.1	.1	.1	.1	.0	.0	.0	.0
320.	* .0	.1	.1	.1	.2	.1	.1	.0	.0	.0	.0	.0
330.	* .0	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
340.	* .0	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
350.	* .0	.1	.1	.0	.1	.1	.1	.0	.0	.0	.0	.0
360.	* .0	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
MAX	* .1	.2	.1	.1	.2	.1	.1	.3	.2	.3	.3	.3
DEGR.	* 10	70	0	0	320	0	0	260	110	120	120	120

THE HIGHEST CONCENTRATION OF .30 PPM OCCURRED AT RECEPTOR REC10.

JOB: 14 W BROADWAY - WEST 2ND & ATHENS RUN: 2019 BUILD 1-HR PEAK PM

DATE : 11/ 6/14
TIME : 12:21:16

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = .0 CM/S VD = .0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = .0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT) X1	Y1	X2	Y2	*	LENGTH (FT)	BRG TYPE (DEG)	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. W 2ND WB (1) FRE FLO	*	776005.4	********	776241.4	********	*	247.	107. AG	1532.	3.2	.0	25.0		
2. W 2ND WB (2) FRE FLO	*	775908.0	********	776005.1	********	*	101.	107. AG	1557.	3.2	.0	25.0		
3. W 2ND EB (1) FRE FLO	*	776000.5	********	775883.7	********	*	122.	287. AG	266.	3.2	.0	25.0		
4. W 2ND EB (2) FRE FLO	*	776236.6	********	776000.7	********	*	247.	288. AG	249.	3.2	.0	25.0		
5. ATHENS NB (1) QUEUE	*	775993.3	********	776003.2	********	*	15.	140. AG	2.	100.0	.0	15.0	.04	.8

JOB: 14 W BROADWAY - WEST 2ND & ATHENS RUN: 2019 BUILD 1-HR PEAK PM

DATE : 11/ 6/14
TIME : 12:21:16

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	APPROACH VOL (VPH)	CAPACITY (VPH)	IDLE EM FAC (gm/hr)
5. ATHENS NB (1) QUEUE	35	855.	12.21

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. 7A	775905.2	********	5.9
2. 7B	775961.2	********	5.9
3. 7C	775989.8	********	5.9
4. 7D	776017.3	********	5.9
5. 7E	776037.0	********	5.9
6. 7F	776096.2	********	5.9
7. 7G	776171.4	********	5.9
8. 7H	776180.6	********	5.9
9. 7I	776113.7	********	5.9
10. 7J	776046.3	********	5.9
11. 7K	775971.2	********	5.9
12. 7L	775896.1	********	5.9

JOB: 14 W BROADWAY - WEST 2ND & ATHENS RUN: 2019 BUILD 1-HR PEAK PM

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12
0.	* .0	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
10.	* .1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
20.	* .1	.1	.0	.1	.1	.1	.1	.0	.0	.0	.0	.0
30.	* .1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
40.	* .1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
50.	* .1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
60.	* .1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
70.	* .1	.2	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
80.	* .1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
90.	* .1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
100.	* .1	.1	.1	.0	.1	.1	.0	.1	.1	.2	.2	.1
110.	* .0	.1	.0	.0	.0	.0	.0	.2	.2	.2	.2	.2
120.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.3	.3	.3
130.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.3	.3	.2
140.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.3	.1
150.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.1
160.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.1
170.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
180.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
190.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
200.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
210.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
220.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
230.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
240.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
250.	* .0	.0	.0	.0	.0	.0	.0	.2	.2	.2	.2	.0
260.	* .0	.0	.0	.0	.0	.0	.0	.3	.2	.3	.2	.0
270.	* .0	.0	.0	.0	.0	.0	.0	.3	.2	.3	.2	.0
280.	* .0	.0	.0	.0	.0	.0	.0	.3	.2	.2	.2	.0
290.	* .0	.0	.0	.0	.0	.0	.1	.2	.1	.2	.1	.0
300.	* .0	.0	.0	.0	.1	.1	.1	.1	.1	.2	.1	.0
310.	* .0	.1	.1	.0	.1	.1	.1	.1	.0	.0	.0	.0
320.	* .0	.1	.1	.1	.2	.1	.1	.0	.0	.0	.0	.0
330.	* .0	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
340.	* .0	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
350.	* .0	.1	.1	.0	.1	.1	.1	.0	.0	.0	.0	.0
360.	* .0	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
MAX	* .1	.2	.1	.1	.2	.1	.1	.3	.2	.3	.3	.3
DEGR.	* 10	70	0	0	320	0	0	260	110	120	120	120

THE HIGHEST CONCENTRATION OF .30 PPM OCCURRED AT RECEPTOR REC10.

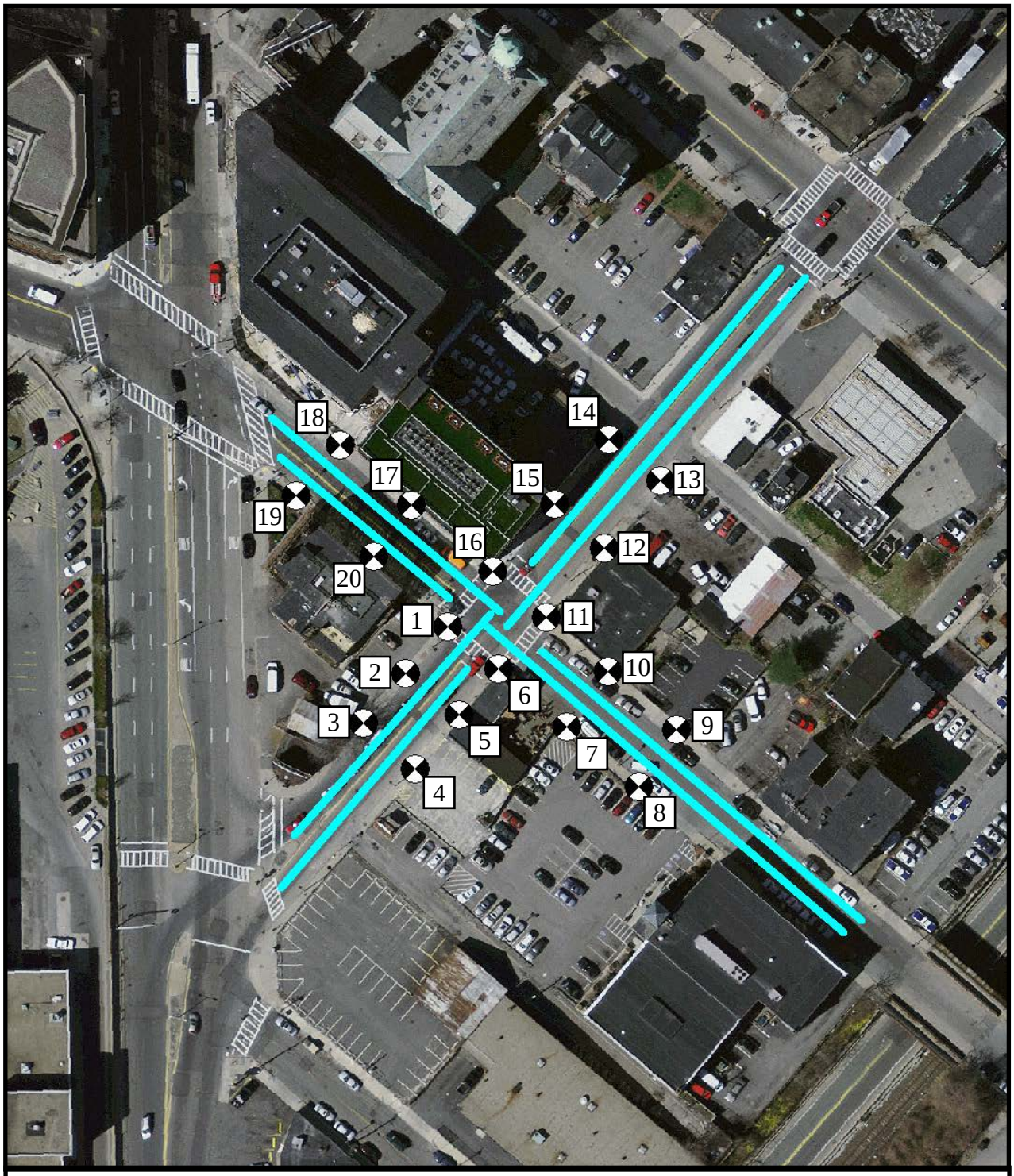


Figure 1
A Street & West 4th Street
Existing and Future No Build & Build Conditions
Roadway Links and Receptors

TECH environmental
FOCUSED KNOWLEDGE. REAL SOLUTIONS.

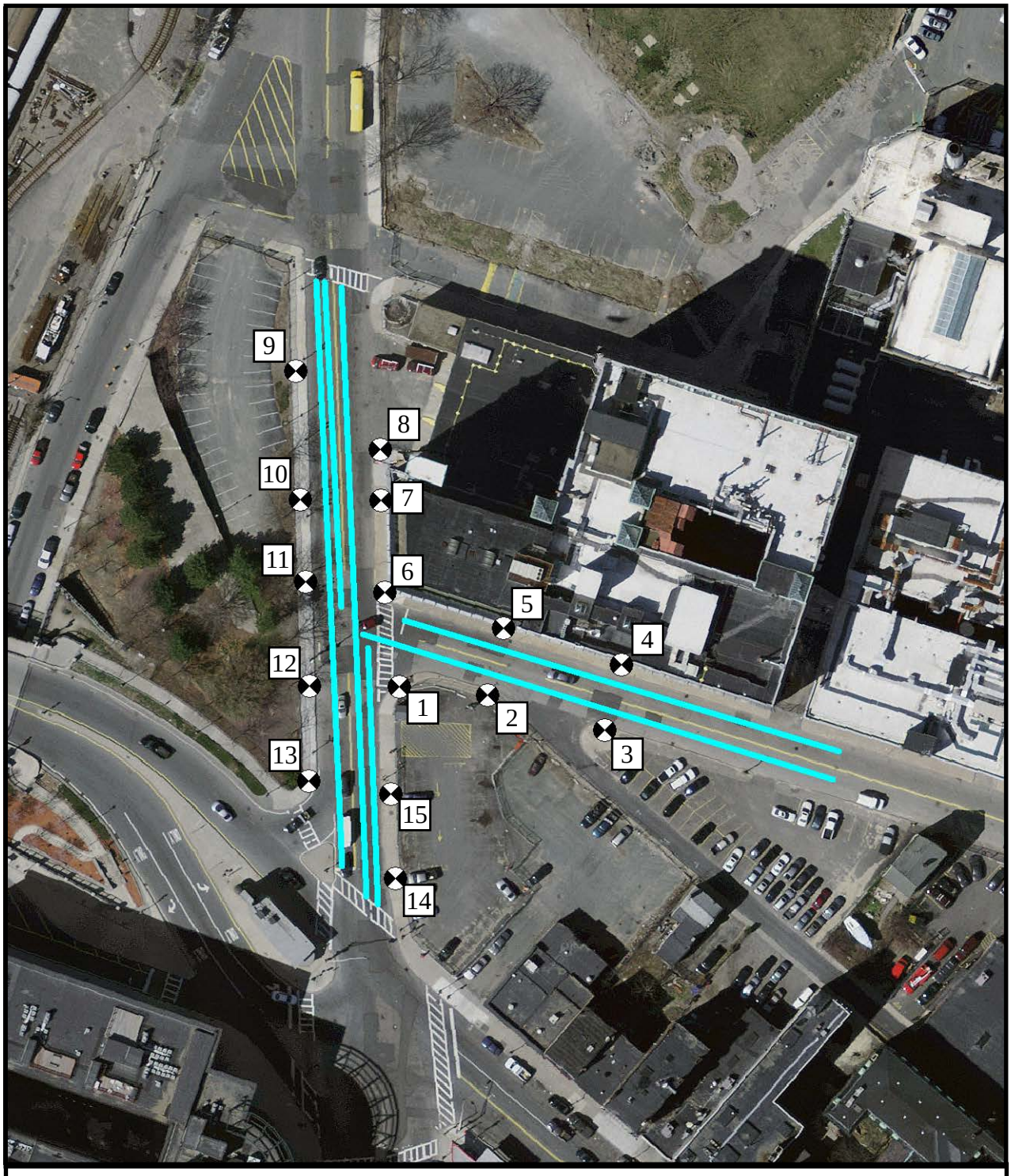


Figure 2
Dorchester Avenue & West 2nd Street
Existing and Future No Build & Build Conditions
Roadway Links and Receptors

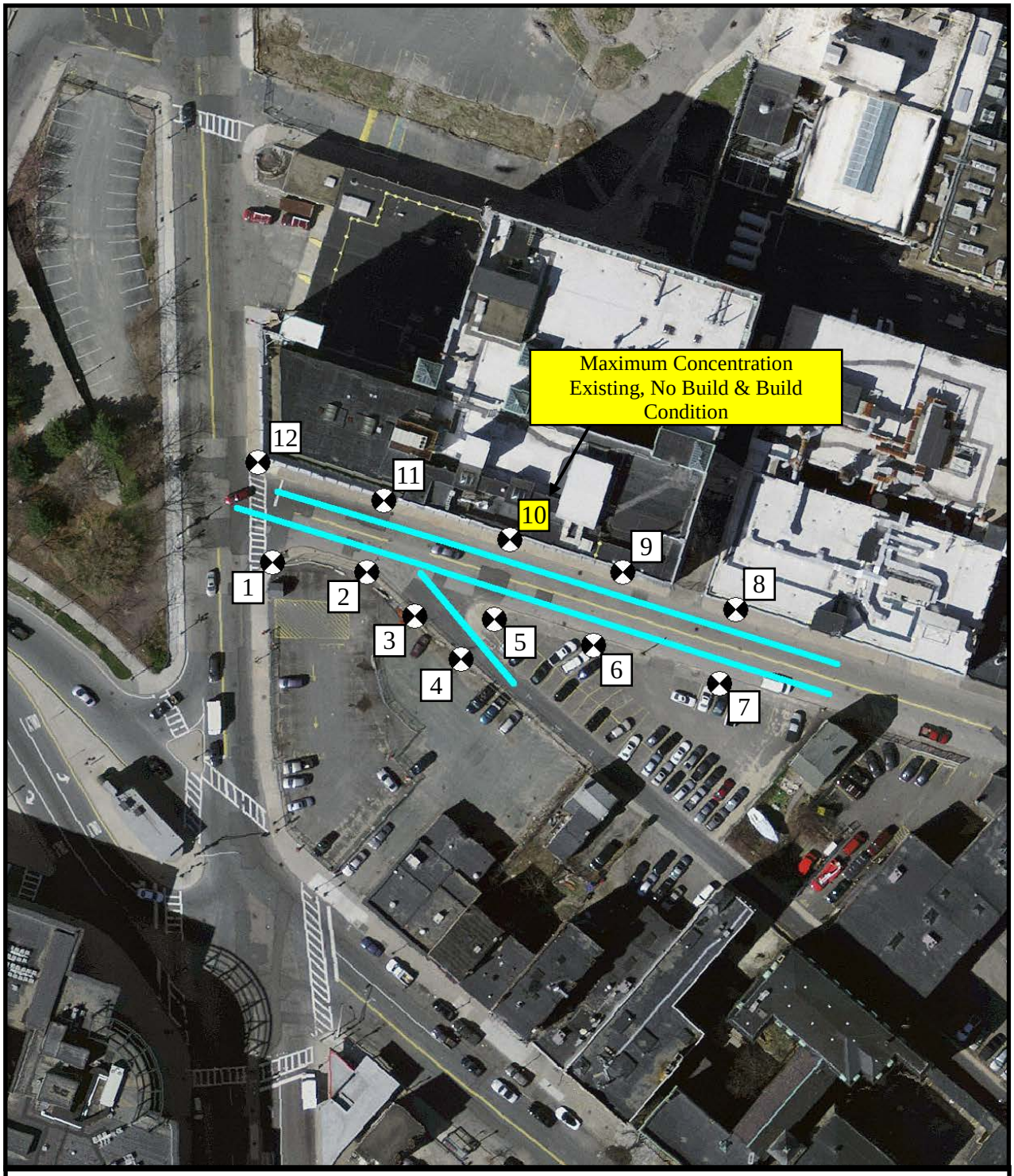


Figure 3
West 2nd Street & Athens Street
Existing and Future No Build & Build Conditions
Roadway Links and Receptors

TECH environmental
FOCUSED KNOWLEDGE. REAL SOLUTIONS.

APPENDIX C – NOISE APPENDIX

APPENDIX C
NOISE

14 WEST BROADWAY
PROJECT NOTIFICATION FORM

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2 Figure 1: Sound Monitoring Locations & Modeling Receptors
3 Sound Monitoring Results
6 Cadna Noise Modeling Results

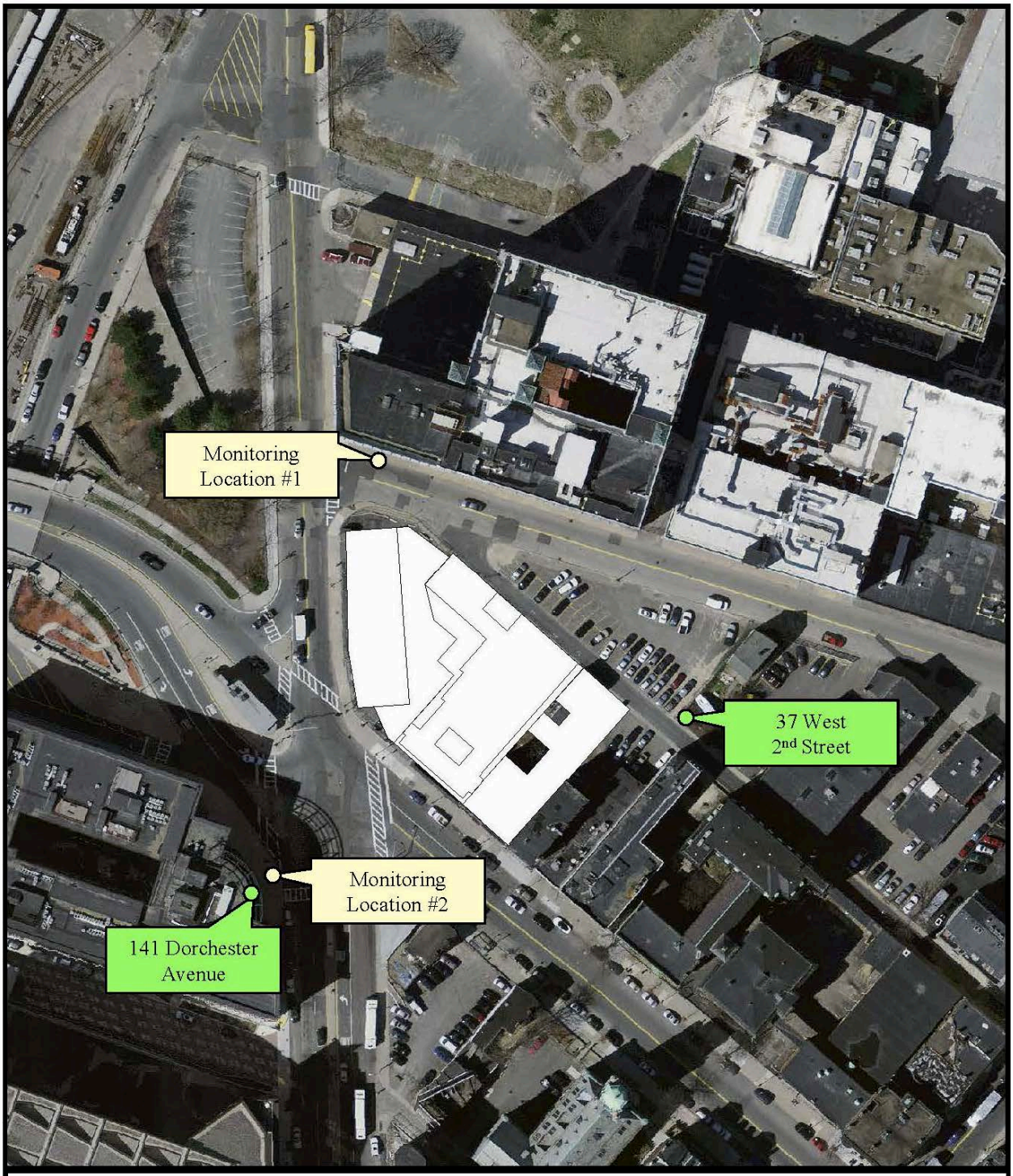


Figure 1

Sound Monitoring Locations & Modeling Receptors
14 West Broadway, Boston, MA

TECH environmental
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Sound Monitoring Results

Location: Location #1 **File #**
Date: 10/28/14 5:04 PM 831_Data.011
Duration: 0:30:05
Weather: Calm, Overcast, 57 F

	Wt	L_{EQ}	L_{90}	LF_{MAX}	LF_{MIN}
Total	A	67.5	61.3	88.5	57.7
Frequency (Hz)					
16	Z	74.8	66.4	114.0	59.3
32	Z	80.5	71.0	123.7	63.0
63	Z	77.2	70.5	116.2	64.4
125	Z	73.1	66.6	113.0	59.7
250	Z	68.2	60.0	110.2	55.9
500	Z	63.2	57.4	100.9	54.1
1,000	Z	63.0	56.2	98.9	52.0
2,000	Z	60.8	51.4	99.9	47.3
4,000	Z	55.6	43.2	92.5	40.1
8,000	Z	54.7	32.8	86.0	28.9
16,000	Z	54.6	20.0	89.6	16.8

Sound Sources: Traffic from nearby highway & local roads, construction vehicles, trains passing by/ train station noises, pedestrians.

Sound Monitoring Results

Location: Location #1 **File #**
Date: 10/27/14 11:48 PM 831_Data.008
Duration: 0:30:06
Weather: Calm, Overcast, 54 F

	Wt	L_{EQ}	L_{90}	LF_{MAX}	LF_{MIN}
Total	A	65.2	56.5	92.6	54.5
Frequency (Hz)					
16	Z	69.8	60.6	93.4	51.2
32	Z	70.1	61.9	90.3	54.7
63	Z	70.8	60.5	92.3	54.3
125	Z	66.4	58.8	86.2	53.6
250	Z	62.0	55.2	86.8	52.0
500	Z	60.7	52.5	88.3	49.5
1,000	Z	60.6	52.9	87.2	49.9
2,000	Z	57.9	47.3	86.1	44.9
4,000	Z	54.6	35.2	85.4	33.6
8,000	Z	49.5	25.6	82.0	23.9
16,000	Z	41.1	15.5	72.6	14.9

Sound Sources: Traffic from nearby highway & local roads, construction vehicles and buses, trains passing by/ train station noises, pedestrians.

Sound Monitoring Results

Location: Location #2 **File #**
Date: 10/28/14 12:24 AM 831_Data.009
Duration: 0:30:03
Weather: Calm, Overcast, 54 F

	Wt	L_{EQ}	L_{90}	LF_{MAX}	LF_{MIN}
Total	A	62.7	54.3	90.1	52.6
Frequency (Hz)					
16	Z	64.6	56.7	86.3	46.4
32	Z	69.9	62.9	90.3	55.6
63	Z	73.7	61.7	98.8	55.3
125	Z	67.7	58.8	88.5	54.5
250	Z	62.1	56.3	81.8	53.4
500	Z	57.7	50.9	77.7	48.4
1,000	Z	57.6	49.2	75.1	46.7
2,000	Z	54.0	43.1	80.4	40.4
4,000	Z	51.6	32.7	85.1	30.3
8,000	Z	51.6	21.0	86.8	17.7
16,000	Z	46.4	14.3	81.7	13.5

Sound Sources: Traffic from nearby highway & local roads, construction vehicles and buses, trains passing by/ train station noises, HVAC equipment, pedestrians.

Cadna Noise Modeling Results

Sound Modeling Results

		Coordinates			
Name	**Sound Level (dBA)**	**Height (m)**	**X (m)**	**Y (m)**	**Z (m)**
Macellan Building - 4th Floor	42.0	10.7	236473.9	899214.8	14.9
37 West 2nd Street - 4th Floor	22.1	12.2	236577.95	899258.69	17.29

Octave Band Levels

Macellan Building - 4th Floor	31.5	63	125	250	500	1000	2000	4000	8000
Frequency Sound Level (dB)	41.8	42.4	40.8	40.9	39.9	37.7	33.2	26.3	18.2
37 West 2nd Street - 4th Floor	31.5	63	125	250	500	1000	2000	4000	8000
Frequency Sound Level (dB)	35.3	31.6	23.9	20.8	19.9	17.6	13	6.4	-0.3

APPENDIX D – TRANSPORTATION APPENDIX

TRANSPORTATION TECHNICAL APPENDIX

- TRAFFIC COUNTS
- TRIP GENERATION CALCULATIONS
- INTERSECTION CAPACITY ANALYSIS WORKSHEETS

TRAFFIC COUNTS

Accurate Counts

978-664-2565

N/S Street : Dorchester Avenue
E/W Street : A Street / W 4th Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099002
Site Code : 14099002
Start Date : 10/8/2014
Page No : 1

Groups Printed- Cars - Trucks

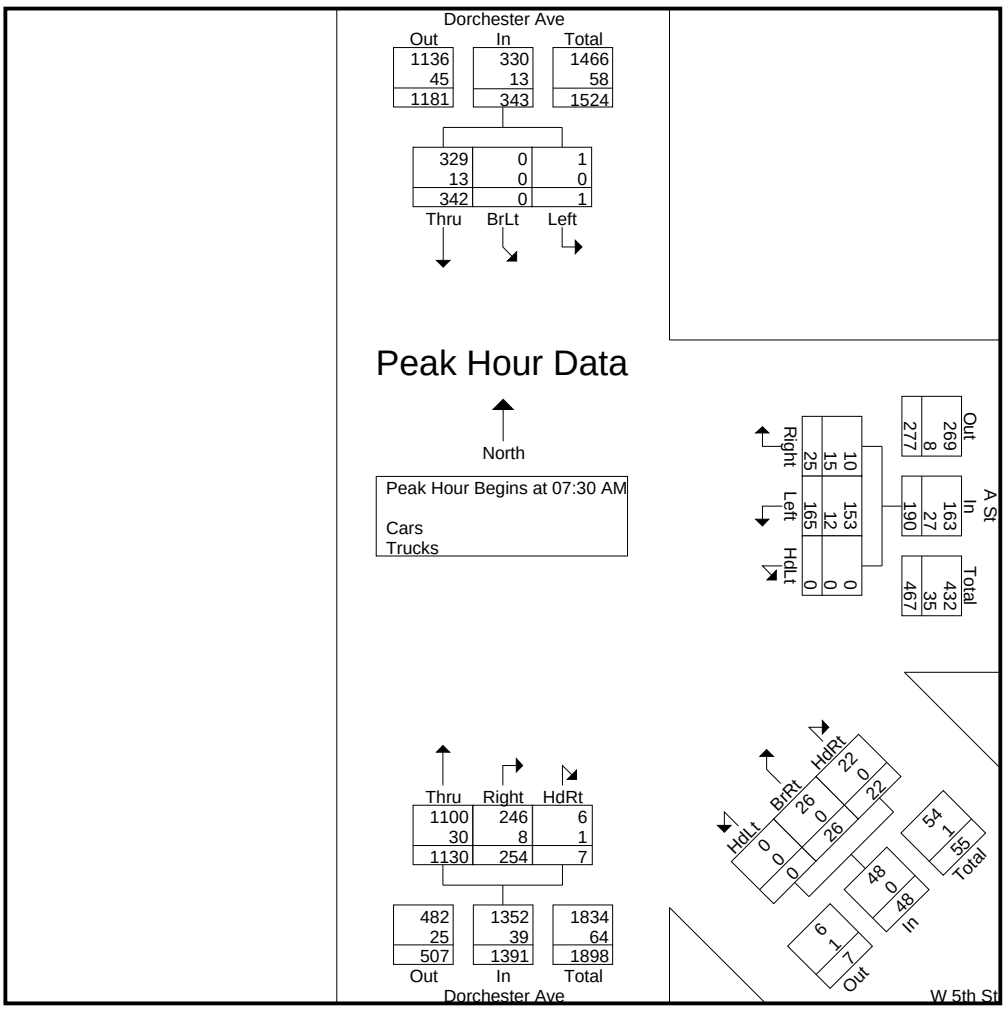
	Dorchester Ave From North			A St From East			W 5th St From Southeast			Dorchester Ave From South			
Start Time	Left	BrLt	Thru	HdLt	Left	Right	HdLt	BrRt	HdRt	Thru	Right	HdRt	Int. Total
07:00 AM	0	0	76	0	42	4	0	5	5	225	60	0	417
07:15 AM	0	0	75	0	47	8	0	8	2	212	42	1	395
07:30 AM	0	0	83	0	45	8	0	10	5	291	43	1	486
07:45 AM	0	0	82	0	38	5	0	6	8	314	75	2	530
Total	0	0	316	0	172	25	0	29	20	1042	220	4	1828
08:00 AM	0	0	97	0	38	4	0	4	5	247	64	2	461
08:15 AM	1	0	80	0	44	8	0	6	4	278	72	2	495
08:30 AM	0	0	75	0	46	6	0	12	6	268	64	1	478
08:45 AM	0	0	73	0	37	12	0	4	0	288	87	1	502
Total	1	0	325	0	165	30	0	26	15	1081	287	6	1936
Grand Total	1	0	641	0	337	55	0	55	35	2123	507	10	3764
Apprch %	0.2	0	99.8	0	86	14	0	61.1	38.9	80.4	19.2	0.4	
Total %	0	0	17	0	9	1.5	0	1.5	0.9	56.4	13.5	0.3	
Cars	1	0	613	0	316	26	0	55	34	2057	480	9	3591
% Cars	100	0	95.6	0	93.8	47.3	0	100	97.1	96.9	94.7	90	95.4
Trucks	0	0	28	0	21	29	0	0	1	66	27	1	173
% Trucks	0	0	4.4	0	6.2	52.7	0	0	2.9	3.1	5.3	10	4.6

Accurate Counts
978-664-2565

N/S Street : Dorchester Avenue
E/W Street : A Street / W 4th Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099002
Site Code : 14099002
Start Date : 10/8/2014

	Dorchester Ave From North				A St From East				W 5th St From Southeast				Dorchester Ave From South				
Start Time	Left	BrLt	Thru	App. Total	HdLt	Left	Right	App. Total	HdLt	BrRt	HdRt	App. Total	Thru	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	83	83	0	**45**	**8**	**53**	0	**10**	5	**15**	291	43	1	335	486
07:45 AM	0	0	82	82	0	38	5	43	0	6	**8**	14	**314**	**75**	**2**	**391**	**530**
08:00 AM	0	0	**97**	**97**	0	38	4	42	0	4	5	9	247	64	2	313	461
08:15 AM	**1**	0	80	81	0	44	8	52	0	6	4	10	278	72	2	352	495
Total Volume	1	0	342	343	0	165	25	190	0	26	22	48	1130	254	7	1391	1972
% App. Total	0.3	0	99.7		0	86.8	13.2		0	54.2	45.8		81.2	18.3	0.5		
PHF	.250	.000	.881	.884	.000	.917	.781	.896	.000	.650	.688	.800	.900	.847	.875	.889	.930
Cars	1	0	329	330	0	153	10	163	0	26	22	48	1100	246	6	1352	1893
% Cars	100	0	96.2	96.2	0	92.7	40.0	85.8	0	100	100	100	97.3	96.9	85.7	97.2	96.0
Trucks	0	0	13	13	0	12	15	27	0	0	0	0	30	8	1	39	79
% Trucks	0	0	3.8	3.8	0	7.3	60.0	14.2	0	0	0	0	2.7	3.1	14.3	2.8	4.0



Accurate Counts

978-664-2565

N/S Street : Dorchester Avenue
E/W Street : A Street / W 4th Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099002
Site Code : 14099002
Start Date : 10/8/2014

Groups Printed- Bikes Peds

	Dorchester Ave From North				A St From East				W 5th St From Southeast				Dorchester Ave From South						
Start Time	Left	BrLt	Thru	Peds	HdLt	Left	Right	Peds	HdLt	BrRt	HdRt	Peds	Thru	Right	HdRt	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	1	1	0	0	0	16	0	0	0	12	4	1	0	0	29	6	35
07:15 AM	0	0	0	0	0	0	0	14	0	0	0	12	3	1	0	0	26	4	30
07:30 AM	0	0	0	1	0	0	0	14	0	0	0	8	2	1	0	0	23	3	26
07:45 AM	0	0	2	1	0	0	0	30	0	0	0	19	2	1	0	0	50	5	55
Total	0	0	3	3	0	0	0	74	0	0	0	51	11	4	0	0	128	18	146
08:00 AM	0	0	1	7	0	0	0	20	0	0	0	15	2	3	0	0	42	6	48
08:15 AM	0	0	2	2	0	2	0	29	0	0	0	19	4	7	0	0	50	15	65
08:30 AM	0	0	0	2	0	2	0	17	0	0	0	18	4	8	0	0	37	14	51
08:45 AM	0	0	1	1	0	0	0	13	0	1	0	13	4	5	0	0	27	11	38
Total	0	0	4	12	0	4	0	79	0	1	0	65	14	23	0	0	156	46	202
Grand Total	0	0	7	15	0	4	0	153	0	1	0	116	25	27	0	0	284	64	348
Apprch %	0	0	100		0	100	0		0	100	0		48.1	51.9	0				
Total %	0	0	10.9		0	6.2	0		0	1.6	0		39.1	42.2	0		81.6	18.4	

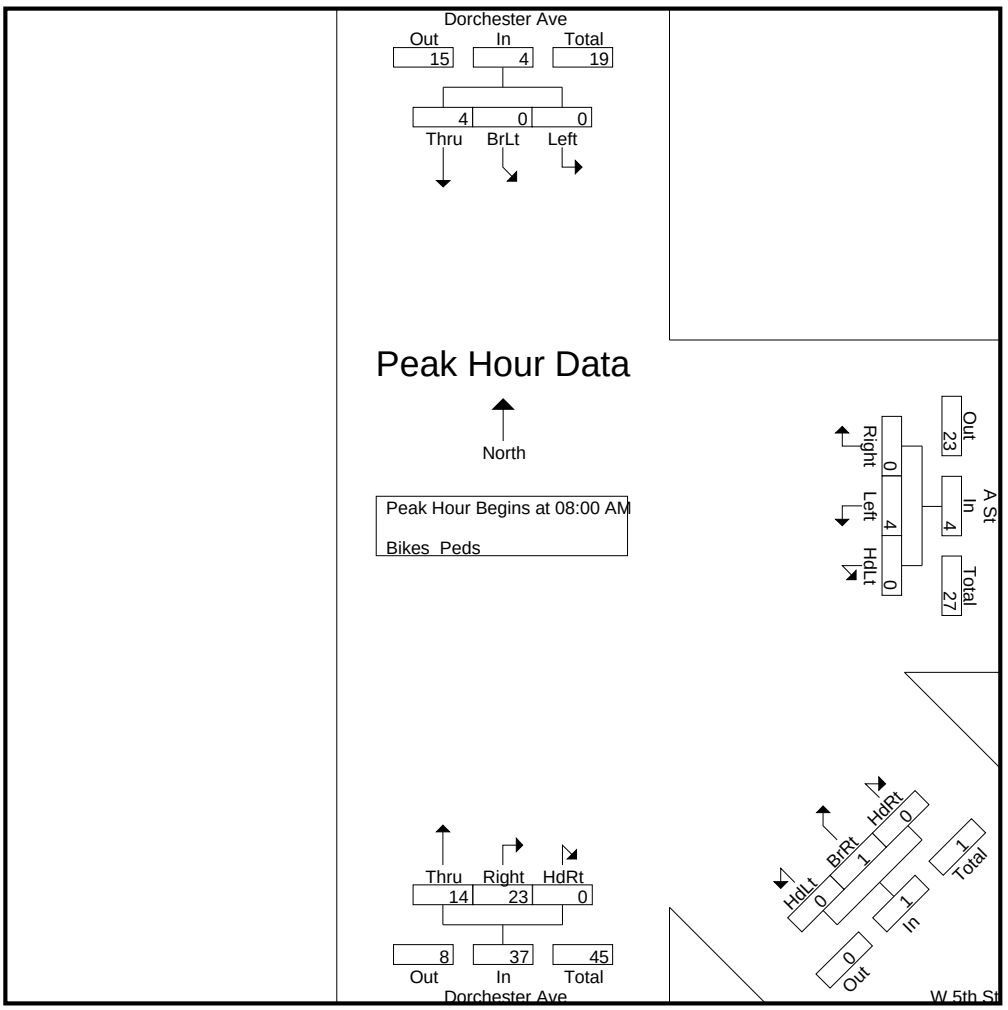
Accurate Counts

978-664-2565

N/S Street : Dorchester Avenue
E/W Street : A Street / W 4th Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099002
Site Code : 14099002
Start Date : 10/8/2014
Page No : 11

	Dorchester Ave From North				A St From East				W 5th St From Southeast				Dorchester Ave From South				
Start Time	Left	BrLt	Thru	App. Total	HdLt	Left	Right	App. Total	HdLt	BrRt	HdRt	App. Total	Thru	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	1	1	0	0	0	0	0	0	0	0	2	3	0	5	6
08:15 AM	0	0	**2**	**2**	0	**2**	0	**2**	0	0	0	0	**4**	7	0	11	**15**
08:30 AM	0	0	0	0	0	2	0	2	0	0	0	0	4	**8**	0	**12**	14
08:45 AM	0	0	1	1	0	0	0	0	0	**1**	0	**1**	4	5	0	9	11
Total Volume	0	0	4	4	0	4	0	4	0	1	0	1	14	23	0	37	46
% App. Total	0	0	100		0	100	0		0	100	0		37.8	62.2	0		
PHF	.000	.000	.500	.500	.000	.500	.000	.500	.000	.250	.000	.250	.875	.719	.000	.771	.767



Accurate Counts

978-664-2565

N/S Street : Dorchester Avenue
E/W Street : A Street / W 4th Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099002
Site Code : 14099002
Start Date : 10/8/2014
Page No : 1

Groups Printed- Cars - Trucks

	Dorchester Ave From North			A St From East			W 5th St From Southeast			Dorchester Ave From South			
Start Time	Left	BrLt	Thru	HdLt	Left	Right	HdLt	BrRt	HdRt	Thru	Right	HdRt	Int. Total
04:00 PM	0	0	216	0	103	4	0	3	8	139	38	0	511
04:15 PM	0	0	168	0	100	4	1	2	0	140	38	1	454
04:30 PM	0	0	157	0	92	6	0	7	2	128	40	1	433
04:45 PM	0	0	194	0	91	6	0	2	3	203	50	1	550
Total	0	0	735	0	386	20	1	14	13	610	166	3	1948
05:00 PM	0	0	156	0	73	3	0	2	0	175	34	1	444
05:15 PM	1	0	177	0	87	4	0	0	1	144	49	1	464
05:30 PM	0	0	189	0	80	7	0	2	0	153	51	1	483
05:45 PM	0	0	176	0	80	6	0	2	1	157	35	0	457
Total	1	0	698	0	320	20	0	6	2	629	169	3	1848
Grand Total	1	0	1433	0	706	40	1	20	15	1239	335	6	3796
Apprch %	0.1	0	99.9	0	94.6	5.4	2.8	55.6	41.7	78.4	21.2	0.4	
Total %	0	0	37.8	0	18.6	1.1	0	0.5	0.4	32.6	8.8	0.2	
Cars	1	0	1411	0	689	27	1	20	13	1195	328	6	3691
% Cars	100	0	98.5	0	97.6	67.5	100	100	86.7	96.4	97.9	100	97.2
Trucks	0	0	22	0	17	13	0	0	2	44	7	0	105
% Trucks	0	0	1.5	0	2.4	32.5	0	0	13.3	3.6	2.1	0	2.8

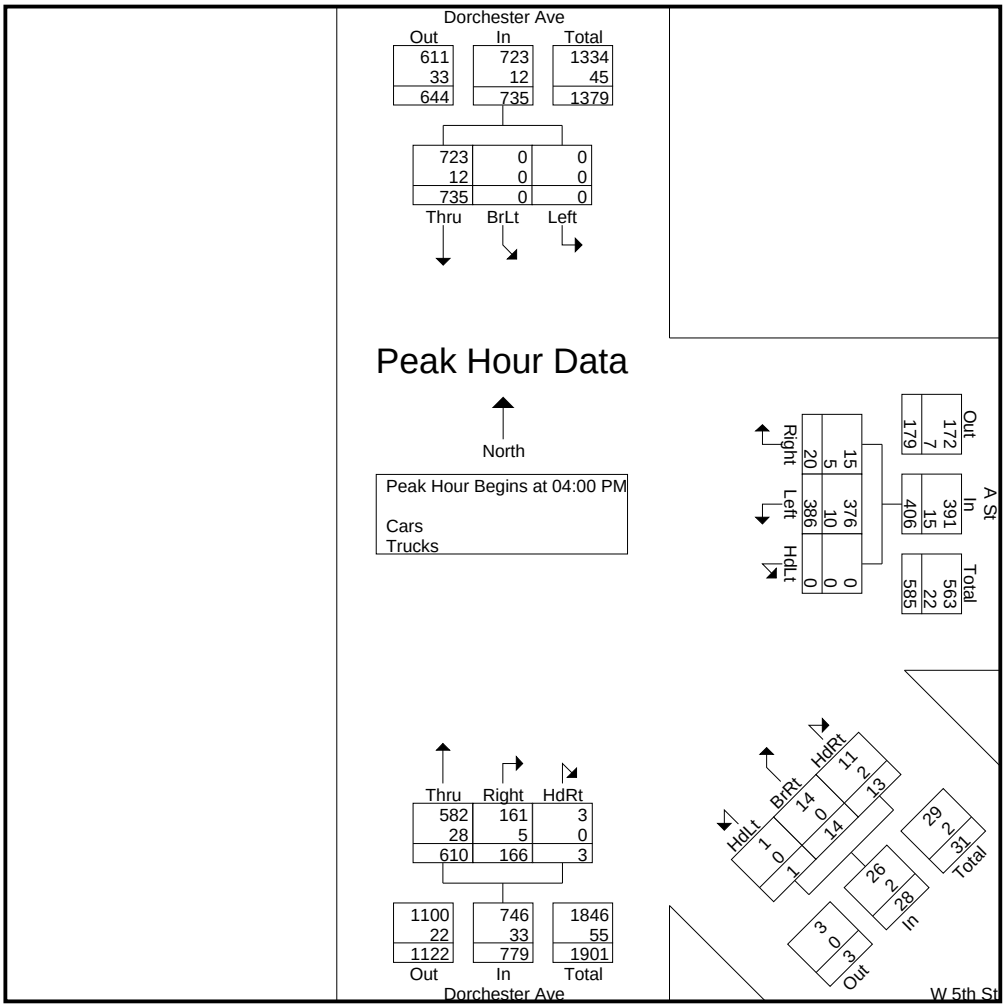
Accurate Counts

978-664-2565

N/S Street : Dorchester Avenue
E/W Street : A Street / W 4th Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099002
Site Code : 14099002
Start Date : 10/8/2014

	Dorchester Ave From North				A St From East				W 5th St From Southeast				Dorchester Ave From South				
Start Time	Left	BrLt	Thru	App. Total	HdLt	Left	Right	App. Total	HdLt	BrRt	HdRt	App. Total	Thru	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	**216**	**216**	0	**103**	4	**107**	0	3	**8**	**11**	139	38	0	177	511
04:15 PM	0	0	168	168	0	100	4	104	**1**	2	0	3	140	38	**1**	179	454
04:30 PM	0	0	157	157	0	92	**6**	98	0	**7**	2	9	128	40	1	169	433
04:45 PM	0	0	194	194	0	91	6	97	0	2	3	5	**203**	**50**	1	**254**	**550**
Total Volume	0	0	735	735	0	386	20	406	1	14	13	28	610	166	3	779	1948
% App. Total	0	0	100		0	95.1	4.9		3.6	50	46.4		78.3	21.3	0.4		
PHF	.000	.000	.851	.851	.000	.937	.833	.949	.250	.500	.406	.636	.751	.830	.750	.767	.885
Cars	0	0	723	723	0	376	15	391	1	14	11	26	582	161	3	746	1886
% Cars	0	0	98.4	98.4	0	97.4	75.0	96.3	100	100	84.6	92.9	95.4	97.0	100	95.8	96.8
Trucks	0	0	12	12	0	10	5	15	0	0	2	2	28	5	0	33	62
% Trucks	0	0	1.6	1.6	0	2.6	25.0	3.7	0	0	15.4	7.1	4.6	3.0	0	4.2	3.2



Accurate Counts

978-664-2565

N/S Street : Dorchester Avenue
E/W Street : A Street / W 4th Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099002
Site Code : 14099002
Start Date : 10/8/2014

Groups Printed- Bikes Peds

	Dorchester Ave From North				A St From East				W 5th St From Southeast				Dorchester Ave From South						
Start Time	Left	BrLt	Thru	Peds	HdLt	Left	Right	Peds	HdLt	BrRt	HdRt	Peds	Thru	Right	HdRt	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	18	0	0	0	16	0	0	0	0	34	0	34
04:15 PM	0	0	2	0	0	2	0	15	0	1	0	13	0	0	0	0	28	5	33
04:30 PM	0	0	0	0	0	1	0	11	0	0	0	11	1	1	0	0	22	3	25
04:45 PM	0	0	3	2	0	2	0	18	0	0	0	13	1	1	0	0	33	7	40
Total	0	0	5	2	0	5	0	62	0	1	0	53	2	2	0	0	117	15	132
05:00 PM	0	0	0	0	0	4	1	15	0	0	0	7	1	0	0	0	22	6	28
05:15 PM	0	0	2	1	0	6	0	23	0	0	0	22	3	0	0	0	46	11	57
05:30 PM	0	0	6	1	0	2	0	33	0	0	0	25	5	2	0	0	59	15	74
05:45 PM	0	0	2	4	0	3	0	23	0	0	0	28	2	2	0	0	55	9	64
Total	0	0	10	6	0	15	1	94	0	0	0	82	11	4	0	0	182	41	223
Grand Total	0	0	15	8	0	20	1	156	0	1	0	135	13	6	0	0	299	56	355
Apprch %	0	0	100		0	95.2	4.8		0	100	0		68.4	31.6	0				
Total %	0	0	26.8		0	35.7	1.8		0	1.8	0		23.2	10.7	0		84.2	15.8	

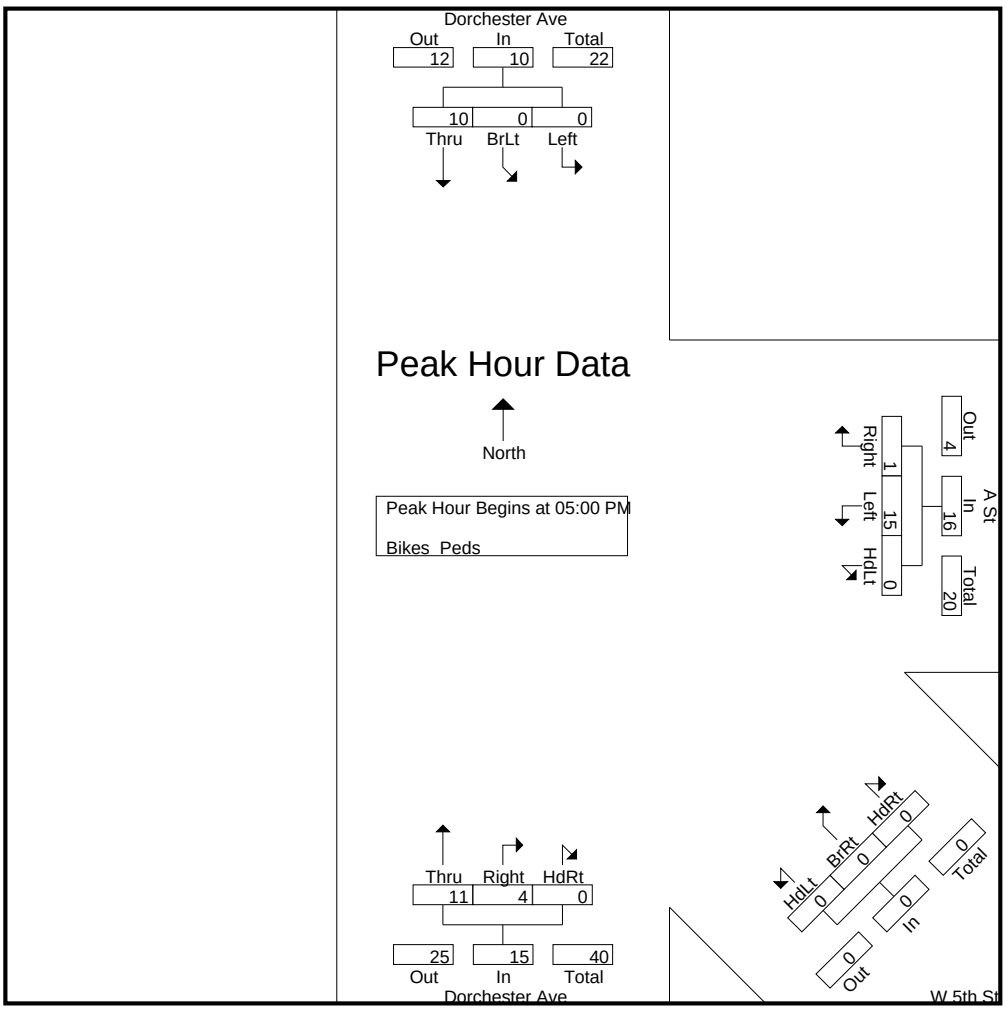
Accurate Counts

978-664-2565

N/S Street : Dorchester Avenue
E/W Street : A Street / W 4th Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099002
Site Code : 14099002
Start Date : 10/8/2014
Page No : 11

	Dorchester Ave From North				A St From East				W 5th St From Southeast				Dorchester Ave From South				
Start Time	Left	BrLt	Thru	App. Total	HdLt	Left	Right	App. Total	HdLt	BrRt	HdRt	App. Total	Thru	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	4	**1**	5	0	0	0	0	1	0	0	1	6
05:15 PM	0	0	2	2	0	**6**	0	**6**	0	0	0	0	3	0	0	3	11
05:30 PM	0	0	**6**	**6**	0	2	0	2	0	0	0	0	**5**	**2**	0	**7**	**15**
05:45 PM	0	0	2	2	0	3	0	3	0	0	0	0	2	2	0	4	9
Total Volume	0	0	10	10	0	15	1	16	0	0	0	0	11	4	0	15	41
% App. Total	0	0	100		0	93.8	6.2		0	0	0		73.3	26.7	0		
PHF	.000	.000	.417	.417	.000	.625	.250	.667	.000	.000	.000	.000	.550	.500	.000	.536	.683



Accurate Counts

978-664-2565

N/S Street : Dorchester Avenue
E/W Street : West Fourth Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099003
Site Code : 14099003
Start Date : 10/8/2014

Groups Printed- Cars - Trucks

	Dorchester Ave From North			W Fourth St From East			Dorchester Ave From South			W Fourth St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	9	48	32	1	77	3	106	132	0	8	28	23	467
07:15 AM	9	60	38	1	99	6	106	127	0	18	32	15	511
07:30 AM	5	60	37	2	89	7	124	171	1	7	36	21	560
07:45 AM	17	53	30	1	97	7	148	180	2	7	33	31	606
Total	40	221	137	5	362	23	484	610	3	40	129	90	2144
08:00 AM	21	67	35	1	94	9	121	130	1	7	42	27	555
08:15 AM	16	58	39	0	104	5	124	167	3	11	36	24	587
08:30 AM	10	52	33	3	90	1	154	146	3	6	43	20	561
08:45 AM	6	55	35	0	84	6	145	147	0	15	37	17	547
Total	53	232	142	4	372	21	544	590	7	39	158	88	2250
Grand Total	93	453	279	9	734	44	1028	1200	10	79	287	178	4394
Apprch %	11.3	54.9	33.8	1.1	93.3	5.6	45.9	53.6	0.4	14.5	52.8	32.7	
Total %	2.1	10.3	6.3	0.2	16.7	1	23.4	27.3	0.2	1.8	6.5	4.1	
Cars	91	438	220	8	723	42	1001	1132	9	63	278	167	4172
% Cars	97.8	96.7	78.9	88.9	98.5	95.5	97.4	94.3	90	79.7	96.9	93.8	94.9
Trucks	2	15	59	1	11	2	27	68	1	16	9	11	222
% Trucks	2.2	3.3	21.1	11.1	1.5	4.5	2.6	5.7	10	20.3	3.1	6.2	5.1

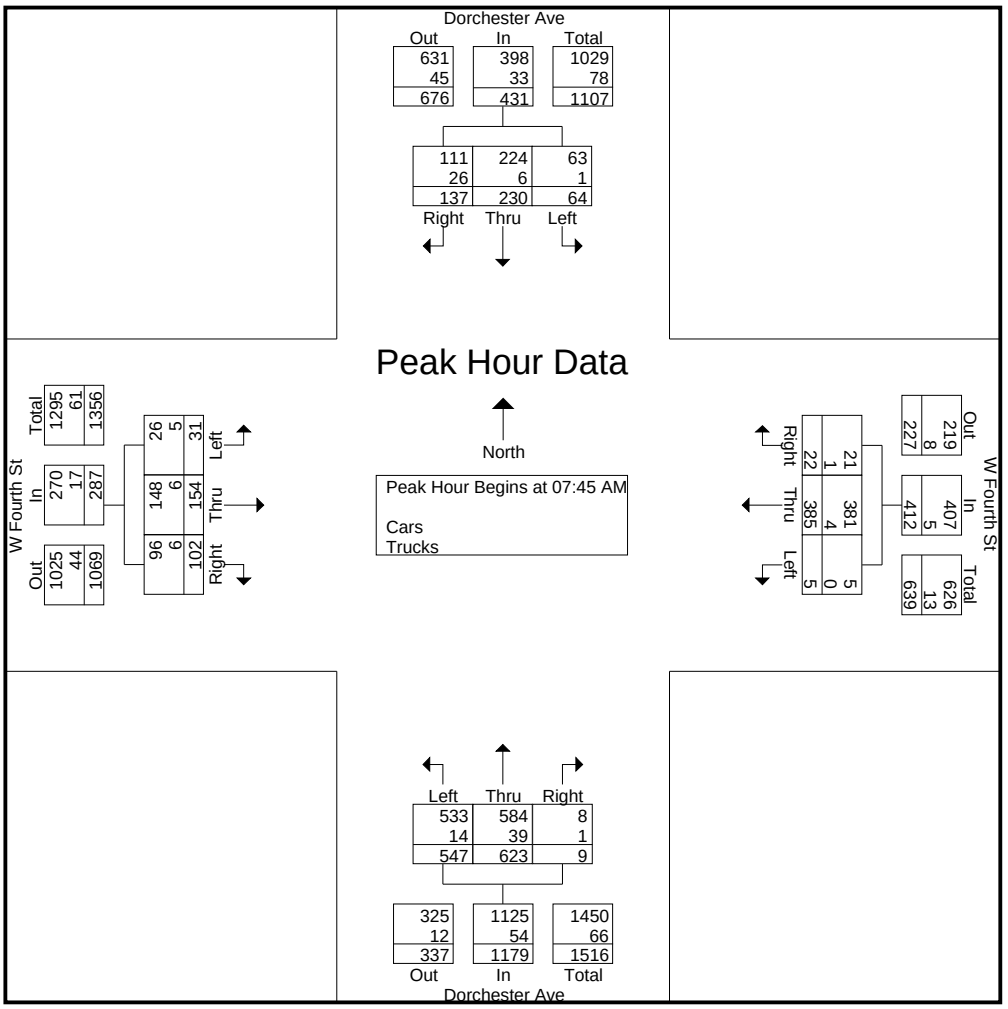
Accurate Counts

978-664-2565

N/S Street : Dorchester Avenue
E/W Street : West Fourth Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099003
Site Code : 14099003
Start Date : 10/8/2014
Page No : 2

	Dorchester Ave From North				W Fourth St From East				Dorchester Ave From South				W Fourth St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	17	53	30	100	1	97	7	105	148	**180**	2	**330**	7	33	**31**	71	**606**
08:00 AM	**21**	**67**	35	**123**	1	94	**9**	104	121	130	1	252	7	42	27	**76**	555
08:15 AM	16	58	**39**	113	0	**104**	5	**109**	124	167	**3**	294	**11**	36	24	71	587
08:30 AM	10	52	33	95	**3**	90	1	94	**154**	146	3	303	6	**43**	20	69	561
Total Volume	64	230	137	431	5	385	22	412	547	623	9	1179	31	154	102	287	2309
% App. Total	14.8	53.4	31.8		1.2	93.4	5.3		46.4	52.8	0.8		10.8	53.7	35.5		
PHF	.762	.858	.878	.876	.417	.925	.611	.945	.888	.865	.750	.893	.705	.895	.823	.944	.953
Cars	63	224	111	398	5	381	21	407	533	584	8	1125	26	148	96	270	2200
% Cars	98.4	97.4	81.0	92.3	100	99.0	95.5	98.8	97.4	93.7	88.9	95.4	83.9	96.1	94.1	94.1	95.3
Trucks	1	6	26	33	0	4	1	5	14	39	1	54	5	6	6	17	109
% Trucks	1.6	2.6	19.0	7.7	0	1.0	4.5	1.2	2.6	6.3	11.1	4.6	16.1	3.9	5.9	5.9	4.7



Accurate Counts

978-664-2565

N/S Street : Dorchester Avenue
E/W Street : West Fourth Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099003
Site Code : 14099003
Start Date : 10/8/2014

Groups Printed- Bikes Peds

	Dorchester Ave From North				W Fourth St From East				Dorchester Ave From South				W Fourth St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	1	1	9	0	5	0	14	1	1	0	2	0	0	0	12	37	9	46
07:15 AM	0	0	0	6	0	1	0	30	1	4	0	8	0	2	0	5	49	8	57
07:30 AM	0	1	1	3	0	4	2	14	2	0	0	8	0	1	0	4	29	11	40
07:45 AM	0	1	0	12	0	1	0	27	0	1	0	6	0	1	0	17	62	4	66
Total	0	3	2	30	0	11	2	85	4	6	0	24	0	4	0	38	177	32	209
08:00 AM	0	0	1	7	0	5	0	25	2	0	0	4	1	1	0	6	42	10	52
08:15 AM	0	2	1	15	0	9	1	42	2	2	0	9	0	1	1	6	72	19	91
08:30 AM	0	0	0	8	0	3	2	23	0	4	0	11	0	5	0	11	53	14	67
08:45 AM	0	1	1	20	0	2	0	15	0	3	0	11	1	5	1	5	51	14	65
Total	0	3	3	50	0	19	3	105	4	9	0	35	2	12	2	28	218	57	275
Grand Total	0	6	5	80	0	30	5	190	8	15	0	59	2	16	2	66	395	89	484
Apprch %	0	54.5	45.5		0	85.7	14.3		34.8	65.2	0		10	80	10				
Total %	0	6.7	5.6		0	33.7	5.6		9	16.9	0		2.2	18	2.2		81.6	18.4	

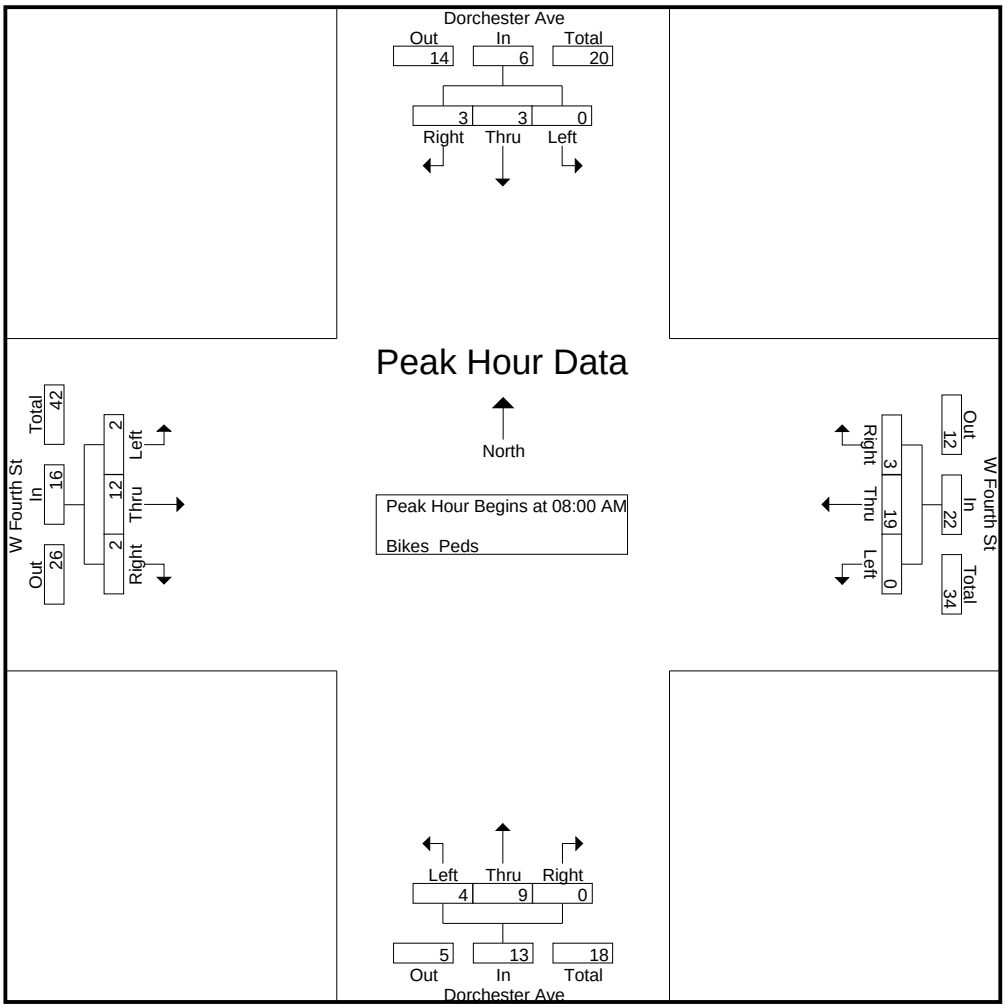
Accurate Counts

978-664-2565

N/S Street : Dorchester Avenue
E/W Street : West Fourth Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099003
Site Code : 14099003
Start Date : 10/8/2014
Page No : 11

	Dorchester Ave From North				W Fourth St From East				Dorchester Ave From South				W Fourth St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	**1**	1	0	5	0	5	**2**	0	0	2	**1**	1	0	2	10
08:15 AM	0	**2**	1	**3**	0	**9**	1	**10**	2	2	0	**4**	0	1	**1**	2	**19**
08:30 AM	0	0	0	0	0	3	**2**	5	0	**4**	0	4	0	**5**	0	5	14
08:45 AM	0	1	1	2	0	2	0	2	0	3	0	3	1	5	1	**7**	14
Total Volume	0	3	3	6	0	19	3	22	4	9	0	13	2	12	2	16	57
% App. Total	0	50	50		0	86.4	13.6		30.8	69.2	0		12.5	75	12.5		
PHF	.000	.375	.750	.500	.000	.528	.375	.550	.500	.563	.000	.813	.500	.600	.500	.571	.750



Accurate Counts

978-664-2565

N/S Street : Dorchester Avenue
E/W Street : West Fourth Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099003
Site Code : 14099003
Start Date : 10/8/2014

Groups Printed- Cars - Trucks

	Dorchester Ave From North			W Fourth St From East			Dorchester Ave From South			W Fourth St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	11	160	20	1	46	7	69	77	2	15	39	58	505
04:15 PM	4	128	29	0	56	4	62	82	2	6	36	37	446
04:30 PM	11	127	36	1	54	5	66	77	1	13	51	39	481
04:45 PM	11	144	29	0	77	5	109	95	0	9	34	42	555
Total	37	559	114	2	233	21	306	331	5	43	160	176	1987
05:00 PM	11	117	28	2	80	10	73	109	1	12	36	35	514
05:15 PM	22	139	22	0	95	3	57	89	0	8	47	46	528
05:30 PM	21	150	32	0	95	8	84	85	1	4	42	31	553
05:45 PM	28	140	35	0	94	5	81	85	2	8	50	34	562
Total	82	546	117	2	364	26	295	368	4	32	175	146	2157
Grand Total	119	1105	231	4	597	47	601	699	9	75	335	322	4144
Apprch %	8.2	75.9	15.9	0.6	92.1	7.3	45.9	53.4	0.7	10.2	45.8	44	
Total %	2.9	26.7	5.6	0.1	14.4	1.1	14.5	16.9	0.2	1.8	8.1	7.8	
Cars	119	1090	196	3	595	47	581	661	9	63	333	315	4012
% Cars	100	98.6	84.8	75	99.7	100	96.7	94.6	100	84	99.4	97.8	96.8
Trucks	0	15	35	1	2	0	20	38	0	12	2	7	132
% Trucks	0	1.4	15.2	25	0.3	0	3.3	5.4	0	16	0.6	2.2	3.2

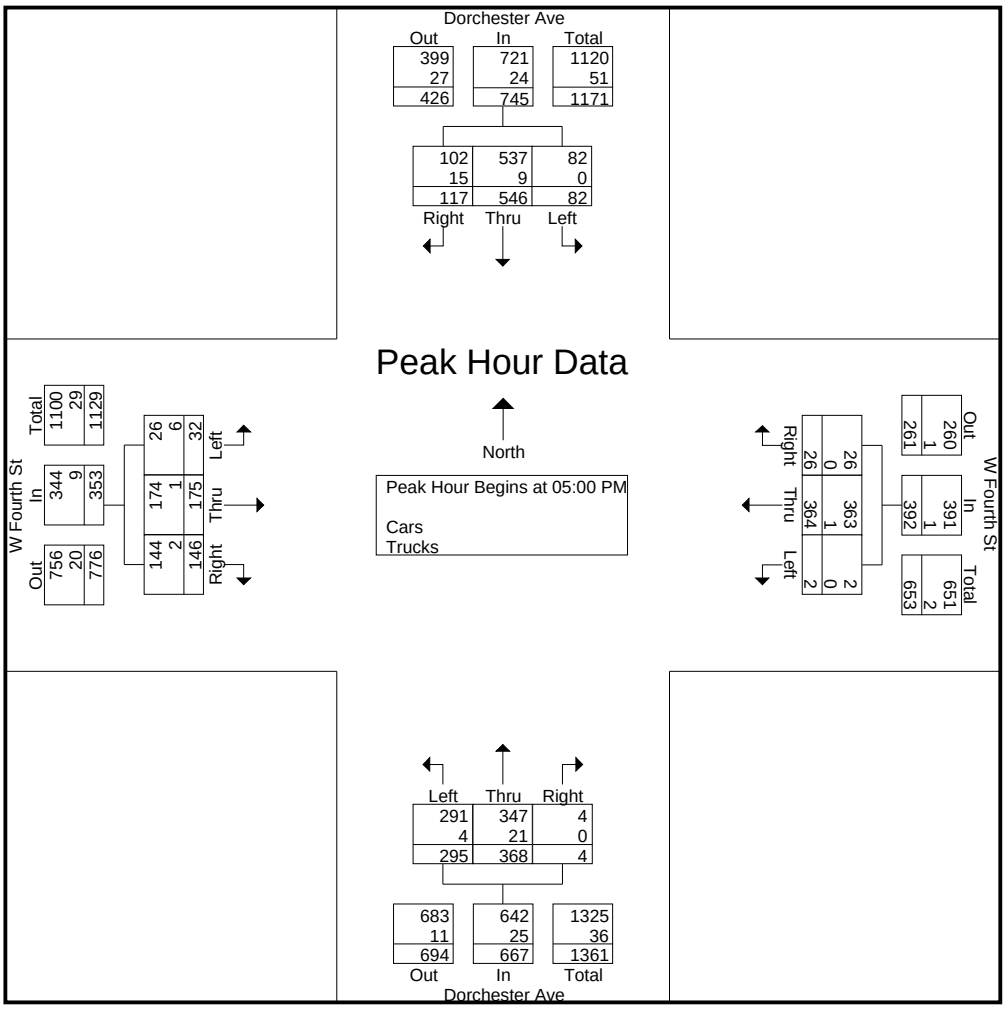
Accurate Counts

978-664-2565

N/S Street : Dorchester Avenue
E/W Street : West Fourth Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099003
Site Code : 14099003
Start Date : 10/8/2014
Page No : 2

	Dorchester Ave From North				W Fourth St From East				Dorchester Ave From South				W Fourth St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	11	117	28	156	**2**	80	**10**	92	73	**109**	1	**183**	**12**	36	35	83	514
05:15 PM	22	139	22	183	0	**95**	3	98	57	89	0	146	8	47	**46**	**101**	528
05:30 PM	21	**150**	32	**203**	0	95	8	**103**	**84**	85	1	170	4	42	31	77	553
05:45 PM	**28**	140	**35**	203	0	94	5	99	81	85	**2**	168	8	**50**	34	92	**562**
Total Volume	82	546	117	745	2	364	26	392	295	368	4	667	32	175	146	353	2157
% App. Total	11	73.3	15.7		0.5	92.9	6.6		44.2	55.2	0.6		9.1	49.6	41.4		
PHF	.732	.910	.836	.917	.250	.958	.650	.951	.878	.844	.500	.911	.667	.875	.793	.874	.960
Cars	82	537	102	721	2	363	26	391	291	347	4	642	26	174	144	344	2098
% Cars	100	98.4	87.2	96.8	100	99.7	100	99.7	98.6	94.3	100	96.3	81.3	99.4	98.6	97.5	97.3
Trucks	0	9	15	24	0	1	0	1	4	21	0	25	6	1	2	9	59
% Trucks	0	1.6	12.8	3.2	0	0.3	0	0.3	1.4	5.7	0	3.7	18.8	0.6	1.4	2.5	2.7



Accurate Counts

978-664-2565

N/S Street : Dorchester Avenue
E/W Street : West Fourth Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099003
Site Code : 14099003
Start Date : 10/8/2014

Groups Printed- Bikes Peds

	Dorchester Ave From North				W Fourth St From East				Dorchester Ave From South				W Fourth St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	1	0	7	0	2	0	18	0	0	0	4	0	2	0	2	31	5	36
04:15 PM	0	3	1	13	0	1	0	19	0	1	0	7	0	0	3	3	42	9	51
04:30 PM	0	0	0	8	0	3	0	10	0	1	0	3	1	1	1	4	25	7	32
04:45 PM	0	0	0	9	0	4	0	9	2	0	0	8	0	1	1	3	29	8	37
Total	0	4	1	37	0	10	0	56	2	2	0	22	1	4	5	12	127	29	156
05:00 PM	0	1	0	9	0	4	0	13	0	2	0	4	0	2	0	4	30	9	39
05:15 PM	0	2	2	14	0	4	0	22	0	0	0	8	0	4	0	3	47	12	59
05:30 PM	0	2	1	15	0	9	1	37	0	3	0	17	0	1	5	6	75	22	97
05:45 PM	0	1	1	38	0	8	0	13	0	1	0	15	0	3	0	16	82	14	96
Total	0	6	4	76	0	25	1	85	0	6	0	44	0	10	5	29	234	57	291
Grand Total	0	10	5	113	0	35	1	141	2	8	0	66	1	14	10	41	361	86	447
Apprch %	0	66.7	33.3		0	97.2	2.8		20	80	0		4	56	40				
Total %	0	11.6	5.8		0	40.7	1.2		2.3	9.3	0		1.2	16.3	11.6		80.8	19.2	

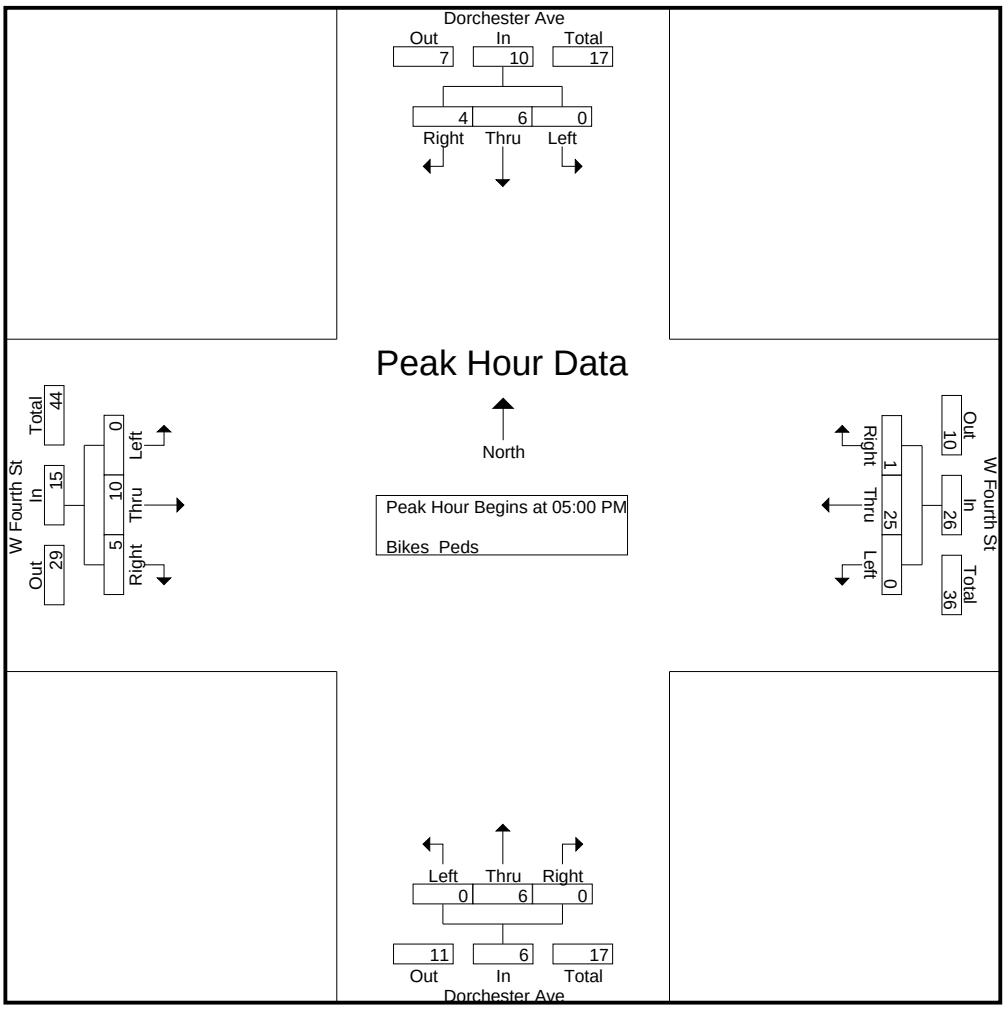
Accurate Counts

978-664-2565

N/S Street : Dorchester Avenue
E/W Street : West Fourth Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099003
Site Code : 14099003
Start Date : 10/8/2014
Page No : 11

	Dorchester Ave From North				W Fourth St From East				Dorchester Ave From South				W Fourth St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	1	0	1	0	4	0	4	0	2	0	2	0	2	0	2	9
05:15 PM	0	**2**	**2**	**4**	0	4	0	4	0	0	0	0	0	**4**	0	4	12
05:30 PM	0	2	1	3	0	**9**	**1**	**10**	0	**3**	0	**3**	0	1	**5**	**6**	**22**
05:45 PM	0	1	1	2	0	8	0	8	0	1	0	1	0	3	0	3	14
Total Volume	0	6	4	10	0	25	1	26	0	6	0	6	0	10	5	15	57
% App. Total	0	60	40		0	96.2	3.8		0	100	0		0	66.7	33.3		
PHF	.000	.750	.500	.625	.000	.694	.250	.650	.000	.500	.000	.500	.000	.625	.250	.625	.648



Accurate Counts

978-664-2565

N/S Street : A Street
E/W Street : West Fourth Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099001
Site Code : 14099001
Start Date : 10/8/2014
Page No : 1

Groups Printed- Cars - Trucks

	A St From North			W 4Th St From East			A St From South			W 4Th St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	40	49	0	30	2	1	62	0	20	9	1	214
07:15 AM	2	49	58	4	45	4	2	41	0	27	21	0	253
07:30 AM	1	56	58	3	42	5	1	45	1	22	24	0	258
07:45 AM	2	35	42	1	44	4	2	66	2	22	21	1	242
Total	5	180	207	8	161	15	6	214	3	91	75	2	967
08:00 AM	3	38	62	2	45	2	5	72	0	18	42	1	290
08:15 AM	1	46	56	2	38	0	2	67	4	22	26	2	266
08:30 AM	2	49	59	4	29	6	2	66	1	36	19	0	273
08:45 AM	2	46	53	3	32	3	1	79	0	18	15	2	254
Total	8	179	230	11	144	11	10	284	5	94	102	5	1083
Grand Total	13	359	437	19	305	26	16	498	8	185	177	7	2050
Apprch %	1.6	44.4	54	5.4	87.1	7.4	3.1	95.4	1.5	50.1	48	1.9	
Total %	0.6	17.5	21.3	0.9	14.9	1.3	0.8	24.3	0.4	9	8.6	0.3	
Cars	13	310	423	18	301	26	15	476	7	180	168	7	1944
% Cars	100	86.4	96.8	94.7	98.7	100	93.8	95.6	87.5	97.3	94.9	100	94.8
Trucks	0	49	14	1	4	0	1	22	1	5	9	0	106
% Trucks	0	13.6	3.2	5.3	1.3	0	6.2	4.4	12.5	2.7	5.1	0	5.2

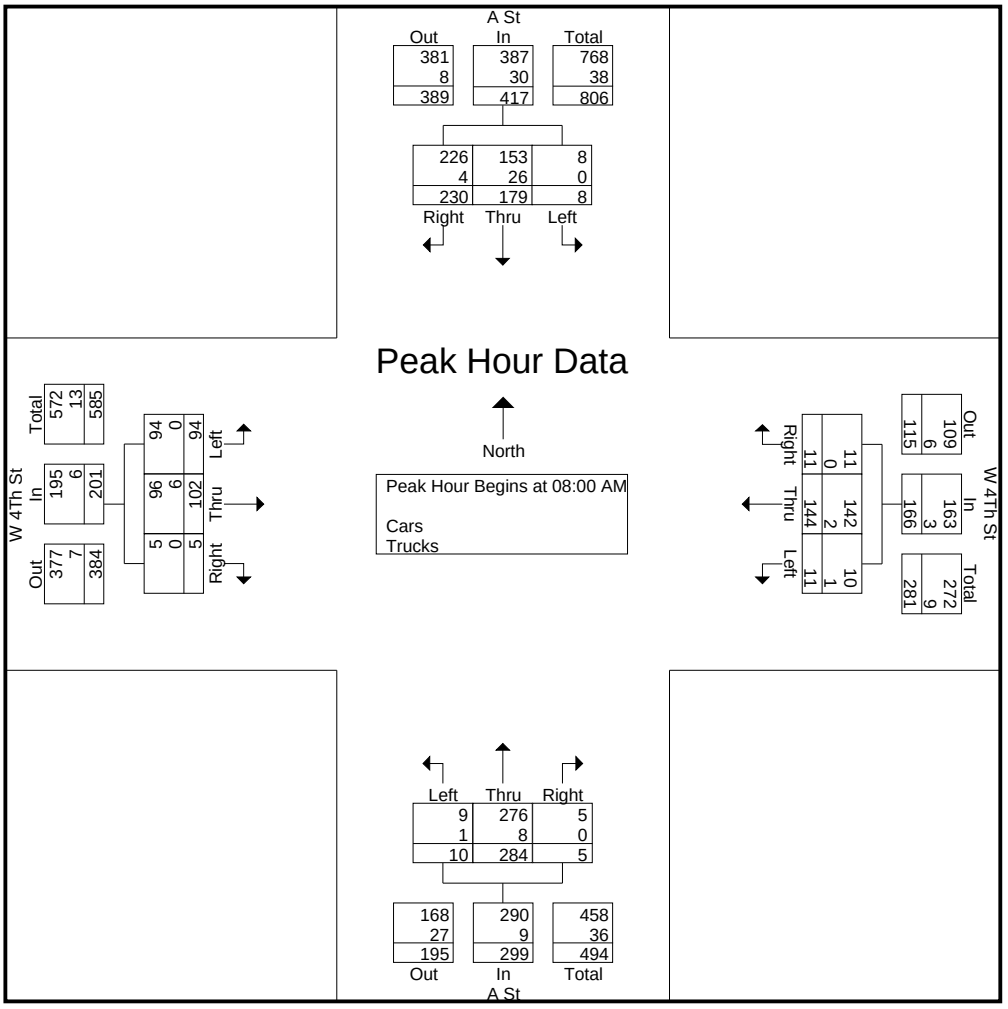
Accurate Counts

978-664-2565

N/S Street : A Street
E/W Street : West Fourth Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099001
Site Code : 14099001
Start Date : 10/8/2014

	A St From North				W 4Th St From East				A St From South				W 4Th St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	**3**	38	**62**	103	2	**45**	2	**49**	**5**	72	0	77	18	**42**	1	**61**	**290**
08:15 AM	1	46	56	103	2	38	0	40	2	67	**4**	73	22	26	**2**	50	266
08:30 AM	2	**49**	59	**110**	**4**	29	**6**	39	2	66	1	69	**36**	19	0	55	273
08:45 AM	2	46	53	101	3	32	3	38	1	**79**	0	**80**	18	15	2	35	254
Total Volume	8	179	230	417	11	144	11	166	10	284	5	299	94	102	5	201	1083
% App. Total	1.9	42.9	55.2		6.6	86.7	6.6		3.3	95	1.7		46.8	50.7	2.5		
PHF	.667	.913	.927	.948	.688	.800	.458	.847	.500	.899	.313	.934	.653	.607	.625	.824	.934
Cars	8	153	226	387	10	142	11	163	9	276	5	290	94	96	5	195	1035
% Cars	100	85.5	98.3	92.8	90.9	98.6	100	98.2	90.0	97.2	100	97.0	100	94.1	100	97.0	95.6
Trucks	0	26	4	30	1	2	0	3	1	8	0	9	0	6	0	6	48
% Trucks	0	14.5	1.7	7.2	9.1	1.4	0	1.8	10.0	2.8	0	3.0	0	5.9	0	3.0	4.4



Accurate Counts

978-664-2565

N/S Street : A Street
E/W Street : West Fourth Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099001
Site Code : 14099001
Start Date : 10/8/2014
Page No : 10

Groups Printed- Bikes Peds

	A St From North				W 4Th St From East				A St From South				W 4Th St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	12	0	1	0	1	0	1	0	0	0	0	0	1	14	2	16
07:15 AM	0	0	0	10	0	2	0	3	0	1	0	2	1	1	0	0	15	5	20
07:30 AM	0	0	2	16	0	1	1	2	0	1	0	5	0	1	0	2	25	6	31
07:45 AM	0	0	3	12	0	1	3	3	0	2	0	2	1	0	0	2	19	10	29
Total	0	0	5	50	0	5	4	9	0	5	0	9	2	2	0	5	73	23	96
08:00 AM	1	3	4	3	0	1	0	6	0	4	0	2	1	0	0	0	11	14	25
08:15 AM	0	0	2	14	0	3	0	4	0	4	0	4	3	0	0	0	22	12	34
08:30 AM	0	2	1	17	0	4	0	7	0	11	0	3	2	2	0	1	28	22	50
08:45 AM	0	0	1	3	0	2	1	12	0	4	0	8	5	2	0	3	26	15	41
Total	1	5	8	37	0	10	1	29	0	23	0	17	11	4	0	4	87	63	150
Grand Total	1	5	13	87	0	15	5	38	0	28	0	26	13	6	0	9	160	86	246
Apprch %	5.3	26.3	68.4		0	75	25		0	100	0		68.4	31.6	0				
Total %	1.2	5.8	15.1		0	17.4	5.8		0	32.6	0		15.1	7	0		65	35	

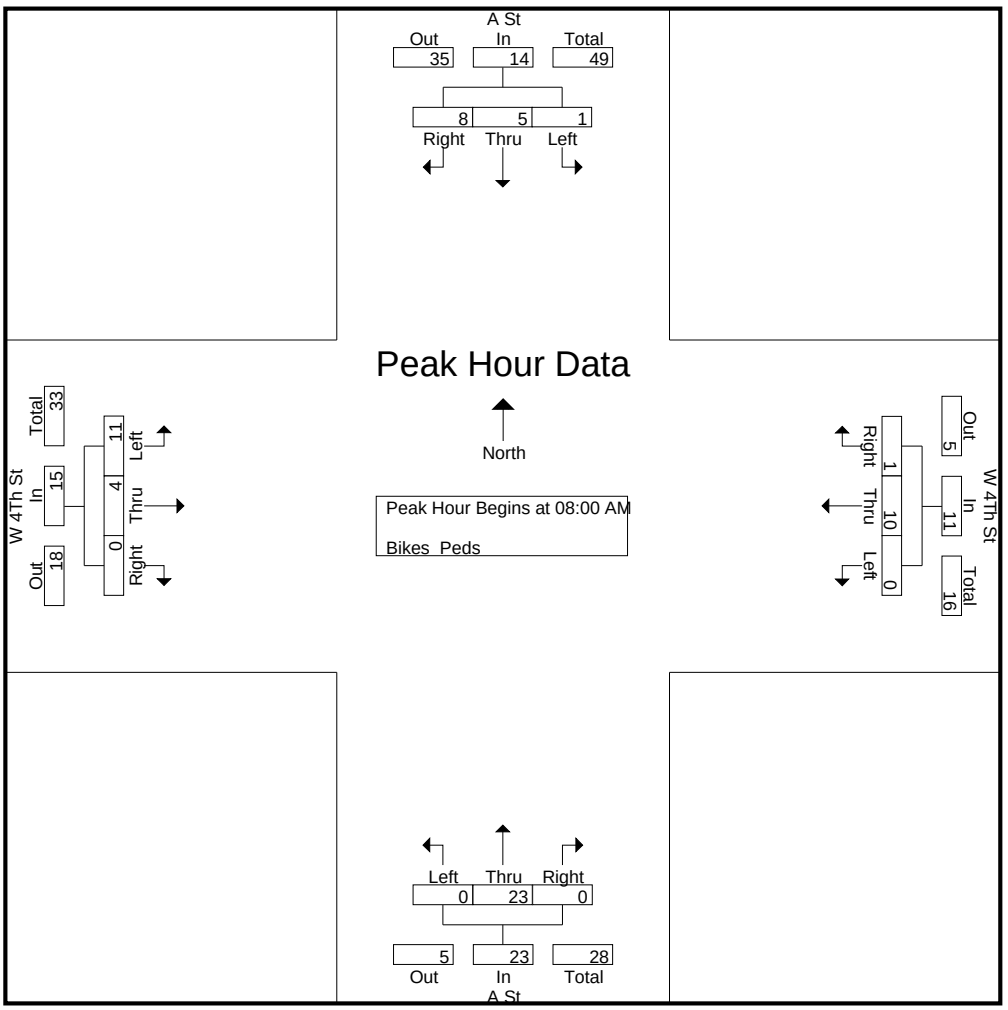
Accurate Counts

978-664-2565

N/S Street : A Street
E/W Street : West Fourth Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099001
Site Code : 14099001
Start Date : 10/8/2014

	A St From North				W 4Th St From East				A St From South				W 4Th St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	**1**	**3**	**4**	**8**	0	1	0	1	0	4	0	4	1	0	0	1	14
08:15 AM	0	0	2	2	0	3	0	3	0	4	0	4	3	0	0	3	12
08:30 AM	0	2	1	3	0	**4**	0	**4**	0	**11**	0	**11**	2	**2**	0	4	**22**
08:45 AM	0	0	1	1	0	2	**1**	3	0	4	0	4	**5**	2	0	**7**	15
Total Volume	1	5	8	14	0	10	1	11	0	23	0	23	11	4	0	15	63
% App. Total	7.1	35.7	57.1		0	90.9	9.1		0	100	0		73.3	26.7	0		
PHF	.250	.417	.500	.438	.000	.625	.250	.688	.000	.523	.000	.523	.550	.500	.000	.536	.716



Accurate Counts

978-664-2565

N/S Street : A Street
E/W Street : West Fourth Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099001
Site Code : 14099001
Start Date : 10/8/2014
Page No : 1

Groups Printed- Cars - Trucks

	A St From North			W 4Th St From East			A St From South			W 4Th St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	3	96	33	6	12	1	3	43	1	27	22	0	247
04:15 PM	3	93	44	1	16	2	0	33	4	22	23	2	243
04:30 PM	2	99	46	1	13	2	3	38	4	27	28	0	263
04:45 PM	4	81	60	1	23	1	2	49	1	15	24	0	261
Total	12	369	183	9	64	6	8	163	10	91	97	2	1014
05:00 PM	2	76	72	1	15	3	1	32	0	31	18	1	252
05:15 PM	4	89	71	4	17	3	0	45	2	40	26	1	302
05:30 PM	3	80	79	1	16	1	0	49	2	29	29	1	290
05:45 PM	2	85	68	0	22	1	1	35	0	39	25	0	278
Total	11	330	290	6	70	8	2	161	4	139	98	3	1122
Grand Total	23	699	473	15	134	14	10	324	14	230	195	5	2136
Apprch %	1.9	58.5	39.6	9.2	82.2	8.6	2.9	93.1	4	53.5	45.3	1.2	
Total %	1.1	32.7	22.1	0.7	6.3	0.7	0.5	15.2	0.7	10.8	9.1	0.2	
Cars	23	669	471	15	134	14	9	316	14	226	195	5	2091
% Cars	100	95.7	99.6	100	100	100	90	97.5	100	98.3	100	100	97.9
Trucks	0	30	2	0	0	0	1	8	0	4	0	0	45
% Trucks	0	4.3	0.4	0	0	0	10	2.5	0	1.7	0	0	2.1

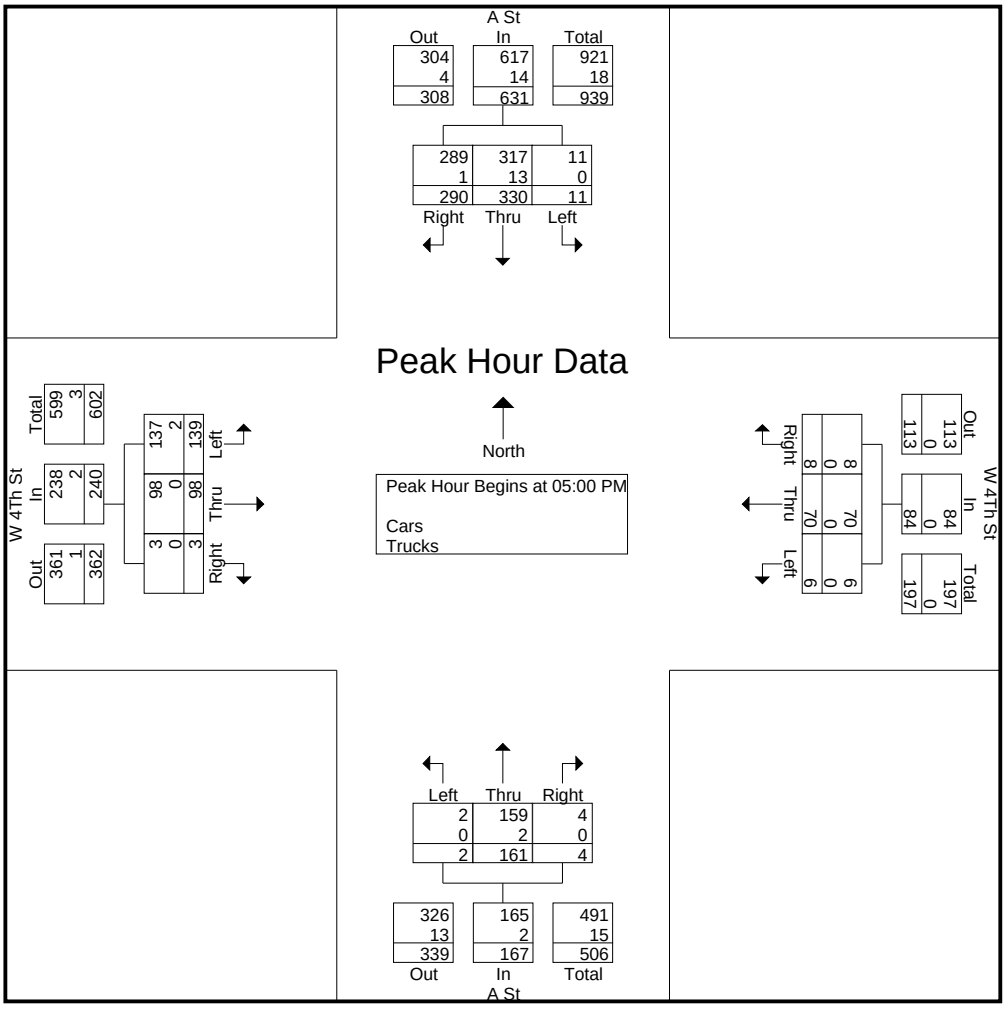
Accurate Counts

978-664-2565

N/S Street : A Street
E/W Street : West Fourth Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099001
Site Code : 14099001
Start Date : 10/8/2014
Page No : 2

	A St From North				W 4Th St From East				A St From South				W 4Th St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	2	76	72	150	1	15	**3**	19	**1**	32	0	33	31	18	**1**	50	252
05:15 PM	**4**	**89**	71	**164**	**4**	17	3	**24**	0	45	**2**	47	**40**	26	1	**67**	**302**
05:30 PM	3	80	**79**	162	1	16	1	18	0	**49**	2	**51**	29	**29**	1	59	290
05:45 PM	2	85	68	155	0	**22**	1	23	1	35	0	36	39	25	0	64	278
Total Volume	11	330	290	631	6	70	8	84	2	161	4	167	139	98	3	240	1122
% App. Total	1.7	52.3	46		7.1	83.3	9.5		1.2	96.4	2.4		57.9	40.8	1.2		
PHF	.688	.927	.918	.962	.375	.795	.667	.875	.500	.821	.500	.819	.869	.845	.750	.896	.929
Cars	11	317	289	617	6	70	8	84	2	159	4	165	137	98	3	238	1104
% Cars	100	96.1	99.7	97.8	100	100	100	100	100	98.8	100	98.8	98.6	100	100	99.2	98.4
Trucks	0	13	1	14	0	0	0	0	0	2	0	2	2	0	0	2	18
% Trucks	0	3.9	0.3	2.2	0	0	0	0	0	1.2	0	1.2	1.4	0	0	0.8	1.6



Accurate Counts

978-664-2565

N/S Street : A Street
E/W Street : West Fourth Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099001
Site Code : 14099001
Start Date : 10/8/2014
Page No : 10

Groups Printed- Bikes Peds

	A St From North				W 4Th St From East				A St From South				W 4Th St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	1	6	0	1	1	3	0	0	0	5	1	2	0	1	15	6	21
04:15 PM	0	2	0	13	0	0	0	8	0	0	0	11	0	0	0	2	34	2	36
04:30 PM	0	1	4	14	0	1	0	6	0	0	0	6	1	1	0	3	29	8	37
04:45 PM	0	2	4	16	0	0	0	12	0	0	0	7	0	1	0	3	38	7	45
Total	0	5	9	49	0	2	1	29	0	0	0	29	2	4	0	9	116	23	139
05:00 PM	0	7	7	16	0	1	0	6	0	0	0	6	1	1	0	1	29	17	46
05:15 PM	0	7	2	11	0	1	0	8	0	0	0	3	1	3	0	3	25	14	39
05:30 PM	0	1	8	17	0	1	1	8	0	2	0	17	0	0	0	2	44	13	57
05:45 PM	1	3	4	9	0	3	0	7	0	2	0	9	0	4	0	7	32	17	49
Total	1	18	21	53	0	6	1	29	0	4	0	35	2	8	0	13	130	61	191
Grand Total	1	23	30	102	0	8	2	58	0	4	0	64	4	12	0	22	246	84	330
Apprch %	1.9	42.6	55.6		0	80	20		0	100	0		25	75	0				
Total %	1.2	27.4	35.7		0	9.5	2.4		0	4.8	0		4.8	14.3	0		74.5	25.5	

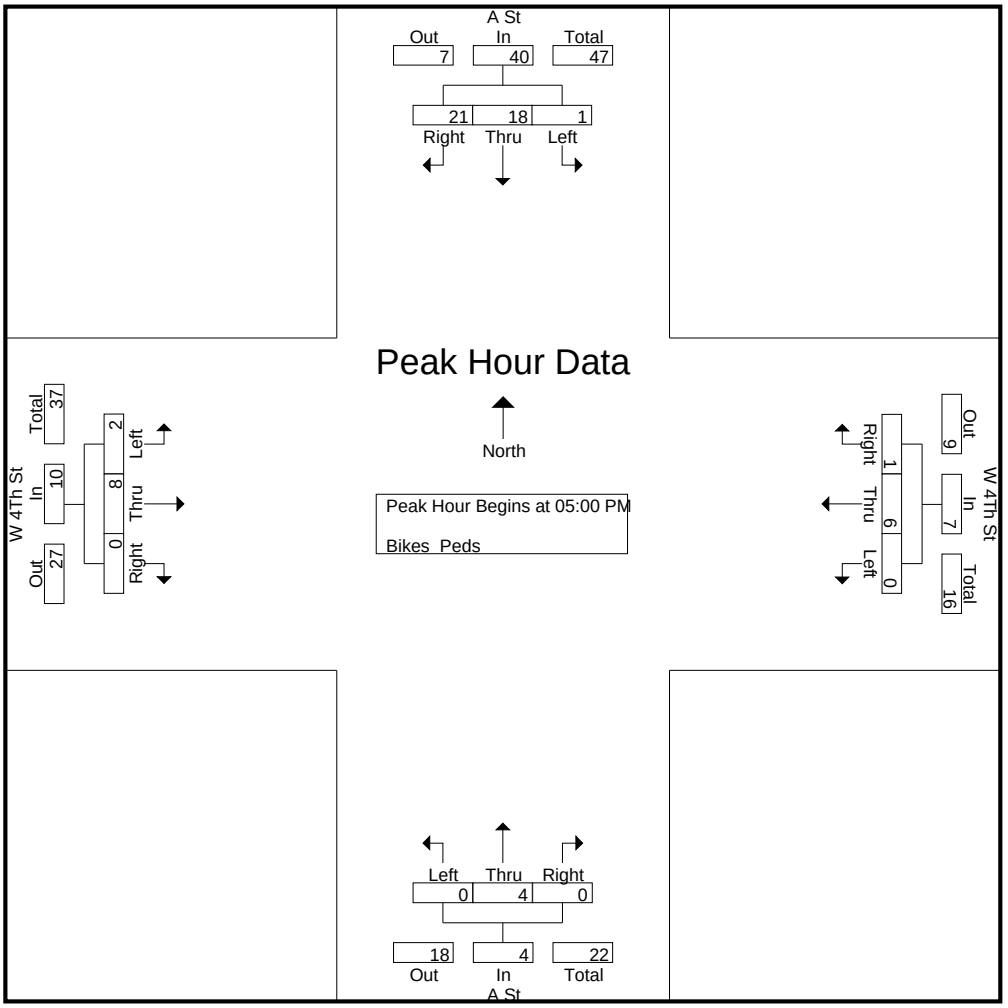
Accurate Counts

978-664-2565

N/S Street : A Street
E/W Street : West Fourth Street
City/State : Boston, MA
Weather : Cloudy

File Name : 14099001
Site Code : 14099001
Start Date : 10/8/2014

	A St From North				W 4Th St From East				A St From South				W 4Th St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	**7**	7	**14**	0	1	0	1	0	0	0	0	**1**	1	0	2	**17**
05:15 PM	0	7	2	9	0	1	0	1	0	0	0	0	1	3	0	**4**	14
05:30 PM	0	1	**8**	9	0	1	**1**	2	0	**2**	0	**2**	0	0	0	0	13
05:45 PM	**1**	3	4	8	0	**3**	0	**3**	0	2	0	2	0	**4**	0	4	17
Total Volume	1	18	21	40	0	6	1	7	0	4	0	4	2	8	0	10	61
% App. Total	2.5	45	52.5		0	85.7	14.3		0	100	0		20	80	0		
PHF	.250	.643	.656	.714	.000	.500	.250	.583	.000	.500	.000	.500	.500	.500	.000	.625	.897



Accurate Counts

978-664-2565

N/S Street : Dorchester Avenue
E/W Street: W Broadway / Traveler St
City/State : Boston, MA
Weather : Cloudy

File Name : 12117001
Site Code : 12117001
Start Date : 4/25/2013
Page No : 1

Groups Printed- Cars - Trucks

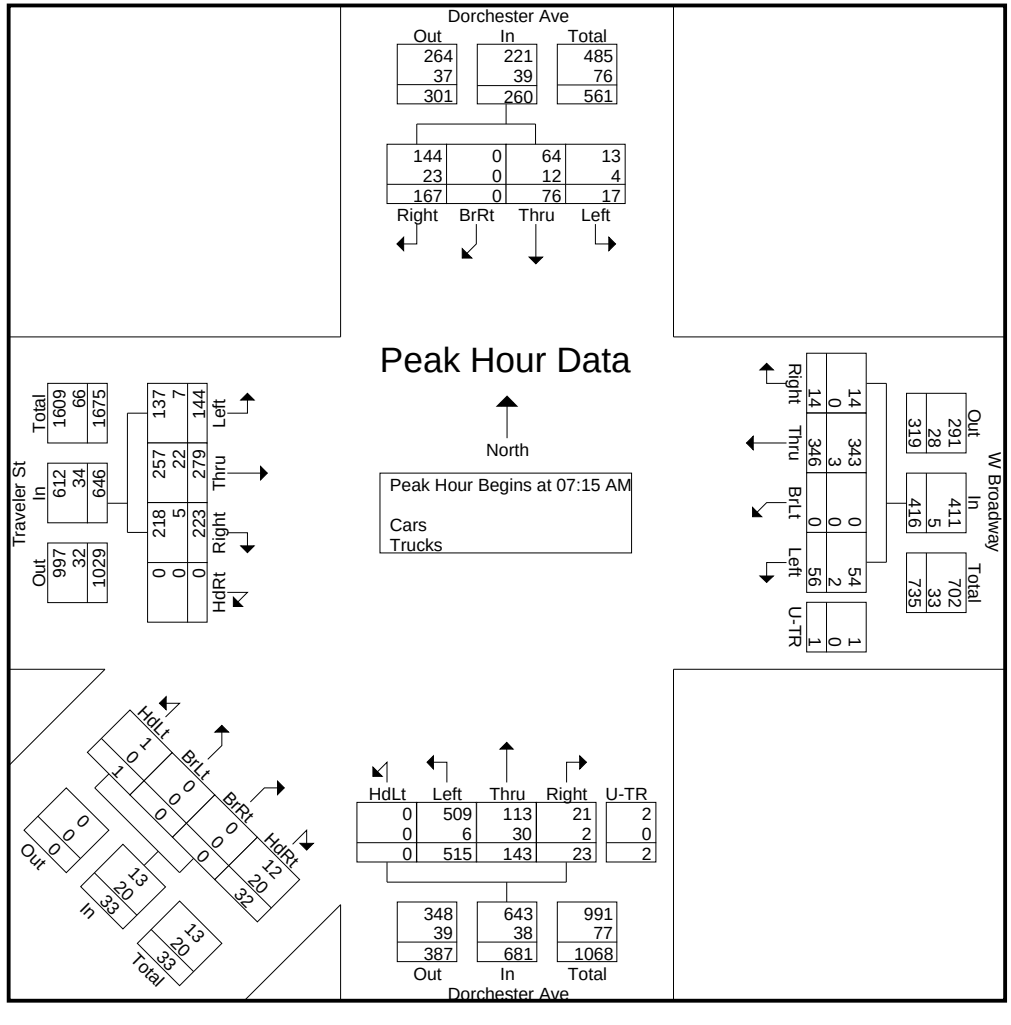
	Dorchester Ave From North				W Broadway From East					Dorchester Ave From South					Greenbaum St From Southwest				Traveler St From West							
Start Time	Left	Thru	BrRt	Right	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	U-TR	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	2	15	0	30	7	0	76	1	0	0	106	30	8	0	2	0	0	6	40	71	54	0	1	1	448	449
07:15 AM	4	25	0	40	10	0	85	5	0	0	117	28	5	0	1	0	0	9	31	59	65	0	1	1	484	485
07:30 AM	6	19	0	37	13	0	86	3	0	0	139	39	2	0	0	0	0	9	39	62	54	0	0	0	508	508
07:45 AM	3	13	0	42	10	0	91	5	1	0	126	36	6	1	0	0	0	6	41	85	55	0	1	1	521	522
Total	15	72	0	149	40	0	338	14	1	0	488	133	21	1	3	0	0	30	151	277	228	0	3	3	1961	1964
08:00 AM	4	19	0	48	23	0	84	1	0	0	133	40	10	1	0	0	0	8	33	73	49	0	0	0	526	526
08:15 AM	0	17	0	25	17	0	83	4	0	0	124	30	6	1	0	0	0	5	28	74	52	0	0	0	466	466
08:30 AM	6	15	0	40	15	0	85	3	0	0	138	26	6	0	0	0	1	10	25	80	67	0	0	0	517	517
08:45 AM	1	16	0	31	9	0	65	4	0	0	123	34	3	0	0	0	0	9	46	82	70	0	0	0	493	493
Total	11	67	0	144	64	0	317	12	0	0	518	130	25	2	0	0	1	32	132	309	238	0	0	0	2002	2002
Grand Total	26	139	0	293	104	0	655	26	1	0	1006	263	46	3	3	0	1	62	283	586	466	0	3	3	3963	3966
Apprch %	5.7	30.3	0	64	13.2	0	83.3	3.3	0.1	0	76.3	20	3.5	0.2	4.5	0	1.5	93.9	21.2	43.9	34.9	0				
Total %	0.7	3.5	0	7.4	2.6	0	16.5	0.7	0	0	25.4	6.6	1.2	0.1	0.1	0	0	1.6	7.1	14.8	11.8	0		0.1	99.9	
Cars	18	124	0	266	102	0	645	25	1	0	992	200	40	3	2	0	1	25	263	543	453	0		0	0	3706
% Cars	69.2	89.2	0	90.8	98.1	0	98.5	96.2	100	0	98.6	76	87	100	66.7	0	100	40.3	92.9	92.7	97.2	0	100	0	0	93.4
Trucks	8	15	0	27	2	0	10	1	0	0	14	63	6	0	1	0	0	37	20	43	13	0		0	0	260
% Trucks	30.8	10.8	0	9.2	1.9	0	1.5	3.8	0	0	1.4	24	13	0	33.3	0	0	59.7	7.1	7.3	2.8	0	0	0	0	6.6

	Dorchester Ave From North					W Broadway From East						Dorchester Ave From South						Greenbaum St From Southwest					Traveler St From West					
Start Time	Left	Thru	BrRt	Right	App. Total	Left	BrLt	Thru	Right	U-TR	App. Total	HdLt	Left	Thru	Right	U-TR	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																												
Peak Hour for Entire Intersection Begins at 07:15 AM																												
07:15 AM	4	**25**	0	40	69	10	0	85	**5**	0	100	0	117	28	5	0	150	**1**	0	0	**9**	**10**	31	59	**65**	0	155	484
07:30 AM	**6**	19	0	37	62	13	0	86	3	0	102	0	**139**	39	2	0	180	0	0	0	9	9	39	62	54	0	155	508
07:45 AM	3	13	0	42	58	10	0	**91**	5	**1**	107	0	126	36	6	**1**	169	0	0	0	6	6	**41**	**85**	55	0	**181**	521
08:00 AM	4	19	0	**48**	**71**	**23**	0	84	1	0	**108**	0	133	**40**	**10**	1	**184**	0	0	0	8	8	33	73	49	0	155	**526**
Total Volume	17	76	0	167	260	56	0	346	14	1	417	0	515	143	23	2	683	1	0	0	32	33	144	279	223	0	646	2039
% App. Total	6.5	29.2	0	64.2		13.4	0	83	3.4	0.2		0	75.4	20.9	3.4	0.3		3	0	0	97		22.3	43.2	34.5	0		
PHF	.708	.760	.000	.870	.915	.609	.000	.951	.700	.250	.965	.000	.926	.894	.575	.500	.928	.250	.000	.000	.889	.825	.878	.821	.858	.000	.892	.969
Cars	13	64	0	144	221	54	0	343	14	1	412	0	509	113	21	2	645	1	0	0	12	13	137	257	218	0	612	1903
% Cars	76.5	84.2	0	86.2	85.0	96.4	0	99.1	100	100	98.8	0	98.8	79.0	91.3	100	94.4	100	0	0	37.5	39.4	95.1	92.1	97.8	0	94.7	93.3
Trucks	4	12	0	23	39	2	0	3	0	0	5	0	6	30	2	0	38	0	0	0	20	20	7	22	5	0	34	136
% Trucks	23.5	15.8	0	13.8	15.0	3.6	0	0.9	0	0	1.2	0	1.2	21.0	8.7	0	5.6	0	0	0	62.5	60.6	4.9	7.9	2.2	0	5.3	6.7

Accurate Counts
978-664-2565

N/S Street : Dorchester Avenue
E/W Street: W Broadway / Traveler St
City/State : Boston, MA
Weather : Cloudy

File Name : 12117001
Site Code : 12117001
Start Date : 4/25/2013
Page No : 2



Accurate Counts
978-664-2565

N/S Street : Dorchester Avenue
E/W Street: W Broadway / Traveler St
City/State : Boston, MA
Weather : Cloudy

File Name : 12117001
Site Code : 12117001
Start Date : 4/25/2013
Page No : 1

Groups Printed- Bikes Peds

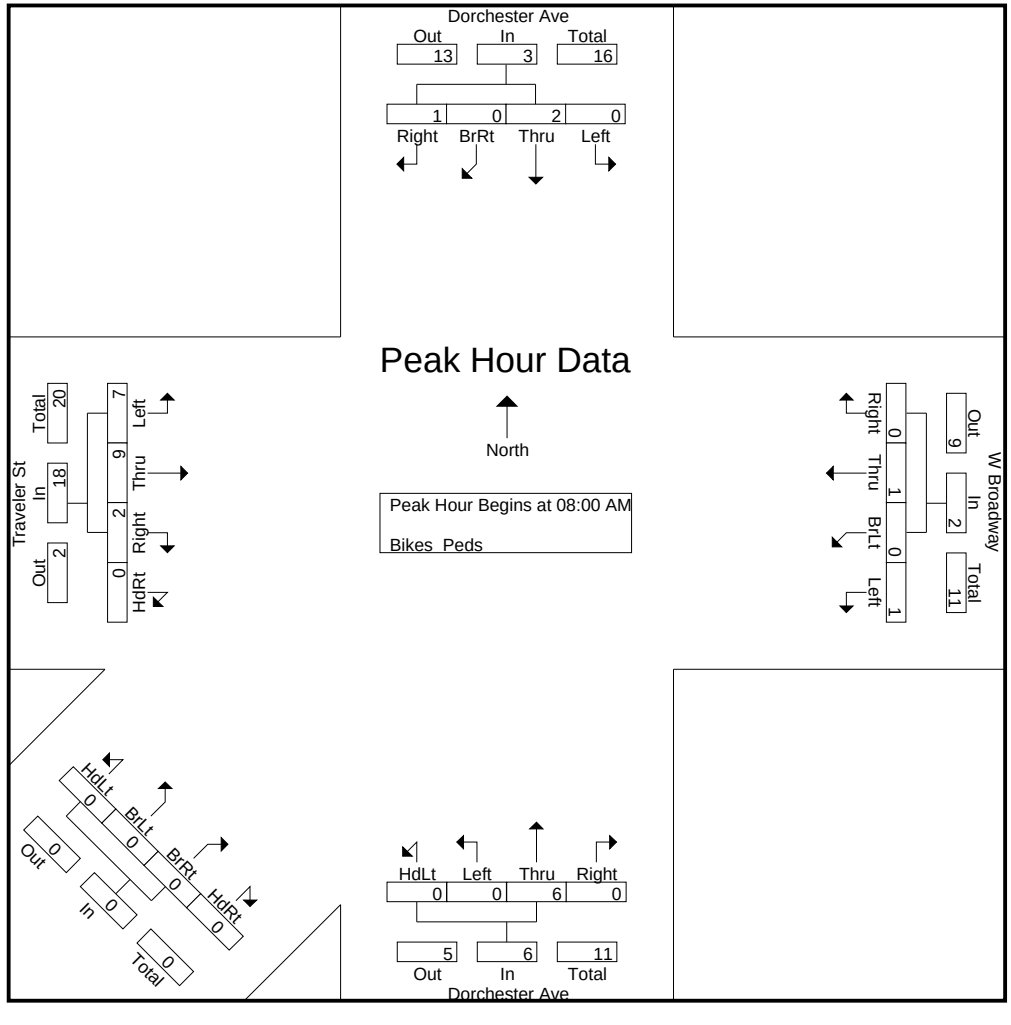
	Dorchester Ave From North					W Broadway From East					Dorchester Ave From South					Greenbaum St From Southwest					Traveler St From West							
Start Time	Left	Thru	BrRt	Right	Peds	Left	BrLt	Thru	Right	Peds	HdLt	Left	Thru	Right	Peds	HdLt	BrLt	BrRt	HdRt	Peds	Left	Thru	Right	HdRt	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	2	0	0	0	0	0	0	2	0	0	11	16	2	18
07:15 AM	0	2	0	1	1	0	0	0	0	5	0	0	0	1	4	0	0	0	0	0	3	0	0	0	8	18	7	25
07:30 AM	0	0	0	1	1	0	0	0	0	5	0	0	1	0	6	0	0	0	0	0	0	0	0	0	15	27	2	29
07:45 AM	0	0	0	0	1	0	0	0	0	6	0	0	1	0	14	0	0	0	0	0	0	0	0	0	16	37	1	38
Total	0	2	0	2	3	0	0	0	0	19	0	0	2	1	26	0	0	0	0	0	3	2	0	0	50	98	12	110
08:00 AM	0	1	0	0	5	0	0	0	0	11	0	0	1	0	6	0	0	0	0	0	3	0	0	0	23	45	5	50
08:15 AM	0	0	0	1	2	0	0	0	0	6	0	0	2	0	11	0	0	0	0	0	2	2	0	0	23	42	7	49
08:30 AM	0	0	0	0	2	0	0	1	0	9	0	0	0	0	12	0	0	0	0	0	0	4	0	0	21	44	5	49
08:45 AM	0	1	0	0	6	1	0	0	0	8	0	0	3	0	6	0	0	0	0	0	2	3	2	0	13	33	12	45
Total	0	2	0	1	15	1	0	1	0	34	0	0	6	0	35	0	0	0	0	0	7	9	2	0	80	164	29	193
Grand Total	0	4	0	3	18	1	0	1	0	53	0	0	8	1	61	0	0	0	0	0	10	11	2	0	130	262	41	303
Apprch %	0	57.1	0	42.9		50	0	50	0		0	0	88.9	11.1		0	0	0	0		43.5	47.8	8.7	0				
Total %	0	9.8	0	7.3		2.4	0	2.4	0		0	0	19.5	2.4		0	0	0	0		24.4	26.8	4.9	0		86.5	13.5	

	Dorchester Ave From North					W Broadway From East					Dorchester Ave From South					Greenbaum St From Southwest					Traveler St From West					
Start Time	Left	Thru	BrRt	Right	App. Total	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 08:00 AM																										
08:00 AM	0	**1**	0	0	**1**	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	**3**	0	0	0	3	5
08:15 AM	0	0	0	**1**	1	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	2	2	0	0	4	7
08:30 AM	0	0	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	**4**	0	0	4	5
08:45 AM	0	1	0	0	1	**1**	0	0	0	1	0	0	**3**	0	**3**	0	0	0	0	0	2	3	**2**	0	**7**	**12**
Total Volume	0	2	0	1	3	1	0	1	0	2	0	0	6	0	6	0	0	0	0	0	7	9	2	0	18	29
% App. Total	0	66.7	0	33.3		50	0	50	0		0	0	100	0		0	0	0	0		38.9	50	11.1	0		
PHF	.000	.500	.000	.250	.750	.250	.000	.250	.000	.500	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.583	.563	.250	.000	.643	.604

Accurate Counts
978-664-2565

N/S Street : Dorchester Avenue
E/W Street: W Broadway / Traveler St
City/State : Boston, MA
Weather : Cloudy

File Name : 12117001
Site Code : 12117001
Start Date : 4/25/2013
Page No : 2



Accurate Counts

978-664-2565

N/S Street : Dorchester Avenue
E/W Street: W Broadway / Traveler St
City/State : Boston, MA
Weather : Cloudy

File Name : 12117001
Site Code : 12117001
Start Date : 4/25/2013
Page No : 1

Groups Printed- Cars - Trucks

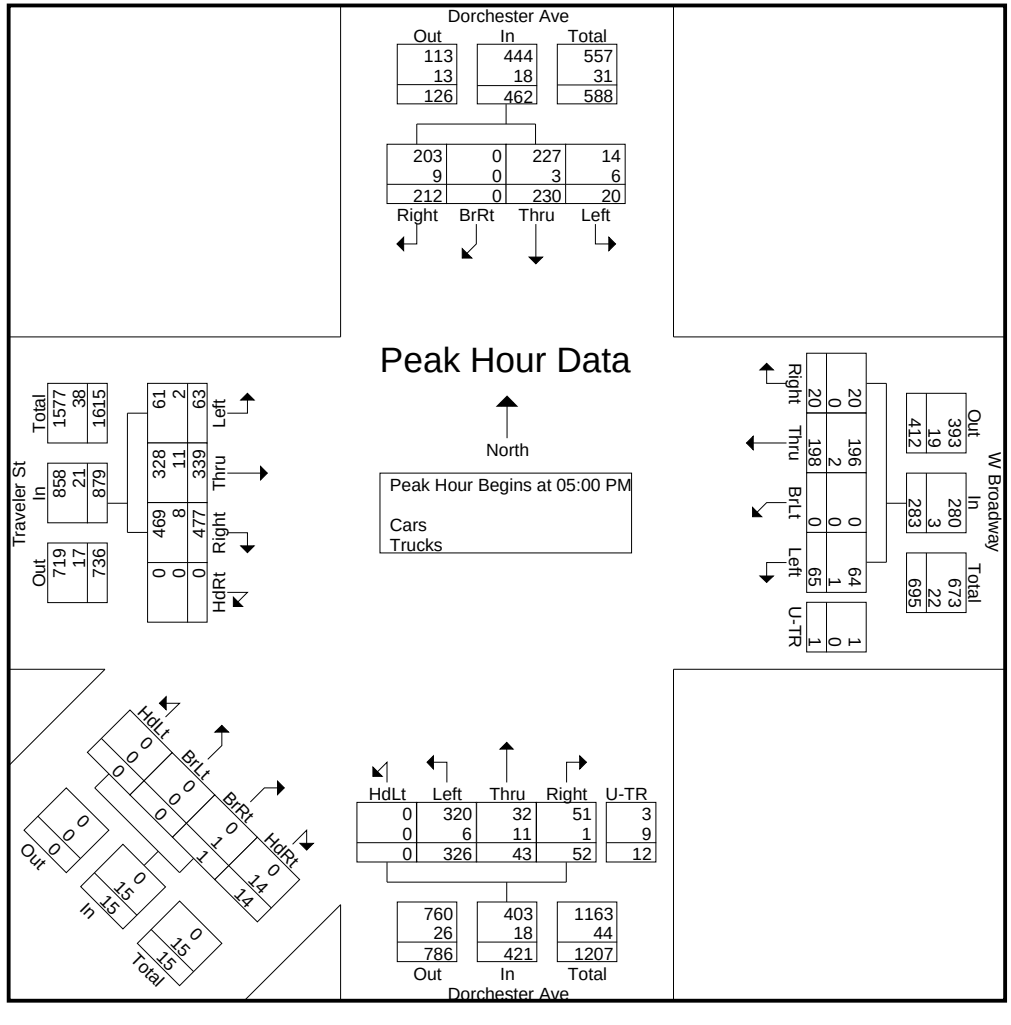
	Dorchester Ave From North				W Broadway From East					Dorchester Ave From South					Greenbaum St From Southwest				Traveler St From West							
Start Time	Left	Thru	BrRt	Right	Left	BrLt	Thru	Right	U-TR	HdLt	Left	Thru	Right	U-TR	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	U-TR	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	2	39	0	56	23	0	36	5	2	0	62	13	10	2	0	0	0	3	15	73	117	0	7	7	458	465
04:15 PM	3	42	0	48	19	0	31	3	0	0	57	7	7	4	0	0	0	8	14	73	120	0	2	2	436	438
04:30 PM	3	43	0	49	25	0	44	7	0	0	92	10	6	1	0	0	0	4	13	67	95	0	1	1	459	460
04:45 PM	2	39	0	45	15	0	37	8	0	0	93	12	8	0	0	0	0	5	12	62	133	0	1	1	471	472
Total	10	163	0	198	82	0	148	23	2	0	304	42	31	7	0	0	0	20	54	275	465	0	11	11	1824	1835
05:00 PM	3	53	0	62	13	0	49	4	0	0	67	8	11	2	0	0	0	5	13	85	127	0	0	0	502	502
05:15 PM	6	55	0	38	18	0	57	9	1	0	101	11	17	3	0	0	1	4	16	75	124	0	1	1	536	537
05:30 PM	5	52	0	70	14	0	52	2	0	0	81	14	10	3	0	0	0	4	15	93	106	0	2	2	521	523
05:45 PM	6	70	0	42	20	0	40	5	0	0	77	10	14	4	0	0	0	1	19	86	120	0	2	2	514	516
Total	20	230	0	212	65	0	198	20	1	0	326	43	52	12	0	0	1	14	63	339	477	0	5	5	2073	2078
Grand Total	30	393	0	410	147	0	346	43	3	0	630	85	83	19	0	0	1	34	117	614	942	0	16	16	3897	3913
Apprch %	3.6	47.2	0	49.2	27.3	0	64.2	8	0.6	0	77.1	10.4	10.2	2.3	0	0	2.9	97.1	7	36.7	56.3	0				
Total %	0.8	10.1	0	10.5	3.8	0	8.9	1.1	0.1	0	16.2	2.2	2.1	0.5	0	0	0	0.9	3	15.8	24.2	0		0.4	99.6	
Cars	19	377	0	392	146	0	341	42	1	0	617	58	81	9	0	0	0	4	108	594	925	0		0	0	3725
% Cars	63.3	95.9	0	95.6	99.3	0	98.6	97.7	33.3	0	97.9	68.2	97.6	47.4	0	0	0	11.8	92.3	96.7	98.2	0	68.8	0	0	95.2
Trucks	11	16	0	18	1	0	5	1	2	0	13	27	2	10	0	0	1	30	9	20	17	0		0	0	188
% Trucks	36.7	4.1	0	4.4	0.7	0	1.4	2.3	66.7	0	2.1	31.8	2.4	52.6	0	0	100	88.2	7.7	3.3	1.8	0	31.2	0	0	4.8

	Dorchester Ave From North					W Broadway From East						Dorchester Ave From South						Greenbaum St From Southwest					Traveler St From West					
Start Time	Left	Thru	BrRt	Right	App. Total	Left	BrLt	Thru	Right	U-TR	App. Total	HdLt	Left	Thru	Right	U-TR	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																												
Peak Hour for Entire Intersection Begins at 05:00 PM																												
05:00 PM	3	53	0	62	118	13	0	49	4	0	66	0	67	8	11	2	88	0	0	0	**5**	**5**	13	85	**127**	0	**225**	502
05:15 PM	**6**	55	0	38	99	18	0	**57**	**9**	**1**	**85**	0	**101**	11	**17**	3	**132**	0	0	**1**	4	5	16	75	124	0	215	**536**
05:30 PM	5	52	0	**70**	**127**	14	0	52	2	0	68	0	81	**14**	10	3	108	0	0	0	4	4	15	**93**	106	0	214	521
05:45 PM	6	**70**	0	42	118	**20**	0	40	5	0	65	0	77	10	14	**4**	105	0	0	0	1	1	**19**	86	120	0	225	514
Total Volume	20	230	0	212	462	65	0	198	20	1	284	0	326	43	52	12	433	0	0	1	14	15	63	339	477	0	879	2073
% App. Total	4.3	49.8	0	45.9		22.9	0	69.7	7	0.4		0	75.3	9.9	12	2.8		0	0	6.7	93.3		7.2	38.6	54.3	0		
PHF	.833	.821	.000	.757	.909	.813	.000	.868	.556	.250	.835	.000	.807	.768	.765	.750	.820	.000	.000	.250	.700	.750	.829	.911	.939	.000	.977	.967
Cars	14	227	0	203	444	64	0	196	20	1	281	0	320	32	51	3	406	0	0	0	0	0	61	328	469	0	858	1989
% Cars	70.0	98.7	0	95.8	96.1	98.5	0	99.0	100	100	98.9	0	98.2	74.4	98.1	25.0	93.8	0	0	0	0	0	96.8	96.8	98.3	0	97.6	95.9
Trucks	6	3	0	9	18	1	0	2	0	0	3	0	6	11	1	9	27	0	0	1	14	15	2	11	8	0	21	84
% Trucks	30.0	1.3	0	4.2	3.9	1.5	0	1.0	0	0	1.1	0	1.8	25.6	1.9	75.0	6.2	0	0	100	100	100	3.2	3.2	1.7	0	2.4	4.1

Accurate Counts
978-664-2565

N/S Street : Dorchester Avenue
E/W Street: W Broadway / Traveler St
City/State : Boston, MA
Weather : Cloudy

File Name : 12117001
Site Code : 12117001
Start Date : 4/25/2013
Page No : 2



Accurate Counts
978-664-2565

N/S Street : Dorchester Avenue
E/W Street: W Broadway / Traveler St
City/State : Boston, MA
Weather : Clear

File Name : 12117001
Site Code : 12117001
Start Date : 4/25/2013
Page No : 1

Groups Printed- Bikes Peds

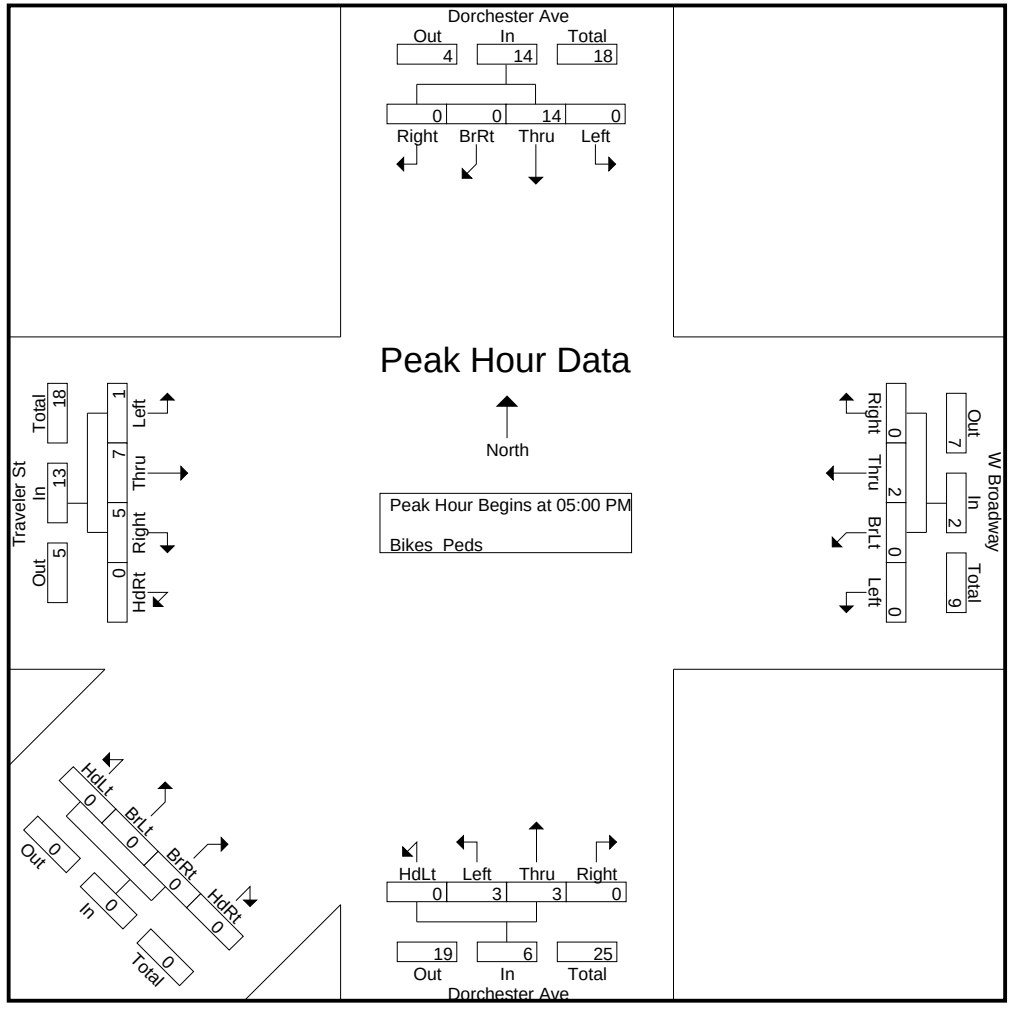
	Dorchester Ave From North					W Broadway From East					Dorchester Ave From South					Greenbaum St From Southwest					Traveler St From West							
Start Time	Left	Thru	BrRt	Right	Peds	Left	BrLt	Thru	Right	Peds	HdLt	Left	Thru	Right	Peds	HdLt	BrLt	BrRt	HdRt	Peds	Left	Thru	Right	HdRt	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	3	0	0	0	0	1	0	0	0	0	7	0	0	0	0	0	0	0	1	0	11	22	1	23
04:15 PM	0	1	0	0	3	0	0	0	0	5	0	0	0	0	15	0	0	0	0	0	0	0	0	0	16	39	1	40
04:30 PM	0	2	0	0	5	0	0	0	0	0	0	0	1	0	7	0	0	0	0	0	0	0	0	0	9	21	3	24
04:45 PM	0	3	0	0	8	0	0	1	0	23	0	0	0	0	18	0	0	0	0	0	0	0	1	0	15	64	5	69
Total	0	6	0	0	19	0	0	1	0	29	0	0	1	0	47	0	0	0	0	0	0	0	2	0	51	146	10	156
05:00 PM	0	3	0	0	9	0	0	0	0	5	0	3	0	0	24	0	0	0	0	0	0	3	2	0	10	48	11	59
05:15 PM	0	1	0	0	10	0	0	1	0	13	0	0	0	0	19	0	0	0	0	0	0	2	0	0	19	61	4	65
05:30 PM	0	5	0	0	9	0	0	1	0	5	0	0	0	0	35	0	0	0	0	0	1	1	2	0	13	62	10	72
05:45 PM	0	5	0	0	13	0	0	0	0	12	0	0	3	0	32	0	0	0	0	0	0	1	1	0	15	72	10	82
Total	0	14	0	0	41	0	0	2	0	35	0	3	3	0	110	0	0	0	0	0	1	7	5	0	57	243	35	278
Grand Total	0	20	0	0	60	0	0	3	0	64	0	3	4	0	157	0	0	0	0	0	1	7	7	0	108	389	45	434
Apprch %	0	100	0	0		0	0	100	0		0	42.9	57.1	0		0	0	0	0		6.7	46.7	46.7	0				
Total %	0	44.4	0	0		0	0	6.7	0		0	6.7	8.9	0		0	0	0	0		2.2	15.6	15.6	0		89.6	10.4	

	Dorchester Ave From North					W Broadway From East					Dorchester Ave From South					Greenbaum St From Southwest					Traveler St From West					
Start Time	Left	Thru	BrRt	Right	App. Total	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 05:00 PM																										
05:00 PM	0	3	0	0	3	0	0	0	0	0	0	**3**	0	0	**3**	0	0	0	0	0	0	**3**	**2**	0	**5**	**11**
05:15 PM	0	1	0	0	1	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	4
05:30 PM	0	**5**	0	0	**5**	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	**1**	1	2	0	4	10
05:45 PM	0	5	0	0	5	0	0	0	0	0	0	0	**3**	0	3	0	0	0	0	0	0	1	1	0	2	10
Total Volume	0	14	0	0	14	0	0	2	0	2	0	3	3	0	6	0	0	0	0	0	1	7	5	0	13	35
% App. Total	0	100	0	0		0	0	100	0		0	50	50	0		0	0	0	0		7.7	53.8	38.5	0			
PHF	.000	.700	.000	.000	.700	.000	.000	.500	.000	.500	.000	.250	.250	.000	.500	.000	.000	.000	.000	.000	.250	.583	.625	.000	.650	.795

Accurate Counts
978-664-2565

N/S Street : Dorchester Avenue
E/W Street: W Broadway / Traveler St
City/State : Boston, MA
Weather : Clear

File Name : 12117001
Site Code : 12117001
Start Date : 4/25/2013
Page No : 2



Accurate Counts
978-664-2565

N/S Street : A Street
E/W Street: West Broadway
City/State : Boston, MA
Weather : Cloudy

File Name : 12117005
Site Code : 12117005
Start Date : 4/25/2013

Groups Printed- Cars - Trucks

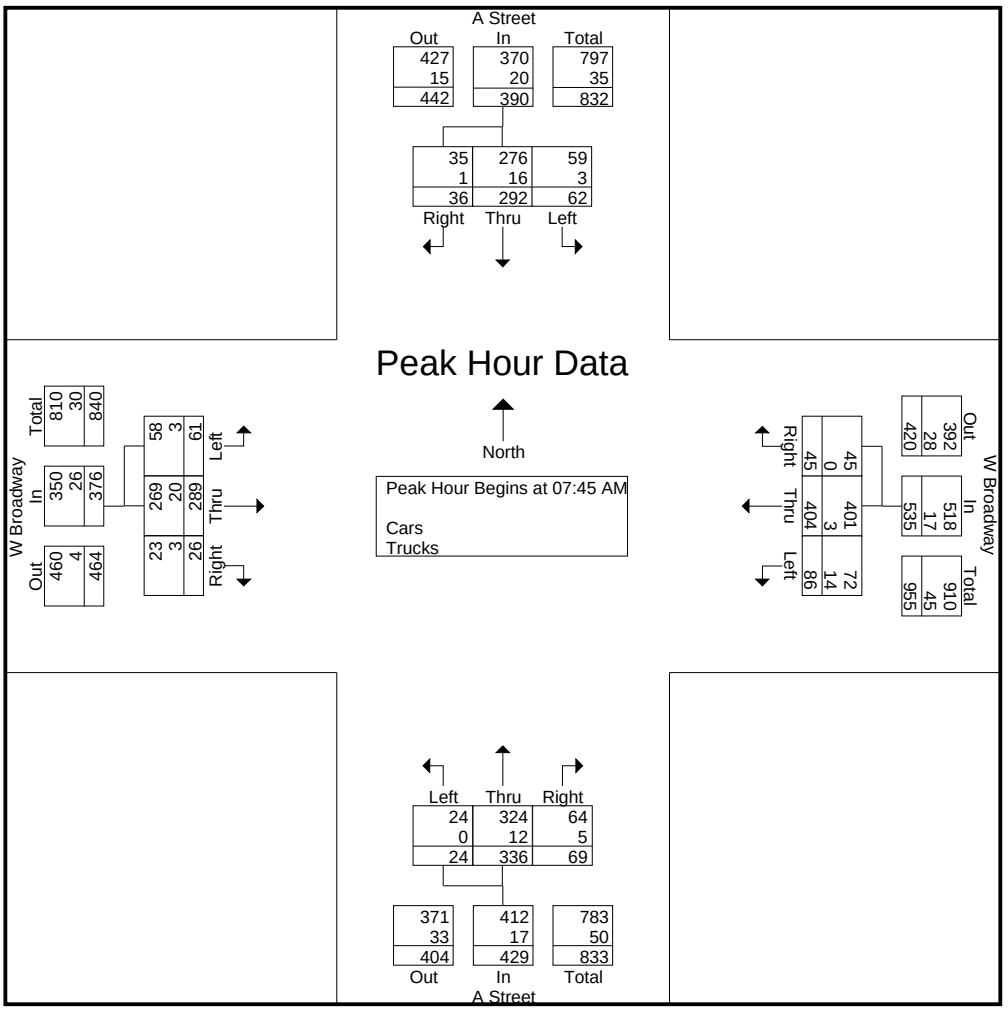
	A Street From North			W Broadway From East			A Street From South			W Broadway From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	16	46	6	16	91	9	5	76	13	9	67	2	356
07:15 AM	10	52	8	16	98	8	2	64	10	6	77	4	355
07:30 AM	12	65	11	19	103	13	9	60	15	4	62	6	379
07:45 AM	20	74	9	21	100	5	5	74	20	20	73	5	426
Total	58	237	34	72	392	35	21	274	58	39	279	17	1516
08:00 AM	21	74	9	17	111	12	5	78	14	10	71	7	429
08:15 AM	9	72	3	23	93	14	8	91	17	12	80	6	428
08:30 AM	12	72	15	25	100	14	6	93	18	19	65	8	447
08:45 AM	13	68	4	21	74	12	6	92	16	18	77	1	402
Total	55	286	31	86	378	52	25	354	65	59	293	22	1706
Grand Total	113	523	65	158	770	87	46	628	123	98	572	39	3222
Apprch %	16.1	74.6	9.3	15.6	75.9	8.6	5.8	78.8	15.4	13.8	80.7	5.5	
Total %	3.5	16.2	2	4.9	23.9	2.7	1.4	19.5	3.8	3	17.8	1.2	
Cars	105	488	62	131	761	85	46	597	107	94	531	35	3042
% Cars	92.9	93.3	95.4	82.9	98.8	97.7	100	95.1	87	95.9	92.8	89.7	94.4
Trucks	8	35	3	27	9	2	0	31	16	4	41	4	180
% Trucks	7.1	6.7	4.6	17.1	1.2	2.3	0	4.9	13	4.1	7.2	10.3	5.6

	A Street From North				W Broadway From East				A Street From South				W Broadway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	20	**74**	9	103	21	100	5	126	5	74	**20**	99	**20**	73	5	**98**	426
08:00 AM	**21**	74	9	**104**	17	**111**	12	**140**	5	78	14	97	10	71	7	88	429
08:15 AM	9	72	3	84	23	93	**14**	130	**8**	91	17	116	12	**80**	6	98	428
08:30 AM	12	72	**15**	99	**25**	100	14	139	6	**93**	18	**117**	19	65	**8**	92	**447**
Total Volume	62	292	36	390	86	404	45	535	24	336	69	429	61	289	26	376	1730
% App. Total	15.9	74.9	9.2		16.1	75.5	8.4		5.6	78.3	16.1		16.2	76.9	6.9		
PHF	.738	.986	.600	.938	.860	.910	.804	.955	.750	.903	.863	.917	.763	.903	.813	.959	.968
Cars	59	276	35	370	72	401	45	518	24	324	64	412	58	269	23	350	1650
% Cars	95.2	94.5	97.2	94.9	83.7	99.3	100	96.8	100	96.4	92.8	96.0	95.1	93.1	88.5	93.1	95.4
Trucks	3	16	1	20	14	3	0	17	0	12	5	17	3	20	3	26	80
% Trucks	4.8	5.5	2.8	5.1	16.3	0.7	0	3.2	0	3.6	7.2	4.0	4.9	6.9	11.5	6.9	4.6

Accurate Counts
978-664-2565

N/S Street : A Street
E/W Street: West Broadway
City/State : Boston, MA
Weather : Cloudy

File Name : 12117005
Site Code : 12117005
Start Date : 4/25/2013
Page No : 2



Accurate Counts
978-664-2565

N/S Street : A Street
E/W Street: West Broadway
City/State : Boston, MA
Weather : Cloudy

File Name : 12117005
Site Code : 12117005
Start Date : 4/25/2013
Page No : 1

Groups Printed- Bikes Peds

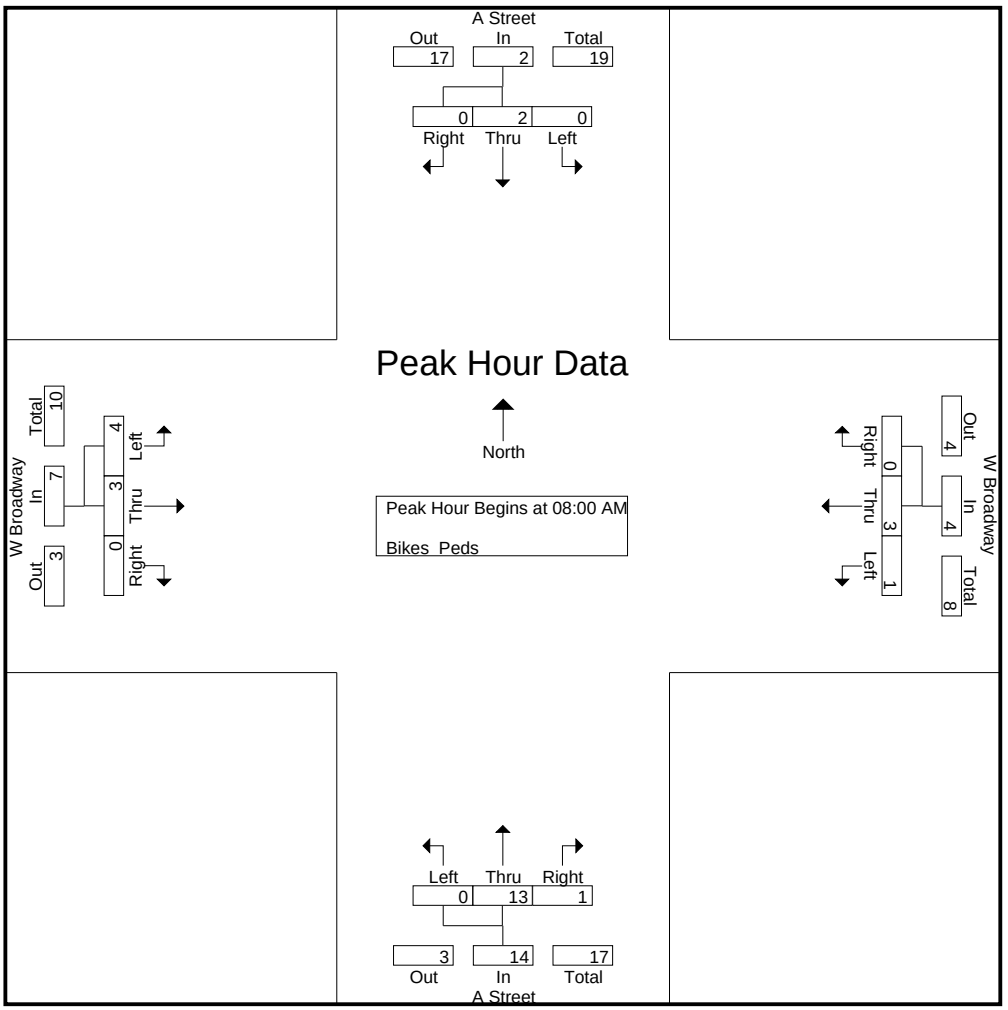
	A Street From North				W Broadway From East				A Street From South				W Broadway From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	1	0	14	1	0	0	16	0	0	0	41	0	0	0	13	84	2	86
07:15 AM	0	0	0	14	0	0	1	7	0	1	0	52	1	1	0	14	87	4	91
07:30 AM	0	0	0	16	0	0	0	12	0	2	1	53	0	0	0	13	94	3	97
07:45 AM	0	1	0	29	0	0	0	17	0	0	0	69	0	0	0	17	132	1	133
Total	0	2	0	73	1	0	1	52	0	3	1	215	1	1	0	57	397	10	407
08:00 AM	0	1	0	20	0	1	0	18	0	1	0	67	0	0	0	23	128	3	131
08:15 AM	0	0	0	21	1	0	0	21	0	5	0	63	1	1	0	14	119	8	127
08:30 AM	0	1	0	17	0	1	0	19	0	2	1	59	1	2	0	24	119	8	127
08:45 AM	0	0	0	33	0	1	0	26	0	5	0	70	2	0	0	29	158	8	166
Total	0	2	0	91	1	3	0	84	0	13	1	259	4	3	0	90	524	27	551
Grand Total	0	4	0	164	2	3	1	136	0	16	2	474	5	4	0	147	921	37	958
Apprch %	0	100	0		33.3	50	16.7		0	88.9	11.1		55.6	44.4	0				
Total %	0	10.8	0		5.4	8.1	2.7		0	43.2	5.4		13.5	10.8	0		96.1	3.9	

	A Street From North				W Broadway From East				A Street From South				W Broadway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	**1**	0	**1**	0	**1**	0	**1**	0	1	0	1	0	0	0	0	3
08:15 AM	0	0	0	0	**1**	0	0	1	0	**5**	0	**5**	1	1	0	2	**8**
08:30 AM	0	1	0	1	0	1	0	1	0	2	**1**	3	1	**2**	0	**3**	8
08:45 AM	0	0	0	0	0	1	0	1	0	5	0	5	**2**	0	0	2	8
Total Volume	0	2	0	2	1	3	0	4	0	13	1	14	4	3	0	7	27
% App. Total	0	100	0		25	75	0		0	92.9	7.1		57.1	42.9	0		
PHF	.000	.500	.000	.500	.250	.750	.000	1.00	.000	.650	.250	.700	.500	.375	.000	.583	.844

Accurate Counts
978-664-2565

N/S Street : A Street
E/W Street: West Broadway
City/State : Boston, MA
Weather : Cloudy

File Name : 12117005
Site Code : 12117005
Start Date : 4/25/2013
Page No : 2



Accurate Counts
978-664-2565

N/S Street : A Street
E/W Street: West Broadway
City/State : Boston, MA
Weather : Clear

File Name : 12117005
Site Code : 12117005
Start Date : 4/25/2013
Page No : 1

Groups Printed- Cars - Trucks

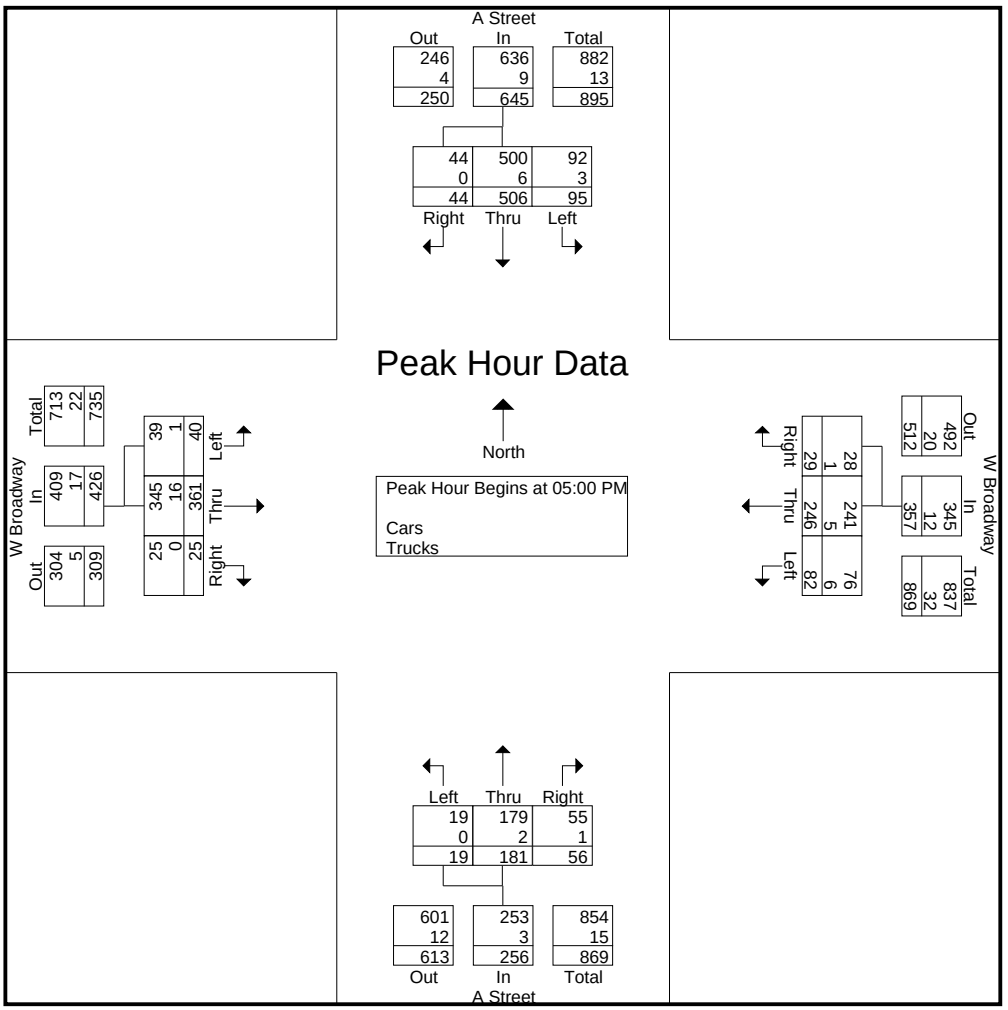
	A Street From North			W Broadway From East			A Street From South			W Broadway From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	41	111	13	8	50	5	7	20	14	6	77	6	358
04:15 PM	22	106	8	8	44	8	2	33	11	12	71	2	327
04:30 PM	27	103	12	10	64	11	5	45	16	8	81	2	384
04:45 PM	22	121	7	13	46	14	7	54	18	4	74	3	383
Total	112	441	40	39	204	38	21	152	59	30	303	13	1452
05:00 PM	30	135	8	22	68	10	4	47	19	8	88	11	450
05:15 PM	17	130	15	17	67	4	7	52	11	13	86	3	422
05:30 PM	23	116	10	21	51	4	5	34	14	15	94	4	391
05:45 PM	25	125	11	22	60	11	3	48	12	4	93	7	421
Total	95	506	44	82	246	29	19	181	56	40	361	25	1684
Grand Total	207	947	84	121	450	67	40	333	115	70	664	38	3136
Apprch %	16.7	76.5	6.8	19	70.5	10.5	8.2	68.2	23.6	9.1	86	4.9	
Total %	6.6	30.2	2.7	3.9	14.3	2.1	1.3	10.6	3.7	2.2	21.2	1.2	
Cars	204	925	84	108	443	65	39	326	112	67	632	38	3043
% Cars	98.6	97.7	100	89.3	98.4	97	97.5	97.9	97.4	95.7	95.2	100	97
Trucks	3	22	0	13	7	2	1	7	3	3	32	0	93
% Trucks	1.4	2.3	0	10.7	1.6	3	2.5	2.1	2.6	4.3	4.8	0	3

	A Street From North				W Broadway From East				A Street From South				W Broadway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**30**	**135**	8	**173**	**22**	**68**	10	**100**	4	47	**19**	**70**	8	88	**11**	107	**450**
05:15 PM	17	130	**15**	162	17	67	4	88	**7**	**52**	11	70	13	86	3	102	422
05:30 PM	23	116	10	149	21	51	4	76	5	34	14	53	**15**	**94**	4	**113**	391
05:45 PM	25	125	11	161	22	60	**11**	93	3	48	12	63	4	93	7	104	421
Total Volume	95	506	44	645	82	246	29	357	19	181	56	256	40	361	25	426	1684
% App. Total	14.7	78.4	6.8		23	68.9	8.1		7.4	70.7	21.9		9.4	84.7	5.9		
PHF	.792	.937	.733	.932	.932	.904	.659	.893	.679	.870	.737	.914	.667	.960	.568	.942	.936
Cars	92	500	44	636	76	241	28	345	19	179	55	253	39	345	25	409	1643
% Cars	96.8	98.8	100	98.6	92.7	98.0	96.6	96.6	100	98.9	98.2	98.8	97.5	95.6	100	96.0	97.6
Trucks	3	6	0	9	6	5	1	12	0	2	1	3	1	16	0	17	41
% Trucks	3.2	1.2	0	1.4	7.3	2.0	3.4	3.4	0	1.1	1.8	1.2	2.5	4.4	0	4.0	2.4

Accurate Counts
978-664-2565

N/S Street : A Street
E/W Street: West Broadway
City/State : Boston, MA
Weather : Clear

File Name : 12117005
Site Code : 12117005
Start Date : 4/25/2013
Page No : 2



Accurate Counts
978-664-2565

N/S Street : A Street
E/W Street: West Broadway
City/State : Boston, MA
Weather : Clear

File Name : 12117005
Site Code : 12117005
Start Date : 4/25/2013
Page No : 1

Groups Printed- Bikes Peds

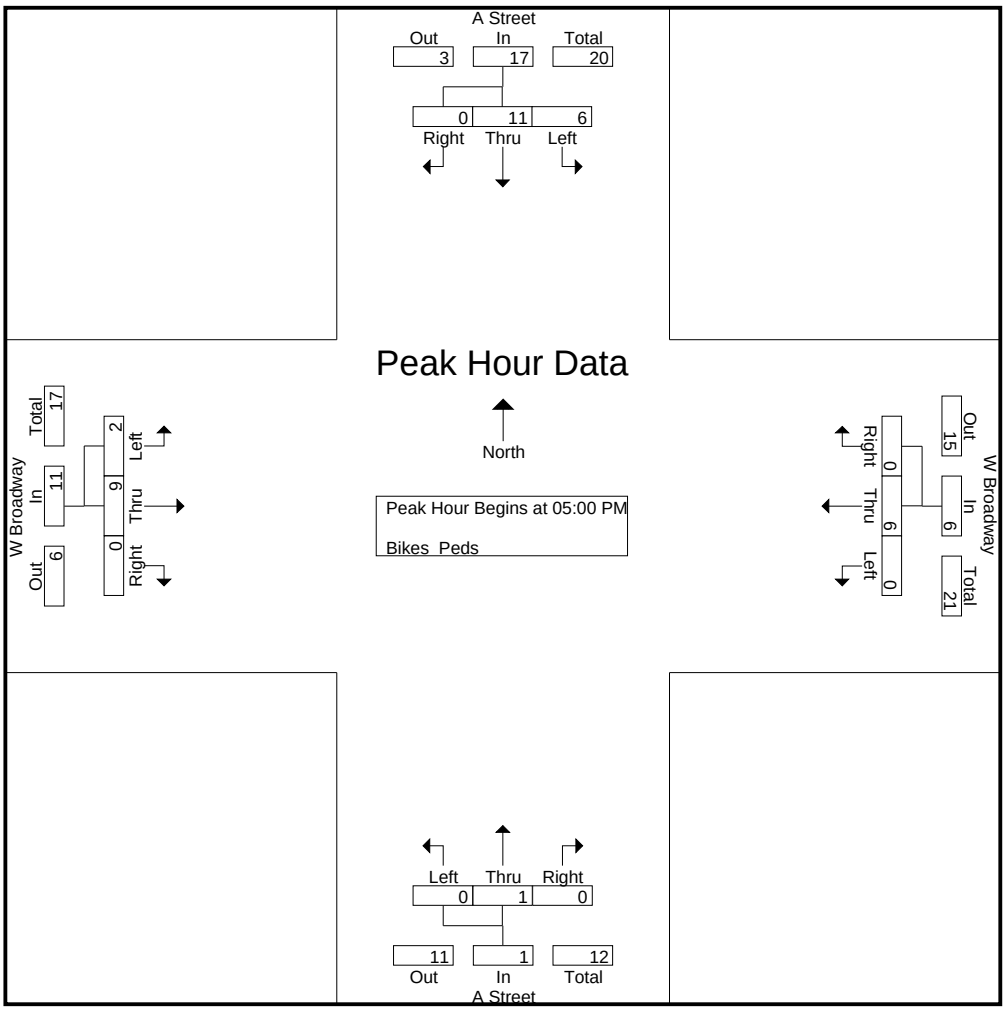
	A Street From North				W Broadway From East				A Street From South				W Broadway From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	20	0	0	0	7	0	1	0	29	0	0	0	5	61	1	62
04:15 PM	0	3	0	30	0	0	1	6	0	0	0	38	0	0	0	11	85	4	89
04:30 PM	1	1	0	16	0	0	0	2	0	0	0	48	0	0	0	18	84	2	86
04:45 PM	1	0	1	24	0	1	1	7	0	0	0	48	0	0	0	13	92	4	96
Total	2	4	1	90	0	1	2	22	0	1	0	163	0	0	0	47	322	11	333
05:00 PM	3	0	0	32	0	4	0	12	0	0	0	73	0	4	0	21	138	11	149
05:15 PM	0	6	0	44	0	0	0	18	0	1	0	92	1	2	0	26	180	10	190
05:30 PM	3	1	0	39	0	2	0	12	0	0	0	69	1	2	0	21	141	9	150
05:45 PM	0	4	0	32	0	0	0	10	0	0	0	86	0	1	0	19	147	5	152
Total	6	11	0	147	0	6	0	52	0	1	0	320	2	9	0	87	606	35	641
Grand Total	8	15	1	237	0	7	2	74	0	2	0	483	2	9	0	134	928	46	974
Apprch %	33.3	62.5	4.2		0	77.8	22.2		0	100	0		18.2	81.8	0				
Total %	17.4	32.6	2.2		0	15.2	4.3		0	4.3	0		4.3	19.6	0		95.3	4.7	

	A Street From North				W Broadway From East				A Street From South				W Broadway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**3**	0	0	3	0	**4**	0	**4**	0	0	0	0	0	**4**	0	**4**	**11**
05:15 PM	0	**6**	0	**6**	0	0	0	0	0	**1**	0	**1**	**1**	2	0	3	10
05:30 PM	3	1	0	4	0	2	0	2	0	0	0	0	1	2	0	3	9
05:45 PM	0	4	0	4	0	0	0	0	0	0	0	0	0	1	0	1	5
Total Volume	6	11	0	17	0	6	0	6	0	1	0	1	2	9	0	11	35
% App. Total	35.3	64.7	0		0	100	0		0	100	0		18.2	81.8	0		
PHF	.500	.458	.000	.708	.000	.375	.000	.375	.000	.250	.000	.250	.500	.563	.000	.688	.795

Accurate Counts
978-664-2565

N/S Street : A Street
E/W Street: West Broadway
City/State : Boston, MA
Weather : Clear

File Name : 12117005
Site Code : 12117005
Start Date : 4/25/2013
Page No : 2



Accurate Counts
978-664-2565

N/S Street : Dorchester Avenue
E/W Street : West 2nd Street
City/State : Boston, MA
Weather : Cloudy

File Name : 12117002
Site Code : 12117002
Start Date : 4/25/2013
Page No : 1

Groups Printed- Cars - Trucks

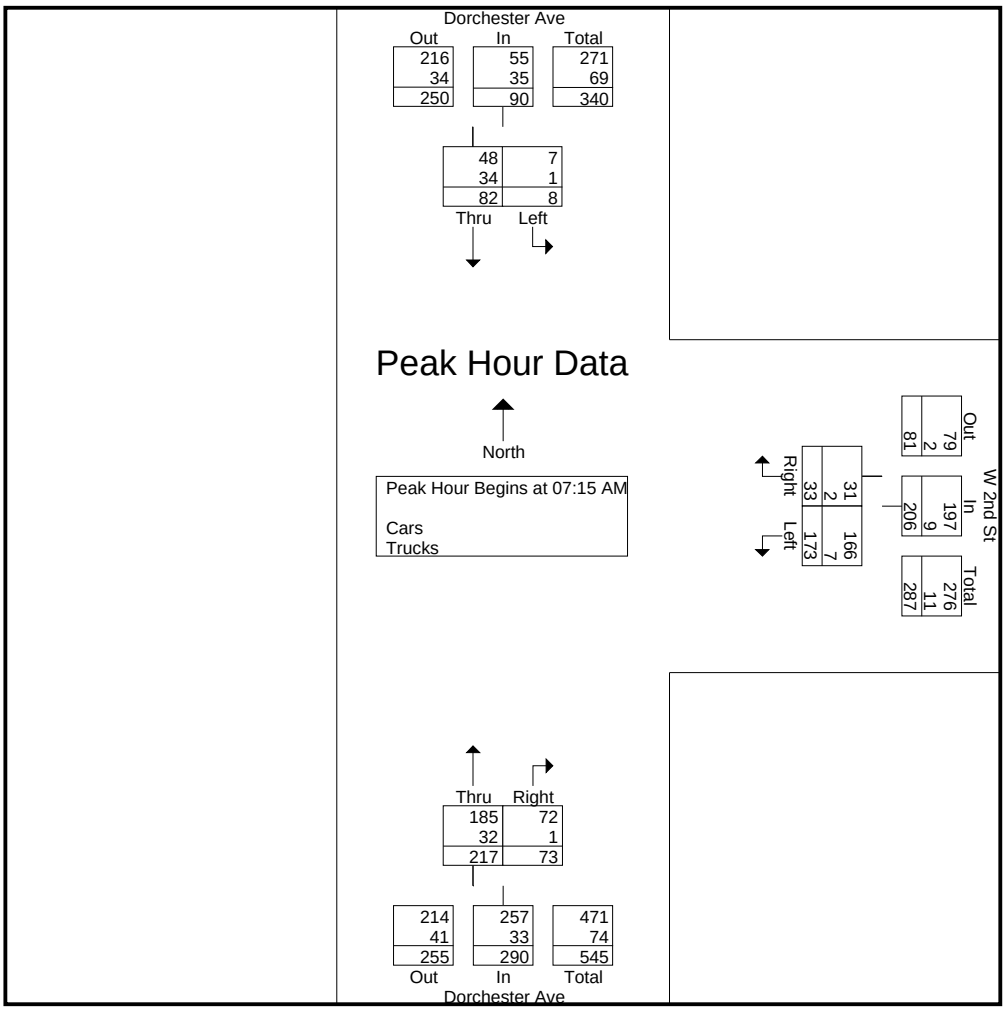
	Dorchester Ave From North		W 2nd St From East		Dorchester Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	6	19	28	7	55	13	128
07:15 AM	3	26	42	10	52	12	145
07:30 AM	1	26	41	4	54	21	147
07:45 AM	3	13	41	10	55	25	147
Total	13	84	152	31	216	71	567
08:00 AM	1	17	49	9	56	15	147
08:15 AM	3	6	39	11	42	23	124
08:30 AM	5	8	51	8	32	14	118
08:45 AM	2	16	34	5	57	19	133
Total	11	47	173	33	187	71	522
Grand Total	24	131	325	64	403	142	1089
Apprch %	15.5	84.5	83.5	16.5	73.9	26.1	
Total %	2.2	12	29.8	5.9	37	13	
Cars	20	88	311	55	326	137	937
% Cars	83.3	67.2	95.7	85.9	80.9	96.5	86
Trucks	4	43	14	9	77	5	152
% Trucks	16.7	32.8	4.3	14.1	19.1	3.5	14

	Dorchester Ave From North			W 2nd St From East			Dorchester Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	**3**	**26**	**29**	42	**10**	52	52	12	64	145
07:30 AM	1	26	27	41	4	45	54	21	75	**147**
07:45 AM	3	13	16	41	10	51	55	**25**	**80**	147
08:00 AM	1	17	18	**49**	9	**58**	**56**	15	71	147
Total Volume	8	82	90	173	33	206	217	73	290	586
% App. Total	8.9	91.1		84	16		74.8	25.2		
PHF	.667	.788	.776	.883	.825	.888	.969	.730	.906	.997
Cars	7	48	55	166	31	197	185	72	257	509
% Cars	87.5	58.5	61.1	96.0	93.9	95.6	85.3	98.6	88.6	86.9
Trucks	1	34	35	7	2	9	32	1	33	77
% Trucks	12.5	41.5	38.9	4.0	6.1	4.4	14.7	1.4	11.4	13.1

Accurate Counts
978-664-2565

N/S Street : Dorchester Avenue
E/W Street : West 2nd Street
City/State : Boston, MA
Weather : Cloudy

File Name : 12117002
Site Code : 12117002
Start Date : 4/25/2013
Page No : 2



Accurate Counts
978-664-2565

N/S Street : Dorchester Avenue
E/W Street : West 2nd Street
City/State : Boston, MA
Weather : Cloudy

File Name : 12117002
Site Code : 12117002
Start Date : 4/25/2013
Page No : 1

Groups Printed- Bikes Peds

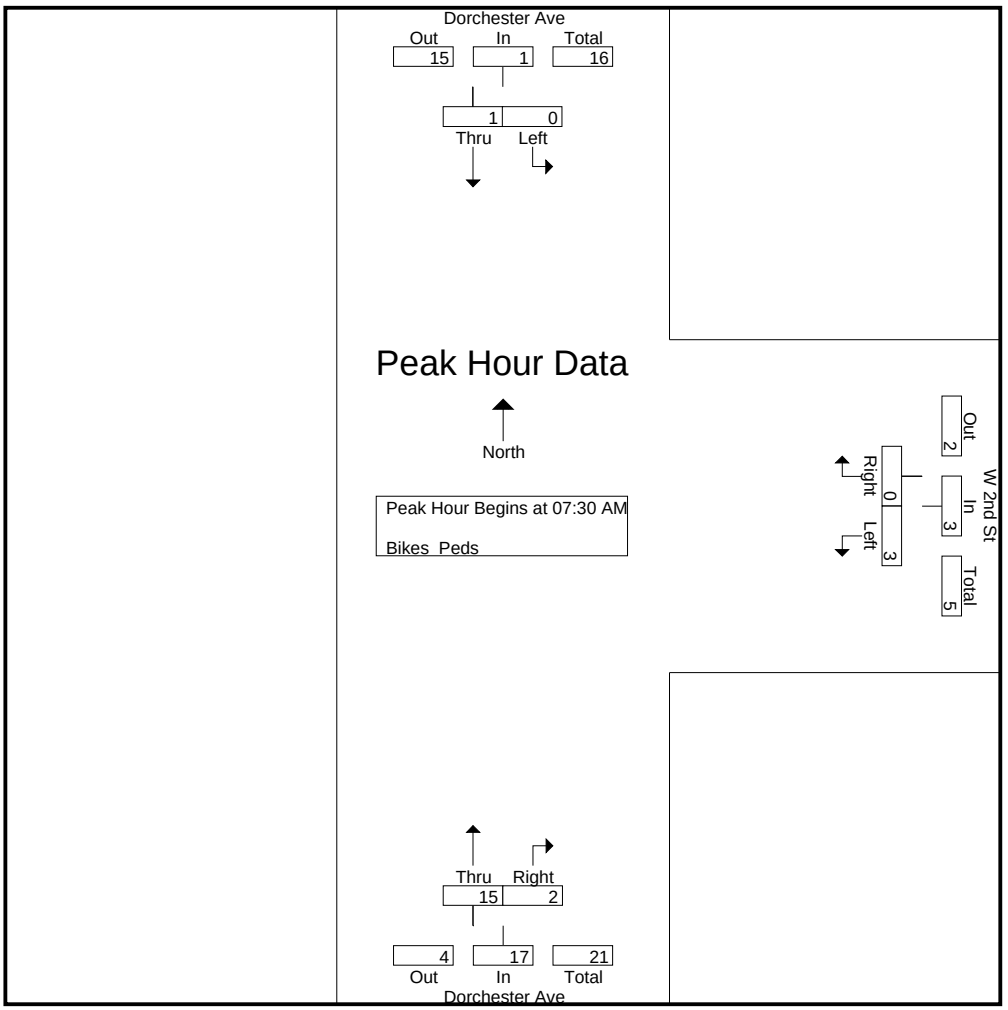
	Dorchester Ave From North			W 2nd St From East			Dorchester Ave From South					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	6	0	0	0	6	0	6
07:15 AM	0	1	1	1	0	8	1	1	2	11	4	15
07:30 AM	0	0	2	1	0	10	2	0	0	12	3	15
07:45 AM	0	1	3	0	0	7	5	1	0	10	7	17
Total	0	2	6	2	0	31	8	2	2	39	14	53
08:00 AM	0	0	8	1	0	9	4	0	2	19	5	24
08:15 AM	0	0	6	1	0	8	4	1	0	14	6	20
08:30 AM	0	0	2	0	0	7	1	0	1	10	1	11
08:45 AM	0	1	2	0	0	7	4	0	0	9	5	14
Total	0	1	18	2	0	31	13	1	3	52	17	69
Grand Total	0	3	24	4	0	62	21	3	5	91	31	122
Apprch %	0	100		100	0		87.5	12.5				
Total %	0	9.7		12.9	0		67.7	9.7		74.6	25.4	

	Dorchester Ave From North			W 2nd St From East			Dorchester Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	0	0	**1**	0	**1**	2	0	2	3
07:45 AM	0	**1**	**1**	0	0	0	**5**	**1**	**6**	**7**
08:00 AM	0	0	0	1	0	1	4	0	4	5
08:15 AM	0	0	0	1	0	1	4	1	5	6
Total Volume	0	1	1	3	0	3	15	2	17	21
% App. Total	0	100		100	0		88.2	11.8		
PHF	.000	.250	.250	.750	.000	.750	.750	.500	.708	.750

Accurate Counts
978-664-2565

N/S Street : Dorchester Avenue
E/W Street : West 2nd Street
City/State : Boston, MA
Weather : Cloudy

File Name : 12117002
Site Code : 12117002
Start Date : 4/25/2013
Page No : 2



Accurate Counts
978-664-2565

N/S Street : Dorchester Avenue
E/W Street : West 2nd Street
City/State : Boston, MA
Weather : Cloudy

File Name : 12117002
Site Code : 12117002
Start Date : 4/25/2013
Page No : 1

Groups Printed- Cars - Trucks

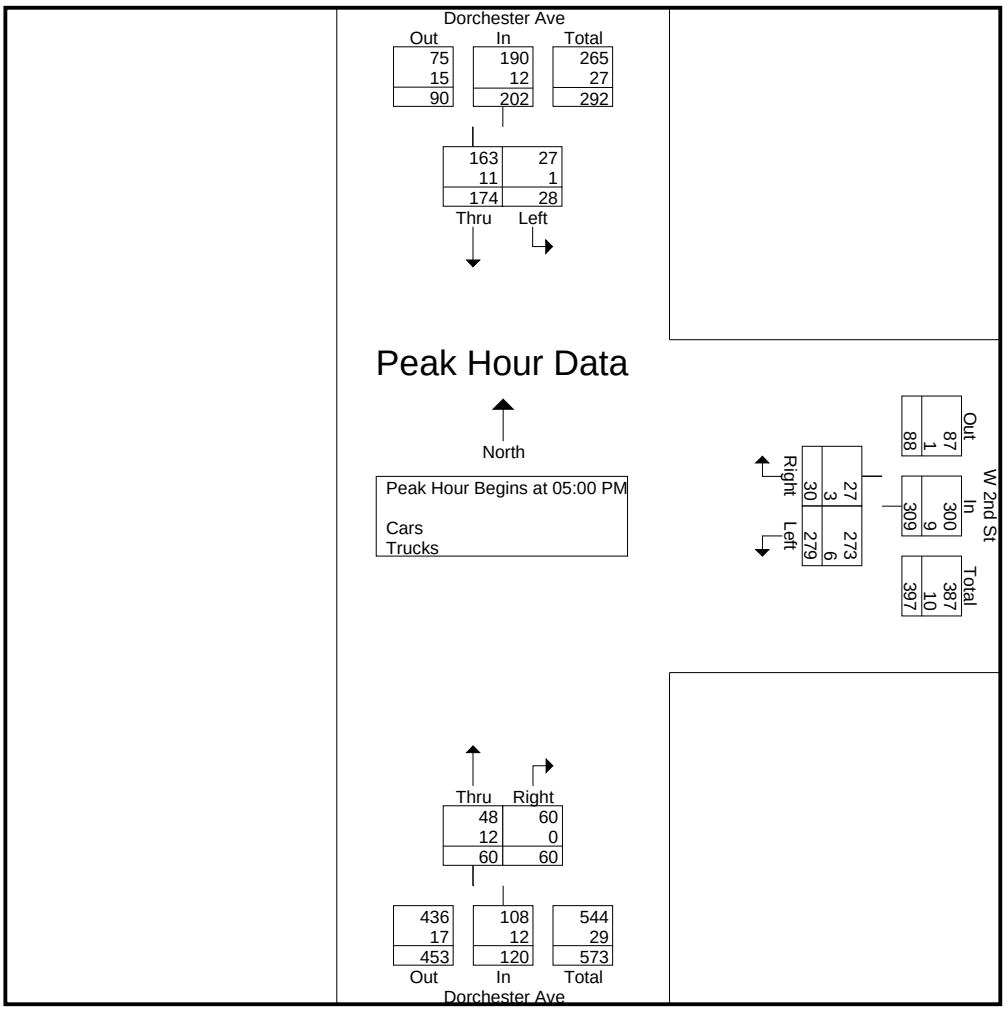
	Dorchester Ave From North		W 2nd St From East		Dorchester Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	3	40	53	6	15	13	130
04:15 PM	4	51	49	9	16	11	140
04:30 PM	5	38	53	12	16	16	140
04:45 PM	7	43	47	9	22	12	140
Total	19	172	202	36	69	52	550
05:00 PM	3	43	72	10	12	15	155
05:15 PM	11	50	52	7	14	17	151
05:30 PM	9	39	88	6	18	9	169
05:45 PM	5	42	67	7	16	19	156
Total	28	174	279	30	60	60	631
Grand Total	47	346	481	66	129	112	1181
Apprch %	12	88	87.9	12.1	53.5	46.5	
Total %	4	29.3	40.7	5.6	10.9	9.5	
Cars	46	317	466	55	94	111	1089
% Cars	97.9	91.6	96.9	83.3	72.9	99.1	92.2
Trucks	1	29	15	11	35	1	92
% Trucks	2.1	8.4	3.1	16.7	27.1	0.9	7.8

	Dorchester Ave From North			W 2nd St From East			Dorchester Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	3	43	46	72	**10**	82	12	15	27	155
05:15 PM	**11**	**50**	**61**	52	7	59	14	17	31	151
05:30 PM	9	39	48	**88**	6	**94**	**18**	9	27	**169**
05:45 PM	5	42	47	67	7	74	16	**19**	**35**	156
Total Volume	28	174	202	279	30	309	60	60	120	631
% App. Total	13.9	86.1		90.3	9.7		50	50		
PHF	.636	.870	.828	.793	.750	.822	.833	.789	.857	.933
Cars	27	163	190	273	27	300	48	60	108	598
% Cars	96.4	93.7	94.1	97.8	90.0	97.1	80.0	100	90.0	94.8
Trucks	1	11	12	6	3	9	12	0	12	33
% Trucks	3.6	6.3	5.9	2.2	10.0	2.9	20.0	0	10.0	5.2

Accurate Counts
978-664-2565

N/S Street : Dorchester Avenue
E/W Street : West 2nd Street
City/State : Boston, MA
Weather : Cloudy

File Name : 12117002
Site Code : 12117002
Start Date : 4/25/2013
Page No : 2



Accurate Counts
978-664-2565

N/S Street : Dorchester Avenue
E/W Street : West 2nd Street
City/State : Boston, MA
Weather : Cloudy

File Name : 12117002
Site Code : 12117002
Start Date : 4/25/2013
Page No : 1

Groups Printed- Bikes Peds

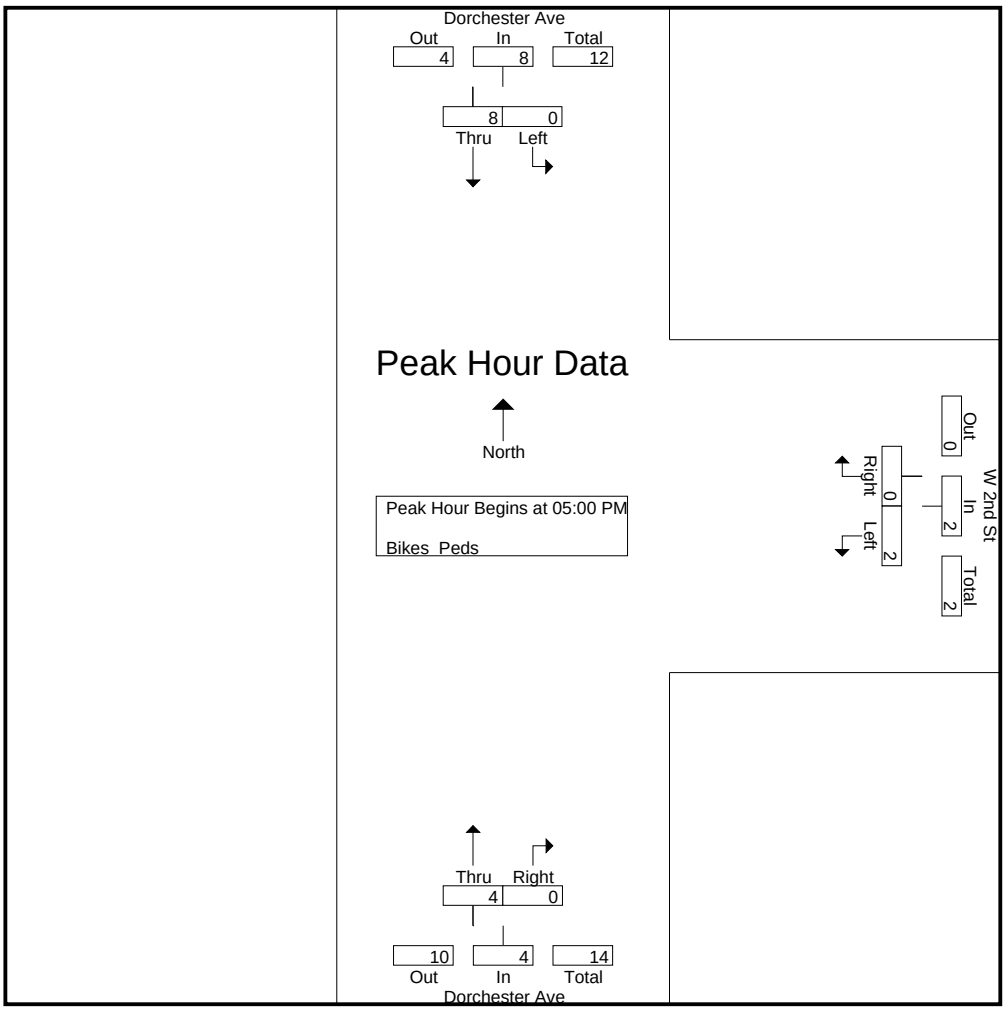
	Dorchester Ave From North			W 2nd St From East			Dorchester Ave From South					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	1	0	0	4	0	0	2	7	0	7
04:15 PM	0	1	1	0	0	3	0	0	0	4	1	5
04:30 PM	0	1	0	1	0	8	1	0	1	9	3	12
04:45 PM	0	1	0	0	0	21	1	0	1	22	2	24
Total	0	3	2	1	0	36	2	0	4	42	6	48
05:00 PM	0	3	0	0	0	10	1	0	0	10	4	14
05:15 PM	0	1	2	0	0	10	0	0	0	12	1	13
05:30 PM	0	3	2	1	0	9	1	0	1	12	5	17
05:45 PM	0	1	0	1	0	15	2	0	0	15	4	19
Total	0	8	4	2	0	44	4	0	1	49	14	63
Grand Total	0	11	6	3	0	80	6	0	5	91	20	111
Apprch %	0	100		100	0		100	0				
Total %	0	55		15	0		30	0		82	18	

	Dorchester Ave From North			W 2nd St From East			Dorchester Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	**3**	**3**	0	0	0	1	0	1	4
05:15 PM	0	1	1	0	0	0	0	0	0	1
05:30 PM	0	3	3	**1**	0	**1**	1	0	1	**5**
05:45 PM	0	1	1	1	0	1	**2**	0	**2**	4
Total Volume	0	8	8	2	0	2	4	0	4	14
% App. Total	0	100		100	0		100	0		
PHF	.000	.667	.667	.500	.000	.500	.500	.000	.500	.700

Accurate Counts
978-664-2565

N/S Street : Dorchester Avenue
E/W Street : West 2nd Street
City/State : Boston, MA
Weather : Cloudy

File Name : 12117002
Site Code : 12117002
Start Date : 4/25/2013
Page No : 2



Accurate Counts
978-664-2565

N/S Street : Athens Street
E/W Street : West 2nd Street
City/State : Boston, MA
Weather : Cloudy`

File Name : 12117006
Site Code : 12117006
Start Date : 4/25/2013
Page No : 1

Groups Printed- Cars

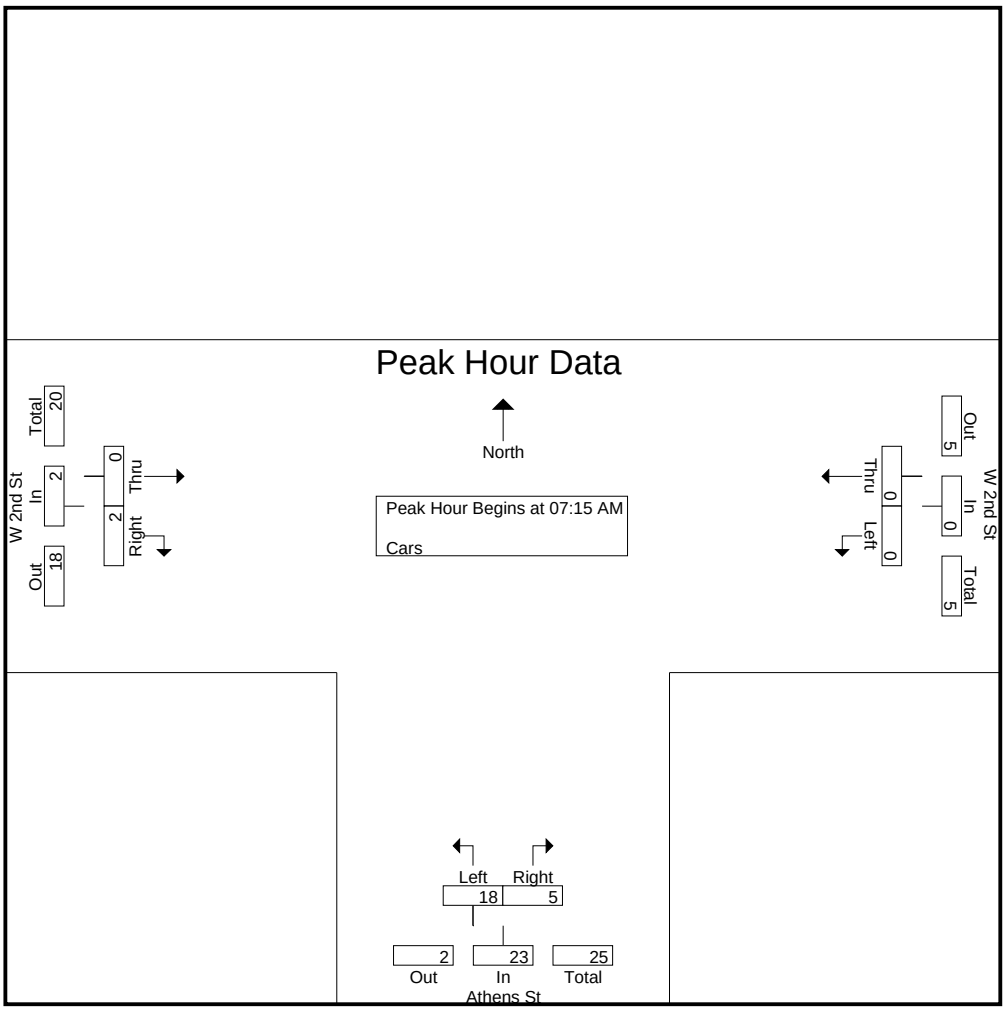
	W 2nd St From East		Athens St From South		W 2nd St From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	0	0	1	1	0	0	2
07:15 AM	0	0	2	0	0	1	3
07:30 AM	0	0	4	3	0	0	7
07:45 AM	0	0	9	1	0	1	11
Total	0	0	16	5	0	2	23
08:00 AM	0	0	3	1	0	0	4
08:15 AM	0	0	1	1	0	0	2
08:30 AM	0	0	4	2	0	0	6
08:45 AM	0	0	2	1	0	0	3
Total	0	0	10	5	0	0	15
Grand Total	0	0	26	10	0	2	38
Apprch %	0	0	72.2	27.8	0	100	
Total %	0	0	68.4	26.3	0	5.3	

	W 2nd St From East			Athens St From South			W 2nd St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	0	0	2	0	2	0	**1**	**1**	3
07:30 AM	0	0	0	4	**3**	7	0	0	0	7
07:45 AM	0	0	0	**9**	1	**10**	0	1	1	**11**
08:00 AM	0	0	0	3	1	4	0	0	0	4
Total Volume	0	0	0	18	5	23	0	2	2	25
% App. Total	0	0		78.3	21.7		0	100		
PHF	.000	.000	.000	.500	.417	.575	.000	.500	.500	.568

Accurate Counts
978-664-2565

N/S Street : Athens Street
E/W Street : West 2nd Street
City/State : Boston, MA
Weather : Cloudy`

File Name : 12117006
Site Code : 12117006
Start Date : 4/25/2013
Page No : 2



Accurate Counts
978-664-2565

N/S Street : Athens Street
E/W Street : West 2nd Street
City/State : Boston, MA
Weather : Cloudy`

File Name : 12117006
Site Code : 12117006
Start Date : 4/25/2013
Page No : 1

Groups Printed- Bikes Peds

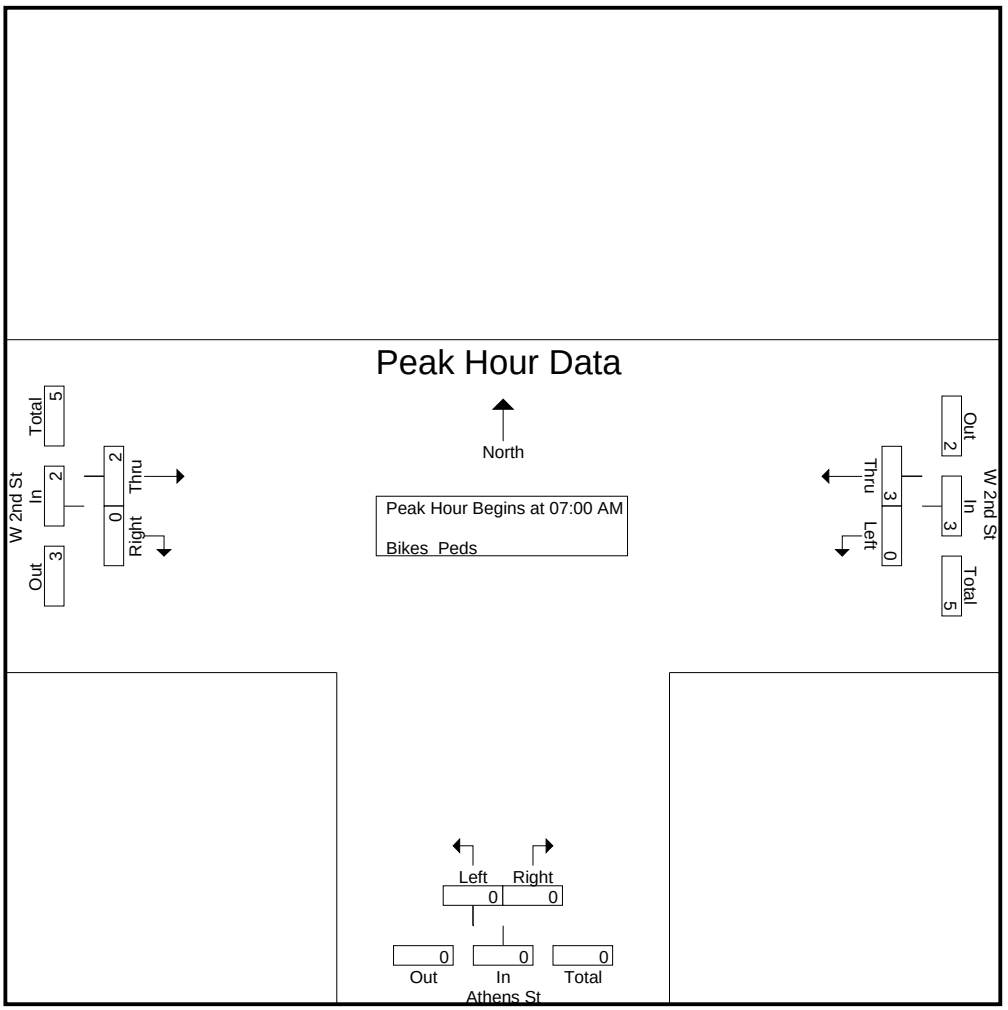
	W 2nd St From East			Athens St From South			W 2nd St From West					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	1	0	0	0	0	0	0	1	1	1	2
07:15 AM	0	1	0	0	0	1	1	0	5	6	2	8
07:30 AM	0	1	1	0	0	2	0	0	0	3	1	4
07:45 AM	0	0	1	0	0	1	1	0	0	2	1	3
Total	0	3	2	0	0	4	2	0	6	12	5	17
08:00 AM	0	0	0	0	0	3	0	0	2	5	0	5
08:15 AM	0	1	2	0	0	1	1	0	3	6	2	8
08:30 AM	0	0	1	0	0	2	0	0	0	3	0	3
08:45 AM	0	0	0	0	0	0	1	0	0	0	1	1
Total	0	1	3	0	0	6	2	0	5	14	3	17
Grand Total	0	4	5	0	0	10	4	0	11	26	8	34
Apprch %	0	100		0	0		100	0				
Total %	0	50		0	0		50	0		76.5	23.5	

	W 2nd St From East			Athens St From South			W 2nd St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	**1**	**1**	0	0	0	0	0	0	1
07:15 AM	0	1	1	0	0	0	**1**	0	**1**	**2**
07:30 AM	0	1	1	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	1	0	1	1
Total Volume	0	3	3	0	0	0	2	0	2	5
% App. Total	0	100		0	0		100	0		
PHF	.000	.750	.750	.000	.000	.000	.500	.000	.500	.625

Accurate Counts
978-664-2565

N/S Street : Athens Street
E/W Street : West 2nd Street
City/State : Boston, MA
Weather : Cloudy`

File Name : 12117006
Site Code : 12117006
Start Date : 4/25/2013
Page No : 2



Accurate Counts
978-664-2565

N/S Street : Athens Street
E/W Street : West 2nd Street
City/State : Boston, MA
Weather : Clear

File Name : 12117006
Site Code : 12117006
Start Date : 4/25/2013
Page No : 1

Groups Printed- Cars

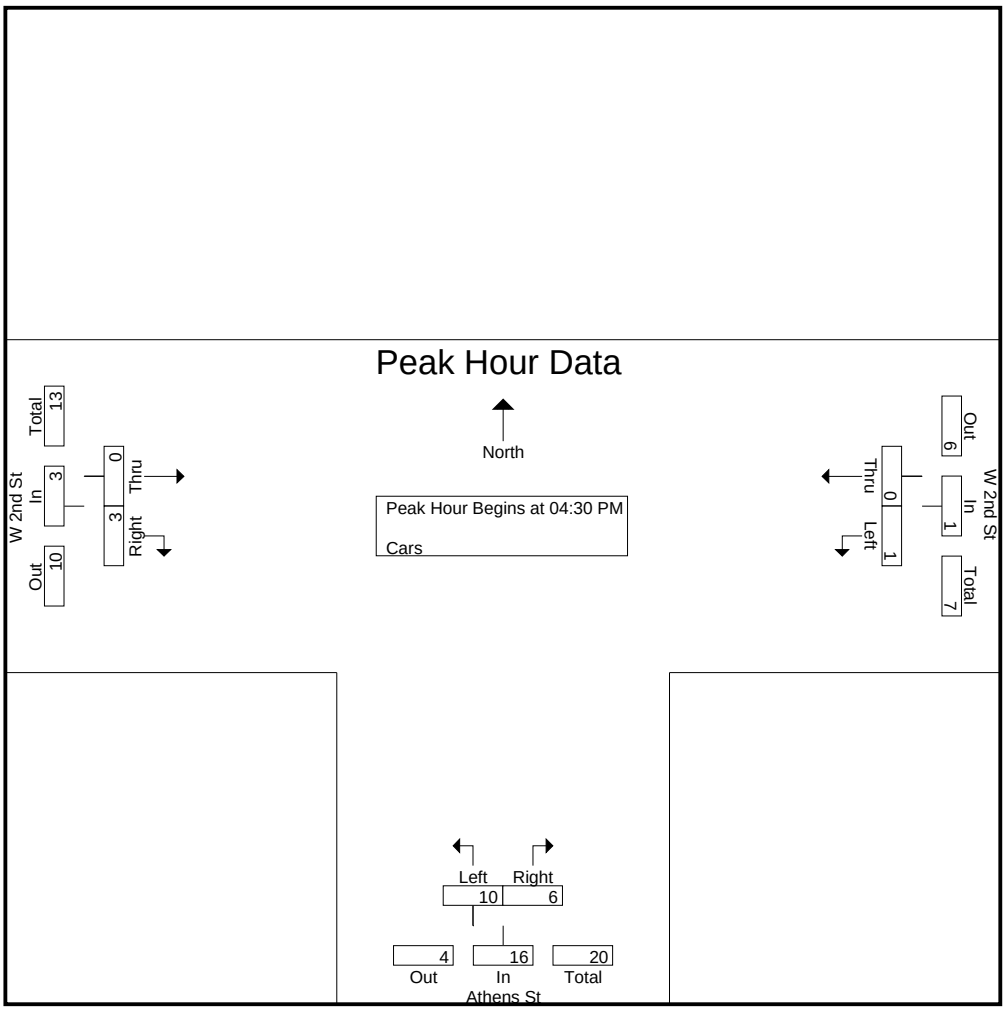
	W 2nd St From East		Athens St From South		W 2nd St From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	0	0	2	0	0	1	3
04:15 PM	0	0	2	2	0	0	4
04:30 PM	0	0	3	1	0	1	5
04:45 PM	0	0	2	3	0	1	6
Total	0	0	9	6	0	3	18
05:00 PM	0	0	2	1	0	0	3
05:15 PM	1	0	3	1	0	1	6
05:30 PM	0	0	0	1	0	1	2
05:45 PM	0	0	1	1	0	1	3
Total	1	0	6	4	0	3	14
Grand Total	1	0	15	10	0	6	32
Apprch %	100	0	60	40	0	100	
Total %	3.1	0	46.9	31.2	0	18.8	

	W 2nd St From East			Athens St From South			W 2nd St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	0	0	**3**	1	4	0	**1**	**1**	5
04:45 PM	0	0	0	2	**3**	**5**	0	1	1	**6**
05:00 PM	0	0	0	2	1	3	0	0	0	3
05:15 PM	**1**	0	**1**	3	1	4	0	1	1	6
Total Volume	1	0	1	10	6	16	0	3	3	20
% App. Total	100	0		62.5	37.5		0	100		
PHF	.250	.000	.250	.833	.500	.800	.000	.750	.750	.833

Accurate Counts
978-664-2565

N/S Street : Athens Street
E/W Street : West 2nd Street
City/State : Boston, MA
Weather : Clear

File Name : 12117006
Site Code : 12117006
Start Date : 4/25/2013
Page No : 2



Accurate Counts
978-664-2565

N/S Street : Athens Street
E/W Street : West 2nd Street
City/State : Boston, MA
Weather : Clear

File Name : 12117006
Site Code : 12117006
Start Date : 4/25/2013
Page No : 1

Groups Printed- Bikes Peds

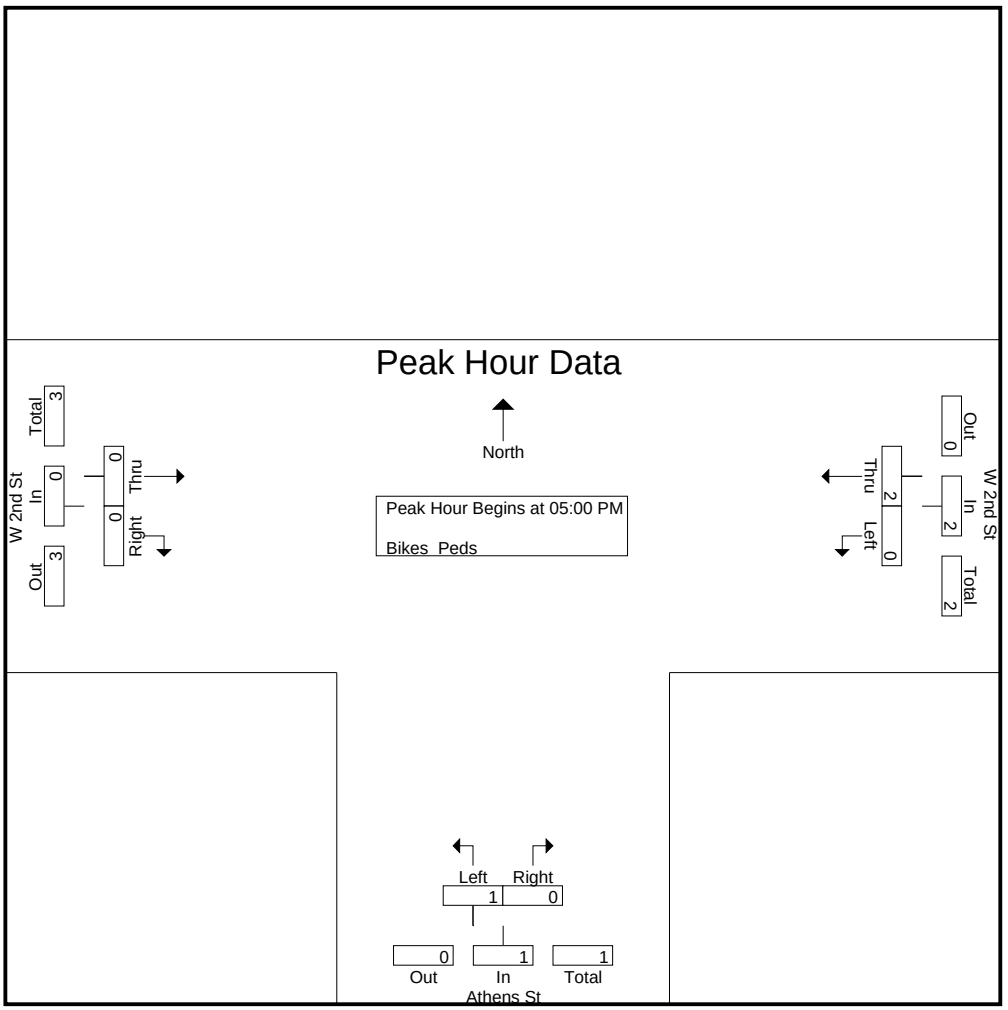
	W 2nd St From East			Athens St From South			W 2nd St From West					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	3	0	0	3	0	0	1	7	0	7
04:15 PM	0	0	0	0	0	2	0	0	0	2	0	2
04:30 PM	0	1	1	0	0	1	0	0	1	3	1	4
04:45 PM	0	0	0	0	0	5	0	0	0	5	0	5
Total	0	1	4	0	0	11	0	0	2	17	1	18
05:00 PM	0	0	0	0	0	2	0	0	0	2	0	2
05:15 PM	0	1	0	0	0	2	0	0	2	4	1	5
05:30 PM	0	0	0	0	0	7	0	0	1	8	0	8
05:45 PM	0	1	0	1	0	4	0	0	1	5	2	7
Total	0	2	0	1	0	15	0	0	4	19	3	22
Grand Total	0	3	4	1	0	26	0	0	6	36	4	40
Apprch %	0	100		100	0		0	0				
Total %	0	75		25	0		0	0		90	10	

	W 2nd St From East			Athens St From South			W 2nd St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	**1**	**1**	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	1	1	**1**	0	**1**	0	0	0	**2**
Total Volume	0	2	2	1	0	1	0	0	0	3
% App. Total	0	100		100	0		0	0		
PHF	.000	.500	.500	.250	.000	.250	.000	.000	.000	.375

Accurate Counts
978-664-2565

N/S Street : Athens Street
E/W Street : West 2nd Street
City/State : Boston, MA
Weather : Clear

File Name : 12117006
Site Code : 12117006
Start Date : 4/25/2013
Page No : 2



N/S: A Street
E/W: Athens Street
City, State: Boston, MA
Client: Howard Stein-Hudson/ M. Santos

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

File Name : 133548 C
Site Code : 13100
Start Date : 9/26/2013
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	A Street From North				Athens Street From East				A Street From South				Athens Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	7	85	0	0	0	0	0	0	0	65	1	0	0	0	0	0	158
07:15 AM	3	82	3	1	0	0	0	0	0	85	0	0	1	0	0	0	175
07:30 AM	1	77	0	0	0	0	0	0	2	79	1	0	0	0	0	0	160
07:45 AM	2	106	0	0	0	1	0	0	0	100	2	0	0	0	0	0	211
Total	13	350	3	1	0	1	0	0	2	329	4	0	1	0	0	0	704
08:00 AM	2	102	0	0	0	0	0	0	0	103	2	0	0	0	1	0	210
08:15 AM	1	102	0	0	0	0	0	0	0	109	1	0	1	0	0	0	214
08:30 AM	2	91	0	0	0	0	0	0	1	103	1	0	0	0	0	0	198
08:45 AM	1	93	0	0	0	0	0	0	0	126	1	0	0	0	0	0	221
Total	6	388	0	0	0	0	0	0	1	441	5	0	1	0	1	0	843
Grand Total	19	738	3	1	0	1	0	0	3	770	9	0	2	0	1	0	1547
Apprch %	2.5	97	0.4	0.1	0	100	0	0	0.4	98.5	1.2	0	66.7	0	33.3	0	
Total %	1.2	47.7	0.2	0.1	0	0.1	0	0	0.2	49.8	0.6	0	0.1	0	0.1	0	
Cars	16	670	3	1	0	1	0	0	3	720	9	0	2	0	1	0	1426
% Cars	84.2	90.8	100	100	0	100	0	0	100	93.5	100	0	100	0	100	0	92.2
Heavy Vehicles	3	68	0	0	0	0	0	0	0	50	0	0	0	0	0	0	121
% Heavy Vehicles	15.8	9.2	0	0	0	0	0	0	0	6.5	0	0	0	0	0	0	7.8

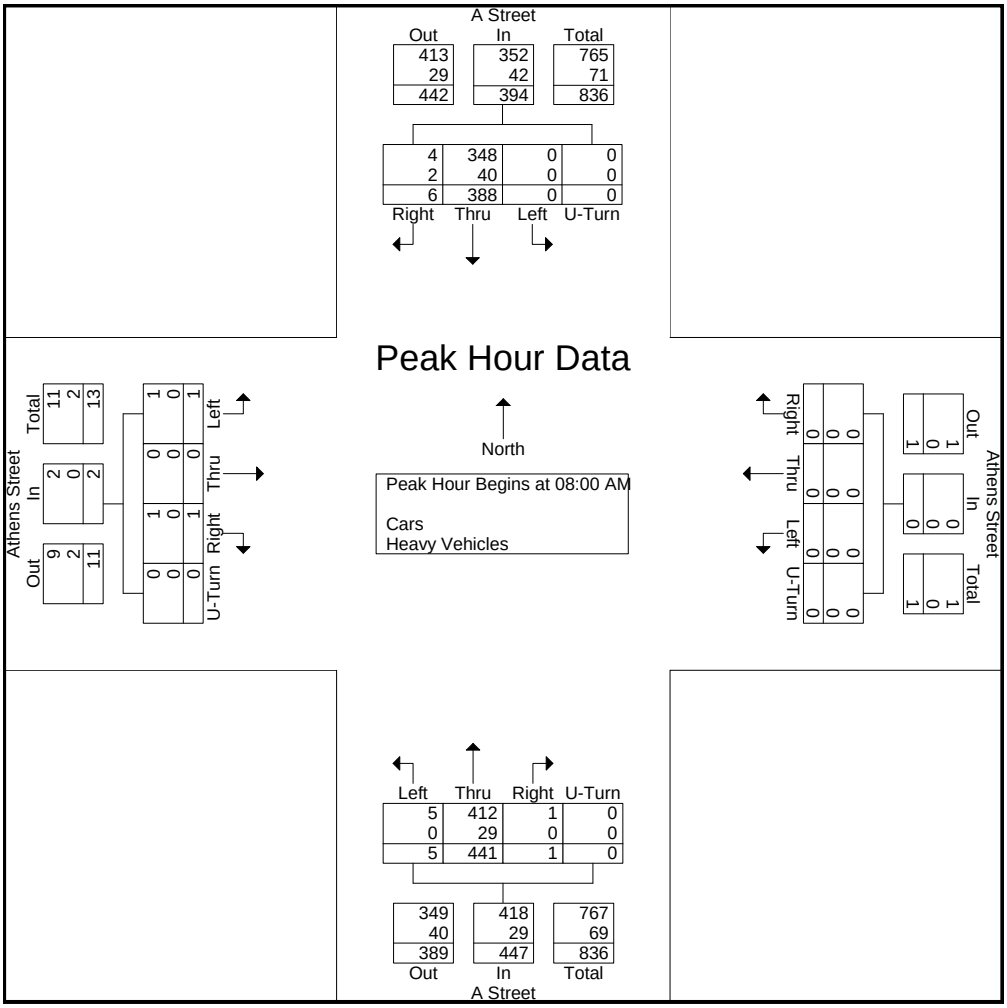
	A Street From North					Athens Street From East					A Street From South					Athens Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	2	102	0	0	104	0	0	0	0	0	0	103	2	0	105	0	0	1	0	1	210
08:15 AM	1	102	0	0	103	0	0	0	0	0	0	109	1	0	110	1	0	0	0	1	214
08:30 AM	2	91	0	0	93	0	0	0	0	0	1	103	1	0	105	0	0	0	0	0	198
08:45 AM	1	93	0	0	94	0	0	0	0	0	0	126	1	0	127	0	0	0	0	0	221
Total Volume	6	388	0	0	394	0	0	0	0	0	1	441	5	0	447	1	0	1	0	2	843
% App. Total	1.5	98.5	0	0		0	0	0	0		0.2	98.7	1.1	0		50	0	50	0		
PHF	.750	.951	.000	.000	.947	.000	.000	.000	.000	.000	.250	.875	.625	.000	.880	.250	.000	.250	.000	.500	.954
Cars	4	348	0	0	352	0	0	0	0	0	1	412	5	0	418	1	0	1	0	2	772
% Cars	66.7	89.7	0	0	89.3	0	0	0	0	0	100	93.4	100	0	93.5	100	0	100	0	100	91.6
Heavy Vehicles	2	40	0	0	42	0	0	0	0	0	0	29	0	0	29	0	0	0	0	0	71
% Heavy Vehicles	33.3	10.3	0	0	10.7	0	0	0	0	0	0	6.6	0	0	6.5	0	0	0	0	0	8.4

N/S: A Street
E/W: Athens Street
City, State: Boston, MA
Client: Howard Stein-Hudson/ M. Santos

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

File Name : 133548 C
Site Code : 13100
Start Date : 9/26/2013
Page No : 1

	A Street From North					Athens Street From East					A Street From South					Athens Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	2	102	0	0	104	0	0	0	0	0	0	103	2	0	105	0	0	1	0	1	210
08:15 AM	1	102	0	0	103	0	0	0	0	0	0	109	1	0	110	1	0	0	0	1	214
08:30 AM	2	91	0	0	93	0	0	0	0	0	1	103	1	0	105	0	0	0	0	0	198
08:45 AM	1	93	0	0	94	0	0	0	0	0	0	126	1	0	127	0	0	0	0	0	221
Total Volume	6	388	0	0	394	0	0	0	0	0	1	441	5	0	447	1	0	1	0	2	843
% App. Total	1.5	98.5	0	0		0	0	0	0		0.2	98.7	1.1	0		50	0	50	0		
PHF	.750	.951	.000	.000	.947	.000	.000	.000	.000	.000	.250	.875	.625	.000	.880	.250	.000	.250	.000	.500	.954
Cars	4	348	0	0	352	0	0	0	0	0	1	412	5	0	418	1	0	1	0	2	772
% Cars	66.7	89.7	0	0	89.3	0	0	0	0	0	100	93.4	100	0	93.5	100	0	100	0	100	91.6
Heavy Vehicles	2	40	0	0	42	0	0	0	0	0	0	29	0	0	29	0	0	0	0	0	71
% Heavy Vehicles	33.3	10.3	0	0	10.7	0	0	0	0	0	0	6.6	0	0	6.5	0	0	0	0	0	8.4



N/S: A Street
E/W: Athens Street
City, State: Boston, MA
Client: Howard Stein-Hudson/ M. Santos

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

File Name : 133548 C
Site Code : 13100
Start Date : 9/26/2013
Page No : 1

Groups Printed- Peds and Bikes

	A Street From North				Athens Street From East				A Street From South				Athens Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	1	0	0	0	0	0	6	0	4	0	0	1	0	0	4	16
07:15 AM	0	0	0	0	0	0	0	6	0	1	0	1	1	0	0	7	16
07:30 AM	0	1	0	1	0	0	0	5	0	5	0	2	0	0	0	16	30
07:45 AM	0	2	0	0	0	0	0	7	0	6	0	0	0	0	0	18	33
Total	0	4	0	1	0	0	0	24	0	16	0	3	2	0	0	45	95
08:00 AM	0	2	0	1	0	0	0	6	0	6	0	1	0	0	0	23	39
08:15 AM	0	1	0	2	0	0	0	12	0	11	0	1	0	0	0	36	63
08:30 AM	0	1	0	0	0	0	0	23	0	10	0	0	0	0	0	27	61
08:45 AM	0	0	0	2	0	0	0	29	0	4	0	3	0	0	1	37	76
Total	0	4	0	5	0	0	0	70	0	31	0	5	0	0	1	123	239
Grand Total	0	8	0	6	0	0	0	94	0	47	0	8	2	0	1	168	334
Apprch %	0	57.1	0	42.9	0	0	0	100	0	85.5	0	14.5	1.2	0	0.6	98.2	
Total %	0	2.4	0	1.8	0	0	0	28.1	0	14.1	0	2.4	0.6	0	0.3	50.3	

	A Street From North					Athens Street From East					A Street From South					Athens Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	2	0	1	3	0	0	0	6	6	0	6	0	1	7	0	0	0	23	23	39
08:15 AM	0	1	0	2	3	0	0	0	12	12	0	11	0	1	12	0	0	0	36	36	63
08:30 AM	0	1	0	0	1	0	0	0	23	23	0	10	0	0	10	0	0	0	27	27	61
08:45 AM	0	0	0	2	2	0	0	0	29	29	0	4	0	3	7	0	0	1	37	38	76
Total Volume	0	4	0	5	9	0	0	0	70	70	0	31	0	5	36	0	0	1	123	124	239
% App. Total	0	44.4	0	55.6		0	0	0	100		0	86.1	0	13.9		0	0	0.8	99.2		
PHF	.000	.500	.000	.625	.750	.000	.000	.000	.603	.603	.000	.705	.000	.417	.750	.000	.000	.250	.831	.816	.786

N/S: A Street
E/W: Athens Street
City, State: Boston, MA
Client: Howard Stein-Hudson/ M. Santos

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File Name : 133548 CC
Site Code : 13100
Start Date : 9/26/2013
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	A Street From North				Athens Street From East				A Street From South				Athens Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	1	159	0	0	0	0	0	0	0	74	2	0	0	0	0	0	236
04:15 PM	4	159	0	0	0	0	0	0	0	59	2	0	0	0	0	0	224
04:30 PM	4	154	0	0	1	0	0	0	1	70	2	0	0	0	0	0	232
04:45 PM	1	163	0	0	0	0	0	0	0	75	0	0	0	0	0	0	239
Total	10	635	0	0	1	0	0	0	1	278	6	0	0	0	0	0	931
05:00 PM	1	150	0	0	1	0	0	0	0	82	1	0	0	0	0	0	235
05:15 PM	0	153	0	0	0	0	0	0	0	83	2	0	1	0	0	0	239
05:30 PM	1	160	0	0	0	0	0	0	0	72	5	0	1	0	0	0	239
05:45 PM	2	168	0	0	0	0	0	0	1	92	2	0	0	0	0	0	265
Total	4	631	0	0	1	0	0	0	1	329	10	0	2	0	0	0	978
Grand Total	14	1266	0	0	2	0	0	0	2	607	16	0	2	0	0	0	1909
Apprch %	1.1	98.9	0	0	100	0	0	0	0.3	97.1	2.6	0	100	0	0	0	
Total %	0.7	66.3	0	0	0.1	0	0	0	0.1	31.8	0.8	0	0.1	0	0	0	
Cars	14	1240	0	0	1	0	0	0	1	595	16	0	2	0	0	0	1869
% Cars	100	97.9	0	0	50	0	0	0	50	98	100	0	100	0	0	0	97.9
Heavy Vehicles	0	26	0	0	1	0	0	0	1	12	0	0	0	0	0	0	40
% Heavy Vehicles	0	2.1	0	0	50	0	0	0	50	2	0	0	0	0	0	0	2.1

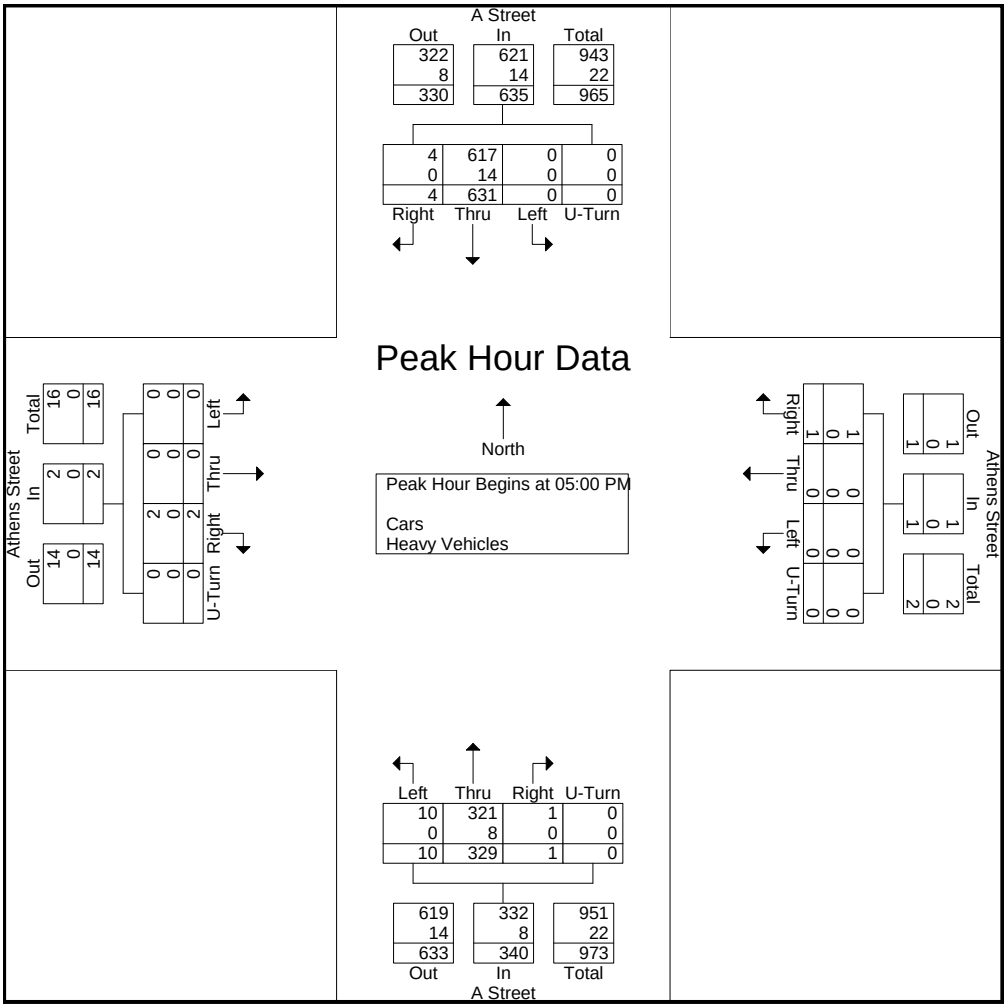
	A Street From North					Athens Street From East					A Street From South					Athens Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	1	150	0	0	151	1	0	0	0	1	0	82	1	0	83	0	0	0	0	0	235
05:15 PM	0	153	0	0	153	0	0	0	0	0	0	83	2	0	85	1	0	0	0	1	239
05:30 PM	1	160	0	0	161	0	0	0	0	0	0	72	5	0	77	1	0	0	0	1	239
05:45 PM	2	168	0	0	170	0	0	0	0	0	1	92	2	0	95	0	0	0	0	0	265
Total Volume	4	631	0	0	635	1	0	0	0	1	1	329	10	0	340	2	0	0	0	2	978
% App. Total	0.6	99.4	0	0		100	0	0	0		0.3	96.8	2.9	0		100	0	0	0		
PHF	.500	.939	.000	.000	.934	.250	.000	.000	.000	.250	.250	.894	.500	.000	.895	.500	.000	.000	.000	.500	.923
Cars	4	617	0	0	621	1	0	0	0	1	1	321	10	0	332	2	0	0	0	2	956
% Cars	100	97.8	0	0	97.8	100	0	0	0	100	100	97.6	100	0	97.6	100	0	0	0	100	97.8
Heavy Vehicles	0	14	0	0	14	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	22
% Heavy Vehicles	0	2.2	0	0	2.2	0	0	0	0	0	0	2.4	0	0	2.4	0	0	0	0	0	2.2

N/S: A Street
E/W: Athens Street
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Client: Howard Stein-Hudson/ M. Santos

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	A Street From North					Athens Street From East					A Street From South					Athens Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	1	150	0	0	151	1	0	0	0	1	0	82	1	0	83	0	0	0	0	0	235
05:15 PM	0	153	0	0	153	0	0	0	0	0	0	83	2	0	85	1	0	0	0	1	239
05:30 PM	1	160	0	0	161	0	0	0	0	0	0	72	5	0	77	1	0	0	0	1	239
05:45 PM	2	168	0	0	170	0	0	0	0	0	1	92	2	0	95	0	0	0	0	0	265
Total Volume	4	631	0	0	635	1	0	0	0	1	1	329	10	0	340	2	0	0	0	2	978
% App. Total	0.6	99.4	0	0		100	0	0	0		0.3	96.8	2.9	0		100	0	0	0		
PHF	.500	.939	.000	.000	.934	.250	.000	.000	.000	.250	.250	.894	.500	.000	.895	.500	.000	.000	.000	.500	.923
Cars	4	617	0	0	621	1	0	0	0	1	1	321	10	0	332	2	0	0	0	2	956
% Cars	100	97.8	0	0	97.8	100	0	0	0	100	100	97.6	100	0	97.6	100	0	0	0	100	97.8
Heavy Vehicles	0	14	0	0	14	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	22
% Heavy Vehicles	0	2.2	0	0	2.2	0	0	0	0	0	0	2.4	0	0	2.4	0	0	0	0	0	2.2



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Groups Printed- Peds and Bikes

	A Street From North				Athens Street From East				A Street From South				Athens Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	5	0	0	0	0	0	13	0	3	0	1	0	0	0	9	31
04:15 PM	0	4	0	1	0	0	0	14	0	3	0	1	0	0	0	18	41
04:30 PM	0	3	0	1	0	0	0	9	0	0	0	1	0	0	0	11	25
04:45 PM	0	9	0	1	0	0	0	11	0	1	0	2	0	0	0	8	32
Total	0	21	0	3	0	0	0	47	0	7	0	5	0	0	0	46	129
05:00 PM	0	12	0	2	0	0	0	21	0	0	0	1	0	0	0	33	69
05:15 PM	0	10	0	1	0	0	0	26	0	1	0	1	0	0	0	24	63
05:30 PM	0	6	0	2	0	0	0	26	0	1	0	4	0	0	0	31	70
05:45 PM	0	15	0	3	0	0	0	23	0	4	0	0	0	0	0	27	72
Total	0	43	0	8	0	0	0	96	0	6	0	6	0	0	0	115	274
Grand Total	0	64	0	11	0	0	0	143	0	13	0	11	0	0	0	161	403
Apprch %	0	85.3	0	14.7	0	0	0	100	0	54.2	0	45.8	0	0	0	100	
Total %	0	15.9	0	2.7	0	0	0	35.5	0	3.2	0	2.7	0	0	0	40	

	A Street From North					Athens Street From East					A Street From South					Athens Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	12	0	2	14	0	0	0	21	21	0	0	0	1	1	0	0	0	33	33	69
05:15 PM	0	10	0	1	11	0	0	0	26	26	0	1	0	1	2	0	0	0	24	24	63
05:30 PM	0	6	0	2	8	0	0	0	26	26	0	1	0	4	5	0	0	0	31	31	70
05:45 PM	0	15	0	3	18	0	0	0	23	23	0	4	0	0	4	0	0	0	27	27	72
Total Volume	0	43	0	8	51	0	0	0	96	96	0	6	0	6	12	0	0	0	115	115	274
% App. Total	0	84.3	0	15.7		0	0	0	100		0	50	0	50		0	0	0	100		
PHF	.000	.717	.000	.667	.708	.000	.000	.000	.923	.923	.000	.375	.000	.375	.600	.000	.000	.000	.871	.871	.951

TRIP GENERATION CALCULATIONS

14-20 West Broadway
Detailed Trip Generation Estimate

Howard/Stein-Hudson Associates

XX hard coded to balance

Land Use	Size	Category	Trip Rates (Trips/ksf or unit)	Unadjusted Vehicle Trips	Internal trips	Capture Rate	Less capture trips	Assumed national vehicle occupancy rate[2]	**Converted to Person trips**	Transit Share[3]	**Transit Trips**	Walk/Bike/ Other Share[3]	**Walk/ Bike/ Other Trips**	Vehicle Share[3]	Vehicle Person Trips	Assumed national vehicle occupancy rate[2]	**Total Adjusted Vehicle Trips**
Daily Trip Generation																	
Residential- Condominium/Townhouse [5]	47.0	Total	5.81	274	0	0%	274	1.13	**310**	23%	**72**	24%	**74**	53%	164	1.13	**146**
	Units	In	2.91	137	0	0%	137	1.13	**155**	23%	**36**	24%	**37**	53%	82	1.13	**73**
		Out	2.91	137	0	0%	137	1.13	**155**	23%	**36**	24%	**37**	53%	82	1.13	**73**
Restaurant [8]	5.3	Total	89.95	478	0	0%	478	1.78	**850**	11%	**94**	29%	**246**	60%	510	1.78	**286**
	KSF	In	44.98	239	0	0%	239	1.78	**425**	11%	**47**	29%	**123**	60%	255	1.78	**143**
		Out	44.98	239	0	0%	239	1.78	**425**	11%	**47**	29%	**123**	60%	255	1.78	**143**
Office [7]	3.4	Total	11.03	38	0	0%	38	1.13	**42**	11%	**4**	29%	**12**	60%	26	1.13	**24**
	KSF	In	5.52	19	0	0%	19	1.13	**21**	11%	**2**	29%	**6**	60%	13	1.13	**12**
		Out	5.52	19	0	0%	19	1.13	**21**	11%	**2**	29%	**6**	60%	13	1.13	**12**
Total		Total		790	0		790		**1,202**		**170**		**332**		**700**		**456**
		In		395	0		395		**601**		**85**		**166**		**350**		**228**
		Out		395	0		395		**601**		**85**		**166**		**350**		**228**
AM Peak Hour Trip Generation																	
Residential- Condominium/Townhouse	47.0	Total	0.44	20	0	0%	20	1.13	**22**	23%	**5**	24%	**5**	53%	**12**	1.13	**11**
	Units	In	0.07	4	0	0%	4	1.13	**5**	23%	**1**	24%	**1**	53%	3	1.13	**3**
		Out	0.37	16	0	0%	16	1.13	**17**	23%	**4**	24%	**4**	53%	9	1.13	**8**
Restaurant	5.3	Total	0.81	4	0	0%	4	1.78	**8**	11%	**1**	29%	**2**	60%	**5**	1.78	**3**
	KSF	In	0.45	2	0	0%	2	1.78	**4**	11%	**0**	29%	**1**	60%	3	1.78	**2**
		Out	0.36	2	0	0%	2	1.78	**4**	11%	**1**	29%	**1**	60%	2	1.78	**1**
Office	3.4	Total	1.56	6	0	0%	6	1.13	**6**	11%	**1**	29%	**2**	60%	**3**	1.13	**3**
	KSF	In	1.37	5	0	0%	5	1.13	**6**	11%	**1**	29%	**2**	60%	3	1.13	**3**
		Out	0.19	1	0	0%	1	1.13	**0**	11%	**0**	29%	**0**	60%	0	1.13	**0**
Total		Total		30			30		**36**		**7**		**9**		**20**		**17**
		In		11			11		**15**		**2**		**4**		**9**		**8**
		Out		19			19		**21**		**5**		**5**		**11**		**9**
PM Peak Hour Trip Generation																	
Residential- Condominium/Townhouse	47.0	Total	0.52	24	0	0%	24	1.13	**28**	23%	**6**	24%	**7**	53%	**15**	1.13	**13**
	Units	In	0.33	16	0	0%	16	1.13	**18**	23%	**4**	24%	**4**	53%	10	1.13	**9**
		Out	0.19	8	0	0%	8	1.13	**10**	23%	**2**	24%	**3**	53%	5	1.13	**4**
Restaurant	5.3	Total	7.49	40	0	0%	40	1.78	**72**	11%	**8**	29%	**21**	60%	**43**	1.78	**24**
	KSF	In	5.02	27	0	0%	27	1.78	**48**	11%	**5**	29%	**14**	60%	29	1.78	**16**
		Out	2.47	13	0	0%	13	1.78	**24**	11%	**3**	29%	**7**	60%	14	1.78	**8**
Office	3.4	Total	1.49	6	0	0%	6	1.13	**6**	11%	**1**	29%	**1**	60%	**4**	1.13	**4**
	KSF	In	0.25	1	0	0%	1	1.13	**1**	11%	**0**	29%	**0**	60%	1	1.13	**1**
		Out	1.24	5	0	0%	5	1.13	**5**	11%	**1**	29%	**1**	60%	3	1.13	**3**
Total		Total		70			70		**106**		**15**		**29**		**62**		**41**
		In		44			44		**67**		**9**		**18**		**40**		**26**
		Out		26			26		**39**		**6**		**11**		**22**		**15**

Notes:

2. 2009 National vehicle occupancy rates - 1.13: Home to work; 1.8: Retail; 2.20: Social and Recreational
3. Mode shares based on 2000 Census data and BTD Data for Area 8

5. ITE Trip Generation Rate, 8th Edition, LUC 230 (Residential Condominium/Townhouse), average rate

7. ITE Trip Generation Rate, 8th Edition, LUC 710 (General Office Building), average rate
8. ITE Trip Generation Rate, 8th Edition, LUC 931 (Quality Restaurant), average rate

INTERSECTION CAPACITY ANALYSIS WORKSHEETS

Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	ø10
Lane Configurations							
Volume (vph)	1156	299	0	337	170	25	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)		100	0		0	0	
Storage Lanes		1	0		1	0	
Taper Length (ft)			25		25		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Frt		0.850			0.983		
Flt Protected					0.958		
Satd. Flow (prot)	3505	1568	0	3471	1572	0	
Flt Permitted					0.958		
Satd. Flow (perm)	3505	1568	0	3471	1572	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		246			7		
Link Speed (mph)	30			30	30		
Link Distance (ft)	601			452	370		
Travel Time (s)	13.7			10.3	8.4		
Peak Hour Factor	0.89	0.89	0.88	0.88	0.90	0.90	
Heavy Vehicles (%)	3%	3%	0%	4%	7%	60%	
Adj. Flow (vph)	1299	336	0	383	189	28	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1299	336	0	383	217	0	
Turn Type	NA	pt+ov		NA	NA		
Protected Phases	1	1 3		1	3		10
Permitted Phases							
Detector Phase	1	1 3		1	3		
Switch Phase							
Minimum Initial (s)	4.0			4.0	4.0		1.0
Minimum Split (s)	21.0			21.0	21.0		31.0
Total Split (s)	37.0			37.0	32.0		31.0
Total Split (%)	37.0%			37.0%	32.0%		31%
Maximum Green (s)	32.0			32.0	27.0		26.0
Yellow Time (s)	3.0			3.0	3.0		2.0
All-Red Time (s)	2.0			2.0	2.0		3.0



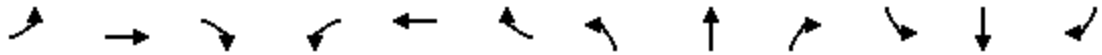
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	ø10
Lost Time Adjust (s)	2.0			0.0	0.0		
Total Lost Time (s)	7.0			5.0	5.0		
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0			3.0	3.0		3.0
Recall Mode	Max			Max	C-Max		None
Walk Time (s)							7.0
Flash Dont Walk (s)							19.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	61.0	100.0		63.0	27.0		
Actuated g/C Ratio	0.61	1.00		0.63	0.27		
v/c Ratio	0.61	0.21		0.18	0.51		
Control Delay	13.6	0.3		2.2	26.8		
Queue Delay	0.1	0.0		0.0	0.4		
Total Delay	13.7	0.3		2.2	27.1		
LOS	B	A		A	C		
Approach Delay	10.9			2.2	27.1		
Approach LOS	B			A	C		
90th %ile Green (s)	63.0			63.0	27.0		0.0
90th %ile Term Code	MaxR			MaxR	Coord		Skip
70th %ile Green (s)	63.0			63.0	27.0		0.0
70th %ile Term Code	MaxR			MaxR	Coord		Skip
50th %ile Green (s)	63.0			63.0	27.0		0.0
50th %ile Term Code	MaxR			MaxR	Coord		Skip
30th %ile Green (s)	63.0			63.0	27.0		0.0
30th %ile Term Code	MaxR			MaxR	Coord		Skip
10th %ile Green (s)	63.0			63.0	27.0		0.0
10th %ile Term Code	MaxR			MaxR	Coord		Skip
Queue Length 50th (ft)	248	0		14	133		
Queue Length 95th (ft)	306	0		14	208		
Internal Link Dist (ft)	521			372	290		
Turn Bay Length (ft)		100					
Base Capacity (vph)	2138	1568		2186	429		
Starvation Cap Reductn	0	0		0	0		

Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	ø10
Spillback Cap Reductn	70	0		0	34		
Storage Cap Reductn	0	0		0	0		
Reduced v/c Ratio	0.63	0.21		0.18	0.55		

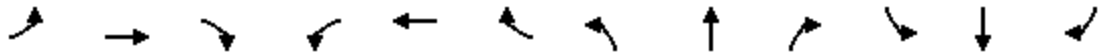
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 37 (37%), Referenced to phase 3:SWL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 11.0		Intersection LOS: B	
Intersection Capacity Utilization 52.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Dorchester Ave. & A Street

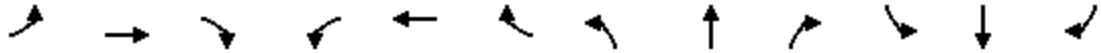




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	154	102	5	375	20	549	623	9	64	230	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	200		0	0		60
Storage Lanes	0		1	0		0	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	1.00
Frt			0.850		0.993				0.850			0.850
Flt Protected		0.992			0.999		0.950				0.989	
Satd. Flow (prot)	0	1784	1615	0	1863	0	1752	3406	1455	0	3474	1357
Flt Permitted		0.866			0.997		0.471				0.690	
Satd. Flow (perm)	0	1557	1615	0	1859	0	869	3406	1455	0	2423	1357
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		3				22			139
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		787			298			452			440	
Travel Time (s)		17.9			6.8			10.3			10.0	
Peak Hour Factor	0.94	0.94	0.94	0.95	0.95	0.95	0.90	0.90	0.90	0.88	0.88	0.88
Heavy Vehicles (%)	4%	6%	0%	0%	1%	5%	3%	6%	11%	2%	3%	19%
Adj. Flow (vph)	33	164	109	5	395	21	610	692	10	73	261	156
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	197	109	0	421	0	610	692	10	0	334	156
Turn Type	Perm	NA	Perm	Perm	NA		D.P+P	NA	custom	Perm	NA	Perm
Protected Phases		3			3		1	1 2	1		2	
Permitted Phases	3		3	3			2		2	2		2
Detector Phase	3	3	3	3	3		1	1 2	1	2	2	2
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0		8.0	8.0	8.0	8.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0		13.0		13.0	27.0	27.0	27.0
Total Split (s)	38.0	38.0	38.0	38.0	38.0		35.0		35.0	27.0	27.0	27.0
Total Split (%)	38.0%	38.0%	38.0%	38.0%	38.0%		35.0%		35.0%	27.0%	27.0%	27.0%
Maximum Green (s)	33.0	33.0	33.0	33.0	33.0		30.0		30.0	22.0	22.0	22.0
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)	2.0	2.0	2.0	2.0	2.0		2.0		2.0	2.0	2.0	2.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)		0.0	0.0		0.0		0.0		0.0		0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0		5.0		5.0		5.0	5.0
Lead/Lag							Lead		Lead	Lag	Lag	Lag
Lead-Lag Optimize?							Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None		None	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0					10.0	10.0	10.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0					12.0	12.0	12.0
Pedestrian Calls (#/hr)	0	0	0	0	0					0	0	0
Act Effct Green (s)		33.0	33.0		33.0		52.0	57.0	57.0		23.1	23.1
Actuated g/C Ratio		0.33	0.33		0.33		0.52	0.57	0.57		0.23	0.23
v/c Ratio		0.38	0.18		0.68		0.86	0.36	0.01		0.60	0.37
Control Delay		28.5	5.5		28.2		45.0	17.7	6.9		43.1	13.0
Queue Delay		0.0	0.0		9.6		0.8	0.0	0.0		0.0	0.0
Total Delay		28.5	5.5		37.9		45.8	17.7	6.9		43.1	13.0
LOS		C	A		D		D	B	A		D	B
Approach Delay		20.3			37.9			30.7			33.5	
Approach LOS		C			D			C			C	
90th %ile Green (s)	33.0	33.0	33.0	33.0	33.0		30.0		30.0	22.0	22.0	22.0
90th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max		Max	MaxR	MaxR	MaxR
70th %ile Green (s)	33.0	33.0	33.0	33.0	33.0		30.0		30.0	22.0	22.0	22.0
70th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max		Max	MaxR	MaxR	MaxR
50th %ile Green (s)	33.0	33.0	33.0	33.0	33.0		30.0		30.0	22.0	22.0	22.0
50th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max		Max	MaxR	MaxR	MaxR
30th %ile Green (s)	33.0	33.0	33.0	33.0	33.0		30.0		30.0	22.0	22.0	22.0
30th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max		Max	MaxR	MaxR	MaxR
10th %ile Green (s)	33.0	33.0	33.0	33.0	33.0		24.6		24.6	27.4	27.4	27.4
10th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Gap		Gap	MaxR	MaxR	MaxR
Queue Length 50th (ft)		96	0		138		328	142	0		108	5
Queue Length 95th (ft)		159	37		283		#476	200	m1		153	72
Internal Link Dist (ft)		707			218			372			360	
Turn Bay Length (ft)							200					60
Base Capacity (vph)		513	605		615		725	1941	838		559	419
Starvation Cap Reductn		0	0		162		20	0	0		0	0



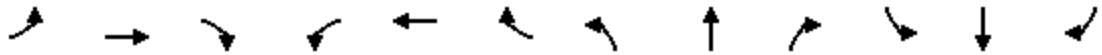
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		2	0		0		0	0	99		0	0
Storage Cap Reductn		0	0		0		0	0	0		0	0
Reduced v/c Ratio		0.39	0.18		0.93		0.87	0.36	0.01		0.60	0.37

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 3:EBWB, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 31.2		Intersection LOS: C	
Intersection Capacity Utilization 79.3%		ICU Level of Service D	
Analysis Period (min) 15			

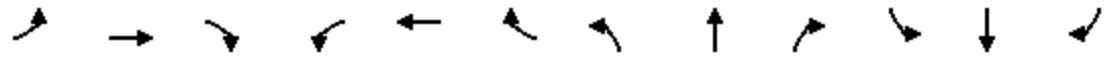
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Dorchester Ave. & W 4th Street





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lane Configurations													
Volume (vph)	106	116	5	11	150	10	10	284	5	8	179	240	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.997			0.992			0.998			0.924		
Flt Protected		0.977			0.997			0.998			0.999		
Satd. Flow (prot)	0	1796	0	0	1852	0	0	1834	0	0	1633	0	
Flt Permitted		0.776			0.976			0.982			0.993		
Satd. Flow (perm)	0	1426	0	0	1813	0	0	1804	0	0	1623	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		1			4			1			77		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		298			374			370			288		
Travel Time (s)		6.8			8.5			8.4			6.5		
Peak Hour Factor	0.82	0.82	0.82	0.85	0.85	0.85	0.93	0.93	0.93	0.95	0.95	0.95	
Heavy Vehicles (%)	0%	6%	0%	9%	1%	0%	10%	3%	0%	0%	15%	2%	
Adj. Flow (vph)	129	141	6	13	176	12	11	305	5	8	188	253	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	276	0	0	201	0	0	321	0	0	449	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		1			1			5			5		9
Permitted Phases	1			1			5			5			
Detector Phase	1	1		1	1		5	5		5	5		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0		1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		13.0	13.0		13.0	13.0		15.0
Total Split (s)	40.0	40.0		40.0	40.0		45.0	45.0		45.0	45.0		15.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%		45.0%	45.0%		45.0%	45.0%		15%
Maximum Green (s)	35.0	35.0		35.0	35.0		40.0	40.0		40.0	40.0		13.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0		0.0
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		5.0			5.0			5.0			5.0		
Lead/Lag													

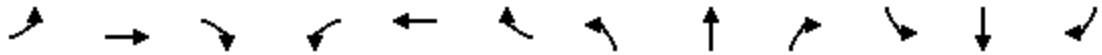


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lead-Lag Optimize?													
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		3.0
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max		None
Walk Time (s)													5.0
Flash Dont Walk (s)													8.0
Pedestrian Calls (#/hr)													0
Act Effct Green (s)		50.0			50.0			40.0			40.0		
Actuated g/C Ratio		0.50			0.50			0.40			0.40		
v/c Ratio		0.39			0.22			0.44			0.65		
Control Delay		27.3			14.6			24.3			31.9		
Queue Delay		2.9			0.2			2.6			55.2		
Total Delay		30.1			14.8			26.9			87.2		
LOS		C			B			C			F		
Approach Delay		30.1			14.8			26.9			87.2		
Approach LOS		C			B			C			F		
90th %ile Green (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0		0.0
90th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
70th %ile Green (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0		0.0
70th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
50th %ile Green (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0		0.0
50th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
30th %ile Green (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0		0.0
30th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
10th %ile Green (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0		0.0
10th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
Queue Length 50th (ft)		133			68			146			251		
Queue Length 95th (ft)		188			104			223			354		
Internal Link Dist (ft)		218			294			290			208		
Turn Bay Length (ft)													
Base Capacity (vph)		713			908			722			695		
Starvation Cap Reductn		325			0			208			290		
Spillback Cap Reductn		199			254			282			52		
Storage Cap Reductn		0			0			0			0		
Reduced v/c Ratio		0.71			0.31			0.73			1.11		

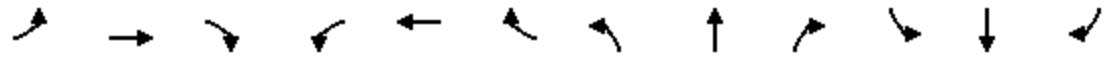
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 60 (60%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 47.4		Intersection LOS: D	
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: A Street & W 4th Street

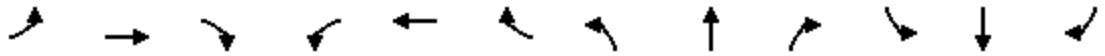




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Lane Configurations													
Volume (vph)	148	311	283	64	399	14	510	141	23	17	84	165	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	120		0	125		0	0		90	0		0	
Storage Lanes	1		1	1		0	1		0	0		1	
Taper Length (ft)	25			50			25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.95	1.00	1.00	1.00	
Ped Bike Factor	0.99			0.98	1.00		0.91	0.99			0.99	0.97	
Frt			0.850		0.995			0.979				0.850	
Flt Protected	0.950			0.950			0.950				0.992		
Satd. Flow (prot)	1719	1759	1583	1736	1870	0	1626	2799	0	0	1607	1417	
Flt Permitted	0.357			0.435			0.657				0.919		
Satd. Flow (perm)	642	1759	1583	782	1870	0	1026	2799	0	0	1474	1373	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			318		2			20				179	
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		657			600			440			211		
Travel Time (s)		14.9			13.6			10.0			4.8		
Confl. Peds. (#/hr)	8		30	30		8	62		27	27		62	
Confl. Bikes (#/hr)			6						3			3	
Peak Hour Factor	0.89	0.89	0.89	0.97	0.97	0.97	0.93	0.93	0.93	0.92	0.92	0.92	
Heavy Vehicles (%)	5%	8%	2%	4%	1%	0%	1%	21%	9%	24%	16%	14%	
Parking (#/hr)						0							
Adj. Flow (vph)	166	349	318	66	411	14	548	152	25	18	91	179	
Shared Lane Traffic (%)							0%						
Lane Group Flow (vph)	166	349	318	66	425	0	548	177	0	0	109	179	
Turn Type	Perm	NA	pt+ov	Perm	NA		pm+pt	NA		Perm	NA	Free	
Protected Phases		5	5 6		5		6	1 6			1		2
Permitted Phases	5			5			1 6			1		Free	
Detector Phase	5	5	5 6	5	5		6	1 6		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		6.0			8.0	8.0		4.0
Minimum Split (s)	13.0	13.0		13.0	13.0		11.0			23.0	23.0		23.0
Total Split (s)	33.0	33.0		33.0	33.0		21.0			23.0	23.0		23.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Total Split (%)	33.0%	33.0%		33.0%	33.0%		21.0%			23.0%	23.0%		23%
Maximum Green (s)	28.0	28.0		28.0	28.0		16.0			18.0	18.0		21.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0			3.0	3.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0			2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0				0.0		
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0				5.0		
Lead/Lag	Lead	Lead		Lead	Lead		Lag			Lead	Lead		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0			2.0	2.0		3.0
Recall Mode	None	None		None	None		Max			C-Min	C-Min		None
Walk Time (s)										7.0	7.0		7.0
Flash Dont Walk (s)										11.0	11.0		12.0
Pedestrian Calls (#/hr)										30	30		30
Act Effct Green (s)	42.1	42.1	63.1	42.1	42.1		30.3	35.3			14.3	100.0	
Actuated g/C Ratio	0.42	0.42	0.63	0.42	0.42		0.30	0.35			0.14	1.00	
v/c Ratio	0.61	0.47	0.28	0.20	0.54		1.35	0.18			0.52	0.13	
Control Delay	41.5	28.0	2.2	21.5	25.5		197.2	15.4			47.5	0.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0	
Total Delay	41.5	28.0	2.2	21.5	25.5		197.2	15.4			47.5	0.2	
LOS	D	C	A	C	C		F	B			D	A	
Approach Delay		20.8			25.0			152.8			18.1		
Approach LOS		C			C			F			B		
90th %ile Green (s)	30.0	30.0		30.0	30.0		16.0			18.0	18.0		19.0
90th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Ped
70th %ile Green (s)	30.0	30.0		30.0	30.0		16.0			18.0	18.0		19.0
70th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Ped
50th %ile Green (s)	30.0	30.0		30.0	30.0		16.0			18.0	18.0		19.0
50th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Ped
30th %ile Green (s)	59.5	59.5		59.5	59.5		16.0			9.5	9.5		0.0
30th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Skip
10th %ile Green (s)	61.0	61.0		61.0	61.0		16.0			8.0	8.0		0.0
10th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Skip
Queue Length 50th (ft)	100	194	0	37	271		~315	34			62	0	
Queue Length 95th (ft)	#220	289	40	m57	#385		#547	m64			116	0	

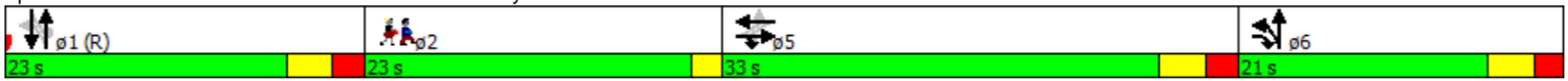


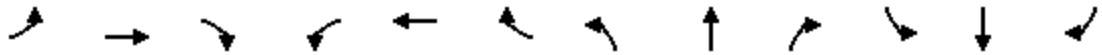
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Internal Link Dist (ft)		577			520			360			131		
Turn Bay Length (ft)	120			125									
Base Capacity (vph)	270	740	1116	329	788		406	1103			265	1373	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	0	
Reduced v/c Ratio	0.61	0.47	0.28	0.20	0.54		1.35	0.16			0.41	0.13	

Intersection Summary

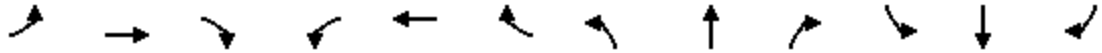
Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.35
Intersection Signal Delay: 62.3 Intersection LOS: E
Intersection Capacity Utilization 63.4% ICU Level 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Dorchester Ave. & West Broadway





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	286	25	87	416	38	24	310	66	64	315	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	0		0	0		0	100		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	50			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.97			0.97			0.97	
Frt		0.989			0.990			0.978			0.984	
Flt Protected		0.994			0.992			0.997		0.950		
Satd. Flow (prot)	0	3307	0	0	1753	0	0	1707	0	1641	1683	0
Flt Permitted		0.853			0.877			0.889		0.295		
Satd. Flow (perm)	0	2838	0	0	1536	0	0	1515	0	510	1683	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			6			12			7	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		600			564			288			195	
Travel Time (s)		13.6			12.8			6.5			4.4	
Confl. Peds. (#/hr)	79		24	24		79	67		54	54		67
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.92	0.92	0.92	0.94	0.94	0.94
Heavy Vehicles (%)	3%	7%	5%	19%	1%	0%	0%	4%	17%	10%	8%	5%
Parking (#/hr)			0			0						
Adj. Flow (vph)	42	298	26	91	433	40	26	337	72	68	335	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	366	0	0	564	0	0	435	0	68	374	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Detector Phase	1	1		1	1		5	5		5	5	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.0	25.0		25.0	25.0		28.0	28.0		28.0	28.0	
Total Split (s)	55.0	55.0		55.0	55.0		45.0	45.0		45.0	45.0	
Total Split (%)	55.0%	55.0%		55.0%	55.0%		45.0%	45.0%		45.0%	45.0%	



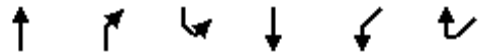
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	51.0	51.0		51.0	51.0		41.0	41.0		41.0	41.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		4.0			4.0			4.0		4.0	4.0	
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	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Pedestrian Calls (#/hr)	100	100		100	100		100	100		100	100	
Act Effct Green (s)		60.7			60.7			31.3		31.3	31.3	
Actuated g/C Ratio		0.61			0.61			0.31		0.31	0.31	
v/c Ratio		0.21			0.60			0.90		0.43	0.70	
Control Delay		22.7			17.4			62.5		33.6	36.2	
Queue Delay		0.0			1.5			8.5		0.0	9.0	
Total Delay		22.8			18.9			70.9		33.6	45.3	
LOS		C			B			E		C	D	
Approach Delay		22.8			18.9			70.9			43.5	
Approach LOS		C			B			E			D	
90th %ile Green (s)	51.1	51.1		51.1	51.1		40.9	40.9		40.9	40.9	
90th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
70th %ile Green (s)	56.3	56.3		56.3	56.3		35.7	35.7		35.7	35.7	
70th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
50th %ile Green (s)	60.1	60.1		60.1	60.1		31.9	31.9		31.9	31.9	
50th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
30th %ile Green (s)	64.9	64.9		64.9	64.9		27.1	27.1		27.1	27.1	
30th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
10th %ile Green (s)	71.0	71.0		71.0	71.0		21.0	21.0		21.0	21.0	
10th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
Queue Length 50th (ft)		118			207			293		34	203	
Queue Length 95th (ft)		167			398			378		67	265	
Internal Link Dist (ft)		520			484			208			115	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)										100		
Base Capacity (vph)		1726			934			628		209	694	
Starvation Cap Reductn		0			0			156		0	0	
Spillback Cap Reductn		183			198			0		0	280	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.24			0.77			0.92		0.33	0.90	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 38.2		Intersection LOS: D	
Intersection Capacity Utilization 90.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: A Street & West Broadway

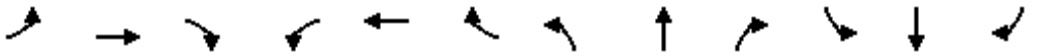




Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Volume (vph)	1156	299	0	337	170	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Frt	1.00	0.85		1.00	0.98	
Flt Protected	1.00	1.00		1.00	0.96	
Satd. Flow (prot)	3505	1568		3471	1572	
Flt Permitted	1.00	1.00		1.00	0.96	
Satd. Flow (perm)	3505	1568		3471	1572	
Peak-hour factor, PHF	0.89	0.89	0.88	0.88	0.90	0.90
Adj. Flow (vph)	1299	336	0	383	189	28
RTOR Reduction (vph)	0	0	0	0	5	0
Lane Group Flow (vph)	1299	336	0	383	212	0
Heavy Vehicles (%)	3%	3%	0%	4%	7%	60%
Turn Type	NA	pt+ov		NA	NA	
Protected Phases	1	1 3		1	3	
Permitted Phases						
Actuated Green, G (s)	63.0	100.0		63.0	27.0	
Effective Green, g (s)	61.0	100.0		63.0	27.0	
Actuated g/C Ratio	0.61	1.00		0.63	0.27	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	2138	1568		2186	424	
v/s Ratio Prot	c0.37	0.21		0.11	c0.13	
v/s Ratio Perm						
v/c Ratio	0.61	0.21		0.18	0.50	
Uniform Delay, d1	12.1	0.0		7.7	30.8	
Progression Factor	1.00	1.00		0.27	0.76	
Incremental Delay, d2	1.3	0.3		0.2	3.4	
Delay (s)	13.4	0.3		2.2	27.0	
Level of Service	B	A		A	C	
Approach Delay (s)	10.7			2.2	27.0	
Approach LOS	B			A	C	

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	154	102	5	375	20	549	623	9	64	230	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0	5.0		5.0	5.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00		0.95	1.00
Frt		1.00	0.85		0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected		0.99	1.00		1.00		0.95	1.00	1.00		0.99	1.00
Satd. Flow (prot)		1783	1615		1864		1752	3406	1455		3474	1357
Flt Permitted		0.87	1.00		1.00		0.47	1.00	1.00		0.69	1.00
Satd. Flow (perm)		1558	1615		1859		869	3406	1455		2422	1357
Peak-hour factor, PHF	0.94	0.94	0.94	0.95	0.95	0.95	0.90	0.90	0.90	0.88	0.88	0.88
Adj. Flow (vph)	33	164	109	5	395	21	610	692	10	73	261	156
RTOR Reduction (vph)	0	0	73	0	2	0	0	0	5	0	0	107
Lane Group Flow (vph)	0	197	36	0	419	0	610	692	5	0	334	49
Heavy Vehicles (%)	4%	6%	0%	0%	1%	5%	3%	6%	11%	2%	3%	19%
Turn Type	Perm	NA	Perm	Perm	NA		D.P+P	NA	custom	Perm	NA	Perm
Protected Phases		3			3		1	1 2	1		2	
Permitted Phases	3		3	3			2		2	2		2
Actuated Green, G (s)		33.0	33.0		33.0		52.0	57.0	52.0		23.1	23.1
Effective Green, g (s)		33.0	33.0		33.0		52.0	57.0	52.0		23.1	23.1
Actuated g/C Ratio		0.33	0.33		0.33		0.52	0.57	0.52		0.23	0.23
Clearance Time (s)		5.0	5.0		5.0		5.0		5.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0		3.0		3.0		3.0	3.0
Lane Grp Cap (vph)		514	532		613		707	1941	829		559	313
v/s Ratio Prot							c0.25	0.20	0.00			
v/s Ratio Perm		0.13	0.02		c0.23		c0.20		0.00		0.14	0.04
v/c Ratio		0.38	0.07		0.68		0.86	0.36	0.01		0.60	0.16
Uniform Delay, d1		25.7	23.0		29.0		17.8	11.6	11.6		34.3	30.7
Progression Factor		1.00	1.00		0.77		2.25	1.47	3.95		1.09	1.35
Incremental Delay, d2		2.2	0.2		5.5		8.7	0.1	0.0		4.5	1.0
Delay (s)		27.9	23.2		27.9		48.7	17.1	45.6		42.0	42.4
Level of Service		C	C		C		D	B	D		D	D
Approach Delay (s)		26.2			27.9			32.0			42.2	
Approach LOS		C			C			C			D	

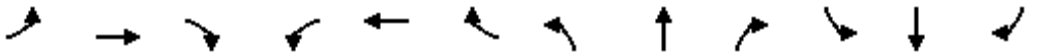
Intersection Summary			
HCM 2000 Control Delay	32.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	116	5	11	150	10	10	284	5	8	179	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			0.99			1.00			0.92	
Flt Protected		0.98			1.00			1.00			1.00	
Satd. Flow (prot)		1796			1852			1834			1633	
Flt Permitted		0.78			0.98			0.98			0.99	
Satd. Flow (perm)		1427			1813			1804			1624	
Peak-hour factor, PHF	0.82	0.82	0.82	0.85	0.85	0.85	0.93	0.93	0.93	0.95	0.95	0.95
Adj. Flow (vph)	129	141	6	13	176	12	11	305	5	8	188	253
RTOR Reduction (vph)	0	1	0	0	2	0	0	1	0	0	46	0
Lane Group Flow (vph)	0	276	0	0	199	0	0	320	0	0	403	0
Heavy Vehicles (%)	0%	6%	0%	9%	1%	0%	10%	3%	0%	0%	15%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		50.0			50.0			40.0			40.0	
Effective Green, g (s)		50.0			50.0			40.0			40.0	
Actuated g/C Ratio		0.50			0.50			0.40			0.40	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		713			906			721			649	
v/s Ratio Prot												
v/s Ratio Perm		c0.19			0.11			0.18			c0.25	
v/c Ratio		0.39			0.22			0.44			0.62	
Uniform Delay, d1		15.5			14.0			21.9			23.9	
Progression Factor		1.62			1.00			1.00			1.37	
Incremental Delay, d2		1.5			0.6			2.0			3.8	
Delay (s)		26.6			14.6			23.8			36.7	
Level of Service		C			B			C			D	
Approach Delay (s)		26.6			14.6			23.8			36.7	
Approach LOS		C			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	148	311	283	64	399	14	510	141	23	17	84	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.91	0.91			1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.99			1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		0.94	1.00			0.99	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.98			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1711	1759	1583	1715	1871		1535	2798			1591	1373
Flt Permitted	0.36	1.00	1.00	0.43	1.00		0.66	1.00			0.92	1.00
Satd. Flow (perm)	643	1759	1583	785	1871		1063	2798			1473	1373
Peak-hour factor, PHF	0.89	0.89	0.89	0.97	0.97	0.97	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	166	349	318	66	411	14	548	152	25	18	91	179
RTOR Reduction (vph)	0	0	117	0	1	0	0	14	0	0	0	0
Lane Group Flow (vph)	166	349	201	66	424	0	548	163	0	0	109	179
Confl. Peds. (#/hr)	8		30	30		8	62		27	27		62
Confl. Bikes (#/hr)			6						3			3
Heavy Vehicles (%)	5%	8%	2%	4%	1%	0%	1%	21%	9%	24%	16%	14%
Parking (#/hr)						0						
Turn Type	Perm	NA	pt+ov	Perm	NA		pm+pt	NA		Perm	NA	Free
Protected Phases		5	5 6		5		6	1 6			1	
Permitted Phases	5			5			1 6			1		Free
Actuated Green, G (s)	42.1	42.1	63.1	42.1	42.1		29.5	29.5			13.5	100.0
Effective Green, g (s)	42.1	42.1	63.1	42.1	42.1		29.5	29.5			13.5	100.0
Actuated g/C Ratio	0.42	0.42	0.63	0.42	0.42		0.29	0.29			0.14	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0				5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0				2.0	
Lane Grp Cap (vph)	270	740	998	330	787		389	965			198	1373
v/s Ratio Prot		0.20	0.13		0.23		c0.23	0.03				
v/s Ratio Perm	c0.26			0.08			c0.19	0.03			0.07	c0.13
v/c Ratio	0.61	0.47	0.20	0.20	0.54		1.41	0.17			0.55	0.13
Uniform Delay, d1	22.6	20.9	7.8	18.3	21.7		34.0	26.2			40.4	0.0
Progression Factor	1.00	1.00	1.00	0.80	0.88		0.84	0.79			1.00	1.00
Incremental Delay, d2	4.1	0.5	0.1	0.2	0.6		198.0	0.4			10.6	0.2
Delay (s)	26.7	21.4	7.9	14.8	19.6		226.7	21.1			51.0	0.2
Level of Service	C	C	A	B	B		F	C			D	A
Approach Delay (s)		17.3			19.0			176.5			19.4	
Approach LOS		B			B			F			B	

Intersection Summary			
HCM 2000 Control Delay	67.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	286	25	87	416	38	24	310	66	64	315	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		0.95			1.00			1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.98			0.98		1.00	0.97	
Flpb, ped/bikes		0.99			0.99			1.00		1.00	1.00	
Frt		0.99			0.99			0.98		1.00	0.98	
Flt Protected		0.99			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		3279			1738			1707		1641	1684	
Flt Permitted		0.85			0.88			0.89		0.29	1.00	
Satd. Flow (perm)		2812			1535			1521		509	1684	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	42	298	26	91	433	40	26	337	72	68	335	39
RTOR Reduction (vph)	0	4	0	0	2	0	0	8	0	0	5	0
Lane Group Flow (vph)	0	362	0	0	562	0	0	427	0	68	369	0
Confl. Peds. (#/hr)	79		24	24		79	67		54	54		67
Heavy Vehicles (%)	3%	7%	5%	19%	1%	0%	0%	4%	17%	10%	8%	5%
Parking (#/hr)			0			0						
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		60.7			60.7			31.3		31.3	31.3	
Effective Green, g (s)		60.7			60.7			31.3		31.3	31.3	
Actuated g/C Ratio		0.61			0.61			0.31		0.31	0.31	
Clearance Time (s)		4.0			4.0			4.0		4.0	4.0	
Vehicle Extension (s)		2.0			2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		1706			931			476		159	527	
v/s Ratio Prot											0.22	
v/s Ratio Perm		0.13			c0.37			c0.28		0.13		
v/c Ratio		0.21			0.60			0.90		0.43	0.70	
Uniform Delay, d1		8.9			12.2			32.8		27.2	30.2	
Progression Factor		2.27			1.00			1.32		1.00	1.00	
Incremental Delay, d2		0.3			2.9			17.6		0.7	3.4	
Delay (s)		20.4			15.1			60.9		27.9	33.7	
Level of Service		C			B			E		C	C	
Approach Delay (s)		20.4			15.1			60.9			32.8	
Approach LOS		C			B			E			C	

Intersection Summary			
HCM 2000 Control Delay	31.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	ø10
Lane Configurations							
Volume (vph)	662	179	0	735	386	20	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)		100	0		0	0	
Storage Lanes		1	0		1	0	
Taper Length (ft)			25		25		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Frt		0.850			0.993		
Flt Protected					0.955		
Satd. Flow (prot)	3438	1568	0	3539	1731	0	
Flt Permitted					0.955		
Satd. Flow (perm)	3438	1568	0	3539	1731	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		232			3		
Link Speed (mph)	30			30	30		
Link Distance (ft)	601			452	370		
Travel Time (s)	13.7			10.3	8.4		
Peak Hour Factor	0.77	0.77	0.85	0.85	0.95	0.95	
Heavy Vehicles (%)	5%	3%	0%	2%	3%	25%	
Adj. Flow (vph)	860	232	0	865	406	21	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	860	232	0	865	427	0	
Turn Type	NA	pt+ov		NA	NA		
Protected Phases	1	1 3		1	3		10
Permitted Phases							
Detector Phase	1	1 3		1	3		
Switch Phase							
Minimum Initial (s)	4.0			4.0	4.0		1.0
Minimum Split (s)	21.0			21.0	21.0		31.0
Total Split (s)	27.0			27.0	42.0		31.0
Total Split (%)	27.0%			27.0%	42.0%		31%
Maximum Green (s)	22.0			22.0	37.0		26.0
Yellow Time (s)	3.0			3.0	3.0		2.0
All-Red Time (s)	2.0			2.0	2.0		3.0



Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	ø10
Lost Time Adjust (s)	2.0			0.0	0.0		
Total Lost Time (s)	7.0			5.0	5.0		
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0			3.0	3.0		3.0
Recall Mode	Max			Max	C-Max		None
Walk Time (s)							7.0
Flash Dont Walk (s)							19.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	51.0	100.0		53.0	37.0		
Actuated g/C Ratio	0.51	1.00		0.53	0.37		
v/c Ratio	0.49	0.15		0.46	0.67		
Control Delay	17.2	0.2		13.2	10.2		
Queue Delay	0.0	0.0		0.0	3.0		
Total Delay	17.2	0.2		13.2	13.2		
LOS	B	A		B	B		
Approach Delay	13.6			13.2	13.2		
Approach LOS	B			B	B		
90th %ile Green (s)	53.0			53.0	37.0		0.0
90th %ile Term Code	MaxR			MaxR	Coord		Skip
70th %ile Green (s)	53.0			53.0	37.0		0.0
70th %ile Term Code	MaxR			MaxR	Coord		Skip
50th %ile Green (s)	53.0			53.0	37.0		0.0
50th %ile Term Code	MaxR			MaxR	Coord		Skip
30th %ile Green (s)	53.0			53.0	37.0		0.0
30th %ile Term Code	MaxR			MaxR	Coord		Skip
10th %ile Green (s)	53.0			53.0	37.0		0.0
10th %ile Term Code	MaxR			MaxR	Coord		Skip
Queue Length 50th (ft)	180	0		266	120		
Queue Length 95th (ft)	187	0		286	m170		
Internal Link Dist (ft)	521			372	290		
Turn Bay Length (ft)		100					
Base Capacity (vph)	1753	1568		1875	642		
Starvation Cap Reductn	0	0		0	125		

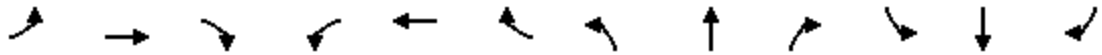
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	ø10
Spillback Cap Reductn	0	0		0	0		
Storage Cap Reductn	0	0		0	0		
Reduced v/c Ratio	0.49	0.15		0.46	0.83		

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 37 (37%), Referenced to phase 3:SWL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 13.4		Intersection LOS: B	
Intersection Capacity Utilization 51.3%		ICU Level of Service A	
Analysis Period (min) 15			

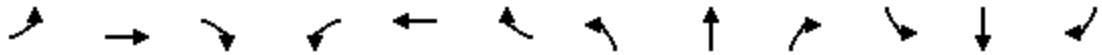
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dorchester Ave. & A Street





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	164	155	2	349	26	295	383	4	82	578	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	200		0	0		60
Storage Lanes	0		1	0		0	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	1.00
Frt			0.850		0.991				0.850			0.850
Flt Protected		0.992					0.950				0.994	
Satd. Flow (prot)	0	1811	1599	0	1883	0	1787	3406	1615	0	3527	1429
Flt Permitted		0.833			0.999		0.277				0.823	
Satd. Flow (perm)	0	1521	1599	0	1881	0	521	3406	1615	0	2920	1429
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			178		4				22			76
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		787			298			452			440	
Travel Time (s)		17.9			6.8			10.3			10.0	
Peak Hour Factor	0.87	0.87	0.87	0.95	0.95	0.95	0.91	0.91	0.91	0.92	0.92	0.92
Heavy Vehicles (%)	19%	1%	1%	0%	0%	0%	1%	6%	0%	0%	2%	13%
Adj. Flow (vph)	39	189	178	2	367	27	324	421	4	89	628	127
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	228	178	0	396	0	324	421	4	0	717	127
Turn Type	Perm	NA	Perm	Perm	NA		D.P+P	NA	custom	Perm	NA	Perm
Protected Phases		3			3		1	1 2	1		2	
Permitted Phases	3		3	3			2		2	2		2
Detector Phase	3	3	3	3	3		1	1 2	1	2	2	2
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0		8.0	8.0	8.0	8.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0		13.0		13.0	27.0	27.0	27.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0		20.0		20.0	44.0	44.0	44.0
Total Split (%)	36.0%	36.0%	36.0%	36.0%	36.0%		20.0%		20.0%	44.0%	44.0%	44.0%
Maximum Green (s)	31.0	31.0	31.0	31.0	31.0		15.0		15.0	39.0	39.0	39.0
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)	2.0	2.0	2.0	2.0	2.0		2.0		2.0	2.0	2.0	2.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)		0.0	0.0		0.0		0.0		0.0		0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0		5.0		5.0		5.0	5.0
Lead/Lag							Lead		Lead	Lag	Lag	Lag
Lead-Lag Optimize?							Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None		None	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0					10.0	10.0	10.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0					12.0	12.0	12.0
Pedestrian Calls (#/hr)	0	0	0	0	0					0	0	0
Act Effct Green (s)		31.0	31.0		31.0		54.0	59.0	59.0		40.2	40.2
Actuated g/C Ratio		0.31	0.31		0.31		0.54	0.59	0.59		0.40	0.40
v/c Ratio		0.48	0.29		0.68		0.71	0.21	0.00		0.61	0.20
Control Delay		32.2	5.3		43.9		42.8	23.1	7.0		31.6	13.1
Queue Delay		0.0	0.0		49.1		0.0	0.0	0.0		0.1	0.0
Total Delay		32.2	5.3		92.9		42.8	23.1	7.0		31.8	13.1
LOS		C	A		F		D	C	A		C	B
Approach Delay		20.4			92.9			31.6			29.0	
Approach LOS		C			F			C			C	
90th %ile Green (s)	31.0	31.0	31.0	31.0	31.0		15.0		15.0	39.0	39.0	39.0
90th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max		Max	MaxR	MaxR	MaxR
70th %ile Green (s)	31.0	31.0	31.0	31.0	31.0		15.0		15.0	39.0	39.0	39.0
70th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max		Max	MaxR	MaxR	MaxR
50th %ile Green (s)	31.0	31.0	31.0	31.0	31.0		15.0		15.0	39.0	39.0	39.0
50th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max		Max	MaxR	MaxR	MaxR
30th %ile Green (s)	31.0	31.0	31.0	31.0	31.0		13.7		13.7	40.3	40.3	40.3
30th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Gap		Gap	MaxR	MaxR	MaxR
10th %ile Green (s)	31.0	31.0	31.0	31.0	31.0		10.2		10.2	43.8	43.8	43.8
10th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Gap		Gap	MaxR	MaxR	MaxR
Queue Length 50th (ft)		117	0		221		199	114	0		222	27
Queue Length 95th (ft)		183	43		m287		287	164	m0		282	m51
Internal Link Dist (ft)		707			218			372			360	
Turn Bay Length (ft)							200					60
Base Capacity (vph)		471	618		585		477	1982	949		1174	620
Starvation Cap Reductn		0	0		219		0	0	0		0	0

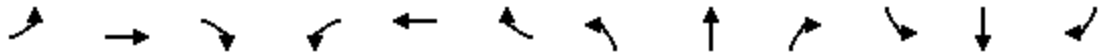
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0	0		0		0	0	65		58	0
Storage Cap Reductn		0	0		0		0	0	0		0	0
Reduced v/c Ratio		0.48	0.29		1.08		0.68	0.21	0.00		0.64	0.20

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 3:EBWB, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 38.9		Intersection LOS: D	
Intersection Capacity Utilization 81.5%		ICU Level of Service D	
Analysis Period (min) 15			

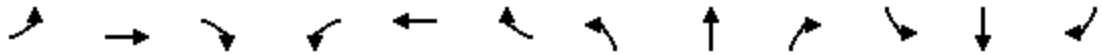
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Dorchester Ave. & W 4th Street





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lane Configurations													
Volume (vph)	139	108	3	6	85	8	2	173	4	11	396	290	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.999			0.989			0.997			0.944		
Flt Protected		0.973			0.997						0.999		
Satd. Flow (prot)	0	1837	0	0	1873	0	0	1876	0	0	1752	0	
Flt Permitted		0.779			0.981			0.996			0.995		
Satd. Flow (perm)	0	1470	0	0	1843	0	0	1869	0	0	1745	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		1			4			2			49		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		298			374			370			288		
Travel Time (s)		6.8			8.5			8.4			6.5		
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.82	0.82	0.82	0.96	0.96	0.96	
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	4%	0%	
Adj. Flow (vph)	154	120	3	7	97	9	2	211	5	11	412	302	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	277	0	0	113	0	0	218	0	0	725	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		1			1			5			5		9
Permitted Phases	1			1			5			5			
Detector Phase	1	1		1	1		5	5		5	5		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0		1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		13.0	13.0		13.0	13.0		15.0
Total Split (s)	30.0	30.0		30.0	30.0		53.0	53.0		53.0	53.0		17.0
Total Split (%)	30.0%	30.0%		30.0%	30.0%		53.0%	53.0%		53.0%	53.0%		17%
Maximum Green (s)	25.0	25.0		25.0	25.0		48.0	48.0		48.0	48.0		15.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0		0.0
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		5.0			5.0			5.0			5.0		
Lead/Lag													

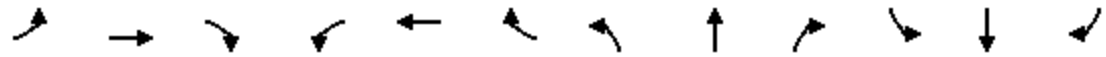


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lead-Lag Optimize?													
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		3.0
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max		None
Walk Time (s)													5.0
Flash Dont Walk (s)													8.0
Pedestrian Calls (#/hr)													0
Act Effct Green (s)		42.0			42.0			48.0			48.0		
Actuated g/C Ratio		0.42			0.42			0.48			0.48		
v/c Ratio		0.45			0.15			0.24			0.84		
Control Delay		33.7			17.9			16.1			22.6		
Queue Delay		3.0			7.6			0.0			9.2		
Total Delay		36.7			25.5			16.1			31.8		
LOS		D			C			B			C		
Approach Delay		36.7			25.5			16.1			31.8		
Approach LOS		D			C			B			C		
90th %ile Green (s)	42.0	42.0		42.0	42.0		48.0	48.0		48.0	48.0		0.0
90th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
70th %ile Green (s)	42.0	42.0		42.0	42.0		48.0	48.0		48.0	48.0		0.0
70th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
50th %ile Green (s)	42.0	42.0		42.0	42.0		48.0	48.0		48.0	48.0		0.0
50th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
30th %ile Green (s)	42.0	42.0		42.0	42.0		48.0	48.0		48.0	48.0		0.0
30th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
10th %ile Green (s)	42.0	42.0		42.0	42.0		48.0	48.0		48.0	48.0		0.0
10th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
Queue Length 50th (ft)		133			42			78			176		
Queue Length 95th (ft)		218			76			112			#426		
Internal Link Dist (ft)		218			294			290			208		
Turn Bay Length (ft)													
Base Capacity (vph)		617			776			898			863		
Starvation Cap Reductn		236			0			0			116		
Spillback Cap Reductn		0			616			23			42		
Storage Cap Reductn		0			0			0			0		
Reduced v/c Ratio		0.73			0.71			0.25			0.97		

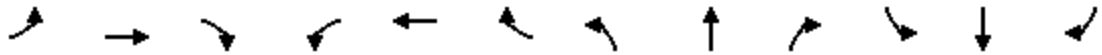
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 85 (85%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 29.7		Intersection LOS: C	
Intersection Capacity Utilization 74.1%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: A Street & W 4th Street

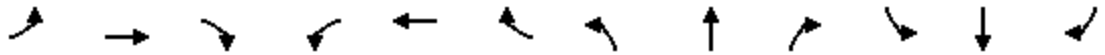




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Lane Configurations													
Volume (vph)	64	366	480	67	216	18	350	40	53	25	230	214	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	120		0	125		0	0		90	0		0	
Storage Lanes	1		1	1		0	1		0	0		1	
Taper Length (ft)	25			50			25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.95	1.00	1.00	1.00	
Ped Bike Factor	0.95			0.94	0.99		0.95	0.93			0.99	0.97	
Frt			0.850		0.989			0.914				0.850	
Flt Protected	0.950			0.950			0.950				0.995		
Satd. Flow (prot)	1752	1845	1583	1770	1845	0	1535	2625	0	0	1832	1553	
Flt Permitted	0.432			0.295			0.265				0.959		
Satd. Flow (perm)	755	1845	1583	517	1845	0	408	2625	0	0	1751	1507	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			490		4			65				235	
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		657			600			440			211		
Travel Time (s)		14.9			13.6			10.0			4.8		
Confl. Peds. (#/hr)	41		110	110		41	57		35	35		57	
Confl. Bikes (#/hr)			6						3			3	
Peak Hour Factor	0.98	0.98	0.98	0.84	0.84	0.84	0.82	0.82	0.82	0.91	0.91	0.91	
Heavy Vehicles (%)	3%	3%	2%	2%	1%	0%	7%	26%	2%	24%	1%	4%	
Parking (#/hr)						0							
Adj. Flow (vph)	65	373	490	80	257	21	427	49	65	27	253	235	
Shared Lane Traffic (%)							0%						
Lane Group Flow (vph)	65	373	490	80	278	0	427	114	0	0	280	235	
Turn Type	Perm	NA	pt+ov	Perm	NA		pm+pt	NA		Perm	NA	Free	
Protected Phases		5	5 6		5		6	1 6			1		2
Permitted Phases	5			5			1 6			1		Free	
Detector Phase	5	5	5 6	5	5		6	1 6		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		6.0			8.0	8.0		4.0
Minimum Split (s)	13.0	13.0		13.0	13.0		11.0			23.0	23.0		23.0
Total Split (s)	25.0	25.0		25.0	25.0		25.0			27.0	27.0		23.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Total Split (%)	25.0%	25.0%		25.0%	25.0%		25.0%			27.0%	27.0%		23%
Maximum Green (s)	20.0	20.0		20.0	20.0		20.0			22.0	22.0		21.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0			3.0	3.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0			2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0				0.0		
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0				5.0		
Lead/Lag	Lead	Lead		Lead	Lead		Lag			Lead	Lead		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0			2.0	2.0		3.0
Recall Mode	None	None		None	None		Max			C-Min	C-Min		None
Walk Time (s)										7.0	7.0		7.0
Flash Dont Walk (s)										11.0	11.0		12.0
Pedestrian Calls (#/hr)										30	30		30
Act Effct Green (s)	29.6	29.6	58.3	29.6	29.6		42.8	47.8			19.1	100.0	
Actuated g/C Ratio	0.30	0.30	0.58	0.30	0.30		0.43	0.48			0.19	1.00	
v/c Ratio	0.29	0.68	0.43	0.53	0.51		0.97	0.09			0.84	0.16	
Control Delay	36.0	41.8	2.8	47.8	36.1		67.7	12.9			60.6	0.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0	
Total Delay	36.0	41.8	2.8	47.8	36.1		67.7	12.9			60.6	0.2	
LOS	D	D	A	D	D		E	B			E	A	
Approach Delay		20.8			38.7			56.2			33.1		
Approach LOS		C			D			E			C		
90th %ile Green (s)	22.0	22.0		22.0	22.0		20.0			22.0	22.0		19.0
90th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Ped
70th %ile Green (s)	22.0	22.0		22.0	22.0		20.0			22.0	22.0		19.0
70th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Ped
50th %ile Green (s)	23.5	23.5		23.5	23.5		20.0			20.5	20.5		19.0
50th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Ped
30th %ile Green (s)	39.9	39.9		39.9	39.9		27.5			17.6	17.6		0.0
30th %ile Term Code	Gap	Gap		Gap	Gap		MaxR			Coord	Coord		Skip
10th %ile Green (s)	40.6	40.6		40.6	40.6		31.1			13.3	13.3		0.0
10th %ile Term Code	Gap	Gap		Gap	Gap		MaxR			Coord	Coord		Skip
Queue Length 50th (ft)	35	229	0	50	170		~289	11			170	0	
Queue Length 95th (ft)	79	#407	53	m#84	m244		#416	m31			#278	0	

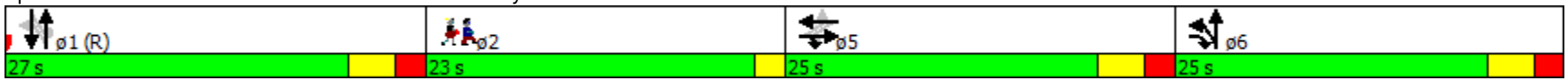


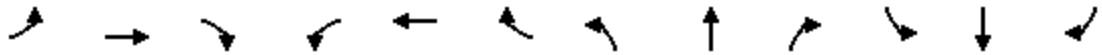
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Internal Link Dist (ft)		577			520			360			131		
Turn Bay Length (ft)	120			125									
Base Capacity (vph)	223	546	1127	152	549		441	1363			385	1507	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	0	
Reduced v/c Ratio	0.29	0.68	0.43	0.53	0.51		0.97	0.08			0.73	0.16	

Intersection Summary

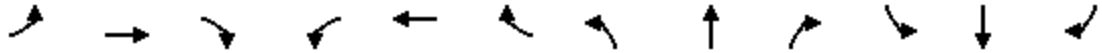
Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 34.4 Intersection LOS: C
Intersection Capacity Utilization 72.6% ICU Level 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: 4: Dorchester Ave. & West Broadway

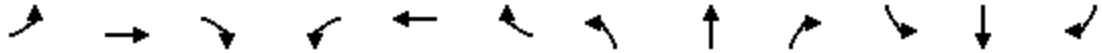




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	365	29	93	233	37	24	226	70	96	575	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	0		0	0		0	100		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	50			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.96			0.88			0.97		0.95	0.98	
Frt		0.990			0.986			0.970			0.989	
Flt Protected		0.994			0.987			0.996		0.950		
Satd. Flow (prot)	0	3135	0	0	1638	0	0	1713	0	1752	1770	0
Flt Permitted		0.866			0.778			0.690		0.461		
Satd. Flow (perm)	0	2732	0	0	1202	0	0	1187	0	812	1770	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			7			20			5	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		600			564			288			195	
Travel Time (s)		13.6			12.8			6.5			4.4	
Confl. Peds. (#/hr)	147		320	320		147	87		52	52		87
Peak Hour Factor	0.94	0.94	0.94	0.89	0.89	0.89	0.91	0.91	0.91	0.93	0.93	0.93
Heavy Vehicles (%)	8%	9%	0%	16%	3%	7%	5%	4%	5%	3%	4%	0%
Parking (#/hr)			0			0						
Adj. Flow (vph)	53	388	31	104	262	42	26	248	77	103	618	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	472	0	0	408	0	0	351	0	103	665	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Detector Phase	1	1		1	1		5	5		5	5	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		18.0	18.0		18.0	18.0	
Total Split (s)	46.0	46.0		46.0	46.0		54.0	54.0		54.0	54.0	
Total Split (%)	46.0%	46.0%		46.0%	46.0%		54.0%	54.0%		54.0%	54.0%	



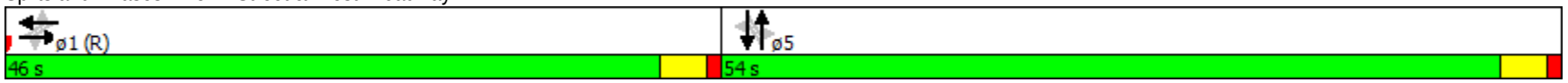
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	42.0	42.0		42.0	42.0		50.0	50.0		50.0	50.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		4.0			4.0			4.0		4.0	4.0	
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	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	
Pedestrian Calls (#/hr)	100	100		100	100		100	100		100	100	
Act Effct Green (s)		48.8			48.8			43.2		43.2	43.2	
Actuated g/C Ratio		0.49			0.49			0.43		0.43	0.43	
v/c Ratio		0.35			0.69			0.67		0.29	0.87	
Control Delay		20.2			29.3			32.6		19.3	37.7	
Queue Delay		0.1			10.0			1.7		0.0	0.2	
Total Delay		20.3			39.3			34.3		19.3	37.9	
LOS		C			D			C		B	D	
Approach Delay		20.3			39.3			34.3			35.4	
Approach LOS		C			D			C			D	
90th %ile Green (s)	42.0	42.0		42.0	42.0		50.0	50.0		50.0	50.0	
90th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Max	Max	
70th %ile Green (s)	43.5	43.5		43.5	43.5		48.5	48.5		48.5	48.5	
70th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
50th %ile Green (s)	47.3	47.3		47.3	47.3		44.7	44.7		44.7	44.7	
50th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
30th %ile Green (s)	51.7	51.7		51.7	51.7		40.3	40.3		40.3	40.3	
30th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
10th %ile Green (s)	59.4	59.4		59.4	59.4		32.6	32.6		32.6	32.6	
10th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
Queue Length 50th (ft)		146			197			189		40	362	
Queue Length 95th (ft)		211			#379			116		72	472	
Internal Link Dist (ft)		520			484			208			115	

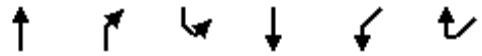


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)										100		
Base Capacity (vph)		1337			589			603		406	887	
Starvation Cap Reductn		0			0			123		0	0	
Spillback Cap Reductn		172			151			0		0	20	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.41			0.93			0.73		0.25	0.77	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 83 (83%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 32.4		Intersection LOS: C	
Intersection Capacity Utilization 81.0%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: A Street & West Broadway

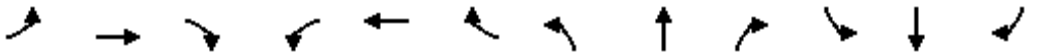




Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Volume (vph)	662	179	0	735	386	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Frt	1.00	0.85		1.00	0.99	
Flt Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	3438	1568		3539	1731	
Flt Permitted	1.00	1.00		1.00	0.95	
Satd. Flow (perm)	3438	1568		3539	1731	
Peak-hour factor, PHF	0.77	0.77	0.85	0.85	0.95	0.95
Adj. Flow (vph)	860	232	0	865	406	21
RTOR Reduction (vph)	0	0	0	0	2	0
Lane Group Flow (vph)	860	232	0	865	425	0
Heavy Vehicles (%)	5%	3%	0%	2%	3%	25%
Turn Type	NA	pt+ov		NA	NA	
Protected Phases	1	1 3		1	3	
Permitted Phases						
Actuated Green, G (s)	53.0	100.0		53.0	37.0	
Effective Green, g (s)	51.0	100.0		53.0	37.0	
Actuated g/C Ratio	0.51	1.00		0.53	0.37	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	1753	1568		1875	640	
v/s Ratio Prot	c0.25	0.15		0.24	c0.25	
v/s Ratio Perm						
v/c Ratio	0.49	0.15		0.46	0.66	
Uniform Delay, d1	16.0	0.0		14.6	26.3	
Progression Factor	1.00	1.00		0.84	0.27	
Incremental Delay, d2	1.0	0.2		0.7	3.0	
Delay (s)	17.0	0.2		13.0	10.1	
Level of Service	B	A		B	B	
Approach Delay (s)	13.4			13.0	10.1	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

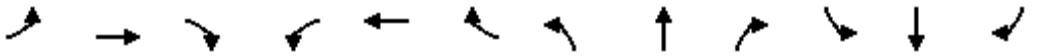
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	164	155	2	349	26	295	383	4	82	578	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0	5.0		5.0	5.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00		0.95	1.00
Frt		1.00	0.85		0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected		0.99	1.00		1.00		0.95	1.00	1.00		0.99	1.00
Satd. Flow (prot)		1810	1599		1882		1787	3406	1615		3526	1429
Flt Permitted		0.83	1.00		1.00		0.28	1.00	1.00		0.82	1.00
Satd. Flow (perm)		1521	1599		1880		520	3406	1615		2921	1429
Peak-hour factor, PHF	0.87	0.87	0.87	0.95	0.95	0.95	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	39	189	178	2	367	27	324	421	4	89	628	127
RTOR Reduction (vph)	0	0	123	0	3	0	0	0	2	0	0	45
Lane Group Flow (vph)	0	228	55	0	393	0	324	421	2	0	717	82
Heavy Vehicles (%)	19%	1%	1%	0%	0%	0%	1%	6%	0%	0%	2%	13%
Turn Type	Perm	NA	Perm	Perm	NA		D.P+P	NA	custom	Perm	NA	Perm
Protected Phases		3			3		1	1 2	1		2	
Permitted Phases	3		3	3			2		2	2		2
Actuated Green, G (s)		31.0	31.0		31.0		54.0	59.0	54.0		40.2	40.2
Effective Green, g (s)		31.0	31.0		31.0		54.0	59.0	54.0		40.2	40.2
Actuated g/C Ratio		0.31	0.31		0.31		0.54	0.59	0.54		0.40	0.40
Clearance Time (s)		5.0	5.0		5.0		5.0		5.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0		3.0		3.0		3.0	3.0
Lane Grp Cap (vph)		471	495		582		455	2009	952		1174	574
v/s Ratio Prot							c0.10	0.12	0.00			
v/s Ratio Perm		0.15	0.03		c0.21		c0.29		0.00		0.25	0.06
v/c Ratio		0.48	0.11		0.68		0.71	0.21	0.00		0.61	0.14
Uniform Delay, d1		28.0	24.7		30.1		14.0	9.6	10.6		23.7	19.0
Progression Factor		1.00	1.00		1.29		3.14	2.37	1.00		1.21	1.36
Incremental Delay, d2		3.5	0.5		4.6		4.6	0.0	0.0		2.1	0.4
Delay (s)		31.5	25.1		43.4		48.6	22.8	10.6		30.8	26.2
Level of Service		C	C		D		D	C	B		C	C
Approach Delay (s)		28.7			43.4			33.9			30.1	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		

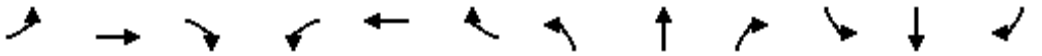
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	139	108	3	6	85	8	2	173	4	11	396	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			0.99			1.00			0.94	
Flt Protected		0.97			1.00			1.00			1.00	
Satd. Flow (prot)		1836			1874			1875			1752	
Flt Permitted		0.78			0.98			1.00			1.00	
Satd. Flow (perm)		1470			1844			1869			1745	
Peak-hour factor, PHF	0.90	0.90	0.90	0.88	0.88	0.88	0.82	0.82	0.82	0.96	0.96	0.96
Adj. Flow (vph)	154	120	3	7	97	9	2	211	5	11	412	302
RTOR Reduction (vph)	0	1	0	0	2	0	0	1	0	0	25	0
Lane Group Flow (vph)	0	276	0	0	111	0	0	217	0	0	700	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		42.0			42.0			48.0			48.0	
Effective Green, g (s)		42.0			42.0			48.0			48.0	
Actuated g/C Ratio		0.42			0.42			0.48			0.48	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		617			774			897			837	
v/s Ratio Prot												
v/s Ratio Perm		c0.19			0.06			0.12			c0.40	
v/c Ratio		0.45			0.14			0.24			0.84	
Uniform Delay, d1		20.7			17.9			15.3			22.6	
Progression Factor		1.49			1.00			1.00			0.70	
Incremental Delay, d2		2.0			0.4			0.6			6.7	
Delay (s)		33.0			18.3			15.9			22.6	
Level of Service		C			B			B			C	
Approach Delay (s)		33.0			18.3			15.9			22.6	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	366	480	67	216	18	350	40	53	25	230	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.91	0.91			1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99		1.00	0.93			1.00	0.97
Flpb, ped/bikes	0.96	1.00	1.00	0.95	1.00		0.99	1.00			0.99	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.91			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1681	1845	1583	1679	1849		1519	2627			1817	1507
Flt Permitted	0.43	1.00	1.00	0.30	1.00		0.26	1.00			0.96	1.00
Satd. Flow (perm)	765	1845	1583	522	1849		424	2627			1751	1507
Peak-hour factor, PHF	0.98	0.98	0.98	0.84	0.84	0.84	0.82	0.82	0.82	0.91	0.91	0.91
Adj. Flow (vph)	65	373	490	80	257	21	427	49	65	27	253	235
RTOR Reduction (vph)	0	0	204	0	3	0	0	38	0	0	0	0
Lane Group Flow (vph)	65	373	286	80	275	0	427	76	0	0	280	235
Confl. Peds. (#/hr)	41		110	110		41	57		35	35		57
Confl. Bikes (#/hr)			6						3			3
Heavy Vehicles (%)	3%	3%	2%	2%	1%	0%	7%	26%	2%	24%	1%	4%
Parking (#/hr)						0						
Turn Type	Perm	NA	pt+ov	Perm	NA		pm+pt	NA		Perm	NA	Free
Protected Phases		5	5 6		5		6	1 6			1	
Permitted Phases	5			5			1 6			1		Free
Actuated Green, G (s)	29.6	29.6	58.3	29.6	29.6		42.0	42.0			18.3	100.0
Effective Green, g (s)	29.6	29.6	58.3	29.6	29.6		42.0	42.0			18.3	100.0
Actuated g/C Ratio	0.30	0.30	0.58	0.30	0.30		0.42	0.42			0.18	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0				5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0				2.0	
Lane Grp Cap (vph)	226	546	922	154	547		437	1234			320	1507
v/s Ratio Prot		c0.20	0.18		0.15		c0.23	0.01				
v/s Ratio Perm	0.08			0.15			c0.18	0.01			0.16	c0.16
v/c Ratio	0.29	0.68	0.31	0.52	0.50		0.98	0.06			0.88	0.16
Uniform Delay, d1	27.1	31.1	10.6	29.3	29.1		24.4	17.3			39.7	0.0
Progression Factor	1.00	1.00	1.00	1.05	1.05		1.29	1.79			1.00	1.00
Incremental Delay, d2	0.7	3.5	0.2	2.2	0.6		37.4	0.1			26.7	0.2
Delay (s)	27.8	34.6	10.8	33.0	31.1		68.9	30.9			66.4	0.2
Level of Service	C	C	B	C	C		E	C			E	A
Approach Delay (s)		21.6			31.5			60.9			36.2	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	35.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	365	29	93	233	37	24	226	70	96	575	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		0.95			1.00			1.00		1.00	1.00	
Frpb, ped/bikes		0.96			0.95			0.97		1.00	0.98	
Flpb, ped/bikes		0.98			0.93			1.00		0.96	1.00	
Frt		0.99			0.99			0.97		1.00	0.99	
Flt Protected		0.99			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		3082			1519			1714		1681	1771	
Flt Permitted		0.87			0.78			0.69		0.46	1.00	
Satd. Flow (perm)		2686			1197			1187		815	1771	
Peak-hour factor, PHF	0.94	0.94	0.94	0.89	0.89	0.89	0.91	0.91	0.91	0.93	0.93	0.93
Adj. Flow (vph)	53	388	31	104	262	42	26	248	77	103	618	47
RTOR Reduction (vph)	0	5	0	0	4	0	0	11	0	0	3	0
Lane Group Flow (vph)	0	467	0	0	404	0	0	340	0	103	662	0
Confl. Peds. (#/hr)	147		320	320		147	87		52	52		87
Heavy Vehicles (%)	8%	9%	0%	16%	3%	7%	5%	4%	5%	3%	4%	0%
Parking (#/hr)			0			0						
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		48.8			48.8			43.2		43.2	43.2	
Effective Green, g (s)		48.8			48.8			43.2		43.2	43.2	
Actuated g/C Ratio		0.49			0.49			0.43		0.43	0.43	
Clearance Time (s)		4.0			4.0			4.0		4.0	4.0	
Vehicle Extension (s)		2.0			2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		1310			584			512		352	765	
v/s Ratio Prot											c0.37	
v/s Ratio Perm		0.17			c0.34			0.29		0.13		
v/c Ratio		0.36			0.69			0.66		0.29	0.87	
Uniform Delay, d1		15.9			19.8			22.6		18.5	25.8	
Progression Factor		1.15			1.00			1.27		1.00	1.00	
Incremental Delay, d2		0.6			6.6			2.4		0.2	9.8	
Delay (s)		18.9			26.4			31.1		18.6	35.5	
Level of Service		B			C			C		B	D	
Approach Delay (s)		18.9			26.4			31.1			33.3	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	ø10
Lane Configurations							
Volume (vph)	1227	322	0	365	183	26	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)		100	0		0	0	
Storage Lanes		1	0		1	0	
Taper Length (ft)			25		25		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Frt		0.850			0.983		
Flt Protected					0.958		
Satd. Flow (prot)	3505	1568	0	3471	1575	0	
Flt Permitted					0.958		
Satd. Flow (perm)	3505	1568	0	3471	1575	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		249			7		
Link Speed (mph)	30			30	30		
Link Distance (ft)	601			452	370		
Travel Time (s)	13.7			10.3	8.4		
Peak Hour Factor	0.89	0.89	0.88	0.88	0.90	0.90	
Heavy Vehicles (%)	3%	3%	0%	4%	7%	60%	
Adj. Flow (vph)	1379	362	0	415	203	29	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1379	362	0	415	232	0	
Turn Type	NA	pt+ov		NA	NA		
Protected Phases	1	1 3		1	3		10
Permitted Phases							
Detector Phase	1	1 3		1	3		
Switch Phase							
Minimum Initial (s)	4.0			4.0	4.0		1.0
Minimum Split (s)	21.0			21.0	21.0		31.0
Total Split (s)	37.0			37.0	32.0		31.0
Total Split (%)	37.0%			37.0%	32.0%		31%
Maximum Green (s)	32.0			32.0	27.0		26.0
Yellow Time (s)	3.0			3.0	3.0		2.0
All-Red Time (s)	2.0			2.0	2.0		3.0



Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	ø10
Lost Time Adjust (s)	2.0			0.0	0.0		
Total Lost Time (s)	7.0			5.0	5.0		
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0			3.0	3.0		3.0
Recall Mode	Max			Max	C-Max		None
Walk Time (s)							7.0
Flash Dont Walk (s)							19.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	61.0	100.0		63.0	27.0		
Actuated g/C Ratio	0.61	1.00		0.63	0.27		
v/c Ratio	0.64	0.23		0.19	0.54		
Control Delay	14.3	0.3		2.2	26.2		
Queue Delay	0.1	0.0		0.0	2.1		
Total Delay	14.4	0.3		2.2	28.3		
LOS	B	A		A	C		
Approach Delay	11.5			2.2	28.3		
Approach LOS	B			A	C		
90th %ile Green (s)	63.0			63.0	27.0		0.0
90th %ile Term Code	MaxR			MaxR	Coord		Skip
70th %ile Green (s)	63.0			63.0	27.0		0.0
70th %ile Term Code	MaxR			MaxR	Coord		Skip
50th %ile Green (s)	63.0			63.0	27.0		0.0
50th %ile Term Code	MaxR			MaxR	Coord		Skip
30th %ile Green (s)	63.0			63.0	27.0		0.0
30th %ile Term Code	MaxR			MaxR	Coord		Skip
10th %ile Green (s)	63.0			63.0	27.0		0.0
10th %ile Term Code	MaxR			MaxR	Coord		Skip
Queue Length 50th (ft)	274	0		14	138		
Queue Length 95th (ft)	336	0		14	m219		
Internal Link Dist (ft)	521			372	290		
Turn Bay Length (ft)		100					
Base Capacity (vph)	2138	1568		2186	430		
Starvation Cap Reductn	0	0		0	0		

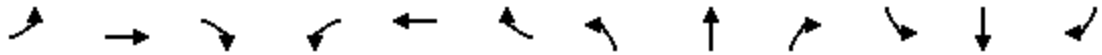
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	ø10
Spillback Cap Reductn	89	0		0	96		
Storage Cap Reductn	0	0		0	0		
Reduced v/c Ratio	0.67	0.23		0.19	0.69		

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 37 (37%), Referenced to phase 3:SWL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 11.5		Intersection LOS: B	
Intersection Capacity Utilization 55.6%		ICU Level of Service B	
Analysis Period (min) 15			

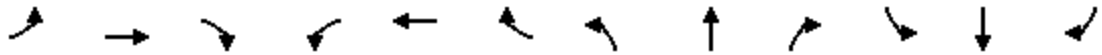
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dorchester Ave. & A Street

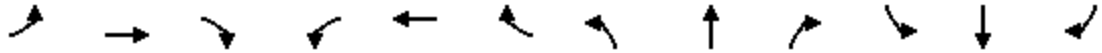




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	164	107	5	395	21	577	667	9	67	253	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	200		0	0		60
Storage Lanes	0		1	0		0	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	1.00
Frt			0.850		0.993				0.850			0.850
Flt Protected		0.992			0.999		0.950				0.990	
Satd. Flow (prot)	0	1784	1615	0	1863	0	1752	3406	1455	0	3477	1357
Flt Permitted		0.845			0.997		0.433				0.679	
Satd. Flow (perm)	0	1519	1615	0	1859	0	799	3406	1455	0	2385	1357
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			114		3				22			142
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		787			298			452			440	
Travel Time (s)		17.9			6.8			10.3			10.0	
Peak Hour Factor	0.94	0.94	0.94	0.95	0.95	0.95	0.90	0.90	0.90	0.88	0.88	0.88
Heavy Vehicles (%)	4%	6%	0%	0%	1%	5%	3%	6%	11%	2%	3%	19%
Adj. Flow (vph)	35	174	114	5	416	22	641	741	10	76	288	174
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	209	114	0	443	0	641	741	10	0	364	174
Turn Type	Perm	NA	Perm	Perm	NA		D.P+P	NA	custom	Perm	NA	Perm
Protected Phases		3			3		1	1 2	1		2	
Permitted Phases	3		3	3			2		2	2		2
Detector Phase	3	3	3	3	3		1	1 2	1	2	2	2
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0		8.0	8.0	8.0	8.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0		13.0		13.0	27.0	27.0	27.0
Total Split (s)	38.0	38.0	38.0	38.0	38.0		35.0		35.0	27.0	27.0	27.0
Total Split (%)	38.0%	38.0%	38.0%	38.0%	38.0%		35.0%		35.0%	27.0%	27.0%	27.0%
Maximum Green (s)	33.0	33.0	33.0	33.0	33.0		30.0		30.0	22.0	22.0	22.0
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)	2.0	2.0	2.0	2.0	2.0		2.0		2.0	2.0	2.0	2.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)		0.0	0.0		0.0		0.0		0.0		0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0		5.0		5.0		5.0	5.0
Lead/Lag							Lead		Lead	Lag	Lag	Lag
Lead-Lag Optimize?							Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None		None	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0					10.0	10.0	10.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0					12.0	12.0	12.0
Pedestrian Calls (#/hr)	0	0	0	0	0					0	0	0
Act Effct Green (s)		33.0	33.0		33.0		52.0	57.0	57.0		22.4	22.4
Actuated g/C Ratio		0.33	0.33		0.33		0.52	0.57	0.57		0.22	0.22
v/c Ratio		0.42	0.19		0.72		0.92	0.38	0.01		0.68	0.42
Control Delay		29.2	5.5		32.3		51.9	18.9	7.2		45.6	14.5
Queue Delay		0.2	0.0		16.7		2.2	0.4	0.0		0.0	0.0
Total Delay		29.4	5.5		49.0		54.1	19.3	7.2		45.6	14.5
LOS		C	A		D		D	B	A		D	B
Approach Delay		20.9			49.0			35.3			35.6	
Approach LOS		C			D			D			D	
90th %ile Green (s)	33.0	33.0	33.0	33.0	33.0		30.0		30.0	22.0	22.0	22.0
90th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max		Max	MaxR	MaxR	MaxR
70th %ile Green (s)	33.0	33.0	33.0	33.0	33.0		30.0		30.0	22.0	22.0	22.0
70th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max		Max	MaxR	MaxR	MaxR
50th %ile Green (s)	33.0	33.0	33.0	33.0	33.0		30.0		30.0	22.0	22.0	22.0
50th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max		Max	MaxR	MaxR	MaxR
30th %ile Green (s)	33.0	33.0	33.0	33.0	33.0		30.0		30.0	22.0	22.0	22.0
30th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max		Max	MaxR	MaxR	MaxR
10th %ile Green (s)	33.0	33.0	33.0	33.0	33.0		28.1		28.1	23.9	23.9	23.9
10th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Gap		Gap	MaxR	MaxR	MaxR
Queue Length 50th (ft)		103	0		165		357	159	0		120	27
Queue Length 95th (ft)		170	37		317		#503	218	m1		167	84
Internal Link Dist (ft)		707			218			372			360	
Turn Bay Length (ft)							200					60
Base Capacity (vph)		501	609		615		704	1920	829		533	414
Starvation Cap Reductn		0	0		163		20	631	0		0	0



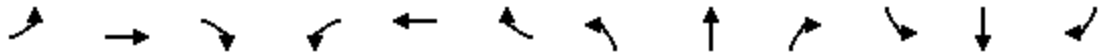
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		37	0		0		0	0	101		0	0
Storage Cap Reductn		0	0		0		0	0	0		0	0
Reduced v/c Ratio		0.45	0.19		0.98		0.94	0.57	0.01		0.68	0.42

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 3:EBWB, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 35.9		Intersection LOS: D	
Intersection Capacity Utilization 83.7%		ICU Level of Service E	
Analysis Period (min) 15			

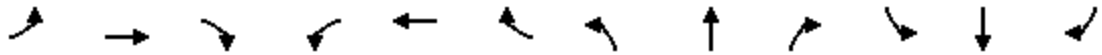
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Dorchester Ave. & W 4th Street





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lane Configurations													
Volume (vph)	113	122	5	12	159	11	11	299	5	8	192	252	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.997			0.992			0.998			0.925		
Flt Protected		0.977			0.997			0.998			0.999		
Satd. Flow (prot)	0	1796	0	0	1852	0	0	1834	0	0	1633	0	
Flt Permitted		0.763			0.974			0.980			0.994		
Satd. Flow (perm)	0	1403	0	0	1809	0	0	1801	0	0	1625	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		1			4			1			76		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		298			374			370			288		
Travel Time (s)		6.8			8.5			8.4			6.5		
Peak Hour Factor	0.82	0.82	0.82	0.85	0.85	0.85	0.93	0.93	0.93	0.95	0.95	0.95	
Heavy Vehicles (%)	0%	6%	0%	9%	1%	0%	10%	3%	0%	0%	15%	2%	
Adj. Flow (vph)	138	149	6	14	187	13	12	322	5	8	202	265	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	293	0	0	214	0	0	339	0	0	475	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		1			1			5			5		9
Permitted Phases	1			1			5			5			
Detector Phase	1	1		1	1		5	5		5	5		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0		1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		13.0	13.0		13.0	13.0		15.0
Total Split (s)	40.0	40.0		40.0	40.0		45.0	45.0		45.0	45.0		15.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%		45.0%	45.0%		45.0%	45.0%		15%
Maximum Green (s)	35.0	35.0		35.0	35.0		40.0	40.0		40.0	40.0		13.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0		0.0
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		5.0			5.0			5.0			5.0		
Lead/Lag													

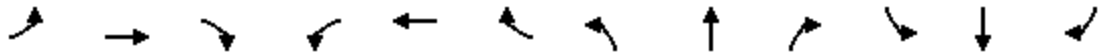


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lead-Lag Optimize?													
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		3.0
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max		None
Walk Time (s)													5.0
Flash Dont Walk (s)													8.0
Pedestrian Calls (#/hr)													0
Act Effct Green (s)		50.0			50.0			40.0			40.0		
Actuated g/C Ratio		0.50			0.50			0.40			0.40		
v/c Ratio		0.42			0.24			0.47			0.68		
Control Delay		28.4			14.8			24.8			26.5		
Queue Delay		3.7			0.1			1.3			36.2		
Total Delay		32.2			14.8			26.0			62.7		
LOS		C			B			C			E		
Approach Delay		32.2			14.8			26.0			62.7		
Approach LOS		C			B			C			E		
90th %ile Green (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0		0.0
90th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
70th %ile Green (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0		0.0
70th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
50th %ile Green (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0		0.0
50th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
30th %ile Green (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0		0.0
30th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
10th %ile Green (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0		0.0
10th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
Queue Length 50th (ft)		142			73			156			207		
Queue Length 95th (ft)		202			110			237			326		
Internal Link Dist (ft)		218			294			290			208		
Turn Bay Length (ft)													
Base Capacity (vph)		702			906			721			695		
Starvation Cap Reductn		317			0			201			243		
Spillback Cap Reductn		0			147			91			89		
Storage Cap Reductn		0			0			0			0		
Reduced v/c Ratio		0.76			0.28			0.65			1.05		

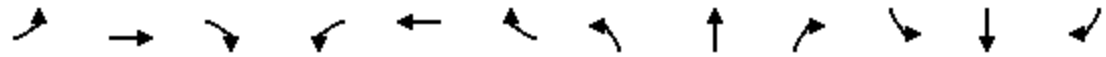
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 60 (60%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 38.8		Intersection LOS: D	
Intersection Capacity Utilization 64.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: A Street & W 4th Street

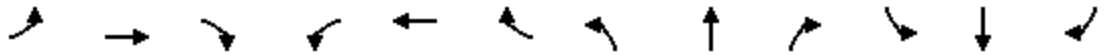




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Lane Configurations													
Volume (vph)	188	332	304	78	440	32	538	158	24	18	90	179	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	120		0	125		0	0		90	0		0	
Storage Lanes	1		1	1		0	1		0	0		1	
Taper Length (ft)	25			50			25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.95	1.00	1.00	1.00	
Ped Bike Factor	1.00			0.99	1.00		0.91	0.99			0.99	0.97	
Frt			0.850		0.990			0.980				0.850	
Flt Protected	0.950			0.950			0.950				0.992		
Satd. Flow (prot)	1719	1759	1583	1736	1859	0	1626	2802	0	0	1606	1417	
Flt Permitted	0.295			0.409			0.628				0.911		
Satd. Flow (perm)	531	1759	1583	736	1859	0	983	2802	0	0	1461	1373	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			342		4			19				195	
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		657			600			440			211		
Travel Time (s)		14.9			13.6			10.0			4.8		
Confl. Peds. (#/hr)	8		30	30		8	62		27	27		62	
Confl. Bikes (#/hr)			6						3			3	
Peak Hour Factor	0.89	0.89	0.89	0.97	0.97	0.97	0.93	0.93	0.93	0.92	0.92	0.92	
Heavy Vehicles (%)	5%	8%	2%	4%	1%	0%	1%	21%	9%	24%	16%	14%	
Parking (#/hr)						0							
Adj. Flow (vph)	211	373	342	80	454	33	578	170	26	20	98	195	
Shared Lane Traffic (%)							0%						
Lane Group Flow (vph)	211	373	342	80	487	0	578	196	0	0	118	195	
Turn Type	Perm	NA	pt+ov	Perm	NA		pm+pt	NA		Perm	NA	Free	
Protected Phases		5	5 6		5		6	1 6			1		2
Permitted Phases	5			5			1 6			1		Free	
Detector Phase	5	5	5 6	5	5		6	1 6		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		6.0			8.0	8.0		4.0
Minimum Split (s)	13.0	13.0		13.0	13.0		11.0			23.0	23.0		23.0
Total Split (s)	33.0	33.0		33.0	33.0		21.0			23.0	23.0		23.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Total Split (%)	33.0%	33.0%		33.0%	33.0%		21.0%			23.0%	23.0%		23%
Maximum Green (s)	28.0	28.0		28.0	28.0		16.0			18.0	18.0		21.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0			3.0	3.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0			2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0				0.0		
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0				5.0		
Lead/Lag	Lead	Lead		Lead	Lead		Lag			Lead	Lead		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0			2.0	2.0		3.0
Recall Mode	None	None		None	None		Max			C-Min	C-Min		None
Walk Time (s)										7.0	7.0		7.0
Flash Dont Walk (s)										11.0	11.0		12.0
Pedestrian Calls (#/hr)										30	30		30
Act Effct Green (s)	42.0	42.0	63.0	42.0	42.0		30.4	35.4			14.4	100.0	
Actuated g/C Ratio	0.42	0.42	0.63	0.42	0.42		0.30	0.35			0.14	1.00	
v/c Ratio	0.95	0.51	0.30	0.26	0.62		1.44	0.20			0.56	0.14	
Control Delay	84.8	28.8	2.3	28.1	31.6		235.5	16.1			49.4	0.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0	
Total Delay	84.8	28.8	2.3	28.1	31.6		235.5	16.1			49.4	0.2	
LOS	F	C	A	C	C		F	B			D	A	
Approach Delay		31.7			31.1			180.0			18.8		
Approach LOS		C			C			F			B		
90th %ile Green (s)	30.0	30.0		30.0	30.0		16.0			18.0	18.0		19.0
90th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Ped
70th %ile Green (s)	30.0	30.0		30.0	30.0		16.0			18.0	18.0		19.0
70th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Ped
50th %ile Green (s)	30.0	30.0		30.0	30.0		16.0			18.0	18.0		19.0
50th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Ped
30th %ile Green (s)	58.9	58.9		58.9	58.9		16.0			10.1	10.1		0.0
30th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Skip
10th %ile Green (s)	61.0	61.0		61.0	61.0		16.0			8.0	8.0		0.0
10th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Skip
Queue Length 50th (ft)	~175	210	0	40	291		~374	41			68	0	
Queue Length 95th (ft)	#314	312	41	84	#473		#608	m73			124	0	

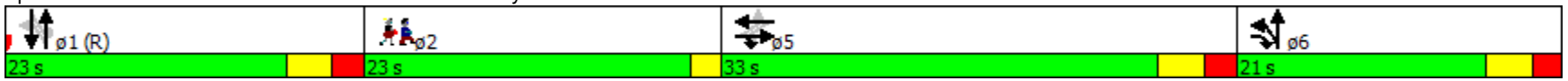


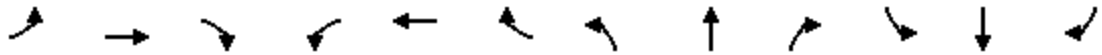
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Internal Link Dist (ft)		577			520			360			131		
Turn Bay Length (ft)	120			125									
Base Capacity (vph)	222	738	1123	308	782		402	1104			262	1373	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	0	
Reduced v/c Ratio	0.95	0.51	0.30	0.26	0.62		1.44	0.18			0.45	0.14	

Intersection Summary

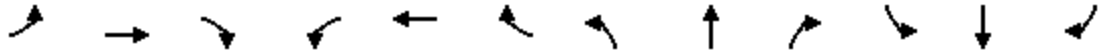
Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.44
Intersection Signal Delay: 74.5 Intersection LOS: E
Intersection Capacity Utilization 69.6% ICU Level 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: 4: Dorchester Ave. & West Broadway





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	305	26	91	439	40	25	329	69	68	345	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	0		0	0		0	100		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	50			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.98			0.99		0.98	0.97	
Frt		0.990			0.990			0.978			0.970	
Flt Protected		0.994			0.992			0.997		0.950		
Satd. Flow (prot)	0	3322	0	0	1773	0	0	1729	0	1641	1665	0
Flt Permitted		0.845			0.869			0.777		0.312		
Satd. Flow (perm)	0	2807	0	0	1545	0	0	1343	0	526	1665	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			6			13			16	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		600			564			288			195	
Travel Time (s)		13.6			12.8			6.5			4.4	
Confl. Peds. (#/hr)	79		24	24		79	67		54	54		67
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.92	0.92	0.92	0.94	0.94	0.94
Heavy Vehicles (%)	3%	7%	5%	19%	1%	0%	0%	4%	17%	10%	8%	5%
Parking (#/hr)			0			0						
Adj. Flow (vph)	45	318	27	95	457	42	27	358	75	72	367	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	390	0	0	594	0	0	460	0	72	458	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Detector Phase	1	1		1	1		5	5		5	5	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.0	25.0		25.0	25.0		28.0	28.0		28.0	28.0	
Total Split (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0	
Total Split (%)	55.6%	55.6%		55.6%	55.6%		44.4%	44.4%		44.4%	44.4%	



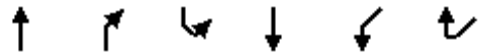
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	45.0	45.0		45.0	45.0		35.0	35.0		35.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
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	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	200	200		200	200		50	50		50	50	
Act Effct Green (s)		50.6			50.6			29.4		29.4	29.4	
Actuated g/C Ratio		0.56			0.56			0.33		0.33	0.33	
v/c Ratio		0.25			0.68			1.03		0.42	0.83	
Control Delay		11.2			20.5			79.9		30.0	39.7	
Queue Delay		0.0			0.0			34.4		0.0	0.0	
Total Delay		11.2			20.5			114.3		30.0	39.7	
LOS		B			C			F		C	D	
Approach Delay		11.2			20.5			114.3			38.4	
Approach LOS		B			C			F			D	
90th %ile Green (s)	45.0	45.0		45.0	45.0		35.0	35.0		35.0	35.0	
90th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Max	Max	
70th %ile Green (s)	45.5	45.5		45.5	45.5		34.5	34.5		34.5	34.5	
70th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
50th %ile Green (s)	49.5	49.5		49.5	49.5		30.5	30.5		30.5	30.5	
50th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
30th %ile Green (s)	53.3	53.3		53.3	53.3		26.7	26.7		26.7	26.7	
30th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
10th %ile Green (s)	59.9	59.9		59.9	59.9		20.1	20.1		20.1	20.1	
10th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
Queue Length 50th (ft)		55			229			252		31	226	
Queue Length 95th (ft)		92			405			#416		68	321	
Internal Link Dist (ft)		520			484			208			115	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)										100		
Base Capacity (vph)		1584			872			530		204	657	
Starvation Cap Reductn		0			0			95		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.25			0.68			1.06		0.35	0.70	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 57 (63%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 45.3		Intersection LOS: D	
Intersection Capacity Utilization 103.3%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: A Street & West Broadway

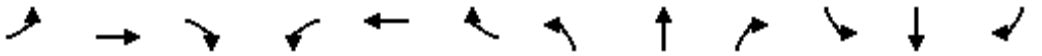




Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Volume (vph)	1227	322	0	365	183	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Frt	1.00	0.85		1.00	0.98	
Flt Protected	1.00	1.00		1.00	0.96	
Satd. Flow (prot)	3505	1568		3471	1575	
Flt Permitted	1.00	1.00		1.00	0.96	
Satd. Flow (perm)	3505	1568		3471	1575	
Peak-hour factor, PHF	0.89	0.89	0.88	0.88	0.90	0.90
Adj. Flow (vph)	1379	362	0	415	203	29
RTOR Reduction (vph)	0	0	0	0	5	0
Lane Group Flow (vph)	1379	362	0	415	227	0
Heavy Vehicles (%)	3%	3%	0%	4%	7%	60%
Turn Type	NA	pt+ov		NA	NA	
Protected Phases	1	1 3		1	3	
Permitted Phases						
Actuated Green, G (s)	63.0	100.0		63.0	27.0	
Effective Green, g (s)	61.0	100.0		63.0	27.0	
Actuated g/C Ratio	0.61	1.00		0.63	0.27	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	2138	1568		2186	425	
v/s Ratio Prot	c0.39	0.23		0.12	c0.14	
v/s Ratio Perm						
v/c Ratio	0.64	0.23		0.19	0.53	
Uniform Delay, d1	12.5	0.0		7.8	31.1	
Progression Factor	1.00	1.00		0.25	0.72	
Incremental Delay, d2	1.5	0.3		0.2	3.7	
Delay (s)	14.1	0.3		2.1	26.3	
Level of Service	B	A		A	C	
Approach Delay (s)	11.2			2.1	26.3	
Approach LOS	B			A	C	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	164	107	5	395	21	577	667	9	67	253	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0	5.0		5.0	5.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00		0.95	1.00
Frt		1.00	0.85		0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected		0.99	1.00		1.00		0.95	1.00	1.00		0.99	1.00
Satd. Flow (prot)		1783	1615		1864		1752	3406	1455		3476	1357
Flt Permitted		0.85	1.00		1.00		0.43	1.00	1.00		0.68	1.00
Satd. Flow (perm)		1520	1615		1860		799	3406	1455		2384	1357
Peak-hour factor, PHF	0.94	0.94	0.94	0.95	0.95	0.95	0.90	0.90	0.90	0.88	0.88	0.88
Adj. Flow (vph)	35	174	114	5	416	22	641	741	10	76	288	174
RTOR Reduction (vph)	0	0	76	0	2	0	0	0	5	0	0	110
Lane Group Flow (vph)	0	209	38	0	441	0	641	741	5	0	364	64
Heavy Vehicles (%)	4%	6%	0%	0%	1%	5%	3%	6%	11%	2%	3%	19%
Turn Type	Perm	NA	Perm	Perm	NA		D.P+P	NA	custom	Perm	NA	Perm
Protected Phases		3			3		1	1 2	1		2	
Permitted Phases	3		3	3			2		2	2		2
Actuated Green, G (s)		33.0	33.0		33.0		52.0	57.0	52.0		22.4	22.4
Effective Green, g (s)		33.0	33.0		33.0		52.0	57.0	52.0		22.4	22.4
Actuated g/C Ratio		0.33	0.33		0.33		0.52	0.57	0.52		0.22	0.22
Clearance Time (s)		5.0	5.0		5.0		5.0		5.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0		3.0		3.0		3.0	3.0
Lane Grp Cap (vph)		501	532		613		697	1941	829		534	303
v/s Ratio Prot							c0.27	0.22	0.00			
v/s Ratio Perm		0.14	0.02		c0.24		c0.21		0.00		0.15	0.05
v/c Ratio		0.42	0.07		0.72		0.92	0.38	0.01		0.68	0.21
Uniform Delay, d1		26.0	23.0		29.4		18.4	11.8	11.6		35.5	31.6
Progression Factor		1.00	1.00		0.87		2.22	1.55	4.13		1.07	1.25
Incremental Delay, d2		2.5	0.3		6.3		13.9	0.1	0.0		6.7	1.5
Delay (s)		28.6	23.2		31.8		54.9	18.4	47.7		44.8	41.1
Level of Service		C	C		C		D	B	D		D	D
Approach Delay (s)		26.7			31.8			35.4			43.6	
Approach LOS		C			C			D			D	

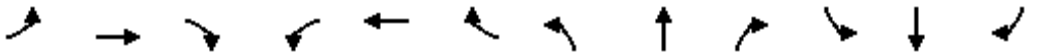
Intersection Summary			
HCM 2000 Control Delay	35.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	113	122	5	12	159	11	11	299	5	8	192	252
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			0.99			1.00			0.92	
Flt Protected		0.98			1.00			1.00			1.00	
Satd. Flow (prot)		1796			1851			1834			1633	
Flt Permitted		0.76			0.97			0.98			0.99	
Satd. Flow (perm)		1402			1810			1801			1624	
Peak-hour factor, PHF	0.82	0.82	0.82	0.85	0.85	0.85	0.93	0.93	0.93	0.95	0.95	0.95
Adj. Flow (vph)	138	149	6	14	187	13	12	322	5	8	202	265
RTOR Reduction (vph)	0	1	0	0	2	0	0	1	0	0	46	0
Lane Group Flow (vph)	0	293	0	0	212	0	0	338	0	0	429	0
Heavy Vehicles (%)	0%	6%	0%	9%	1%	0%	10%	3%	0%	0%	15%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		50.0			50.0			40.0			40.0	
Effective Green, g (s)		50.0			50.0			40.0			40.0	
Actuated g/C Ratio		0.50			0.50			0.40			0.40	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		701			905			720			649	
v/s Ratio Prot												
v/s Ratio Perm		c0.21			0.12			0.19			c0.26	
v/c Ratio		0.42			0.23			0.47			0.66	
Uniform Delay, d1		15.8			14.2			22.2			24.5	
Progression Factor		1.65			1.00			1.00			1.00	
Incremental Delay, d2		1.7			0.6			2.2			5.2	
Delay (s)		27.7			14.8			24.3			29.7	
Level of Service		C			B			C			C	
Approach Delay (s)		27.7			14.8			24.3			29.7	
Approach LOS		C			B			C			C	

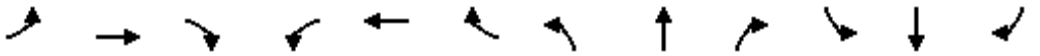
Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	188	332	304	78	440	32	538	158	24	18	90	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.91	0.91			1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.99			1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		0.95	1.00			0.99	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.98			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1712	1759	1583	1716	1860		1542	2802			1590	1373
Flt Permitted	0.29	1.00	1.00	0.41	1.00		0.63	1.00			0.91	1.00
Satd. Flow (perm)	532	1759	1583	739	1860		1019	2802			1460	1373
Peak-hour factor, PHF	0.89	0.89	0.89	0.97	0.97	0.97	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	211	373	342	80	454	33	578	170	26	20	98	195
RTOR Reduction (vph)	0	0	127	0	2	0	0	13	0	0	0	0
Lane Group Flow (vph)	211	373	215	80	485	0	578	183	0	0	118	195
Confl. Peds. (#/hr)	8		30	30		8	62		27	27		62
Confl. Bikes (#/hr)			6						3			3
Heavy Vehicles (%)	5%	8%	2%	4%	1%	0%	1%	21%	9%	24%	16%	14%
Parking (#/hr)						0						
Turn Type	Perm	NA	pt+ov	Perm	NA		pm+pt	NA		Perm	NA	Free
Protected Phases		5	5 6		5		6	1 6			1	
Permitted Phases	5			5			1 6			1		Free
Actuated Green, G (s)	42.0	42.0	63.0	42.0	42.0		29.6	29.6			13.6	100.0
Effective Green, g (s)	42.0	42.0	63.0	42.0	42.0		29.6	29.6			13.6	100.0
Actuated g/C Ratio	0.42	0.42	0.63	0.42	0.42		0.30	0.30			0.14	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0				5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0				2.0	
Lane Grp Cap (vph)	223	738	997	310	781		385	969			198	1373
v/s Ratio Prot		0.21	0.14		0.26		c0.24	0.03				
v/s Ratio Perm	c0.40			0.11			c0.20	0.04			0.08	c0.14
v/c Ratio	0.95	0.51	0.22	0.26	0.62		1.50	0.19			0.60	0.14
Uniform Delay, d1	27.9	21.4	7.9	18.9	22.7		33.9	26.2			40.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.86	0.81			1.00	1.00
Incremental Delay, d2	44.9	0.5	0.1	0.4	1.5		238.0	0.4			12.5	0.2
Delay (s)	72.8	21.9	8.0	19.3	24.3		267.3	21.7			53.2	0.2
Level of Service	E	C	A	B	C		F	C			D	A
Approach Delay (s)		28.4			23.6			205.1			20.2	
Approach LOS		C			C			F			C	

Intersection Summary			
HCM 2000 Control Delay	79.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	305	26	91	439	40	25	329	69	68	345	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0		5.0	5.0	
Lane Util. Factor		0.95			1.00			1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.99			0.99		1.00	0.97	
Flpb, ped/bikes		0.99			0.99			1.00		0.98	1.00	
Frt		0.99			0.99			0.98		1.00	0.97	
Flt Protected		0.99			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		3300			1765			1724		1605	1666	
Flt Permitted		0.84			0.87			0.78		0.31	1.00	
Satd. Flow (perm)		2804			1546			1343		527	1666	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	45	318	27	95	457	42	27	358	75	72	367	91
RTOR Reduction (vph)	0	5	0	0	3	0	0	9	0	0	11	0
Lane Group Flow (vph)	0	385	0	0	591	0	0	451	0	72	447	0
Confl. Peds. (#/hr)	79		24	24		79	67		54	54		67
Heavy Vehicles (%)	3%	7%	5%	19%	1%	0%	0%	4%	17%	10%	8%	5%
Parking (#/hr)			0			0						
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		50.6			50.6			29.4		29.4	29.4	
Effective Green, g (s)		50.6			50.6			29.4		29.4	29.4	
Actuated g/C Ratio		0.56			0.56			0.33		0.33	0.33	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		2.0			2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		1576			869			438		172	544	
v/s Ratio Prot											0.27	
v/s Ratio Perm		0.14			c0.38			c0.34		0.14		
v/c Ratio		0.24			0.68			1.03		0.42	0.82	
Uniform Delay, d1		10.0			14.0			30.3		23.6	27.9	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.4			4.3			51.0		0.6	9.3	
Delay (s)		10.4			18.3			81.3		24.2	37.2	
Level of Service		B			B			F		C	D	
Approach Delay (s)		10.4			18.3			81.3			35.4	
Approach LOS		B			B			F			D	

Intersection Summary			
HCM 2000 Control Delay	36.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	103.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	ø10
Lane Configurations							
Volume (vph)	707	195	0	790	407	21	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)		100	0		0	0	
Storage Lanes		1	0		1	0	
Taper Length (ft)			25		25		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Frt		0.850			0.993		
Flt Protected					0.955		
Satd. Flow (prot)	3438	1568	0	3539	1731	0	
Flt Permitted					0.955		
Satd. Flow (perm)	3438	1568	0	3539	1731	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		253			3		
Link Speed (mph)	30			30	30		
Link Distance (ft)	601			452	370		
Travel Time (s)	13.7			10.3	8.4		
Peak Hour Factor	0.77	0.77	0.85	0.85	0.95	0.95	
Heavy Vehicles (%)	5%	3%	0%	2%	3%	25%	
Adj. Flow (vph)	918	253	0	929	428	22	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	918	253	0	929	450	0	
Turn Type	NA	pt+ov		NA	NA		
Protected Phases	1	1 3		1	3		10
Permitted Phases							
Detector Phase	1	1 3		1	3		
Switch Phase							
Minimum Initial (s)	4.0			4.0	4.0		1.0
Minimum Split (s)	21.0			21.0	21.0		31.0
Total Split (s)	27.0			27.0	42.0		31.0
Total Split (%)	27.0%			27.0%	42.0%		31%
Maximum Green (s)	22.0			22.0	37.0		26.0
Yellow Time (s)	3.0			3.0	3.0		2.0
All-Red Time (s)	2.0			2.0	2.0		3.0



Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	ø10
Lost Time Adjust (s)	2.0			0.0	0.0		
Total Lost Time (s)	7.0			5.0	5.0		
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0			3.0	3.0		3.0
Recall Mode	Max			Max	C-Max		None
Walk Time (s)							7.0
Flash Dont Walk (s)							19.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	51.0	100.0		53.0	37.0		
Actuated g/C Ratio	0.51	1.00		0.53	0.37		
v/c Ratio	0.52	0.16		0.50	0.70		
Control Delay	17.7	0.2		13.1	11.8		
Queue Delay	0.0	0.0		0.0	4.4		
Total Delay	17.7	0.2		13.1	16.2		
LOS	B	A		B	B		
Approach Delay	14.0			13.1	16.2		
Approach LOS	B			B	B		
90th %ile Green (s)	53.0			53.0	37.0		0.0
90th %ile Term Code	MaxR			MaxR	Coord		Skip
70th %ile Green (s)	53.0			53.0	37.0		0.0
70th %ile Term Code	MaxR			MaxR	Coord		Skip
50th %ile Green (s)	53.0			53.0	37.0		0.0
50th %ile Term Code	MaxR			MaxR	Coord		Skip
30th %ile Green (s)	53.0			53.0	37.0		0.0
30th %ile Term Code	MaxR			MaxR	Coord		Skip
10th %ile Green (s)	53.0			53.0	37.0		0.0
10th %ile Term Code	MaxR			MaxR	Coord		Skip
Queue Length 50th (ft)	197	0		292	165		
Queue Length 95th (ft)	202	0		288	m169		
Internal Link Dist (ft)	521			372	290		
Turn Bay Length (ft)		100					
Base Capacity (vph)	1753	1568		1875	642		
Starvation Cap Reductn	0	0		0	125		

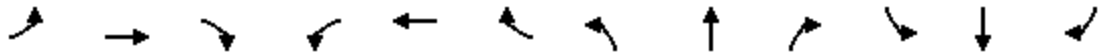
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	ø10
Spillback Cap Reductn	0	0		0	0		
Storage Cap Reductn	0	0		0	0		
Reduced v/c Ratio	0.52	0.16		0.50	0.87		

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 37 (37%), Referenced to phase 3:SWL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 14.0		Intersection LOS: B	
Intersection Capacity Utilization 54.0%		ICU Level of Service A	
Analysis Period (min) 15			

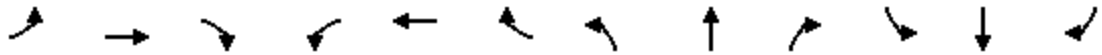
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dorchester Ave. & A Street

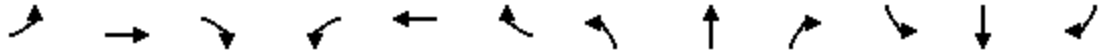




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	180	163	2	368	27	310	414	4	86	625	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	200		0	0		60
Storage Lanes	0		1	0		0	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	1.00
Frt			0.850		0.991				0.850			0.850
Flt Protected		0.992					0.950				0.994	
Satd. Flow (prot)	0	1813	1599	0	1883	0	1787	3406	1615	0	3526	1429
Flt Permitted		0.814			0.999		0.245				0.816	
Satd. Flow (perm)	0	1487	1599	0	1881	0	461	3406	1615	0	2895	1429
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			187		4				22			76
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		787			298			452			440	
Travel Time (s)		17.9			6.8			10.3			10.0	
Peak Hour Factor	0.87	0.87	0.87	0.95	0.95	0.95	0.91	0.91	0.91	0.92	0.92	0.92
Heavy Vehicles (%)	19%	1%	1%	0%	0%	0%	1%	6%	0%	0%	2%	13%
Adj. Flow (vph)	41	207	187	2	387	28	341	455	4	93	679	147
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	248	187	0	417	0	341	455	4	0	772	147
Turn Type	Perm	NA	Perm	Perm	NA		D.P+P	NA	Perm	Perm	NA	Perm
Protected Phases		3			3		1	1 2			2	
Permitted Phases	3		3	3			2		1 2	2		2
Detector Phase	3	3	3	3	3		1	1 2	1 2	2	2	2
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0			8.0	8.0	8.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0		13.0			27.0	27.0	27.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0		20.0			44.0	44.0	44.0
Total Split (%)	36.0%	36.0%	36.0%	36.0%	36.0%		20.0%			44.0%	44.0%	44.0%
Maximum Green (s)	31.0	31.0	31.0	31.0	31.0		15.0			39.0	39.0	39.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0			3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0			2.0	2.0	2.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)		0.0	0.0		0.0		0.0				0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0		5.0				5.0	5.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0			3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None			Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0					10.0	10.0	10.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0					12.0	12.0	12.0
Pedestrian Calls (#/hr)	0	0	0	0	0					0	0	0
Act Effct Green (s)		31.0	31.0		31.0		54.0	59.0	59.0		39.6	39.6
Actuated g/C Ratio		0.31	0.31		0.31		0.54	0.59	0.59		0.40	0.40
v/c Ratio		0.54	0.30		0.71		0.78	0.23	0.00		0.67	0.24
Control Delay		33.8	5.2		46.4		47.1	23.8	6.8		32.7	14.1
Queue Delay		0.0	0.0		55.4		0.0	0.0	0.0		0.4	0.0
Total Delay		33.8	5.2		101.8		47.1	23.8	6.8		33.1	14.1
LOS		C	A		F		D	C	A		C	B
Approach Delay		21.5			101.8			33.7			30.0	
Approach LOS		C			F			C			C	
90th %ile Green (s)	31.0	31.0	31.0	31.0	31.0		15.0			39.0	39.0	39.0
90th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max			MaxR	MaxR	MaxR
70th %ile Green (s)	31.0	31.0	31.0	31.0	31.0		15.0			39.0	39.0	39.0
70th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max			MaxR	MaxR	MaxR
50th %ile Green (s)	31.0	31.0	31.0	31.0	31.0		15.0			39.0	39.0	39.0
50th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max			MaxR	MaxR	MaxR
30th %ile Green (s)	31.0	31.0	31.0	31.0	31.0		15.0			39.0	39.0	39.0
30th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max			MaxR	MaxR	MaxR
10th %ile Green (s)	31.0	31.0	31.0	31.0	31.0		12.2			41.8	41.8	41.8
10th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Gap			MaxR	MaxR	MaxR
Queue Length 50th (ft)		130	0		237		213	127	0		238	35
Queue Length 95th (ft)		201	43		m290		#319	177	m0		311	m59
Internal Link Dist (ft)		707			218			372			360	
Turn Bay Length (ft)							200					60
Base Capacity (vph)		460	624		585		450	1994	954		1145	611
Starvation Cap Reductn		0	0		219		0	0	0		65	0



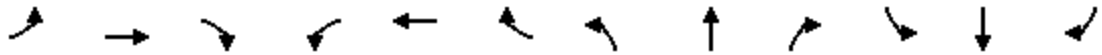
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0	0		0		0	0	97		87	0
Storage Cap Reductn		0	0		0		0	0	0		0	0
Reduced v/c Ratio		0.54	0.30		1.14		0.76	0.23	0.00		0.73	0.24

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 3:EBWB, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 41.4		Intersection LOS: D	
Intersection Capacity Utilization 86.2%		ICU Level of Service E	
Analysis Period (min) 15			

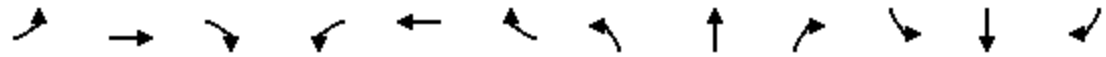
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Dorchester Ave. & W 4th Street





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lane Configurations													
Volume (vph)	154	114	3	6	90	8	2	186	4	12	417	305	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.999			0.990			0.997			0.944		
Flt Protected		0.972			0.997						0.999		
Satd. Flow (prot)	0	1835	0	0	1875	0	0	1876	0	0	1752	0	
Flt Permitted		0.771			0.981			0.996			0.995		
Satd. Flow (perm)	0	1455	0	0	1845	0	0	1869	0	0	1745	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)					4			2			49		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		298			374			370			288		
Travel Time (s)		6.8			8.5			8.4			6.5		
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.82	0.82	0.82	0.96	0.96	0.96	
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	4%	0%	
Adj. Flow (vph)	171	127	3	7	102	9	2	227	5	12	434	318	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	301	0	0	118	0	0	234	0	0	764	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		1			1			5			5		9
Permitted Phases	1			1			5			5			
Detector Phase	1	1		1	1		5	5		5	5		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0		1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		13.0	13.0		13.0	13.0		15.0
Total Split (s)	30.0	30.0		30.0	30.0		53.0	53.0		53.0	53.0		17.0
Total Split (%)	30.0%	30.0%		30.0%	30.0%		53.0%	53.0%		53.0%	53.0%		17%
Maximum Green (s)	25.0	25.0		25.0	25.0		48.0	48.0		48.0	48.0		15.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0		0.0
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		5.0			5.0			5.0			5.0		
Lead/Lag													

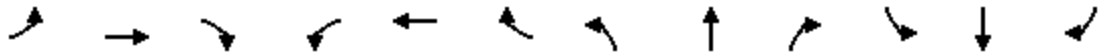


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lead-Lag Optimize?													
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		3.0
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max		None
Walk Time (s)													5.0
Flash Dont Walk (s)													8.0
Pedestrian Calls (#/hr)													0
Act Effct Green (s)		42.0			42.0			48.0			48.0		
Actuated g/C Ratio		0.42			0.42			0.48			0.48		
v/c Ratio		0.49			0.15			0.26			0.89		
Control Delay		35.5			18.0			16.3			36.0		
Queue Delay		4.4			84.4			0.0			49.2		
Total Delay		39.9			102.4			16.3			85.2		
LOS		D			F			B			F		
Approach Delay		39.9			102.4			16.3			85.2		
Approach LOS		D			F			B			F		
90th %ile Green (s)	42.0	42.0		42.0	42.0		48.0	48.0		48.0	48.0		0.0
90th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
70th %ile Green (s)	42.0	42.0		42.0	42.0		48.0	48.0		48.0	48.0		0.0
70th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
50th %ile Green (s)	42.0	42.0		42.0	42.0		48.0	48.0		48.0	48.0		0.0
50th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
30th %ile Green (s)	42.0	42.0		42.0	42.0		48.0	48.0		48.0	48.0		0.0
30th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
10th %ile Green (s)	42.0	42.0		42.0	42.0		48.0	48.0		48.0	48.0		0.0
10th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
Queue Length 50th (ft)		151			44			85			403		
Queue Length 95th (ft)		238			78			121			#653		
Internal Link Dist (ft)		218			294			290			208		
Turn Bay Length (ft)													
Base Capacity (vph)		611			777			898			863		
Starvation Cap Reductn		232			0			0			286		
Spillback Cap Reductn		0			697			0			53		
Storage Cap Reductn		0			0			0			0		
Reduced v/c Ratio		0.79			1.48			0.26			1.32		

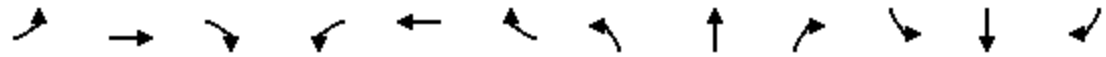
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 85 (85%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 65.6		Intersection LOS: E	
Intersection Capacity Utilization 78.1%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: A Street & W 4th Street

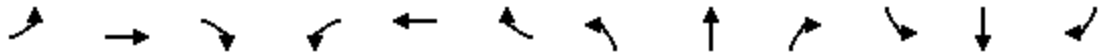




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Lane Configurations													
Volume (vph)	90	369	514	89	250	31	372	49	56	26	243	231	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	120		0	125		0	0		90	0		0	
Storage Lanes	1		1	1		0	1		0	0		1	
Taper Length (ft)	25			50			25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.95	1.00	1.00	1.00	
Ped Bike Factor	0.96			0.94	0.99		0.96	0.94			0.99	0.97	
Frt			0.850		0.983			0.920				0.850	
Flt Protected	0.950			0.950			0.950				0.995		
Satd. Flow (prot)	1752	1845	1583	1770	1827	0	1535	2634	0	0	1831	1553	
Flt Permitted	0.380			0.326			0.246				0.956		
Satd. Flow (perm)	671	1845	1583	572	1827	0	380	2634	0	0	1745	1507	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			524		6			68				254	
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		657			600			440			211		
Travel Time (s)		14.9			13.6			10.0			4.8		
Confl. Peds. (#/hr)	41		110	110		41	57		35	35		57	
Confl. Bikes (#/hr)			6						3			3	
Peak Hour Factor	0.98	0.98	0.98	0.84	0.84	0.84	0.82	0.82	0.82	0.91	0.91	0.91	
Heavy Vehicles (%)	3%	3%	2%	2%	1%	0%	7%	26%	2%	24%	1%	4%	
Parking (#/hr)						0							
Adj. Flow (vph)	92	377	524	106	298	37	454	60	68	29	267	254	
Shared Lane Traffic (%)							0%						
Lane Group Flow (vph)	92	377	524	106	335	0	454	128	0	0	296	254	
Turn Type	Perm	NA	pt+ov	Perm	NA		pm+pt	NA		Perm	NA	Free	
Protected Phases		5	5 6		5		6	1 6			1		2
Permitted Phases	5			5			1 6			1		Free	
Detector Phase	5	5	5 6	5	5		6	1 6		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		6.0			8.0	8.0		4.0
Minimum Split (s)	13.0	13.0		13.0	13.0		11.0			23.0	23.0		23.0
Total Split (s)	25.0	25.0		25.0	25.0		25.0			27.0	27.0		23.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Total Split (%)	25.0%	25.0%		25.0%	25.0%		25.0%			27.0%	27.0%		23%
Maximum Green (s)	20.0	20.0		20.0	20.0		20.0			22.0	22.0		21.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0			3.0	3.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0			2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0				0.0		
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0				5.0		
Lead/Lag	Lead	Lead		Lead	Lead		Lag			Lead	Lead		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0			2.0	2.0		3.0
Recall Mode	None	None		None	None		Max			C-Min	C-Min		None
Walk Time (s)										7.0	7.0		7.0
Flash Dont Walk (s)										11.0	11.0		12.0
Pedestrian Calls (#/hr)										30	30		30
Act Effct Green (s)	32.6	32.6	57.6	32.6	32.6		39.8	44.8			19.8	100.0	
Actuated g/C Ratio	0.33	0.33	0.58	0.33	0.33		0.40	0.45			0.20	1.00	
v/c Ratio	0.42	0.63	0.46	0.57	0.56		1.19	0.11			0.86	0.17	
Control Delay	40.3	38.7	2.9	49.1	36.0		138.5	13.7			62.4	0.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0	
Total Delay	40.3	38.7	2.9	49.1	36.0		138.5	13.7			62.4	0.2	
LOS	D	D	A	D	D		F	B			E	A	
Approach Delay		20.0			39.1			111.0			33.7		
Approach LOS		B			D			F			C		
90th %ile Green (s)	22.0	22.0		22.0	22.0		20.0			22.0	22.0		19.0
90th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Ped
70th %ile Green (s)	22.0	22.0		22.0	22.0		20.0			22.0	22.0		19.0
70th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Ped
50th %ile Green (s)	22.3	22.3		22.3	22.3		20.0			21.7	21.7		19.0
50th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Ped
30th %ile Green (s)	46.3	46.3		46.3	46.3		20.0			18.7	18.7		0.0
30th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Skip
10th %ile Green (s)	50.6	50.6		50.6	50.6		20.0			14.4	14.4		0.0
10th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Skip
Queue Length 50th (ft)	53	236	0	65	200		~330	15			179	0	
Queue Length 95th (ft)	#126	#412	55	#150	#304		#464	m39			#303	0	

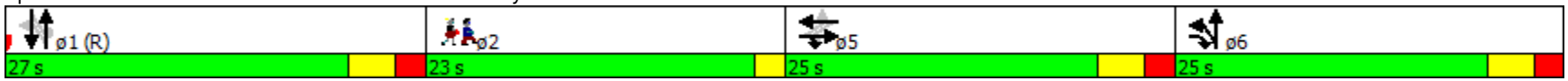


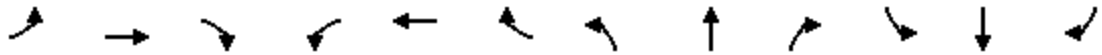
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Internal Link Dist (ft)		577			520			360			131		
Turn Bay Length (ft)	120			125									
Base Capacity (vph)	218	602	1134	186	600		382	1274			383	1507	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	0	
Reduced v/c Ratio	0.42	0.63	0.46	0.57	0.56		1.19	0.10			0.77	0.17	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.19
Intersection Signal Delay: 46.9 Intersection LOS: D
Intersection Capacity Utilization 72.8% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Dorchester Ave. & West Broadway

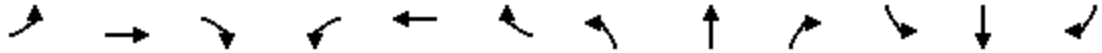




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	57	390	30	98	248	39	25	250	74	103	612	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	0		0	0		0	100		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	50			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.95			0.91			0.98		0.97	0.97	
Frt		0.991			0.986			0.971			0.979	
Flt Protected		0.994			0.987			0.996		0.950		
Satd. Flow (prot)	0	3169	0	0	1672	0	0	1735	0	1752	1752	0
Flt Permitted		0.846			0.733			0.612		0.468		
Satd. Flow (perm)	0	2656	0	0	1166	0	0	1066	0	838	1752	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			8			21			12	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		600			564			288			195	
Travel Time (s)		13.6			12.8			6.5			4.4	
Confl. Peds. (#/hr)	147		320	320		147	87		52	52		87
Peak Hour Factor	0.94	0.94	0.94	0.89	0.89	0.89	0.91	0.91	0.91	0.93	0.93	0.93
Heavy Vehicles (%)	8%	9%	0%	16%	3%	7%	5%	4%	5%	3%	4%	0%
Parking (#/hr)			0			0						
Adj. Flow (vph)	61	415	32	110	279	44	27	275	81	111	658	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	508	0	0	433	0	0	383	0	111	763	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Detector Phase	1	1		1	1		5	5		5	5	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.0	25.0		25.0	25.0		28.0	28.0		28.0	28.0	
Total Split (s)	42.0	42.0		42.0	42.0		48.0	48.0		48.0	48.0	
Total Split (%)	46.7%	46.7%		46.7%	46.7%		53.3%	53.3%		53.3%	53.3%	



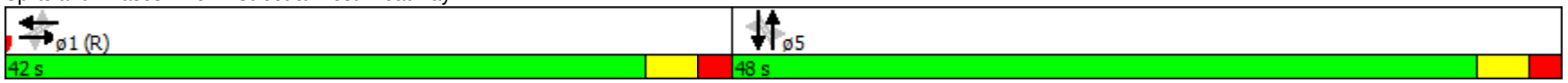
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	37.0	37.0		37.0	37.0		43.0	43.0		43.0	43.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
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	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	200	200		200	200		50	50		50	50	
Act Effct Green (s)		38.7			38.7			41.3		41.3	41.3	
Actuated g/C Ratio		0.43			0.43			0.46		0.46	0.46	
v/c Ratio		0.44			0.86			0.77		0.29	0.94	
Control Delay		19.7			42.3			30.7		17.0	44.2	
Queue Delay		0.0			0.0			10.4		0.0	0.0	
Total Delay		19.7			42.3			41.1		17.0	44.2	
LOS		B			D			D		B	D	
Approach Delay		19.7			42.3			41.1			40.7	
Approach LOS		B			D			D			D	
90th %ile Green (s)	37.0	37.0		37.0	37.0		43.0	43.0		43.0	43.0	
90th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Max	Max	
70th %ile Green (s)	37.0	37.0		37.0	37.0		43.0	43.0		43.0	43.0	
70th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Max	Max	
50th %ile Green (s)	37.0	37.0		37.0	37.0		43.0	43.0		43.0	43.0	
50th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Max	Max	
30th %ile Green (s)	38.2	38.2		38.2	38.2		41.8	41.8		41.8	41.8	
30th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
10th %ile Green (s)	44.5	44.5		44.5	44.5		35.5	35.5		35.5	35.5	
10th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
Queue Length 50th (ft)		105			220			160		36	378	
Queue Length 95th (ft)		151			#401			#294		74	#624	
Internal Link Dist (ft)		520			484			208			115	

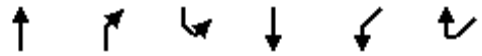


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)										100		
Base Capacity (vph)		1148			506			520		400	843	
Starvation Cap Reductn		0			0			111		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.44			0.86			0.94		0.28	0.91	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 31 (34%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 36.2		Intersection LOS: D	
Intersection Capacity Utilization 92.0%		ICU Level of Service F	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: A Street & West Broadway

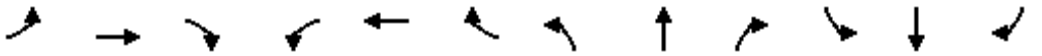




Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Volume (vph)	707	195	0	790	407	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Frt	1.00	0.85		1.00	0.99	
Flt Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	3438	1568		3539	1731	
Flt Permitted	1.00	1.00		1.00	0.95	
Satd. Flow (perm)	3438	1568		3539	1731	
Peak-hour factor, PHF	0.77	0.77	0.85	0.85	0.95	0.95
Adj. Flow (vph)	918	253	0	929	428	22
RTOR Reduction (vph)	0	0	0	0	2	0
Lane Group Flow (vph)	918	253	0	929	448	0
Heavy Vehicles (%)	5%	3%	0%	2%	3%	25%
Turn Type	NA	pt+ov		NA	NA	
Protected Phases	1	1 3		1	3	
Permitted Phases						
Actuated Green, G (s)	53.0	100.0		53.0	37.0	
Effective Green, g (s)	51.0	100.0		53.0	37.0	
Actuated g/C Ratio	0.51	1.00		0.53	0.37	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	1753	1568		1875	640	
v/s Ratio Prot	c0.27	0.16		0.26	c0.26	
v/s Ratio Perm						
v/c Ratio	0.52	0.16		0.50	0.70	
Uniform Delay, d1	16.4	0.0		15.0	26.8	
Progression Factor	1.00	1.00		0.81	0.32	
Incremental Delay, d2	1.1	0.2		0.8	3.1	
Delay (s)	17.5	0.2		12.9	11.6	
Level of Service	B	A		B	B	
Approach Delay (s)	13.8			12.9	11.6	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	180	163	2	368	27	310	414	4	86	625	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0	5.0		5.0	5.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00		0.95	1.00
Frt		1.00	0.85		0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected		0.99	1.00		1.00		0.95	1.00	1.00		0.99	1.00
Satd. Flow (prot)		1812	1599		1882		1787	3406	1615		3526	1429
Flt Permitted		0.81	1.00		1.00		0.24	1.00	1.00		0.82	1.00
Satd. Flow (perm)		1487	1599		1881		460	3406	1615		2896	1429
Peak-hour factor, PHF	0.87	0.87	0.87	0.95	0.95	0.95	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	41	207	187	2	387	28	341	455	4	93	679	147
RTOR Reduction (vph)	0	0	129	0	3	0	0	0	2	0	0	46
Lane Group Flow (vph)	0	248	58	0	414	0	341	455	2	0	772	101
Heavy Vehicles (%)	19%	1%	1%	0%	0%	0%	1%	6%	0%	0%	2%	13%
Turn Type	Perm	NA	Perm	Perm	NA		D.P+P	NA	Perm	Perm	NA	Perm
Protected Phases		3			3		1	1 2			2	
Permitted Phases	3		3	3			2		1 2	2		2
Actuated Green, G (s)		31.0	31.0		31.0		54.0	59.0	59.0		39.6	39.6
Effective Green, g (s)		31.0	31.0		31.0		54.0	59.0	59.0		39.6	39.6
Actuated g/C Ratio		0.31	0.31		0.31		0.54	0.59	0.59		0.40	0.40
Clearance Time (s)		5.0	5.0		5.0		5.0				5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0		3.0				3.0	3.0
Lane Grp Cap (vph)		460	495		583		439	2009	952		1146	565
v/s Ratio Prot							c0.11	0.13				
v/s Ratio Perm		0.17	0.04		c0.22		c0.31		0.00		0.27	0.07
v/c Ratio		0.54	0.12		0.71		0.78	0.23	0.00		0.67	0.18
Uniform Delay, d1		28.6	24.7		30.5		14.7	9.7	8.4		24.9	19.6
Progression Factor		1.00	1.00		1.33		2.98	2.41	1.00		1.18	1.27
Incremental Delay, d2		4.5	0.5		5.1		7.3	0.0	0.0		2.7	0.6
Delay (s)		33.1	25.2		45.8		51.0	23.4	8.4		31.9	25.5
Level of Service		C	C		D		D	C	A		C	C
Approach Delay (s)		29.7			45.8			35.1			30.9	
Approach LOS		C			D			D			C	

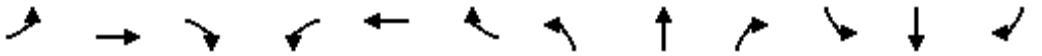
Intersection Summary			
HCM 2000 Control Delay	34.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	154	114	3	6	90	8	2	186	4	12	417	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			0.99			1.00			0.94	
Flt Protected		0.97			1.00			1.00			1.00	
Satd. Flow (prot)		1835			1875			1876			1752	
Flt Permitted		0.77			0.98			1.00			0.99	
Satd. Flow (perm)		1456			1845			1869			1744	
Peak-hour factor, PHF	0.90	0.90	0.90	0.88	0.88	0.88	0.82	0.82	0.82	0.96	0.96	0.96
Adj. Flow (vph)	171	127	3	7	102	9	2	227	5	12	434	318
RTOR Reduction (vph)	0	0	0	0	2	0	0	1	0	0	25	0
Lane Group Flow (vph)	0	301	0	0	116	0	0	233	0	0	739	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		42.0			42.0			48.0			48.0	
Effective Green, g (s)		42.0			42.0			48.0			48.0	
Actuated g/C Ratio		0.42			0.42			0.48			0.48	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		611			774			897			837	
v/s Ratio Prot												
v/s Ratio Perm		c0.21			0.06			0.12			c0.42	
v/c Ratio		0.49			0.15			0.26			0.88	
Uniform Delay, d1		21.2			17.9			15.4			23.5	
Progression Factor		1.52			1.00			1.00			1.00	
Incremental Delay, d2		2.3			0.4			0.7			13.0	
Delay (s)		34.6			18.4			16.1			36.4	
Level of Service		C			B			B			D	
Approach Delay (s)		34.6			18.4			16.1			36.4	
Approach LOS		C			B			B			D	

Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	369	514	89	250	31	372	49	56	26	243	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.91	0.91			1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99		1.00	0.94			1.00	0.97
Flpb, ped/bikes	0.97	1.00	1.00	0.95	1.00		0.99	1.00			0.99	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.92			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1694	1845	1583	1684	1835		1521	2634			1817	1507
Flt Permitted	0.38	1.00	1.00	0.33	1.00		0.25	1.00			0.96	1.00
Satd. Flow (perm)	678	1845	1583	577	1835		393	2634			1746	1507
Peak-hour factor, PHF	0.98	0.98	0.98	0.84	0.84	0.84	0.82	0.82	0.82	0.91	0.91	0.91
Adj. Flow (vph)	92	377	524	106	298	37	454	60	68	29	267	254
RTOR Reduction (vph)	0	0	222	0	4	0	0	41	0	0	0	0
Lane Group Flow (vph)	92	377	302	106	331	0	454	87	0	0	296	254
Confl. Peds. (#/hr)	41		110	110		41	57		35	35		57
Confl. Bikes (#/hr)			6						3			3
Heavy Vehicles (%)	3%	3%	2%	2%	1%	0%	7%	26%	2%	24%	1%	4%
Parking (#/hr)						0						
Turn Type	Perm	NA	pt+ov	Perm	NA		pm+pt	NA		Perm	NA	Free
Protected Phases		5	5 6		5		6	1 6			1	
Permitted Phases	5			5			1 6			1		Free
Actuated Green, G (s)	32.6	32.6	57.6	32.6	32.6		39.0	39.0			19.0	100.0
Effective Green, g (s)	32.6	32.6	57.6	32.6	32.6		39.0	39.0			19.0	100.0
Actuated g/C Ratio	0.33	0.33	0.58	0.33	0.33		0.39	0.39			0.19	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0				5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0				2.0	
Lane Grp Cap (vph)	221	601	911	188	598		378	1158			331	1507
v/s Ratio Prot		c0.20	0.19		0.18		c0.24	0.01				
v/s Ratio Perm	0.14			0.18			c0.23	0.02			0.17	c0.17
v/c Ratio	0.42	0.63	0.33	0.56	0.55		1.20	0.07			0.89	0.17
Uniform Delay, d1	26.3	28.6	11.1	27.8	27.7		25.9	19.2			39.5	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.24	1.79			1.00	1.00
Incremental Delay, d2	1.3	2.1	0.2	3.8	1.1		112.8	0.1			28.7	0.2
Delay (s)	27.6	30.6	11.3	31.7	28.8		145.0	34.5			68.2	0.2
Level of Service	C	C	B	C	C		F	C			E	A
Approach Delay (s)		20.1			29.5			120.7			36.8	
Approach LOS		C			C			F			D	

Intersection Summary			
HCM 2000 Control Delay	48.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	57	390	30	98	248	39	25	250	74	103	612	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0		5.0	5.0	
Lane Util. Factor		0.95			1.00			1.00		1.00	1.00	
Frpb, ped/bikes		0.97			0.97			0.98		1.00	0.97	
Flpb, ped/bikes		0.98			0.94			1.00		0.97	1.00	
Frt		0.99			0.99			0.97		1.00	0.98	
Flt Protected		0.99			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		3119			1571			1737		1702	1752	
Flt Permitted		0.85			0.73			0.61		0.47	1.00	
Satd. Flow (perm)		2653			1165			1067		839	1752	
Peak-hour factor, PHF	0.94	0.94	0.94	0.89	0.89	0.89	0.91	0.91	0.91	0.93	0.93	0.93
Adj. Flow (vph)	61	415	32	110	279	44	27	275	81	111	658	105
RTOR Reduction (vph)	0	5	0	0	5	0	0	11	0	0	6	0
Lane Group Flow (vph)	0	503	0	0	428	0	0	372	0	111	757	0
Confl. Peds. (#/hr)	147		320	320		147	87		52	52		87
Heavy Vehicles (%)	8%	9%	0%	16%	3%	7%	5%	4%	5%	3%	4%	0%
Parking (#/hr)			0			0						
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		38.7			38.7			41.3		41.3	41.3	
Effective Green, g (s)		38.7			38.7			41.3		41.3	41.3	
Actuated g/C Ratio		0.43			0.43			0.46		0.46	0.46	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		2.0			2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		1140			500			489		385	803	
v/s Ratio Prot											c0.43	
v/s Ratio Perm		0.19			c0.37			0.35		0.13		
v/c Ratio		0.44			0.86			0.76		0.29	0.94	
Uniform Delay, d1		18.0			23.2			20.2		15.2	23.2	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		1.2			17.0			6.0		0.2	18.9	
Delay (s)		19.3			40.2			26.2		15.3	42.1	
Level of Service		B			D			C		B	D	
Approach Delay (s)		19.3			40.2			26.2			38.7	
Approach LOS		B			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	32.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	ø10
Lane Configurations							
Volume (vph)	1229	322	0	367	183	26	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)		100	0		0	0	
Storage Lanes		1	0		1	0	
Taper Length (ft)			25		25		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Frt		0.850			0.983		
Flt Protected					0.958		
Satd. Flow (prot)	3505	1568	0	3471	1575	0	
Flt Permitted					0.958		
Satd. Flow (perm)	3505	1568	0	3471	1575	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		249			7		
Link Speed (mph)	30			30	30		
Link Distance (ft)	601			452	370		
Travel Time (s)	13.7			10.3	8.4		
Peak Hour Factor	0.89	0.89	0.88	0.88	0.90	0.90	
Heavy Vehicles (%)	3%	3%	0%	4%	7%	60%	
Adj. Flow (vph)	1381	362	0	417	203	29	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1381	362	0	417	232	0	
Turn Type	NA	pt+ov		NA	NA		
Protected Phases	1	1 3		1	3		10
Permitted Phases							
Detector Phase	1	1 3		1	3		
Switch Phase							
Minimum Initial (s)	4.0			4.0	4.0		1.0
Minimum Split (s)	21.0			21.0	21.0		31.0
Total Split (s)	37.0			37.0	32.0		31.0
Total Split (%)	37.0%			37.0%	32.0%		31%
Maximum Green (s)	32.0			32.0	27.0		26.0
Yellow Time (s)	3.0			3.0	3.0		2.0
All-Red Time (s)	2.0			2.0	2.0		3.0



Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	ø10
Lost Time Adjust (s)	2.0			0.0	0.0		
Total Lost Time (s)	7.0			5.0	5.0		
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0			3.0	3.0		3.0
Recall Mode	Max			Max	C-Max		None
Walk Time (s)							7.0
Flash Dont Walk (s)							19.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	61.0	100.0		63.0	27.0		
Actuated g/C Ratio	0.61	1.00		0.63	0.27		
v/c Ratio	0.65	0.23		0.19	0.54		
Control Delay	14.3	0.3		2.2	26.2		
Queue Delay	0.1	0.0		0.0	2.3		
Total Delay	14.4	0.3		2.2	28.4		
LOS	B	A		A	C		
Approach Delay	11.5			2.2	28.4		
Approach LOS	B			A	C		
90th %ile Green (s)	63.0			63.0	27.0		0.0
90th %ile Term Code	MaxR			MaxR	Coord		Skip
70th %ile Green (s)	63.0			63.0	27.0		0.0
70th %ile Term Code	MaxR			MaxR	Coord		Skip
50th %ile Green (s)	63.0			63.0	27.0		0.0
50th %ile Term Code	MaxR			MaxR	Coord		Skip
30th %ile Green (s)	63.0			63.0	27.0		0.0
30th %ile Term Code	MaxR			MaxR	Coord		Skip
10th %ile Green (s)	63.0			63.0	27.0		0.0
10th %ile Term Code	MaxR			MaxR	Coord		Skip
Queue Length 50th (ft)	274	0		14	138		
Queue Length 95th (ft)	337	0		14	m219		
Internal Link Dist (ft)	521			372	290		
Turn Bay Length (ft)		100					
Base Capacity (vph)	2138	1568		2186	430		
Starvation Cap Reductn	0	0		0	0		

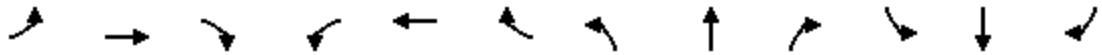
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	ø10
Spillback Cap Reductn	90	0		0	99		
Storage Cap Reductn	0	0		0	0		
Reduced v/c Ratio	0.67	0.23		0.19	0.70		

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 37 (37%), Referenced to phase 3:SWL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 11.5		Intersection LOS: B	
Intersection Capacity Utilization 55.7%		ICU Level of Service B	
Analysis Period (min) 15			

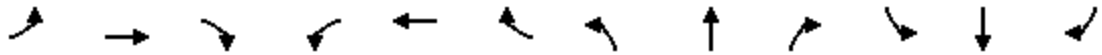
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dorchester Ave. & A Street

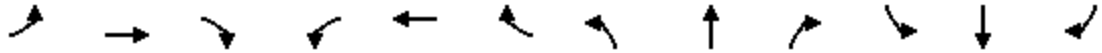




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	164	107	5	395	21	577	669	9	67	255	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	200		0	0		60
Storage Lanes	0		1	0		0	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	1.00
Frt			0.850		0.993				0.850			0.850
Flt Protected		0.992			0.999		0.950				0.990	
Satd. Flow (prot)	0	1784	1615	0	1863	0	1752	3406	1455	0	3477	1357
Flt Permitted		0.845			0.997		0.431				0.679	
Satd. Flow (perm)	0	1519	1615	0	1859	0	795	3406	1455	0	2385	1357
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			114		3				22			143
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		787			298			452			440	
Travel Time (s)		17.9			6.8			10.3			10.0	
Peak Hour Factor	0.94	0.94	0.94	0.95	0.95	0.95	0.90	0.90	0.90	0.88	0.88	0.88
Heavy Vehicles (%)	4%	6%	0%	0%	1%	5%	3%	6%	11%	2%	3%	19%
Adj. Flow (vph)	35	174	114	5	416	22	641	743	10	76	290	176
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	209	114	0	443	0	641	743	10	0	366	176
Turn Type	Perm	NA	Perm	Perm	NA		D.P+P	NA	Perm	Perm	NA	Perm
Protected Phases		3			3		1	1 2			2	
Permitted Phases	3		3	3			2		1 2	2		2
Detector Phase	3	3	3	3	3		1	1 2	1 2	2	2	2
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0			8.0	8.0	8.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0		13.0			27.0	27.0	27.0
Total Split (s)	38.0	38.0	38.0	38.0	38.0		35.0			27.0	27.0	27.0
Total Split (%)	38.0%	38.0%	38.0%	38.0%	38.0%		35.0%			27.0%	27.0%	27.0%
Maximum Green (s)	33.0	33.0	33.0	33.0	33.0		30.0			22.0	22.0	22.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0			3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0			2.0	2.0	2.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)		0.0	0.0		0.0		0.0				0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0		5.0				5.0	5.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0			3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None			Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0					10.0	10.0	10.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0					12.0	12.0	12.0
Pedestrian Calls (#/hr)	0	0	0	0	0					0	0	0
Act Effct Green (s)		33.0	33.0		33.0		52.0	57.0	57.0		22.4	22.4
Actuated g/C Ratio		0.33	0.33		0.33		0.52	0.57	0.57		0.22	0.22
v/c Ratio		0.42	0.19		0.72		0.92	0.38	0.01		0.69	0.43
Control Delay		29.2	5.5		32.3		52.1	19.0	7.2		46.0	14.7
Queue Delay		0.2	0.0		16.7		2.3	0.4	0.0		0.0	0.0
Total Delay		29.4	5.5		49.0		54.4	19.4	7.2		46.0	14.7
LOS		C	A		D		D	B	A		D	B
Approach Delay		20.9			49.0			35.4			35.8	
Approach LOS		C			D			D			D	
90th %ile Green (s)	33.0	33.0	33.0	33.0	33.0		30.0			22.0	22.0	22.0
90th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max			MaxR	MaxR	MaxR
70th %ile Green (s)	33.0	33.0	33.0	33.0	33.0		30.0			22.0	22.0	22.0
70th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max			MaxR	MaxR	MaxR
50th %ile Green (s)	33.0	33.0	33.0	33.0	33.0		30.0			22.0	22.0	22.0
50th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max			MaxR	MaxR	MaxR
30th %ile Green (s)	33.0	33.0	33.0	33.0	33.0		30.0			22.0	22.0	22.0
30th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max			MaxR	MaxR	MaxR
10th %ile Green (s)	33.0	33.0	33.0	33.0	33.0		28.2			23.8	23.8	23.8
10th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Gap			MaxR	MaxR	MaxR
Queue Length 50th (ft)		103	0		165		358	160	0		121	28
Queue Length 95th (ft)		170	37		317		#504	218	m1		168	85
Internal Link Dist (ft)		707			218			372			360	
Turn Bay Length (ft)							200					60
Base Capacity (vph)		501	609		615		703	1919	829		533	414
Starvation Cap Reductn		0	0		163		20	631	0		0	0



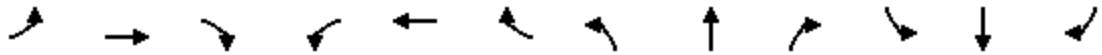
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		38	0		0		0	0	101		0	0
Storage Cap Reductn		0	0		0		0	0	0		0	0
Reduced v/c Ratio		0.45	0.19		0.98		0.94	0.58	0.01		0.69	0.43

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 3:EBWB, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 36.0		Intersection LOS: D	
Intersection Capacity Utilization 83.7%		ICU Level of Service E	
Analysis Period (min) 15			

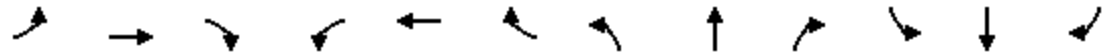
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Dorchester Ave. & W 4th Street





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lane Configurations													
Volume (vph)	113	122	5	12	159	11	11	299	5	8	192	252	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.997			0.992			0.998			0.925		
Flt Protected		0.977			0.997			0.998			0.999		
Satd. Flow (prot)	0	1796	0	0	1852	0	0	1834	0	0	1633	0	
Flt Permitted		0.763			0.974			0.980			0.994		
Satd. Flow (perm)	0	1403	0	0	1809	0	0	1801	0	0	1625	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		1			4			1			76		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		298			374			370			288		
Travel Time (s)		6.8			8.5			8.4			6.5		
Peak Hour Factor	0.82	0.82	0.82	0.85	0.85	0.85	0.93	0.93	0.93	0.95	0.95	0.95	
Heavy Vehicles (%)	0%	6%	0%	9%	1%	0%	10%	3%	0%	0%	15%	2%	
Adj. Flow (vph)	138	149	6	14	187	13	12	322	5	8	202	265	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	293	0	0	214	0	0	339	0	0	475	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		1			1			5			5		9
Permitted Phases	1			1			5			5			
Detector Phase	1	1		1	1		5	5		5	5		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0		1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		13.0	13.0		13.0	13.0		15.0
Total Split (s)	40.0	40.0		40.0	40.0		45.0	45.0		45.0	45.0		15.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%		45.0%	45.0%		45.0%	45.0%		15%
Maximum Green (s)	35.0	35.0		35.0	35.0		40.0	40.0		40.0	40.0		13.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0		0.0
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		5.0			5.0			5.0			5.0		
Lead/Lag													

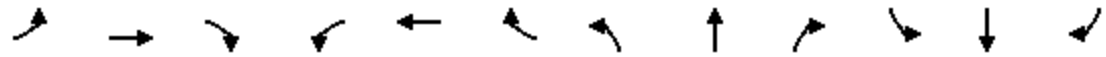


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lead-Lag Optimize?													
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		3.0
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max		None
Walk Time (s)													5.0
Flash Dont Walk (s)													8.0
Pedestrian Calls (#/hr)													0
Act Effct Green (s)		50.0			50.0			40.0			40.0		
Actuated g/C Ratio		0.50			0.50			0.40			0.40		
v/c Ratio		0.42			0.24			0.47			0.68		
Control Delay		28.4			14.8			24.8			26.5		
Queue Delay		3.8			0.1			1.3			36.2		
Total Delay		32.2			14.8			26.0			62.7		
LOS		C			B			C			E		
Approach Delay		32.2			14.8			26.0			62.7		
Approach LOS		C			B			C			E		
90th %ile Green (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0		0.0
90th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
70th %ile Green (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0		0.0
70th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
50th %ile Green (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0		0.0
50th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
30th %ile Green (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0		0.0
30th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
10th %ile Green (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0		0.0
10th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
Queue Length 50th (ft)		142			73			156			207		
Queue Length 95th (ft)		203			110			237			326		
Internal Link Dist (ft)		218			294			290			208		
Turn Bay Length (ft)													
Base Capacity (vph)		702			906			721			695		
Starvation Cap Reductn		318			0			201			243		
Spillback Cap Reductn		0			147			91			89		
Storage Cap Reductn		0			0			0			0		
Reduced v/c Ratio		0.76			0.28			0.65			1.05		

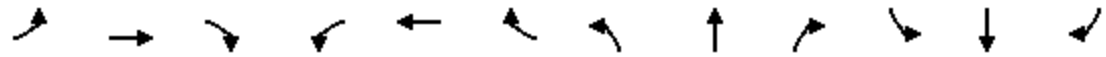
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 60 (60%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 38.8		Intersection LOS: D	
Intersection Capacity Utilization 64.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: A Street & W 4th Street

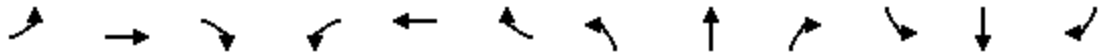




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Lane Configurations													
Volume (vph)	194	332	304	78	440	32	538	160	24	18	94	182	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	120		0	125		0	0		90	0		0	
Storage Lanes	1		1	1		0	1		0	0		1	
Taper Length (ft)	25			50			25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.95	1.00	1.00	1.00	
Ped Bike Factor	1.00			0.99	1.00		0.92	0.99			0.99	0.97	
Frt			0.850		0.990			0.980				0.850	
Flt Protected	0.950			0.950			0.950				0.992		
Satd. Flow (prot)	1719	1759	1583	1736	1859	0	1626	2802	0	0	1607	1417	
Flt Permitted	0.294			0.408			0.616				0.913		
Satd. Flow (perm)	530	1759	1583	735	1859	0	965	2802	0	0	1465	1373	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			342		4			18				198	
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		657			600			440			211		
Travel Time (s)		14.9			13.6			10.0			4.8		
Confl. Peds. (#/hr)	8		30	30		8	62		27	27		62	
Confl. Bikes (#/hr)			6						3			3	
Peak Hour Factor	0.89	0.89	0.89	0.97	0.97	0.97	0.93	0.93	0.93	0.92	0.92	0.92	
Heavy Vehicles (%)	5%	8%	2%	4%	1%	0%	1%	21%	9%	24%	16%	14%	
Parking (#/hr)						0							
Adj. Flow (vph)	218	373	342	80	454	33	578	172	26	20	102	198	
Shared Lane Traffic (%)							0%						
Lane Group Flow (vph)	218	373	342	80	487	0	578	198	0	0	122	198	
Turn Type	Perm	NA	pt+ov	Perm	NA		pm+pt	NA		Perm	NA	Free	
Protected Phases		5	5 6		5		6	1 6			1		2
Permitted Phases	5			5			1 6			1		Free	
Detector Phase	5	5	5 6	5	5		6	1 6		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		6.0			8.0	8.0		4.0
Minimum Split (s)	13.0	13.0		13.0	13.0		11.0			23.0	23.0		23.0
Total Split (s)	33.0	33.0		33.0	33.0		21.0			23.0	23.0		23.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Total Split (%)	33.0%	33.0%		33.0%	33.0%		21.0%			23.0%	23.0%		23%
Maximum Green (s)	28.0	28.0		28.0	28.0		16.0			18.0	18.0		21.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0			3.0	3.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0			2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0				0.0		
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0				5.0		
Lead/Lag	Lead	Lead		Lead	Lead		Lag			Lead	Lead		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0			2.0	2.0		3.0
Recall Mode	None	None		None	None		Max			C-Min	C-Min		None
Walk Time (s)										7.0	7.0		7.0
Flash Dont Walk (s)										11.0	11.0		12.0
Pedestrian Calls (#/hr)										30	30		30
Act Effct Green (s)	41.9	41.9	62.9	41.9	41.9		30.5	35.5			14.5	100.0	
Actuated g/C Ratio	0.42	0.42	0.63	0.42	0.42		0.30	0.36			0.14	1.00	
v/c Ratio	0.98	0.51	0.30	0.26	0.62		1.45	0.20			0.58	0.14	
Control Delay	92.5	28.8	2.3	28.1	31.6		239.6	16.2			50.0	0.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0	
Total Delay	92.5	28.8	2.3	28.1	31.6		239.6	16.2			50.0	0.2	
LOS	F	C	A	C	C		F	B			D	A	
Approach Delay		33.9			31.1			182.6			19.2		
Approach LOS		C			C			F			B		
90th %ile Green (s)	30.0	30.0		30.0	30.0		16.0			18.0	18.0		19.0
90th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Ped
70th %ile Green (s)	30.0	30.0		30.0	30.0		16.0			18.0	18.0		19.0
70th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Ped
50th %ile Green (s)	30.0	30.0		30.0	30.0		16.0			18.0	18.0		19.0
50th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Ped
30th %ile Green (s)	58.7	58.7		58.7	58.7		16.0			10.3	10.3		0.0
30th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Skip
10th %ile Green (s)	61.0	61.0		61.0	61.0		16.0			8.0	8.0		0.0
10th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Skip
Queue Length 50th (ft)	~185	210	0	40	291		~379	41			70	0	
Queue Length 95th (ft)	#326	312	41	84	#473		#615	m73			128	0	

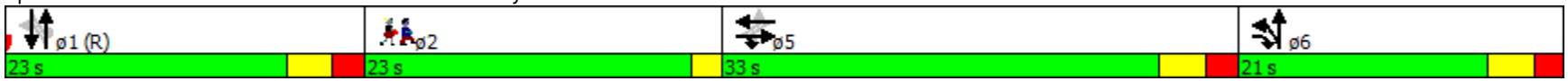


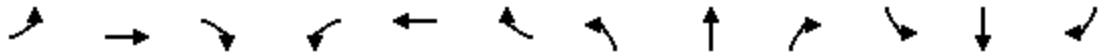
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Internal Link Dist (ft)		577			520			360			131		
Turn Bay Length (ft)	120			125									
Base Capacity (vph)	222	737	1122	308	781		399	1103			263	1373	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	0	
Reduced v/c Ratio	0.98	0.51	0.30	0.26	0.62		1.45	0.18			0.46	0.14	

Intersection Summary

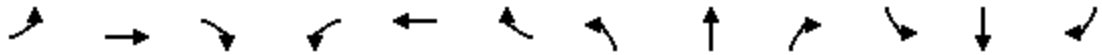
Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.45
Intersection Signal Delay: 75.9 Intersection LOS: E
Intersection Capacity Utilization 70.0% ICU Level 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: 4: Dorchester Ave. & West Broadway





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	305	26	91	439	42	25	329	69	68	345	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	0		0	0		0	100		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	50			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.98			0.99		0.98	0.97	
Frt		0.990			0.990			0.978			0.970	
Flt Protected		0.994			0.992			0.997		0.950		
Satd. Flow (prot)	0	3322	0	0	1772	0	0	1729	0	1641	1665	0
Flt Permitted		0.844			0.870			0.777		0.312		
Satd. Flow (perm)	0	2804	0	0	1546	0	0	1343	0	526	1665	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			6			13			16	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		600			564			288			195	
Travel Time (s)		13.6			12.8			6.5			4.4	
Confl. Peds. (#/hr)	79		24	24		79	67		54	54		67
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.92	0.92	0.92	0.94	0.94	0.94
Heavy Vehicles (%)	3%	7%	5%	19%	1%	0%	0%	4%	17%	10%	8%	5%
Parking (#/hr)			0			0						
Adj. Flow (vph)	45	318	27	95	457	44	27	358	75	72	367	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	390	0	0	596	0	0	460	0	72	458	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Detector Phase	1	1		1	1		5	5		5	5	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.0	25.0		25.0	25.0		28.0	28.0		28.0	28.0	
Total Split (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0	
Total Split (%)	55.6%	55.6%		55.6%	55.6%		44.4%	44.4%		44.4%	44.4%	



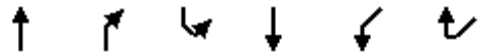
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	45.0	45.0		45.0	45.0		35.0	35.0		35.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
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	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	200	200		200	200		50	50		50	50	
Act Effct Green (s)		50.6			50.6			29.4		29.4	29.4	
Actuated g/C Ratio		0.56			0.56			0.33		0.33	0.33	
v/c Ratio		0.25			0.68			1.03		0.42	0.83	
Control Delay		11.2			20.6			79.9		30.0	39.7	
Queue Delay		0.0			0.0			34.4		0.0	0.0	
Total Delay		11.2			20.6			114.3		30.0	39.7	
LOS		B			C			F		C	D	
Approach Delay		11.2			20.6			114.3			38.4	
Approach LOS		B			C			F			D	
90th %ile Green (s)	45.0	45.0		45.0	45.0		35.0	35.0		35.0	35.0	
90th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Max	Max	
70th %ile Green (s)	45.5	45.5		45.5	45.5		34.5	34.5		34.5	34.5	
70th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
50th %ile Green (s)	49.5	49.5		49.5	49.5		30.5	30.5		30.5	30.5	
50th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
30th %ile Green (s)	53.3	53.3		53.3	53.3		26.7	26.7		26.7	26.7	
30th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
10th %ile Green (s)	59.9	59.9		59.9	59.9		20.1	20.1		20.1	20.1	
10th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
Queue Length 50th (ft)		55			230			252		31	226	
Queue Length 95th (ft)		92			407			#416		68	321	
Internal Link Dist (ft)		520			484			208			115	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)										100		
Base Capacity (vph)		1583			872			530		204	657	
Starvation Cap Reductn		0			0			95		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.25			0.68			1.06		0.35	0.70	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 57 (63%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 45.3		Intersection LOS: D	
Intersection Capacity Utilization 103.4%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: A Street & West Broadway

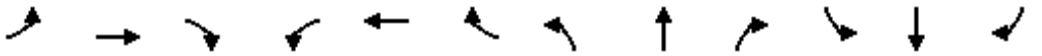




Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Volume (vph)	1229	322	0	367	183	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Frt	1.00	0.85		1.00	0.98	
Flt Protected	1.00	1.00		1.00	0.96	
Satd. Flow (prot)	3505	1568		3471	1575	
Flt Permitted	1.00	1.00		1.00	0.96	
Satd. Flow (perm)	3505	1568		3471	1575	
Peak-hour factor, PHF	0.89	0.89	0.88	0.88	0.90	0.90
Adj. Flow (vph)	1381	362	0	417	203	29
RTOR Reduction (vph)	0	0	0	0	5	0
Lane Group Flow (vph)	1381	362	0	417	227	0
Heavy Vehicles (%)	3%	3%	0%	4%	7%	60%
Turn Type	NA	pt+ov		NA	NA	
Protected Phases	1	1 3		1	3	
Permitted Phases						
Actuated Green, G (s)	63.0	100.0		63.0	27.0	
Effective Green, g (s)	61.0	100.0		63.0	27.0	
Actuated g/C Ratio	0.61	1.00		0.63	0.27	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	2138	1568		2186	425	
v/s Ratio Prot	c0.39	0.23		0.12	c0.14	
v/s Ratio Perm						
v/c Ratio	0.65	0.23		0.19	0.53	
Uniform Delay, d1	12.5	0.0		7.8	31.1	
Progression Factor	1.00	1.00		0.25	0.72	
Incremental Delay, d2	1.5	0.3		0.2	3.7	
Delay (s)	14.1	0.3		2.1	26.3	
Level of Service	B	A		A	C	
Approach Delay (s)	11.2			2.1	26.3	
Approach LOS	B			A	C	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		

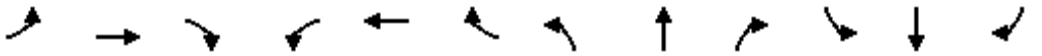
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	164	107	5	395	21	577	669	9	67	255	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0	5.0		5.0	5.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00		0.95	1.00
Frt		1.00	0.85		0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected		0.99	1.00		1.00		0.95	1.00	1.00		0.99	1.00
Satd. Flow (prot)		1783	1615		1864		1752	3406	1455		3476	1357
Flt Permitted		0.85	1.00		1.00		0.43	1.00	1.00		0.68	1.00
Satd. Flow (perm)		1520	1615		1860		795	3406	1455		2385	1357
Peak-hour factor, PHF	0.94	0.94	0.94	0.95	0.95	0.95	0.90	0.90	0.90	0.88	0.88	0.88
Adj. Flow (vph)	35	174	114	5	416	22	641	743	10	76	290	176
RTOR Reduction (vph)	0	0	76	0	2	0	0	0	4	0	0	111
Lane Group Flow (vph)	0	209	38	0	441	0	641	743	6	0	366	65
Heavy Vehicles (%)	4%	6%	0%	0%	1%	5%	3%	6%	11%	2%	3%	19%
Turn Type	Perm	NA	Perm	Perm	NA		D.P+P	NA	Perm	Perm	NA	Perm
Protected Phases		3			3		1	1 2			2	
Permitted Phases	3		3	3			2		1 2	2		2
Actuated Green, G (s)		33.0	33.0		33.0		52.0	57.0	57.0		22.4	22.4
Effective Green, g (s)		33.0	33.0		33.0		52.0	57.0	57.0		22.4	22.4
Actuated g/C Ratio		0.33	0.33		0.33		0.52	0.57	0.57		0.22	0.22
Clearance Time (s)		5.0	5.0		5.0		5.0				5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0		3.0				3.0	3.0
Lane Grp Cap (vph)		501	532		613		696	1941	829		534	303
v/s Ratio Prot							c0.27	0.22				
v/s Ratio Perm		0.14	0.02		c0.24		c0.21		0.00		0.15	0.05
v/c Ratio		0.42	0.07		0.72		0.92	0.38	0.01		0.69	0.21
Uniform Delay, d1		26.0	23.0		29.4		18.4	11.8	9.3		35.6	31.6
Progression Factor		1.00	1.00		0.87		2.22	1.55	4.15		1.08	1.27
Incremental Delay, d2		2.5	0.3		6.3		14.3	0.1	0.0		6.8	1.6
Delay (s)		28.6	23.2		31.8		55.3	18.4	38.5		45.1	41.8
Level of Service		C	C		C		E	B	D		D	D
Approach Delay (s)		26.7			31.8			35.5			44.0	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

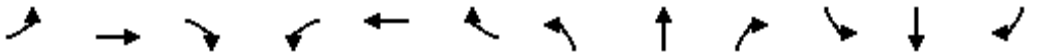
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	113	122	5	12	159	11	11	299	5	8	192	252
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			0.99			1.00			0.92	
Flt Protected		0.98			1.00			1.00			1.00	
Satd. Flow (prot)		1796			1851			1834			1633	
Flt Permitted		0.76			0.97			0.98			0.99	
Satd. Flow (perm)		1402			1810			1801			1624	
Peak-hour factor, PHF	0.82	0.82	0.82	0.85	0.85	0.85	0.93	0.93	0.93	0.95	0.95	0.95
Adj. Flow (vph)	138	149	6	14	187	13	12	322	5	8	202	265
RTOR Reduction (vph)	0	1	0	0	2	0	0	1	0	0	46	0
Lane Group Flow (vph)	0	293	0	0	212	0	0	338	0	0	429	0
Heavy Vehicles (%)	0%	6%	0%	9%	1%	0%	10%	3%	0%	0%	15%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		50.0			50.0			40.0			40.0	
Effective Green, g (s)		50.0			50.0			40.0			40.0	
Actuated g/C Ratio		0.50			0.50			0.40			0.40	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		701			905			720			649	
v/s Ratio Prot												
v/s Ratio Perm		c0.21			0.12			0.19			c0.26	
v/c Ratio		0.42			0.23			0.47			0.66	
Uniform Delay, d1		15.8			14.2			22.2			24.5	
Progression Factor		1.65			1.00			1.00			1.00	
Incremental Delay, d2		1.7			0.6			2.2			5.2	
Delay (s)		27.7			14.8			24.3			29.7	
Level of Service		C			B			C			C	
Approach Delay (s)		27.7			14.8			24.3			29.7	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	332	304	78	440	32	538	160	24	18	94	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.91	0.91			1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.99			1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		0.95	1.00			0.99	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.98			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1712	1759	1583	1716	1860		1545	2802			1591	1373
Flt Permitted	0.29	1.00	1.00	0.41	1.00		0.62	1.00			0.91	1.00
Satd. Flow (perm)	530	1759	1583	738	1860		1001	2802			1465	1373
Peak-hour factor, PHF	0.89	0.89	0.89	0.97	0.97	0.97	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	218	373	342	80	454	33	578	172	26	20	102	198
RTOR Reduction (vph)	0	0	127	0	2	0	0	13	0	0	0	0
Lane Group Flow (vph)	218	373	215	80	485	0	578	185	0	0	122	198
Confl. Peds. (#/hr)	8		30	30		8	62		27	27		62
Confl. Bikes (#/hr)			6						3			3
Heavy Vehicles (%)	5%	8%	2%	4%	1%	0%	1%	21%	9%	24%	16%	14%
Parking (#/hr)						0						
Turn Type	Perm	NA	pt+ov	Perm	NA		pm+pt	NA		Perm	NA	Free
Protected Phases		5	5 6		5		6	1 6			1	
Permitted Phases	5			5			1 6			1		Free
Actuated Green, G (s)	41.9	41.9	62.9	41.9	41.9		29.7	29.7			13.7	100.0
Effective Green, g (s)	41.9	41.9	62.9	41.9	41.9		29.7	29.7			13.7	100.0
Actuated g/C Ratio	0.42	0.42	0.63	0.42	0.42		0.30	0.30			0.14	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0				5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0				2.0	
Lane Grp Cap (vph)	222	737	995	309	779		384	972			200	1373
v/s Ratio Prot		0.21	0.14		0.26		c0.24	0.03				
v/s Ratio Perm	c0.41			0.11			c0.21	0.04			0.08	c0.14
v/c Ratio	0.98	0.51	0.22	0.26	0.62		1.51	0.19			0.61	0.14
Uniform Delay, d1	28.7	21.4	8.0	18.9	22.8		33.8	26.2			40.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.86	0.81			1.00	1.00
Incremental Delay, d2	55.0	0.5	0.1	0.4	1.6		239.7	0.4			13.1	0.2
Delay (s)	83.7	22.0	8.1	19.4	24.4		269.0	21.6			53.7	0.2
Level of Service	F	C	A	B	C		F	C			D	A
Approach Delay (s)		31.3			23.7			205.8			20.6	
Approach LOS		C			C			F			C	

Intersection Summary			
HCM 2000 Control Delay	80.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	305	26	91	439	42	25	329	69	68	345	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0		5.0	5.0	
Lane Util. Factor		0.95			1.00			1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.99			0.99		1.00	0.97	
Flpb, ped/bikes		0.99			1.00			1.00		0.98	1.00	
Frt		0.99			0.99			0.98		1.00	0.97	
Flt Protected		0.99			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		3300			1763			1724		1605	1666	
Flt Permitted		0.84			0.87			0.78		0.31	1.00	
Satd. Flow (perm)		2803			1546			1343		527	1666	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	45	318	27	95	457	44	27	358	75	72	367	91
RTOR Reduction (vph)	0	5	0	0	3	0	0	9	0	0	11	0
Lane Group Flow (vph)	0	385	0	0	593	0	0	451	0	72	447	0
Confl. Peds. (#/hr)	79		24	24		79	67		54	54		67
Heavy Vehicles (%)	3%	7%	5%	19%	1%	0%	0%	4%	17%	10%	8%	5%
Parking (#/hr)			0			0						
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		50.6			50.6			29.4		29.4	29.4	
Effective Green, g (s)		50.6			50.6			29.4		29.4	29.4	
Actuated g/C Ratio		0.56			0.56			0.33		0.33	0.33	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		2.0			2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		1575			869			438		172	544	
v/s Ratio Prot											0.27	
v/s Ratio Perm		0.14			c0.38			c0.34		0.14		
v/c Ratio		0.24			0.68			1.03		0.42	0.82	
Uniform Delay, d1		10.0			14.0			30.3		23.6	27.9	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.4			4.3			51.0		0.6	9.3	
Delay (s)		10.4			18.3			81.3		24.2	37.2	
Level of Service		B			B			F		C	D	
Approach Delay (s)		10.4			18.3			81.3			35.4	
Approach LOS		B			B			F			D	

Intersection Summary			
HCM 2000 Control Delay	36.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	103.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	ø10
Lane Configurations							
Volume (vph)	707	195	0	790	407	21	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)		100	0		0	0	
Storage Lanes		1	0		1	0	
Taper Length (ft)			25		25		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Frt		0.850			0.993		
Flt Protected					0.955		
Satd. Flow (prot)	3438	1568	0	3539	1731	0	
Flt Permitted					0.955		
Satd. Flow (perm)	3438	1568	0	3539	1731	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		253			3		
Link Speed (mph)	30			30	30		
Link Distance (ft)	601			452	370		
Travel Time (s)	13.7			10.3	8.4		
Peak Hour Factor	0.77	0.77	0.85	0.85	0.95	0.95	
Heavy Vehicles (%)	5%	3%	0%	2%	3%	25%	
Adj. Flow (vph)	918	253	0	929	428	22	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	918	253	0	929	450	0	
Turn Type	NA	pt+ov		NA	NA		
Protected Phases	1	1 3		1	3		10
Permitted Phases							
Detector Phase	1	1 3		1	3		
Switch Phase							
Minimum Initial (s)	4.0			4.0	4.0		1.0
Minimum Split (s)	21.0			21.0	21.0		31.0
Total Split (s)	27.0			27.0	42.0		31.0
Total Split (%)	27.0%			27.0%	42.0%		31%
Maximum Green (s)	22.0			22.0	37.0		26.0
Yellow Time (s)	3.0			3.0	3.0		2.0
All-Red Time (s)	2.0			2.0	2.0		3.0



Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	ø10
Lost Time Adjust (s)	2.0			0.0	0.0		
Total Lost Time (s)	7.0			5.0	5.0		
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0			3.0	3.0		3.0
Recall Mode	Max			Max	C-Max		None
Walk Time (s)							7.0
Flash Dont Walk (s)							19.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	51.0	100.0		53.0	37.0		
Actuated g/C Ratio	0.51	1.00		0.53	0.37		
v/c Ratio	0.52	0.16		0.50	0.70		
Control Delay	17.7	0.2		13.1	11.8		
Queue Delay	0.0	0.0		0.0	4.4		
Total Delay	17.7	0.2		13.1	16.2		
LOS	B	A		B	B		
Approach Delay	14.0			13.1	16.2		
Approach LOS	B			B	B		
90th %ile Green (s)	53.0			53.0	37.0		0.0
90th %ile Term Code	MaxR			MaxR	Coord		Skip
70th %ile Green (s)	53.0			53.0	37.0		0.0
70th %ile Term Code	MaxR			MaxR	Coord		Skip
50th %ile Green (s)	53.0			53.0	37.0		0.0
50th %ile Term Code	MaxR			MaxR	Coord		Skip
30th %ile Green (s)	53.0			53.0	37.0		0.0
30th %ile Term Code	MaxR			MaxR	Coord		Skip
10th %ile Green (s)	53.0			53.0	37.0		0.0
10th %ile Term Code	MaxR			MaxR	Coord		Skip
Queue Length 50th (ft)	197	0		292	165		
Queue Length 95th (ft)	202	0		288	m169		
Internal Link Dist (ft)	521			372	290		
Turn Bay Length (ft)		100					
Base Capacity (vph)	1753	1568		1875	642		
Starvation Cap Reductn	0	0		0	125		

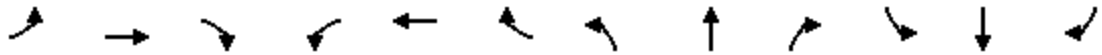
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR	ø10
Spillback Cap Reductn	0	0		0	0		
Storage Cap Reductn	0	0		0	0		
Reduced v/c Ratio	0.52	0.16		0.50	0.87		

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 37 (37%), Referenced to phase 3:SWL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 14.0		Intersection LOS: B	
Intersection Capacity Utilization 54.0%		ICU Level of Service A	
Analysis Period (min) 15			

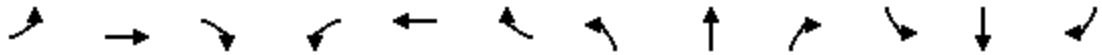
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dorchester Ave. & A Street





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	180	163	2	368	27	310	414	4	86	625	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	200		0	0		60
Storage Lanes	0		1	0		0	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	1.00
Frt			0.850		0.991				0.850			0.850
Flt Protected		0.992					0.950				0.994	
Satd. Flow (prot)	0	1813	1599	0	1883	0	1787	3406	1615	0	3526	1429
Flt Permitted		0.814			0.999		0.245				0.816	
Satd. Flow (perm)	0	1487	1599	0	1881	0	461	3406	1615	0	2895	1429
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			187		4				22			76
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		787			298			452			440	
Travel Time (s)		17.9			6.8			10.3			10.0	
Peak Hour Factor	0.87	0.87	0.87	0.95	0.95	0.95	0.91	0.91	0.91	0.92	0.92	0.92
Heavy Vehicles (%)	19%	1%	1%	0%	0%	0%	1%	6%	0%	0%	2%	13%
Adj. Flow (vph)	41	207	187	2	387	28	341	455	4	93	679	147
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	248	187	0	417	0	341	455	4	0	772	147
Turn Type	Perm	NA	Perm	Perm	NA		D.P+P	NA	Perm	Perm	NA	Perm
Protected Phases		3			3		1	1 2			2	
Permitted Phases	3		3	3			2		1 2	2		2
Detector Phase	3	3	3	3	3		1	1 2	1 2	2	2	2
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0			8.0	8.0	8.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0		13.0			27.0	27.0	27.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0		20.0			44.0	44.0	44.0
Total Split (%)	36.0%	36.0%	36.0%	36.0%	36.0%		20.0%			44.0%	44.0%	44.0%
Maximum Green (s)	31.0	31.0	31.0	31.0	31.0		15.0			39.0	39.0	39.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0			3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0			2.0	2.0	2.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)		0.0	0.0		0.0		0.0				0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0		5.0				5.0	5.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0			3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None			Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0					10.0	10.0	10.0
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0					12.0	12.0	12.0
Pedestrian Calls (#/hr)	0	0	0	0	0					0	0	0
Act Effct Green (s)		31.0	31.0		31.0		54.0	59.0	59.0		39.6	39.6
Actuated g/C Ratio		0.31	0.31		0.31		0.54	0.59	0.59		0.40	0.40
v/c Ratio		0.54	0.30		0.71		0.78	0.23	0.00		0.67	0.24
Control Delay		33.8	5.2		46.4		47.1	23.8	6.8		32.7	14.1
Queue Delay		0.0	0.0		55.4		0.0	0.0	0.0		0.4	0.0
Total Delay		33.8	5.2		101.8		47.1	23.8	6.8		33.1	14.1
LOS		C	A		F		D	C	A		C	B
Approach Delay		21.5			101.8			33.7			30.0	
Approach LOS		C			F			C			C	
90th %ile Green (s)	31.0	31.0	31.0	31.0	31.0		15.0			39.0	39.0	39.0
90th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max			MaxR	MaxR	MaxR
70th %ile Green (s)	31.0	31.0	31.0	31.0	31.0		15.0			39.0	39.0	39.0
70th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max			MaxR	MaxR	MaxR
50th %ile Green (s)	31.0	31.0	31.0	31.0	31.0		15.0			39.0	39.0	39.0
50th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max			MaxR	MaxR	MaxR
30th %ile Green (s)	31.0	31.0	31.0	31.0	31.0		15.0			39.0	39.0	39.0
30th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Max			MaxR	MaxR	MaxR
10th %ile Green (s)	31.0	31.0	31.0	31.0	31.0		12.2			41.8	41.8	41.8
10th %ile Term Code	Coord	Coord	Coord	Coord	Coord		Gap			MaxR	MaxR	MaxR
Queue Length 50th (ft)		130	0		237		213	127	0		238	35
Queue Length 95th (ft)		201	43		m290		#319	177	m0		311	m59
Internal Link Dist (ft)		707			218			372			360	
Turn Bay Length (ft)							200					60
Base Capacity (vph)		460	624		585		450	1994	954		1145	611
Starvation Cap Reductn		0	0		219		0	0	0		65	0

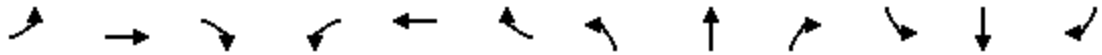
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0	0		0		0	0	97		87	0
Storage Cap Reductn		0	0		0		0	0	0		0	0
Reduced v/c Ratio		0.54	0.30		1.14		0.76	0.23	0.00		0.73	0.24

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 3:EBWB, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 41.4		Intersection LOS: D	
Intersection Capacity Utilization 86.2%		ICU Level of Service E	
Analysis Period (min) 15			

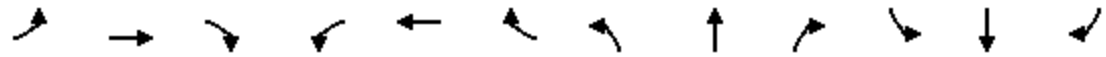
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Dorchester Ave. & W 4th Street





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lane Configurations													
Volume (vph)	154	114	3	6	90	8	2	186	4	12	417	305	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.999			0.990			0.997			0.944		
Flt Protected		0.972			0.997						0.999		
Satd. Flow (prot)	0	1835	0	0	1875	0	0	1876	0	0	1752	0	
Flt Permitted		0.771			0.981			0.996			0.995		
Satd. Flow (perm)	0	1455	0	0	1845	0	0	1869	0	0	1745	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)					4			2			49		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		298			374			370			288		
Travel Time (s)		6.8			8.5			8.4			6.5		
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.82	0.82	0.82	0.96	0.96	0.96	
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	4%	0%	
Adj. Flow (vph)	171	127	3	7	102	9	2	227	5	12	434	318	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	301	0	0	118	0	0	234	0	0	764	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		1			1			5			5		9
Permitted Phases	1			1			5			5			
Detector Phase	1	1		1	1		5	5		5	5		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0		1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		13.0	13.0		13.0	13.0		15.0
Total Split (s)	30.0	30.0		30.0	30.0		53.0	53.0		53.0	53.0		17.0
Total Split (%)	30.0%	30.0%		30.0%	30.0%		53.0%	53.0%		53.0%	53.0%		17%
Maximum Green (s)	25.0	25.0		25.0	25.0		48.0	48.0		48.0	48.0		15.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0		0.0
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		5.0			5.0			5.0			5.0		
Lead/Lag													

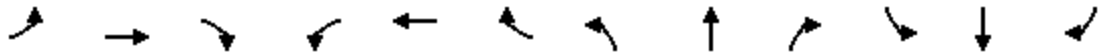


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lead-Lag Optimize?													
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		3.0
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max		None
Walk Time (s)													5.0
Flash Dont Walk (s)													8.0
Pedestrian Calls (#/hr)													0
Act Effct Green (s)		42.0			42.0			48.0			48.0		
Actuated g/C Ratio		0.42			0.42			0.48			0.48		
v/c Ratio		0.49			0.15			0.26			0.89		
Control Delay		35.5			18.0			16.3			36.0		
Queue Delay		4.4			84.4			0.0			49.2		
Total Delay		39.9			102.4			16.3			85.2		
LOS		D			F			B			F		
Approach Delay		39.9			102.4			16.3			85.2		
Approach LOS		D			F			B			F		
90th %ile Green (s)	42.0	42.0		42.0	42.0		48.0	48.0		48.0	48.0		0.0
90th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
70th %ile Green (s)	42.0	42.0		42.0	42.0		48.0	48.0		48.0	48.0		0.0
70th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
50th %ile Green (s)	42.0	42.0		42.0	42.0		48.0	48.0		48.0	48.0		0.0
50th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
30th %ile Green (s)	42.0	42.0		42.0	42.0		48.0	48.0		48.0	48.0		0.0
30th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
10th %ile Green (s)	42.0	42.0		42.0	42.0		48.0	48.0		48.0	48.0		0.0
10th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		MaxR	MaxR		Skip
Queue Length 50th (ft)		151			44			85			403		
Queue Length 95th (ft)		238			78			121			#653		
Internal Link Dist (ft)		218			294			290			208		
Turn Bay Length (ft)													
Base Capacity (vph)		611			777			898			863		
Starvation Cap Reductn		232			0			0			286		
Spillback Cap Reductn		0			697			0			53		
Storage Cap Reductn		0			0			0			0		
Reduced v/c Ratio		0.79			1.48			0.26			1.32		

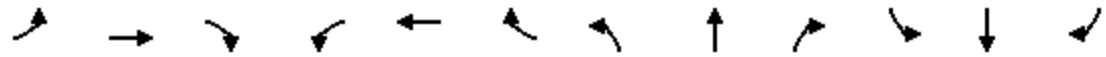
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 85 (85%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 65.6		Intersection LOS: E	
Intersection Capacity Utilization 78.1%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: A Street & W 4th Street

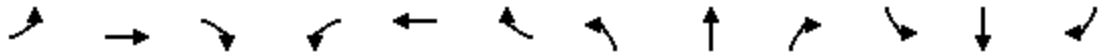




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Lane Configurations													
Volume (vph)	90	369	514	89	250	31	372	49	56	26	243	231	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	120		0	125		0	0		90	0		0	
Storage Lanes	1		1	1		0	1		0	0		1	
Taper Length (ft)	25			50			25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.95	1.00	1.00	1.00	
Ped Bike Factor	0.96			0.94	0.99		0.96	0.94			0.99	0.97	
Frt			0.850		0.983			0.920				0.850	
Flt Protected	0.950			0.950			0.950				0.995		
Satd. Flow (prot)	1752	1845	1583	1770	1827	0	1535	2634	0	0	1831	1553	
Flt Permitted	0.380			0.326			0.246				0.956		
Satd. Flow (perm)	671	1845	1583	572	1827	0	380	2634	0	0	1745	1507	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			524		6			68				254	
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		657			600			440			211		
Travel Time (s)		14.9			13.6			10.0			4.8		
Confl. Peds. (#/hr)	41		110	110		41	57		35	35		57	
Confl. Bikes (#/hr)			6						3			3	
Peak Hour Factor	0.98	0.98	0.98	0.84	0.84	0.84	0.82	0.82	0.82	0.91	0.91	0.91	
Heavy Vehicles (%)	3%	3%	2%	2%	1%	0%	7%	26%	2%	24%	1%	4%	
Parking (#/hr)						0							
Adj. Flow (vph)	92	377	524	106	298	37	454	60	68	29	267	254	
Shared Lane Traffic (%)							0%						
Lane Group Flow (vph)	92	377	524	106	335	0	454	128	0	0	296	254	
Turn Type	Perm	NA	pt+ov	Perm	NA		pm+pt	NA		Perm	NA	Free	
Protected Phases		5	5 6		5		6	1 6			1		2
Permitted Phases	5			5			1 6			1		Free	
Detector Phase	5	5	5 6	5	5		6	1 6		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0		8.0	8.0		6.0			8.0	8.0		4.0
Minimum Split (s)	13.0	13.0		13.0	13.0		11.0			23.0	23.0		23.0
Total Split (s)	25.0	25.0		25.0	25.0		25.0			27.0	27.0		23.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Total Split (%)	25.0%	25.0%		25.0%	25.0%		25.0%			27.0%	27.0%		23%
Maximum Green (s)	20.0	20.0		20.0	20.0		20.0			22.0	22.0		21.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0			3.0	3.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0			2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0				0.0		
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0				5.0		
Lead/Lag	Lead	Lead		Lead	Lead		Lag			Lead	Lead		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0			2.0	2.0		3.0
Recall Mode	None	None		None	None		Max			C-Min	C-Min		None
Walk Time (s)										7.0	7.0		7.0
Flash Dont Walk (s)										11.0	11.0		12.0
Pedestrian Calls (#/hr)										30	30		30
Act Effct Green (s)	32.6	32.6	57.6	32.6	32.6		39.8	44.8			19.8	100.0	
Actuated g/C Ratio	0.33	0.33	0.58	0.33	0.33		0.40	0.45			0.20	1.00	
v/c Ratio	0.42	0.63	0.46	0.57	0.56		1.19	0.11			0.86	0.17	
Control Delay	40.3	38.7	2.9	49.1	36.0		138.5	13.7			62.4	0.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0	
Total Delay	40.3	38.7	2.9	49.1	36.0		138.5	13.7			62.4	0.2	
LOS	D	D	A	D	D		F	B			E	A	
Approach Delay		20.0			39.1			111.0			33.7		
Approach LOS		B			D			F			C		
90th %ile Green (s)	22.0	22.0		22.0	22.0		20.0			22.0	22.0		19.0
90th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Ped
70th %ile Green (s)	22.0	22.0		22.0	22.0		20.0			22.0	22.0		19.0
70th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Ped
50th %ile Green (s)	22.3	22.3		22.3	22.3		20.0			21.7	21.7		19.0
50th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Ped
30th %ile Green (s)	46.3	46.3		46.3	46.3		20.0			18.7	18.7		0.0
30th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Skip
10th %ile Green (s)	50.6	50.6		50.6	50.6		20.0			14.4	14.4		0.0
10th %ile Term Code	Max	Max		Max	Max		MaxR			Coord	Coord		Skip
Queue Length 50th (ft)	53	236	0	65	200		~330	15			179	0	
Queue Length 95th (ft)	#126	#412	55	#150	#304		#464	m39			#303	0	

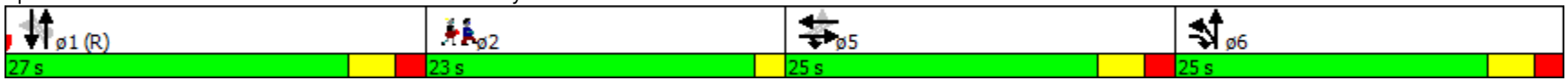


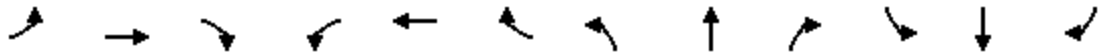
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Internal Link Dist (ft)		577			520			360			131		
Turn Bay Length (ft)	120			125									
Base Capacity (vph)	218	602	1134	186	600		382	1274			383	1507	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	0	
Reduced v/c Ratio	0.42	0.63	0.46	0.57	0.56		1.19	0.10			0.77	0.17	

Intersection Summary

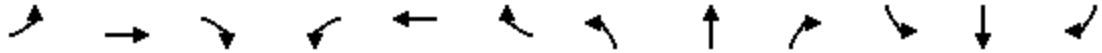
Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.19
Intersection Signal Delay: 46.9 Intersection LOS: D
Intersection Capacity Utilization 72.8% ICU Level 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Dorchester Ave. & West Broadway





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	57	390	30	98	248	39	25	250	74	103	612	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	0		0	0		0	100		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	50			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.95			0.91			0.98		0.97	0.97	
Frt		0.991			0.986			0.971			0.979	
Flt Protected		0.994			0.987			0.996		0.950		
Satd. Flow (prot)	0	3169	0	0	1672	0	0	1735	0	1752	1752	0
Flt Permitted		0.846			0.733			0.612		0.468		
Satd. Flow (perm)	0	2656	0	0	1166	0	0	1066	0	838	1752	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			8			21			12	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		600			564			288			195	
Travel Time (s)		13.6			12.8			6.5			4.4	
Confl. Peds. (#/hr)	147		320	320		147	87		52	52		87
Peak Hour Factor	0.94	0.94	0.94	0.89	0.89	0.89	0.91	0.91	0.91	0.93	0.93	0.93
Heavy Vehicles (%)	8%	9%	0%	16%	3%	7%	5%	4%	5%	3%	4%	0%
Parking (#/hr)			0			0						
Adj. Flow (vph)	61	415	32	110	279	44	27	275	81	111	658	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	508	0	0	433	0	0	383	0	111	763	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Detector Phase	1	1		1	1		5	5		5	5	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.0	25.0		25.0	25.0		28.0	28.0		28.0	28.0	
Total Split (s)	42.0	42.0		42.0	42.0		48.0	48.0		48.0	48.0	
Total Split (%)	46.7%	46.7%		46.7%	46.7%		53.3%	53.3%		53.3%	53.3%	

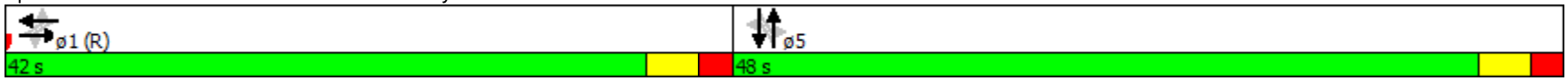


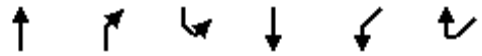
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	37.0	37.0		37.0	37.0		43.0	43.0		43.0	43.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
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	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	200	200		200	200		50	50		50	50	
Act Effct Green (s)		38.7			38.7			41.3		41.3	41.3	
Actuated g/C Ratio		0.43			0.43			0.46		0.46	0.46	
v/c Ratio		0.44			0.86			0.77		0.29	0.94	
Control Delay		19.7			42.3			30.7		17.0	44.2	
Queue Delay		0.0			0.0			10.4		0.0	0.0	
Total Delay		19.7			42.3			41.1		17.0	44.2	
LOS		B			D			D		B	D	
Approach Delay		19.7			42.3			41.1			40.7	
Approach LOS		B			D			D			D	
90th %ile Green (s)	37.0	37.0		37.0	37.0		43.0	43.0		43.0	43.0	
90th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Max	Max	
70th %ile Green (s)	37.0	37.0		37.0	37.0		43.0	43.0		43.0	43.0	
70th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Max	Max	
50th %ile Green (s)	37.0	37.0		37.0	37.0		43.0	43.0		43.0	43.0	
50th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Max	Max	
30th %ile Green (s)	38.2	38.2		38.2	38.2		41.8	41.8		41.8	41.8	
30th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
10th %ile Green (s)	44.5	44.5		44.5	44.5		35.5	35.5		35.5	35.5	
10th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Gap	Gap	
Queue Length 50th (ft)		105			220			160		36	378	
Queue Length 95th (ft)		151			#401			#294		74	#624	
Internal Link Dist (ft)		520			484			208			115	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)										100		
Base Capacity (vph)		1148			506			520		400	843	
Starvation Cap Reductn		0			0			111		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.44			0.86			0.94		0.28	0.91	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 31 (34%), Referenced to phase 1:EBWB, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 36.2		Intersection LOS: D	
Intersection Capacity Utilization 92.0%		ICU Level of Service F	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: A Street & West Broadway

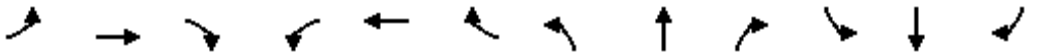




Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Volume (vph)	707	195	0	790	407	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Frt	1.00	0.85		1.00	0.99	
Flt Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	3438	1568		3539	1731	
Flt Permitted	1.00	1.00		1.00	0.95	
Satd. Flow (perm)	3438	1568		3539	1731	
Peak-hour factor, PHF	0.77	0.77	0.85	0.85	0.95	0.95
Adj. Flow (vph)	918	253	0	929	428	22
RTOR Reduction (vph)	0	0	0	0	2	0
Lane Group Flow (vph)	918	253	0	929	448	0
Heavy Vehicles (%)	5%	3%	0%	2%	3%	25%
Turn Type	NA	pt+ov		NA	NA	
Protected Phases	1	1 3		1	3	
Permitted Phases						
Actuated Green, G (s)	53.0	100.0		53.0	37.0	
Effective Green, g (s)	51.0	100.0		53.0	37.0	
Actuated g/C Ratio	0.51	1.00		0.53	0.37	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	1753	1568		1875	640	
v/s Ratio Prot	c0.27	0.16		0.26	c0.26	
v/s Ratio Perm						
v/c Ratio	0.52	0.16		0.50	0.70	
Uniform Delay, d1	16.4	0.0		15.0	26.8	
Progression Factor	1.00	1.00		0.81	0.32	
Incremental Delay, d2	1.1	0.2		0.8	3.1	
Delay (s)	17.5	0.2		12.9	11.6	
Level of Service	B	A		B	B	
Approach Delay (s)	13.8			12.9	11.6	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

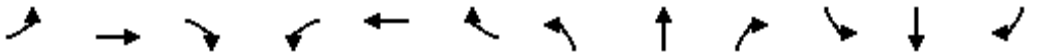
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	180	163	2	368	27	310	414	4	86	625	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0	5.0		5.0	5.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00		0.95	1.00
Frt		1.00	0.85		0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected		0.99	1.00		1.00		0.95	1.00	1.00		0.99	1.00
Satd. Flow (prot)		1812	1599		1882		1787	3406	1615		3526	1429
Flt Permitted		0.81	1.00		1.00		0.24	1.00	1.00		0.82	1.00
Satd. Flow (perm)		1487	1599		1881		460	3406	1615		2896	1429
Peak-hour factor, PHF	0.87	0.87	0.87	0.95	0.95	0.95	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	41	207	187	2	387	28	341	455	4	93	679	147
RTOR Reduction (vph)	0	0	129	0	3	0	0	0	2	0	0	46
Lane Group Flow (vph)	0	248	58	0	414	0	341	455	2	0	772	101
Heavy Vehicles (%)	19%	1%	1%	0%	0%	0%	1%	6%	0%	0%	2%	13%
Turn Type	Perm	NA	Perm	Perm	NA		D.P+P	NA	Perm	Perm	NA	Perm
Protected Phases		3			3		1	1 2			2	
Permitted Phases	3		3	3			2		1 2	2		2
Actuated Green, G (s)		31.0	31.0		31.0		54.0	59.0	59.0		39.6	39.6
Effective Green, g (s)		31.0	31.0		31.0		54.0	59.0	59.0		39.6	39.6
Actuated g/C Ratio		0.31	0.31		0.31		0.54	0.59	0.59		0.40	0.40
Clearance Time (s)		5.0	5.0		5.0		5.0				5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0		3.0				3.0	3.0
Lane Grp Cap (vph)		460	495		583		439	2009	952		1146	565
v/s Ratio Prot							c0.11	0.13				
v/s Ratio Perm		0.17	0.04		c0.22		c0.31		0.00		0.27	0.07
v/c Ratio		0.54	0.12		0.71		0.78	0.23	0.00		0.67	0.18
Uniform Delay, d1		28.6	24.7		30.5		14.7	9.7	8.4		24.9	19.6
Progression Factor		1.00	1.00		1.33		2.98	2.41	1.00		1.18	1.27
Incremental Delay, d2		4.5	0.5		5.1		7.3	0.0	0.0		2.7	0.6
Delay (s)		33.1	25.2		45.8		51.0	23.4	8.4		31.9	25.5
Level of Service		C	C		D		D	C	A		C	C
Approach Delay (s)		29.7			45.8			35.1			30.9	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	34.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		

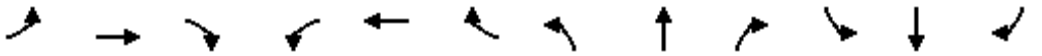
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	154	114	3	6	90	8	2	186	4	12	417	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			0.99			1.00			0.94	
Flt Protected		0.97			1.00			1.00			1.00	
Satd. Flow (prot)		1835			1875			1876			1752	
Flt Permitted		0.77			0.98			1.00			0.99	
Satd. Flow (perm)		1456			1845			1869			1744	
Peak-hour factor, PHF	0.90	0.90	0.90	0.88	0.88	0.88	0.82	0.82	0.82	0.96	0.96	0.96
Adj. Flow (vph)	171	127	3	7	102	9	2	227	5	12	434	318
RTOR Reduction (vph)	0	0	0	0	2	0	0	1	0	0	25	0
Lane Group Flow (vph)	0	301	0	0	116	0	0	233	0	0	739	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		42.0			42.0			48.0			48.0	
Effective Green, g (s)		42.0			42.0			48.0			48.0	
Actuated g/C Ratio		0.42			0.42			0.48			0.48	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		611			774			897			837	
v/s Ratio Prot												
v/s Ratio Perm		c0.21			0.06			0.12			c0.42	
v/c Ratio		0.49			0.15			0.26			0.88	
Uniform Delay, d1		21.2			17.9			15.4			23.5	
Progression Factor		1.52			1.00			1.00			1.00	
Incremental Delay, d2		2.3			0.4			0.7			13.0	
Delay (s)		34.6			18.4			16.1			36.4	
Level of Service		C			B			B			D	
Approach Delay (s)		34.6			18.4			16.1			36.4	
Approach LOS		C			B			B			D	

Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	369	514	89	250	31	372	49	56	26	243	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.91	0.91			1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99		1.00	0.94			1.00	0.97
Flpb, ped/bikes	0.97	1.00	1.00	0.95	1.00		0.99	1.00			0.99	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.92			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1694	1845	1583	1684	1835		1521	2634			1817	1507
Flt Permitted	0.38	1.00	1.00	0.33	1.00		0.25	1.00			0.96	1.00
Satd. Flow (perm)	678	1845	1583	577	1835		393	2634			1746	1507
Peak-hour factor, PHF	0.98	0.98	0.98	0.84	0.84	0.84	0.82	0.82	0.82	0.91	0.91	0.91
Adj. Flow (vph)	92	377	524	106	298	37	454	60	68	29	267	254
RTOR Reduction (vph)	0	0	222	0	4	0	0	41	0	0	0	0
Lane Group Flow (vph)	92	377	302	106	331	0	454	87	0	0	296	254
Confl. Peds. (#/hr)	41		110	110		41	57		35	35		57
Confl. Bikes (#/hr)			6						3			3
Heavy Vehicles (%)	3%	3%	2%	2%	1%	0%	7%	26%	2%	24%	1%	4%
Parking (#/hr)						0						
Turn Type	Perm	NA	pt+ov	Perm	NA		pm+pt	NA		Perm	NA	Free
Protected Phases		5	5 6		5		6	1 6			1	
Permitted Phases	5			5			1 6			1		Free
Actuated Green, G (s)	32.6	32.6	57.6	32.6	32.6		39.0	39.0			19.0	100.0
Effective Green, g (s)	32.6	32.6	57.6	32.6	32.6		39.0	39.0			19.0	100.0
Actuated g/C Ratio	0.33	0.33	0.58	0.33	0.33		0.39	0.39			0.19	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0				5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0				2.0	
Lane Grp Cap (vph)	221	601	911	188	598		378	1158			331	1507
v/s Ratio Prot		c0.20	0.19		0.18		c0.24	0.01				
v/s Ratio Perm	0.14			0.18			c0.23	0.02			0.17	c0.17
v/c Ratio	0.42	0.63	0.33	0.56	0.55		1.20	0.07			0.89	0.17
Uniform Delay, d1	26.3	28.6	11.1	27.8	27.7		25.9	19.2			39.5	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.24	1.79			1.00	1.00
Incremental Delay, d2	1.3	2.1	0.2	3.8	1.1		112.8	0.1			28.7	0.2
Delay (s)	27.6	30.6	11.3	31.7	28.8		145.0	34.5			68.2	0.2
Level of Service	C	C	B	C	C		F	C			E	A
Approach Delay (s)		20.1			29.5			120.7			36.8	
Approach LOS		C			C			F			D	

Intersection Summary			
HCM 2000 Control Delay	48.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	57	390	30	98	248	39	25	250	74	103	612	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0		5.0	5.0	
Lane Util. Factor		0.95			1.00			1.00		1.00	1.00	
Frpb, ped/bikes		0.97			0.97			0.98		1.00	0.97	
Flpb, ped/bikes		0.98			0.94			1.00		0.97	1.00	
Frt		0.99			0.99			0.97		1.00	0.98	
Flt Protected		0.99			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		3119			1571			1737		1702	1752	
Flt Permitted		0.85			0.73			0.61		0.47	1.00	
Satd. Flow (perm)		2653			1165			1067		839	1752	
Peak-hour factor, PHF	0.94	0.94	0.94	0.89	0.89	0.89	0.91	0.91	0.91	0.93	0.93	0.93
Adj. Flow (vph)	61	415	32	110	279	44	27	275	81	111	658	105
RTOR Reduction (vph)	0	5	0	0	5	0	0	11	0	0	6	0
Lane Group Flow (vph)	0	503	0	0	428	0	0	372	0	111	757	0
Confl. Peds. (#/hr)	147		320	320		147	87		52	52		87
Heavy Vehicles (%)	8%	9%	0%	16%	3%	7%	5%	4%	5%	3%	4%	0%
Parking (#/hr)			0			0						
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		38.7			38.7			41.3		41.3	41.3	
Effective Green, g (s)		38.7			38.7			41.3		41.3	41.3	
Actuated g/C Ratio		0.43			0.43			0.46		0.46	0.46	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		2.0			2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		1140			500			489		385	803	
v/s Ratio Prot											c0.43	
v/s Ratio Perm		0.19			c0.37			0.35		0.13		
v/c Ratio		0.44			0.86			0.76		0.29	0.94	
Uniform Delay, d1		18.0			23.2			20.2		15.2	23.2	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		1.2			17.0			6.0		0.2	18.9	
Delay (s)		19.3			40.2			26.2		15.3	42.1	
Level of Service		B			D			C		B	D	
Approach Delay (s)		19.3			40.2			26.2			38.7	
Approach LOS		B			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	32.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	180	33	229	74	8	86
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.91	0.91	0.78	0.78
Hourly flow rate (vph)	202	37	252	81	10	110
Pedestrians	34		4			14
Lane Width (ft)	12.0		16.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	3		0			1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			211			
pX, platoon unblocked	0.89	0.89			0.89	
vC, conflicting volume	461	340			367	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	333	198			228	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	64	95			99	
cM capacity (veh/h)	561	713			1106	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	239	333	10	110
Volume Left	202	0	10	0
Volume Right	37	81	0	0
cSH	580	1700	1106	1700
Volume to Capacity	0.41	0.20	0.01	0.06
Queue Length 95th (ft)	50	0	1	0
Control Delay (s)	15.5	0.0	8.3	0.0
Lane LOS	C		A	
Approach Delay (s)	15.5	0.0	0.7	
Approach LOS	C			

Intersection Summary			
Average Delay	5.5		
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	82	0	0	195	18	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.86	0.86	0.58	0.58
Hourly flow rate (vph)	164	0	0	227	31	9
Pedestrians	7			2	7	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	1			0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			171		405	173
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			171		405	173
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	99
cM capacity (veh/h)			1410		599	869

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	164	227	40
Volume Left	0	0	31
Volume Right	0	0	9
cSH	1700	1700	642
Volume to Capacity	0.10	0.13	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.0	11.0
Lane LOS			B
Approach Delay (s)	0.0	0.0	11.0
Approach LOS			B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	20.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	0	1	0	1	0	5	382	1	0	415	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.50	0.50	0.50	0.88	0.88	0.88	0.95	0.95	0.95
Hourly flow rate (vph)	1	0	1	0	2	0	6	434	1	0	437	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								195				
pX, platoon unblocked	0.79	0.79		0.79	0.79	0.79				0.79		
vC, conflicting volume	888	887	441	888	890	435	444			435		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	720	720	441	720	724	144	444			145		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	99	100	99			100		
cM capacity (veh/h)	269	279	621	270	277	714	1127			1129		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	2	2	441	444
Volume Left	1	0	6	0
Volume Right	1	0	1	7
cSH	375	277	1127	1129
Volume to Capacity	0.01	0.01	0.01	0.00
Queue Length 95th (ft)	0	1	0	0
Control Delay (s)	14.6	18.1	0.2	0.0
Lane LOS	B	C	A	
Approach Delay (s)	14.6	18.1	0.2	0.0
Approach LOS	B	C		

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	34.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	289	30	61	61	28	180
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.82	0.82	0.86	0.86	0.83	0.83
Hourly flow rate (vph)	352	37	71	71	34	217
Pedestrians	44		1			4
Lane Width (ft)	12.0		16.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	4		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			211			
pX, platoon unblocked	0.99	0.99			0.99	
vC, conflicting volume	436	154			186	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	421	135			167	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	36	96			97	
cM capacity (veh/h)	547	862			1328	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	389	142	34	217
Volume Left	352	0	34	0
Volume Right	37	71	0	0
cSH	566	1700	1328	1700
Volume to Capacity	0.69	0.08	0.03	0.13
Queue Length 95th (ft)	133	0	2	0
Control Delay (s)	24.1	0.0	7.8	0.0
Lane LOS	C		A	
Approach Delay (s)	24.1	0.0	1.0	
Approach LOS	C			

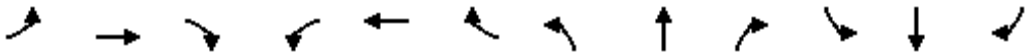
Intersection Summary			
Average Delay	12.4		
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	89	0	0	313	6	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.25	0.25	0.80	0.80
Hourly flow rate (vph)	119	0	0	1252	8	5
Pedestrians					15	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			134		1386	134
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			134		1386	134
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	99
cM capacity (veh/h)			1445		157	909

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	119	1252	12
Volume Left	0	0	8
Volume Right	0	0	5
cSH	1700	1700	235
Volume to Capacity	0.07	0.74	0.05
Queue Length 95th (ft)	0	0	4
Control Delay (s)	0.0	0.0	21.2
Lane LOS			C
Approach Delay (s)	0.0	0.0	21.2
Approach LOS			C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	26.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	2	0	0	1	10	302	1	0	713	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.50	0.50	0.25	0.25	0.25	0.90	0.90	0.90	0.93	0.93	0.93
Hourly flow rate (vph)	0	0	4	0	0	4	11	336	1	0	767	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								195				
pX, platoon unblocked	0.88	0.88		0.88	0.88	0.88				0.88		
vC, conflicting volume	1131	1128	769	1131	1129	336	771			337		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1083	1079	769	1083	1081	183	771			184		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	100	100	99	99			100		
cM capacity (veh/h)	171	192	404	170	192	764	853			1240		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	4	4	348	771
Volume Left	0	0	11	0
Volume Right	4	4	1	4
cSH	404	764	853	1240
Volume to Capacity	0.01	0.01	0.01	0.00
Queue Length 95th (ft)	1	0	1	0
Control Delay (s)	14.0	9.7	0.4	0.0
Lane LOS	B	A	A	
Approach Delay (s)	14.0	9.7	0.4	0.0
Approach LOS	B	A		

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	47.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	225	35	244	78	6	90
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.91	0.91	0.78	0.78
Hourly flow rate (vph)	253	39	268	86	8	115
Pedestrians	34		4			14
Lane Width (ft)	12.0		16.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	3		0			1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			211			
pX, platoon unblocked	0.88	0.88			0.88	
vC, conflicting volume	480	359			388	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	341	203			236	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	54	94			99	
cM capacity (veh/h)	550	699			1085	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	292	354	8	115
Volume Left	253	0	8	0
Volume Right	39	86	0	0
cSH	567	1700	1085	1700
Volume to Capacity	0.52	0.21	0.01	0.07
Queue Length 95th (ft)	74	0	1	0
Control Delay (s)	17.9	0.0	8.3	0.0
Lane LOS	C		A	
Approach Delay (s)	17.9	0.0	0.5	
Approach LOS	C			

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	170	0	0	241	19	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.86	0.86	0.58	0.58
Hourly flow rate (vph)	340	0	0	280	33	9
Pedestrians	7			2	7	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	1			0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			347		634	349
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			347		634	349
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		93	99
cM capacity (veh/h)			1216		441	694

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	340	280	41
Volume Left	0	0	33
Volume Right	0	0	9
cSH	1700	1700	477
Volume to Capacity	0.20	0.16	0.09
Queue Length 95th (ft)	0	0	7
Control Delay (s)	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	0.8		
Intersection Capacity Utilization	23.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	0	1	0	1	0	5	405	1	0	498	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.50	0.50	0.50	0.88	0.88	0.88	0.95	0.95	0.95
Hourly flow rate (vph)	1	0	1	0	2	0	6	460	1	0	524	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								195				
pX, platoon unblocked	0.78	0.78		0.78	0.78	0.78				0.78		
vC, conflicting volume	1001	1001	528	1001	1004	461	532			461		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	858	857	528	858	861	162	532			163		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	99	100	99			100		
cM capacity (veh/h)	215	229	554	216	228	690	1046			1100		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	2	2	467	532
Volume Left	1	0	6	0
Volume Right	1	0	1	7
cSH	309	228	1046	1100
Volume to Capacity	0.01	0.01	0.01	0.00
Queue Length 95th (ft)	1	1	0	0
Control Delay (s)	16.7	20.9	0.2	0.0
Lane LOS	C	C	A	
Approach Delay (s)	16.7	20.9	0.2	0.0
Approach LOS	C	C		

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	36.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	357	32	67	64	29	189
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.82	0.82	0.86	0.86	0.83	0.83
Hourly flow rate (vph)	435	39	78	74	35	228
Pedestrians	44		1			4
Lane Width (ft)	12.0		16.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	4		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			211			
pX, platoon unblocked	0.99	0.99			0.99	
vC, conflicting volume	458	163			196	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	443	144			178	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	18	95			97	
cM capacity (veh/h)	530	853			1317	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	474	152	35	228
Volume Left	435	0	35	0
Volume Right	39	74	0	0
cSH	547	1700	1317	1700
Volume to Capacity	0.87	0.09	0.03	0.13
Queue Length 95th (ft)	238	0	2	0
Control Delay (s)	40.5	0.0	7.8	0.0
Lane LOS	E		A	
Approach Delay (s)	40.5	0.0	1.0	
Approach LOS	E			

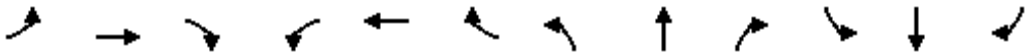
Intersection Summary			
Average Delay	21.9		
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	0	0	382	6	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.25	0.25	0.80	0.80
Hourly flow rate (vph)	239	0	0	1528	8	5
Pedestrians					15	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			254		1782	254
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			254		1782	254
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		92	99
cM capacity (veh/h)			1307		90	780

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	239	1528	12
Volume Left	0	0	8
Volume Right	0	0	5
cSH	1700	1700	139
Volume to Capacity	0.14	0.90	0.09
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.0	33.4
Lane LOS			D
Approach Delay (s)	0.0	0.0	33.4
Approach LOS			D

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	30.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	2	0	0	1	11	333	1	0	811	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.50	0.50	0.25	0.25	0.25	0.90	0.90	0.90	0.93	0.93	0.93
Hourly flow rate (vph)	0	0	4	0	0	4	12	370	1	0	872	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								195				
pX, platoon unblocked	0.88	0.88		0.88	0.88	0.88				0.88		
vC, conflicting volume	1273	1270	874	1273	1271	371	876			371		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1241	1237	874	1241	1239	212	876			212		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	100	100	99	98			100		
cM capacity (veh/h)	132	153	352	131	153	731	779			1201		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	4	4	383	876
Volume Left	0	0	12	0
Volume Right	4	4	1	4
cSH	352	731	779	1201
Volume to Capacity	0.01	0.01	0.02	0.00
Queue Length 95th (ft)	1	0	1	0
Control Delay (s)	15.3	10.0	0.5	0.0
Lane LOS	C	A	A	
Approach Delay (s)	15.3	10.0	0.5	0.0
Approach LOS	C	A		

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	52.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	232	35	244	86	6	90
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.91	0.91	0.78	0.78
Hourly flow rate (vph)	261	39	268	95	8	115
Pedestrians	34		4			14
Lane Width (ft)	12.0		16.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	3		0			1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			211			
pX, platoon unblocked	0.88	0.88			0.88	
vC, conflicting volume	484	363			397	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	340	202			240	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	52	94			99	
cM capacity (veh/h)	548	697			1076	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	300	363	8	115
Volume Left	261	0	8	0
Volume Right	39	95	0	0
cSH	564	1700	1076	1700
Volume to Capacity	0.53	0.21	0.01	0.07
Queue Length 95th (ft)	78	0	1	0
Control Delay (s)	18.4	0.0	8.4	0.0
Lane LOS	C		A	
Approach Delay (s)	18.4	0.0	0.5	
Approach LOS	C			

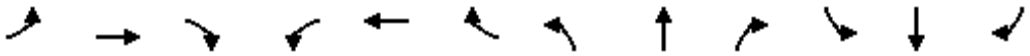
Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	170	8	0	241	26	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.86	0.86	0.58	0.58
Hourly flow rate (vph)	340	16	0	280	45	12
Pedestrians	7			2	7	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	1			0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			363		642	357
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			363		642	357
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		90	98
cM capacity (veh/h)			1200		436	686

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	356	280	57
Volume Left	0	0	45
Volume Right	16	0	12
cSH	1700	1700	473
Volume to Capacity	0.21	0.16	0.12
Queue Length 95th (ft)	0	0	10
Control Delay (s)	0.0	0.0	13.7
Lane LOS			B
Approach Delay (s)	0.0	0.0	13.7
Approach LOS			B

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	23.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	0	1	0	1	0	5	405	1	0	498	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.50	0.50	0.50	0.88	0.88	0.88	0.95	0.95	0.95
Hourly flow rate (vph)	1	0	1	0	2	0	6	460	1	0	524	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								195				
pX, platoon unblocked	0.78	0.78		0.78	0.78	0.78				0.78		
vC, conflicting volume	1001	1001	528	1001	1004	461	532			461		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	858	857	528	858	861	162	532			163		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	99	100	99			100		
cM capacity (veh/h)	215	229	554	216	228	690	1046			1100		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	2	2	467	532
Volume Left	1	0	6	0
Volume Right	1	0	1	7
cSH	309	228	1046	1100
Volume to Capacity	0.01	0.01	0.01	0.00
Queue Length 95th (ft)	1	1	0	0
Control Delay (s)	16.7	20.9	0.2	0.0
Lane LOS	C	C	A	
Approach Delay (s)	16.7	20.9	0.2	0.0
Approach LOS	C	C		

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	36.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	357	32	67	64	29	189
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.82	0.82	0.86	0.86	0.83	0.83
Hourly flow rate (vph)	435	39	78	74	35	228
Pedestrians	44		1			4
Lane Width (ft)	12.0		16.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	4		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			211			
pX, platoon unblocked	0.99	0.99			0.99	
vC, conflicting volume	458	163			196	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	443	144			178	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	18	95			97	
cM capacity (veh/h)	530	853			1317	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	474	152	35	228
Volume Left	435	0	35	0
Volume Right	39	74	0	0
cSH	547	1700	1317	1700
Volume to Capacity	0.87	0.09	0.03	0.13
Queue Length 95th (ft)	238	0	2	0
Control Delay (s)	40.5	0.0	7.8	0.0
Lane LOS	E		A	
Approach Delay (s)	40.5	0.0	1.0	
Approach LOS	E			

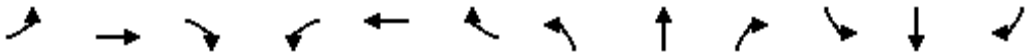
Intersection Summary			
Average Delay	21.9		
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	20	0	383	20	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.25	0.25	0.80	0.80
Hourly flow rate (vph)	239	27	0	1532	25	10
Pedestrians					15	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			280		1799	267
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			280		1799	267
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		72	99
cM capacity (veh/h)			1278		88	767

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	265	1532	35
Volume Left	0	0	25
Volume Right	27	0	10
cSH	1700	1700	118
Volume to Capacity	0.16	0.90	0.30
Queue Length 95th (ft)	0	0	29
Control Delay (s)	0.0	0.0	48.1
Lane LOS			E
Approach Delay (s)	0.0	0.0	48.1
Approach LOS			E

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	2	0	0	1	11	333	1	0	811	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.50	0.50	0.25	0.25	0.25	0.90	0.90	0.90	0.93	0.93	0.93
Hourly flow rate (vph)	0	0	4	0	0	4	12	370	1	0	872	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								195				
pX, platoon unblocked	0.88	0.88		0.88	0.88	0.88				0.88		
vC, conflicting volume	1273	1270	874	1273	1271	371	876			371		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1241	1237	874	1241	1239	212	876			212		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	100	100	99	98			100		
cM capacity (veh/h)	132	153	352	131	153	731	779			1201		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	4	4	383	876
Volume Left	0	0	12	0
Volume Right	4	4	1	4
cSH	352	731	779	1201
Volume to Capacity	0.01	0.01	0.02	0.00
Queue Length 95th (ft)	1	0	1	0
Control Delay (s)	15.3	10.0	0.5	0.0
Lane LOS	C	A	A	
Approach Delay (s)	15.3	10.0	0.5	0.0
Approach LOS	C	A		

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	52.9%	ICU Level of Service	A	
Analysis Period (min)	15			

APPENDIX E – PEDESTRIAN WIND ASSESSMENT

14 West Broadway

Boston, MA

Pedestrian Wind Assessment

RWDI # 1500496
December 3, 2014

SUBMITTED TO

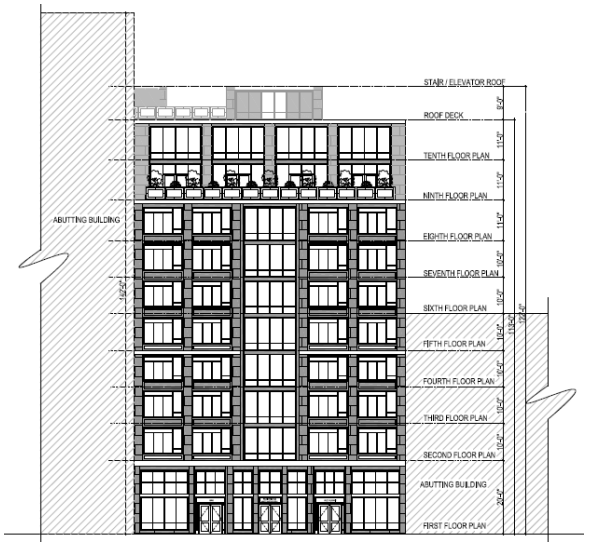
Ryan P. Sillery, Manager
Cornerstone Development, LLC
546 East Broadway
South Boston, MA 02127
rsillery@citypointcapital.com

SUBMITTED BY

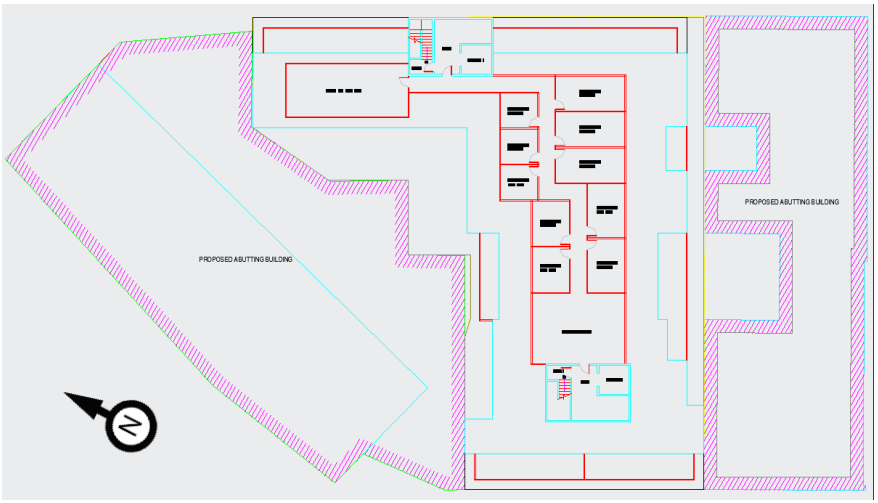
Rowan Williams Davies & Irwin Inc.
650 Woodlawn Road West
Guelph, Ontario, Canada N1K 1B8
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Hanqing Wu, Ph.D., P.Eng.
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Bill Smeaton, P.Eng.
Principal / Senior Project Manager
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West Broadway Elevation



Site Plan

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1. Introduction

Rowan Williams Davies & Irwin Inc. (RWDI) was retained by Cornerstone Development LLC to assess the potential wind conditions for the proposed development at 14 West Broadway in South Boston, MA (Image 1). The objective of this assessment was to provide a qualitative evaluation of wind comfort conditions on and around the development and recommend mitigation measures, if necessary.

This qualitative assessment is based on the following:

- a review of regional long-term meteorological data;
- our previous wind-tunnel tests on buildings in the Boston area;
- design drawings received by RWDI on October 17 and 18, and December 2, 2014;
- our engineering judgment and expert knowledge of wind flows around buildings[1-3];
- Use of software developed by RWDI (*Windestimator*[2]) for estimating the potential wind comfort conditions around generalized building forms.

This qualitative approach provides a screening-level estimation of potential wind conditions. To quantify these conditions or refine any conceptual mitigation measures, physical scale model tests would typically be required.

Note that other wind issues, such as those related to door pressures, exhaust re-entrainment, snowdrifts, wind loading, etc. are not considered in the scope of this assessment.



Image 1 - Aerial Photograph of Existing Site and Surroundings
(Courtesy of Google earth™)

1. H. Wu and F. Kriksic (2012). "Designing for Pedestrian Comfort in Response to Local Climate", *Journal of Wind Engineering and Industrial Aerodynamics*, vol.104-106, pp.397-407.
2. H. Wu, C.J. Williams, H.A. Baker and W.F. Waechter (2004), "Knowledge-based Desk-Top Analysis of Pedestrian Wind Conditions", *ASCE Structure Congress 2004,* Nashville, Tennessee.
3. C.J. Williams, H. Wu, W.F. Waechter and H.A. Baker (1999), "Experience with Remedial Solutions to Control Pedestrian Wind Problems", *10th International Conference on Wind Engineering*, Copenhagen, Denmark.

2. Building and Site Information

The proposed project site is located between West Broadway and Athens Street in South Boston, as shown in the aerial photo in Image 1. It will abut a newly completed 7-story building and a recently approved 13-story hotel. It will consist of a 10-story building plus a stair/elevator roof for a total height of 122 ft to the top of the elevator penthouse (see images on the cover page and below). Pedestrian areas include building entrances (A1, A2 and A3 in Image 3) and sidewalks along West Broadway and Athens Street (B1 and B2, respectively).

Outdoor decks and terraces at the 2nd and 9th floors and on the roof top are not general public spaces and wind conditions on these terraces are not the focus of the current assessment.

The site is currently an open lot with a small one-story building at the south corner (Image 1). In addition to the two abutting buildings, there are existing buildings of similar massing located in the immediate surrounding areas in most directions. To the southeast quadrant are lower buildings and to the northwest beyond the proposed hotel is a treed park, as shown in Image 1. Further away from the site are low-rise buildings and roadways, with the Boston downtown to the distant north, the airport to the northeast and Boston Harbor to the northeast through southeast.

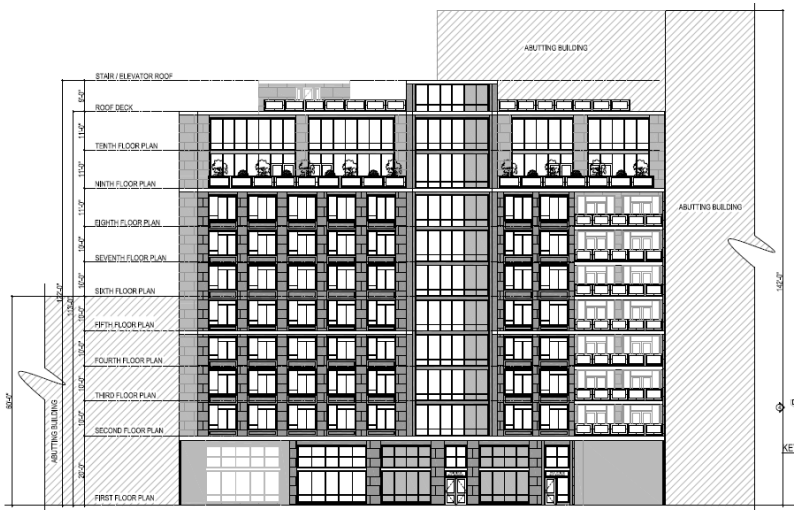


Image 2 – Athens Street Elevation

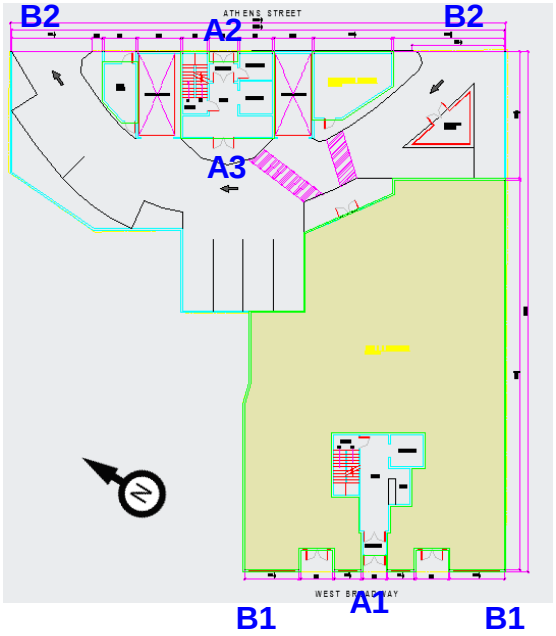


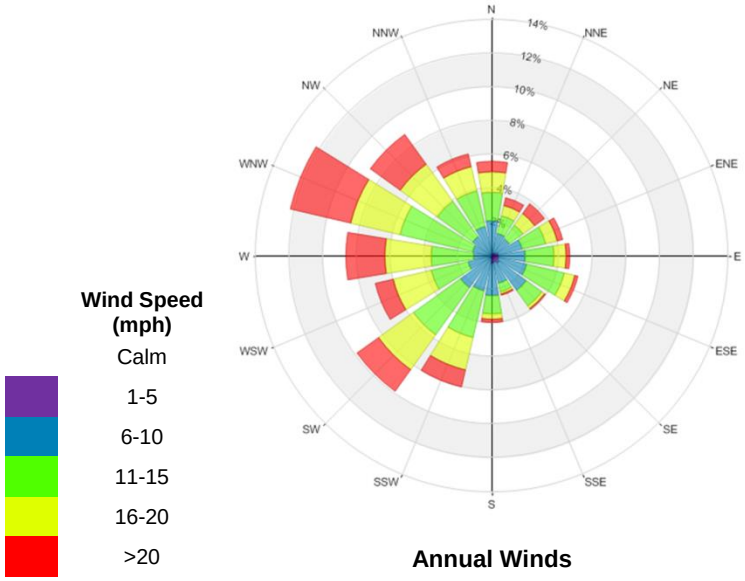
Image 3 – Ground Floor Plan and Pedestrian Locations

3. Meteorological Data

Wind statistics at Boston-Logan International Airport between 1981 and 2011 were analyzed for the spring (March to May), summer (June to August), fall (September to November) and winter (December to February) seasons. Image 4 graphically depicts the distributions of wind frequency and directionality for these four seasons and for the annual period. When all winds are considered, winds from the northwest and southwest quadrants are predominant. The northeasterly winds are also frequent and strong, especially in the spring.

Strong winds with mean speeds greater than 20 mph (red bands) measured at the airport are prevalently from the northwesterly directions throughout the year, while the southwesterly and northeasterly winds are also frequent.

Therefore, winds from the northwest, southwest and northeast directions are considered most relevant to the current study, while winds from other directions are also considered in our analysis.



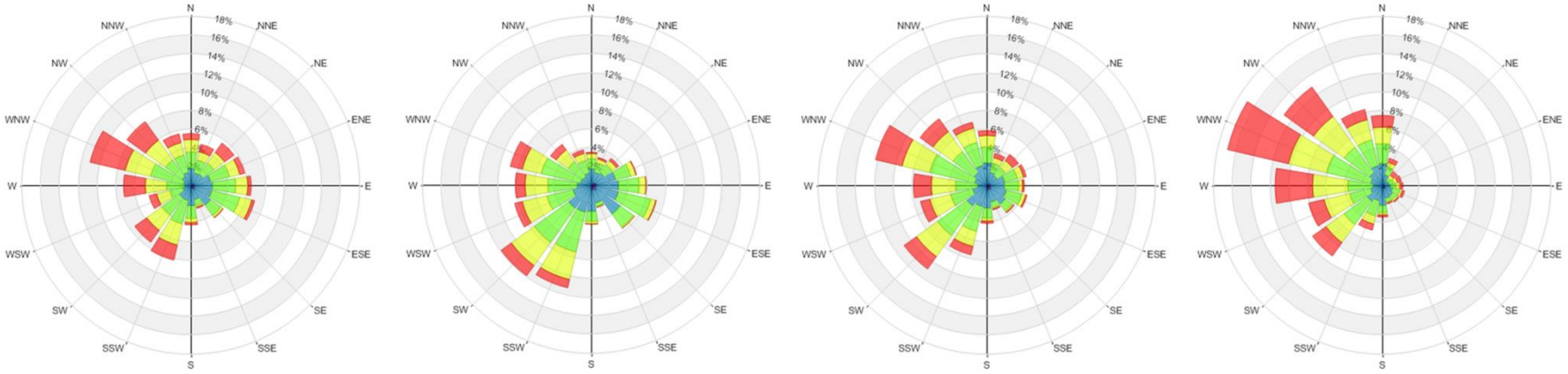


Image 4 - Directional Distribution (%) of Winds (Blowing From) - Boston Logan International Airport (1981 to 2011)

4. Explanation Of Criteria

The BRA has adopted two standards for assessing the relative wind comfort of pedestrians. First, the BRA wind design guidance criterion states that an effective gust velocity (hourly mean wind speed +1.5 times the root mean square wind speed) of 31 mph should not be exceeded more than one percent of the time. The second set of criteria used by the BRA to determine the acceptability of specific locations is based on the work of Melbourne[4]. This set of criteria is used to determine the relative level of pedestrian wind comfort for activities such as sitting, standing, or walking. The criteria are expressed in terms of benchmarks for the 1-hour mean wind speed exceeded 1% of the time (i.e., the 99-percentile mean wind speed). They are as follows:

Table 1: BRA Mean Wind Criteria *

Dangerous	*> 27 mph*
Uncomfortable for Walking	*> 19 and ≤ 27 mph*
Comfortable for Walking	*> 15 and ≤ 19 mph*
Comfortable for Standing	*> 12 and ≤ 15 mph*
Comfortable for Sitting	*< 12 mph*

* Applicable to the hourly mean wind speed exceeded one percent of the time.

Pedestrians on sidewalks and parking lots will be active and wind speeds comfortable for walking are appropriate. Lower wind speeds comfortable for standing are desired for building entrances where people are apt to linger. For outdoor decks and terraces, low wind speeds comfortable for sitting are desired during the summer. In the winter, wind conditions in these areas may not be of a serious concern due to limited usage.

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 any mitigation measures, this wind climate is likely to be frequently unsuitable for more passive activities such as sitting.

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

5. Pedestrian Wind Conditions

5.1 Background

Predicting wind speeds and occurrence frequencies is complicated. It involves building geometry, orientation, position and height of surrounding buildings, upstream terrain and the local wind climate. Over the years, RWDI has conducted more than 2,500 wind-tunnel model studies on pedestrian wind conditions around buildings, yielding a broad knowledge base. This knowledge has been incorporated into RWDI's proprietary software that allows, in many situations, for a qualitative, screening-level numerical estimation of pedestrian wind conditions without wind tunnel testing.

As indicated in the elevations on the cover page and in Image 2, the approved hotel building will be taller than the proposed project. It will shelter the site from the prevailing northwest and west winds (Image 5). Winds from the northeast and southwest directions will be slowed down by the existing surrounding buildings. However, winds over the existing buildings and along streets may be re-directed into the site between the recently completed 7-story building and the approved 13-story hotel (Image 5). As a result of the channeling effect (Image 6a), wind conditions on the development site are likely to be comfortable for standing or walking on an annual basis. Uncomfortable or unacceptable wind conditions are not expected on the development site, but may occur occasionally around the base of the hotel tower in the winter.

The proposed development will fill the gap and effectively stop the channeling flows between the two adjacent buildings. However, its 10 story facade will intercept the prevailing southwest and northeast winds and deflect them down to the ground level (Image 6b), resulting in increased wind activity along streets. More details on wind flow patterns and resultant conditions are provided below.

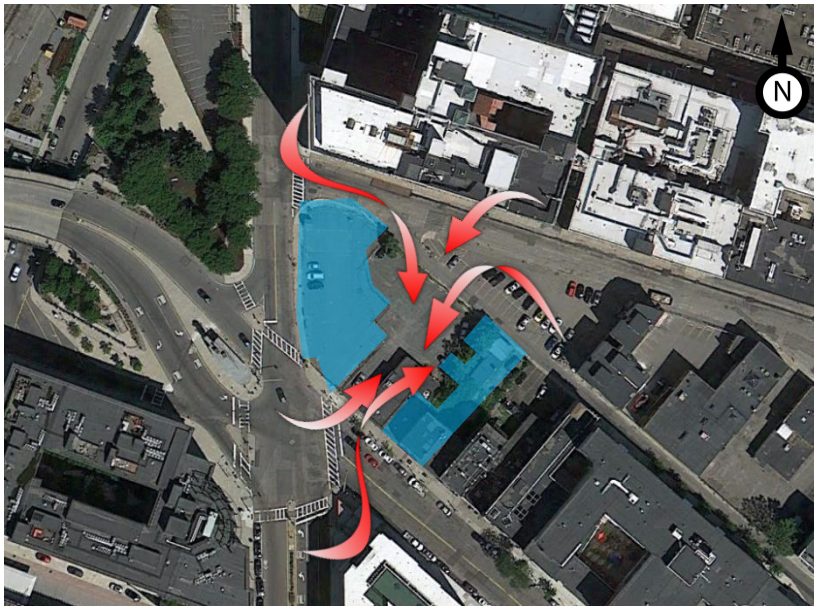


Image 5 – Wind Flows between Existing and Approved Buildings

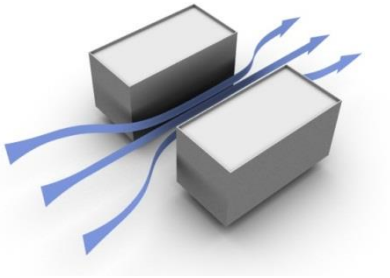


Image 6a - Channeling Effect

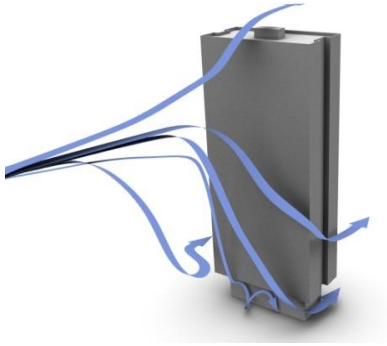


Image 6b – Downwashing Flow

5.2 Potential Wind Conditions at Grade

Given the building height and position as well as the local wind climate, it is our prediction that the potential wind conditions at entrances and sidewalks will meet the mean speed and effective gust criteria. The following discussions on wind conditions focus on these areas as labeled in Image 3.

A. Building Entrances

There are three entrances on the West Broadway side of the building (A1 in Image 3): a residential entrance in the middle and two restaurant entrances on either side. These entrances are sheltered by the existing and proposed buildings from the northwest and northeast directions. Only the southwest winds may downwash off the building façade and affect the entrance areas along West Broadway. The potential wind impact is insignificant, because these entrances will be recessed from the main building façade and the residential entrance will be designed with a vestibule. The resultant wind conditions are predicted to be suitable around the entrances along West Broadway throughout the year.

Entrances on Athens Street are located at the middle of the building façade (A2 in Image 3) and within a driveway underneath the proposed building (A3). Similar to the entrances on the other side of the building, the exterior entrance A2 will be sheltered by the existing and proposed buildings from the northwest and southwest winds, but exposed to the northeast winds. The recessed entrance and vestibule will reduce the wind impact of northeasterly winds that may downwash off the proposed building.

The other entrance A3 will be located within a curved driveway under the building, where low wind activity is anticipated due to similar wind pressures at both openings on the same building façade.

Therefore, suitable wind conditions are also predicted at the entrances along Athens Street.

B. Sidewalks

Based on the above discussion on entrances, similar and, thus, suitable wind conditions are predicted on sidewalks along West Broadway and Athens Street immediately in front of the proposed development (B1 and B2 in Image 3).

Due to the location and size of the proposed development, it is unlikely that wind conditions further away from the site will be negatively affected by the proposed development. It is our opinion that no further wind study is required for the proposed development.

5.3 Wind Conditions above Grade

There are outdoor decks and terraces proposed at the 2nd and 9th floors and on the roof top. It is our understanding that these spaces are not accessible by the general public.

Decks at the 2nd and 9th floors are recessed from the main façade and/or sheltered by the proposed building massing from one or two prevailing wind directions. Landscaping will be installed for the decks at the 9th floor (see elevations on the cover page and Image 2). Wind conditions in these areas are expected to be appropriate in the summer when they are typically in use.

The roof-top area will be more exposed to winds from different directions. If frequent use of this area is anticipated, wind control measures in the form of tall perimeter parapets and wind screens can be developed to create a suitable wind environment for passive usage in the summer.

6. Summary

The proposed building will largely be sheltered by the existing and approved surrounding buildings from the prevailing northwest, northeast and southwest winds. Recessed entrances and vestibules are positive wind control features that reduce the potential impact of winds downwashing off the façade of the proposed development. As a result, suitable wind conditions are predicted at the building entrances and sidewalks along West Broadway and Athens Street. The proposed development will not negatively affect wind conditions further away from the site.

Suitable wind conditions are also predicted for the outdoor decks at the 2nd and 9th floors during the summer when these areas are typically in use. If frequent usage is anticipated for the roof-top area, wind control measures such as tall parapets and screens should be included in the design to improve the wind conditions to an appropriate level.

It is our opinion that no further wind study is required for the proposed development.

7. Applicability Of Results

In the event of any significant changes to the design, construction or operation of the building or addition of surroundings in the future, RWDI could provide an assessment of their impact on the design considered in this report. It is the responsibility of others to contact RWDI to initiate this process.

APPENDIX F – RESPONSE TO CLIMATE CHANGE QUESTIONNAIRE

Climate Change Preparedness and Resiliency Checklist for New Construction

In November 2013, in conformance with the Mayor's 2011 Climate Action Leadership Committee's recommendations, the Boston Redevelopment Authority adopted policy for all development projects subject to Boston Zoning Article 80 Small and Large Project Review, including all Institutional Master Plan modifications and updates, are to complete the following checklist and provide any necessary responses regarding project resiliency, preparedness, and to mitigate any identified adverse impacts that might arise under future climate conditions.

For more information about the City of Boston's climate policies and practices, and the 2011 update of the climate action plan, *A Climate of Progress*, please see the City's climate action web pages at http://www.cityofboston.gov/climate

In advance we thank you for your time and assistance in advancing best practices in Boston.

Climate Change Analysis and Information Sources:

1. Northeast Climate Impacts Assessment (www.climatechoices.org/ne/)
2. USGCRP 2009 (http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts/)
3. Army Corps of Engineers guidance on sea level rise (http://planning.usace.army.mil/toolbox/library/ECs/EC11652212Nov2011.pdf)
4. Proceeding of the National Academy of Science, "Global sea level rise linked to global temperature", Vermeer and Rahmstorf, 2009 (http://www.pnas.org/content/early/2009/12/04/0907765106.full.pdf)
5. "Hotspot of accelerated sea-level rise on the Atlantic coast of North America", Asbury H. Sallenger Jr*, Kara S. Doran and Peter A. Howd, 2012 (http://www.bostonredevelopmentauthority.org/planning/Hotspot of Accelerated Sea-level Rise 2012.pdf)
6. "Building Resilience in Boston": Best Practices for Climate Change Adaptation and Resilience for Existing Buildings, Linnean Solutions, The Built Environment Coalition, The Resilient Design Institute, 2103 (http://www.greenribboncommission.org/downloads/Building_Resilience_in_Boston_SML.pdf)

Checklist

Please respond to all of the checklist questions to the fullest extent possible. For projects that respond "Yes" to any of the D.1 – Sea-Level Rise and Storms, Location Description and Classification questions, please respond to all of the remaining Section D questions.

Checklist responses are due at the time of initial project filing or Notice of Project Change and final filings just prior seeking Final BRA Approval. A PDF of your response to the Checklist should be submitted to the Boston Redevelopment Authority via your project manager.

Please Note: When initiating a new project, please visit the BRA web site for the most current Climate Change Preparedness & Resiliency Checklist.

A.1 - Project Information

Project Name:	**14 West Broadway**
Project Address Primary:	**14 West Broadway, Boston MA**
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	**Mr. Ryan P. Sillery, Manager Cornerstone Development, LLC 546 East Broadway South Boston, MA 02127**

A.2 - Team Description

Owner / Developer:	**Cornerstone Development, LLC**
Architect:	**RCA, LLC**
Engineer (building systems):	**TBD**
Sustainability / LEED:	**Soden Sustainability Consulting LLC**
Permitting:	**MLF Consulting LLC**
Construction Management:	**West Side Real Estate Services**
Climate Change Expert:	**Soden Sustainability Consulting LLC**

A.3 - Project Permitting and Phase

At what phase is the project – most recent completed submission at the time of this response?

PNF / Expanded PNF Submission	Draft / Final Project Impact Report Submission	BRA Board Approved	Notice of Project Change
Planned Development Area	BRA Final Design Approved	Under Construction	Construction just completed:

A.4 - Building Classification and Description

List the principal Building Uses:	**47 Condo Units, 4 Commercial Retail Spaces, 2 Condo Offices, and 1 Condo Gym**
List the First Floor Uses:	**Restaurant, Vehicle Elevators, Valet Parking Office, Stairs, Mechanical Room. Residential Services Office, Locked Building Storage, and Porte Cochere Below Second Floor**

What is the principal Construction Type – select most appropriate type?

Wood Frame	Masonry	**Steel Frame**	Concrete

Describe the building?

Site Area:	***14,326 SF***	Building Area:	***109,013 gsf***
Building Height:	***113** Ft. per Zoning;*	Number of Stories:	***10 Flrs.***

	122 *Ft. To the top of the stair tower and roof deck*		
First Floor Elevation (reference Boston City Base): **HSH**	***20-0"*** *Elev.*	Are there below grade spaces/levels, if yes how many: 1 level of parking 20 ft below grade	***Yes*** *No /* ***1*** *Number of Levels*

A.5 - Green Building

Which LEED Rating System(s) and version has or will your project use (by area for multiple rating systems)?

Select by Primary Use:	**New Construction**	Core & Shell	Healthcare	Schools
	Retail	Homes Midrise	Homes	Other
Select LEED Outcome:	Certified	**Silver**	Gold	Platinum

Will the project be USGBC Registered and / or USGBC Certified?

Registered:	*Yes /* ***No***	Certified:	*Yes /* ***No***

A.6 - Building Energy—*The Proponent does not have a MEP on the team as of this date. We will follow up with an update as soon as possible.*

What are the base and peak operating energy loads for the building?

Electric:	*(kW)*	Heating:	*(MMBtu/hr)*
What is the planned building Energy Use Intensity:	*(kbut/SF or kWh/SF)*	Cooling:	*(Tons/hr)*

What are the peak energy demands of your critical systems in the event of a service interruption?

Electric:	*(kW)*	Heating:	*(MMBtu/hr)*
		Cooling:	*(Tons/hr)*

What is nature and source of your back-up / emergency generators?

Electrical Generation:	*(kW)*		Fuel Source:	*Diesel*
System Type and Number of Units:	Combustion Engine	Gas Turbine	Combine Heat and Power	*(Units)*

B - Extreme Weather and Heat Events

Climate change will result in more extreme weather events including higher year round average temperatures, higher peak temperatures, and more periods of extended peak temperatures. The section explores how a project responds to higher temperatures and heat waves.

B.1 - Analysis

What is the full expected life of the project?

Select most appropriate:	10 Years	25 Years	**50 Years**	75 Years

What is the full expected operational life of key building systems (e.g. heating, cooling, ventilation)?

Select most appropriate:	10 Years	**25 Years**	50 Years	75 Years

What time span of future Climate Conditions was considered?

Select most appropriate:	10 Years	**25 Years**	50 Years	75 Years

Analysis Conditions - What range of temperatures will be used for project planning – Low/High?

0/100 *Deg.*

What Extreme Heat Event characteristics will be used for project planning – Peak High, Duration, and Frequency

95 *Deg.*	***5*** *Days*	***6*** *Events / yr.*

What Drought characteristics will be used for project planning – Duration and Frequency?

30-90 *Days*	***0.2*** *Events / yr.*

What Extreme Rain Event characteristics will be used for project planning – Seasonal Rain Fall, Peak Rain Fall, and Frequency of Events per year?

45 *Inches / yr.*	***4*** *Inches*	***0.5*** *Events / yr.*

What Extreme Wind Storm Event characteristics will be used for project planning – Peak Wind Speed, Duration of Storm Event, and Frequency of Events per year?

60 *mph Peak Wind*	***0.1*** *Hours*	***18*** *Events / yr.*

B.2 - Mitigation Strategies

What will be the overall energy performance, based on use, of the project and how will performance be determined?

Building energy use below code:	***25%***
How is performance determined:	**90.1 Appendix G Performance Rating Method**

What specific measures will the project employ to reduce building energy consumption?

Select all appropriate:	**High performance building envelope**	**High performance lighting & controls**	**Building day lighting**	**EnergyStar equip. / appliances**
	High performance HVAC equipment	Energy recovery ventilation	No active cooling	No active heating

Describe any added measures:	

What are the insulation (R) values for building envelop elements?

Roof:	*R =30*	Walls / Curtain Wall Assembly:	*R = 30*
Foundation:	*R = 30*	Basement / Slab:	*R =30*
Windows:	*R = / U =*	Doors:	*R = / U =*

What specific measures will the project employ to reduce building energy demands on the utilities and infrastructure?

On-site clean energy / CHP system(s)	Building-wide power dimming	Thermal energy storage systems	Ground source heat pump
On-site Solar PV	On-site Solar Thermal	Wind power	None
Describe any added measures:			

Will the project employ Distributed Energy / Smart Grid Infrastructure and /or Systems?

Select all appropriate:	**Connected to local distributed electrical**	Building will be Smart Grid ready	Connected to distributed steam, hot, chilled water	Distributed thermal energy ready

Will the building remain operable without utility power for an extended period?

	*Yes / **No***	If yes, for how long:	
If Yes, is building "Islandable?	**No**		
If Yes, describe strategies:			

Describe any non-mechanical strategies that will support building functionality and use during an extended interruption(s) of utility services and infrastructure:

Select all appropriate:	Solar oriented – longer south walls	Prevailing winds oriented	External shading devices	Tuned glazing,
	Building cool zones	**Operable windows**	Natural ventilation	Building shading
	Potable water for drinking / food preparation	Potable water for sinks / sanitary systems	Waste water storage capacity	**High Performance Building Envelope**
Describe any added measures:				

What measures will the project employ to reduce urban heat-island effect?

Select all appropriate:	**High reflective paving materials**	**Shade trees & shrubs**	**High reflective roof materials**	**Vegetated roofs**
Describe other strategies:				

What measures will the project employ to accommodate rain events and more rain fall?

Select all appropriate:	**On-site retention systems &**	Infiltration galleries & areas	vegetated water capture systems	**Vegetated roofs**

	ponds			
Describe other strategies:				

What measures will the project employ to accommodate extreme storm events and high winds?

Select all appropriate:	Hardened building structure & elements	Buried utilities & hardened infrastructure	Hazard removal & protective landscapes	**Soft & permeable surfaces (water infiltration)**
Describe other strategies:	**Trees, Hedges and Arc enclosure walls that shelter pedestrians from harsh winds.**			

C - Sea-Level Rise and Storms

Rising Sea-Levels and more frequent Extreme Storms increase the probability of coastal and river flooding and enlarging the extent of the 100 Year Flood Plain. This section explores if a project is or might be subject to Sea-Level Rise and Storm impacts.

C.1 - Location Description and Classification:

Do you believe the building to susceptible to flooding now or during the full expected life of the building?

	*Yes / **No***

Describe site conditions?

Site Elevation – Low/High Points:	*Boston City Base **(-20 to 140Ft.)***
Building Proximity to Water:	***Approx. 1,000 Ft.***

Is the site or building located in any of the following?

Coastal Zone:	*Yes / **No***	Velocity Zone:	*Yes / **No***
Flood Zone:	*Yes / **No***	Area Prone to Flooding:	*Yes / **No***

Will the 2013 Preliminary FEMA Flood Insurance Rate Maps or future floodplain delineation updates due to Climate Change result in a change of the classification of the site or building location?

2013 FEMA Prelim. FIRMs:	*Yes / **No***	Future floodplain delineation updates:	*Yes / **No***

What is the project or building proximity to nearest Coastal, Velocity or Flood Zone or Area Prone to Flooding?

Approx. 1,000 Ft.

If you answered YES to any of the above Location Description and Classification questions, please complete the following questions. Otherwise you have completed the questionnaire; thank you!

C - Sea-Level Rise and Storms

This section explores how a project responds to Sea-Level Rise and / or increase in storm frequency or severity.

C.2 - Analysis

How were impacts from higher sea levels and more frequent and extreme storm events analyzed:

Sea Level Rise:	*Ft.*	Frequency of storms:	*per year*

C.3 - Building Flood Proofing

Describe any strategies to limit storm and flood damage and to maintain functionality during an extended periods of disruption.

What will be the Building Flood Proof Elevation and First Floor Elevation:

Flood Proof Elevation:	*Boston City Base Elev.(Ft.)*	First Floor Elevation:	*Boston City Base Elev. (Ft.)*

Will the project employ temporary measures to prevent building flooding (e.g. barricades, flood gates):

Yes / No	If Yes, to what elevation	*Boston City Base Elev. (Ft.)*

If Yes, describe:

What measures will be taken to ensure the integrity of critical building systems during a flood or severe storm event:

Systems located above 1st Floor.	Water tight utility conduits	Waste water back flow prevention	Storm water back flow prevention

Were the differing effects of fresh water and salt water flooding considered:

Yes / No

Will the project site / building(s) be accessible during periods of inundation or limited access to transportation:

Yes / No	If yes, to what height above 100 Year Floodplain:	*Boston City Base Elev. (Ft.)*

Will the project employ hard and / or soft landscape elements as velocity barriers to reduce wind or wave impacts?

Yes / No

If Yes, describe:

Will the building remain occupiable without utility power during an extended period of inundation:

Yes / No	If Yes, for how long:	*days*

Describe any additional strategies to addressing sea level rise and or sever storm impacts:

C.4 - Building Resilience and Adaptability

Describe any strategies that would support rapid recovery after a weather event and accommodate future building changes that respond to climate change:

Will the building be able to withstand severe storm impacts and endure temporary inundation?

Select appropriate:	*Yes / No*	Hardened / Resilient Ground Floor	Temporary shutters and or barricades	Resilient site design, materials and construction

	Construction		

Can the site and building be reasonably modified to increase Building Flood Proof Elevation?

Select appropriate:	*Yes / No*	Surrounding site elevation can be raised	Building ground floor can be raised	Construction been engineered
Describe additional strategies:				

Has the building been planned and designed to accommodate future resiliency enhancements?

Select appropriate:	*Yes / No*	Solar PV	Solar Thermal	Clean Energy / CHP System(s)
		Potable water storage	Wastewater storage	Back up energy systems & fuel
Describe any specific or additional strategies:				

Thank you for completing the Boston Climate Change Resilience and Preparedness Checklist!

For questions or comments about this checklist or Climate Change Resiliency and Preparedness best practices, please contact: John.Dalzell.BRA@cityofboston.gov

APPENDIX G – RESPONSE TO COB ACCESS GUIDELINES

Accessibility Checklist

(to be added to the BRA Development Review Guidelines)

In 2009, a nine-member Advisory Board was appointed to the Commission for Persons with Disabilities in an effort to reduce architectural, procedural, attitudinal, and communication barriers affecting persons with disabilities in the City of Boston. These efforts were instituted to work toward creating universal access in the built environment.

In line with these priorities, the Accessibility Checklist aims to support the inclusion of people with disabilities. In order to complete the Checklist, you must provide specific detail, including descriptions, diagrams and data, of the universal access elements that will ensure all individuals have an equal experience that includes full participation in the built environment throughout the proposed buildings and open space.

In conformance with this directive, all development projects subject to Boston Zoning Article 80 Small and Large Project Review, including all Institutional Master Plan modifications and updates, are to complete the following checklist and provide any necessary responses regarding the following:

- improvements for pedestrian and vehicular circulation and access;
- encourage new buildings and public spaces to be designed to enhance and preserve Boston's system of parks, squares, walkways, and active shopping streets;
- ensure that persons with disabilities have full access to buildings open to the public;
- afford such persons the educational, employment, and recreational opportunities available to all citizens; and
- preserve and increase the supply of living space accessible to persons with disabilities.

We would like to thank you in advance for your time and effort in advancing best practices and progressive approaches to expand accessibility throughout Boston's built environment.

Accessibility Analysis Information Sources:

1. Americans with Disabilities Act – 2010 ADA Standards for Accessible Design
    a. http://www.ada.gov/2010ADAstandards_index.htm
2. Massachusetts Architectural Access Board 521 CMR
    a. http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/aab/aab-rules-and-regulations-pdf.html
3. Boston Complete Street Guidelines
    a. http://bostoncompletestreets.org/
4. City of Boston Mayors Commission for Persons with Disabilities Advisory Board
    a. http://www.cityofboston.gov/Disability
5. City of Boston – Public Works Sidewalk Reconstruction Policy
    a. http://www.cityofboston.gov/images_documents/sidewalk%20policy%200114_tcm3-41668.pdf
6. Massachusetts Office On Disability Accessible Parking Requirements
    a. www.mass.gov/anf/docs/mod/hp-parking-regulations-mod.doc
7. MBTA Fixed Route Accessible Transit Stations
    a. http://www.mbta.com/about_the_mbta/accessibility/

Project Information

Project Name:	14 West Broadway Mixed-Use Development
Project Address Primary:	14-20 West Broadway, South Boston
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	**CPC Cornerstone Development, LLC / Ryan P. Sillery / Manager/ Rsillery@citypointcapital.com** **857-496-0309**

Team Description

Owner / Developer:	**CPC Cornerstone Development, LLC / Ryan P. Sillery**
Architect:	**RCA, LLC**
Engineer (building systems):	**n/a**
Sustainability / LEED:	**Soden Sustainability Consulting**
Permitting:	**MLF Consulting LLC**
Construction Management:	**West Side Real Estate Services**

Project Permitting and Phase

At what phase is the project – at time of this questionnaire?

☑ PNF / Expanded PNF Submitted	Draft / Final Project Impact Report Submitted	BRA Board Approved
BRA Design Approved	Under Construction	Construction just completed:

Building Classification and Description

What are the principal Building Uses - select all appropriate uses?

	Residential – One to Three Unit	☑ Residential - Multi-unit, Four +	Institutional	Education
	Commercial	Office	Retail	Assembly
	Laboratory / Medical	Manufacturing / Industrial	Mercantile	Storage, Utility and Other
First Floor Uses (List)	*Residential, Amenity Space, Accessory Retail Space*			

What is the Construction Type – select most appropriate type?

	Wood Frame	Masonry	☑ Steel Frame	Concrete

Describe the building?

Site Area:	14,326 SF	Building Area:	Approx. 120,164 GSF +/-
Building Height:	113' / 122'	Number of Stories:	10 (not including basement)
First Floor Elevation:	*.Final Elevation to be determined during Construction Drawing Phase*	Are there below grade spaces:	☑*Yes / No* ** Parking / Mechanical & Storage Space

Assessment of Existing Infrastructure for Accessibility:

This section explores the proximity to accessible transit lines and proximate institutions such as, but not limited to hospitals, elderly and disabled housing, and general neighborhood information. The proponent should identify how the area surrounding the development is accessible for people with mobility impairments and should analyze the existing condition of the accessible routes through sidewalk and pedestrian ramp reports.

Provide a description of the development neighborhood and identifying characteristics.	Mixed-Use: Residential, Retail, Offices, & Restaurant
List the surrounding ADA compliant MBTA transit lines and the proximity to the development site: Commuter	West Broadway Train Station across the street on West Broadway

rail, subway, bus, etc.	
List the surrounding institutions: hospitals, public housing and elderly and disabled housing developments, educational facilities, etc.	Residential, Hotel, West Broadway Train Station
Is the proposed development on a priority accessible route to a key public use facility? List the surrounding: government buildings, libraries, community centers and recreational facilities and other related facilities.	Not Available at this time. This will be coordinated during Final Design Plans

Surrounding Site Conditions – Existing:

This section identifies the current condition of the sidewalks and pedestrian ramps around the development site.

Are there sidewalks and pedestrian ramps existing at the development site?	Yes, an existing sidewalk abuts the project site on the front & rear of the building. The existing sidewalk includes pedestrian ramps at the end of the block.
If yes above, list the existing sidewalk and pedestrian ramp materials and physical condition at the development site.	The existing sidewalk material is concrete with granite curbing. The physical condition of the existing concrete sidewalk and pedestrian ramps is fair.
Are the sidewalks and pedestrian ramps existing-to-remain? **If yes,** have the sidewalks and pedestrian ramps been verified as compliant? **If yes,** please provide surveyors report.	Yes, with modifications for new driveway entrances into the property. No, the existing sidewalks and pedestrian ramps have not been verified as being in compliance at this time but will be verified during the project design.
Is the development site within a historic district? **If yes,** please identify.	No

Surrounding Site Conditions – Proposed

This section identifies the proposed condition of the walkways and pedestrian ramps in and around the development site. The width of the sidewalk contributes to the degree of comfort and enjoyment of walking along a street. Narrow sidewalks do not support lively pedestrian activity, and may create dangerous conditions that force people to walk in the street. Typically, a five foot wide Pedestrian Zone supports two people walking side by side or two wheelchairs passing each other. An eight foot wide Pedestrian Zone allows two pairs of people to comfortable pass each other, and a ten foot or wider Pedestrian Zone can support high volumes of pedestrians.

Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? See: www.bostoncompletestreets.org	No change to the existing sidewalks
If yes above, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, Boulevard.	N/A
What is the total width of the proposed sidewalk? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone.	8' +/ Wide
List the proposed materials for each Zone. Will the proposed materials be on private property or will the proposed materials be on the City of Boston pedestrian right-of-way?	Not Available at this time. This will be coordinated during Final Design Plans
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the City of Boston Public Improvement Commission?	No
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way?	No
If yes above, what are the proposed dimensions of the sidewalk café or furnishings and what will the right-of-way clearance	N/A

be?	

Proposed Accessible Parking:

See Massachusetts Architectural Access Board Rules and Regulations 521 CMR Section 23.00 regarding accessible parking requirement counts and the Massachusetts Office of Disability Handicap Parking Regulations.

What is the total number of parking spaces provided at the development site parking lot or garage?	70 +/- spaces (Valet Parking)
What is the total number of accessible spaces provided at the development site?	Not Available at this time. This will be coordinated during Final Design Plans
Will any on street accessible parking spaces be required? **If yes,** has the proponent contacted the Commission for Persons with Disabilities and City of Boston Transportation Department regarding this need?	None
Where is accessible visitor parking located?	Not Available at this time. This will be coordinated during Final Design Plans
Has a drop-off area been identified? **If yes,** will it be accessible?	Yes, off Athens Street & it will be accessible
Include a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations. Please include route distances.	See **Diagram** that Follows

Circulation and Accessible Routes:

The primary objective in designing smooth and continuous paths of travel is to accommodate persons of all abilities that allow for universal access to entryways, common spaces and the visit-ability* of neighbors.

**Visit-ability – Neighbors ability to access and visit with neighbors without architectural barrier limitations*

Provide a diagram of the accessible route connections through the site.	See **Diagram** That Follows
Describe accessibility at each entryway: Flush Condition, Stairs, Ramp Elevator.	Flush
Are the accessible entrance and the standard entrance integrated?	Yes
If no above, what is the reason?	N/A
Will there be a roof deck or outdoor courtyard space? **If yes,** include diagram of the accessible route.	Yes, accessible by (2) elevators and (2) egress stairwells
Has an accessible routes way-finding and signage package been developed? **If yes,** please describe.	Not at this time, but all future way finding signage will be developed to meet Building Code and Accessibility Board Requirements

Accessible Units: (If applicable)

In order to facilitate access to housing opportunities this section addresses the number of accessible units that are proposed for the development site that remove barriers to housing choice.

What is the total number of proposed units for the development?	47 +/- units
How many units are for sale; how many are for rent? What is the market value vs. affordable breakdown?	Not Available at this time
How many accessible units are being proposed?	Not Available at this time. This will be coordinated during Final Design Plans
Please provide plan and diagram of the accessible units.	Not Available at this time. This will be coordinated during Final Design Plans
How many accessible units will also be affordable? If none, please	Not Available at this time. This will be coordinated during Final Design Plans

describe reason.	
Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility impairments? Example: stairs at entry or step to balcony. **If yes,** please provide reason.	No
Has the proponent reviewed or presented the proposed plan to the City of Boston Mayor's Commission for Persons with Disabilities Advisory Board?	Yes
Did the Advisory Board vote to support this project? **If no,** what recommendations did the Advisory Board give to make this project more accessible?	Ongoing BRA and other city agency reviews

See Attached Accessibility Diagram

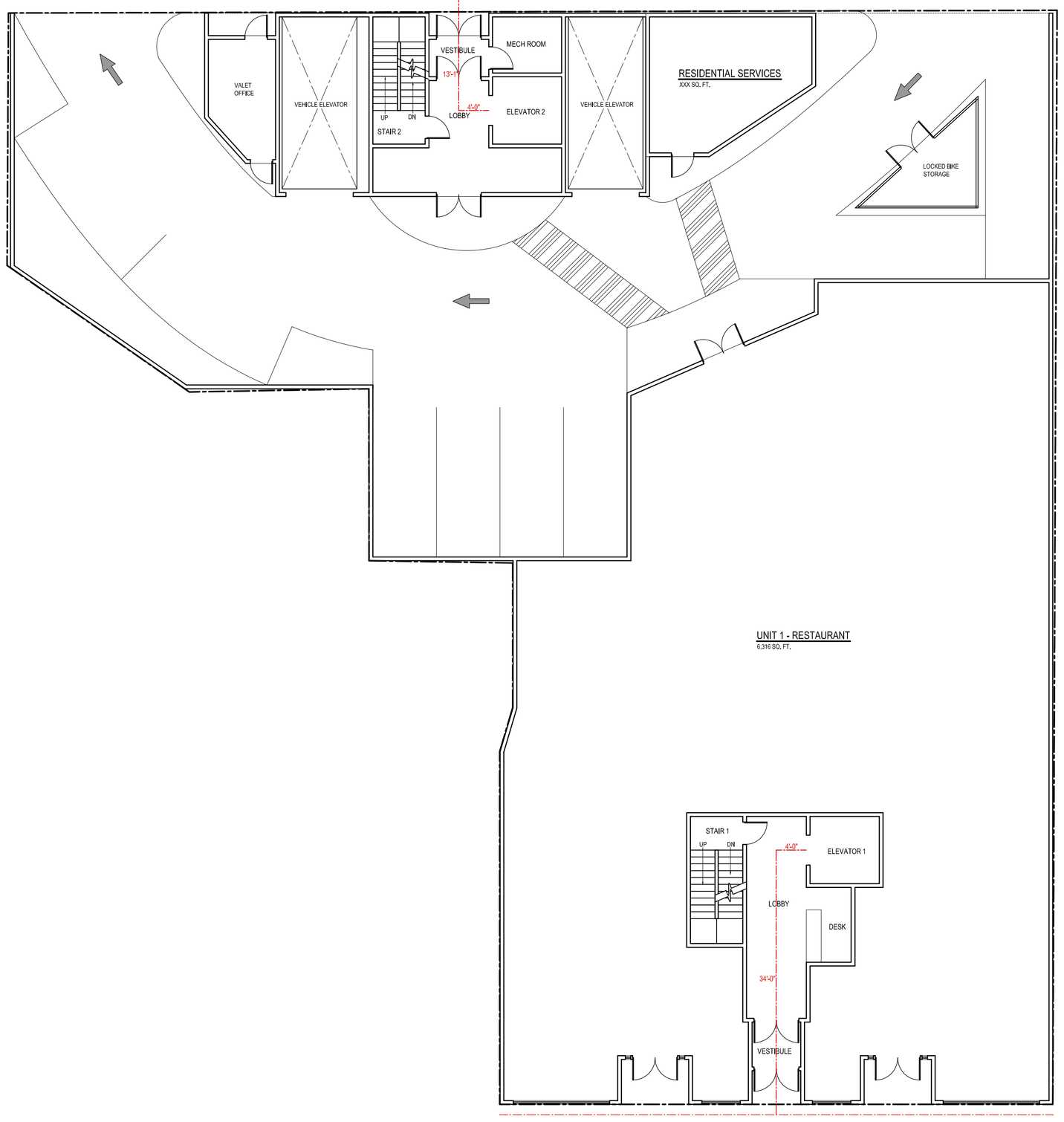
Thank you for completing the Accessibility Checklist!

For questions or comments about this checklist or accessibility practices, please contact:

kathryn.quigley@boston.gov | Mayors Commission for Persons with Disabilities

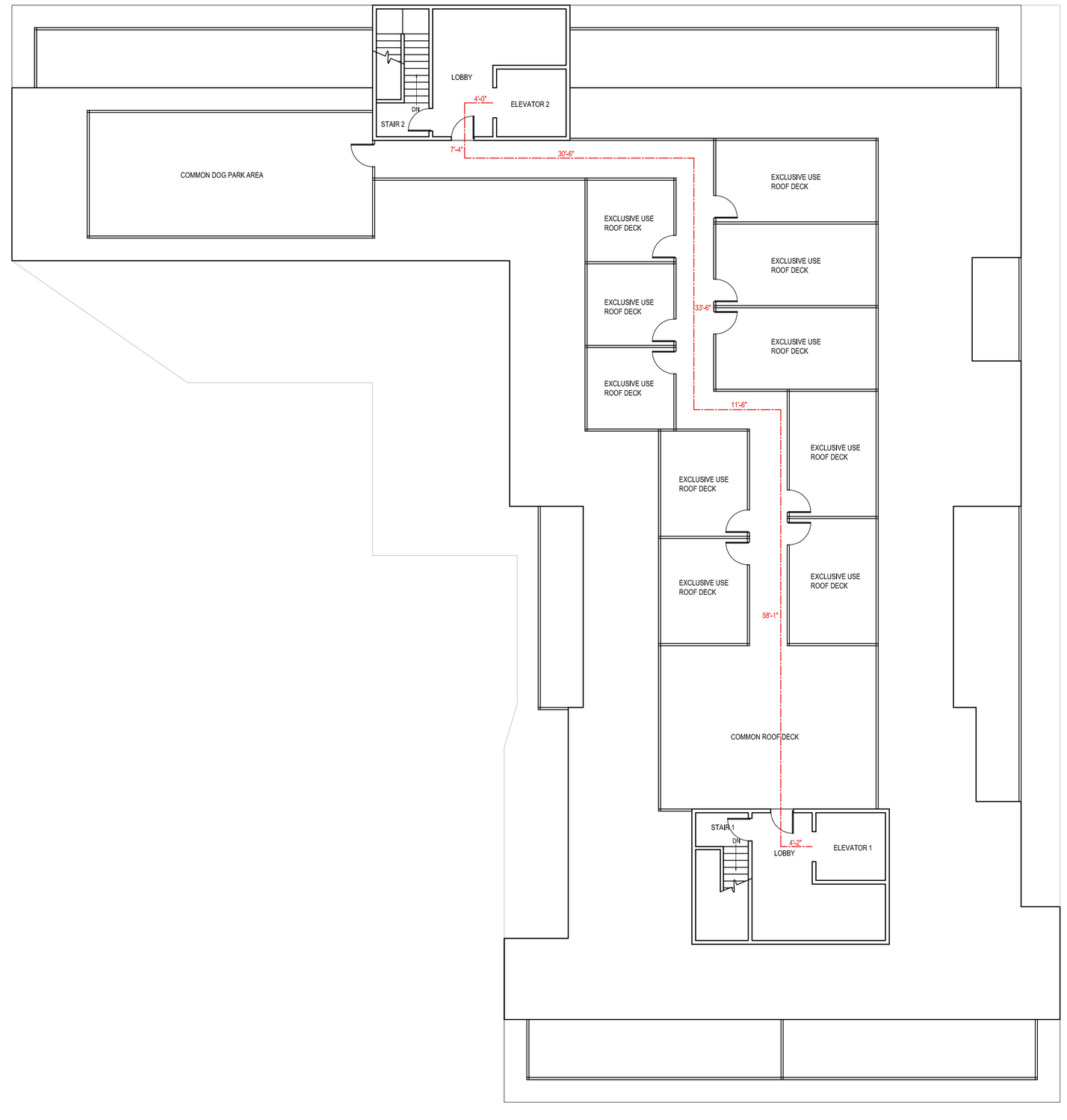
REV.	DATE	DESCRIPTION
1	X-XX-XX	XXX

ATHENS STREET



WEST BROAD WAY

FIRST FLOOR ACCESSIBILITY DIAGRAM PLAN



ROOF DECK ACCESSIBILITY DIAGRAM PLAN

RCA, LLC
415 Neponset Ave.
Dorchester, Massachusetts 02122
Telephone: 617-282-0930
Fax: 617-282-1880
www.roche-christopher.com

Ryan Sillery
14-20 West Broadway
South Boston, Ma 02127

PROJECT # 13-157
DATE: 7-16-14 REV:
SCALE: 3/32" = 1'-0"
DRAWN BY: CD
CHECKED BY: J.E.R. / R.B.

APPENDIX H – DRAFT ARTICLE 37 - GREEN BUILDING REPORT

Draft Green Building Report
14 West Broadway Residential Project

14 West Broadway
South Boston MA 02127

November 25, 2014



Prepared by:
Colleen Soden
Soden Sustainability

sodenSUSTAINABILITYconsulting
charting your path to EFFICIENT and HEALTHY buildings

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IV. APPENDICES 18

Appendix A: IDc2 LEED Registration & Accredited Professional- 18

I. PROJECT INTRODUCTION

Sustainability informs every design decision. Enduring and efficient buildings conserve embodied energy and preserve natural resources. We are working to minimize our energy use as much as possible by evaluating every possible efficiency measure.

The 14 West Broadway project embraces the opportunity to positively influence the urban environment. Its urban location takes advantage of existing infrastructure while convenient access to mass transportation will reduce dependence on single occupant vehicle trips and minimize transportation impacts. Bicycle storage will be provided on-site along with many nearby transportation alternatives.

The 14 West Broadway project is using the LEED for New Construction 2009 rating systems and will meet BRA Certifiability Requirements.

The LEED rating system tracks the sustainable features of the project by achieving points in following categories: Sustainable Sites; Water Efficiency; Energy & Atmosphere; Materials and Resources; Indoor Environmental Quality; and Innovation & Design Process.

We currently are tracking 61 YES credits and 15 study credits. The project currently earns a LEED Gold Certifiability level.

Project Information

Gross SF= 109,013

Total number of units = 47 units- *6- 1 bed, 31- 2 bed, 10- 3 bed*

Occupancy = 98 Residents + 10 staff

Total parking = 70 (*26 stacked parking = 52 + 18 regular parking spaces)*

Total Bike Storage (covered and uncovered) 15 covered

Site Area SF= 14,326

Building Footprint- Approximately 14,326 SF

Open Space Zoning requirement

50 SF/unit x 47 units= 2,350 25% more = 2,937.5 50% more= 3,525

Pedestrian Hardscape = 3,800 SF

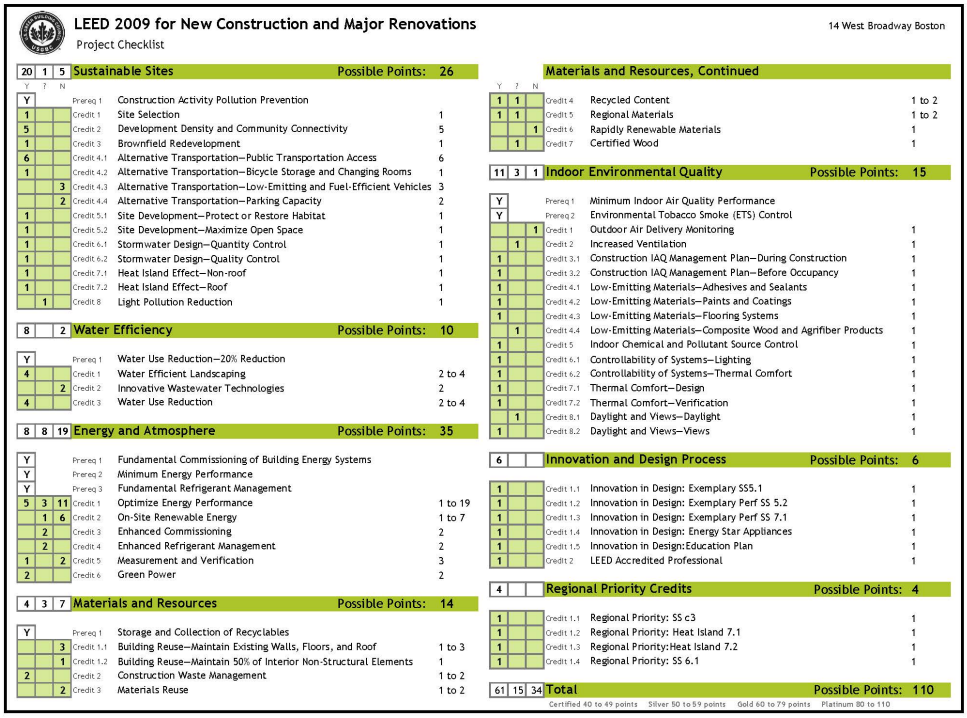
- Hardscape with a min SRI of 29

Green/vegetated SF = 4,400 SF

- Native/adaptive vegetation SF 4,400 Sq'

Total SF of open spaces provided = 8,200

II. LEED 2009 NEW CONSTRUCTION CHECKLIST



LEED 2009 for New Construction and Major Renovations

Project Checklist

14 West Broadway Boston

Y	?	N			
20	**1**	**5**	**Sustainable Sites**	**Possible Points:**	**26**
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
8		**2**	**Water Efficiency**	**Possible Points:**	**10**
Y			Prereq 1	Water Use Reduction—20% Reduction	
4			Credit 1	Water Efficient Landscaping	2 to 4
		2	Credit 2	Innovative Wastewater Technologies	2
4			Credit 3	Water Use Reduction	2 to 4
8	**8**	**19**	**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	
5	3	11	Credit 1	Optimize Energy Performance	1 to 19
	1	6	Credit 2	On-Site Renewable Energy	1 to 7
	2		Credit 3	Enhanced Commissioning	2
	2		Credit 4	Enhanced Refrigerant Management	2
1		2	Credit 5	Measurement and Verification	3
2			Credit 6	Green Power	2
4	**3**	**7**	**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
		2	Credit 3	Materials Reuse	1 to 2

Y	?	N			
			Materials and Resources, Continued		
1	1		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
11	**3**	**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
6			**Innovation and Design Process**	**Possible Points:**	**6**
1			Credit 1.1	Innovation in Design: Exemplary SS5.1	1
1			Credit 1.2	Innovation in Design: Exemplary Perf SS 5.2	1
1			Credit 1.3	Innovation in Design: Exemplary Perf SS 7.1	1
1			Credit 1.4	Innovation in Design: Energy Star Appliances	1
1			Credit 1.5	Innovation in Design:Education Plan	1
1			Credit 2	LEED Accredited Professional	1
4			**Regional Priority Credits**	**Possible Points:**	**4**
1			Credit 1.1	Regional Priority: SS c3	1
1			Credit 1.2	Regional Priority: Heat Island 7.1	1
1			Credit 1.3	Regional Priority:Heat Island 7.2	1
1			Credit 1.4	Regional Priority: SS 6.1	1
61	**15**	**34**	**Total**	**Possible Points:**	**110**

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

III. LEED EXPLANATORY NARRATIVE

Sustainable Sites

SSp1 - Construction Activity Pollution Prevention

Required

An erosion and sedimentation plan is required that conforms to local codes and the EPA Construction General Permit (Phase I and Phase II) of the National Pollution Discharge Elimination System Program NPDES.

The project's erosion and sedimentation plan conforms to local codes and the EPA Construction General Permit (Phase I and Phase II) of the National Pollution Discharge Elimination System Program NPDES.

SSc1 – Site Selection

1 Point

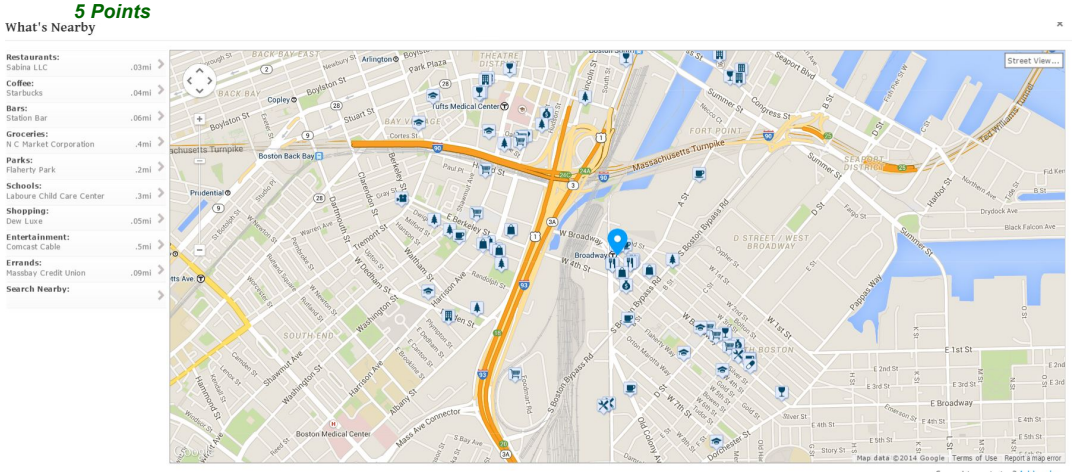
Do not develop buildings, hardscape, roads or parking areas on portions of sites that meet any one of the criteria listed below.

The project has not been developed on any of these restricted sites:

- ***Prime farmland as defined citation in 7CFR657.5.***
- ***Previously undeveloped land whose elevation is lower than 5 feet above the elevation of the 100-year flood as defined by FEMA.***
- ***Land that is specifically identified as habitat for any species on Federal or State threatened or endangered lists***
- ***Within 100 feet of any wetlands as US Code of Fed. Regulations and isolated wetlands or areas of special concern identified by state or local rule, OR within setback distances from wetlands prescribed in state or local regulations, as defined by local or state rule or law, whichever is more stringent.***
- ***Previously undeveloped land that is within 50 feet of a water body that supports or could support fish, recreation or industrial use, consistent with the terminology of the Clean Water Act.***
- ***Land which prior to acquisition for the project was public parkland, unless land of equal or greater value as parkland is accepted in trade by the public landowner.***

SSc2 - Development Density and Community Connectivity

5 Points



OPTION 2: Community Connectivity

The project must meet the following criteria:

- Is located on a previously developed site
- Is within ½ mile of a residential area or neighborhood with an average density of 10 units per acre
- Is within ½ mile of at least 10 basic services (2 of the 10 services can be anticipated within a year; 1 of 10 can be located within the project itself)
- Has pedestrian access between the building and the services

FOR COMMUNITY CONNECTIVITY:

The project meets the above criteria. It:

- ✓ ***is a previously developed site***
- ✓ ***is within ½ mile of a dense residential area in Boston***
- ✓ ***Is within ½ mile, with pedestrian access, of at least 10 basic services***

SSc3 – Brownfield Redevelopment

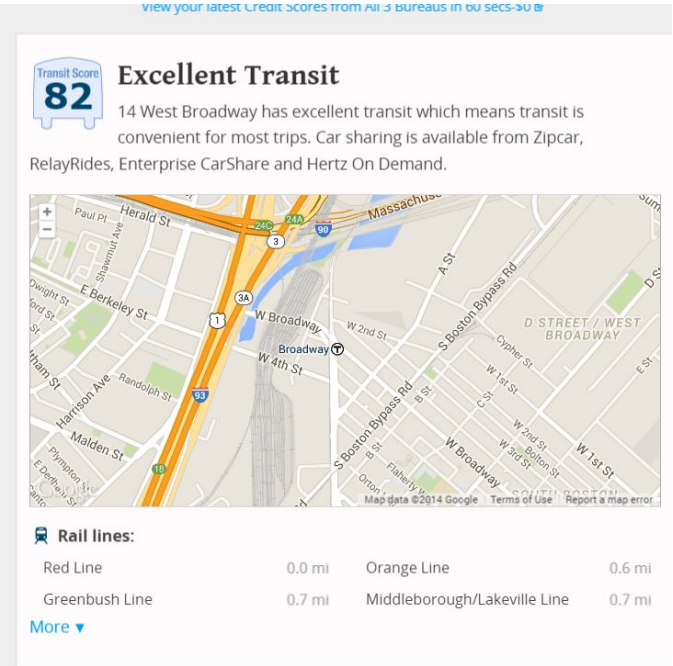
1 Point

OPTION 1 Develop on a site documented as contaminated (by means of an ASTM E1903-97 Phase II Environmental Site Assessment or a local Voluntary Cleanup Program)

The project performed a Phase 1 and a Phase II site inspection and found contamination in the soils. These will be removed and remediated

SSc4.1 - Alternative Transportation, Public Transportation Access

OPTION 1: RAIL STATION, BUS RAPID TRANSIT STATION & FERRY TERMINAL PROXIMITY- Locate the project within 1/2-mile walking distance) of an existing or planned and funded commuter rail, light rail, subway



SSc4.2 - Alternative Transportation, Bicycle Storage & Changing Rooms

CASE 1: COMMERCIAL OR INSTITUTIONAL PROJECTS

Provide secure bicycle racks and/or storage within 200 yards of a building entrance for 5% or more of all building users (measured at peak periods)

Provide shower and changing facilities in the building, or within 200 yards of a building entrance, for 0.5% of full-time equivalent (FTE) occupants.

CASE 2: RESIDENTIAL PROJECTS

Provide covered storage facilities for securing bicycles for 15% or more of building occupants.

Occupancy = 98 residents, 10 Staff

98 Residents= 15 Covered bike racks required, 15 bike racks provided
10 Staff =FTE= 1 Bike rack required, 1 shower required, 1 shower provided

The project meets the above criteria. Secure/covered storage for bicycles and exterior racks are provided. A shower will be also provided for staff.

SS Credit 4.3: Alternative transportation - low-emitting and fuel-efficient vehicles
1 Point

OPTION 1: PREFERRED OR DISCOUNTED PARKING

Provide preferred parking for low-emitting and fuel-efficient vehicles for 5% of the total vehicle parking capacity of the site.

The project has 70 covered parking spaces provided but since they are all valet we cannot designate the preferred parking for this credit.

SSc4.4 Alternative Transportation, Parking Capacity
2 Points
OPTION 1

Size parking capacity to meet, but not exceed, minimum local zoning requirements

Provide infrastructure and support programs to facilitate shared vehicle use such as carpool drop-off areas, designated parking for vanpools, car-share services, ride boards and shuttle services to mass transit.

The project provides 70 parking spaces which is less than zoning requirements, although off-street parking requirements are determined through the Large Project Review process in accordance with Article 80 of the Zoning Code.

Credit 5.1 Site Development—Protect or Restore Habitat

CASE 2. PREVIOUSLY DEVELOPED2 AREAS OR GRADED SITES
Restore or protect a minimum of 50% of the site (excluding the building footprint) or 20% of the total site area (including building footprint), whichever is greater, with native or adapted vegetation.

Native/adaptive vegetation Provided SF =4,400 SF

- 20% of the site area = 2,865.20 SF
- 30% of the site area= 4,297.80 SF

The project exceeds the 20% requirement for native and adaptive vegetation with a combination of green areas on the ground plans and roof area. The project also earns an exemplary performance point for restoring more than 30% of the site area.

SSc5.2 – Site Development, Maximize Open Space
1 Point
CASE 1. SITES WITH LOCAL ZONING OPEN SPACE REQUIREMENTS

Reduce the development footprint1 and/or provide vegetated open space within the project boundary such that the amount of open space exceeds local zoning requirements by 25%.

The intention of the site design is to maximize open space. For projects located in urban areas that earn SS Credit 2, pedestrian-oriented hardscape areas can contribute to credit compliance. For such projects, a minimum of 25% of the open space counted must be vegetated.

The project exceeds the 25% requirement for open space with a combination of green areas on the ground plan and roof area.

Zoning requirement
50 SF/unit x 47 units= 2,350 25% more = 2,937.5 50% more= 3,525

- Pedestrian Hardscape 3,800 SF
  - Hardscape with a min SRI of 29
- Green/vegetated SF 4,400 SF
  - Native/adaptive vegetation SF 4,400 SF

Total SF provided= 8,200 SF

Credit 6.1 Stormwater Design—Quantity Control
Credit 6.2 Stormwater Design—Quality Control

Every effort has been made to increase pervious surfaces and selected plant material and strategies that will minimize rate and quantity, and maximize infiltration. The Proponent anticipates achieving both of these credits. The Quality Control credit is still being evaluated and has been marked as a maybe yes. The final calculation will be run during the CD phase of the project.

SS c7.1 Heat Island Effect, Non-Roof
1 Point
OPTION 2
Place a minimum of 50% of parking spaces under cover3. Any roof used to shade or cover parking must have an SRI of at least 29, be a vegetated green roof or be covered by solar panels that produce energy used to offset some nonrenewable resource use.

More than 100% of the parking spaces will be below-grade with an SRI Compliant Roof

SS c7.2 Heat Island Effect, Roof
1 Point
OPTION 1
Use roofing materials with a solar reflectance index2 (SRI) equal to or greater than the values in the table below for a minimum of 75% of the roof surface.

Roof Type	Slope	SRI
Low-sloped roof	≤ 2:12	78
Steep-sloped roof	> 2:12	29

100% of the roofing material will comply with these requirements.

SSc8 - Light Pollution Reduction

1 Point

Project teams must comply with one of the two options for interior lighting AND the requirement for exterior lighting.

FOR INTERIOR LIGHTING

OPTION 1

Reduce the input power (by automatic device) of all nonemergency interior luminaires with a direct line of sight to any openings in the envelope (translucent or transparent) by at least 50% between 11 p.m. and 5 a.m. After-hours override may be provided by a manual or occupant-sensing device provided the override lasts no more than 30 minutes.

FOR EXTERIOR LIGHTING

Light areas only as required for safety and comfort. Exterior lighting power densities shall not exceed those specified in ANSI/ASHRAE/IESNA Standard 90.1-2007 with Addenda for the documented lighting zone. Justification shall be provided for the selected lighting zone. Lighting controls for all exterior lighting shall comply with section 9.4.1.3 of ANSI/ASHRAE/IESNA Standard 90.1- 2007, without amendments.

The project will investigate possible compliance during DD.

Water Efficiency

WEp1 – Water Use Reduction-
Required
Employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements. Calculations are based on estimated occupant usage and must include only the following fixtures (as applicable to the building): water closets, urinals, lavatory faucets, showers, kitchen sink faucets and pre-rinse spray valves.

With the use of high efficient plumbing fixtures, we have calculated a 42% water use reduction.

Residents- 98
Staff- 10 FTE

Fixtures and flow rates	***Proposed***	***LEED Baseline***
Water closets	1.28 GPF	1.6 GPF
Lavatory faucets	.5 GPM	2.2 GPM
Showers	1.5 GPM	2.5 GPM
Kitchen sink faucets	1.0 GPM	2.2 GPM

47 total units

WEc1.1 - Water Efficient Landscaping, Reduce by 50%
2 Points
OPTION 1: REDUCE BY 50% (2 POINTS)
Reduce potable water consumption for irrigation by 50% from a calculated midsummer baseline case or using the month with the highest irrigation demand.

Easily achievable with proposed highly efficient irrigation.

WEc 1.1 & 1.2 - Water Efficient Landscaping, Reduce by 100%
4 Points
OPTION 2: NO POTABLE WATER USE OR IRRIGATION1 (4 POINTS)

There will be no irrigation installed for this project.

WE C2 Innovative Wastewater Technologies
We are unable to achieve this credit for the project since we are not reusing stormwater or specifying composting toilets.

WEc3- Water Use Reduction, 30%-40 Reduction
2-4 Points
Employ strategies that in aggregate use less water than the water use baseline calculated for the building (not including irrigation). The minimum water savings percentage for each point threshold is as follows:

% Reduction	Points
30%	**2**
35%	**3**
40%	**4**

With the use of high efficient plumbing fixtures, we have calculated a 42% water use reduction.

Residents- 98
Staff- 10 FTE

Fixtures and flow rates	***Proposed***	***LEED Baseline***
Water closets	1.28 GPF	1.6 GPF
Lavatory faucets	.5 GPM	2.2 GPM
Showers	1.5 GPM	2.5 GPM
Kitchen sink faucets	1.0 GPM	2.2 GPM

Energy & Atmosphere

EAp1 - Fundamental Building Systems Commissioning (construction credit)
Required
The following commissioning process activities must be completed by the project team:
1) Designate an individual as the Commissioning Authority (CxA) to lead, review and oversee the completion of the commissioning process activities.
a) The CxA must have documented commissioning authority experience in at least two building projects.
b) The individual serving as the CxA must be independent of the project's design and construction management, though they may be employees of the firms providing those services. The CxA may be a qualified employee or consultant of the Owner.
c) The CxA must report results, findings and recommendations directly to the Owner.
d) For projects smaller than 50,000 gross square feet, the CxA may include qualified persons on the design or construction teams who have the required experience.
2) The Owner must document the Owner's Project Requirements (OPR). The design team must develop the Basis of Design (BOD). The CxA must review these documents for clarity and completeness. The Owner and design team must be responsible for updates to their respective documents.
3) Develop and incorporate commissioning requirements into the construction documents.
4) Develop and implement a commissioning plan.
5) Verify the installation and performance of the systems to be commissioned.
6) Complete a summary commissioning report.

Commissioning process activities will be completed for the following energy-related systems, at a minimum. The commissioning agent is contracted directly to the owners:

- ❑ ***Heating, ventilating, air conditioning and refrigeration (HVAC&R) systems (mechanical and passive) and associated controls.***
- ❑ ***Lighting and daylighting controls.***
- ❑ ***Domestic hot water systems.***
- ❑ ***Renewable energy systems (wind, solar, etc.)***

The project team is also engaging an exterior envelope consultant to review building enclosure details.

EAp2 - Minimum Energy Performance
Required
ENERGY AND ATMOSPHERE
EAp2 Minimum Energy Performance & EAc1 Optimized Energy Performance:
"Comply with the mandatory requirements of ASHRAE 90.1-2007 for all major components, including the envelope, HVAC, lighting and domestic hot water.
- Demonstrate a 10 percent savings (5 percent for existing buildings) compared with a baseline case meeting the minimum requirements of ASHRAE 90.1"

The project team will at a minimum meet the stretch code requirement of a 20% reduction per ASHRAE 90.1 at a minimum. Our energy model will test ECMS to reduce energy beyond the stretch code. We will not have the final results until the energy model is developed. We are engaging the utilities to take advantage of as many utility incentives as possible.

EAp3 - Fundamental Refrigerant Management
Required
Zero use of CFC-based refrigerants in new base building HVAC&R and fire suppression systems.

This project will be designed without the use of CFC or HCFC refrigerants.

EAc1 - Optimize Energy Performance
19 Points
5 points

The project team will meet the stretch code requirement of a 20% reduction per ASHRAE 90.1 at a minimum. Our energy model will test ECMS to reduce energy beyond the stretch code. We will not have the final results until the energy model is developed. We will be engaging the utilities to take advantage of as many incentives as possible.

Credit 2 On-Site Renewable Energy
PV and solar thermal will be evaluated for the common areas of the project.

EAc3 Enhanced Commissioning (Construction Credit)
2 Points
Requirements
NC, SCHOOLS & CS
Implement, or have a contract in place to implement, the following additional commissioning process activities in addition to the requirements of EA Prerequisite 1: Fundamental Commissioning of Building Energy Systems and in accordance with the LEED Reference Guide for Green Building Design and Construction, 2009 Edition:
Prior to the start of the construction documents phase, designate an independent commissioning authority (CxA) to lead, review, and oversee the completion of all commissioning process activities.

- The CxA must report results, findings and recommendations directly to the owner.
- The CxA must conduct, at a minimum, 1 commissioning design review of the owner's project requirements basis of design, and design documents prior to the mid-construction documents phase and back-check the review comments in the subsequent design submission.
- The CxA must review contractor submittals applicable to systems being commissioned for compliance with the owner's project requirements and basis of design. This review must be concurrent with the review of the architect or engineer of record and submitted to the design team and the owner.
- The CxA or other project team members must develop a systems manual that provides future operating staff the information needed to understand and optimally operate the commissioned systems.
- The CxA or other project team members must verify that the requirements for training operating personnel and building occupants have been completed.
- The CxA must be involved in reviewing the operation of the building with operations and maintenance (O&M) staff and occupants within 10 months after substantial completion.

A plan for resolving outstanding commissioning-related issues must be included.

Enhanced Commissioning will be evaluated for the project.

EAc4 Enhanced Refrigerant Management
2 Points
OPTION 2
Select refrigerants and HVAC&R that minimize or eliminate the emission of compounds that contribute to ozone depletion and global warming. The base building HVAC&R equipment must comply with the formula, which sets a maximum threshold for the combined contributions to ozone depletion and global warming potential.

The project team will confirm calculations for the Enhanced Refrigerant Management standard when final equipment is selected.

EAc5- Measurement and Verification
OPTION 3 (1 POINT)

Meet MPR 6 through compliance Option 1: Energy and Water Data Release Form. Projects must register an account in ENERGY STAR's Portfolio Manager tool and share the project file with the USGBC master account.

The project will meet MPR6 through Compliance Option 1.

EAc6 – Green Power (Construction Credit)
2 points

Provide at least 35% (70% for EP) of the building's electricity from renewable sources by engaging in a renewable energy contract for a period of at least 2 years. Renewable sources are as defined by the Center for Resource Solutions (CRS) Green-e products certification requirements.

OPTION 1 - Determine the Baseline Electricity Use
Use the annual electricity consumption from the results of EA Credit 1.

The project will pursue Green Power. A renewable energy contract is expected to be included in the final submission.

Materials & Resources

MRp1 -- Storage & Collection of Recyclables
Required
Provide an easily accessible area that serves the entire building and is dedicated to the collection and storage of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics and metals.

The project will have a dedicated recycling area as a part of the trash collection for the building. The project at a minimum is collecting paper, corrugated cardboard, glass, plastics and metals. An independent third party service will be taking the single stream recycled material to an off-site facility.

Credit 1.1-1.4 Building Reuse—Maintain Existing Walls, Floors, and Roof
4 Points
N/A- New Construction

MRc2 Construction Waste Management (construction credit)
2 Points
Recycle and/or salvage at least 50% of non-hazardous construction and demolition debris. Develop and implement a construction waste management plan that, at a minimum, identifies the materials to be diverted from disposal and whether the materials will be sorted on-site or co-mingled. Excavated soil and land-clearing debris do not contribute to this credit. Calculations can be done by weight or volume, but must be consistent throughout. The minimum percent diversion is as follows: 50% - 1 pt; 75% - 2 pts; 95% - 1 EP point.

The project will develop and implement a construction waste management plan that, at a minimum, identifies the materials to be diverted from disposal and whether the materials will be sorted on-site or co-mingled. The project is targeting a minimum of 75% diversion from landfill.

MR c3 Materials Reuse, Reuse 5%, Reuse 10%-
Not possible for this project since we are not supplying furniture

MR c4 Recycled Content- 10% of Content, 20% of Content
The project team will pursue the 10% threshold.

MR c5 Regional Materials-10% of Materials, 20% of Materials
The project team will pursue the 10% threshold.

MR c6 Rapidly Renewable Materials
The project team opted to pursue credits with a carbon/energy reduction and positive occupant health impacts.

MRc7 Certified Wood (Construction Credit)
1 Point

The project will may pursue this credit. We are tracking it as a maybe and will decide at the time of the CDs.

Indoor Environmental Quality

EQp1 Minimum IAQ Performance
Required
Meet the minimum requirements of Sections 4 through 7 of ASHRAE 62.1-2007. Mechanical ventilation systems must be designed using the Ventilation Rate Procedure or the applicable local code, whichever is more stringent. Naturally ventilated buildings must comply with ASHRAE 62.1-2007, paragraph 5.1.

The project will be designed to meet the minimum requirements of ASHRAE 62-2007 Table 6-1 the "Minimum Ventilation Rates in Breathing Zone". The building is mechanically ventilated and will meet the requirements of this credit.

EQp2 Environmental Tobacco Smoke (ETS) Control
Required
OPTION 1
❑ Prohibit smoking in the building.
❑ Locate any exterior designated smoking areas at least 25 feet away from entries, outdoor air intakes and operable windows. Provide signage to allow smoking in designated areas.

The project will comply with Option 1- Smoking is not allowed on the Project property, inside or outside the building, at any time. This policy will be outlined in the tenant handbook.

EQc1 Outdoor Air Delivery Monitoring
CO2 Sensors typically don't make sense for natural ventilated units

EQc2 Increased Ventilation
Once we run the EQp1 Calculation, we can determine if this is feasible

EQc3.1 Construction IAQ Management Plan, During Construction **(construction credit)**
1 Point
Develop and implement an Indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the building as follows:
❑ During construction meet or exceed the recommended Control Measures of the SMACNA IAQ Guidelines for Occupied Buildings under Construction, 2nd edition 2007, ANSI/SMACNA 008-2008 (chapter 3).
❑ Protect stored on-site or installed absorptive materials from moisture damage.
❑ If permanently installed air handlers are used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 must be used at each return air grille, as determined by ASHRAE 52.2-1999. Replace all filtration media immediately prior to occupancy.

The project will follow all of the above requirements for implementing and documentation of SMACNA, and installation and replacement of filtration media prior to occupancy.

EQc3.2 Construction IAQ Management Plan, Pre-Occupancy **(construction credit)**
1 Point
OPTION 1: Flushout: Develop an IAQ management plan and implement it after all finishes have been installed and the building has been completely cleaned before occupancy.

The project intends to perform a flush-out prior to occupancy.

EQc4.1 Low-Emitting Materials, Adhesives & Sealants **(construction credit)**
1 Point
Adhesives and sealants used on the interior of the building (i.e. inside of the weatherproofing system and applied on-site) must comply with the following criteria:
❑ Adhesives, sealants and sealant primers must comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168. VOC limits must be conforming to those listed in Reference Guide table.
❑ Aerosol Adhesives must comply with standards of Green Seal Standard for Commercial Adhesives, listed in Reference Guide table.

The project will comply with the above requirements for adhesives and sealants.

EQc4.2 Low-Emitting Materials, Paints (construction credit)
1 Point
Paints and coatings used on the interior of the building (i.e. inside of the weatherproofing system and applied on-site) must comply with the following criteria:
❑ Architectural paints and coatings applied to interior walls and ceilings must not exceed the VOC content limits established in Green Seal Standard GS-11 Paints, 1st edition.
❑ Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates must not exceed the VOC content limit of 250 g/L established in Green Seal Standard GC-03, Anti-Corrosive Paints, 2nd edition.
❑ Clear wood finishes, floor coatings, stains, primers, and shellacs applied to interior elements must not exceed the VOC content limits established in South Coast Air Quality Management District (SCAQMD) Rule 113, Architectural Coatings.

The project will comply with the above requirements for paints.

EQc4.3 Low-Emitting Materials, Flooring Systems (Construction Credit)
1 Point
To comply with this credit, all interior carpet must meet the requirements of the Carpet and Rug Institute's Green Label Plus program, and all carpet cushions must meet the requirements of the Capet and Rug Institute Green Label program. Additionally, all carpet adhesive must meet the VOC limit of 50 g/L. All hard surface flooring installed in the building interior must meet one of the requirements of the FloorScore standard.

The project will comply with the above requirements for flooring systems.

EQc4.4 Low-Emitting Materials, Composite Wood & Agrifiber Products (Construction Credit)
1 Point
Composite products and laminating adhesives shall have no added urea-formaldehyde resins.

The project plans to prioritize use of no added urea-formaldehyde but cannot commit to achieving this for all wood products.
EQc5 Indoor Chemical & Pollutant Source Control
1 Point
Design to minimize and control the entry of pollutants into buildings and later cross-contamination of regularly occupied area through the following strategies:

- Employ permanent entryway systems at last ten feet long in the primary direction of travel to capture dirt and particulates entering the building at regularly used exterior entrances.
- Sufficiently exhaust each space where hazardous gases or chemicals may be present or used (e.g. garages, housekeeping and laundry areas, science laboratories, prep rooms, art shops, shops of any kind, and copying and printing rooms) to create negative pressure with respect to adjacent spaces when the doors to the room are closed.
- In mechanically ventilated buildings, install new air filtration media in regularly occupied areas prior to occupancy; these filters must provide a minimum efficiency reporting value (MERV) of 13 or higher. Filtration should be applied to process both return and outside air that is delivered as supply air.
- Provide containment (i.e. a closed container for storage for off-site disposal in a regulatory compliant storage area, preferably outside the building) for appropriate disposal of hazardous liquid wastes in places where water and chemical concentrate mixing occurs (e.g. housekeeping, janitorial and science laboratories).

The project is evaluating compliance with all requirements for indoor chemical & pollutant source control.

EQc6.1 Controllability of Systems, Lighting
1 Point

Intern11 11/16/10 1:25 PM
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Provide individual lighting controls for 90% (minimum) of the building occupants to enable adjustments to suit individual task needs and preferences.

The project will be designed to comply with the standard by providing individual lighting controls for at least 90% of the occupants.

EQc6.2 Controllability of Systems, Thermal Comfort
1 Point
Provide individual comfort controls for 50% (minimum) of the building occupants to enable adjustments to meet individual needs and preferences. Operable windows may be used in lieu of controls for occupants located 20 feet inside and 10 feet to either side of the operable part of a window.
AND
Provide comfort control systems for all shared multi-occupant spaces to enable adjustments that meet group needs and preferences. Conditions for thermal comfort are described in ASHRAE Standard 55-2004.

The project will be designed to comply with the requirements of this credit by allowing at least 50% of occupant's individual access to control either the air speed, air temperature, radiant temperature, or humidity provided by mechanical systems, in individually occupied spaces. In all multi-occupant spaces, at least one means to control thermal comfort will be provided.

EQc7.1 Thermal Comfort, Design
1 point
Design HVAC systems and the building envelope to meet requirements of ASHRAE Standard 55-2004. Demonstrate design compliance in accordance with the Section 6.1.1 documentation.

Compliance with ASHRAE Standard 55 will be evaluated in the next stage of the project.

EQ c7.2 Thermal Comfort Verification
1 point

Achieve IEQ Credit 7.1: Thermal Comfort—Design
AND

Agree to conduct a thermal comfort survey of building occupants (adults and students of grades 6 and above) within 6 to 18 months after occupancy. This survey should collect anonymous responses about thermal comfort in the building, including an assessment of overall satisfaction with thermal performance and identification of thermal comfort problems. Agree to develop a plan for corrective action if the survey results indicate that more than 20% of occupants are dissatisfied with thermal comfort in the building. This plan should include measurement of relevant environmental variables in problem areas in accordance with ASHRAE Standard 55-2004 (with errata but without addenda).

If ASHRAE 55 is met, the project will survey the occupants 6-18 months following completion of the improvements to find out if they are satisfied with thermal conditions in the building. A corrective action plan will be designed and implemented if greater than 20% of occupants report dissatisfaction with a certain element of thermal comfort.

EQc8.1 Daylight & Views
1 point
The 14 West Broadway Project is designed to maximize daylighting and window to wall areas ratios to provide views. The project team will evaluate compliance with this credit in the CD Phase.

EQc8.2 Daylight & Views, Views for 90% of Spaces (Construction Credit)
1 Point

Achieve direct line of sight to the outdoor environment via vision glazing between 30 and 90 inches above finish floor for building occupants in 90% of all regularly occupied areas. Determine the area with direct line of sight by totaling the regularly occupied square footage that meets the following criteria:

- ❑ In plan view, the area is within sight lines drawn from perimeter vision glazing.
- ❑ In section view, a direct sight line can be drawn from the area to perimeter vision glazing.

Line of sight may be drawn through interior glazing. For private offices, the entire square footage of the office can be counted if 75% or more of the area has direct line of sight to perimeter vision glazing. For multi-occupant spaces, the actual square footage with direct line of sight to perimeter vision glazing is counted.

The project will be designed to maximize daylighting and window to wall areas ratios to provide views. The project team will prepare the views diagrams in the CD phase.

Innovation & Design (I.D.) Process

6 Points

IDc1.1 Innovation & Design- Exemplary Performance SSc5.1
The project will double the target of the required native and adaptive vegetation by over 30%

IDc1.2 Innovation & Design- Exemplary Performance SSc5.2
The project will double the target of the required open space for SS c5.2

IDc1.3 Innovation & Design- Exemplary Performance SSc7.1 Urban Heat Island Non Roof-
100% of parking spaces are below grade covered by an SRI complaint roof

IDc1.4 Energy Star Appliances
The project intends to achieve the Energy Star Appliances Credit through the LEED CI rating systems, as all appliance are specified to be energy star

IDc1.5 Innovation & Design- Education & Outreach
1 Point
Plan to be outlined in final submission

IDc2 LEED Accredited Professional
1 Point
Colleen Soden is the LEED AP for the project.

Regional Credits

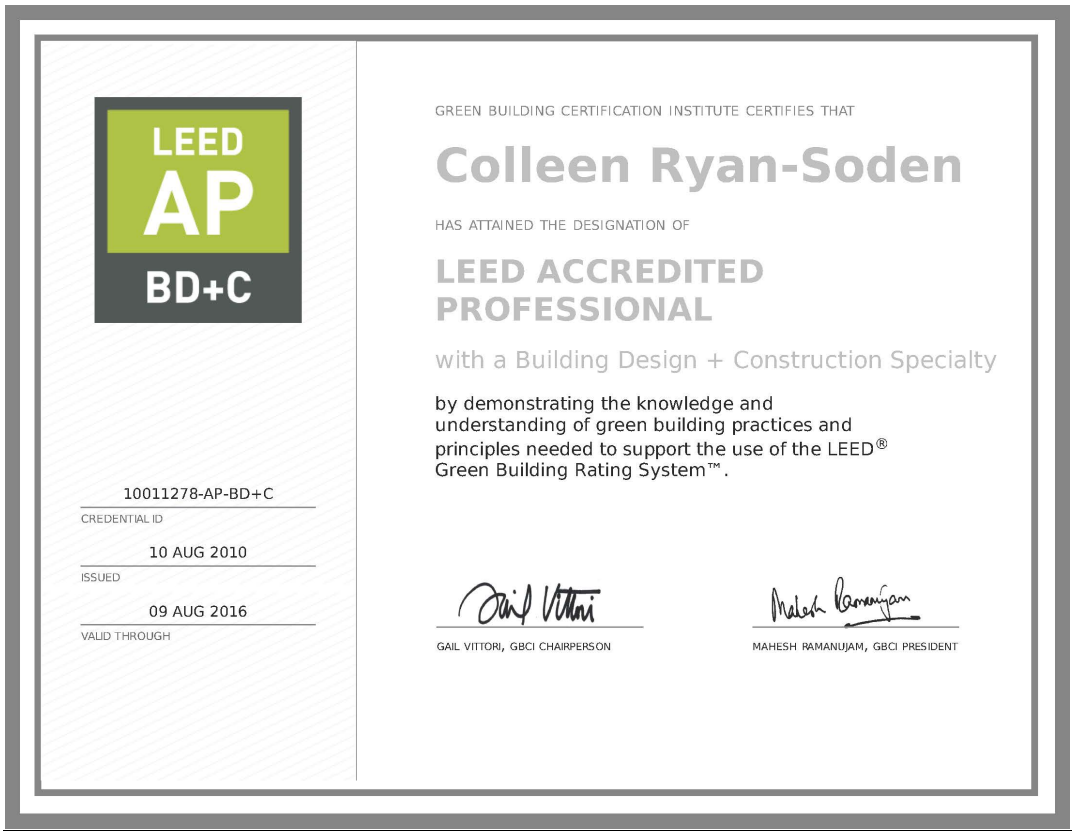
4 Points YES

The project achieves the following regional credits:
Regional Priority: SSc3
Regional Priority: SS c6.1
Regional Priority: SS c7.1
Regional Priority: SSc7.2

IV. APPENDICES

Appendix A: IDc2 LEED Registration & Accredited Professional-

Colleen Ryan Soden is the LEED Administrator and Sustainability Consultant





MLF
CONSULTING LLC

RCA, LLC
Architects – Designers – Planners