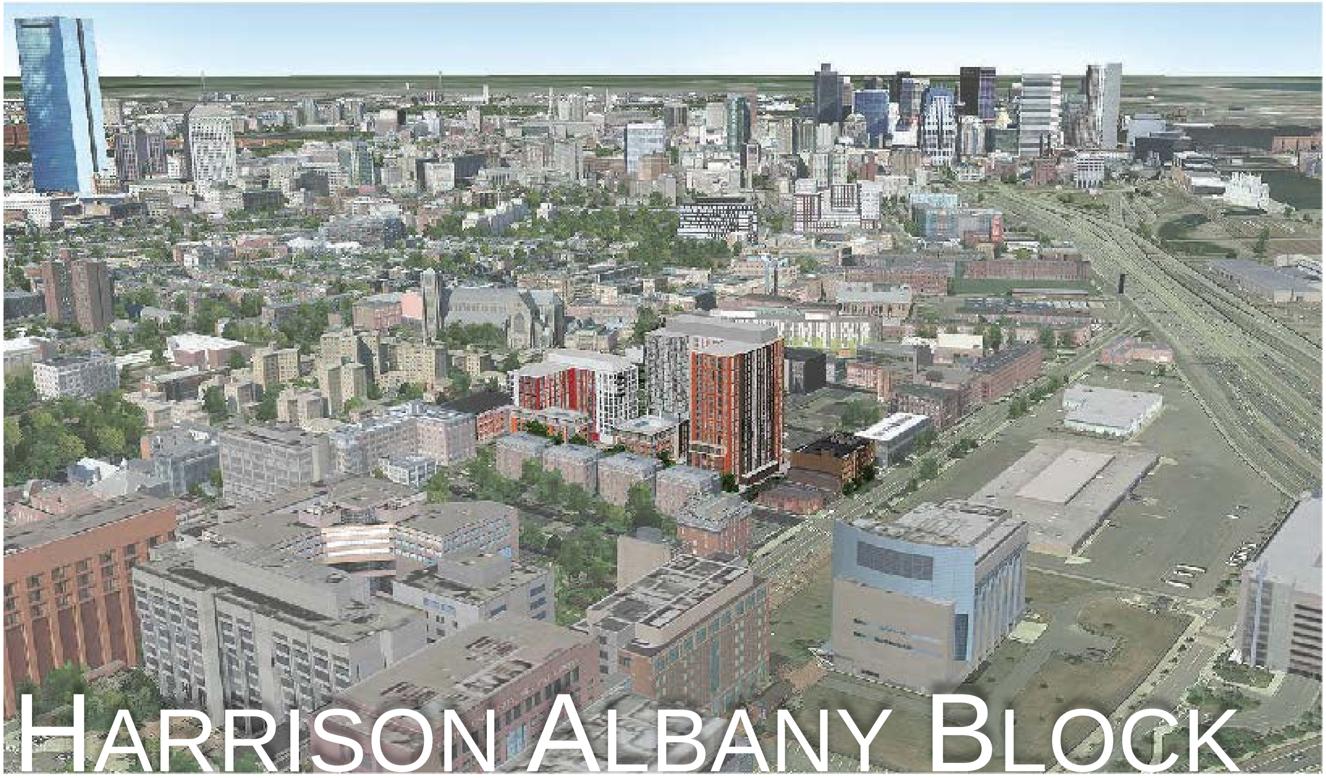
EXPANDED PROJECT NOTIFICATION FORM



HARRISON ALBANY BLOCK

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

Submitted by:
Leggat McCall Properties
10 Post Office Square
Boston, MA 02109

Prepared by:
Epsilon Associates, Inc.
3 Clock Tower Place, Suite 250
Maynard, MA 01754

In Association with:
Bentall Kennedy
Multi-Employer Property Trust
The Bozzuto Group
CBT Architects
Goulston & Storrs
Howard Stein Hudson
Nitsch Engineering

March 21, 2016

Epsilon
ASSOCIATES INC.

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Chapter 1.0

Introduction / Project Description

1.0 INTRODUCTION/ PROJECT DESCRIPTION

1.1 Introduction

Leggat McCall Properties LLC and MEPT/LMP Harrison/Albany Block LLC (together, the "Proponent") proposes a redevelopment of the majority of the approximately three acre block bordered by Harrison Avenue, East Dedham Street, East Canton Street, and Albany Street (the "Project Site") in the Harrison Albany Corridor. The mixed-use development is envisioned to meet three main objectives:

- **Respond to Mayor Walsh's goal of building more housing in Boston.** A thoughtful approach to unlocking the potential of this underutilized site has been pursued to advance the Mayor's goals.

- **Improve an underutilized site and add vibrancy to the South End neighborhood**. The development will transform a surface parking lot into a vibrant space with new activity created by new residents, retail space, significant open spaces and new and exciting commercial activity.

- **Create significant new neighborhood open space that enhances and connects the neighborhood.** The design includes almost an acre of new pedestrian-friendly open space on site that will create opportunities for both passive and active recreation, and provide new pedestrian connections through the site to the surrounding area.

To meet the above objectives, the Proponent is proposing the construction of two new residential buildings and the renovation of one existing building. In aggregate, the development will include approximately 710 residential units, 14,100 square feet (sf) of retail space and 40,100 sf of office space (the "Project"), within a design that is consistent with the spirit of the Harrison Albany Corridor Strategic Plan. The Project Site also includes the existing Gambro Building, which will remain as is.

The Project Site, purchased from Boston Medical Center, is an underutilized site dominated by a surface parking lot and partially occupied medical office buildings that do not activate the street level in a meaningful way, resulting in uninviting streets and a challenge in creating a sense of place. Through the careful design of street edges, pedestrian friendly open spaces, retail storefronts, and tree-lined streets, this underutilized site will become a walkable and vibrant area. The thoughtful landscaping will create nodes of activity, helping define place making opportunities.

The Project's design responds to the scale and history of the South End context through massing and materiality while identifying itself as a transformative, contemporary development.

In addition to enlivening the area with activity, the Project will create significant public benefits including market-rate housing, affordable units and units targeted to working artists; construction and permanent jobs; and increased tax revenues to the City. In addition, the Project design has been carefully orchestrated to create attractive buildings that respond to the scale and history of the South End context through massing and materiality, while identifying itself as a transformative contemporary development. The design places parking below grade instead of on upper floors creating a pleasant pedestrian experience, which is further enhanced by the significant new open spaces that will be created on-site—a benefit of placing parking below-grade and strategically locating additional building height within the middle of the site. The Proponent will construct the Project based on the newest and increasingly energy efficient State building and energy codes, and is targeting to be certified at the Silver level, while assessing the Gold level, under the Leadership in Environmental and Energy Design (LEED) Rating System.

This Expanded Project Notification Form (PNF) is being submitted to the Boston Redevelopment Authority (BRA) to initiate review of the Project under Article 80B, Large Project Review, of the Boston Zoning Code.

1.2 Project Identification/Team

Address/Location:	Block bound by Harrison Avenue, Albany Street, East Dedham Street and East Canton Street in the South End neighborhood of Boston
Proponent/owner entity:	Leggat McCall Properties LLC and MEPT/LMP Harrison/Albany Block LLC
Developer:	Leggat McCall Properties 10 Post Office Square Boston, MA 02109 (617) 422-7000 William Gause Harry Nash Sam Reiche
Investment Advisor:	Bentall Kennedy (U.S.) LP One Federal Street, 25th Floor Boston, MA 02110 (617) 790-0850

Equity Investor:	Multi-Employer Property Trust c/o Bentall Kennedy (U.S.) LP 7315 Wisconsin Avenue, Suite 200 W Bethesda, MD 20852 (202) 737-7300
Development Advisor:	The Bozzuto Group 60 Mall Road Burlington, MA 01805 (857) 301-7018
Architect:	CBT Architects, Inc. 110 Canal Street Boston, MA 02114 (617) 262-4354 Alfred Wojciechowski
Legal Counsel:	Goulston & Storrs 400 Atlantic Avenue Boston, MA 02110-3333 (617) 482-1775 Matthew Kiefer
Permitting Consultants:	Epsilon Associates, Inc. 3 Clock Tower Place, Suite 250 Maynard, MA 01754 (978) 897-7100 Cindy Schlessinger Geoff Starsiak
Transportation and Parking Consultant:	Howard/Stein-Hudson Associates 38 Chauncy Street Boston, MA 02111 (617) 482-7080 Guy Busa Brian Beisel
Civil Engineer:	Nitsch Engineering Two Center Plaza, Suite 430 Boston, MA 0208 (617) (617) 338-0063 Josh Alston

Geotechnical Consultant: Haley & Aldrich, Inc.
465 Medford Street, Suite 2200
Boston, MA 02129
(617) 886-7400
Michael Atwood

1.3 Project Description

1.3.1 Project Site

The Project is situated on an approximately 135,160 sf site[1] bounded by East Dedham Street, Harrison Avenue, East Canton Street, and Albany Street. Andrews Street, a public way, bisects the Project Site and connects East Canton Street to East Dedham Street. There are five existing buildings on the Project Site, including one vacant former residential building (75 East Dedham Street), one vacant and burnt out former commercial building (575 Albany Street), and three buildings that include office, lab and medical office space (Gambro Building, 100 East Canton Street and 123 East Dedham Street), as well as a large surface parking lot. Table 1-1 includes details about the existing conditions on the Project Site. There are also three small buildings adjacent to 575 Albany Street on the block that are not included in the Project Site. See Figure 1-1 for an aerial locus map, Figure 1-2 for a view of the Project area, and Figures 1-3 to 1-8 for photographs of the existing conditions on the Project Site. A site survey is included in Appendix A.

Table 1-1 Existing Conditions

Existing Uses	*Approximate Dimension*
Gambro Building	
Medical Office	34,500 sf / 3 stories
575 Albany Street	
Vacant	45,500 sf / 5 stories
100 East Canton Street/123 East Dedham Street	
Office/Lab	58,900 sf
75 East Dedham Street	
Vacant	2,480 sf
Surface Parking	
Parking Spaces	205

[1] The Project Site area total of 135,160 sf does not include Andrews Street which is approximately 4,000 sf.

Figure 1-1

Existing Site Plan

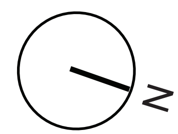

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Figure 1-2
Existing Site Plan

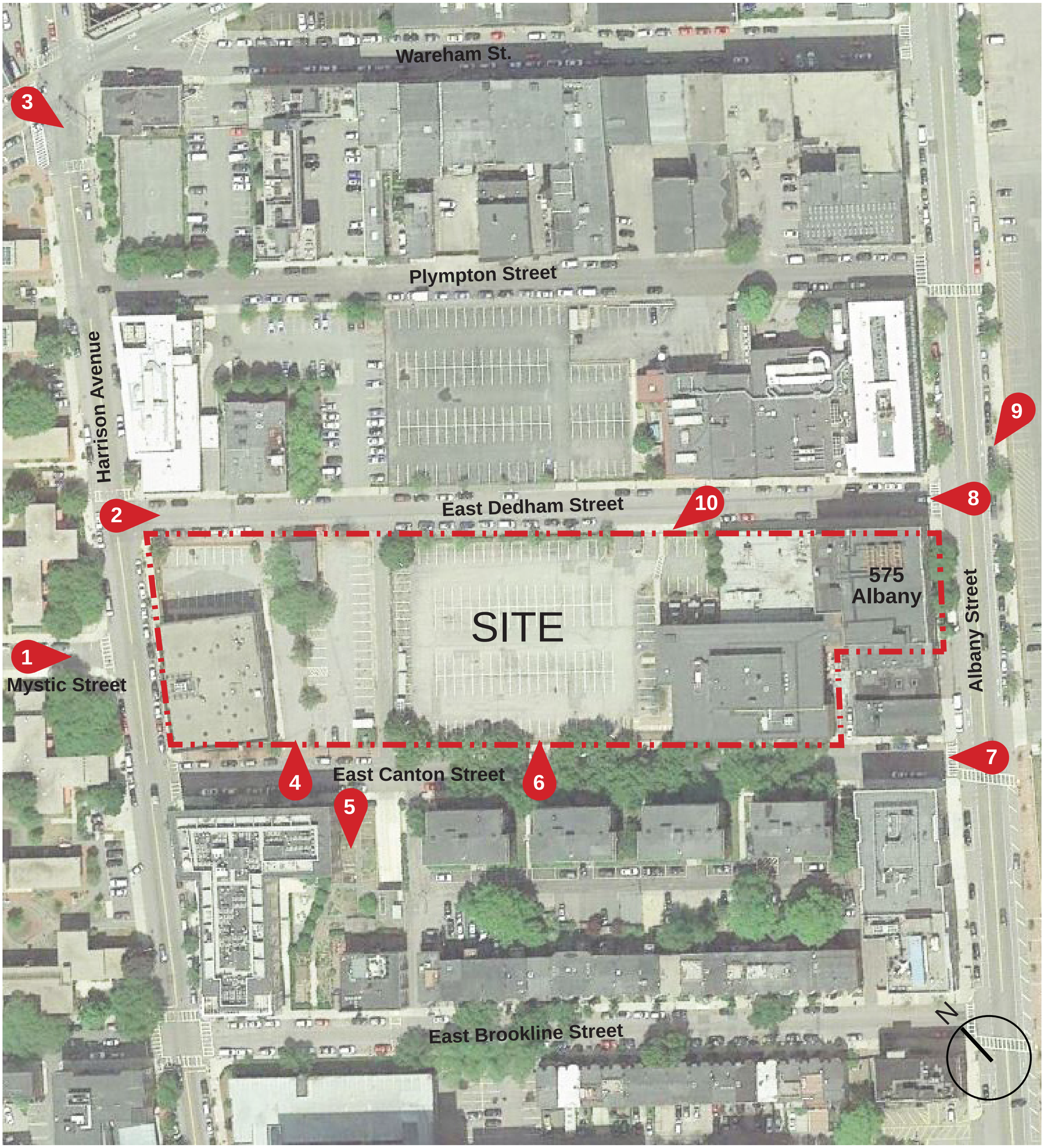

Figure 1-3
Area Photographs
View Location Key

1 - Harrison Avenue at Mystic Street Looking Southeast

2 - East Dedham Street at Harrison Avenue Looking Southeast

3 - Harrison Avenue at Monsignor Reynolds Way Looking South

4 - Gambro Building at East Canton Street Looking Northeast

5 - East Canton Street Looking Southwest

6 - East Canton Street Looking Northeast

7 - East Canton Street at Albany Street Looking Northwest

8 - East Dedham Street at Albany Street Looking Northwest

9 - Albany Street Looking Southwest

10 - East Dedham Street Looking Southwest

1.3.2 *Area Context*

The Project Site is located in the Harrison Albany Corridor in the southernmost portion of Boston's South End neighborhood. The surrounding area includes a combination of commercial and residential buildings with surface parking lots. In the immediately surrounding area, buildings range in height from three to thirteen stories. The neighboring context includes Boston Medical Center, the Boston University Medical Campus, Cathedral Housing, and the Boston Flower Exchange. Nearby parks include Franklin Square and Blackstone Square to the northwest of the Project Site.

The Project Site is within one-quarter mile of several Massachusetts Bay Transportation Authority (MBTA) bus stops serviced by multiple bus routes, including the stops servicing the Silver Line; less than one mile from several train and subway stations, including Massachusetts Avenue Station on the Orange Line, Back Bay Station with connections to the Orange Line, Commuter Rail and Amtrak, and Broadway Station on the Red Line; and walking distance from numerous basic services and amenities. The proximity to the bus stops, train stations and basic services makes the area an ideal location for pedestrian oriented development that promotes community connectivity.

1.3.3 *Proposed Project*

The Project includes approximately 710,500 sf of new and renovated area with a mix of uses throughout, including the construction of two new apartment buildings with approximately 710 residential units, a portion of which will be affordable units targeted to working artists, and renovation of the currently vacant 575 Albany Street building. The Gambro Building, which is 34,500 sf, will not change as part of the Project, and is not included in the above square footage figure. The base of the new apartment buildings will contain approximately 8,700 sf of ground floor retail. Below the new apartment buildings will be a 745-space parking garage to accommodate the uses on the Project Site and spaces that other neighborhood uses may lease. In total, the Project includes approximately 603,620 sf of net new above-grade space (approximately 665,000 sf of new construction minus approximately 61,380 sf of existing space to be demolished), and approximately 45,500 sf of renovated space. Once complete, the Project Site, including the existing Gambro Building, renovated 575 Albany Street and new buildings, will include approximately 745,000 sf and have a floor area ratio (FAR) of approximately 5.5. Figures 1-9 to 1-15 include a Project Site plan, ground floor plan, Project Site section and massing diagrams. Floor plans, additional sections and elevations are included in Appendix B. Table 1-2 includes the Project program.

Table 1-2 Project Program

Project Element	*Approximate Dimension*
Building A	
Residential	442,000 sf / 487 units
Retail	4,200 sf
TOTAL	*446,200 sf*
Height	19 stories / 200 feet
Building B	
Residential	214,300 sf / 223 units
Retail	4,500 sf
TOTAL	*218,800 sf*
Height	11 stories / 120 feet
575 Albany Street (Renovation)	
Office	40,100 sf
Retail	5,400 sf
TOTAL	*45,500 sf*
Height (existing)	5 stories / 68 feet
Parking Garage[1]	
Spaces	745 spaces
TOTAL NEW CONSTRUCTION AND RENOVATION	
Residential	**656,300 sf / 710 units**
Retail	**14,100 sf**
Office	**40,100 sf**
TOTAL	***710,500 sf***

1 The new three level below-grade parking garage will be below Buildings A and B. The relocated Andrews Street will include 5 surface parking spaces. In total, the Project includes approximately 545 new parking spaces.

The Project approach focuses the new construction within the middle of the block, which is bookended by existing lower buildings, the Gambro Building on the northern side and 575 Albany Street and the three adjacent buildings on the southern side. Additionally, the massing of the buildings steps down toward Harrison Avenue and East Canton Street to respect the existing neighborhood conditions. This approach reduces the visual impact of the building from the main adjacent thoroughfares of Harrison Avenue and Albany Street.

East Canton Street currently has a leafy residential feel made up primarily of five-story brick buildings and several large deciduous trees with canopies that cover the entire street. The design steps down at East Canton Street in order to respond to the scale of the street and create a relationship with the current context through scale and design. The ground floor of the Project will be residential along East Canton Street with private entrances, further preserving the quiet, leafy nature of the area.

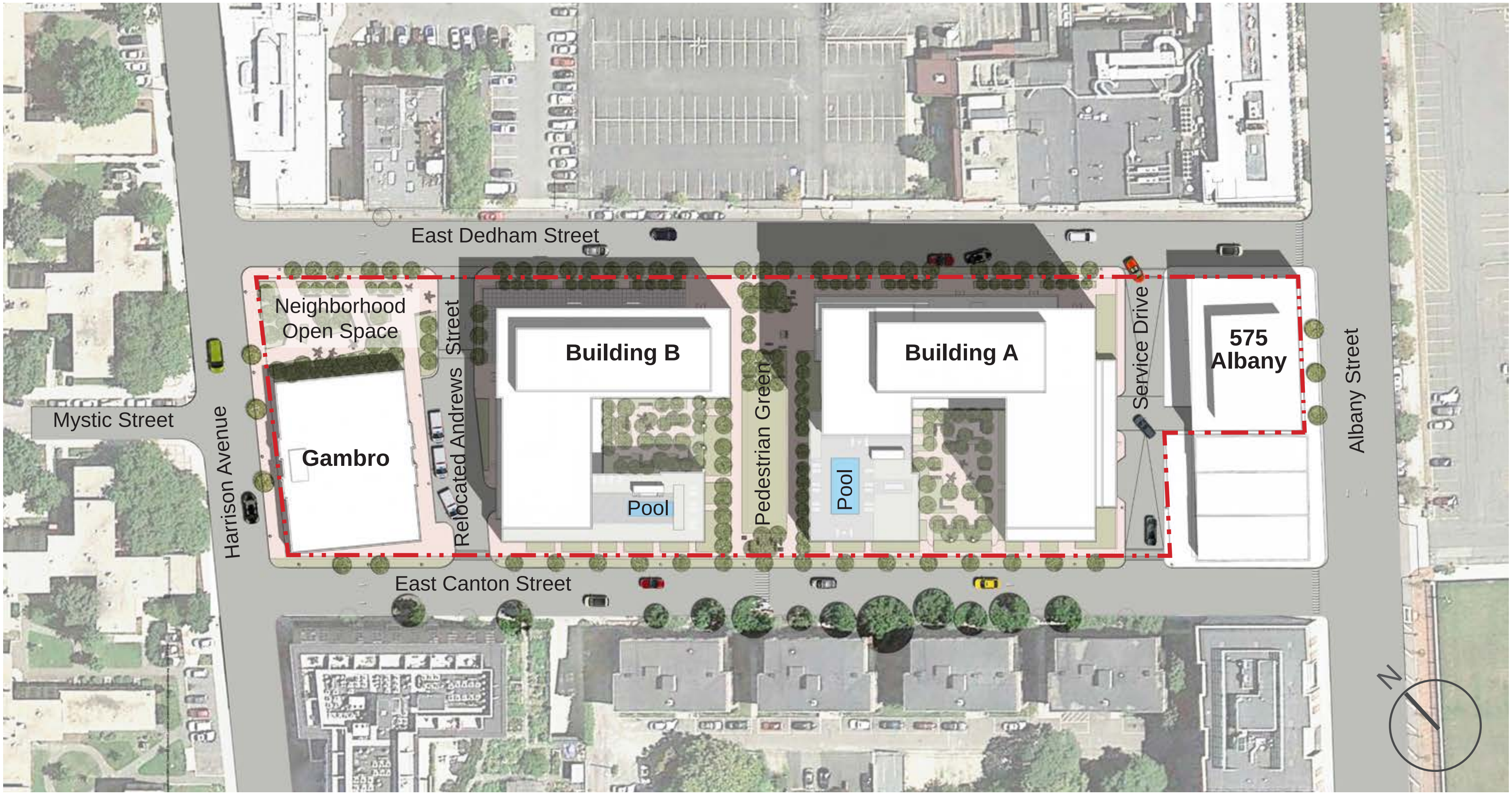

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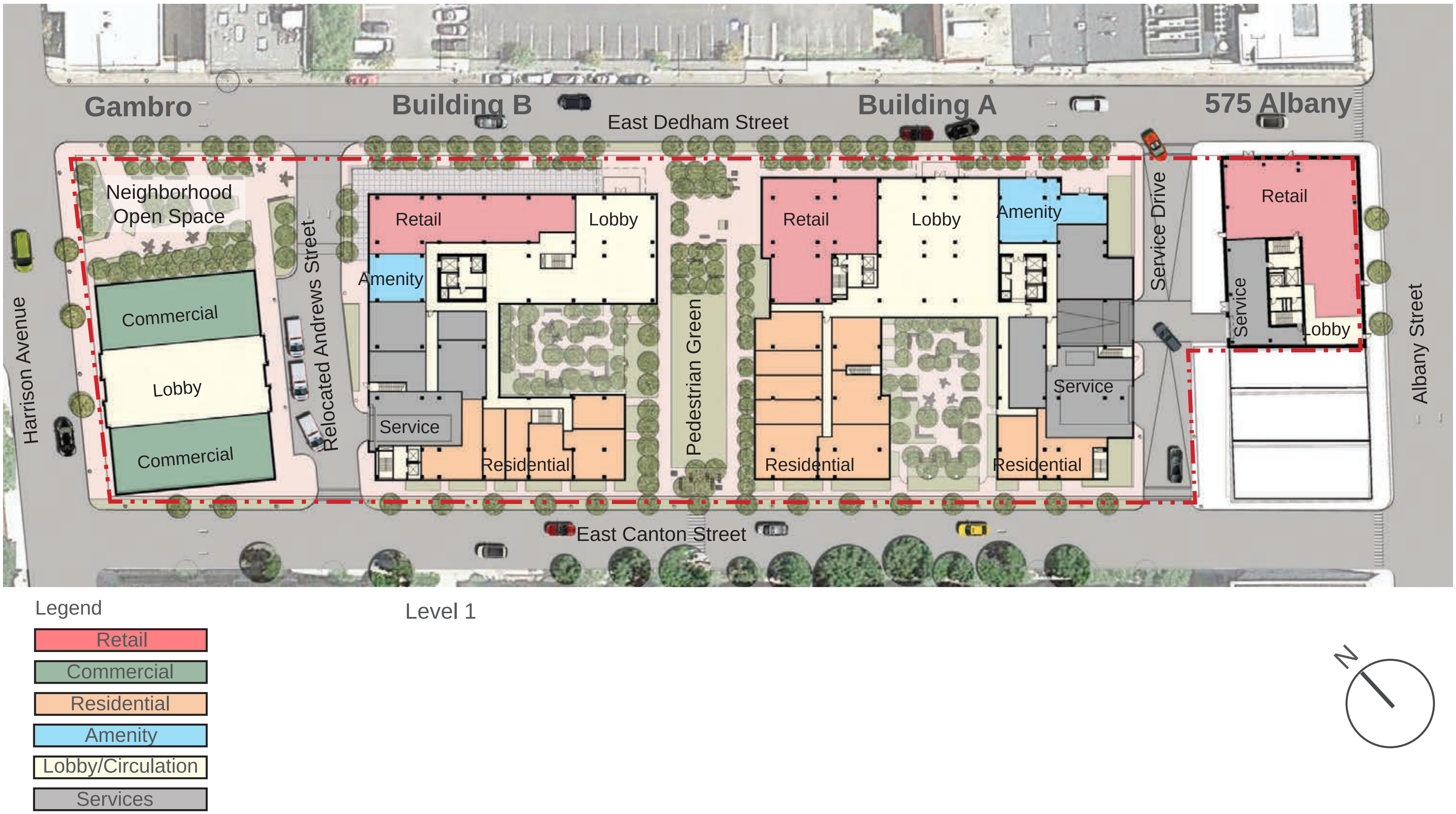
Figure 1-9
Proposed Site Plan



Harrison Albany Block **Boston, Massachusetts**

Figure 1-10

Ground Floor Plan

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Figure 1-11
Site Section

Harrison Albany Block Boston, Massachusetts

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Figure 1-12
Massing Diagrams
View from South

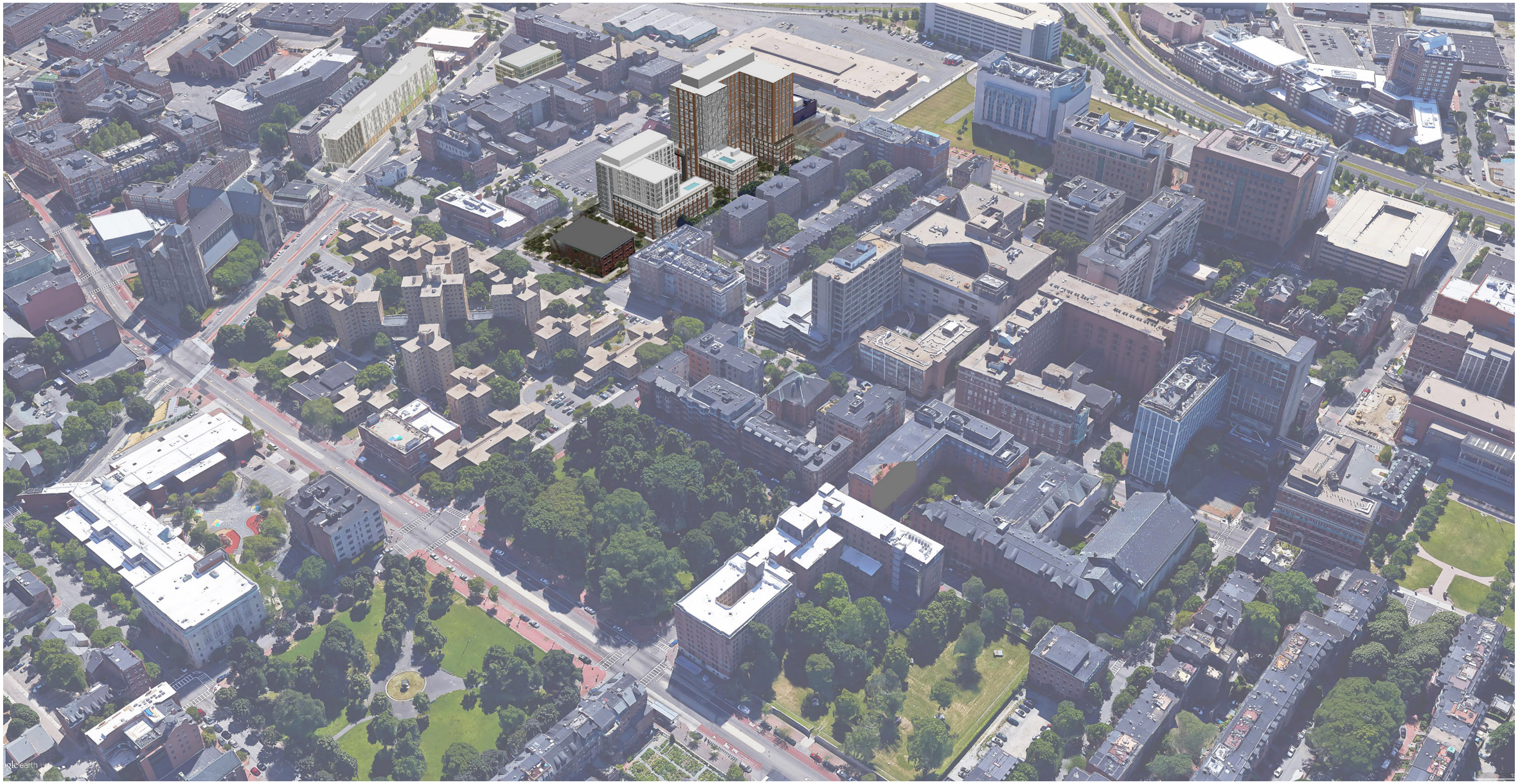

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Figure 1-13
Massing Diagrams
View from West

Figure 1-14
Massing Diagrams
View from North

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Figure 1-15

Massing Diagrams
View from East

East Dedham Street is made up of larger scale buildings with the existing commercial uses at the Perkin Elmer building, the police station, 72-74 East Dedham Street, containing residential units and Wediko Children's Services making this a clear choice for the "front door" of the Project. Consistent with this vision, the Project places the taller portions of the new buildings and retail spaces toward the East Dedham Street side of the Project Site. Reflective of this more active side of the Project Site, it is anticipated that Building A will include a use consistent with the Harrison Avenue Creative Use Corridor, to extend it to the Project Site and draw the SOWA Open Studios enthusiasts into the Project Site. Finally, consistent with the spacing that exists in the surrounding area, the pedestrian way through the middle of the Project Site, Andrews Street and the Service Drive will break up the block, providing visual and physical space between the buildings.

Building A

Building A is a proposed 19-story, approximately 200 foot tall apartment building with approximately 487 residential units, a portion of which will be affordable and targeted to working artists. The first six floors are crafted to engage the street edge, while the upper floors of the building step back from East Dedham and East Canton streets at the seventh floor to provide a human scale at the street and respect the scale of the surrounding neighborhood. The building includes approximately 4,200 sf of ground floor retail along the East Dedham Street side at the pedestrian open space. The residential lobby is central to the building and provides a visual connection to the courtyard along East Canton Street. Along East Canton Street, the building is U-shaped, with a courtyard in the middle. Reflective of this quieter neighborhood side of the Project, Building A will have residential stoops along the East Canton Street edge with units stepped back above the sixth floor. An outdoor amenity area will be created on the roof at the step in the building, which will be accessed from the seventh floor.

Building B

Building B is a proposed 11-story, approximately 120 foot tall apartment building with approximately 223 residential units, a portion of which will be affordable and targeted to working artists. The East Dedham Street façade will have wider sidewalks to allow for outdoor seating and will feel more urban in response to its adjacency to the Harrison Avenue Corridor. There will be an approximately 4,500 sf ground floor retail space located toward Harrison Avenue. This location will allow for outdoor seating or other outdoor space for the retail space to use, overlooking the new green space located on the northeast side of the Gambro Building. Along East Canton Street, the building will be set back from the street above the sixth floor. As with Building A, an outdoor amenity area will be created at the rooftop above the sixth floor.

575 Albany Street

575 Albany Street, located on the southeast corner of the Project Site, is an existing approximately 45,500 sf historic building constructed in 1904, that the Proponent will renovate to include approximately 5,400 sf of retail on the ground floor and approximately 40,100 sf of office space above. An addition on the north side of the building will be demolished to make way for the Service Drive that currently runs along the north side of the adjacent buildings, allowing the Service Drive to connect East Canton Street to East Dedham Street. Demolition of this addition will also expose a fenestrated historic façade, further connecting the Project Site with the existing fabric of the neighborhood.

Gambro

The Gambro Building, located on the northwest corner of the Project Site is an existing three-story, approximately 34,500 sf building, currently being utilized as a dialysis center on the street level and housing Boston Medical Center's research operations offices on the upper two floors. Gambro will maintain its current use and tenants.

Parking

Parking for the Project will be provided in an approximately 745-space below-grade garage beneath Buildings A and B with access from Service Drive. Construction of below-grade garages is expensive, as witnessed by the number of new buildings that incorporate above-grade garages in Boston. However, the significant benefits of below-grade parking, as well as the Project's parking needs and the parking needs of the neighborhood, have driven the Proponent's decision to propose below-grade parking. This decision has allowed the design to incorporate significant open spaces on-site, including the neighborhood open space at the corner of Harrison Avenue and East Dedham Street, as well as the open spaces around and between the new buildings, as described in more detail below. In addition, above-grade parking would have required larger building footprints, significantly smaller ground floor retail spaces and open spaces, and likely would have required additional height on the site to create an economically viable project. Placing parking below-grade also allows for more attractive buildings, without the openings usually incorporated into open air garages, creating a more pedestrian friendly experience around the Project Site.

Open Space

The Project includes over 41,000 sf of pedestrian friendly open space, not including vehicular drives or streets. This represents 30% of the Project Site (see Figures 1-16 and 1-17). In place of existing surface parking, the Project Site will include new open spaces that welcome neighbors to the Project Site, while also breaking up the large block, encouraging connectivity through the Project Site. The Proponent will replace the surface parking lot at the corner of Harrison Avenue and East Dedham Street, northeast of the Gambro Building, with a green open space that will draw people into the Project Site from Harrison Avenue (see Figures 1-18 and 1-19). A tree-lined pedestrian connection with lawns will also cut through the center of the Project Site (see Figures 1-20 and 1-24). These spaces will allow for a variety of active and passive uses for the residents and visitors to the Project Site. The courtyards created by the U-shape of Buildings A and B will be additional open space for residents and their guests (see Figure 1-25).

Additional thoughtfully designed open spaces will be created at each street edge. East Canton Street will be treated as a quiet, leafy residential street with smaller sidewalks and front doors behind landscaping elements typical of the South End. East Dedham Street will have more of an urban feel with café tables behind low decorative metal fencing and street trees along the curb edge.

Streets

As part of the Project, the Proponent proposes to relocate Andrews Street closer to Harrison Avenue (see Figure 1-9). Andrews Street will continue to connect East Dedham Street and East Canton Street, and will include five parking spaces. As mentioned above, the Proponent will extend the existing Service Drive, located on the north side of 575 Albany Street and the adjacent buildings to the west to connect East Dedham Street and East Canton Street. This Service Drive will allow for loading and other services for the Project and the buildings within the block along Albany Street as well as access and egress to the parking garage. Figure 2-26 includes Project Site traffic patterns.

1.3.4 Evolution of Design

As described in more detail in Section 5.2, with the Mayor's housing production goals, proximity to Boston University Medical Campus and Boston Medical Center, and recent success of multi-family projects in the area, a primarily residential development was thought to be the most appropriate in revitalizing the underutilized site. The challenge was how to create a feasible residential density (6.5 allowed under a Planned Development Area) within the allowable height, due to the smaller residential floor plates. Several design iterations were tested, all of which resulted in a scale that felt out of context with the neighborhood. The most appropriate solution was to go above the 120-foot height limit in strategic places, while sculpting the building mass to provide an appropriate scale for each distinctive urban condition and edge. The result was to bring one building up to 200 feet while maintaining an average height of less than 120 feet across the entire Project, resulting in a FAR of approximately 5.5, lower than the FAR allowed under a Planned Development Area.

The increased height allows for stepping back components of the Project, which helps blend with the character and scale of the neighborhood and a substantially increased amount of open space, including a pedestrian connection through the Project Site. Another benefit of the increased height, while maintaining the allowed floor area ratio, is the diversity of building massing. Stepping the buildings at different heights creates a rhythm that is common in this area of the South End, and diminishes the monotony and lack of rhythm a single height across the Project Site would create.

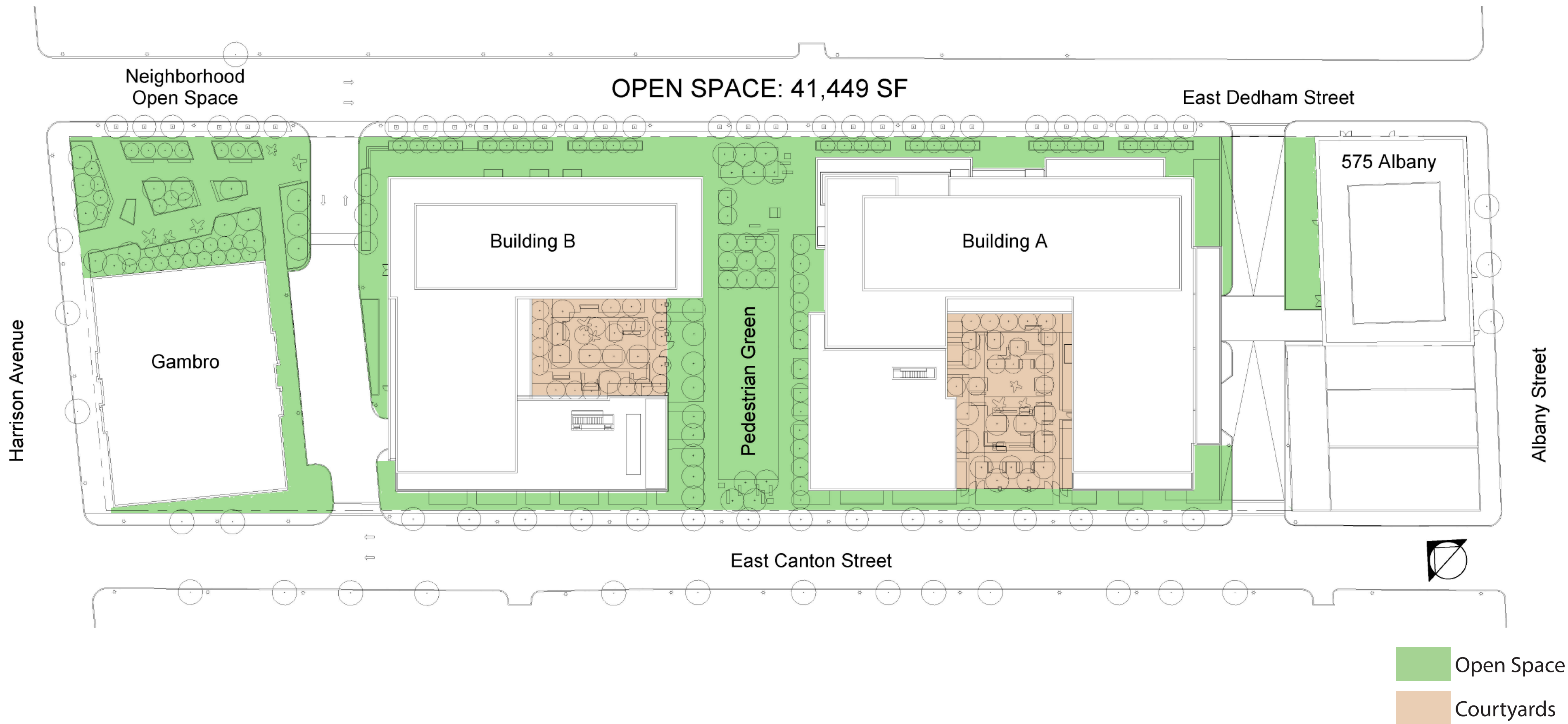

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Figure 1-16

Proposed Open Space

Figure 1-17
Landscape Plan

Figure 1-18

East Canton Street View

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Figure 1-19
East Dedham Street at Harrison Avenue

Figure 1-20

Neighborhood Open Space From East Dedham Street

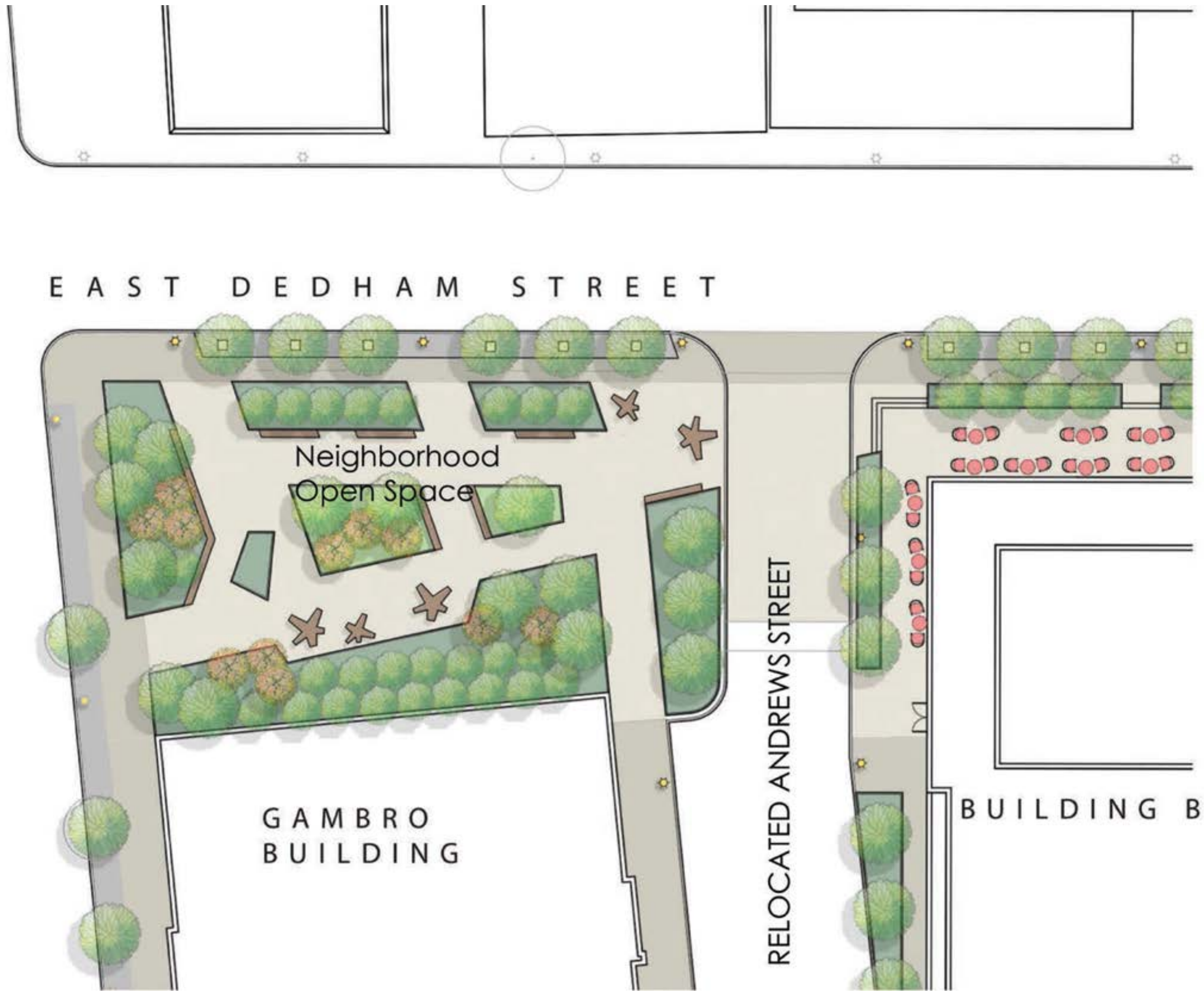

Figure 1-21
Neighborhood Openspace

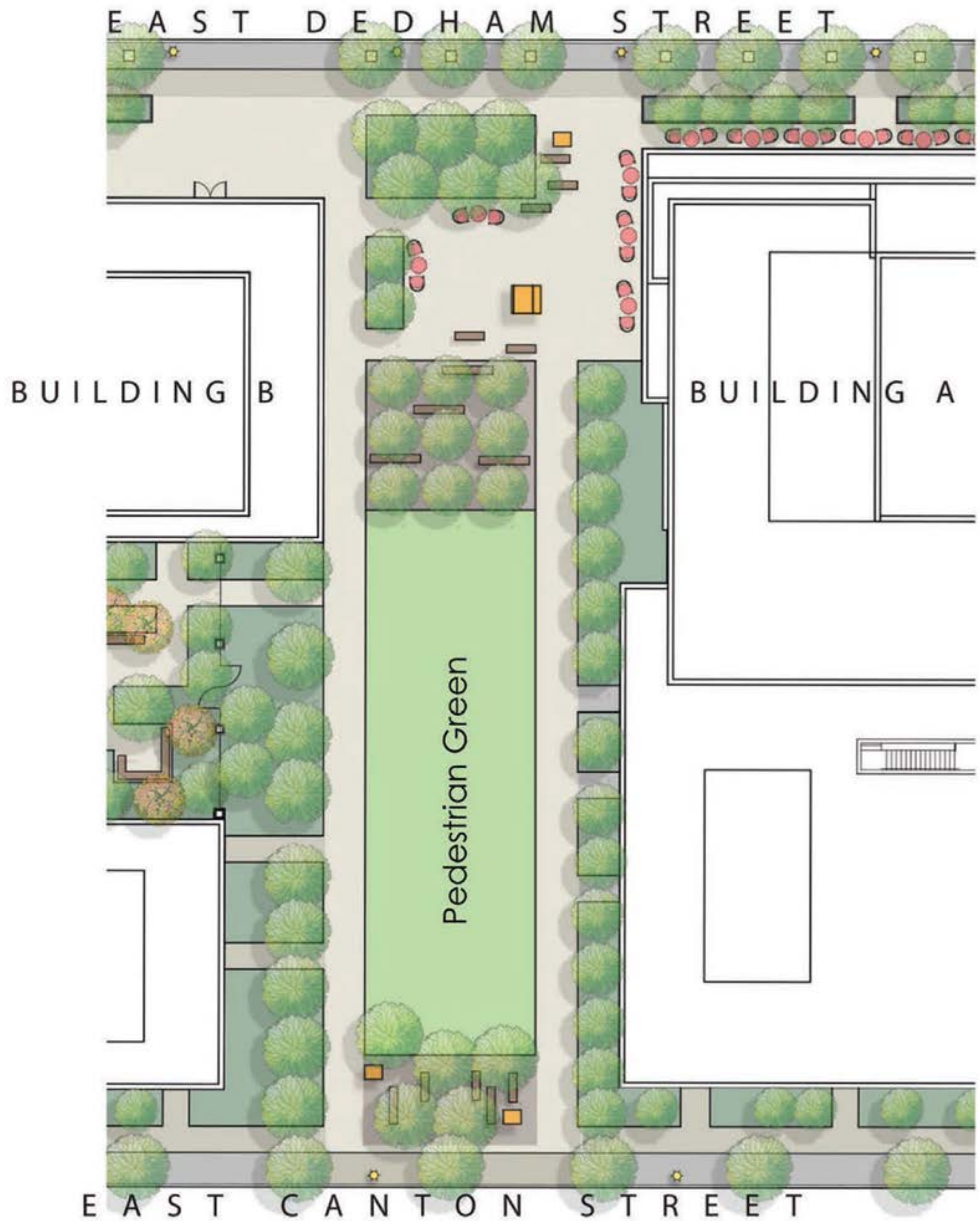

Figure 1-22
Pedestrian Green

Figure 1-23

Pedestrian Green at East Canton Street

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Figure 1-24

Pedestrian Green From East Dedham Street

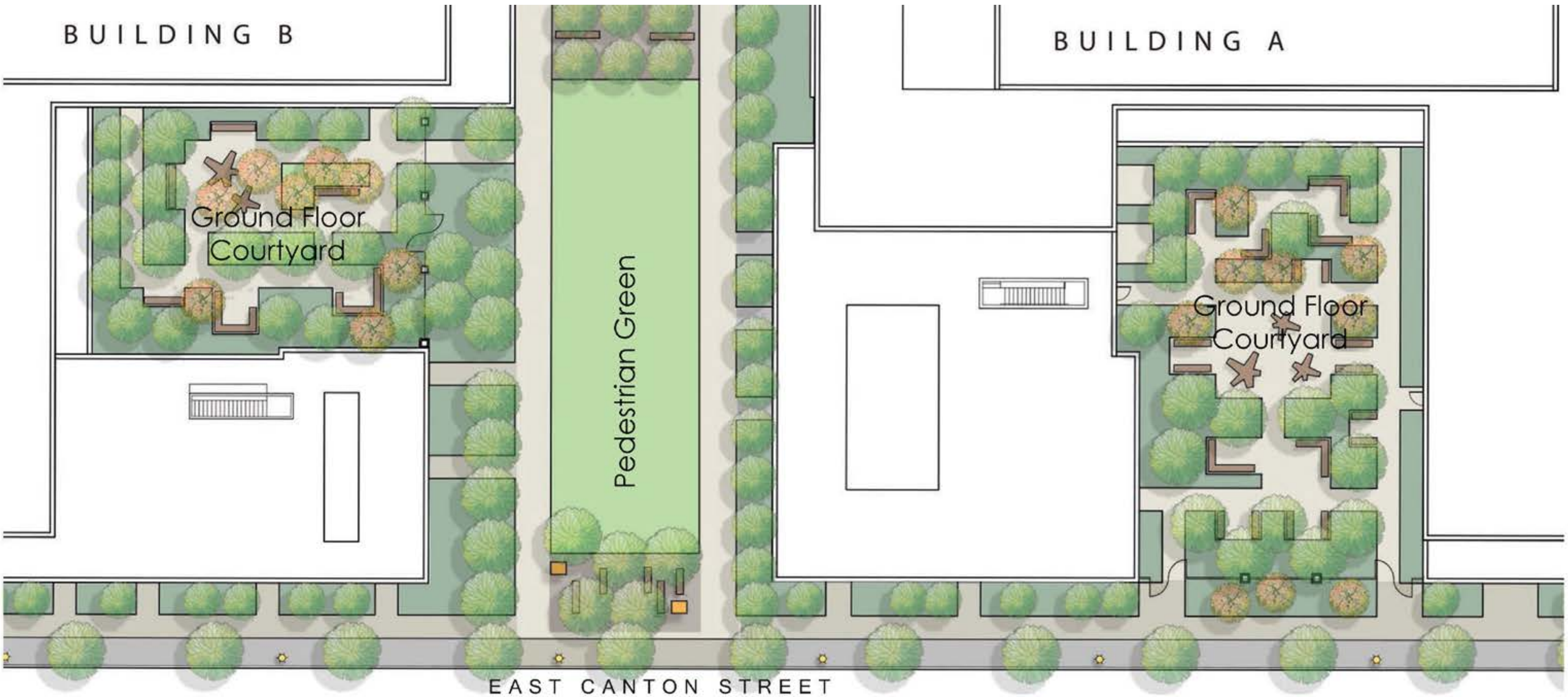

Figure 1-25
Courtyards

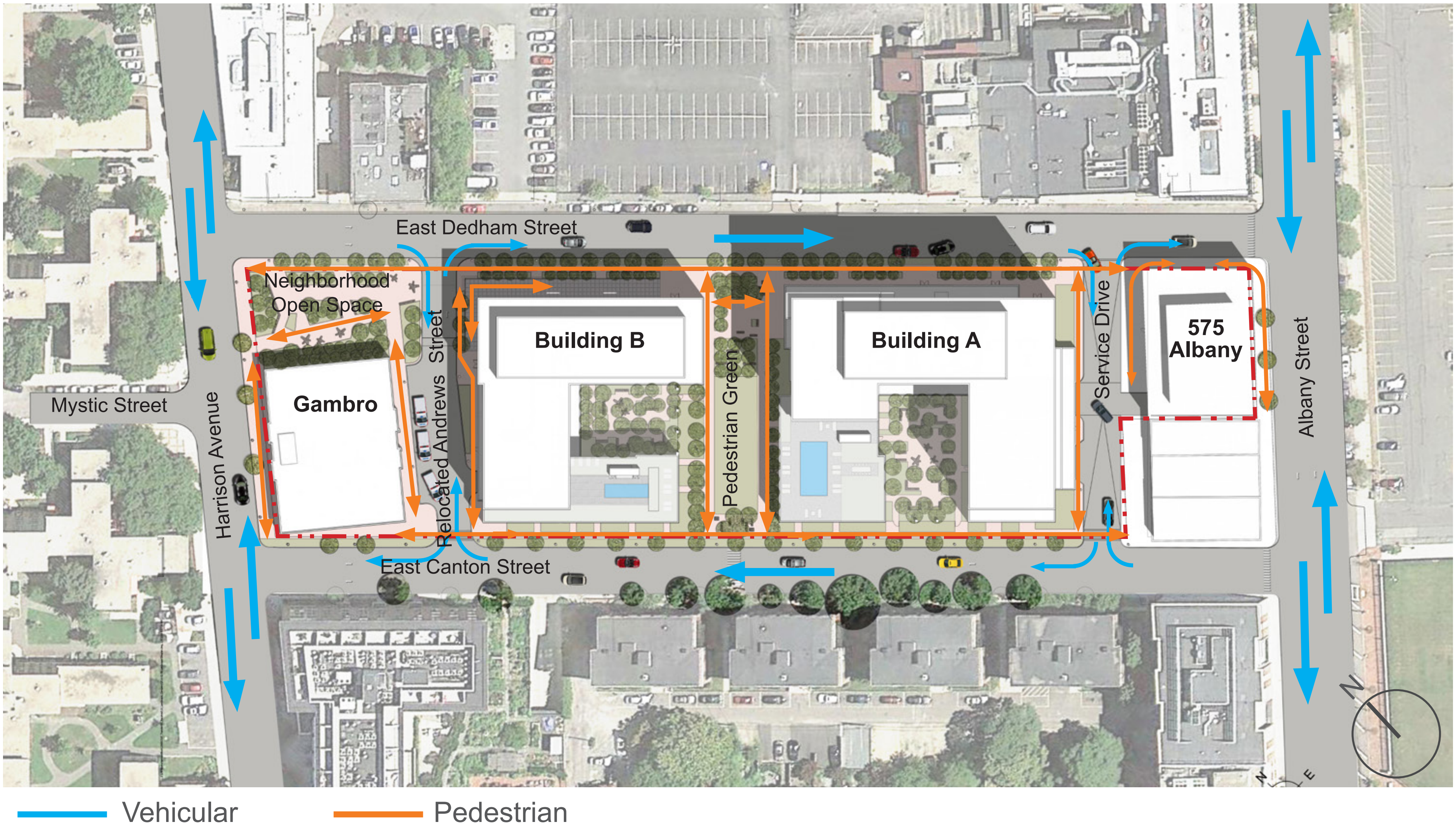

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Figure 1-26

Site Traffic Patterns

1.4 Public Benefits

The Project will contribute numerous public benefits consistent with goals of the Harrison Albany Corridor Strategic Plan (see Chapter 5), including creating much-needed new affordable and market rate housing, replacing underutilized buildings and surface parking lots with thoughtfully designed structures, restoring a historic building, providing substantial publicly accessible open space, street level retail and similar uses that improve the pedestrian experience, and providing amenities and facilities for South End artists.

Creation of Housing

Furthering the Mayor's housing production goals, the Project will add approximately 710 total new units to a rapidly growing area of Boston. The Project will comply with the City of Boston's Inclusionary Development Policy and the affordable housing requirements for Planned Development Areas under Article 64 of the Boston Zoning Code. A portion of the Project's on-site affordable units will be targeted to working artists.

Affordable Cultural Space

The Project will devote a minimum of 5% of its new non-residential floor area for affordable cultural space. The Project views this as an opportunity to embrace the Project Site's location between a vibrant artist community, historic industrial uses, new small business, and the strong residential neighborhood. This will likely include a gallery and maker space. The maker space could be a shared workshop for residents and community members to work with their hands or build prototypes for new business ventures, a shared artist studio for artists from within the building and around the South End to practice their art, or a shared commercial kitchen where the community could gather around culinary workshops in celebration of an art form that is a key characteristic of the South End. The exact use will be confirmed at a later date, but the objective is to create a space for the community to collaborate and create.

Urban Design and Architecture

The Project will provide the following urban design and architectural benefits:

- Redeveloping an underutilized property into a vibrant transit- and pedestrian-oriented mixed-use development;
- Restoring the historic and currently vacant 575 Albany Street into productive use;
- Continuing the resurgence of the South End's Harrison Avenue/Albany Street Corridor, supporting both existing institutions and emerging economic opportunities;

- Advancing a thoughtful contemporary design that engages its neighbors on all sides and respects its context;
- Replacing existing surface parking with more active uses and moving all proposed parking below grade;
- Replacing and relocating the substandard Andrews Street, a north-south, midblock connector with new mid-block connectors that improve and enhance pedestrian and vehicular circulation; and
- Improving the pedestrian experience along all four bordering streets and adding interesting public spaces, new active ground-floor uses, and improved streetscaping and amenities for pedestrians and for existing residents along East Canton Street.

Smart Growth/Transit-Oriented Development

The Project advances numerous smart growth objectives, including redeveloping a low intensity urban site, restoring a historic building, building near transit, mixing uses, mixing income levels in a single residential project, and providing affordable housing. The Project is within 1,000 feet of the MBTA's Silver Line and numerous bus lines, and less than one mile from Massachusetts Avenue Station and Back Bay Station on the Orange Line, and Broadway Station on the Red Line.

Open Space

The Project includes over 41,000 sf of open space, not including vehicular drives or streets. This represents over 30% of the Project Site. The intention is for these spaces to be amenities for the Project's residents and to contribute to the rich inventory of community spaces in the South End by providing access through the Project Site and spaces to attract neighbors to the Project Site. The new open spaces include a mid-block, tree-lined pedestrian connection with green space between Buildings A and B and a green space along Harrison Avenue that will replace an existing parking lot. The Project will contribute a larger open space area than required under site zoning because the increased height of the buildings allows for more ground level space to be used for open space rather than building footprints.

Sustainable Design/Green Building

The Proponent is targeting the Silver level of the LEED rating system for each building, as described in Chapter 4, exceeding the requirements of Article 37 of the Boston Zoning Code. In addition, the Project will be built in compliance with the upcoming changes to the State Building Code that require more energy efficient buildings than the existing State Building Code, will include spaces for bicycles in compliance with Boston Transportation Department guidelines, reuse an underused, urban site, study the incorporation of a solar photovoltaic system, add significant new pervious areas and utilize low impact design elements to promote the infiltration of stormwater runoff into the ground.

Transportation and Public Parking

The Project's proposed parking ratio for the residential component will be slightly less than the ratio of 0.7-1.0 spaces per unit recommended by the Harrison Albany Corridor Strategic Plan. This reflects the Project's proximity to multiple transit options, its overall parking supply, the nearby mix of uses, the distance from Downtown, and the City of Boston's ongoing initiatives to reduce automobile dependency and increase the mode share of transportation alternatives. The Project's efficient parking layout provides opportunities to share parking between Project Site residents and occupants, as well as nearby users (e.g., Boston Medical Center), replacing spaces they use now. In addition, as mentioned above, placing the proposed parking below-grade has allowed for significant open space on the site for residents and site visitors, as well as the proposed retail spaces on the ground floor that will enhance the streetscape and create activity around the Project Site.

The Project will also significantly improve the pedestrian experience along adjacent streets by organizing and consolidating curb cuts, adding pedestrian cut-throughs, and providing access to the parking garage from the Service Drive, instead of the main roadways. The Project will add bike parking and will be a candidate for a new Hubway station supporting the South End. Additional transportation-related benefits are described in Section 2.6.

Increased Employment and Economic Opportunities

The Project will create permanent economic opportunities in the South End. For example, the Project supports the continued growth of the well-established artist community in the South End through its arts component, comprising both affordable artist housing and artist work and/or gallery space. Moreover, the Project will provide much-needed housing for workers at existing Boston businesses and institutions who otherwise might have to commute from outlying areas.

In addition, the Project provides opportunity for small footprint retail, restaurant, or similar non-residential uses for an entrepreneur or small business owner to occupy as a tenant. The Project's scale and visibility will also attract future investment in the neighborhood. The Proponent's acquisition of the Project has also helped to support Boston Medical Center's effort to consolidate its operations and reorganize its landholdings more efficiently.

Overall, the Project will provide an anticipated 1,250 construction employment opportunities during development and approximately 250 permanent jobs.

New Property Tax Revenue

The Project Site, long owned by Boston Medical Center, was formerly tax-exempt. The Project, when completed, is anticipated to generate $3,200,000 in annual property tax revenue.

1.5 City of Boston Zoning

1.5.1 Site Zoning

The Property is located within: (i) the EDA South, a subdistrict of the South End Neighborhood District (the "EDA South"), governed by Article 64 of the Boston Zoning Code (the "Code"); (ii) the Restricted Parking (Overlay) District (RPOD), governed by Section 3-1A(c) of the Code; (iii) the Groundwater Conservation Overlay District (GCOD), governed by Article 32 of the Code; and (iv) the Boston Medical Center/Boston University Medical Campus Institutional Master Plan ("BUMC IMP") Area. (Only a portion of the Property is within the BUMC IMP Area on the zoning map; however, the entire Project Site is identified in the BUMC IMP itself as part of the BMC.)

The Proponent anticipates seeking approval of the Project under the Planned Development Area (PDA) provisions of Article 64, Section 3-1A, and Article 80C of the Code.

As part of the PDA approval process, the Proponent will also seek to increase the maximum height allowed on a PDA in the EDA South from its current 120 feet to 200 feet. A PDA in the EDA South is currently eligible for a maximum FAR of 6.5 and a maximum lot coverage of 80 percent. The Project is anticipated to have an overall FAR of approximately 5.5 and to have a lot coverage of less than 80%. The proposed PDA will also address the Project's parking and mix of uses. Notably, the Project will comply with the applicable affordability requirements for both residential and non-residential uses for a PDA in the EDA South. In addition, the Project's Site plan and design achieve the objectives set forth in Article 64.

The Proponent, in cooperation with BMC, will also pursue a zoning text amendment to remove from the BUMC IMP Area those portions of the Property that will no longer include institutional uses. The Gambro Building will remain in medical institutional use for the foreseeable future, and therefore may remain part of the BUMC IMP, in addition to its inclusion in the proposed PDA Development Plan.

1.5.2 Article 80 – Large Project Review

The Project exceeds the threshold of 50,000 square feet of development, which requires Large Project Review by the BRA pursuant to Article 80B of the Code. The Proponent filed a Letter of Intent with the BRA on November 5, 2015, commencing Large Project Review and indicating the Proponent's intent to file this Expanded PNF in connection with the Project. This Expanded PNF takes a comprehensive approach to addressing potential impacts and mitigation equivalent to the level of information normally presented in a Draft Project

Impact Report. As part of Large Project Review, the Proponent will make appropriate mitigation and commitments.

1.5.3 Boston Civic Design Commission Review

The Project will undergo review by the Boston Civic Design Commission (BCDC) under the provisions of Article 28 of the Code.

1.5.4 Development Impact Project

The Project is not a "Development Impact Project" as such term is defined in Article 80B. The Project proposes only approximately 54,200 sf of new "gross floor area" devoted to "Development Impact Uses." The Project will devote the balance of the square footage to multi-family residential uses, which are not Development Impact Uses.

1.5.5 South End Urban Renewal Plan and Land Disposition Agreements

The Property lies within the South End Urban Renewal Area, governed by the South End Urban Renewal Plan (the "South End URP") originally adopted by the BRA in 1965, and recently extended until April 2016. Portions of the Project Site are subject to Land Disposition Agreements (LDAs) with the BRA while the South End URP remains in effect.

The LDAs designate Parcel 47, located at 100 East Canton Street, for light industrial/laboratory use, designate Parcels 56 and 56-A, which are roughly coincident with the existing midblock surface parking lots, for off-street parking, and designate Parcel 54, which includes much of the lot where the Gambro Building is located as well as some adjacent surface parking, for a dialysis clinic. The LDAs and South End URP also specify certain dimensional and parking requirements.

Modification of the use, dimensional, and procedural designations for portions of the Property will require Amendments to the South End URP and LDAs. The necessary modifications will not significantly affect any of the basic elements of the South End URP.

1.6 Legal Information

1.6.1 Legal Judgments Adverse to the Proposed Project

The Proponent has no knowledge of any legal judgments adverse to the Project.

1.6.2 History of Tax Arrears on Property

The Proponent does not have a history of tax arrears on property that it owns in the City of Boston.

1.6.3 Site Control/ Public Easements

Affiliates of the Proponent acquired the Project Site from the Boston Medical Center Corporation in fee by Quitclaim Deeds dated December 18, 2014 and recorded in the Suffolk Registry of Deeds Book 53863, Page 236 and Book 53863, Page 240. The Proponent also anticipates acquiring the fee in Andrews Street from the City of Boston or the BRA and intends to relocate that substandard midblock connection as part of the Project in a manner mindful of the configuration of adjacent blocks. Portions of the Property are covered by LDAs with the BRA which contain use restrictions, easements and other provisions, as described above in Section 1.5.5.

1.7 Anticipated Permits

Table 1-3 presents a preliminary list of permits and approvals from governmental agencies that are expected to be required for the Project, based on currently available information. It is possible that only some of these permits or actions will be required, or that additional permits or actions will be required.

Table 1-3 Anticipated Permits and Approvals

Agency	*Permit / Approval*
Local	
Boston Air Pollution Control Commission	Parking Freeze Permit/Modification
Boston Civic Design Commission	Advisory Design Review
Boston Employment Commission	Construction Employment Plan
Boston Inspectional Services Department	Demolition Permits; Building Permit; Other construction-related permits; Certificates of Occupancy
Boston Public Improvement Commission/ Department of Public Works	Air and Subsurface Discontinuances; Permits/Canopy Licenses; Street and Sidewalk Occupancy Permits; Discontinuance and relocation of Andrews Street; Specific Repair Plan, as required
Boston Public Safety Commission, Committee on Licenses	Parking Garage License and Flammable Storage Permit
Boston Redevelopment Authority	Article 80B Large Project; Approval of Zoning Code Map and Text Amendments; Comprehensive Sign Design; Cooperation Agreement; South End URP modification; Amendments to the LDAs
Boston Transportation Department	Transportation Access Plan Agreement; Construction Management Agreement

Table 1-3 Anticipated Permits and Approvals (Continued)

Agency	*Permit / Approval*
Boston Water and Sewer Commission	Site Plan Review; Groundwater Conservation Overlay District review/conditional use permit; Water and Sewer connection permits
Boston Zoning Commission/Board of Appeal	Approval of PDA overlay District and Development Plan; Modification of Article 64 PDA provisions Modification of BUMC IMP; Approval of Zoning Code Map and Text Amendments
Office of Jobs and Community Services	Permanent Employment Agreement
South End Landmark District Commission	Certificate of Appropriateness; Application for demolition and construction in the South End Landmark District Protection Area
State	
Executive Office of Energy and Environmental Affairs (EEA)	Certificate Evidencing Completion of MEPA Review, if necessary; Public Benefit Determination for a change of use of landlocked tidelands
Department of Environmental Protection	Fossil Fuel Utilization Permit, if required
Massachusetts Historical Commission	State Register Review
Federal	
Federal Aviation Administration	Determination of No Hazard to Air Navigation
U.S. Environmental Protection Agency	NPDES Notice of Intent for Construction

1.8 Public Participation

In September 2015, the Proponent and the Project team started outreach efforts to elected officials, the City of Boston, many abutters, neighborhood groups and other interested parties to discuss the Project, including:

- Representative Byron Rushing
- Councilor Bill Linehan
- Councilor Frank Baker
- Mayor's Office of Neighborhood Services
- Department of Neighborhood Development
- Blackstone Franklin Square Neighborhood Association

- Worcester Square Area Neighborhood Association
- Newmarket Business Association
- Cathedral Housing
- Washington Gateway Main Street
- Boston Medical Center
- Flower Exchange
- Perkin Elmer
- Boston Flower Market
- Boston Wholesale Flowers
- Future Chefs
- Nearby residents on East Canton Street, Harrison Avenue

The Project team will continue to meet with the community and interested parties as the Project moves forward.

1.9 Schedule

The Proponent anticipates that construction activities will start in the first quarter of 2017, with completion by the third quarter of 2022. The Proponent proposes to build the Project in two phases. Phase 1 includes the construction of the parking garage, Building A and the rehabilitation of 575 Albany Street, and will occur over 26 months. Phase 2 will include the construction of Building B and is anticipated to commence upon completion of Phase 1, subject to market conditions, and will occur over 18 months.

Chapter 2.0

Transportation

2.0 TRANSPORTATION

The Proponent engaged Howard Stein Hudson (HSH) to conduct an evaluation of the transportation impacts of the Project in the South End neighborhood of Boston, Massachusetts. This transportation study adheres to the Boston Transportation Department (BTD) Transportation Access Plan Guidelines and BRA Article 80 Large Project 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.

2.1 Project Description

The Project Site, as previously described in Section 1.3.1, is an approximately three-acre block bounded by Harrison Avenue to the north, East Dedham Street to the east, East Canton Street to the west, and Albany Street to the south. The Project site includes five existing buildings, including one vacant former residential building (75 East Dedham Street), one commercial vacant building (575 Albany Street), and three buildings that include an office, lab and medical office space (Gambro Building, 100 East Canton Street and 123 East Dedham Street). Additionally, the existing site contains 194 surface parking spaces. These spaces are being used by the on-site tenants as well as neighboring land uses.

The Project, as previously described in Section 1.3.3, includes demolition of the 75 and 123 East Dedham Street and 100 East Canton Street buildings; the rehabilitation of 575 Albany Street; construction of two residential buildings identified as Building A and Building B located between 575 Albany Street and the Gambro Building. The Gambro Building, which includes approximately 34,500 sf, will not be changed as part of the Project.

The total Project will consists of approximately 710 residential units and approximately 54,200 sf of commercial space (including approximately 40,100 sf of office space and approximately 14,100 sf of retail space). Below grade parking will provide approximately 745 parking spaces. The parking will be located below Building A and Building B with access to the garage via a new driveway between 575 Albany Street and Building A.

2.1.1 Study Area

The transportation study area runs along the Harrison Avenue/Albany Street corridors, bounded by Malden Street to the north, East Newton Street to the south, I-93 Frontage Road to the east, and Washington Street to the west. The study area consists of the following twelve intersections in the vicinity of the Project Site, also shown on Figure 2-1:

- Harrison Avenue/East Newton Street (signalized);
- Harrison Avenue/East Brookline Street (signalized);

- Washington Street/Monsignor Reynolds Way/Dedham Street (signalized);
- Harrison Avenue/Monsignor Reynolds Way/Malden Street (signalized);
- I-93 NB Frontage Road/Connector/DPW Driveway (signalized);
- I-93 SB Frontage Road/Connector/Albany Street/MBTA Driveway (signalized);
- Albany Street/Malden Street (unsignalized);
- Albany Street/East Dedham Street (unsignalized);
- Albany Street/East Canton Street/Boston Flower Exchange Driveway (unsignalized);
- Albany Street/East Brookline Street (unsignalized);
- Harrison Avenue/East Canton Street (unsignalized); and
- Harrison Avenue/East Dedham Street (unsignalized).

2.1.2 Study Methodology

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

The Existing (2016) Condition analysis includes an inventory of the existing 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. The long-term transportation impacts are evaluated for the year 2023, based on a seven-year horizon from the year of the filing of this traffic study.

The No-Build (2023) Condition analysis includes 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 Build (2023) Condition analysis includes a net increase in traffic volume due to the addition of Project-generated trip estimates to the traffic volumes developed as part of the No-Build (2023) Condition analysis. The transportation study identified expected roadway, parking, transit, pedestrian, and bicycle accommodations, as well as loading capabilities and deficiencies.

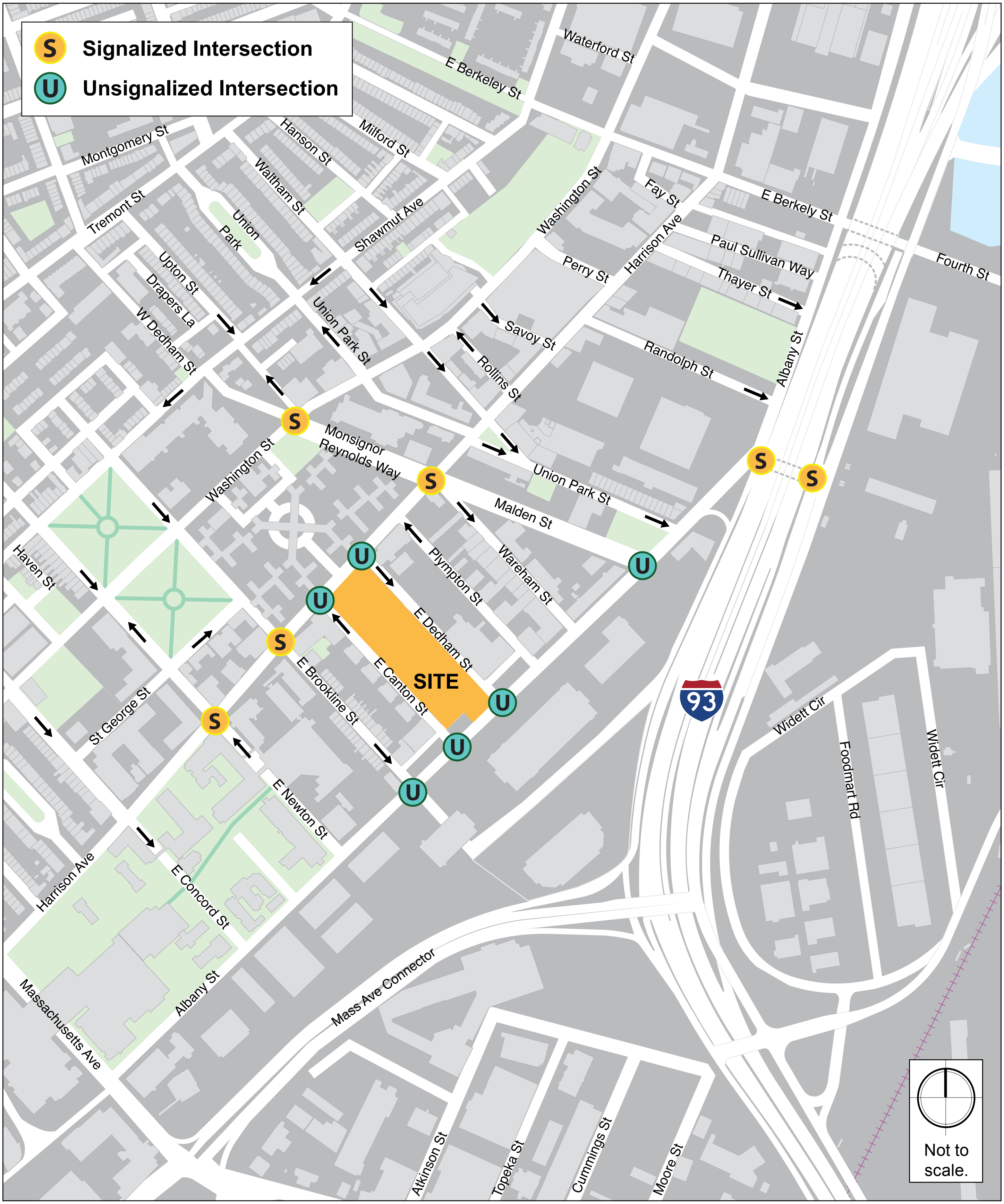

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Figure 2-1
Study Area Intersections

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.

2.2 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, public transportation availability, parking, curb usage, and loading conditions.

2.2.1 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:

Washington Street is a two-way, four lane roadway located to the west of the Project that runs in a predominately north-south direction between downtown Boston to the north and the outer neighborhoods to the south. Washington Street is classified as an urban principal arterial roadway under BTD jurisdiction. Washington Street has a dedicated bus lane in both the northbound and southbound directions. In the vicinity of the Project Site, on-street parking is provided on both sides of Washington Street. Sidewalks exist on both sides of the roadway.

Harrison Avenue is a two-way, two lane roadway located adjacent to the west of the Project Site that runs in a predominately north-south direction between Essex Street to the north and Dudley Square to the south. Harrison Avenue is classified as an urban minor arterial under BTD jurisdiction. In the vicinity of the site, on-street parking and loading activity is provided along both sides of the roadway. Sidewalks are provided on both sides of Harrison Avenue.

Albany Street is a two-way, two lane roadway located adjacent to the east of the Project Site that runs in a predominately north-south direction between Kneeland Street to the north and Eustis Street to the south. Albany Street is classified as an urban minor arterial under BTD jurisdiction. In the vicinity of the Project Site, on-street parking and loading activity exist along both sides of the roadway. Sidewalks are provided on both sides of Albany Street.

East Canton Street is a one-way westbound, one lane roadway located adjacent to the south of the Project Site that runs in a predominately east-west direction between Albany Street to the east and Harrison Avenue to the west. East Canton Street is classified as a local roadway under BTD jurisdiction. In the vicinity of the site, on-street parking and loading activity exist along both sides of the roadway. Sidewalks are provided on both sides East Canton Street.

East Dedham Street is a one-way eastbound, one lane roadway located adjacent to the north of the Project Site that runs in a predominately east-west direction between Albany Street in the east and Harrison Avenue in the west. East Dedham Street is classified as a local roadway under BTD jurisdiction. In the vicinity of the site, on-street parking and loading activity exist along both sides of the roadway. Sidewalks are provided on both sides East Dedham Street.

2.2.2 Existing Intersection Conditions

Existing conditions at the study area intersections are described below.

Harrison Avenue/East Newton Street is a four-leg, signalized intersection with three approaches. The East Newton Street westbound approach is one-way westbound and consists of one shared left-turn/through/right-turn lane. The Harrison Avenue northbound approach consists of one shared left-turn/through lane. The Harrison Avenue southbound approach consists of one shared through/right-turn lane. There are sidewalks along all approaches. There are crosswalks, wheelchair ramps, and pedestrian signal equipment across all approaches to the intersection. On-street parking is permitted on all approaches to the intersection.

Harrison Avenue/East Brookline Street is a four-leg, signalized intersection with three approaches. The East Brookline Street eastbound approach is one-way westbound and consists of one shared left-turn/through/right-turn lane. The Harrison Avenue northbound approach consists of one shared through/right-turn lane. The Harrison Avenue southbound approach consists of one shared left-turn/through lane. There are sidewalks along all approaches. There are crosswalks, wheelchair ramps, and pedestrian signal equipment across all approaches to the intersection. On-street parking is permitted on all approaches to the intersection with the exception of the Harrison Avenue southbound approach that restricts parking due to a bus stop.

Washington Street/Monsignor Reynolds Way/Dedham Street is a four-leg, signalized intersection with four approaches. The Dedham Street eastbound approach consists of one shared left-turn/through/right-turn lane and a bike lane. The Monsignor Reynolds Way westbound approach consists of two lanes, one shared left-turn/through lane and one shared through/right-turn lane. The Washington Street northbound and southbound approaches consist of three lanes, one left-turn only lane, one through lane, and one shared right-turn/bus lane. There are sidewalks along all approaches. There are crosswalks, wheelchair ramps, and pedestrian signal equipment across all approaches to the intersection. On-street parking is permitted on all approaches to the intersection except the eastbound Dedham Street approach.

Harrison Avenue/Monsignor Reynolds Way/Malden Street is a four-leg, signalized intersection with four approaches. The Monsignor Reynolds Way eastbound approach consists of two lanes, one shared left-turn/through lane and one right-turn only lane. The Malden Street westbound approach consists of two lanes, one left-turn only lane and one shared through/right-turn lane. The Harrison Avenue northbound and southbound approaches consist of two lanes, one left-turn only lane and one shared through/right-turn lane. There are sidewalks are along all approaches. There are crosswalks, wheelchair ramps, and pedestrian signal equipment across all approaches to the intersection. On-street parking is permitted the Monsignor Reynolds Way eastbound and Malden Street westbound approaches.

I-93 NB Frontage Road/Connector/DPW Driveway is a five-leg, signalized intersection with three approaches. The Connector eastbound approach consists of three lanes, a left-turn only lane, a shared left-turn/slight left-turn lane, and a through lane. The DPW Driveway westbound approach consists of one lane, a shared right-turn/hard right-turn lane. The I-93 NB Frontage Road northbound approach consists of three lanes, a through lane, a shared through/slight right-turn lane, and a shared slight right-turn/right-turn lane. There are sidewalks along only the south and east sides of the intersection. There are crosswalks and wheelchair ramps across the I-93 NB Frontage Road northbound approach and the DPW Driveway westbound approach. On-street parking is restricted along all approaches to the intersection.

I-93 SB Frontage Road/Connector/Albany Street/MBTA Driveway is a five-leg, signalized intersection with three approaches. The Albany Street eastbound approach consists of two through lanes, additionally this approach has a channelized right turn lane approximately 200 feet behind the intersection. The I-93 SB Frontage Road southbound approach consists of three lanes, a shared left/through lane, a through lane, and a channelized right-turn only lane. The MBTA Driveway southeast-bound approach consists of a shared slight left-turn/slight right-turn/hard right-turn lane. There are sidewalks along the south and west sides of the intersection. There are crosswalks with wheelchair ramps provided across the Albany Street eastbound approach and the I-93 SB Frontage Road northbound approach to the intersection. On-street parking is restricted along all approaches to the intersection.

Albany Street/Malden Street is a three-leg, unsignalized intersection with three approaches. The Malden Street eastbound approach is stop controlled and consists of a one shared left-turn/right-turn lane. The Albany Street northbound approach consists of two lanes, a shared left-turn/through lane and a through only lane. The Albany Street southbound approach consists of one shared through/right-turn lane and a bike lane. There are sidewalks along all approaches. There are crosswalks with wheelchair ramps across the Malden Street eastbound approach. On-street parking is permitted along all approaches except for the Albany Street northbound approach.

Albany Street/East Dedham Street is a three-leg, unsignalized intersection with three approaches. The East Dedham Street eastbound approach is one-way eastbound, stop controlled and consists of one shared left-turn/right-turn lane. The Albany Street northbound and southbound approaches consist of one through lane and a bike lane. There are sidewalks along all approaches. There are crosswalks with wheelchair ramps provided across the East Dedham Street eastbound approach. On-street parking is permitted along the East Dedham Street eastbound approach and the Albany Street southbound approach.

Albany Street/East Canton Street/Boston Flower Exchange Driveway is a four-leg, unsignalized intersection with three approaches. The Boston Flower Exchange Driveway westbound approach and the Albany Street northbound and southbound approaches consist of a shared left-turn/through/right-turn lane and a bike lane. There are sidewalks are provided along all approaches. There are Crosswalks with wheelchair ramps across the East Canton Street eastbound approach and the Albany Street northbound approach. On-street parking is permitted along the Albany Street southbound approach.

Albany Street/East Brookline Street is a three-leg, unsignalized intersection with three approaches. The East Brookline Street eastbound approach is one-way eastbound, stop controlled, and consists of one shared left-turn/right-turn lane. The Albany Street northbound and southbound approaches consist of one through lane and a bike lane. There are sidewalks along all approaches. There are crosswalks with wheelchair ramps across the East Brookline Street eastbound approach and the Albany Street northbound approach. On-street parking is permitted along the East Brookline Street eastbound approach and the Albany Street southbound approach.

Harrison Avenue/East Canton Street is a three-leg, unsignalized intersection with three approaches. The East Canton Street westbound approach is one-way westbound, stop controlled, and consists of a one shared left-turn/right-turn lane. The Harrison Avenue northbound and southbound approaches consist of one through lane. There are sidewalks along all approaches. There are crosswalks with wheelchair ramps across the East Canton Street westbound approach. On-street parking is permitted along all approaches to the intersection.

Harrison Avenue/East Dedham Street is a three-leg, unsignalized intersection with two approaches. Harrison Avenue northbound approach consists of a shared through/right-turn lane and the Harrison Avenue southbound approach consists of a shared left-turn/through lane. There are sidewalks along all approaches. There are crosswalks with wheelchair ramps across the East Dedham Street westbound approach and the Albany Street southbound approach. On-street parking is permitted along the Albany Street southbound approach.

2.2.3 *Existing Parking*

An inventory of the existing on-street and off-street parking in the vicinity of the Project was collected. A description of each follows.

2.2.3.1 On-Street Parking and Curb Usage

On-street parking surrounding the Project Site consists of predominately residential parking, unrestricted parking, and metered parking. The on-street parking regulations within the study area are shown in Figure 2-2.

2.2.3.2 Off-Street Parking

There are more than 4,601 parking spaces within one-quarter mile, or a five-minute walk, from the Project site. These parking spaces consist of a mix of public parking spaces, residential parking spaces, and private parking spaces. A majority of the parking spaces are owned or leased by the nearby medical facilities. Of the parking spaces, approximately 483 are found in parking lots and 4,118 are in parking garages. The surface parking lots and parking garages within a quarter-mile of the Project site are shown in Figure 2-3. A detailed summary of all parking lots and garages are shown in Table 2-1.

Table 2-1 Off-street Parking Lots and Garages within a Quarter-Mile of the Site

Map ID	*Facility*	*Capacity*	*Map ID*	*Facility*	*Capacity*
Parking Garages			**Parking Lots**		
A	610 Albany Street	1,400	1	BioSquare	80
B	710 Albany Street	1,033	2	D Lot	22
C	Doctors Office Building	230	3	Naval Blood Lot	7
D	700 Harrison Avenue	75	4	Gambro	18
E	Crosstown	1,250	5	Perkin Elmer	156
F	GTI Properties	130	6	Evans Way	2
			7	Yawkey HP Lot	30
			8	Menino Valet Lot	73
			9	Power Plant	95
Parking Garages Subtotal		**4,118**	**Parking Lots Subtotal**		**483**
Total Public Parking Spaces			**4,601**		

2.2.3.3 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.

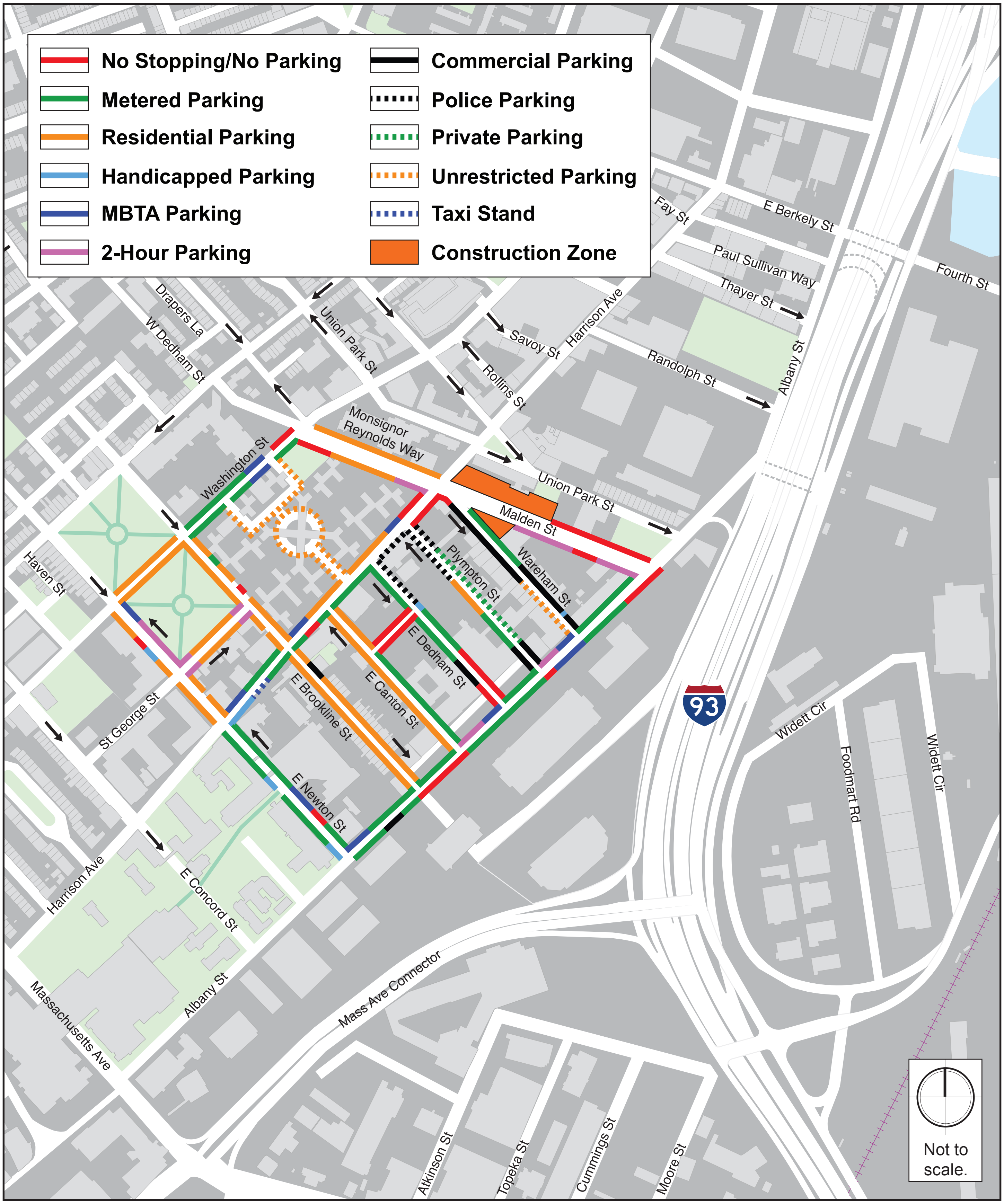

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Figure 2-2
On-Street Parking Regulations

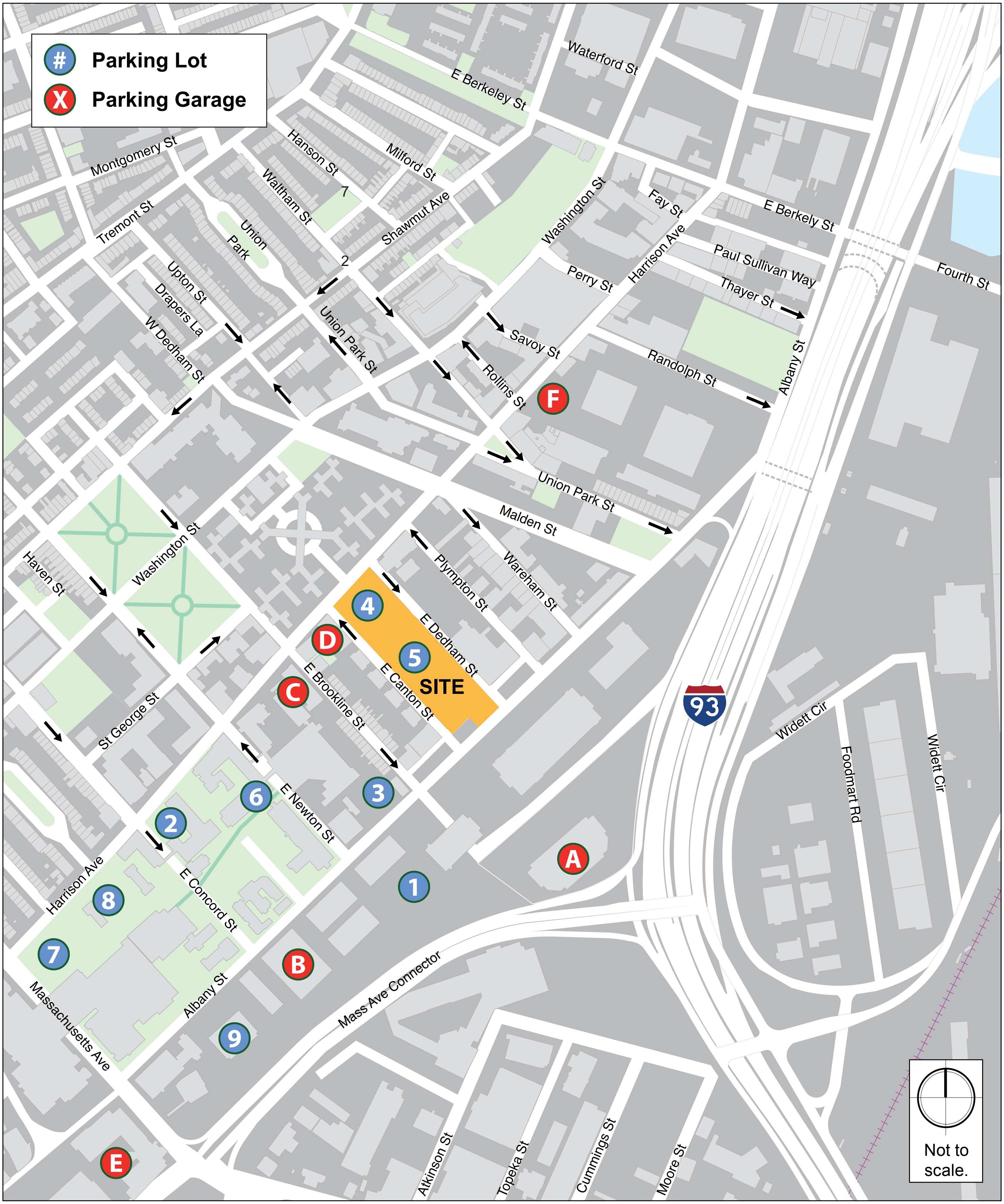

Figure 2-3
Off-Street Parking in the Study Area

Zipcar is the primary company in the Boston car sharing market. There are currently three Zipcar locations within a half-mile walk of the Project Site. The nearby car sharing locations are shown in Figure 2-4.

2.2.4 Existing Traffic Data

Traffic volume data was collected at the twelve study area intersections on November 11, 2015. Turning Movement Counts (TMCs) and vehicle classification counts were conducted during the weekday a.m. and weekday p.m. peak periods (7:00 – 9:00 a.m. and 4:00 – 6:00 p.m., respectively). The traffic classification counts included car, heavy vehicle, pedestrian, and bicycle movements. The detailed traffic counts are provided in Appendix C.

2.2.4.1 Seasonal Adjustment

To account for seasonal variation in traffic volumes throughout the year, data provided by MassDOT was reviewed. The most recent (2011) MassDOT Weekday Seasonal Factors were used to determine the need for seasonal adjustments to the November 2015 TMCs. The seasonal adjustment factor for roadways similar to the study area (Group 6) is 0.97. This indicates that average month traffic volumes are approximately three percent less than the traffic volumes that were collected. Therefore, the traffic counts were not adjusted downward to reflect average month conditions and provide a conservatively high analysis consistent with the peak season traffic volumes. The MassDOT 2011 Weekday Seasonal Factors table is provided in Appendix C.

2.2.5 Existing Vehicular Traffic Volumes

The existing traffic volumes that were collected in November 2015 were used to develop the Existing (2016) Condition traffic volumes. The volumes were increased by 0.5 percent to represent one year of growth and balanced. The Existing (2016) weekday a.m. Peak Hour and weekday p.m. Peak Hour traffic volumes are shown in Figures 2-5 and Figure 2-6, respectively.

2.2.6 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 designates Albany Street and East Newton Street as intermediate routes. Intermediate routes are suitable for riders with some on-road experience.

Bicycle counts were conducted concurrent with the vehicular TMCs and are presented in Figure 2-7. As shown in the figure, bicycle volumes are heaviest along Washington Street during the peak periods.

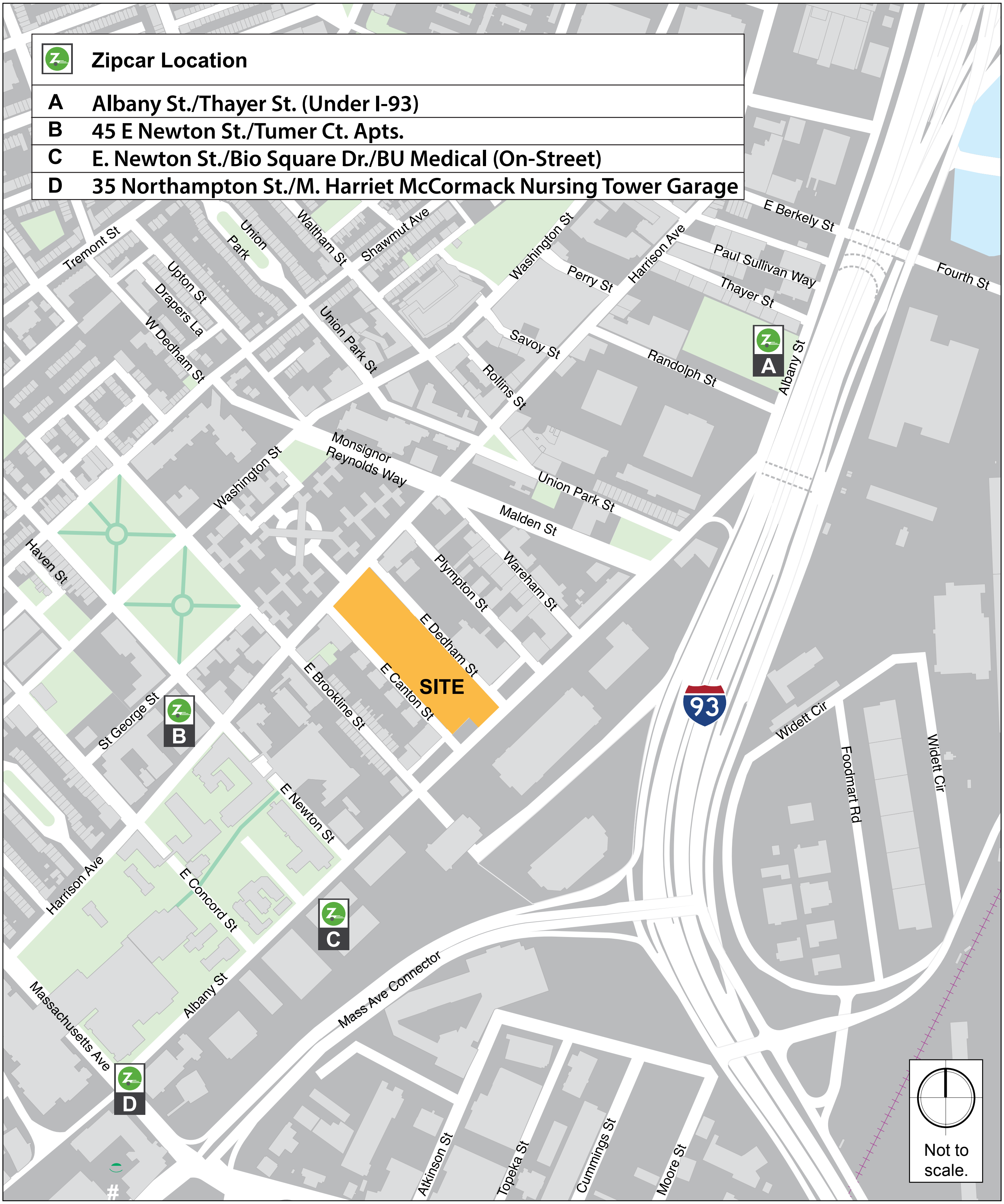

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Figure 2-4
Car Sharing Services

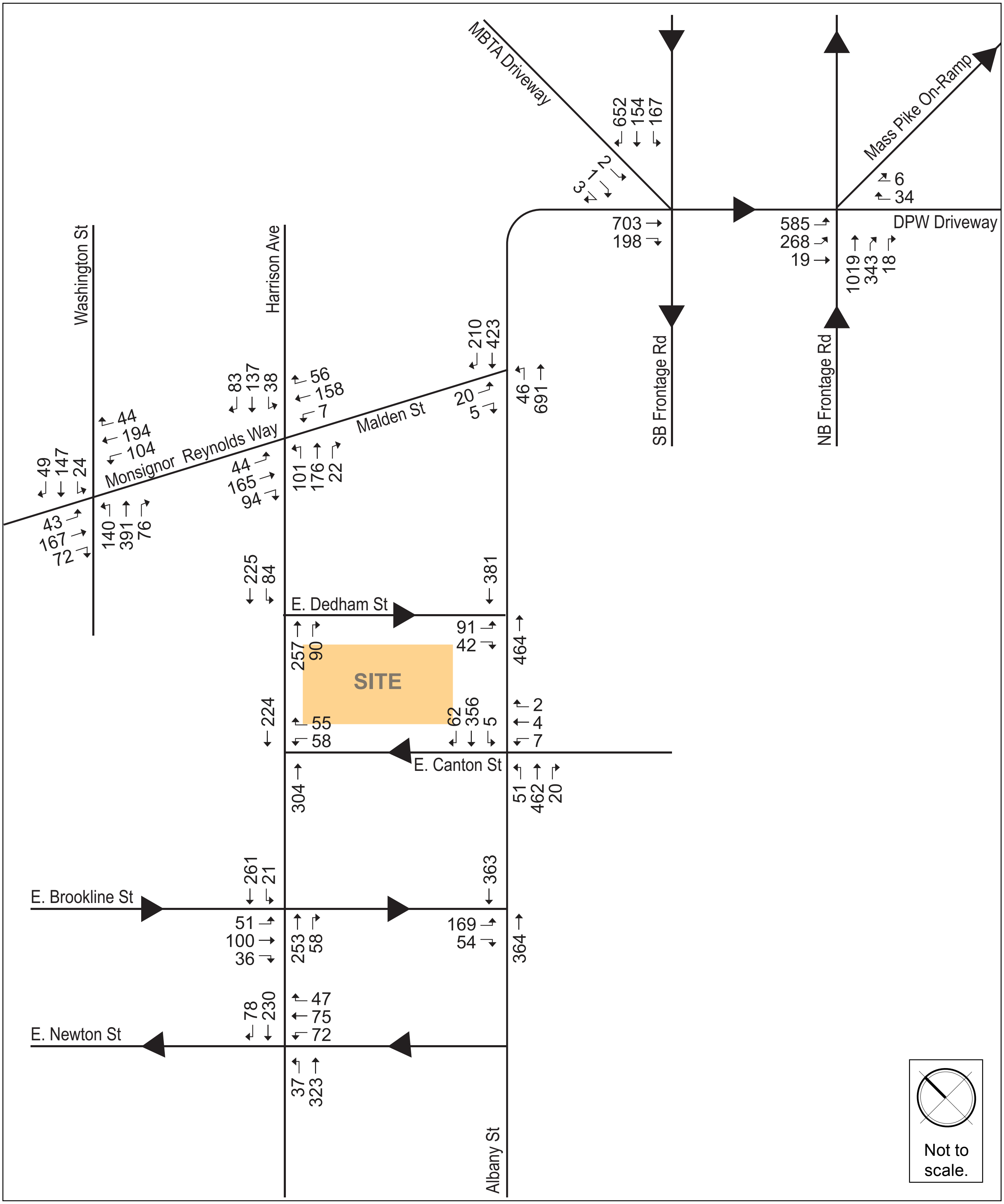

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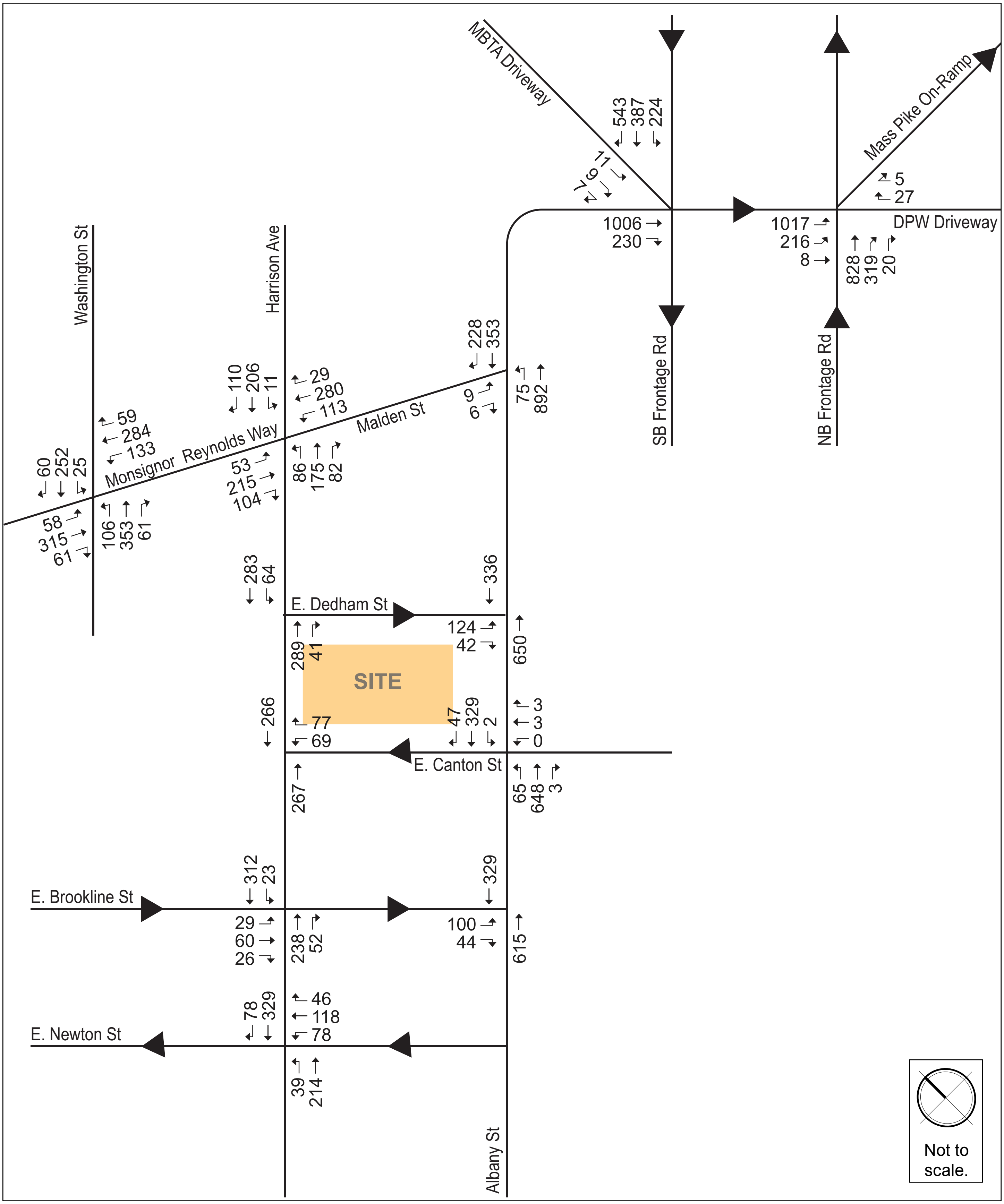
Figure 2-5

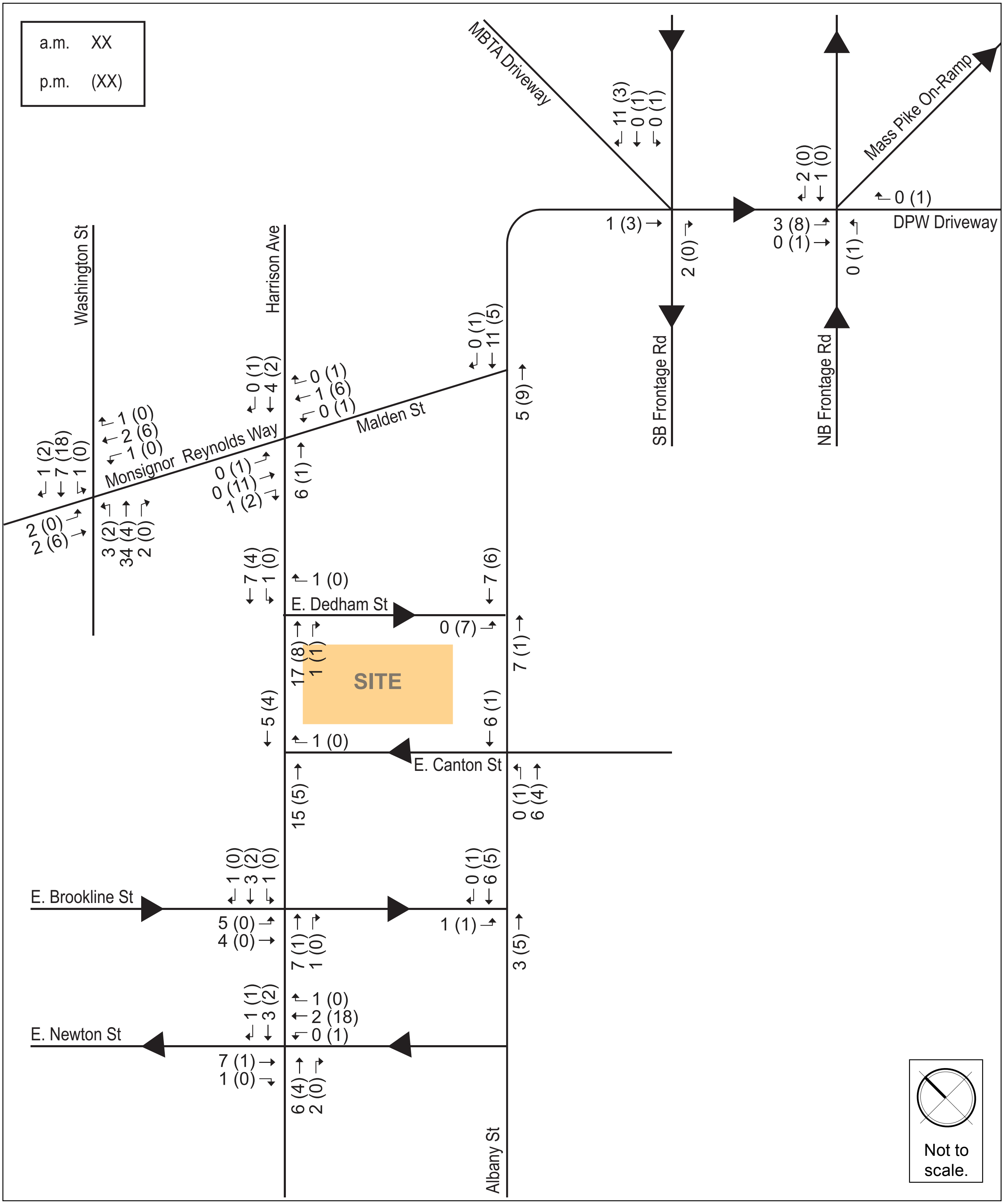
Existing (2015) Condition Vehicular Traffic Volumes, a.m. Peak Hour



Harrison Albany South End

Figure 2-6

Existing (2015) Condition Vehicular Traffic Volumes, p.m. Peak Hour



Harrison Albany South End

Figure 2-7
Existing (2015) Condition Bicycle Volumes, a.m. and p.m. Peak Hours

2.2.6.1 Bicycle Sharing Services

The site is also located in 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. There are three Hubway locations within a quarter mile of the site. Figure 2-8 shows the Hubway stations within one quarter mile radius.

2.2.7 Existing Pedestrian Volumes and Accommodations

In general, sidewalks are provided along all roadways and are in good condition. Crosswalks are provided at all study area intersections. Pedestrian signal equipment is provided at all three of the signalized study area intersections.

To determine the amount of pedestrian activity within the study area, pedestrian counts were conducted concurrent with the TMCs at the study area intersections and are presented in Figure 2-9. As shown in the figure, pedestrian activity is heavy throughout the study area.

2.2.8 Existing Public Transportation Services

The Project Site is located in Boston's South End with reliable public transportation opportunities. The Silver Line and several bus lines provide access throughout the city. The closest Silver Line station is approximately one-quarter mile away.

The MBTA operates five bus routes, as well as two Silver Line routes in close proximity to the Project. Figure 2-10 maps all of the public transportation service located in close proximity of the Project Site, and Table 2-2 provides a brief summary of all routes.

Table 2-2 Existing Public Transportation Service Summary

Transit Service	*Description*	*Rush-hour Headway (in minutes)**
Bus Routes		
SL4	Dudley Station – South Station at Essex St via Washington St	8
SL5	Dudley Station – Downtown Crossing at Temple Place via Washington St	8
CT1	Central Sq, Cambridge - B.U. Medical Center/Boston Medical Center via M.I.T.	20
CT3	Beth Israel Deaconess Medical Center - Andrew Station via B.U. Medical Center	20
8	Harbor Point/UMass - Kenmore Station via B.U. Medical Center & Dudley Station	14
10	City Point - Copley Sq via Andrew Station & B.U. Medical Center	15
47	Central Sq., Cambridge - Broadway Station via B.U. Medical Center, Dudley Station & Longwood Medical Area	10

* Headway is the time between buses.

Harrison Albany South End

Figure 2-8
Bicycle Sharing Locations

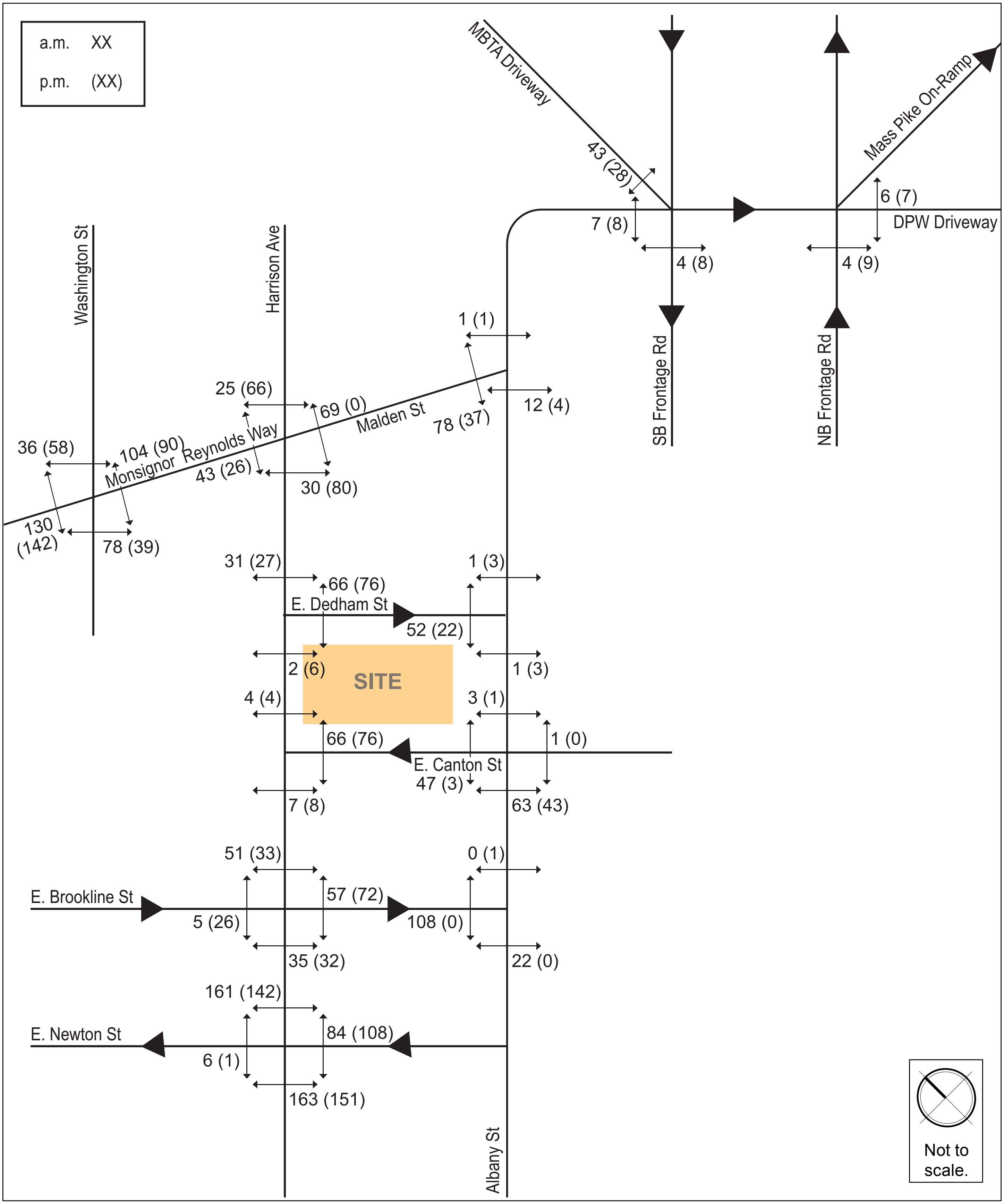


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Figure 2-9
Existing (2015) Condition Pedestrian Volumes, a.m. and p.m. Peak Hours

Harrison Albany South End

Figure 2-10
Public Transportation

2.2.9 Existing (2016) Condition Traffic Operations Analysis

The criterion for evaluating traffic operations is level of service (LOS), which is determined by assessing average delay experienced by vehicles at intersections and along intersection approaches. Trafficware's Synchro (version 9) 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).

LOS designations are based on average delay per vehicle for all vehicles entering an intersection. Table 2-3 displays the intersection LOS criteria. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst condition, with significant traffic delay. LOS D or better is typically considered desirable during the peak hours of traffic in urban and suburban settings.

Table 2-3 Vehicle Level of Service Criteria

Level of Service	*Average Stopped Delay (sec/veh)*	
	Signalized Intersections	*Unsignalized Intersections*
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 ratio (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 95th percentile queue, measured in feet, denotes the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line. This maximum queue occurs five percent, or less, of the time during the peak hour, and typically does not develop during off-peak hours. Since volumes fluctuate throughout the hour, the 95th percentile queue represents what can be considered a "worst case" condition. Queues at an intersection are generally below the 95th percentile length throughout most of the peak hour. It is also unlikely that 95th percentile queues for each approach to an intersection occur simultaneously.

Table 2-4 and Table 2-5 summarize the Existing (2016) Condition capacity analysis for the study area intersection during the a.m. and p.m. peak hours, respectively. The detailed analysis sheets are provided in Appendix C.

Table 2-4 Existing (2016) Condition, Capacity Analysis Summary, a.m. Peak Hour

Intersection/Approach	*LOS*	*Delay (s)*	*V/C Ratio*	*50th Percentile Queue (ft)*	*95th Percentile Queue (ft)*
Signalized Intersections					
Harrison Avenue/East Newton Street	**B**	**18.2**	**-**	**-**	**-**
East Newton Street WB left/thru/right	D	50.1	0.76	119	174
Harrison Avenue NB left/thru	A	9.2	0.43	56	100
Harrison Avenue SB thru/right	A	7.3	0.36	44	73
Harrison Avenue/East Brookline Street	**B**	**15.4**	**-**	**-**	**-**
East Brookline Street EB left/thru/right	D	47.2	0.71	102	175
Harrison Avenue NB thru/right	A	2.7	0.36	29	35
Harrison Avenue SB left/thru	B	10.4	0.33	75	188
Washington Street/Monsignor Reynolds Way/West Dedham Street	**C**	**22.2**	**-**	**-**	**-**
West Dedham Street EB left/thru/right	C	30.8	0.76	95	172
Monsignor Reynolds Way WB left	E	65.5	0.71	70	m120
Monsignor Reynolds Way WB thru/right	D	47.2	0.65	152	231
Washington Street NB left	A	7.2	0.28	28	66
Washington Street NB thru	A	9.0	0.45	105	203
Washington Street NB right	A	2.8	0.13	3	m5
Washington Street SB left	A	5.3	0.07	3	12
Washington Street SB thru	A	5.3	0.18	18	44
Washington Street SB right	A	0.8	0.08	0	2
Harrison Avenue/Monsignor Reynolds Way/Malden Street	**C**	**26.7**	**-**	**-**	**-**
Monsignor Reynolds Way EB left/thru	E	60.5	0.89	91	#238
Monsignor Reynolds Way EB right	A	2.9	0.18	0	m6
Monsignor Reynolds Way WB left/thru/right	D	38.9	0.65	116	194
Harrison Avenue NB left	B	10.8	0.23	36	44
Harrison Avenue NB thru/right	B	16.5	0.28	101	142
Harrison Avenue SB left	B	10.4	0.08	12	17
Harrison Avenue SB thru/right	B	14.1	0.40	89	83

Table 2-4 Existing (2016) Condition, Capacity Analysis Summary, a.m. Peak Hour (Continued)

Intersection/Approach	*LOS*	*Delay (s)*	*V/C Ratio*	*50th Percentile Queue (ft)*	*95th Percentile Queue (ft)*
Signalized Intersections					
I-93 NB Frontage Road/Connector/DPW Driveway	**D**	**49.5**	**-**	**-**	**-**
Connector EB left	F	93.2	0.98	286	m301
Connector EB left/slight left	F	95.4	1.00	302	m#340
Connector EB thru	C	24.4	0.04	7	m9
DPW Driveway WB left/hard left	A	8.5	0.26	0	13
I-93 NB Frontage Road NB thru | thru/slight right | slight right/right	C	22.5	0.65	307	361
I-93 SB Frontage Road/Connector/ Albany Street/MBTA Driveway	**D**	**53.3**	**-**	**-**	**-**
MBTA Driveway EB thru/right/hard right	D	36.7	0.11	4	11
I-93 SB Frontage Road SB left	B	19.7	0.22	75	m125
I-93 SB Frontage Road SB left/thru | thru	B	18.2	0.17	52	76
I-93 SB Frontage Road SB slight right/right	A	6.8	0.61	91	140
Albany Street NEB slight right | slight right/ hard right	F	95.1	1.03	~448	#546
Unsignalized Intersections					
Albany Street/Malden Street	**-**	**-**	**-**	**-**	**-**
Malden Street EB left/right	D	31.3	0.21	-	19
Albany Street NB left/thru | thru	A	0.9	0.34	-	6
Albany Street SB thru/right	A	0.0	0.41	-	0
Albany Street/East Dedham Street	-	-	-	-	-
East Dedham Street EB left/right	D	26.3	0.50	-	67
Albany Street NB thru	A	0.0	0.29	-	0
Albany Street SB thru	A	0.0	0.24	-	0
Albany Street/East Canton Street/BFE Driveway	-	-	-	-	-
BFE Driveway WB left/thru/right	D	26.9	0.18	-	16
Albany Street NB left/thru/right	A	1.4	0.05	-	4
Albany Street SB left/thru/right	A	0.1	0.00	-	0
Albany Street/East Brookline Street	-	-	-	-	-
East Brookline Street EB left/right	E	47.9	0.78	-	155
Albany Street NB thru	A	0.0	0.23	-	0
Albany Street SB thru	A	0.0	0.24	-	0

Table 2-4 Existing (2016) Condition, Capacity Analysis Summary, a.m. Peak Hour (Continued)

Intersection/Approach	*LOS*	*Delay (s)*	*V/C Ratio*	*50th Percentile Queue (ft)*	*95th Percentile Queue (ft)*
Unsignalized Intersections					
Harrison Avenue/East Canton Street	-	-	-	-	-
East Canton Street WB left/right	C	15.9	0.30	-	32
Harrison Avenue NB thru	A	0.0	0.21	-	0
Harrison Avenue SB thru	A	0.0	0.15	-	0
Harrison Avenue/East Dedham Street	-	-	-	-	-
Harrison Avenue NB thru/right	A	0.0	0.21	-	0
Harrison Avenue SB left/thru	A	3.0	0.09	-	7

Table 2-5 Existing (2016) Condition, Capacity Analysis Summary, p.m. Peak Hour

Intersection/Approach	*LOS*	*Delay (s)*	*V/C Ratio*	*50th Percentile Queue (ft)*	*95th Percentile Queue (ft)*
Signalized Intersections					
Harrison Avenue/East Newton Street	**C**	**22.9**	-	-	-
East Newton Street WB left/thru/right	D	47.7	0.79	150	202
Harrison Avenue NB left/thru	B	11.8	0.36	61	143
Harrison Avenue SB thru/right	B	14.9	0.47	102	259
Harrison Avenue/East Brookline Street	**B**	**13.3**	-	-	-
East Brookline Street EB left/thru/right	D	46.6	0.59	77	114
Harrison Avenue NB thru/right	A	6.4	0.30	64	185
Harrison Avenue SB left/thru	A	6.7	0.33	35	m148
Washington Street/Monsignor Reynolds Way/West Dedham Street	C	**31.2**	-	-	-
West Dedham Street EB left/thru/right	E	57.8	0.99	276	#466
Monsignor Reynolds Way WB left	D	41.6	0.79	75	m78
Monsignor Reynolds Way WB thru/right	D	35.4	0.80	188	m174
Washington Street NB left	B	16.6	0.28	46	m95
Washington Street NB thru	B	18.8	0.46	169	301
Washington Street NB right	A	7.6	0.11	12	m24
Washington Street SB left	A	8.6	0.07	5	14
Washington Street SB thru	B	10.6	0.34	60	84
Washington Street SB right	A	1.5	0.11	0	4

Table 2-5 Existing (2016) Condition, Capacity Analysis Summary, p.m. Peak Hour (Continued)

Intersection/Approach	*LOS*	*Delay (s)*	*V/C Ratio*	*50th Percentile Queue (ft)*	*95th Percentile Queue (ft)*
Signalized Intersections					
Harrison Avenue/Monsignor Reynolds Way/Malden Street	**F**	**>100**	**-**	**-**	**-**
Monsignor Reynolds Way EB left/thru	D	43.4	0.85	95	m147
Monsignor Reynolds Way EB right	A	1.6	0.18	0	m0
Monsignor Reynolds Way WB left/thru/right	F	>100	>1.30	~386	#576
Harrison Avenue NB left	A	8.7	0.23	21	37
Harrison Avenue NB thru/right	B	13.1	0.36	74	#245
Harrison Avenue SB left	A	7.1	0.02	2	m8
Harrison Avenue SB thru/right	B	18.2	0.48	125	#322
I-93 NB Frontage Road/Connector/DPW Driveway	**F**	**83.7**	**-**	**-**	**-**
Connector EB left	F	>100	1.25	~636	m#477
Connector EB left | slight/left	F	>100	1.26	~632	m#476
Connector EB thru	B	14.4	0.02	2	m2
DPW Driveway WB left/hard left	A	4.9	0.20	0	0
I-93 NB Frontage Road NB thru | thru/slight right | slight right/right	C	22.1	0.57	238	287
I-93 SB Frontage Road/Connector/ Albany Street/MBTA Driveway	**F**	**95.3**	**-**	**-**	**-**
MBTA Driveway EB thru/right/hard right	D	52.1	0.41	24	34
I-93 SB Frontage Road SB left	C	29.8	0.37	108	m158
I-93 SB Frontage Road SB left/thru | thru	C	26.5	0.42	143	132
I-93 SB Frontage Road SB slight right/right	A	4.5	0.51	76	103
Albany Street NEB slight right | slight right/ hard right	F	>100	1.29	~686	#792
Unsignalized Intersections					
Albany Street/Malden Street	**-**	**-**	**-**	**-**	**-**
Malden Street EB left/right	C	22.4	0.09	-	7
Albany Street NB left/thru | thru	A	1.0	0.38	-	7
Albany Street SB thru/right	A	0.0	0.36	-	0
Albany Street/East Dedham Street	-	-	-	-	-
East Dedham Street EB left/right	F	76.6	0.91	-	205
Albany Street NB thru	A	0.0	0.40	-	0
Albany Street SB thru	A	0.0	0.25	-	0

Table 2-5 Existing (2016) Condition, Capacity Analysis Summary, p.m. Peak Hour (Continued)

Intersection/Approach	*LOS*	*Delay (s)*	*V/C Ratio*	*50th Percentile Queue (ft)*	*95th Percentile Queue (ft)*
Unsignalized Intersections					
Albany Street/East Canton Street/BFE Driveway	-	-	-	-	-
BFE Driveway WB left/thru/right	C	21.2	0.05	-	4
Albany Street NB left/thru/right	A	1.5	0.06	-	5
Albany Street SB left/thru/right	A	0.1	0.00	-	0
Albany Street/East Brookline Street	-	-	-	-	-
East Brookline Street EB left/right	D	31.9	0.59	-	90
Albany Street NB thru	A	0.0	0.39	-	0
Albany Street SB thru	A	0.0	0.22	-	0
Harrison Avenue/East Canton Street	-	-	-	-	-
East Canton Street WB left/right	C	15.6	0.33	-	35
Harrison Avenue NB thru	A	0.0	0.17	-	0
Harrison Avenue SB thru	A	0.0	0.17	-	0
Harrison Avenue/East Dedham Street	-	-	-	-	-
Harrison Avenue NB thru/right	A	0.0	0.23	-	0
Harrison Avenue SB left/thru	A	2.1	0.06	-	5

Grey Shading indicates LOS E or F.

~ 50th percentile volume exceeds capacity. Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity. Queue shown is maximum after two cycles.

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

As shown in Table 2-4 and Table 2-5, the majority of intersections and approaches operate well under the Existing (2016) Condition with the following exceptions:

- The signalized intersection of **Washington Street/Monsignor Reynolds Way/West Dedham Street** operates at LOS C during both the a.m. and p.m. peak hours. The Monsignor Reynolds Way westbound left-turn lane operates at LOS E during the a.m. peak hour. The West Dedham Street eastbound shared left-turn/thru/right-turn lane operates at LOS E during the p.m. peak hour. The longest queues at the intersection occur at the Monsignor Reynolds Way westbound approach during the a.m. peak hour and at the West Dedham Street eastbound approach during the p.m. peak hour.

- The signalized intersection of **Harrison Avenue/Monsignor Reynolds Way/ Malden Street** operates at LOS C during the a.m. peak hour and LOS F during the p.m. peak hour. The Monsignor Reynolds Way eastbound shared left-turn/thru lane operates at LOS E during the a.m. peak hour. The Monsignor Reynolds Way westbound shared left-turn/thru/right-turn lane operates at LOS F during the p.m. peak hour. The longest queues at the intersection occur at the Monsignor Reynolds Way eastbound approach during the a.m. peak hour and the Monsignor Reynolds Way westbound approach during the p.m. peak hour.

- The signalized intersection of **I-93 Northbound Frontage Road/Connector/ DPW Driveway** operates at LOS D during the a.m. peak hour and LOS F during the p.m. peak hour. The Connector eastbound left-turn and shared left/slight left-turn lanes operate at LOS F during both the a.m. and p.m. peak hours. The longest queues at the intersection occur at the I-93 Northbound Frontage Road northbound approach during the a.m. peak hour and the Connector eastbound approach during the p.m. peak hour.

- The signalized intersection of **I-93 Southbound Frontage Road/Connector/ Albany Street/MBTA Driveway** operates at LOS D during the a.m. peak hour and LOS F during the p.m. peak hour. The Albany Street north-eastbound approach operates at LOS F during both the a.m. and p.m. peak hours. The longest queues at the intersection occur at the Albany Street north-eastbound approach during both the a.m. and p.m. peak hours.

- At the unsignalized intersection of **Albany Street/East Dedham Street** the East Dedham Street eastbound stop controlled approach operates at LOS F during the p.m. peak hour.

- At the unsignalized intersection of **Albany Street/East Brookline Street** the East Brookline Street eastbound stop controlled approach operates at LOS E during the a.m. peak hour.

2.3 No-Build (2023) Condition

The No-Build (2023) 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.

2.3.1 Background Traffic Growth

The methodology to account for generic future background traffic growth, 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 traffic growth rate of one-half percent per year, compounded annually, was used.

2.3.2 Specific Development Traffic Growth

Traffic volumes associated with known development projects can affect traffic patterns throughout the study area within the future analysis time horizon. Six such projects were specifically accounted for in the traffic volumes for future scenarios, while others were included in the general background traffic growth (the site-specific background projects are mapped on Figure 2-11):

Boston University Medical Center (BUMC) Institutional Master Plan (IMP) – This project consists of the six projects part of the BUMC IMP. The BUMC is located south of the Project site along Harrison Avenue and Albany Street. In total, these projects consist of approximately 433,100 sf of medical space, 195,000 sf of research and development space, and 160 sf of office space. The projects, the building program and the status are listed below:

- Biosquare II NEIDL – 195,000 sf Research and Development – Construction Complete
- BUMC Administration and Clinical Building – 160,000 sf Office – BRA Board Approved
- BUMC Energy Facility – 38,500 sf Energy Plant – BRA Board Approved
- BUMC Moakley Cancer Center Addition – 27,800 sf Hospital – BRA Board Approved
- BUMC New Inpatient Building (Phase 1) – 82,300 sf Hospital – BRA Board Approved
- BUMC New Inpatient Building (Phase 2) – 323,000 sf Hospital – BRA Board Approved

600 Harrison Avenue – This project calls for the construction of a 193,300 sf mixed-use building consisting of 160 residential units, 3,600 sf of ground floor retail space, and 236 parking spaces. This project is currently under construction.

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Figure 2-11
Specific Background Project Locations

345 Harrison Avenue – This project calls for the construction of 577 rental units, 32,170 sf of ground floor retail and restaurant space, and 270 parking spaces. This project has been approved.

80 East Berkley Street – This project calls for the construction of a 308,000 sf, 11-story mixed-use building consisting of 290,000 sf of office space, 18,000 sf of ground floor retail space, and 200 parking spaces. This project has been approved.

477-481 Harrison Avenue – This project calls for the construction of a 36,700 sf residential building consisting of 18 condominiums and 20 parking spaces. This project is currently under construction.

The Factory at 46 Wareham Street – This project calls for the construction of a 64,530 sf, 6-story mixed-use building consisting of 16 residential units, 45,530 sf of commercial space, and 97 parking spaces. This project has been approved.

2.3.3 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, it was determined that there are no proposed infrastructure improvement projects in the vicinity of the study area.

2.3.4 No-Build Traffic Volumes

The one-half percent per year annual growth rate, compounded annually, was applied to the Existing (2016) Condition traffic volumes, then the traffic volumes associated with the background development projects listed above were added to develop the No-Build (2023) Condition traffic volumes. The No-Build (2023) weekday morning and evening peak hour traffic volumes are shown on Figures 2-12 and Figure 2-13, respectively.

2.3.5 No-Build (2023) Condition Traffic Operations Analysis

The No-Build (2023) Condition analysis uses the same methodology as the Existing (2016) Condition capacity analysis. Tables 2-6 and Table 2-7 present the No-Build (2023) Condition operations analysis for the a.m. and p.m. peak hours, respectively. The shaded cells in the tables indicate a decrease in LOS between the Existing (2016) Condition and the No-Build (2023) Condition to an LOS below LOS D. The detailed analysis sheets are provided in Appendix C.

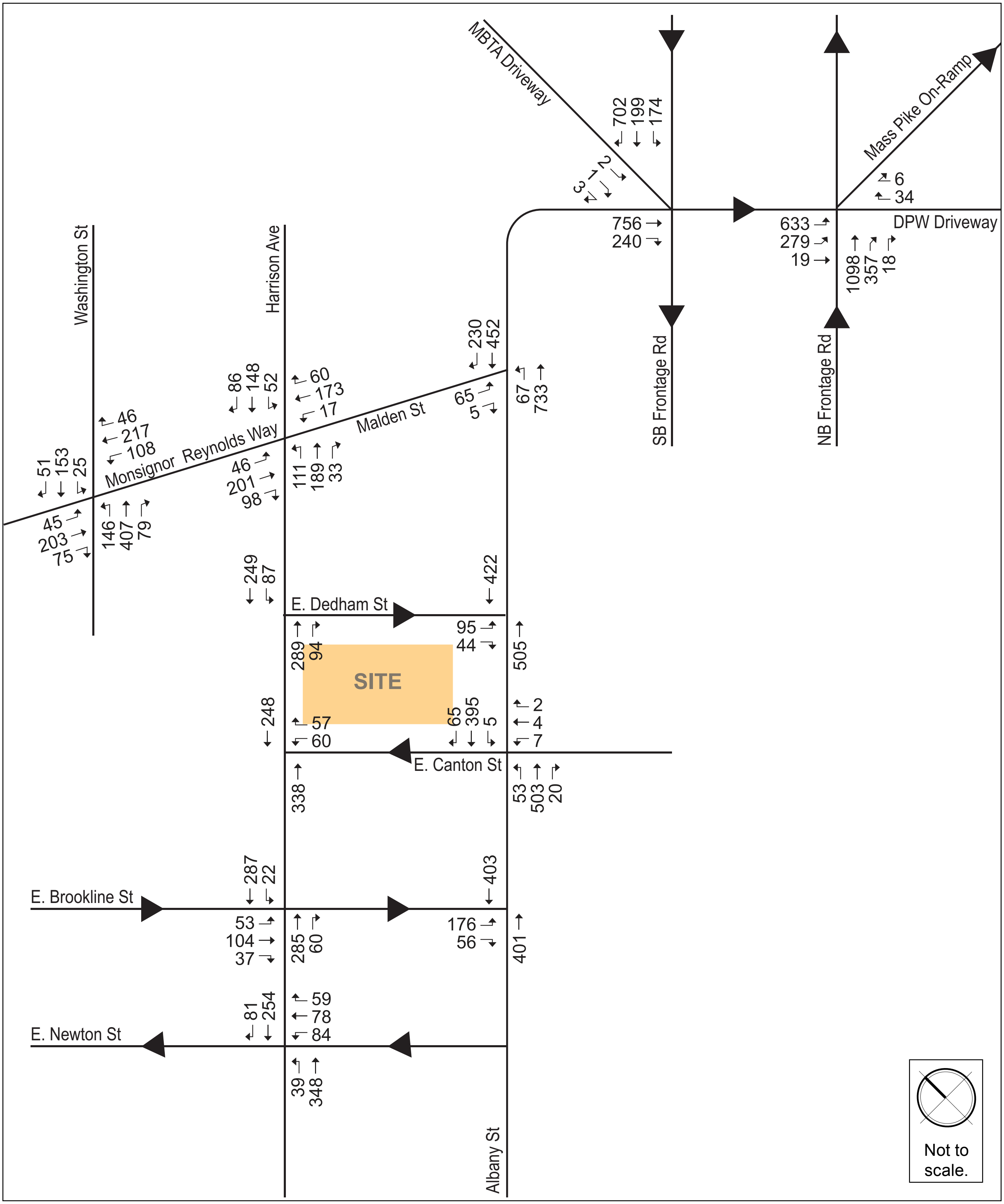

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Figure 2-12
No-Build (2023) Condition Vehicular Traffic Volumes, a.m. Peak Hour

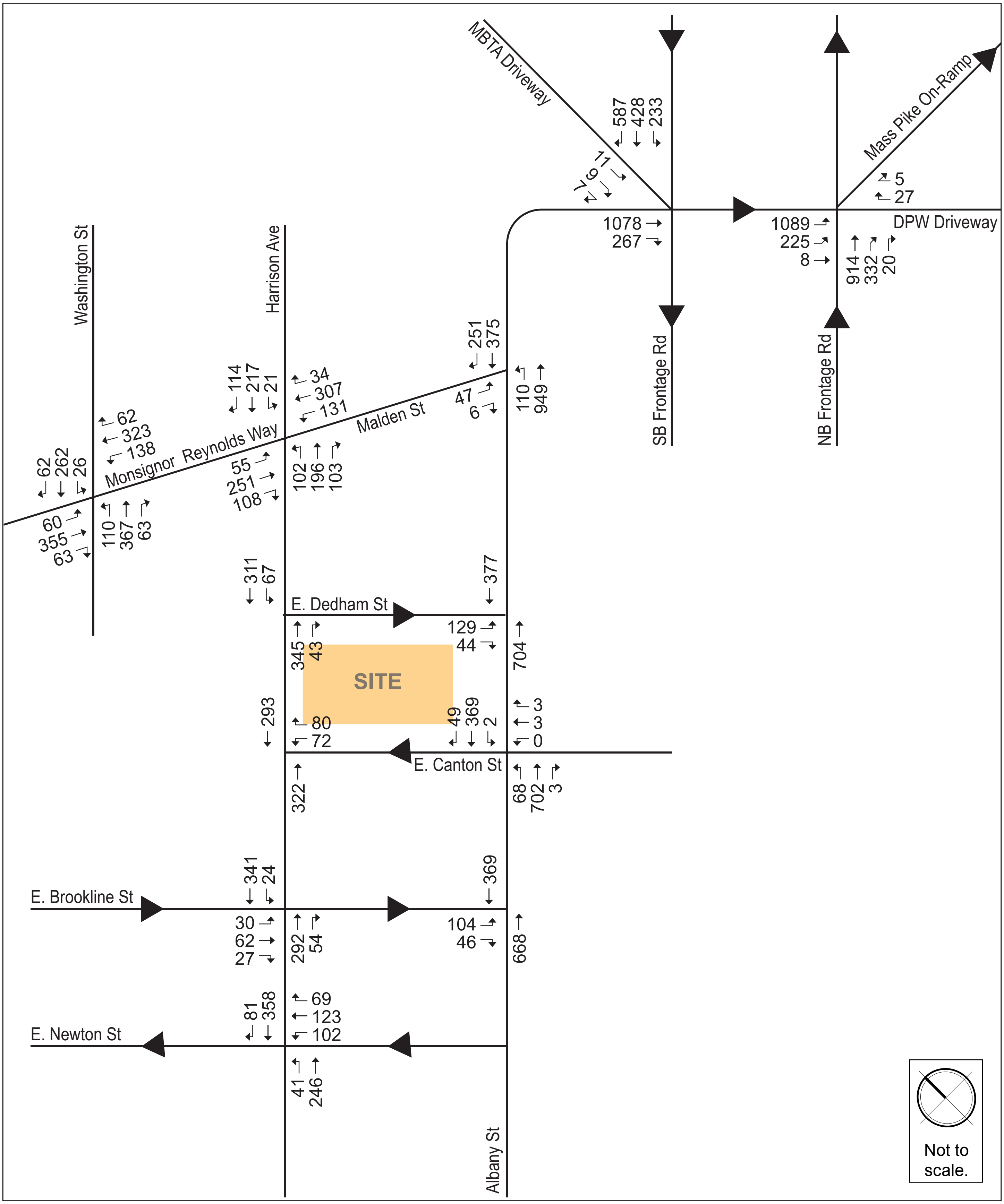

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Figure 2-13
No-Build (2023) Condition Vehicular Traffic Volumes, p.m. Peak Hour

Table 2-6 No-Build (2023) Condition, Capacity Analysis Summary, a.m. Peak Hour

Intersection/Approach	*LOS*	*Delay (s)*	*V/C Ratio*	*50th Percentile Queue (ft)*	*95th Percentile Queue (ft)*
Signalized Intersections					
Harrison Avenue/East Newton Street	**B**	**19.8**	-	-	-
East Newton Street WB left/thru/right	D	51.3	0.80	135	197
Harrison Avenue NB left/thru	B	10.5	0.48	62	107
Harrison Avenue SB thru/right	A	8.3	0.40	51	81
Harrison Avenue/East Brookline Street	**B**	**15.4**	-	-	-
East Brookline Street EB left/thru/right	D	47.2	0.72	107	183
Harrison Avenue NB thru/right	A	3.0	0.41	37	45
Harrison Avenue SB left/thru	B	11.2	0.36	85	208
Washington Street/Monsignor Reynolds Way/West Dedham Street	**C**	**25.1**	-	-	-
West Dedham Street EB left/thru/right	D	38.7	0.85	134	236
Monsignor Reynolds Way WB left	E	69.0	0.76	72	m111
Monsignor Reynolds Way WB thru/right	D	47.0	0.68	169	m234
Washington Street NB left	A	8.5	0.30	38	87
Washington Street NB thru	B	10.8	0.48	142	269
Washington Street NB right	A	3.3	0.14	6	m15
Washington Street SB left	A	6.0	0.07	3	12
Washington Street SB thru	A	5.8	0.19	25	46
Washington Street SB right	A	0.9	0.09	0	2
Harrison Avenue/Monsignor Reynolds Way/Malden Street	**C**	**30.4**	-	-	-
Monsignor Reynolds Way EB left/thru	E	70.1	0.96	104	#292
Monsignor Reynolds Way EB right	A	2.2	0.18	0	m4
Monsignor Reynolds Way WB left/thru/right	D	43.2	0.73	137	#248
Harrison Avenue NB left	B	10.8	0.27	36	44
Harrison Avenue NB thru/right	B	17.5	0.35	114	150
Harrison Avenue SB left	B	10.6	0.12	17	21
Harrison Avenue SB thru/right	B	15.1	0.44	96	90

Table 2-6 No-Build (2023) Condition, Capacity Analysis Summary, a.m. Peak Hour (Continued)

Intersection/Approach	*LOS*	*Delay (s)*	*V/C Ratio*	*50th Percentile Queue (ft)*	*95th Percentile Queue (ft)*
Signalized Intersections					
I-93 NB Frontage Road/Connector/DPW Driveway	**D**	**47.9**	-	-	-
Connector EB left	F	87.6	1.04	~437	m284
Connector EB left | slight/left	F	89.0	1.07	~448	m#308
Connector EB thru	C	24.3	0.04	7	m8
DPW Driveway WB left/hard left	A	8.5	0.26	0	13
I-93 NB Frontage Road NB thru | thru/slight right | slight right/right	C	23.6	0.69	339	398
I-93 SB Frontage Road/Connector/ Albany Street/MBTA Driveway	**E**	**60.4**	-	-	-
MBTA Driveway EB thru/right/hard right	D	36.7	0.11	4	11
I-93 SB Frontage Road SB left	C	20.3	0.23	79	m130
I-93 SB Frontage Road SB left/thru | thru	B	19.2	0.21	68	96
I-93 SB Frontage Road SB slight right/right	A	7.8	0.65	105	166
Albany Street NEB slight right | slight right/ hard right	F	>100	1.14	~552	#647
Unsignalized Intersections					
Albany Street/Malden Street	-	-	-	-	-
Malden Street EB left/right	F	95.2	0.79	-	117
Albany Street NB left/thru | thru	A	3.4	0.36	-	10
Albany Street SB thru/right	A	0.0	0.44	-	0
Albany Street/East Dedham Street	-	-	-	-	-
East Dedham Street EB left/right	D	32.8	0.59	-	87
Albany Street NB thru	A	0.0	0.32	-	0
Albany Street SB thru	A	0.0	0.26	-	0
Albany Street/East Canton Street/BFE Driveway	-	-	-	-	-
BFE Driveway WB left/thru/right	D	30.9	0.21	-	19
Albany Street NB left/thru/right	A	1.4	0.05	-	4
Albany Street SB left/thru/right	A	0.1	0.00	-	0
Albany Street/East Brookline Street	-	-	-	-	-
East Brookline Street EB left/right	F	71.6	0.90	-	204
Albany Street NB thru	A	0.0	0.25	-	0
Albany Street SB thru	A	0.0	0.27	-	0

Table 2-6 No-Build (2023) Condition, Capacity Analysis Summary, a.m. Peak Hour (Continued)

Intersection/Approach	*LOS*	*Delay (s)*	*V/C Ratio*	*50th Percentile Queue (ft)*	*95th Percentile Queue (ft)*
Unsignalized Intersections					
Harrison Avenue/East Canton Street	-	-	-	-	-
East Canton Street WB left/right	C	17.5	0.34	-	37
Harrison Avenue NB thru	A	0.0	0.24	-	0
Harrison Avenue SB thru	A	0.0	0.16	-	0
Harrison Avenue/East Dedham Street	-	-	-	-	-
Harrison Avenue NB thru/right	A	0.0	0.23	-	0
Harrison Avenue SB left/thru	A	3.0	0.09	-	8

Grey Shading indicates a degradation to LOS E or F.
~ 50th percentile volume exceeds capacity. Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity. Queue shown is maximum after two cycles.
m Volumes for 95th percentile queue is metered by upstream signal.

Table 2-7 No-Build (2023) Condition, Capacity Analysis Summary, p.m. Peak Hour

Intersection/Approach	*LOS*	*Delay (s)*	*V/C Ratio*	*50th Percentile Queue (ft)*	*95th Percentile Queue (ft)*
Signalized Intersections					
Harrison Avenue/East Newton Street	**C**	**26.1**	**-**	**-**	**-**
East Newton Street WB left/thru/right	D	49.7	0.84	182	247
Harrison Avenue NB left/thru	B	13.7	0.43	73	161
Harrison Avenue SB thru/right	B	18.4	0.53	152	#379
Harrison Avenue/East Brookline Street	**B**	**13.1**	**-**	**-**	**-**
East Brookline Street EB left/thru/right	D	46.9	0.60	82	119
Harrison Avenue NB thru/right	A	7.0	0.36	80	258
Harrison Avenue SB left/thru	A	6.9	0.36	41	m151

Table 2-7 No-Build (2023) Condition, Capacity Analysis Summary, p.m. Peak Hour (Continued)

Intersection/Approach	*LOS*	*Delay (s)*	*V/C Ratio*	*50th Percentile Queue (ft)*	*95th Percentile Queue (ft)*
Signalized Intersections					
Washington Street/Monsignor Reynolds Way/West Dedham Street	**D**	**36.2**	**-**	**-**	**-**
West Dedham Street EB left/thru/right	E	78.8	1.06	~334	#547
Monsignor Reynolds Way WB left	C	34.9	0.79	79	m76
Monsignor Reynolds Way WB thru/right	C	32.2	0.84	217	m178
Washington Street NB left	B	18.0	0.31	49	m103
Washington Street NB thru	C	20.6	0.50	177	311
Washington Street NB right	A	7.9	0.12	12	m25
Washington Street SB left	A	9.0	0.09	6	15
Washington Street SB thru	B	12.1	0.37	68	89
Washington Street SB right	A	1.6	0.12	0	4
Harrison Avenue/Monsignor Reynolds Way/Malden Street	**F**	**>100**	**-**	**-**	**-**
Monsignor Reynolds Way EB left/thru	E	57.6	0.97	136	m#153
Monsignor Reynolds Way EB right	A	1.4	0.18	0	m0
Monsignor Reynolds Way WB left/thru/right	F	>100	>1.30	~482	#680
Harrison Avenue NB left	A	8.7	0.28	24	38
Harrison Avenue NB thru/right	B	16.1	0.44	97	#311
Harrison Avenue SB left	A	7.4	0.05	4	m13
Harrison Avenue SB thru/right	B	19.4	0.50	132	#345
I-93 NB Frontage Road/Connector/DPW Driveway	**F**	**>100**	**-**	**-**	**-**
Connector EB left	F	>100	>1.30	~693	m#465
Connector EB left | slight/left	F	>100	>1.30	~714	m#483
Connector EB thru	B	14.6	0.02	2	m2
DPW Driveway WB left/hard left	A	4.9	0.20	0	0
I-93 NB Frontage Road NB thru | thru/slight right | slight right/right	C	23.0	0.62	266	320
I-93 SB Frontage Road/Connector/ Albany Street/MBTA Driveway	**F**	**>100**	**-**	**-**	**-**
MBTA Driveway EB thru/right/hard right	D	52.1	0.41	24	34
I-93 SB Frontage Road SB left	C	30.5	0.38	114	m171
I-93 SB Frontage Road SB left/thru | thru	C	27.5	0.46	159	156
I-93 SB Frontage Road SB slight right/right	A	5.2	0.55	87	129
Albany Street NEB slight right | slight right/ hard right	F	>100	>1.30	~794	#897

Table 2-7 No-Build (2023) Condition, Capacity Analysis Summary, p.m. Peak Hour (Continued)

Intersection/Approach	*LOS*	*Delay (s)*	*V/C Ratio*	*50th Percentile Queue (ft)*	*95th Percentile Queue (ft)*
Unsignalized Intersections					
Albany Street/Malden Street	-	-	-	-	-
Malden Street EB left/right	F	54.1	0.50	-	60
Albany Street NB left/thru | thru	A	3.7	0.40	-	11
Albany Street SB thru/right	A	0.0	0.38	-	0
Albany Street/East Dedham Street	-	-	-	-	-
East Dedham Street EB left/right	F	>100	1.09	-	278
Albany Street NB thru	A	0.0	0.44	-	0
Albany Street SB thru	A	0.0	0.28	-	0
Albany Street/East Canton Street/BFE Driveway	-	-	-	-	-
BFE Driveway WB left/thru/right	C	23.7	0.06	-	5
Albany Street NB left/thru/right	A	1.7	0.07	-	5
Albany Street SB left/thru/right	A	0.1	0.00	-	0
Albany Street/East Brookline Street	-	-	-	-	-
East Brookline Street EB left/right	E	43.8	0.70	-	121
Albany Street NB thru	A	0.0	0.42	-	0
Albany Street SB thru	A	0.0	0.25	-	0
Harrison Avenue/East Canton Street	-	-	-	-	-
East Canton Street WB left/right	C	17.5	0.37	-	43
Harrison Avenue NB thru	A	0.0	0.20	-	0
Harrison Avenue SB thru	A	0.0	0.19	-	0
Harrison Avenue/East Dedham Street	-	-	-	-	-
Harrison Avenue NB thru/right	A	0.0	0.27	-	0
Harrison Avenue SB left/thru	A	2.1	0.07	-	5

Grey Shading indicates a degradation to LOS E or F.
~ 50th percentile volume exceeds capacity. Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity. Queue shown is maximum after two cycles.
m Volumes for 95th percentile queue is metered by upstream signal.

As shown in Table 2-6 and Table 2-7, the following operational deficiencies are expected under the No-Build (2023) Condition:

- The signalized intersection of **Harrison Street/Monsignor Reynolds Way/Malden Street** continues to operate at LOS C during the a.m. peak hour and LOS F during the p.m. peak hour. The Monsignor Reynolds Way eastbound shared left-turn/thru lane decreases from LOS D to LOS E during the p.m. peak hour. The longest queues at the intersection continue to occur at the Monsignor Reynolds Way eastbound approach during the a.m. peak hour and the Monsignor Reynolds Way westbound approach during the p.m. peak hour.

- The signalized intersection of **I-93 Southbound Frontage Road/Connector/ Albany Street/MBTA Driveway** decreases from LOS D to LOS E during the a.m. peak hour and continues to operate at LOS F during the p.m. peak hour. The longest queues at the intersection continue to occur at the Albany Street north-eastbound approach during both the a.m. and p.m. peak hours.

- At the unsignalized intersection of **Albany Street/Malden Street**, the Malden Street eastbound stop controlled approach decreases from LOS D to LOS F during the a.m. peak hour, and decreases from LOS C to LOS F during the p.m. peak hour.

- At the unsignalized intersection of **Albany Street/East Brookline Street**, the East Brookline Street eastbound stop controlled approach decreases from LOS E to LOS F during the a.m. peak hour, and from LOS D to LOS E during the p.m. peak hour.

2.4 Build (2023) Condition

As previously mentioned, the proposed Project will consist of the rehabilitation of 575 Albany Street and two new buildings (Building A and Building B) located between 575 Albany Street and the Gambro Building. The Gambro Building, which includes approximately 34,500 sf, will not be changed as part of the Project. The existing buildings at 75 and 123 East Dedham Street and 100 East Canton Street will be removed. The total Project will consist of approximately 710 residential units and approximately 54,200 sf of commercial space (including approximately 40,100 sf of office space and approximately 14,100 sf of retail space). Below grade parking below Building A and Building B will provide approximately 745 parking spaces. Parking will be provided for the on-site uses, as well as additional parking for neighboring properties as is currently occurring on Project Site.

2.4.1 Site Access and Vehicle Circulation

Vehicular access to the garage will be provided via a new driveway between 575 Albany Street and Building A. Pedestrian access to 575 Albany Street and the Gambro Building will remain unchanged. The primary pedestrian access to Building A and Building B will be from East Dedham Street and the main courtyard located between Building A and Building B. The site plan is shown in Figure 2-14.

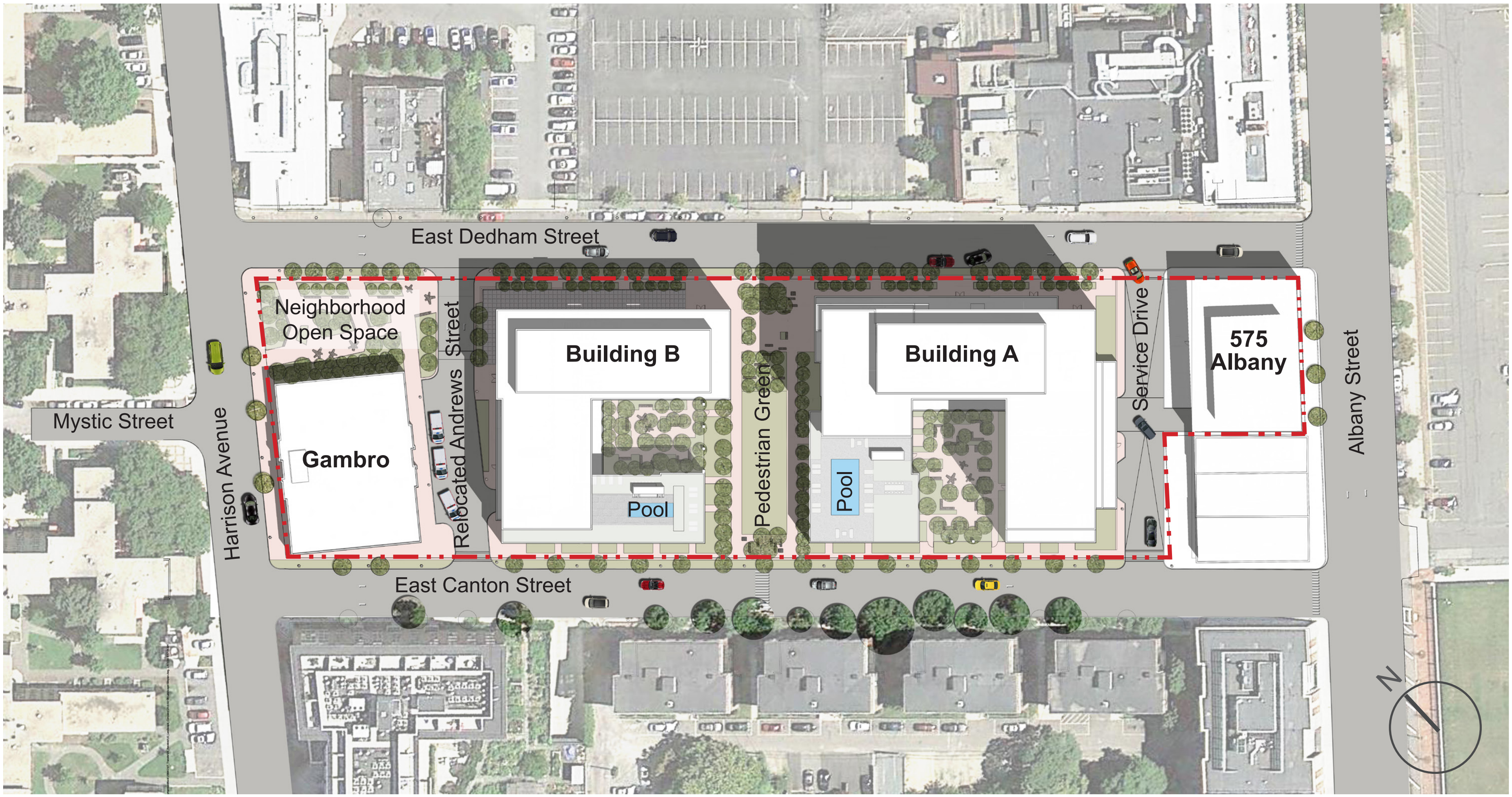

Figure 2-14

Proposed Site Plan

2.4.2 Project Parking

The parking goals developed by the BTD for this section of the South End are a maximum of 0.75 to 1.00 parking spaces per residential unit, and a maximum of 0.75 to 1.00 parking spaces per 1,000 sf of office space.

The Project is planning for a parking ratio of 0.5 spaces per residential unit and 1.0 space per 1,000 sf of office space. This results in an on-site parking demand of approximately 445 parking spaces. The remaining approximately 300 parking spaces will be used for Boston Medical Center and other neighboring land uses.

2.4.3 Loading and Service Accommodations

There will be two separate loading zones located on the Project Site. With access from the new driveway, Building A will house loading for two trucks and 575 Albany Street will also have a loading dock. Building B will also house an additional loading dock on the west side of the building with access from the relocated Andrews Street. The Gambro Building will be serviced by the Building B loading dock along with the short term parking that is to be provided along the relocated Andrews Street. Truck trip estimates for the Project were based on two different data sets. Delivery estimates for the residential and retail space were based on data provided in the Truck Trip Generation Rates by Land Use in the Central Artery/Tunnel Project Study (CTPS) Area report[1], and estimates for the office and medical office space was based on a recent survey at the John Hancock Tower[2]. Deliveries to the Project Site will be limited to mostly SU-36 trucks and smaller delivery vehicles.

Residential. 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 sf of gross floor area and 0.001 medium/heavy truck trips per 1,000 sf of gross floor area.

Retail. Retail truck trips vary depending on the type of retail provided, but a general observation is that larger retail attracts larger trucks but not necessarily more truck deliveries. The storefront retail land use was used to calculate the retail truck trip generation. Based on the CTPS report, retail uses generate approximately 0.15 light truck trips per 1,000 sf of floor area and 0.02 medium/heavy truck trips per 1,000 sf of gross floor area.

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

2 Loading Dock Survey at the John Hancock Tower, Boston, February 8 – 12, 2010. Conducted by Howard Stein Hudson.

Office. The Office land use was used to calculate both the medical office and the general office space. Based on the John Hancock report, office uses generate approximately 0.046 light truck trips per 1,000 sf of floor area and 0.002 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 2-8.

Table 2-8 Expected Delivery Activity

Land Use	*Number of Deliveries*	*General Delivery Times*
Residential	8	
Retail	2	10% before 7:00 a.m.
General Office	2	70% between 7:00 a.m. and 1:00 p.m.
Medical Office	2	20% after 1:00 p.m.
Total	14	

Based on the CTPS data and John Hancock data, the Project is expected to generate approximately 14 deliveries per day, one of which is expected to be a medium/heavy truck. It is anticipated that the majority of these deliveries will occur between 7:00 a.m. and 1:00 p.m. The numbers do not include trash truck trips.

2.4.4 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, and walk/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 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*[3] 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 codes (LUCs) were used:

Land Use Code 200 – Apartment. The apartment land use includes rental dwelling units located within the same building with at least three other dwelling units. Calculations of the number of trips use ITE's average rate per residential unit.

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

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.

Land Use Code 720 – Medical-Dental Office. A medical-dental office building is a facility that provides diagnoses and outpatient care on a routine basis, but is unable to provide prolonged in-house medical and surgical care. This type of facility is generally operated by one or more private physicians or dentists. Calculations of the number of trips use ITE's average rate per 1,000 sf.

Land Use Code 820 – Shopping Center. The Shopping Center land use code is defined as an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. Shopping center trip generation estimates are based on average vehicle rates per square footage of retail space. Calculations of the number of trips use ITE's average rate per 1,000 sf.

In addition, the parking spaces that will be provided for neighboring land uses will also generate traffic to and from the Project Site. This trip generation was determined based on the traffic currently accessing the 194 existing spaces on site.

2.4.5 Mode Share

BTD provides vehicle, transit, and walking mode split rates for different areas of Boston. The Project is located in the westerly portion of designated Area 15 – South End/Roxbury. The daily residential mode shares were based on US Census Journey to Work data. The unadjusted vehicular trips were converted to person trips by using vehicle occupancy rates published by the Federal Highway Administration (FHWA)[4]. The person trips were then distributed to different modes according to the mode shares shown in Table 2-9.

Table 2-9 Travel Mode Share

Land Use		*Walk/Bicycle Share*	*Transit Share*	*Auto Share*	*Vehicle Occupancy Rate*
Daily					
Residential	In	26%	34%	40%	1.13
	Out	26%	34%	40%	1.13
Office	In	35%	12%	53%	1.84
	Out	35%	12%	53%	1.84
Retail	In	17%	24%	59%	1.13
	Out	17%	24%	59%	1.13

4 Summary of Travel Trends: 2009 National Household Travel Survey; FHWA; Washington, D.C.; June 2011.

Table 2-9 Travel Mode Share (Continued)

Land Use		*Walk/Bicycle Share*	*Transit Share*	*Auto Share*	*Vehicle Occupancy Rate*
a.m. Peak					
Residential	In	27%	19%	54%	1.13
	Out	27%	29%	44%	1.13
Office	In	36%	13%	51%	1.84
	Out	37%	21%	42%	1.84
Retail	In	18%	27%	55%	1.13
	Out	17%	40%	43%	1.13
p.m. Peak					
Residential	In	27%	29%	44%	1.13
	Out	27%	19%	54%	1.13
Office	In	37%	21%	42%	1.84
	Out	36%	13%	51%	1.84
Retail	In	17%	40%	43%	1.13
	Out	18%	27%	55%	1.13

2.4.6 Existing Trip Generation

Based on ITE estimates and BTD mode share percentages, the existing site uses are currently generating approximately 1,120 daily vehicle trips, 92 vehicle trips during the weekday a.m. peak hour, and 110 vehicle trips during the weekday p.m. peak hour. The existing site is also generating approximately 726 daily transit trips, 75 transit trips during the weekday a.m. peak hour, and 98 transit trips during the weekday p.m. peak hour. Lastly, it is expected the existing site is generating 514 daily pedestrian and bicycle trips, 45 pedestrian and bicycle trips during the weekday a.m. peak hour, and 58 pedestrian and bicycle trips during the weekday p.m. peak hour.

2.4.7 Project Trip Generation

The mode share percentages shown in Table 2-9 were applied to the number of person trips to develop walk/bicycle, transit, and vehicle trip generation estimates for the Project. The trip generation for the Project by mode is shown in Table 2-10. The detailed trip generation information is provided in Appendix C.

Table 2-10 Net New Project Trip Generation

Land Use		Walk/Bicycle Trips	Transit Trips	Vehicle Trips
Daily				
Residential[1]	In	679	887	924
	Out	679	887	924
Retail[2]	In	120	41	98
	Out	120	41	98
General Office[3]	In	39	56	121
	Out	39	56	121
Medical Office[4]	In	191	269	360
	Out	191	269	360
Parking[5]	In	346	0	306
	Out	346	0	306
Existing Site	In	-257	-363	-560
	Out	-257	-363	-560
Total Net New Project Generated	In	1,118	890	1,249
	Out	1,118	890	1,249
a.m. Peak Hour				
Residential	In	22	16	38
	Out	87	93	125
Retail	In	1	0	1
	Out	0	0	0
General Office	In	11	16	29
	Out	1	2	2
Medical Office	In	21	31	34
	Out	5	12	7
Parking	In	119	0	105
	Out	14	0	12
Existing Site	In	-38	-57	-80
	Out	-7	-18	-12
Total Net New Project Generated	In	136	6	127
	Out	100	89	134

Table 2-10 Net New Project Trip Generation (Continued)

Land Use		*Walk/Bicycle Trips*	*Transit Trips*	*Vehicle Trips*
p.m. Peak Hour				
Residential	In	85	91	121
	Out	44	31	77
Retail	In	8	4	5
	Out	8	4	6
General Office	In	1	3	3
	Out	10	14	26
Medical Office	In	10	23	13
	Out	28	43	47
Parking	In	10	0	9
	Out	55	0	49
Existing Site	In	-14	-32	-21
	Out	-44	-66	-89
Total Net New Project Generated	In	100	89	130
	Out	101	26	116

1. ITE Trip Generation Rate, 9th Edition, LUC 220 (Apartment), 710 units.
2. ITE Trip Generation Rate, 9th Edition, LUC 820 (Shopping Center), 14,100 square feet.
3. ITE Trip Generation Rate, 9th Edition, LUC 710 (General Office Building), 40,100 square feet.
4. ITE Trip Generation Rate, 9th Edition, LUC 720 (Medical-Dental Office Building), 34,500 square feet.
5. 306 parking spaces.

As shown in Table 2-10, there is expected to be 2,236 new pedestrian/bicycle trips, 1,780 new transit trips, and 2,498 new vehicle trips throughout the day. During the a.m. peak hour, there is expected to be 236 pedestrian trips (136 in and 100 out), 95 transit trips (6 in and 89 out), and 261 vehicle trips (127 in and 134 out). During the p.m. peak hour, there is expected to be 201 pedestrian trips (100 in and 101 out), 115 transit trips (89 in and 26 out), and 246 vehicle trips (130 in and 116 out).

2.4.8 Trip Distribution

The trip distribution identifies the various travel paths for vehicles associated with the Project. Trip distribution patterns for the Project were based on BTD's origin-destination data for Area 15 and trip distribution patterns presented in traffic studies for nearby projects. The trip distribution patterns for the Project are illustrated in Figure 2-15 and Figure 2-16.

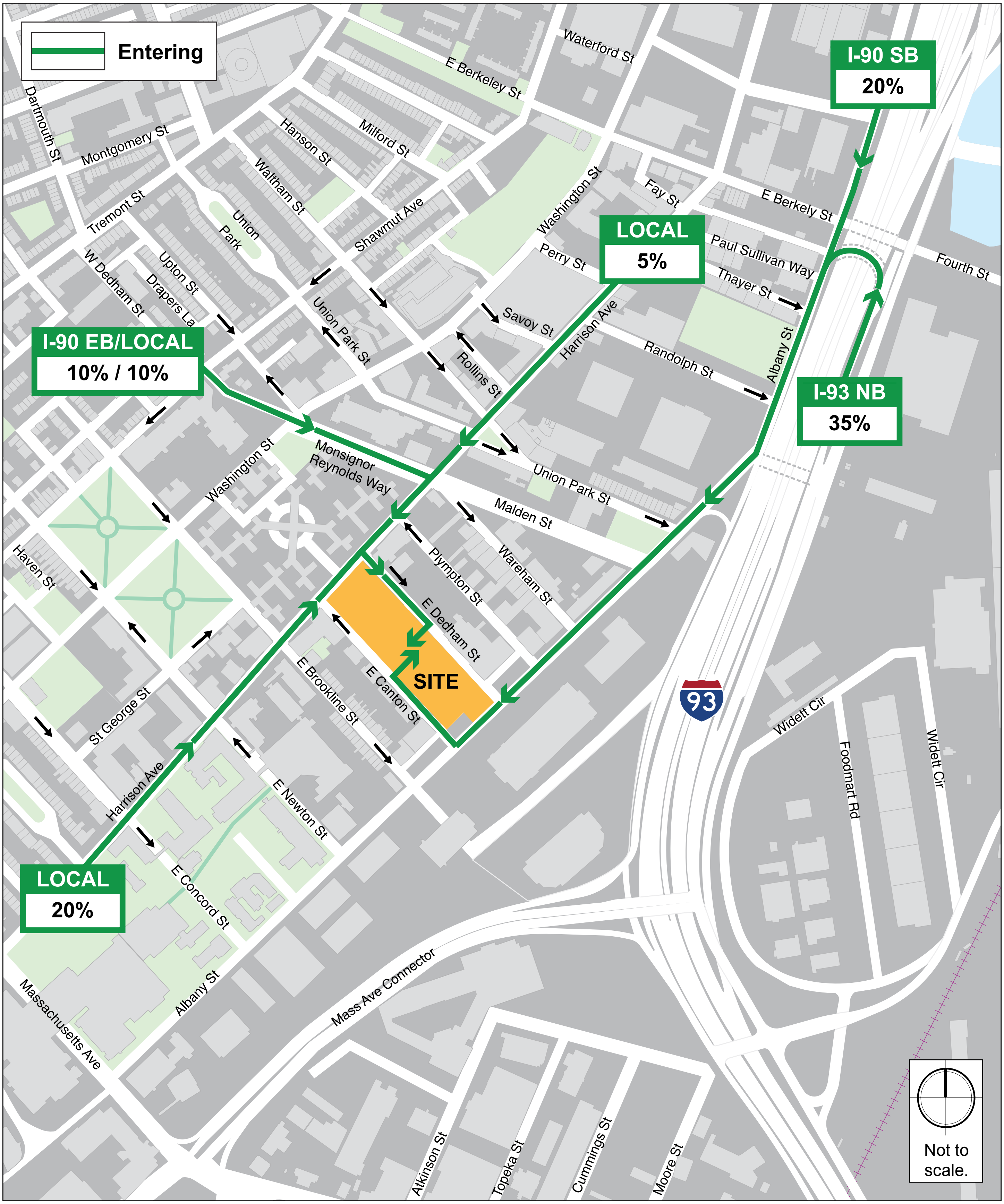

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Figure 2-15
Trip Distribution Entering

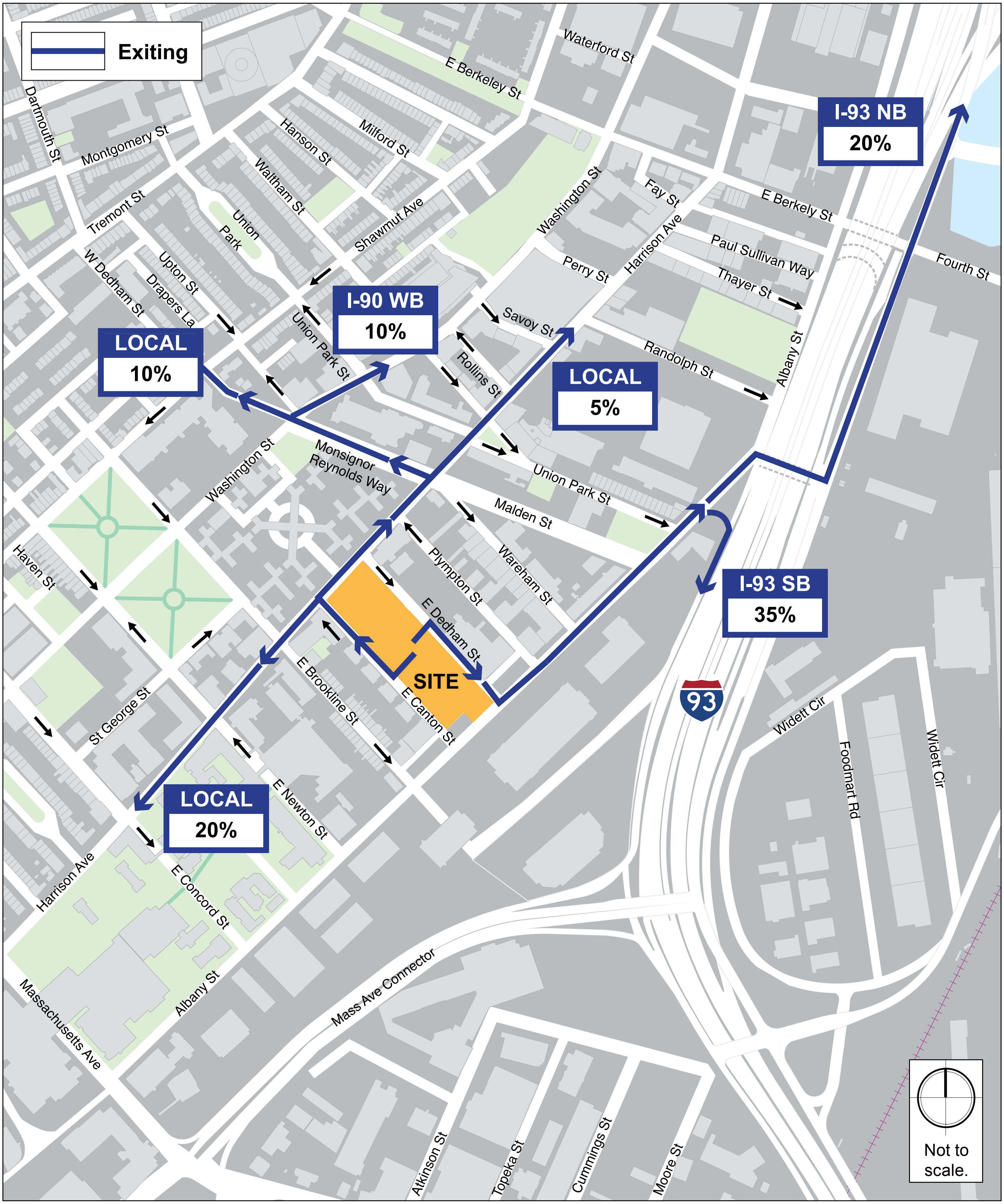

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Figure 2-16
Trip Distribution Exiting

2.4.9 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 2-17 and Figure 2-18, respectively. The trip assignments were added to the No-Build (2023) Condition vehicular traffic volumes to develop the Build (2023) Condition vehicular traffic volumes. The Build (2023) Condition a.m. and p.m. peak hour traffic volumes are shown on Figure 2-19 and Figure 2-20, respectively.

2.4.10 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 480 secure bicycle parking/storage spaces within the Project Site for the residents and employees, as well public bicycle racks throughout the Project Site for visitors.

2.4.11 Build Condition Traffic Operations Analysis

The Build (2023) Condition analysis uses the same methodology as the Existing (2016) Condition and No-Build (2023) Condition analysis. Table 2-11 and Table 2-12 present the Build (2023) Condition capacity analysis for the a.m. and p.m. peak hours, respectively. The shaded cells in the tables indicate a worsening in LOS between the No-Build (2023) Condition and the Build (2023) Condition. The detailed analysis sheets are provided in Appendix C.

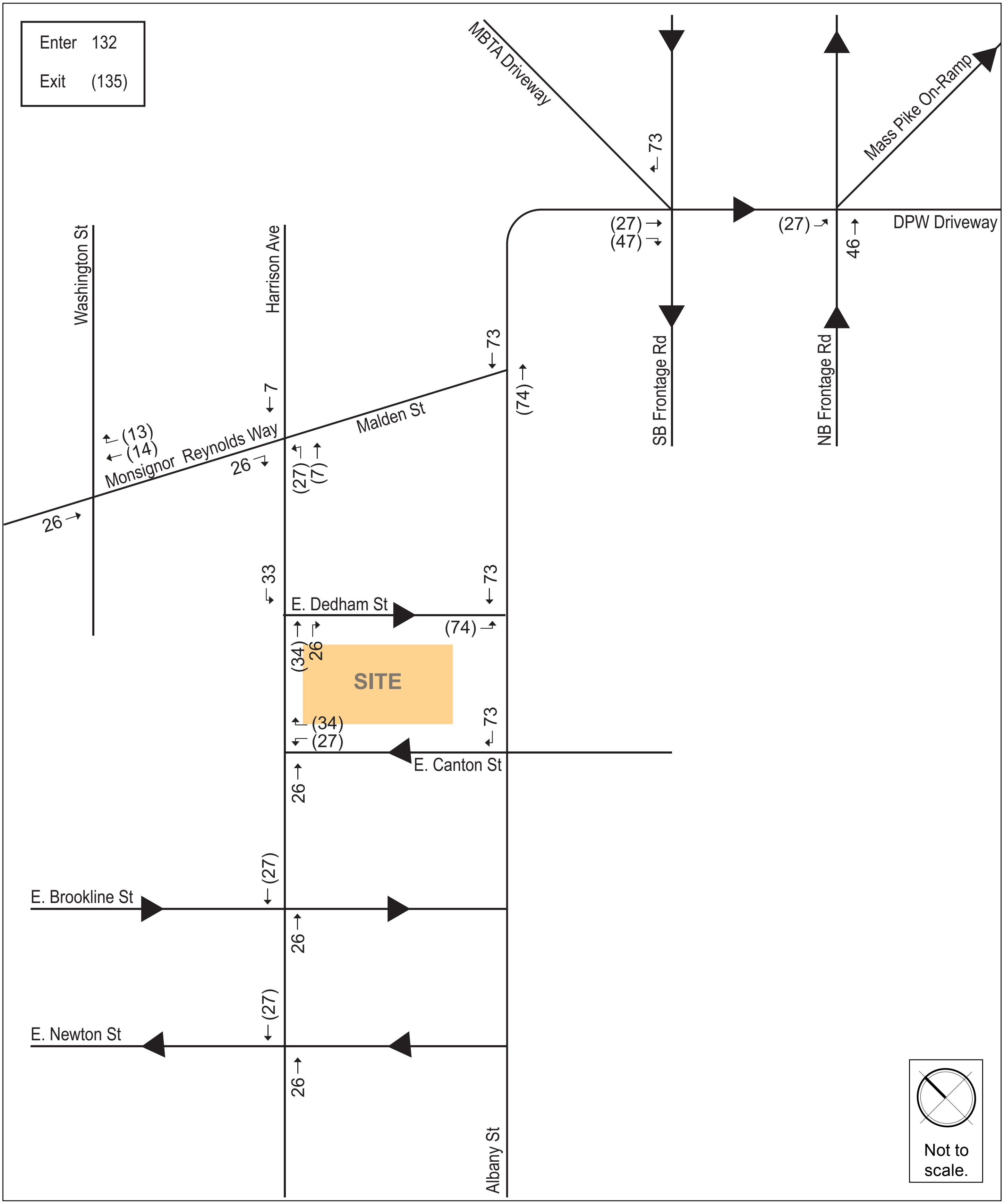

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Figure 2-17
Vehicle Trip Assignment, a.m. Peak Hour

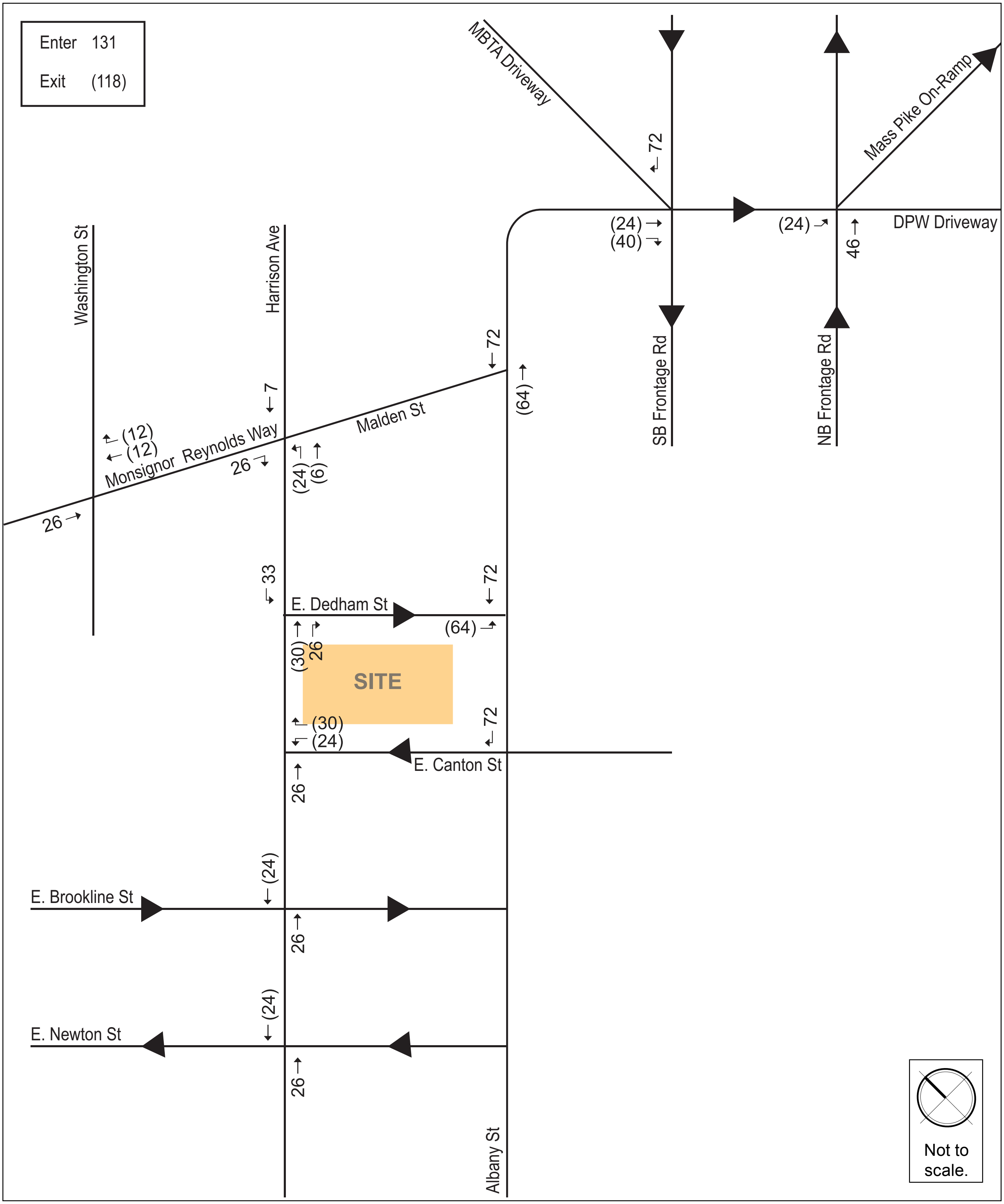

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Figure 2-18
Vehicle Trip Assignment, p.m. Peak Hour

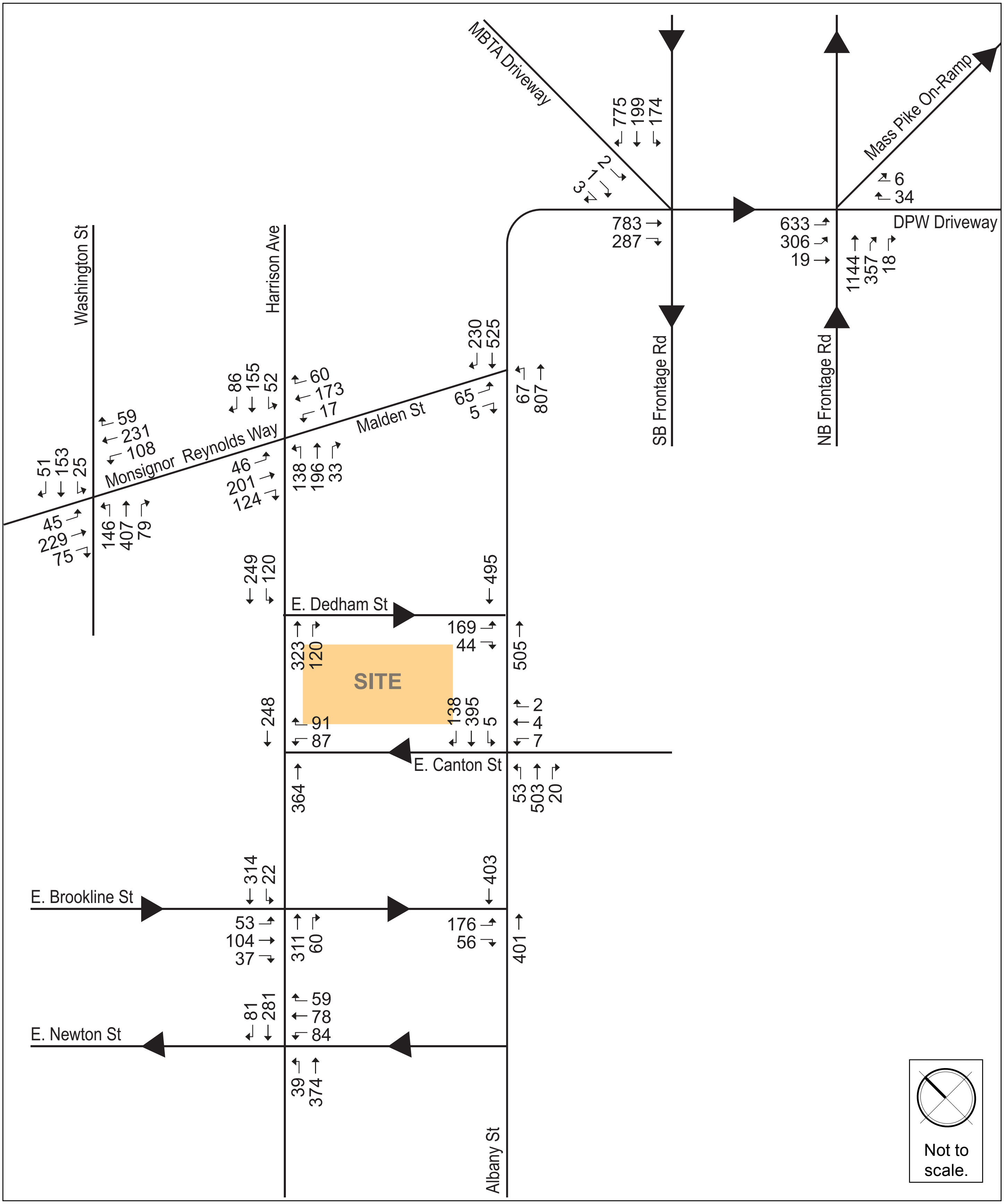

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Figure 2-19

Build (2023) Condition Vehicular Traffic Volumes, a.m. Peak Hour

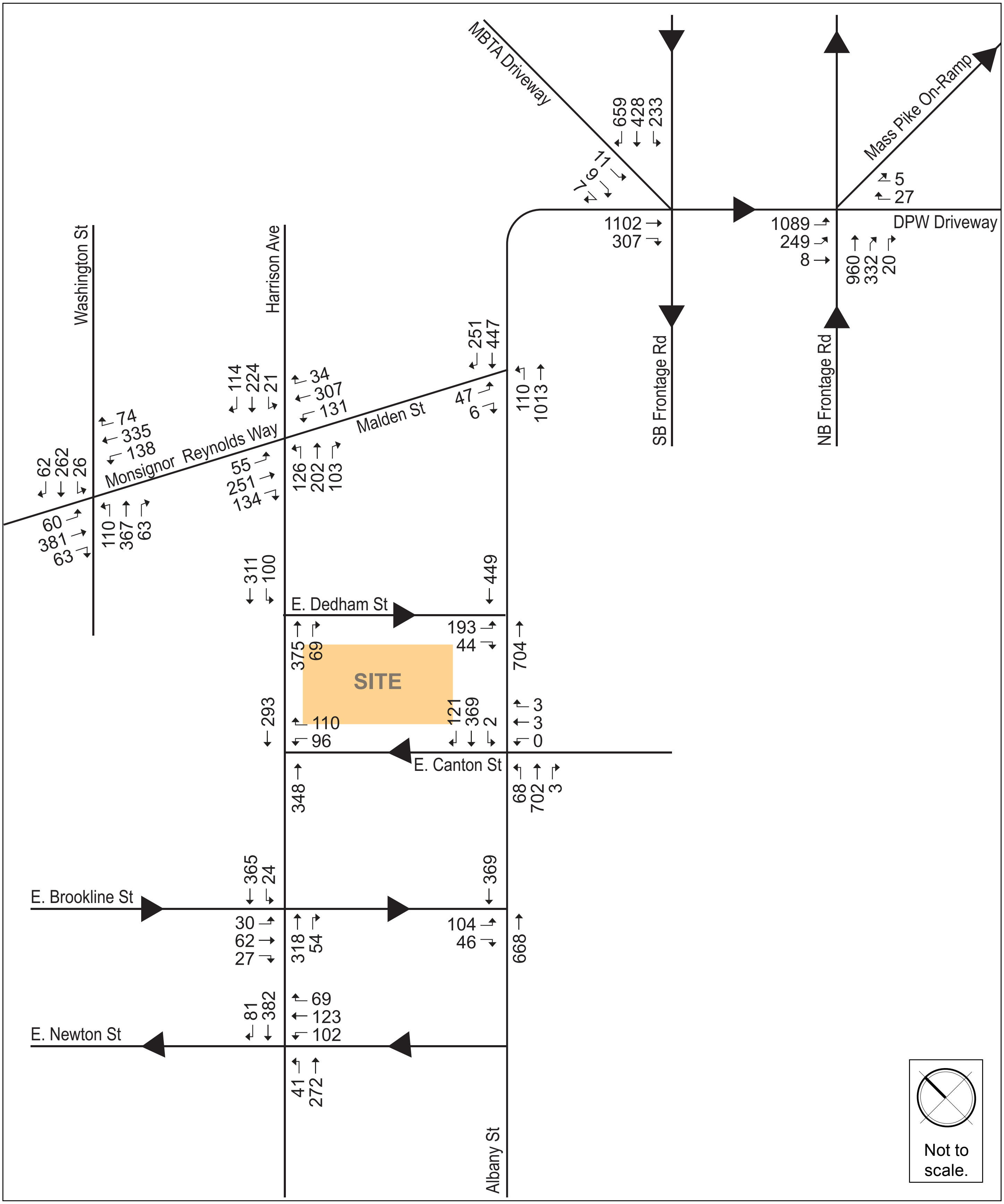

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Figure 2-20
Build (2023) Condition Vehicular Traffic Volumes, p.m. Peak Hour

Table 2-11 Build (2023) Condition, Capacity Analysis Summary, a.m. Peak Hour

Intersection/Approach	*LOS*	*Delay (s)*	*V/C Ratio*	*50th Percentile Queue (ft)*	*95th Percentile Queue (ft)*
Signalized Intersections					
Harrison Avenue/East Newton Street	**B**	**19.8**	**-**	**-**	**-**
East Newton Street WB left/thru/right	D	51.3	0.80	135	197
Harrison Avenue NB left/thru	B	11.2	0.51	67	113
Harrison Avenue SB thru/right	A	9.0	0.43	55	94
Harrison Avenue/East Brookline Street	**B**	**14.9**	**-**	**-**	**-**
East Brookline Street EB left/thru/right	D	47.0	0.72	107	182
Harrison Avenue NB thru/right	A	3.0	0.44	38	45
Harrison Avenue SB left/thru	B	11.2	0.39	89	224
Washington Street/Monsignor Reynolds Way/West Dedham Street	**C**	**28.5**	**-**	**-**	**-**
West Dedham Street EB left/thru/right	D	48.4	0.93	179	308
Monsignor Reynolds Way WB left	E	70.8	0.78	72	m112
Monsignor Reynolds Way WB thru/right	D	48.6	0.73	186	m257
Washington Street NB left	A	9.0	0.31	44	87
Washington Street NB thru	B	11.4	0.48	165	269
Washington Street NB right	A	3.5	0.14	8	m15
Washington Street SB left	A	6.1	0.07	4	12
Washington Street SB thru	A	6.0	0.20	29	46
Washington Street SB right	A	0.9	0.09	0	2
Harrison Avenue/Monsignor Reynolds Way/Malden Street	**C**	**29.3**	**-**	**-**	**-**
Monsignor Reynolds Way EB left/thru	E	69.2	0.96	97	m#267
Monsignor Reynolds Way EB right	A	1.8	0.22	0	m0
Monsignor Reynolds Way WB left/thru/right	D	43.2	0.73	137	#248
Harrison Avenue NB left	B	11.7	0.34	46	56
Harrison Avenue NB thru/right	B	17.6	0.36	117	152
Harrison Avenue SB left	B	10.7	0.13	17	21
Harrison Avenue SB thru/right	B	15.7	0.45	102	96

Table 2-11 Build (2023) Condition, Capacity Analysis Summary, a.m. Peak Hour (Continued)

Intersection/Approach	*LOS*	*Delay (s)*	*V/C Ratio*	*50th Percentile Queue (ft)*	*95th Percentile Queue (ft)*
Signalized Intersections					
I-93 NB Frontage Road/Connector/DPW Driveway	**D**	**46.5**	**-**	**-**	**-**
Connector EB left	F	81.7	1.07	~461	m257
Connector EB left | slight/left	F	85.6	1.10	~476	m281
Connector EB thru	C	24.0	0.04	7	m7
DPW Driveway WB left/hard left	A	8.5	0.26	0	13
I-93 NB Frontage Road NB thru | thru/slight right | slight right/right	C	24.1	0.71	356	416
I-93 SB Frontage Road/Connector/ Albany Street/MBTA Driveway	**E**	**78.5**	**-**	**-**	**-**
MBTA Driveway EB thru/right/hard right	D	36.7	0.11	4	11
I-93 SB Frontage Road SB left	C	20.5	0.23	78	m130
I-93 SB Frontage Road SB left/thru | thru	B	19.5	0.21	68	96
I-93 SB Frontage Road SB slight right/right	B	10.1	0.72	124	207
Albany Street NEB slight right | slight right/ hard right	F	>100	1.23	~632	#725
Unsignalized Intersections					
Albany Street/Malden Street	**-**	**-**	**-**	**-**	**-**
Malden Street EB left/right	F	>100	0.96	-	147
Albany Street NB left/thru | thru	A	3.5	0.40	-	10
Albany Street SB thru/right	A	0.0	0.49	-	0
Albany Street/East Dedham Street	-	-	-	-	-
East Dedham Street EB left/right	F	>100	1.08	-	284
Albany Street NB thru	A	0.0	0.32	-	0
Albany Street SB thru	A	0.0	0.31	-	0
Albany Street/East Canton Street/BFE Driveway	-	-	-	-	-
BFE Driveway WB left/thru/right	D	33.5	0.22	-	20
Albany Street NB left/thru/right	A	1.5	0.06	-	5
Albany Street SB left/thru/right	A	0.1	0.00	-	0
Albany Street/East Brookline Street	-	-	-	-	-
East Brookline Street EB left/right	F	71.6	0.90	-	204
Albany Street NB thru	A	0.0	0.25	-	0
Albany Street SB thru	A	0.0	0.27	-	0

Table 2-11 Build (2023) Condition, Capacity Analysis Summary, a.m. Peak Hour (Continued)

Intersection/Approach	*LOS*	*Delay (s)*	*V/C Ratio*	*50th Percentile Queue (ft)*	*95th Percentile Queue (ft)*
Unsignalized Intersections					
Harrison Avenue/East Canton Street	-	-	-	-	-
East Canton Street WB left/right	C	22.8	0.53	-	76
Harrison Avenue NB thru	A	0.0	0.25	-	0
Harrison Avenue SB thru	A	0.0	0.16	-	0
Harrison Avenue/East Dedham Street	-	-	-	-	-
Harrison Avenue NB thru/right	A	0.0	0.27	-	0
Harrison Avenue SB left/thru	A	3.9	0.14	-	12

Table 2-12 Build (2023) Condition, Capacity Analysis Summary, p.m. Peak Hour

Intersection/Approach	*LOS*	*Delay (s)*	*V/C Ratio*	*50th Percentile Queue (ft)*	*95th Percentile Queue (ft)*
Signalized Intersections					
Harrison Avenue/East Newton Street	**C**	**26.2**	-	-	-
East Newton Street WB left/thru/right	D	49.7	0.84	182	247
Harrison Avenue NB left/thru	B	14.2	0.47	80	174
Harrison Avenue SB thru/right	B	19.3	0.56	161	#415
Harrison Avenue/East Brookline Street	**B**	**12.9**	-	-	-
East Brookline Street EB left/thru/right	D	46.9	0.60	82	119
Harrison Avenue NB thru/right	A	7.1	0.38	88	266
Harrison Avenue SB left/thru	A	7.0	0.39	44	m161
Washington Street/Monsignor Reynolds Way/West Dedham Street	**D**	**49.6**	-	-	-
West Dedham Street EB left/thru/right	F	>100	1.19	~388	#604
Monsignor Reynolds Way WB left	D	37.0	0.83	81	m79
Monsignor Reynolds Way WB thru/right	C	34.0	0.90	237	m195
Washington Street NB left	B	18.0	0.31	49	m103
Washington Street NB thru	C	20.6	0.50	177	311
Washington Street NB right	A	7.9	0.12	12	m25
Washington Street SB left	A	9.0	0.09	6	15
Washington Street SB thru	B	12.1	0.37	68	89
Washington Street SB right	A	1.6	0.12	0	4

Table 2-12 Build (2023) Condition, Capacity Analysis Summary, p.m. Peak Hour (Continued)

Intersection/Approach	*LOS*	*Delay (s)*	*V/C Ratio*	*50th Percentile Queue (ft)*	*95th Percentile Queue (ft)*
Signalized Intersections					
Harrison Avenue/Monsignor Reynolds Way/Malden Street	**F**	**>100**	**-**	**-**	**-**
Monsignor Reynolds Way EB left/thru	D	49.9	0.97	135	m122
Monsignor Reynolds Way EB right	A	1.1	0.22	0	m0
Monsignor Reynolds Way WB left/thru/right	F	>100	>1.30	~482	#680
Harrison Avenue NB left	A	9.5	0.35	30	48
Harrison Avenue NB thru/right	B	16.1	0.45	99	#312
Harrison Avenue SB left	A	7.5	0.05	4	m13
Harrison Avenue SB thru/right	B	19.9	0.51	135	#355
I-93 NB Frontage Road/Connector/DPW Driveway	**F**	**>100**	**-**	**-**	**-**
Connector EB left	F	>100	>1.30	~713	m#386
Connector EB left | slight/left	F	>100	>1.30	~736	m#464
Connector EB thru	B	14.4	0.02	2	m2
DPW Driveway WB left/hard left	A	4.9	0.20	0	0
I-93 NB Frontage Road NB thru | thru/slight right | slight right/right	C	23.5	0.64	280	335
I-93 SB Frontage Road/Connector/ Albany Street/MBTA Driveway	**F**	**>100**	**-**	**-**	**-**
MBTA Driveway EB thru/right/hard right	D	52.1	0.41	24	34
I-93 SB Frontage Road SB left	C	30.6	0.38	113	m174
I-93 SB Frontage Road SB left/thru | thru	C	27.6	0.46	158	159
I-93 SB Frontage Road SB slight right/right	A	6.9	0.61	103	200
Albany Street NEB slight right | slight right/ hard right	F	>100	>1.30	~857	#959
Unsignalized Intersections					
Albany Street/Malden Street	**-**	**-**	**-**	**-**	**-**
Malden Street EB left/right	F	73.1	0.60	-	75
Albany Street NB left/thru | thru	A	3.8	0.43	-	12
Albany Street SB thru/right	A	0.0	0.33	-	0
Albany Street/East Dedham Street	-	-	-	-	-
East Dedham Street EB left/right	F	>100	>1.30	-	607
Albany Street NB thru	A	0.0	0.44	-	0
Albany Street SB thru	A	0.0	0.28	-	0

Table 2-12 Build (2023) Condition, Capacity Analysis Summary, p.m. Peak Hour (Continued)

Intersection/Approach	*LOS*	*Delay (s)*	*V/C Ratio*	*50th Percentile Queue (ft)*	*95th Percentile Queue (ft)*
Unsignalized Intersections					
Albany Street/East Canton Street/BFE Driveway	-	-	-	-	-
BFE Driveway WB left/thru/right	D	25.6	0.06	-	5
Albany Street NB left/thru/right	A	1.8	0.07	-	6
Albany Street SB left/thru/right	A	0.1	0.00	-	0
Albany Street/East Brookline Street	-	-	-	-	-
East Brookline Street EB left/right	E	43.8	0.70	-	121
Albany Street NB thru	A	0.0	0.42	-	0
Albany Street SB thru	A	0.0	0.25	-	0
Harrison Avenue/East Canton Street	-	-	-	-	-
East Canton Street WB left/right	C	21.7	0.52	-	74
Harrison Avenue NB thru	A	0.0	0.22	-	0
Harrison Avenue SB thru	A	0.0	0.19	-	0
Harrison Avenue/East Dedham Street	-	-	-	-	-
Harrison Avenue NB thru/right	A	0.0	0.30	-	0
Harrison Avenue SB left/thru	A	3.1	0.11	-	9

Grey Shading indicates a degradation to LOS E or F.

~ 50th percentile volume exceeds capacity. Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity. Queue shown is maximum after two cycles.

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

As shown in Table 2-11 and Table 2-12, the following operational deficiencies are expected to begin to occur under the Build (2023) Condition:

- The signalized intersection of **Washington Street/Monsignor Reynolds Way/West Dedham Street** continues to operate at LOS C during the a.m. peak hour and at LOS D during the p.m. peak hour. The West Dedham Street eastbound approach decreases from LOS E to LOS F during the p.m. peak hour. The longest queues at the intersection occur at the West Dedham Street eastbound approach during both the a.m. and p.m. peak hours.

- At the unsignalized intersection of **Albany Street/East Dedham Street** the East Dedham Street eastbound stop controlled approach decreases from LOS D to LOS F during the a.m. peak hour.

2.5 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 Project 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 Project 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:

- The Proponent will designate a transportation coordinator to oversee transportation issues, including parking, service and loading, and deliveries, and will work with tenants as they move in to office space to raise awareness of public transportation, bicycling, and walking opportunities;
- The Proponent will provide orientation packets to new 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;
- Promote to commercial tenants that, as employers, they can save on payroll-related taxes and provide employee benefits when they offer transportation benefits such as subsidized public transportation;
- Encourage employers to subsidize on-site full-time employees' purchase of monthly transit passes;
- Encourage employers to arrange to provide Guaranteed Ride Home during hours in which public transit service is no longer available to employee's home;
- Provide on-line registration for the RideSource ride-matching program through the local TMA membership;

- Provide access to information on area carpool and vanpool participants through the local TMA membership
- Provide electric vehicle charging stations for 5 percent of the parking spaces in the garage;
- Provide information on travel alternatives for employees and visitors via the Internet and in the building lobby;
- Vehicle Sharing Program: The Proponent will explore the feasibility of providing spaces in the garage for a car sharing service.

2.6 Transportation Mitigation Measures

Although the traffic impacts associated with the new trips are minimal (generating less than five vehicle trips per minute during the peak hours), the Proponent will continue to work with the City of Boston so that the Project efficiently serves vehicle trips, improves the pedestrian environment, and encourages transit and bicycle use.

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.

2.7 Evaluation of Short-term Construction Impacts

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

To minimize transportation impacts during the construction period, the following measures will be considered for the CMP:

- 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 CMP to be executed with the City prior to commencement of construction will document all committed measures.

Chapter 3.0

Environmental Review Component

3.0 ENVIRONMENTAL REVIEW COMPONENT

3.1 Wind

3.1.1 Introduction

Gradient Wind Engineering Inc. (GWE) completed a Pedestrian Level Wind (PLW) study for the Project based on industry standard wind tunnel testing techniques, architectural drawings provided by the Project architect, surrounding context data obtained from the BRA, and recent site imagery.

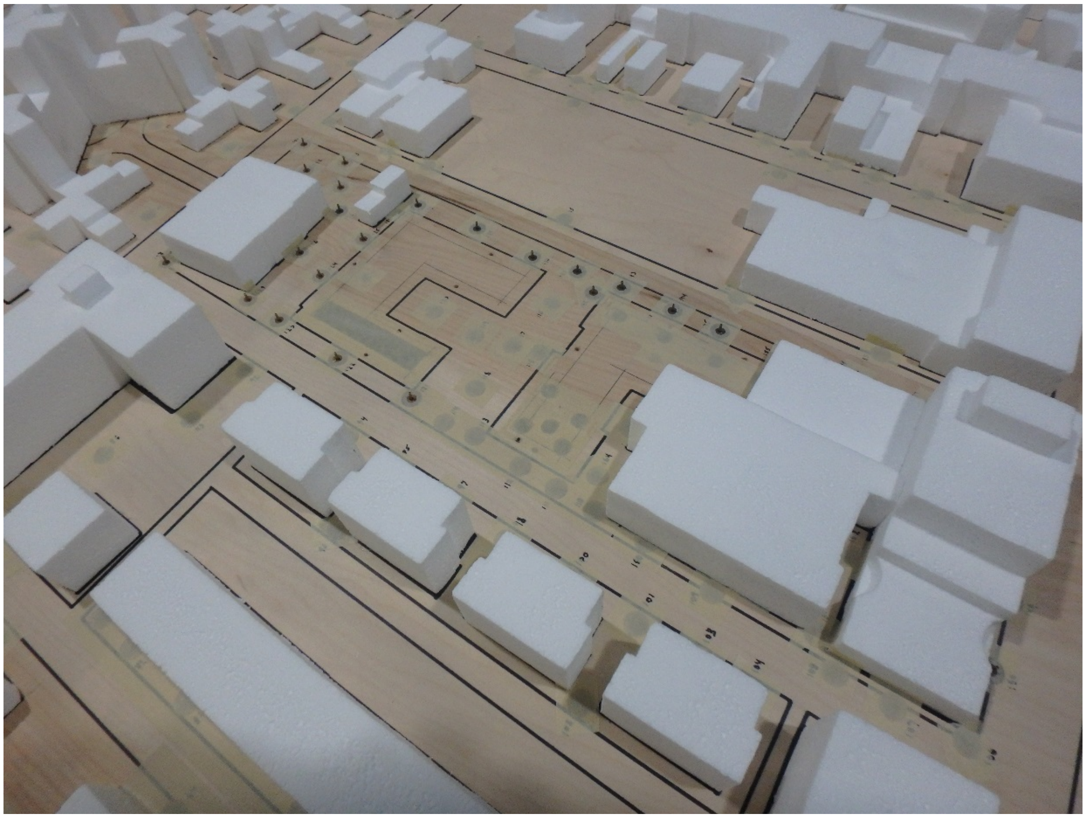
Based on the wind tunnel test results, interpretation, and GWE's experience with similar developments in Boston, wind conditions at the vast majority of pedestrian sensitive locations studied will be suitable for walking, or better, on an annual basis. Although uncomfortable conditions are measured at the north side of the lawn separating Buildings A and B, wind mitigation can locally-reduce wind speeds in this area. Beyond the Project Site, the introduction of the Project results in only minor changes to pedestrian wind comfort. Exceptions occur to the southeast of the Project Site on the south side of East Canton Street, as well as at the future service entrances on the west elevation of 575 Albany Street, where uncomfortable wind speeds are expected. Wind mitigation will be studied for these areas.

3.1.2 Study Methodology

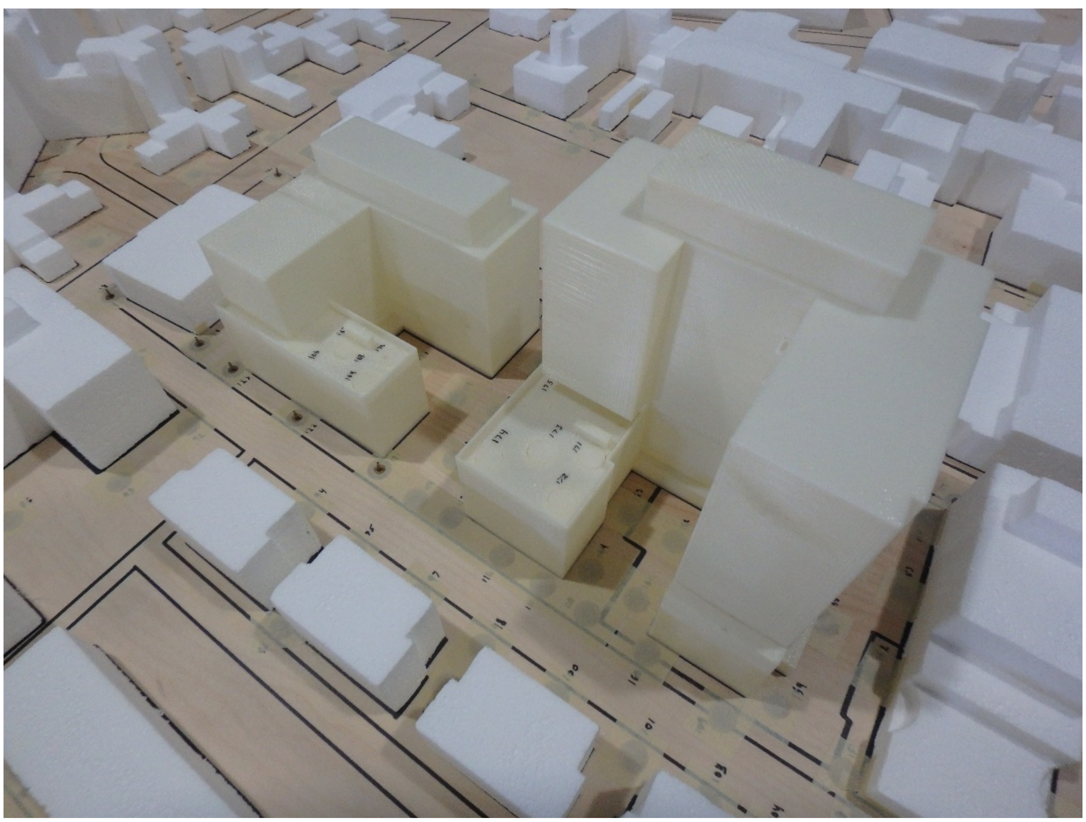
3.1.2.1 Wind Tunnel Context Modelling

The general concept and approach to wind tunnel modeling is to provide building detail in the immediate vicinity of the Project Site on the surrounding model, and to rely on a length of wind tunnel upwind of the model to develop wind properties consistent with known turbulent intensity profiles that represent the surrounding terrain. For this study, the wind tunnel was configured to simulate atmospheric velocity profiles consistent with suburban upwind terrain.

To conduct the wind tunnel study, a physical model of the Project and relevant surroundings was constructed at a scale of 1:400. The wind tunnel model, centered at the Project Site, includes all existing buildings and approved future developments (including the developments at 600 Harrison Avenue and 46 Wareham Street to the northeast of the Project Site) within a diameter of 2,700 feet. The existing building massing and approved future developments are defined according to mapping data acquired from the BRA. Figure 3.1-1 shows photographs of the wind tunnel model.



No Build



Build

3.1.2.2 Wind Speed Measurements

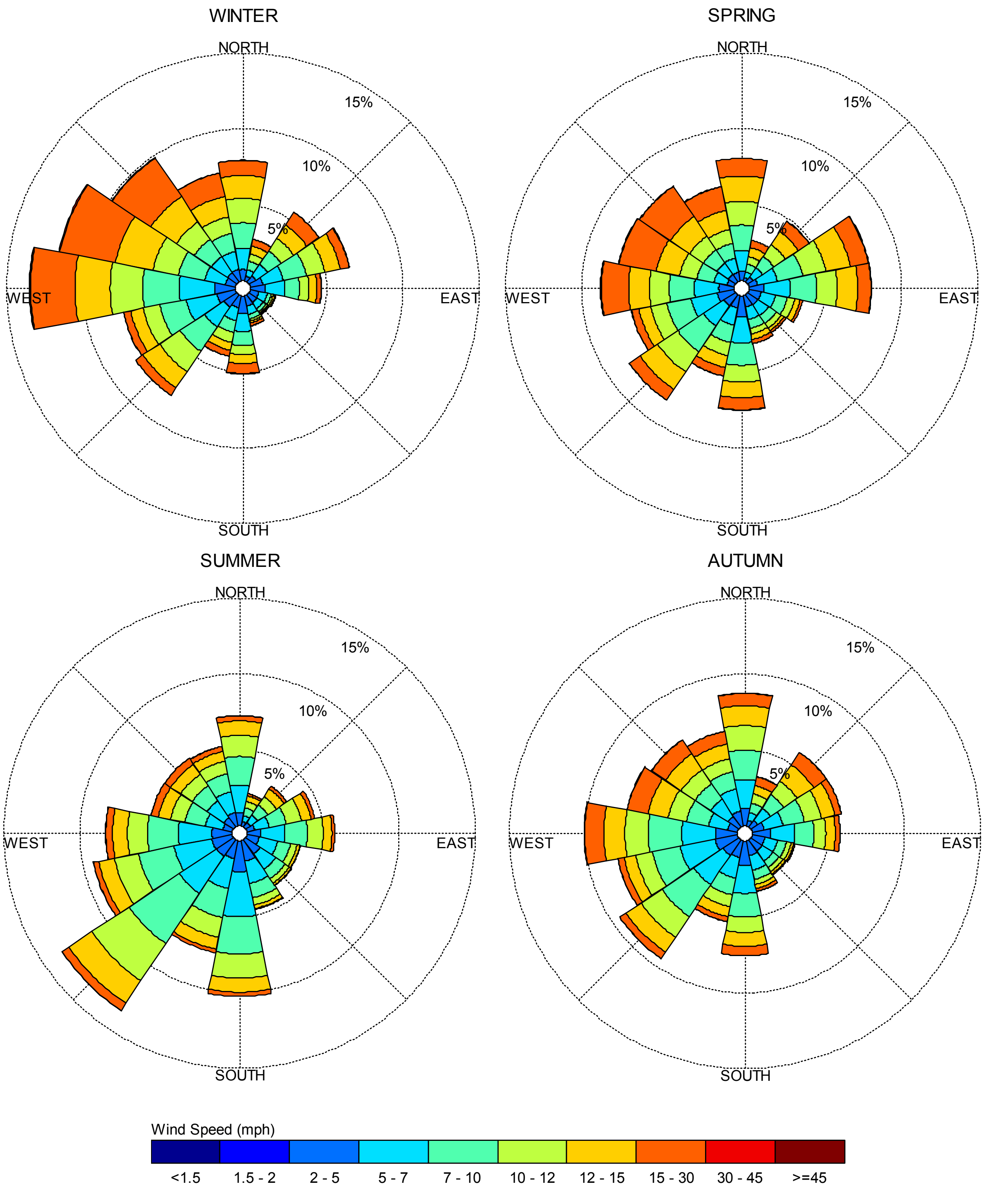
The PLW assessment was performed by testing a total of 150 wind sensor locations for the No Build site massing and 180 for the Build massing on the scale model in GWE's wind tunnel. Of the 180 sensors, 165 were placed at grade, while the remaining 15 sensors were located at elevated amenity terraces on the study buildings. Wind speed measurements were performed at each of the 180 sensors for 36 wind directions at 10° intervals. Polar plots of the raw wind tunnel data acquired for each sensor location are available upon request.

Mean and peak wind speed values for each location and wind direction were calculated from real-time pressure measurements, recorded at a sample rate of approximately 500 samples per second, and taken over a 60-second time period. This period at model-scale corresponds approximately to one hour in full-scale, which matches the time frame of full-scale meteorological observations. Measured mean and gust wind speeds at grade were referenced to the wind speed measured near the ceiling of the wind tunnel to generate mean and peak wind speed ratios. Ceiling height in the wind tunnel represents the depth of the boundary layer of wind flowing over the earth's surface, referred to as the gradient height. Within this boundary layer, mean wind speed increases up to the gradient height and remains constant thereafter.

3.1.2.3 Meteorological Data Analysis

A statistical model for the wind climate in Boston was developed from approximately 40-years of hourly meteorological wind data recorded at Logan International Airport. Wind speed and direction data were analyzed for each month of the year in order to determine the statistically prominent wind directions and corresponding speeds, and to characterize similarities between monthly weather patterns. Based on this portion of the analysis, the four seasons are represented by grouping data from consecutive months based on similarity of weather patterns, and not according to the traditional calendar method.

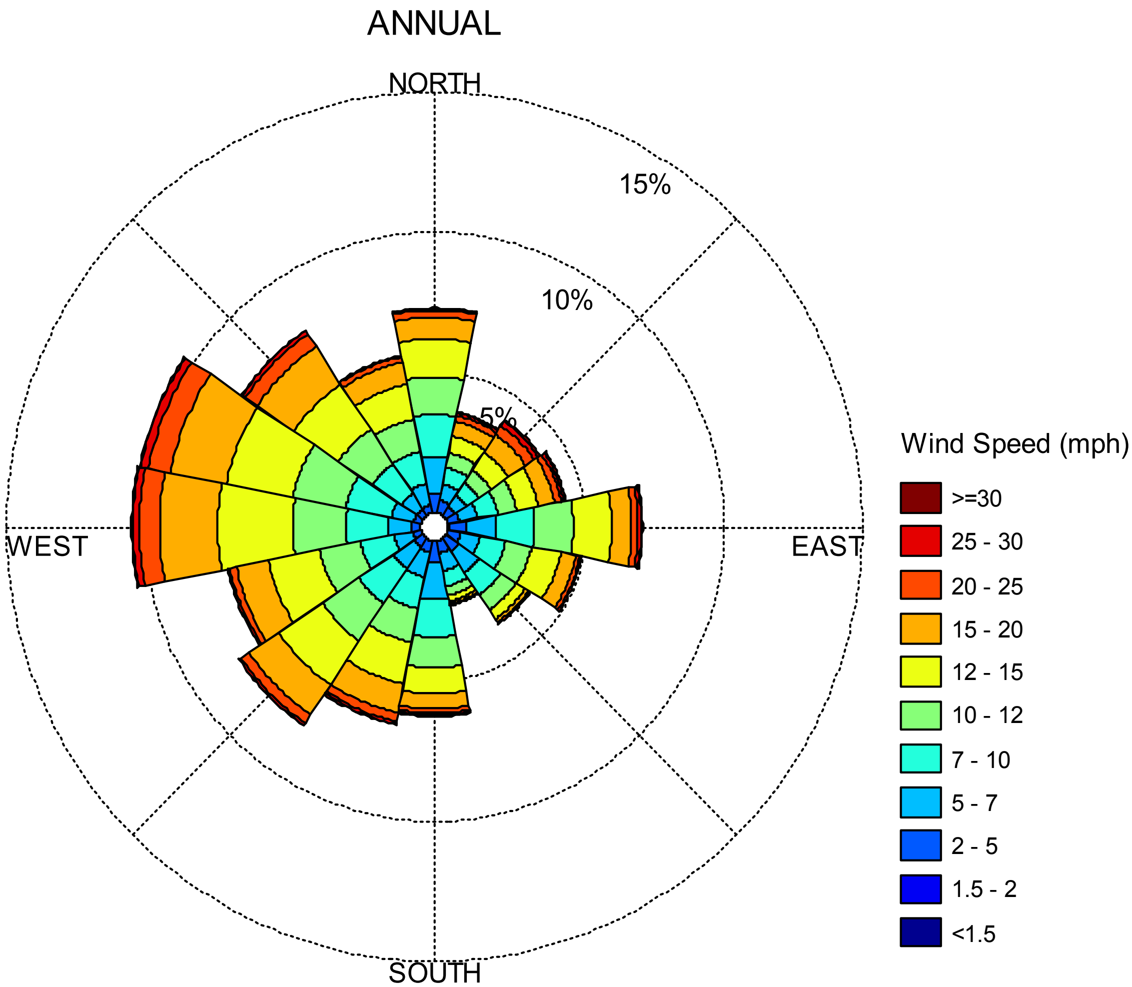
The statistical model of the Boston wind climate, which indicates the directional character of local winds on a seasonal and annual basis, is illustrated in Figures 3.1-2 and 3.1-3. The plots illustrate the distribution of measured wind speeds and directions in miles per hour (mph). Probabilities of occurrence of different wind speeds are represented as stacked polar bars in sixteen azimuth divisions. The radial direction represents the percentage of time for various wind speed ranges per wind direction during the measurement period. The prominent wind speeds and directions can be identified by the longer length of the bars. For Boston, the most common winds concerning pedestrian comfort occur from the south clockwise to the north, as well as those from the east-northeast. The directional preference and relative magnitude of the wind speed varies somewhat from season to season, with the summer months displaying the calmest winds relative to the remaining seasonal periods.



Notes:

1.Radial distances indicate percentage of time of wind events.

2.Wind speeds represent mean hourly wind speeds measured at 33 feet above the ground.



Notes:

1.Radial distances indicate percentage of time of wind events.

2.Wind speeds represent mean hourly wind speeds measured at 33 feet above the ground.

Harrison Albany Block Boston, Massachusetts

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Figure 3.1-3

Annual Wind Distribution

3.1.2.4 Pedestrian Comfort Assessment

Pedestrian comfort criteria are based on mechanical wind effects without consideration of other meteorological conditions (i.e., temperature and relative humidity). The criteria provide an assessment of comfort, assuming that pedestrians are appropriately dressed for a specified outdoor activity during any given season. The BRA employs two separate standards for determining pedestrian wind comfort. The first standard relates to the effective wind gust velocity (calculated as the hourly mean wind speed plus 1.5 times the root mean square wind speed), requiring that a threshold of 31 mph should not be exceeded more than one percent of the time. The second set of standards is based on the hourly mean wind speeds, and defines five pedestrian comfort classes and corresponding mean wind speed ranges. The comfort classes are defined in terms of standards for the hourly mean wind speed exceeded one percent of the time. The comfort classes and associated wind speed ranges are summarized as follows:

Comfortable for Sitting	≤ 12 mph
Comfortable for Standing	> 12 and ≤ 15 mph
Comfortable for Walking	> 15 and ≤ 19 mph
Uncomfortable for Walking	> 19 and ≤ 27 mph
Dangerous	> 27 mph

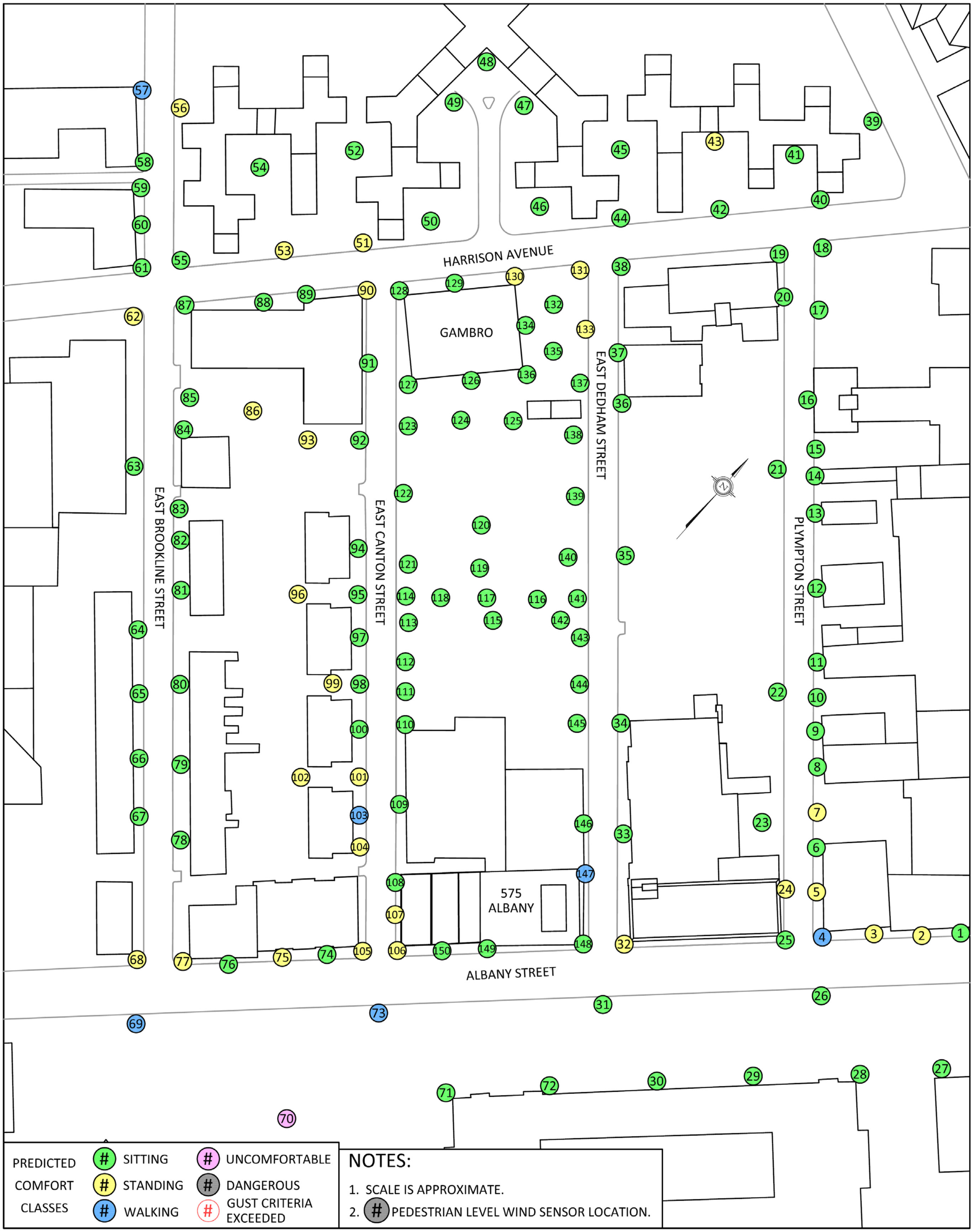
* Applicable to the hourly mean wind speed exceeded one percent of the time.

3.1.3 Results

3.1.3.1 No Build

The No Build condition was modeled to include all existing buildings, including those located on the Project Site, and approved future developments (including 600 Harrison Avenue and 46 Wareham Street to the northeast of the Project Site) surrounding the Project. 150 sensors were used to measure wind speeds at existing surrounding sidewalks, building entrances, and other pedestrian areas. The results of the No Build analysis are shown in Figure 3.1-4.

Analysis of the No Build scenario shows that wind conditions over the Project Site and at surrounding areas are comfortable for walking or better on a seasonal and annual basis. A lone exception, where wind speeds are uncomfortable for walking, occurs near the northeast corner of the Boston Medical Center building to the southwest of the Project Site (Sensor 70). All locations within the study area are below the effective gust velocity criteria.



Harrison Albany Block   Boston, Massachusetts

Figure 3.1-4

Annual Pedestrian Comfort, No Build

3.1.3.2 Comparison of No Build to Build

The Build condition was analyzed for the 150 wind sensor locations studied in the No Build condition, as well as for an additional 15 sensors located in place of existing buildings on the Project Site (see Figure 3.1-5). In addition, 15 wind sensors were placed on the elevated amenity terraces on the proposed buildings (see Figure 3.1-6).

Beyond the immediate vicinity of the Project Site, the development of the Project will have a minimal impact on wind comfort. However, to the southeast of the Project along the south side of East Canton Street (Sensors 100 and 101), the study shows that wind conditions categorized as uncomfortable for walking are anticipated as a result of easterly winds accelerating around the southeast corner of Building A. The Project team will study the incorporation of landscaping around the southeast corner of Building A which would be anticipated to improve the wind conditions at these two locations.

For pedestrian areas within the Project Site, wind speeds suitable for walking or better on an annual basis are anticipated at most locations. More specifically:

- The main residential entrances for Buildings A and B (Sensors 145 and 140, respectively) are expected to be comfortable for sitting on an annual basis;

- For the retail space at the northwest corner of Building A, wind conditions along the north elevation of the building (Sensors 143 and 144) are expected to be suitable for standing or better on an annual basis. Towards the corner of the building and along the west elevation (Sensor 142), conditions are expected to be suitable for walking;

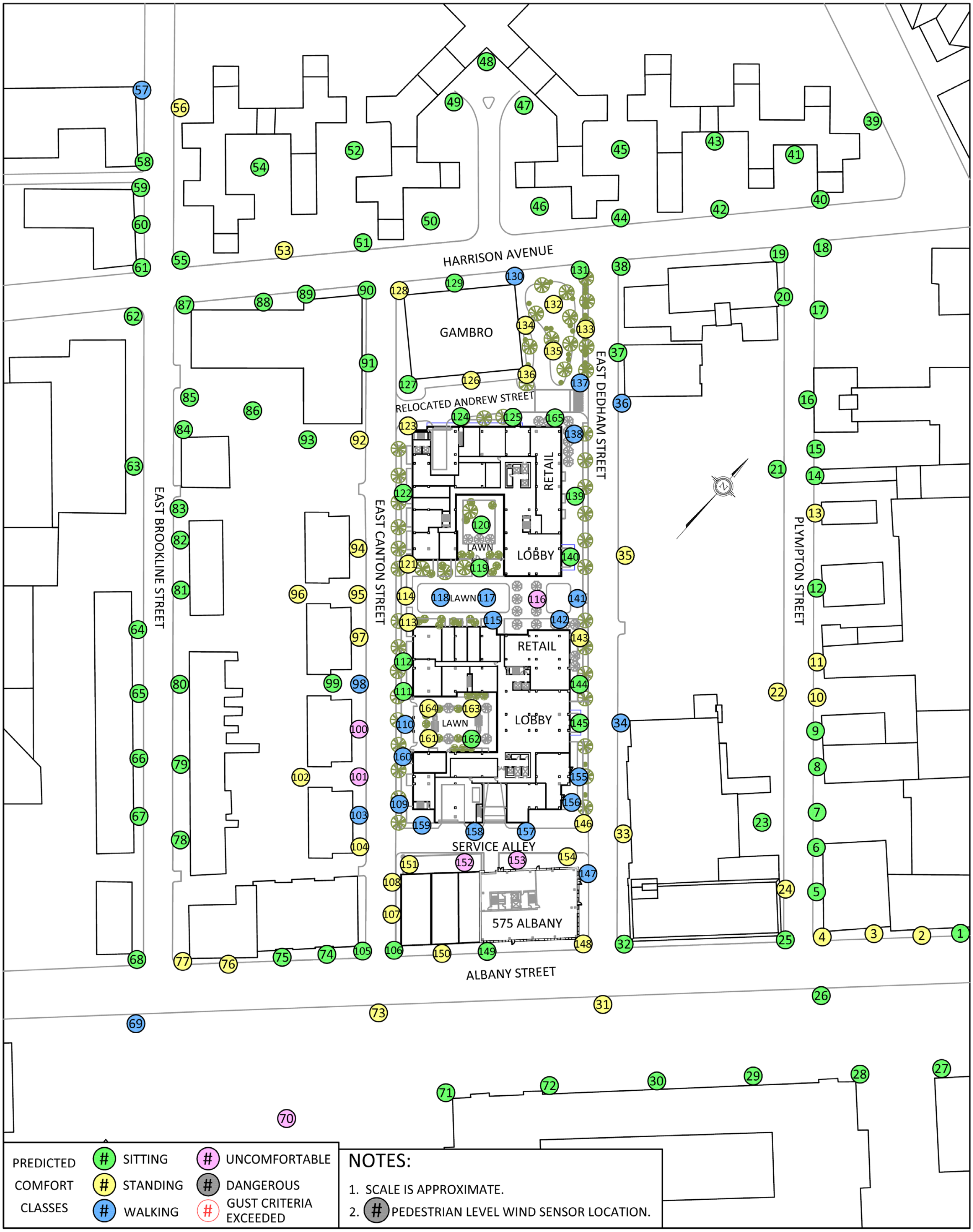
- Within the courtyard lawn at the center of Building A (Sensors 161 to 164), conditions are expected to be acceptable for standing, or better, on an annual basis, and are expected to be comfortable for sitting during the summer months;

- Loading and service entrances (Sensors 155 to 158) along the south side of Building A are expected to be comfortable for walking on an annual basis;

- For the lawn separating Buildings A and B, wind speeds over the south portion of the space (Sensors 117 and 118) are expected to be acceptable for walking on an annual basis. At the north portion of the lawn (Sensor 116), conditions are expected to be uncomfortable for walking. The Project team will study measures such as wind screens and landscaping to improve these conditions as the design progresses;

- At the courtyard lawn at the east side of Building B (Sensors 119 and 120), annual conditions are expected to be appropriate for sitting;

- The lawn at the northwest corner of the Project Site (Sensors 132 to 135) are expected to experience annual wind speeds suitable for standing.



Harrison Albany Block Boston, Massachusetts

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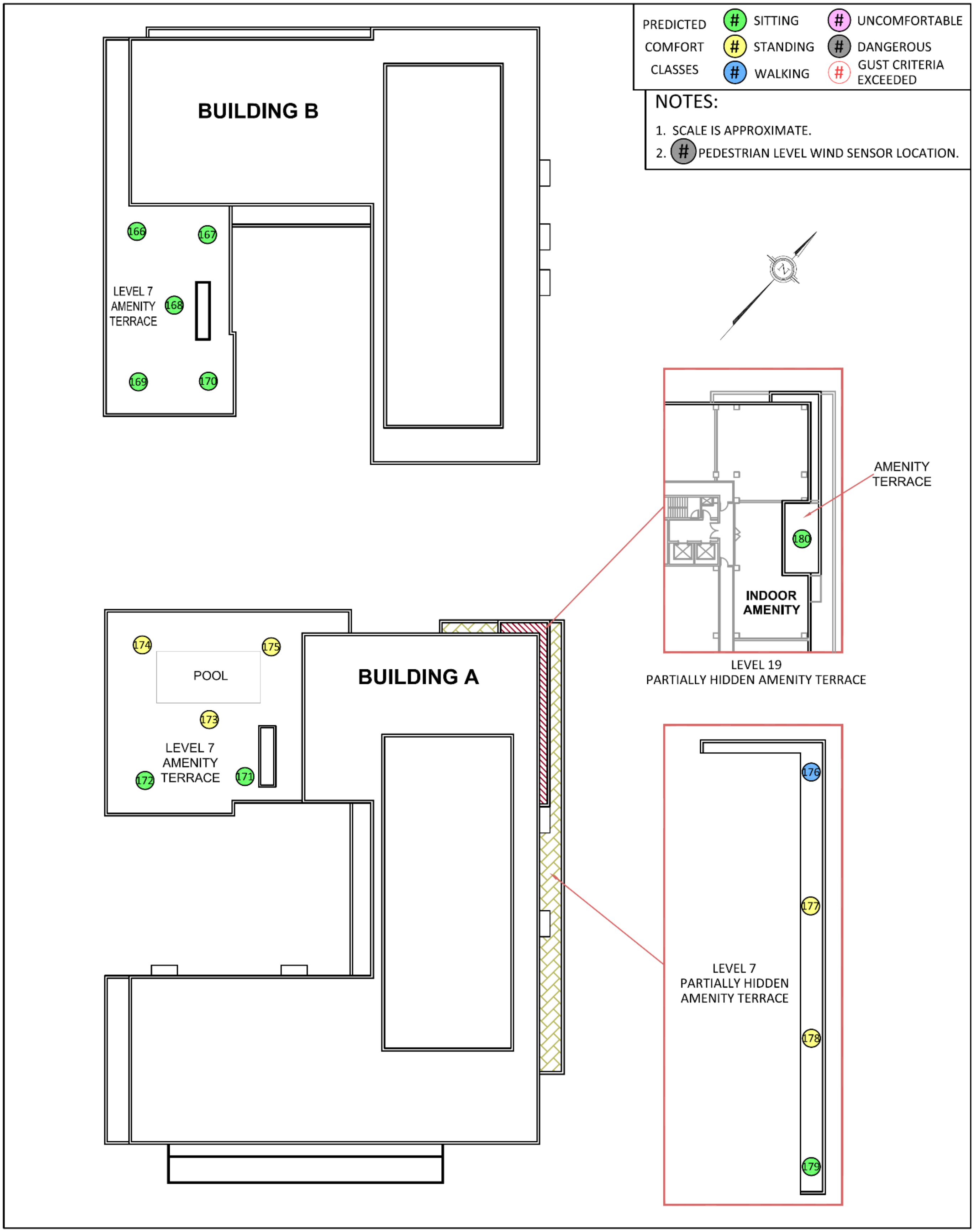
Figure 3.1-5

Annual Pedestrian Comfort, Build



Harrison Albany Block   Boston, Massachusetts

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Figure 3.1-6
Annual Pedestrian Comfort, Build, Rooftop Locations

- Retail entrances along the north elevation of Building B (Sensor 139) and near the north side of the west elevation (Sensor 165) are expected to experience wind speeds suitable for sitting on an annual basis. At the west side of the north elevation (Sensor 138), annual conditions are expected to be acceptable for walking;

- Loading areas and service entrances for Building B (Sensors 124 and 125) are expected to be acceptable for sitting on an annual basis;

- At the secondary building entrances on the west elevation of 575 Albany Street (Sensors 152 and 153), annual wind conditions are expected to be uncomfortable for walking. If necessary, the Project team will study mitigation for this are as the design progresses;

- All remaining on-site locations, representing public sidewalks and walkways, annual wind speeds are expected to be acceptable for walking, or better.

Wind speeds will be below the effective gust velocity criteria at the majority of locations within and surrounding the Project Site on an annual basis. Although the gust velocity criteria is projected to be exceeded by 0.2% at Sensor 116 (representing the lawn separating Buildings A and B) during the winter months, mitigation that may be incorporated for that location would be expected to improve this condition.

3.1.3.3 Conclusions

In general, the introduction of the Project results in only minor changes to pedestrian wind comfort at locations beyond the Project Site. An exception is near the southeast corner of the Project Site, where easterly winds accelerate around the corner of Building A, which are expected to produce uncomfortable winds on the south side of East Canton Street. In addition, uncomfortable conditions are expected at the future service entrances on the west elevation of 575 Albany Street. The Project team will study mitigation, as necessary, as the Project design progresses.

Wind speeds at the majority of studied locations are expected to be suitable for walking, or better, on an annual basis. An exception is at the north side of the lawn separating Buildings A and B, where uncomfortable conditions are expected. The Project team will study mitigation, as necessary, as the Project design progresses.

3.2 Shadow

3.2.1 Introduction and Methodology

A shadow impact analysis was conducted to investigate shadow impacts from the Project during three time periods (9:00 a.m., 12:00 noon, and 3:00 p.m.) during the vernal equinox (March 21), summer solstice (June 21), autumnal equinox (September 21), and winter solstice (December 21).

The shadow impact analysis presents the existing shadow and new shadow that would be created by the Project, illustrating the incremental impact of the Project. The analysis focuses on nearby open spaces and sidewalks adjacent to and in the vicinity of the Project Site. Shadows have been determined using the applicable Altitude and Azimuth data for Boston. Figures showing the net new shadow from the Project are provided in Figures 3.2-1 to 3.2-14 at the end of this section.

The shadow impact analysis shows that new shadow will generally be limited to the surrounding streets and Project Site.

3.2.2 Vernal Equinox (March 21)

At 9:00 a.m. during the vernal equinox, new shadow from the Project will be cast to the northwest. No new shadow will be cast onto nearby bus stops or existing public open spaces. New shadow will be cast onto the Project's new open spaces, onto a small portion of Harrison Avenue and its southern sidewalk, and onto East Canton Street's northern sidewalk.

At 12:00 p.m., new shadow from the Project will be cast to the north. No new shadow will be cast onto nearby bus stops or existing public open spaces. New shadow will be cast onto the Project's new open spaces and onto East Dedham Street and its sidewalks.

At 3:00 p.m., new shadow from the Project will be cast to the northeast. No new shadow will be cast onto nearby bus stops or existing public open spaces. New shadow will be cast onto the Project's new open spaces, onto East Dedham Street and its sidewalks and onto Plympton Street and its sidewalks.

3.2.3 Summer Solstice (June 21)

At 9:00 a.m. during the summer solstice, new shadow from the Project will be cast to the west. No new shadow will be cast onto nearby bus stops or existing public open spaces. New shadow will be cast onto the Project's open spaces and onto a portion of East Canton Street and its sidewalks.

At 12:00 p.m., new shadow from the Project will be minimal. No new shadow will be cast onto nearby bus stops or existing public open spaces. New shadow will be cast to the north onto a small portion of the Project's new open spaces, as well as onto East Dedham Street and its southern sidewalk.

At 3:00 p.m., new shadow from the Project will be cast to the northeast. No new shadow will be cast onto nearby bus stops or existing public open spaces. New shadow will be cast onto the Project's new open spaces and onto East Dedham Street and its sidewalks.

At 6:00 p.m., new shadow from the Project will be cast to the east. No new shadow will be cast onto nearby bus stops or existing open spaces. New shadow will be cast onto the

Project's new open spaces, onto East Dedham and its sidewalks, and onto Albany Street and its sidewalks.

3.2.4 Autumnal Equinox (September 21)

At 9:00 a.m., during the autumnal equinox, new shadow from the Project will be cast to the northwest. No new shadow will be cast onto nearby bus stops or existing public open spaces. Most of the new shadow will be cast onto the Project's open spaces.

At 12:00 p.m., new shadow from the Project will be cast to the north. No new shadow will be cast onto nearby bus stops or existing public open spaces. New shadow will be cast onto a portion of the Project's new open spaces and onto East Dedham Street and its sidewalks.

At 3:00 p.m., new shadow from the Project will be cast to the northeast. No new shadow will be cast onto nearby bus stops or existing public open spaces. New shadow will be cast onto a portion of the Project's new open space, onto East Dedham Street and its sidewalks and onto Plympton Street and its sidewalks.

At 6:00 p.m., most of the area is covered by existing shadow. No new shadow will be cast onto nearby bus stops or existing public open spaces.

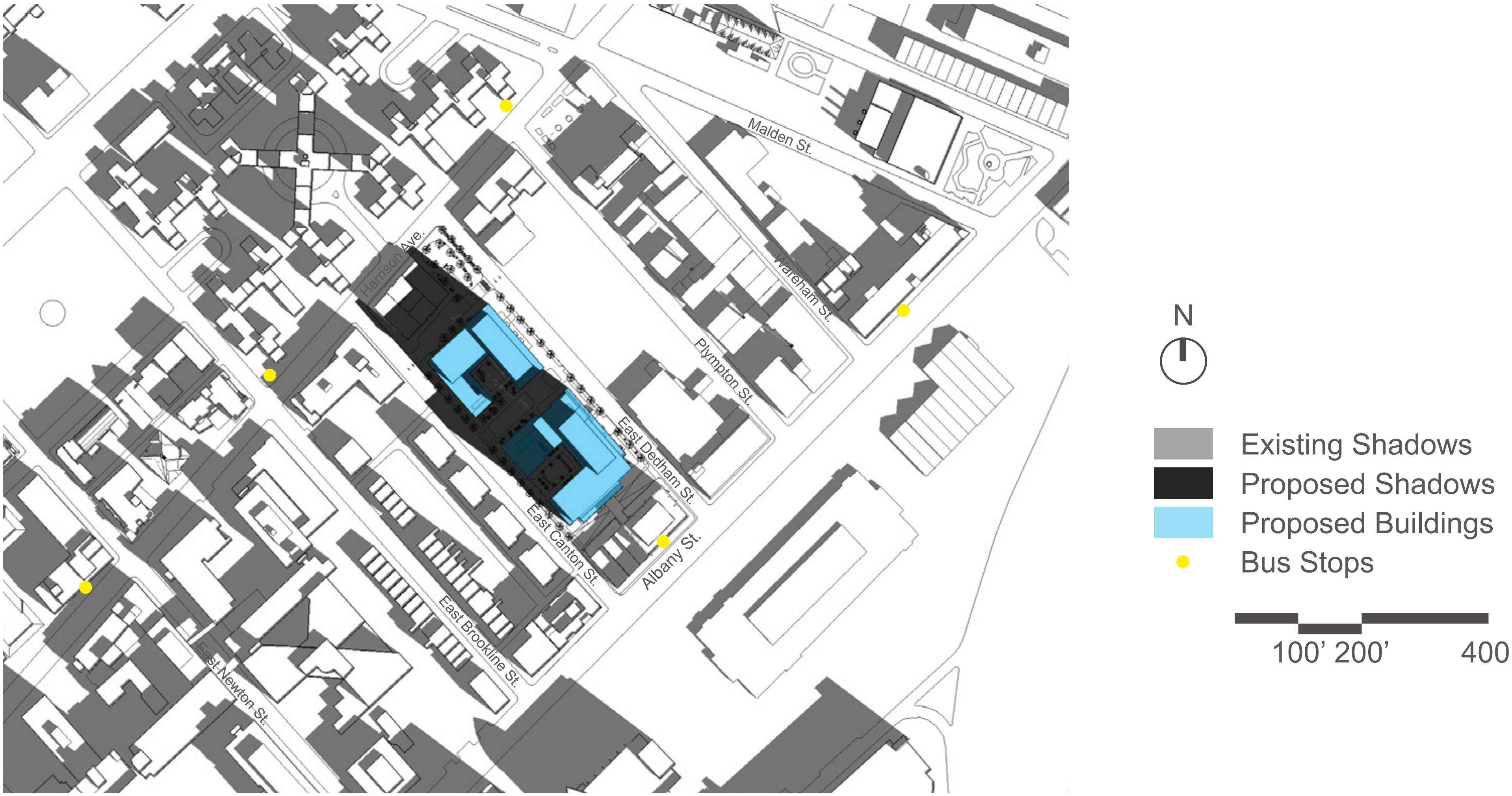
3.2.5 Winter Solstice (December 21)

The winter solstice creates the least favorable conditions for sunlight in New England. Because the sun angle during the winter is lower than in other seasons, shadows are made longer and reach further into the surrounding area.

At 9:00 a.m., new shadow from the Project will be cast to the northwest. No new shadow will be cast onto nearby bus stops or existing public open spaces. The majority of the new shadow will be cast onto the Project itself, onto the Project's new open spaces, and onto Harrison Avenue and its sidewalks.

At 12:00 p.m., new shadow from the Project will be cast to the north. No new shadow will be cast onto nearby bus stops or existing public open spaces. New shadow will be cast onto the Project's new open spaces, onto East Dedham Street and its sidewalks and onto Plympton Street and its sidewalks.

At 3:00 p.m., most of the area is under existing shadow. No new shadow will be cast onto nearby bus stops or existing public open spaces. New shadow from the Project will be cast to the northeast onto a portion of East Dedham Street and its sidewalks, and onto Plympton Street and its sidewalks.



Harrison Albany Block Boston, Massachusetts

Figure 3.2-1

Shadow Study: March 21, 9:00 am

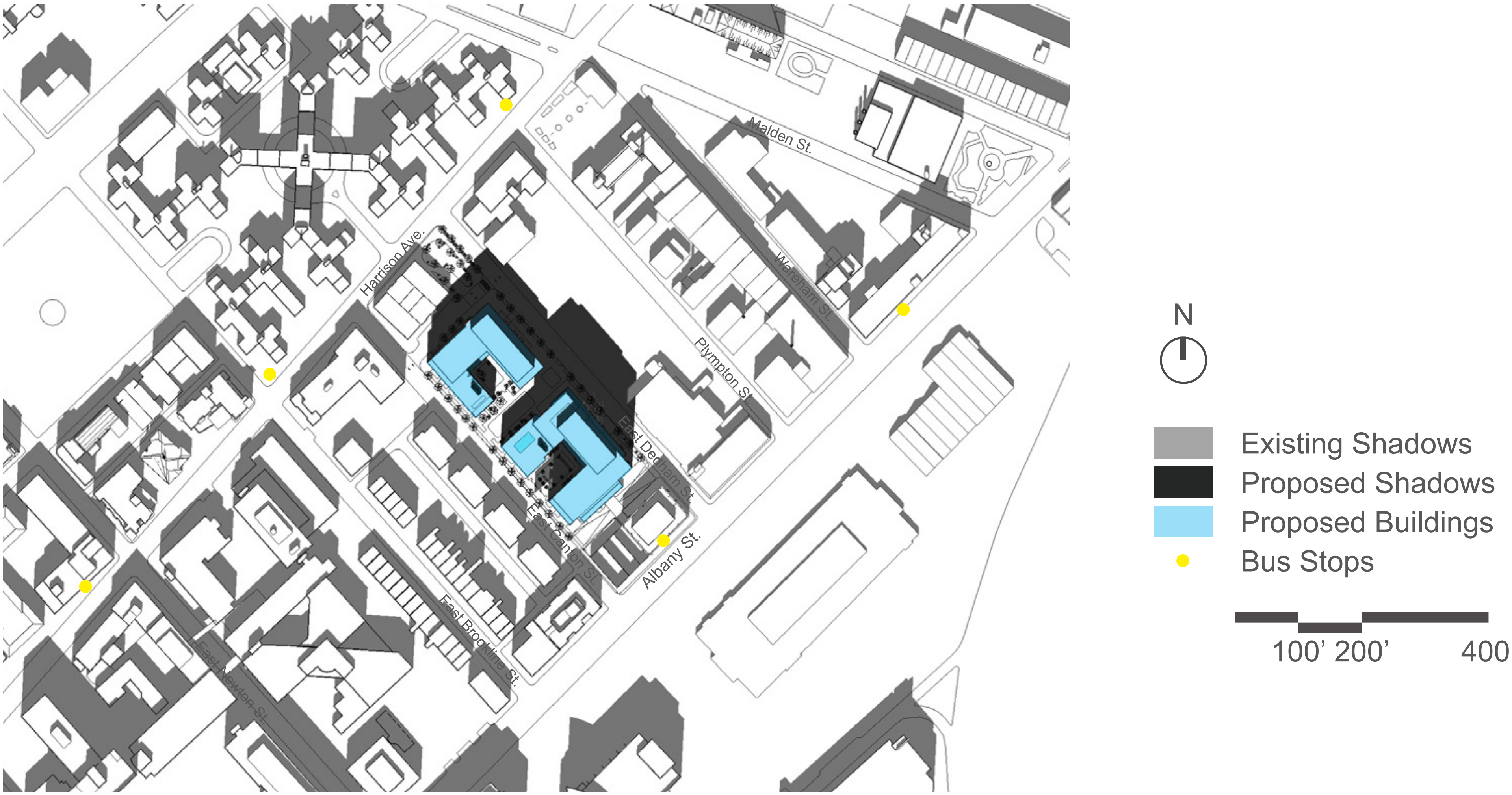
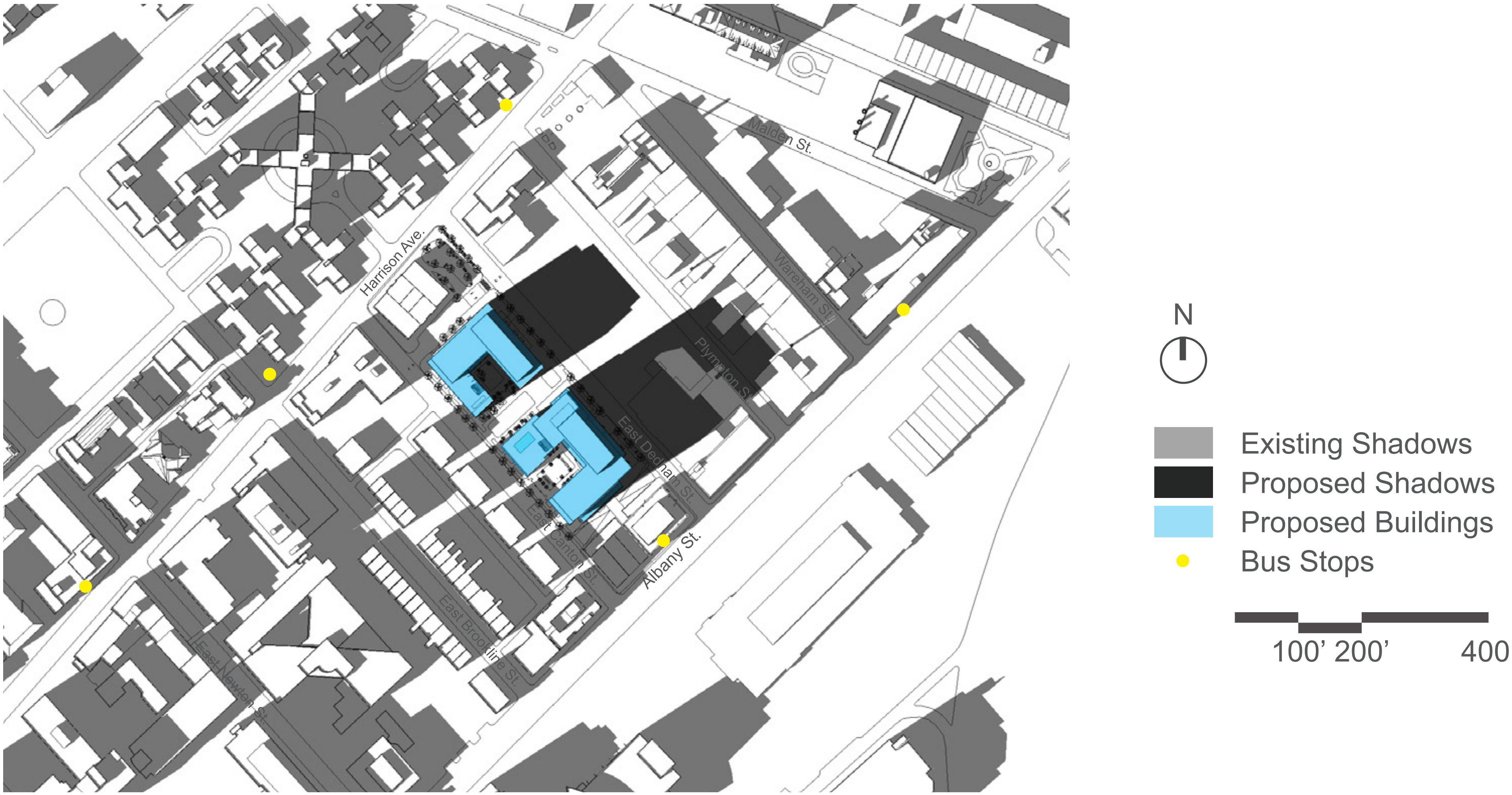


Figure 3.2-2

Shadow Study: March 21, 12:00 pm

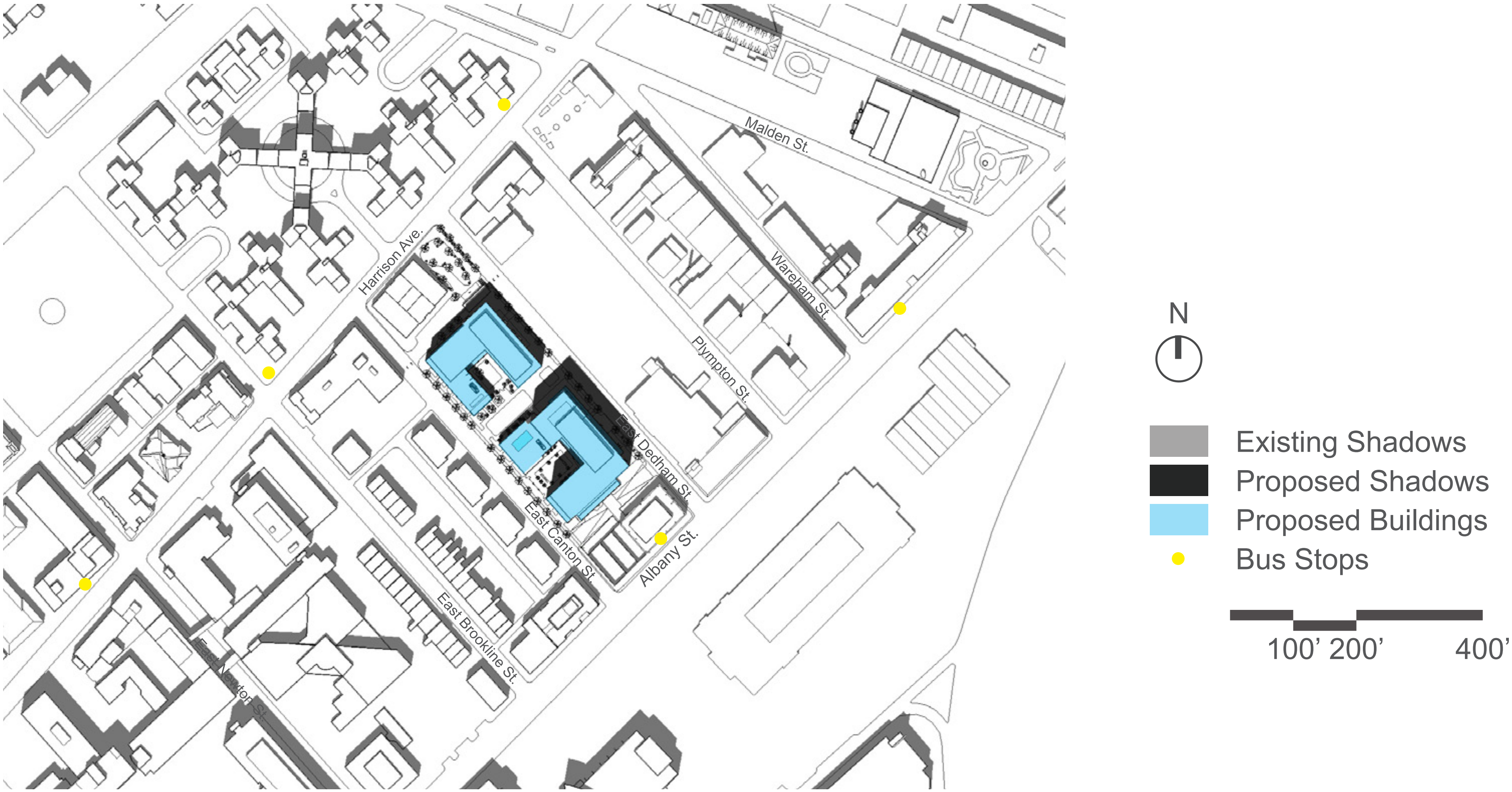


Shadow Study: March 21, 3:00 pm

cbt

Figure 3.2-4

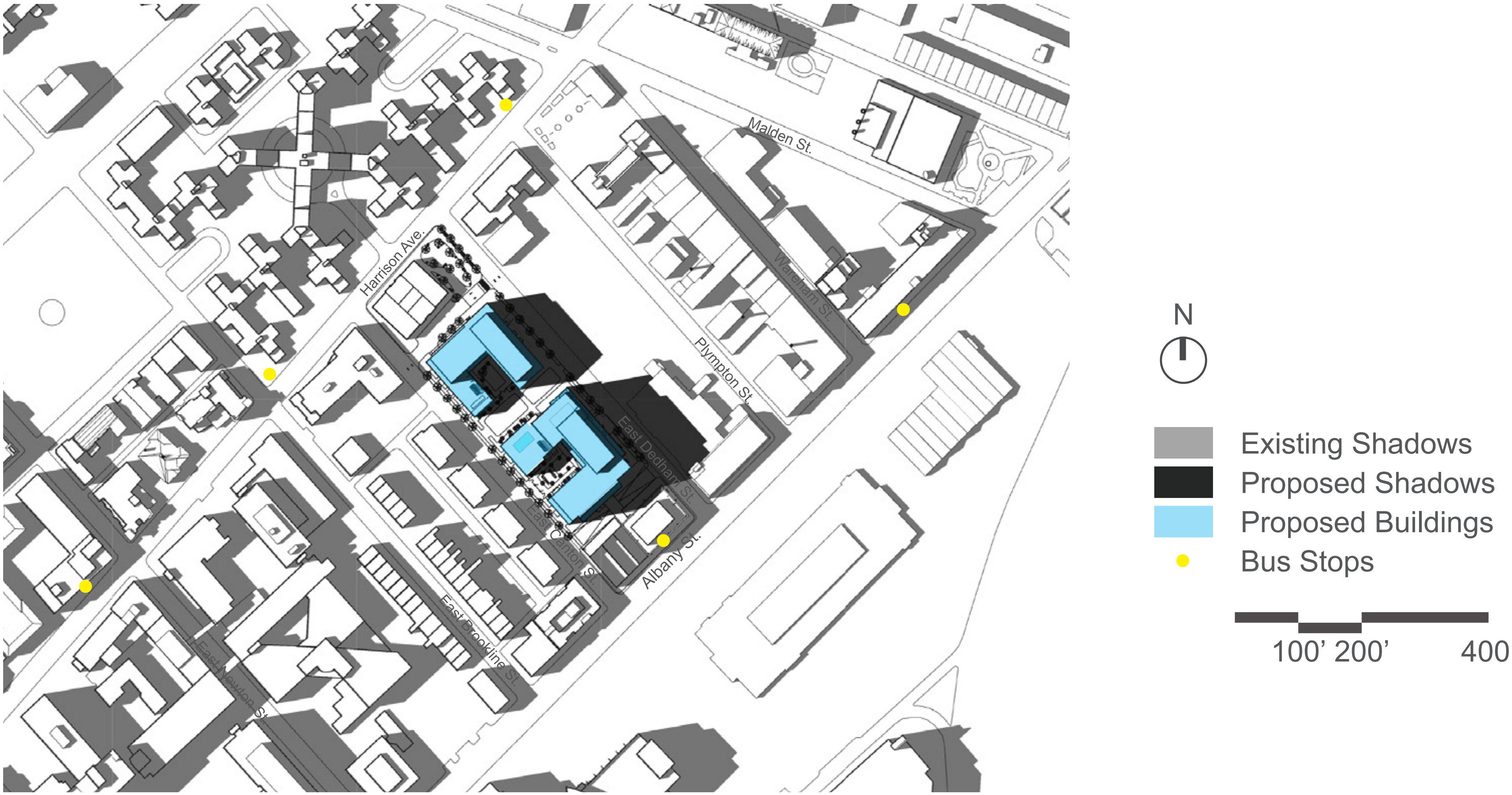
Shadow Study: June 21, 9:00 am



cbt

Figure 3.2-5

Shadow Study: June 21, 12:00 pm



Harrison Albany Block **Boston, Massachusetts**

cbt

Figure 3.2-6

Shadow Study: June 21, 3:00 pm

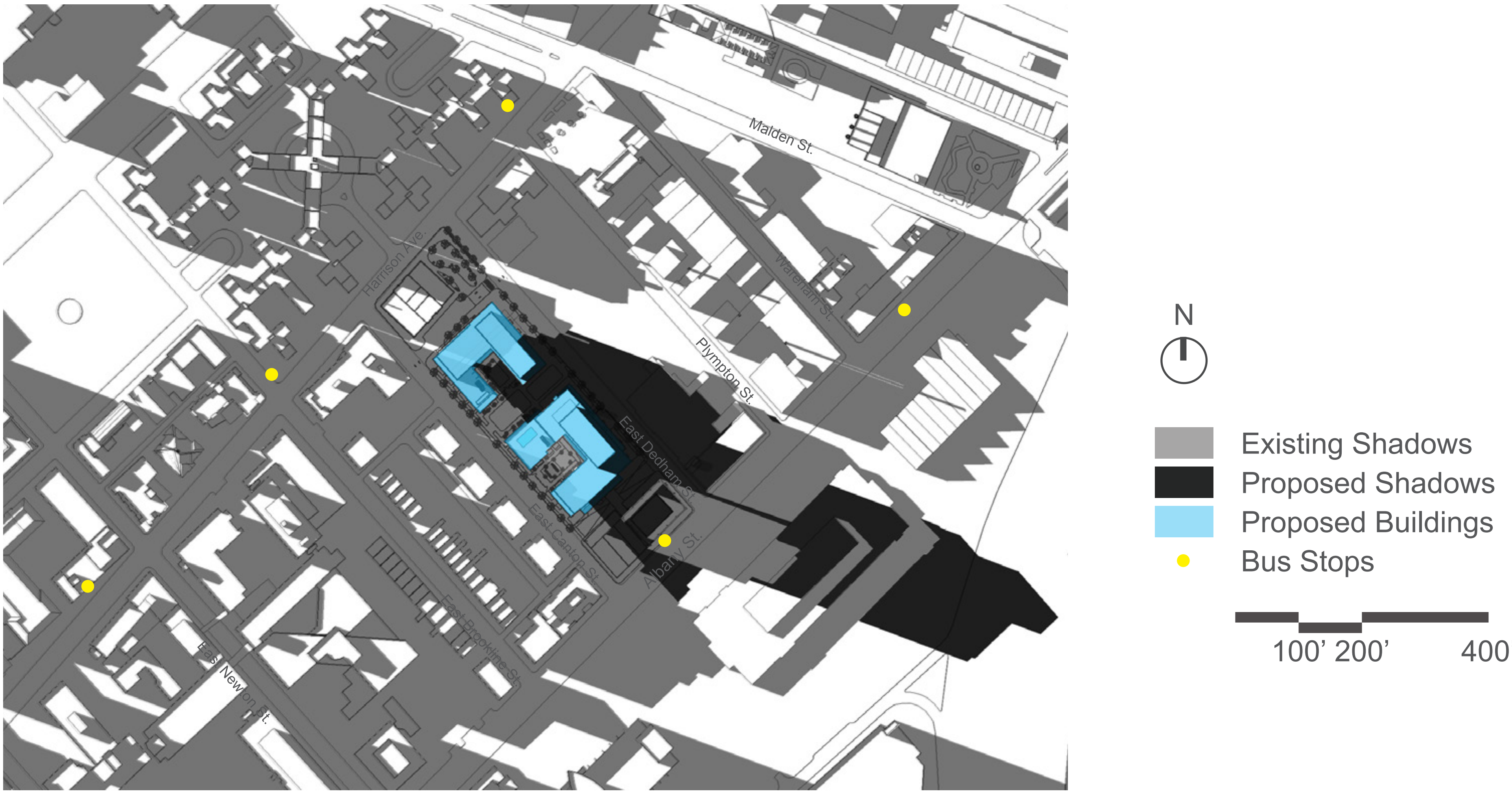


Figure 3.2-7

Shadow Study: June 21, 6:00 pm

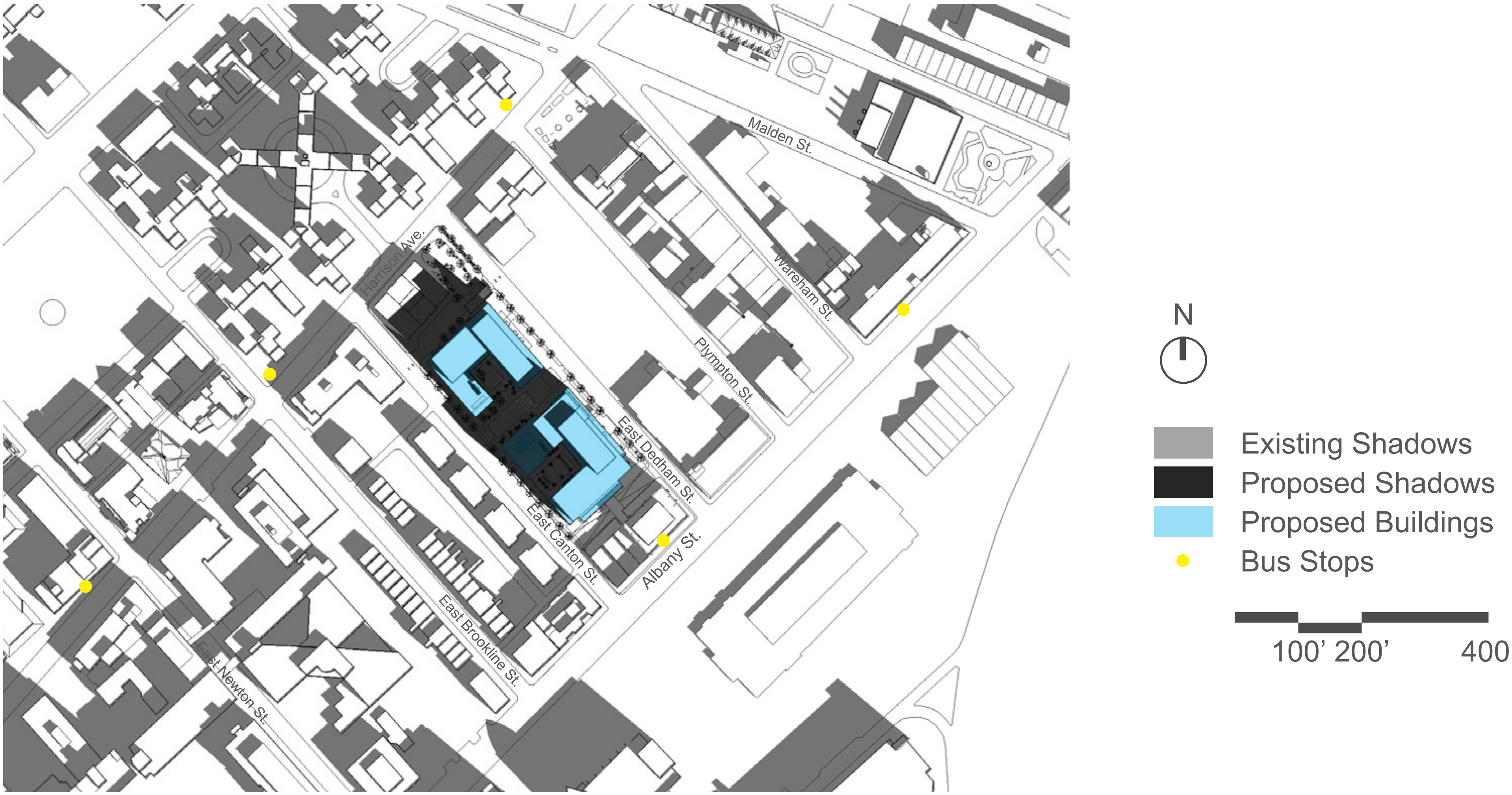
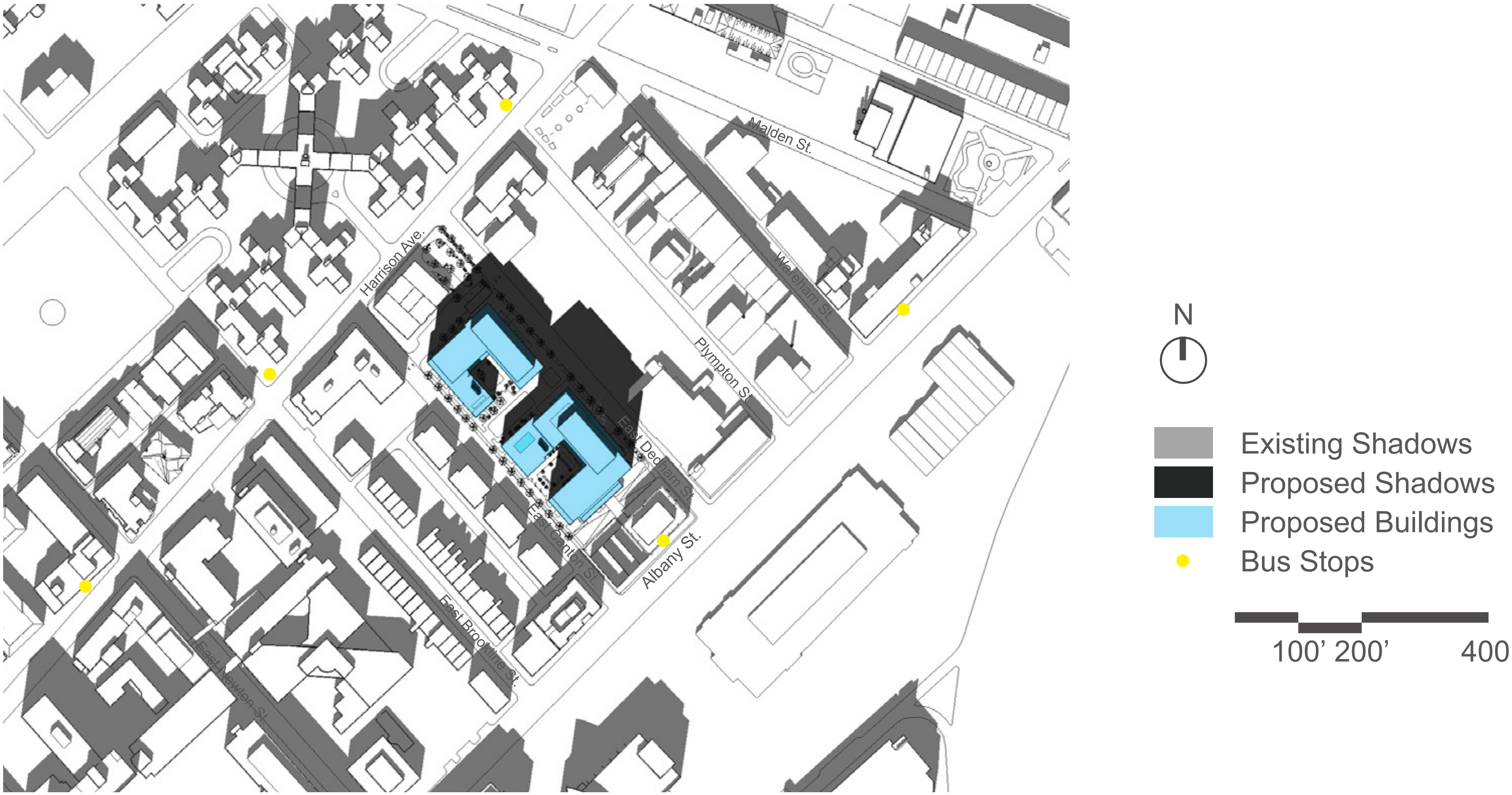


Figure 3.2-8

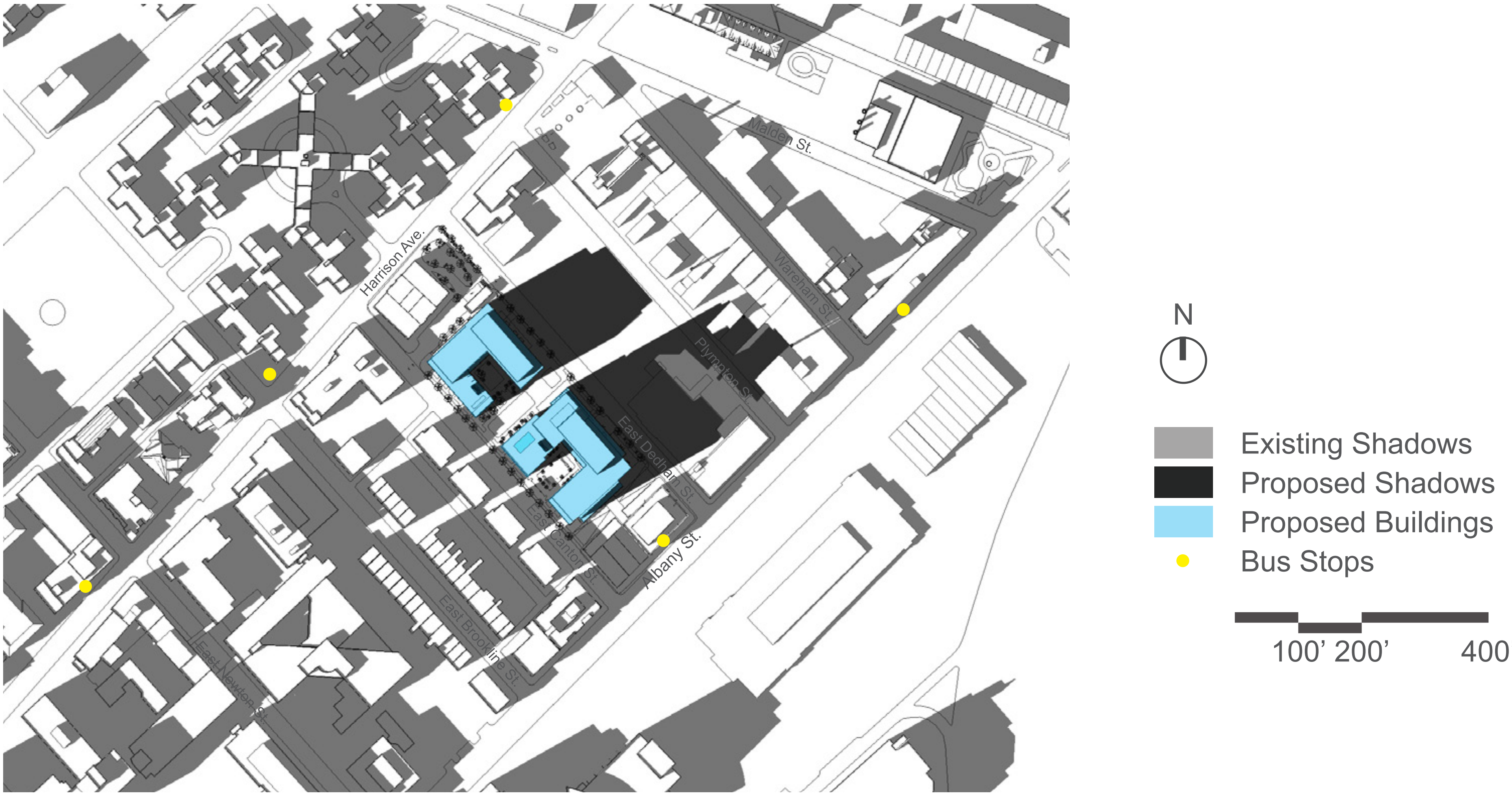
Shadow Study: September 21, 9:00 am



cbt

Figure 3.2-9

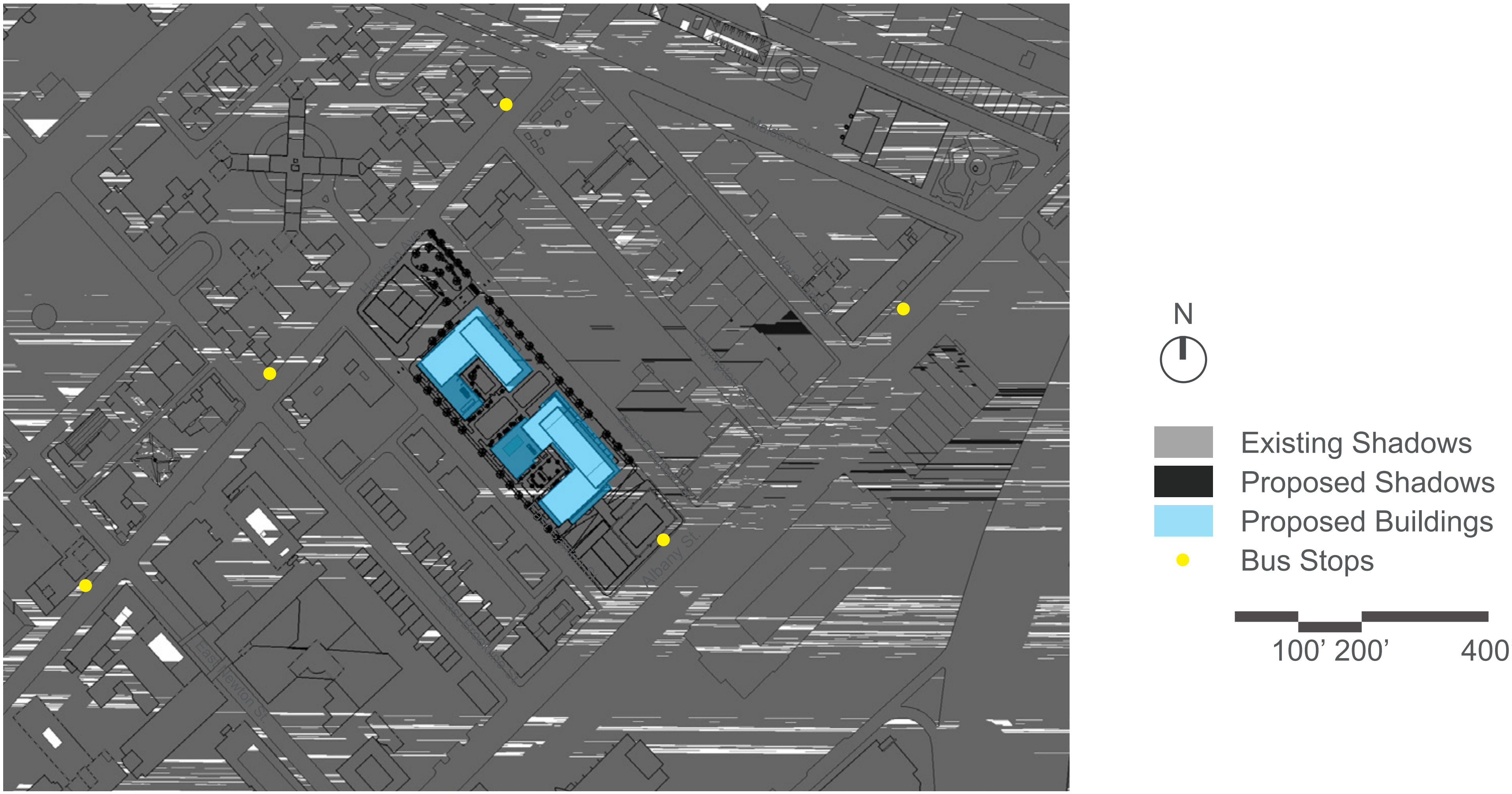
Shadow Study: September 21, 12:00 pm



cbt

Figure 3.2-10

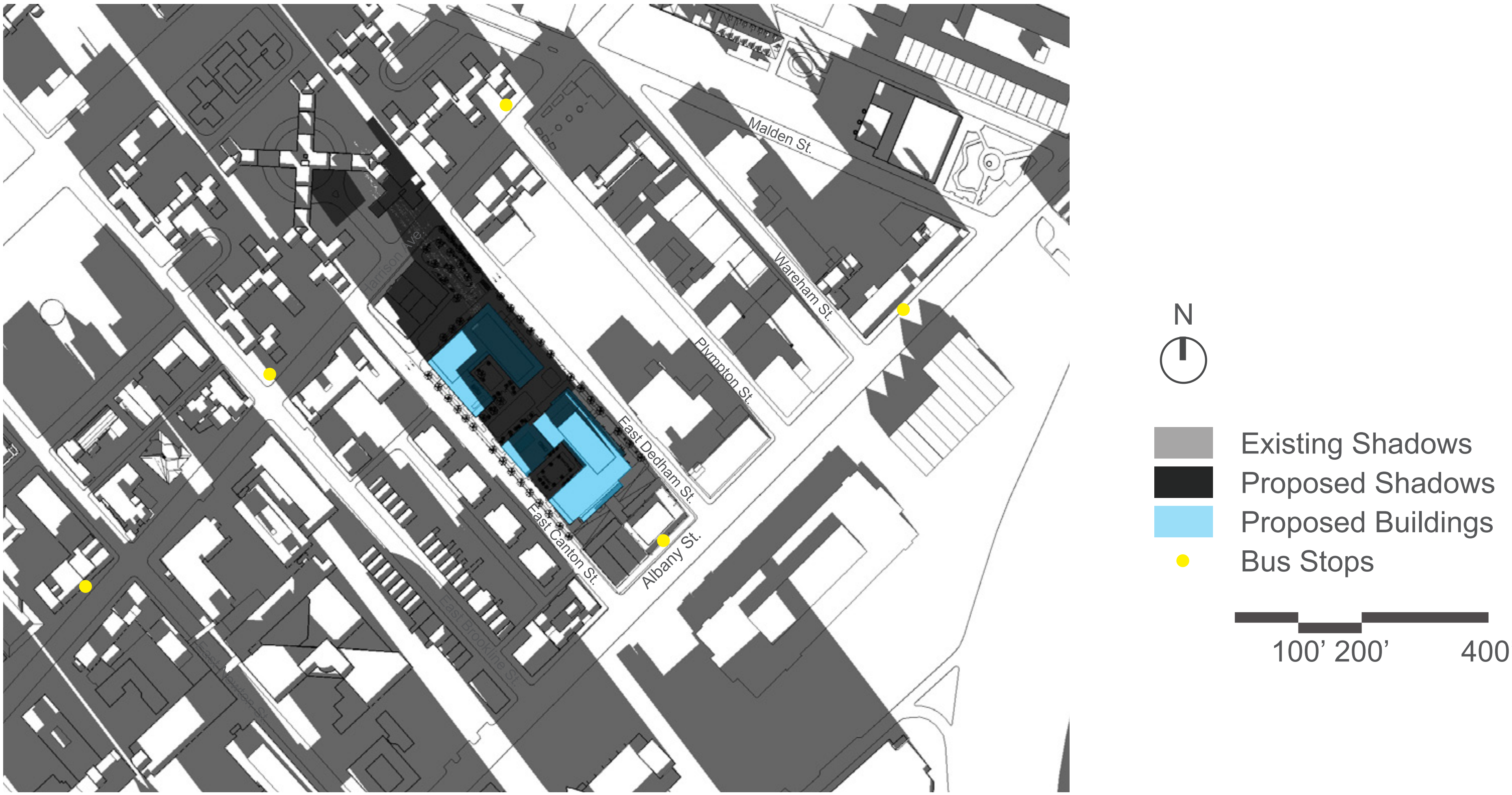
Shadow Study: September 21, 3:00 pm

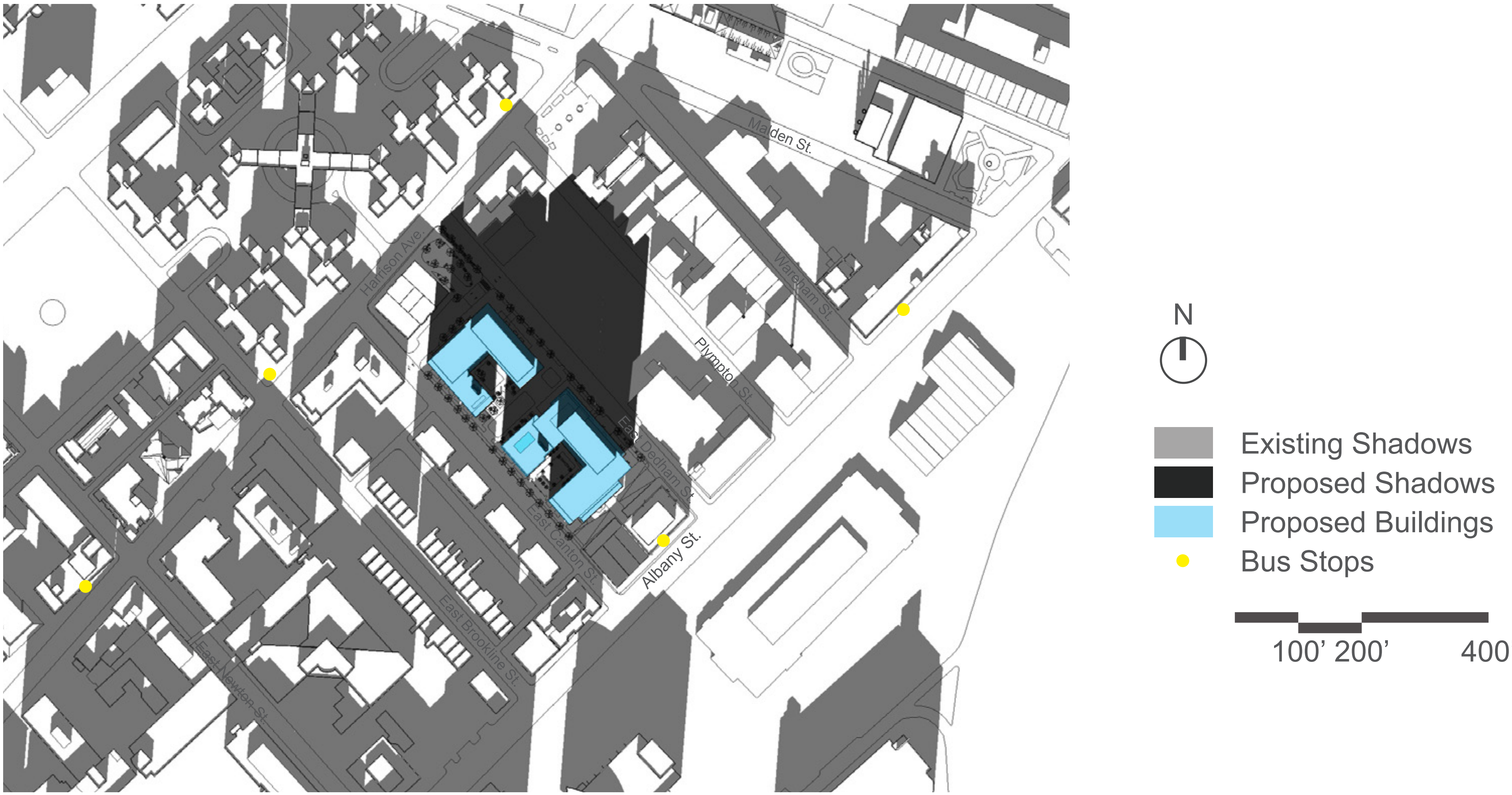


Harrison Albany Block **Boston, Massachusetts**

Figure 3.2-11

Shadow Study: September 21, 6:00 pm


Malden St.
Wareham St.
Plympton St.
Harrison Ave.
East Dedham St.
East Canton St.
Albany St.
East Brookline St.
N
Existing Shadows
Proposed Shadows
Proposed Buildings
Bus Stops
100' 200' 400'



Harrison Albany Block Boston, Massachusetts

cbt

Figure 3.2-13

Shadow Study: December 21, 12:00 pm

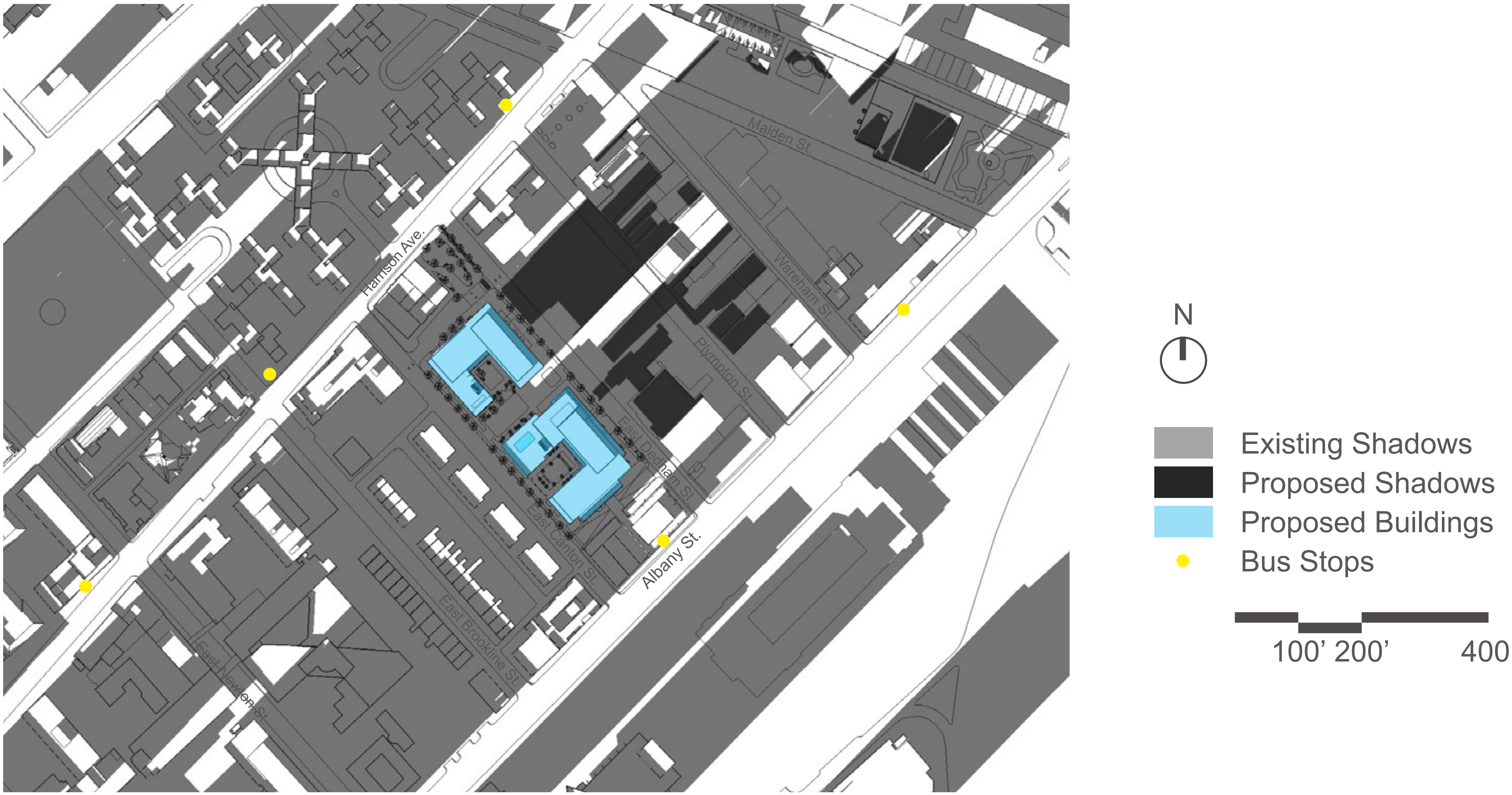


Figure 3.2-14

Shadow Study: December 21, 3:00 pm

3.2.6 Conclusions

The shadow impact analysis looked at net new shadow created by the Project during 14 time periods. New shadow will generally be limited to the Project Site itself, as well as the immediately surrounding streets and sidewalks. No new shadow will be cast onto existing public open spaces or bus stops.

3.3 Daylight Analysis

3.3.1 Introduction

The purpose of the daylight analysis is to estimate the extent to which a proposed project will affect the amount of daylight reaching the streets and the sidewalks in the immediate vicinity of a project site. The daylight analysis for the Project considers the existing and proposed conditions, as well as daylight obstruction values of the surrounding area.

The analysis focuses on the new buildings, since the massing of the existing buildings that will remain will not be changed. Since the new buildings will be located on the portion of the Project Site mostly occupied by a surface parking lot and low-rise buildings, the proposed Project will increase daylight obstruction from the existing condition; however, the resulting conditions will be lower than the daylight obstruction values of the context points in the area and lower than in other urban areas.

3.3.2 Methodology

The daylight analysis was performed using the Boston Redevelopment Authority Daylight Analysis (BRADA) computer program[1]. This program measures the percentage of “sky dome” that is obstructed by a project and is a useful tool in evaluating the net change in obstruction from existing to build conditions at a specific site.

Using BRADA, a silhouette view of the building is taken at ground level from the middle of the adjacent city streets or pedestrian ways centered on the proposed building. The façade of the building facing the viewpoint, including heights, setbacks, corners and other features, is plotted onto a base map using lateral and elevation angles. The two-dimensional base map generated by BRADA represents a figure of the building in the "sky dome" from the viewpoint chosen. The BRADA program calculates the percentage of daylight that will be obstructed on a scale of 0 to 100 percent based on the width of the view, the distance between the viewpoint and the building, and the massing and setbacks incorporated into the design of the building; the lower the number, the lower the percentage of obstruction of daylight from any given viewpoint.

---

[1] Method developed by Harvey Bryan and Susan Stuebing, computer program developed by Ronald Fergle, Massachusetts Institute of Technology, Cambridge, MA, September 1984.

The analysis compares three conditions: Existing Conditions; Proposed Conditions; and the context of the area.

Three viewpoints were chosen to evaluate the daylight obstruction for the Existing and Proposed Conditions. Three area context points were considered to provide a basis of comparison to existing conditions in the surrounding area. The viewpoint and area context viewpoints were taken in the following locations and are shown on Figure 3.3-1.

- **Viewpoint 1:** View from East Canton Street facing northeast toward the Project Site
- **Viewpoint 2:** View from East Dedham Street facing southwest toward the Project Site
- **Area Context Viewpoint AC1:** View from the center of Harrison Avenue facing southeast toward 650 Harrison Avenue
- **Area Context Viewpoint AC2:** View from the center of East Canton Street facing southwest toward 700 Harrison Avenue
- **Area Context Viewpoint AC3:** View from the center of East Brookline Street facing east toward 92-108 East Brookline Street.
- **Area Context Viewpoint AC4:** View from the center of East Canton Street facing west toward residential buildings (79-109 East Canton Street).

3.3.3 Results

The results for each viewpoint are described in Table 3.3-1. Figures 3.3-2 through 3.3-4 illustrate the BRADA results for each analysis.

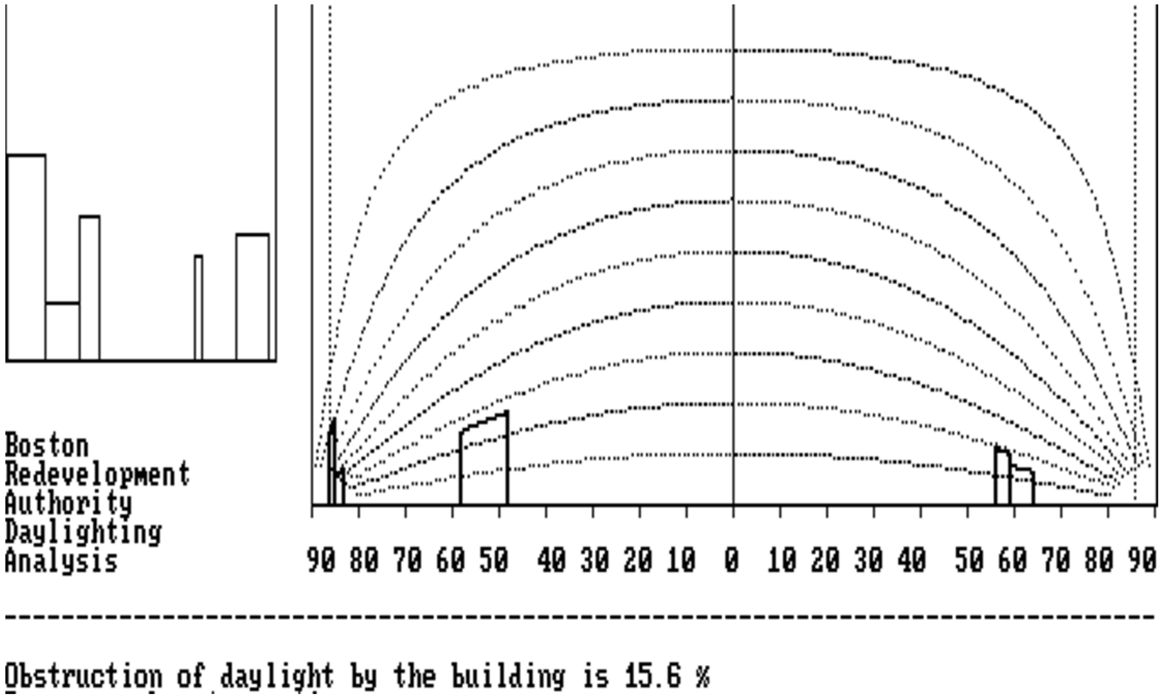
G:\Projects2\MA\Boston\4129\daylight_viewpoints.mxd

Harrison Albany Block   Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 3.3-1
Daylight Analysis Viewpoints

Viewpoint 1: View from East Canton Street facing northeast toward the Project site



Viewpoint 2: View from East Dedham Street facing southwest toward the Project site

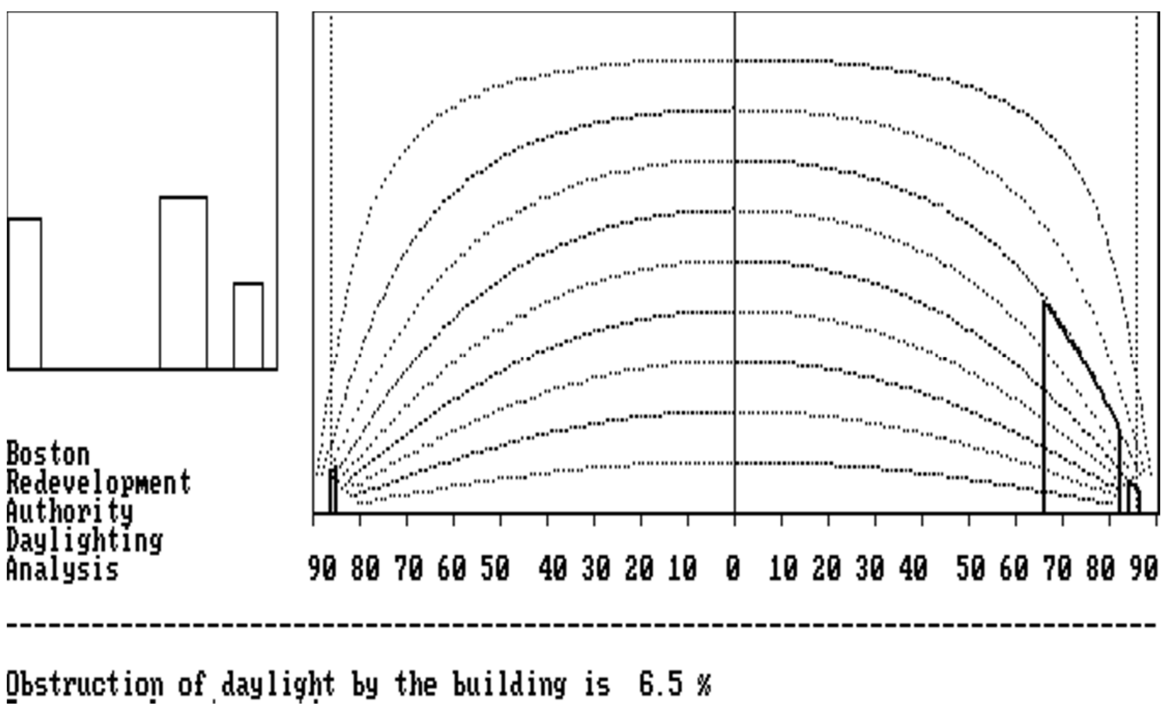
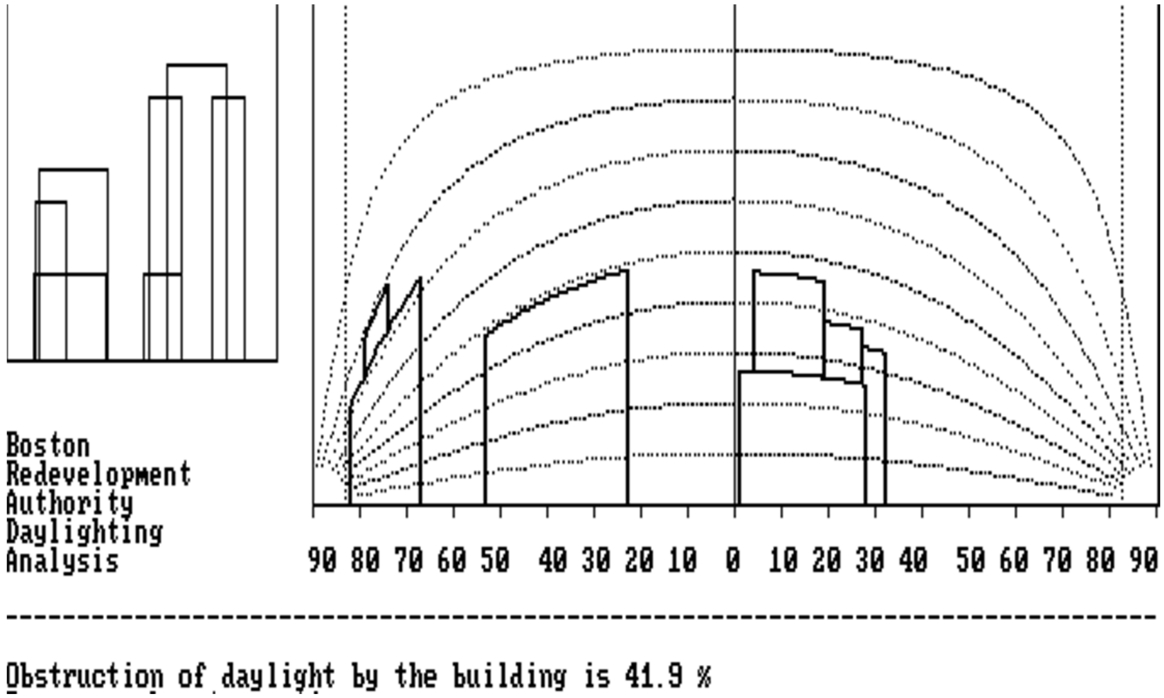
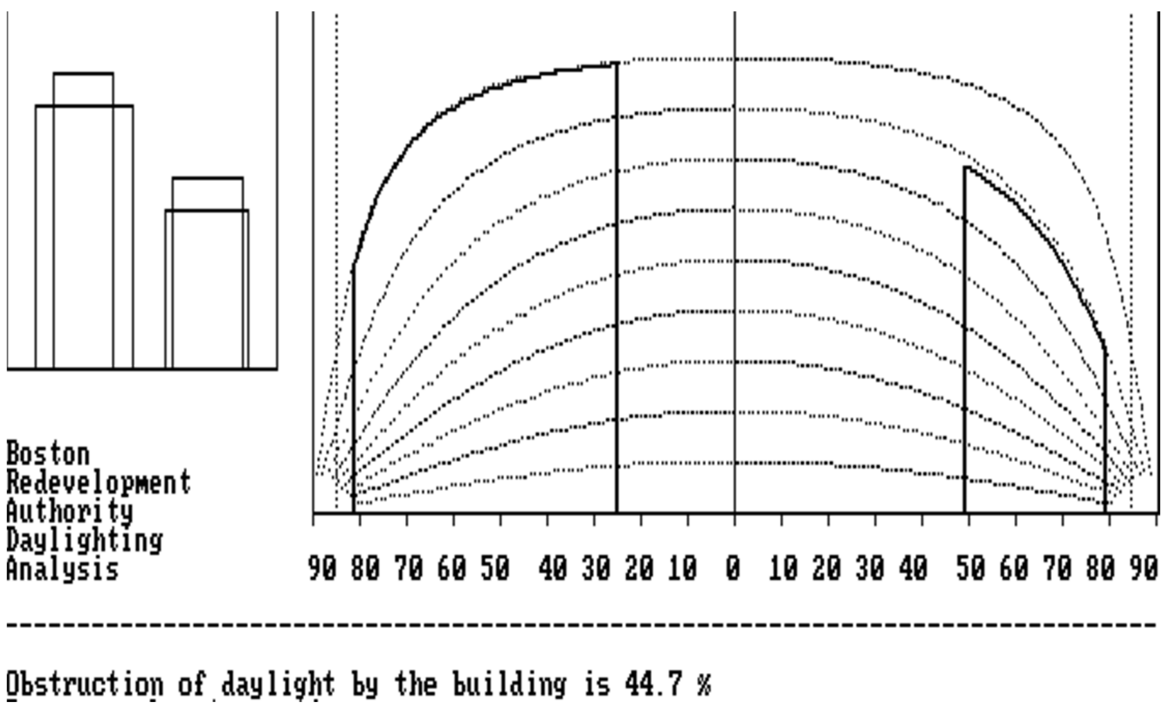


Figure 3.3-2
Existing Conditions

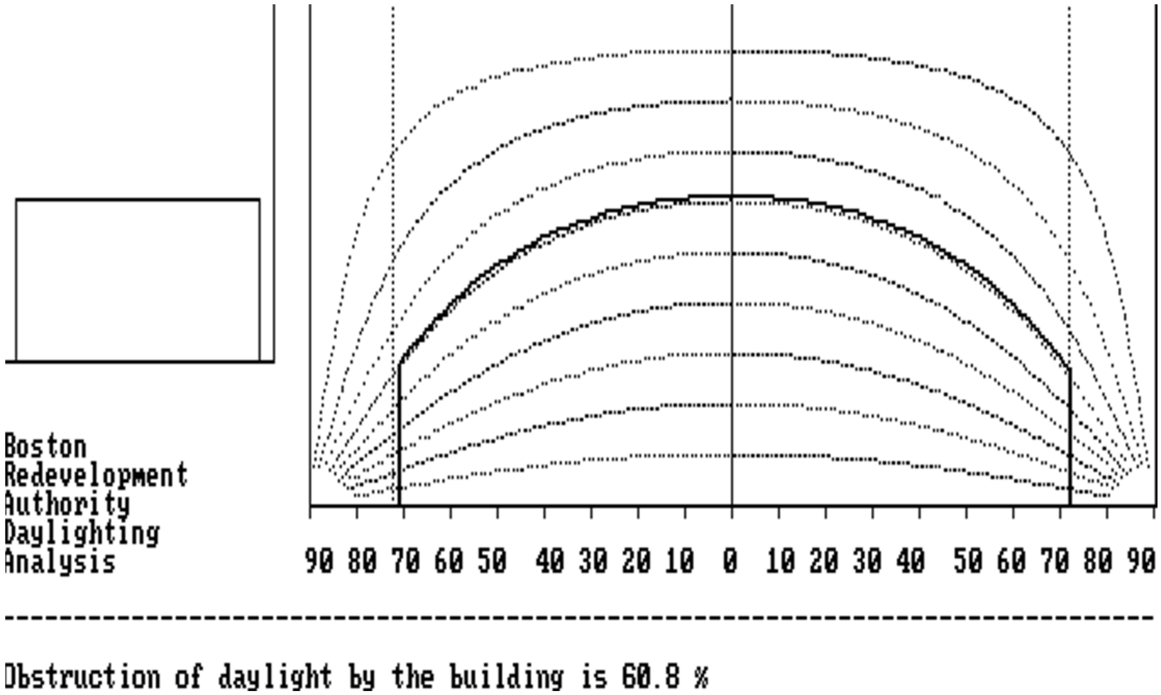
Viewpoint 1: View from East Canton Street facing northeast toward the Project site



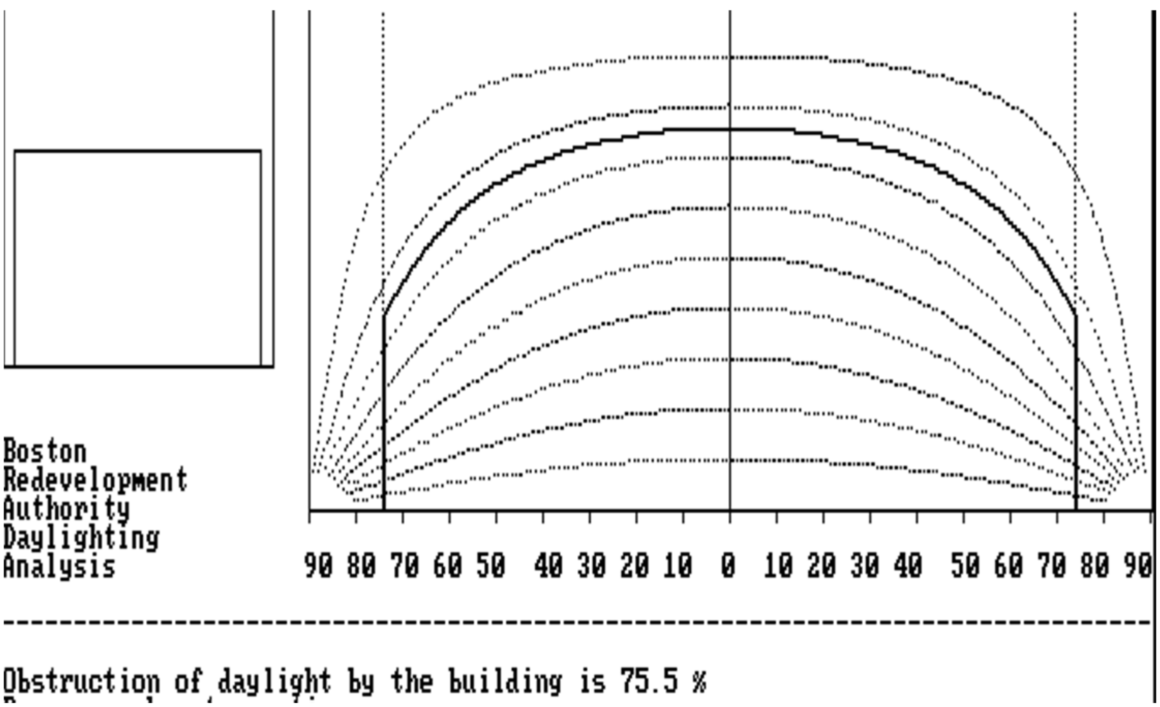
Viewpoint 2: View from East Dedham Street facing southwest toward the Project site



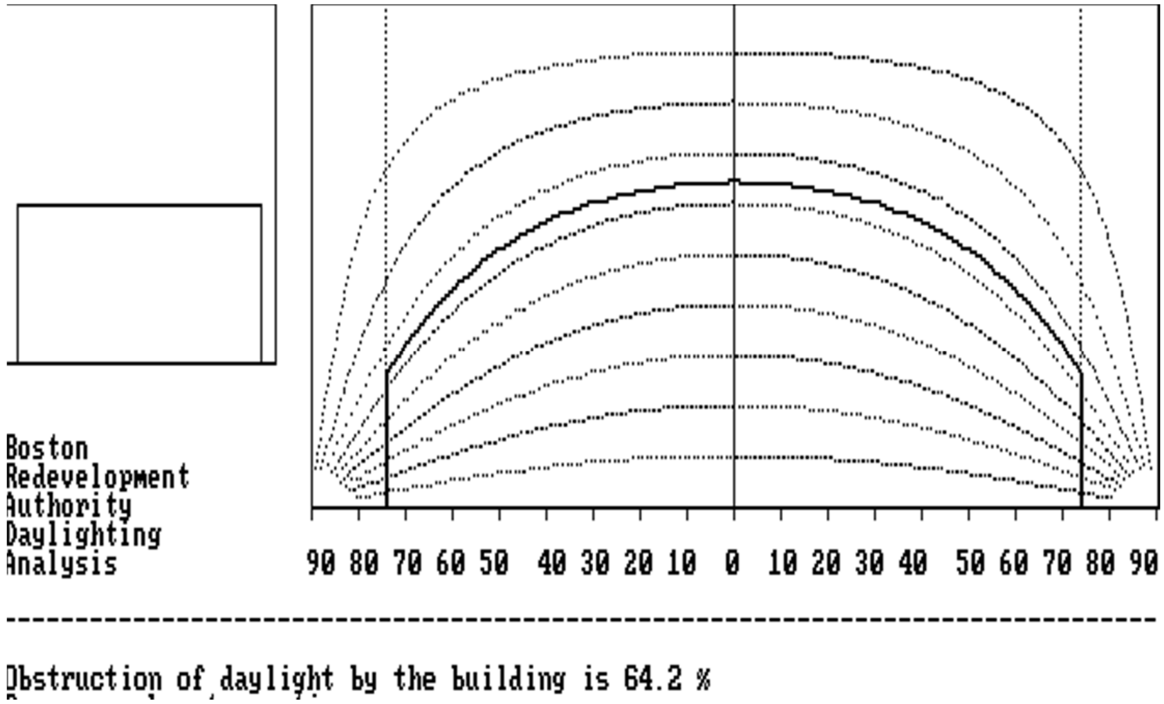
AC 1: View from Harrison Avenue facing southeast toward 650 Harrison Avenue



AC 2: View from East Canton Street facing southwest toward 700 Harrison Avenue



AC 3: View from East Brookline Street facing east toward 92-108 East Brookline Street



AC 4: View from East Canton Street facing west toward 79-109 East Canton Street

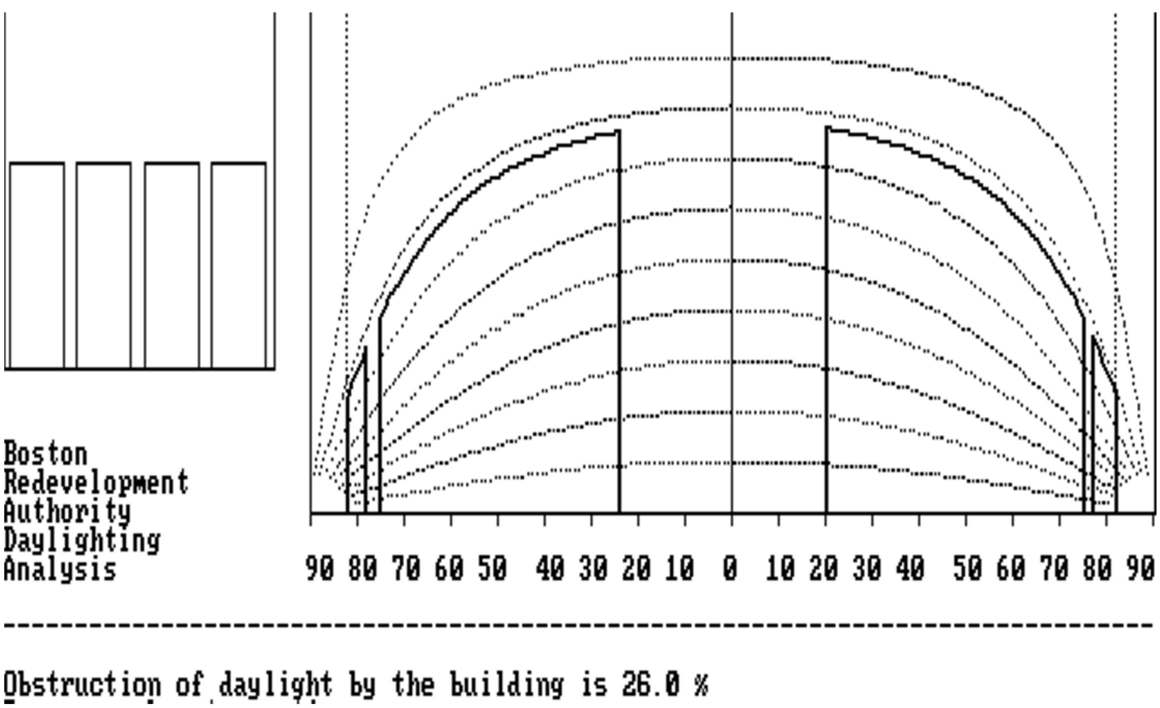


Table 3.3-1 Daylight Analysis Results

Viewpoint Locations		*Existing Conditions*	*Proposed Conditions*
Viewpoint 1	View from East Dedham Street facing south toward the Project Site	15.6%	41.9%
Viewpoint 2	View from East Canton Street facing north toward the Project Site	6.5%	44.7%
Area Context Points			
AC1	View from the center of Harrison Avenue facing southeast toward the 650 Harrison Avenue	60.8%	N/A
AC2	View from the center of East Canton Street facing southwest toward 700 Harrison Avenue	75.5%	N/A
AC3	View from the center of East Brookline Street facing east toward 92-108 East Brookline Street	64.2%	N/A
AC4	View from the center of East Canton Street facing west toward 79-109 East Canton Street	26.0%	N/A

East Canton Street – Viewpoint 1

East Canton Street runs along the western edge of the Project Site. Viewpoint 1 was taken from the center of East Canton Street facing northeast toward the Project Site. The Project Site has an existing daylight obstruction of 15.6% due to the surface parking lot that encompasses the majority of the Project Site, and the low heights of the existing buildings. The development of the Project will increase the daylight obstruction value to 41.9%. The daylight obstruction value is consistent with or less than the daylight obstruction value of other buildings in the area, including the Area Context buildings, due to the Project design that lowers the heights of the new buildings along East Canton Street and the spaces between the buildings allowing for views of the sky.

East Dedham Street – Viewpoint 2

East Dedham Street runs along the eastern edge of the Project Site. Viewpoint 2 was taken from the center of East Dedham Street facing southwest toward the Project Site. The Project Site has an existing daylight obstruction of 6.5% due to the surface parking lot that encompasses the majority of the Project Site. The development of the Project will increase the daylight obstruction value to 44.7%. Although the tallest portions of the new buildings are located along East Dedham Street, they are set back from the street and the space between the buildings allows for views of the sky. The daylight obstruction value is also consistent with or less than the daylight obstruction value of other buildings in the area, including the Area Context buildings.

Area Context Viewpoints

The Project Site is located in the South End in an area with a mix of relatively low density residential and higher density institutional uses and surface parking lots. To provide a larger context for comparison of daylight conditions, obstruction values were calculated for the three Area Context Viewpoints described above and shown on Figure 3.3-1. The daylight obstruction values ranged from 26.0% for AC4 to 75.5% for AC2. Daylight obstruction values for the Project are consistent with or less than the Area Context values.

3.3.4 Conclusions

The daylight analysis conducted for the Project describes existing and proposed daylight obstruction conditions at the Project Site and in the surrounding area. The results of the BRADA analysis indicate that while the development of the Project will result in increased daylight obstruction over existing conditions, the resulting conditions will be similar to or less than the daylight obstruction values within the surrounding area. The design includes setbacks from the streets, space between buildings, and a variety of heights that allow for views of the sky.

3.4 Solar Glare

The Project materials are still being studied and glazing of the windows will be determined as the design progresses. Due to the type of potential glass and glazing proposed, solar glare impacts are not currently anticipated.

3.5 Air Quality

3.5.1 Introduction

An air quality analysis has been conducted to determine the impact of pollutant emissions from mobile sources generated by the Project. Specifically, a microscale analysis was performed to evaluate the potential air quality impacts of carbon monoxide (CO) resulting from traffic flow around the Project area. Any new stationary sources will be reviewed by the Massachusetts Department of Environmental Protection (MassDEP) during permitting under the Environmental Results Program (ERP), if required.

Results of the microscale analysis show that all predicted CO concentrations are well below one-hour and eight-hour National Ambient Air Quality Standards (NAAQS).

3.5.2 National Ambient Air Quality Standards and Background Concentrations

Background air quality concentrations and federal air quality standards were utilized to conduct the air quality impact analysis. Federal NAAQS were developed by the U.S. Environmental Protection Agency (EPA) to protect human health against adverse health effects with a margin of safety. The modeling methodologies were developed in accordance with the latest MassDEP modeling policies and Federal modeling guidelines.[2] The following sections outline the NAAQS standards and detail the sources of background air quality data.

3.5.2.1 National Ambient Air Quality Standards

The 1970 Clean Air Act was enacted by the U.S. Congress to protect the health and welfare of the public from the adverse effects of air pollution. As required by the Clean Air Act, EPA promulgated NAAQS for the following criteria pollutants: nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM) (PM10 and PM2.5), carbon monoxide (CO), ozone (O_3), and lead (Pb). The NAAQS are listed in Table 3.5-1. Massachusetts Ambient Air Quality Standards (MAAQS) are typically identical to NAAQS.

NAAQS specify concentration levels for various averaging times and include both "primary" and "secondary" standards. Primary standards are intended to protect human health, whereas secondary standards are intended to protect public welfare from any known or anticipated adverse effects associated with the presence of air pollutants, such as damage to vegetation. The more stringent of the primary or secondary standards were applied when comparing to the modeling results for the Project.

The NAAQS also reflect various durations of exposure. The non-probabilistic short-term periods (24 hours or less) refer to exposure levels not to be exceeded more than once a year. Long-term periods refer to limits that cannot be exceeded for exposure averaged over three months or longer.

Massachusetts Ambient Air Quality Standards (MAAQS) are codified in 310 CMR 6.04, and generally follow the NAAQS but are not identical (highlighted in **bold** in Table 3.5-1).

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

Table 3.5-1 National (NAAQS) and Massachusetts (MAAQS) Ambient Air Quality Standards

Pollutant	Averaging Period	NAAQS ($\mu g/m^3$)		MAAQS ($\mu g/m^3$)	
		Primary	*Secondary*	*Primary*	*Secondary*
NO_2	Annual (1)	100	Same	100	Same
	1-hour (2)	**188**	None	**None**	None
SO_2	Annual (1)(9)	80	None	80	None
	24-hour (3)(9)	365	None	365	None
	3-hour (3)	None	1300	None	1300
	1-hour (4)	**196**	None	**None**	None
$PM_{2.5}$	Annual (1)	**12**	**15**	**None**	**None**
	24-hour (5)	**35**	**Same**	**None**	**None**
PM_{10}	Annual (1)(6)	**None**	None	**50**	Same
	24-hour (3)(7)	150	Same	150	Same
CO	8-hour (3)	10,000	Same	10,000	Same
	1-hour (3)	40,000	Same	40,000	Same
Ozone	8-hour (8)	**147**	Same	**235**	Same
Pb	3-month (1)	1.5	Same	1.5	Same

(1) Not to be exceeded.
(2) 98th percentile of one-hour daily maximum concentrations, averaged over three years.
(3) Not to be exceeded more than once per year.
(4) 99th percentile of one-hour daily maximum concentrations, averaged over three years.
(5) 98th percentile, averaged over three years.
(6) EPA revoked the annual PM10 NAAQS in 2006.
(7) Not to be exceeded more than once per year on average over three years.
(8) Annual fourth-highest daily maximum eight-hour concentration, averaged over three years.
(9) EPA revoked the annual and 24-hour SO_2 NAAQS in 2010. However they remain in effect until one year after the area's initial attainment designation, unless designated as "nontattainment".

Source: http://www.epa.gov/ttn/naaqs/criteria.html and 310 CMR 6.04

3.5.2.2 Background Concentrations

To estimate background pollutant levels representative of the area, the most recent air quality monitor data reported by the MassDEP in their Annual Air Quality Reports was obtained for 2012 to 2014.

The Clean Air Act allows for one exceedance per year of the CO short-term NAAQS per year. The highest second-high accounts for the one exceedance. Annual NAAQS are never to be exceeded.

Background concentrations were determined from the closest available monitoring stations to the Project. The closest monitor is at Harrison Avenue, roughly 1.25 miles southwest of the Project Site. This site samples for all pollutants. A summary of the background air quality concentrations are presented in Table 3.5-2.

Table 3.5-2 Observed Ambient Air Quality Concentrations and Selected Background Levels

Pollutant	Averaging Time	2012	2013	2014	Background Concentration (µg/m³)	NAAQS (µg/m³)	Percent of NAAQS
SO_2 (1)(6)	1-Hour (5)	31.7	28.6	32.2	30.8	196.0	16%
	3-Hour	30.9	25.4	56.3	56.3	1300.0	4%
	24-Hour	13.1	13.1	13.4	13.4	365.0	4%
	Annual	2.9	2.8	2.8	2.9	80.0	4%
PM-10	24-Hour	31.5	34.0	61.0	61.0	150.0	41%
	Annual	13.9	15.2	13.9	15.2	50.0	30%
PM-2.5	24-Hour (5)	20.6	15.9	12.7	16.4	35.0	47%
	Annual (5)	8.3	7.3	6.0	7.2	12.0	60%
NO_2 (3)	1-Hour (5)	82.7	94.0	95.9	90.9	188.0	48%
	Annual	29.7	32.8	29.6	32.8	100.0	33%
CO (2)	1-Hour	2474.2	2145.2	1963.1	2474.2	40000.0	6%
	8-Hour	2177.4	1375.2	1489.8	2177.4	10000.0	22%
Ozone (4)	8-Hour	121.7	115.8	106.0	121.7	147.0	83%
Lead	Rolling 3-Month	0.013	0.006	0.014	0.014	0.15	9%

Notes:
From 2013-2015 EPA's AirData Website
(1) SO_2 reported ppb. Converted to µg/m^3 using factor of 1 ppm = 2.62 µg/m^3.
(2) CO reported in ppm. Converted to µg/m^3 using factor of 1 ppm = 1146 µg/m^3.
(3) NO_2 reported in ppb. Converted to µg/m^3 using factor of 1 ppm = 1.88 µg/m^3.
(4) O_3 reported in ppm. Converted to µg/m^3 using factor of 1 ppm = 1963 µg/m^3.
(5) Background level is the average concentration of the three years.
(6) The 24-hour and Annual standards were revoked by EPA on June 22, 2010, Federal Register 75-119, p. 35520.

Air quality in the vicinity of the Project Site is generally good, with all local background concentrations found to be well below the NAAQS.

For use in the microscale analysis, background concentrations of CO in parts per million (ppm) were required. The corresponding maximum background concentrations in ppm were 2.2 ppm (2,177 µg/m^3) for one-hour and 1.9 ppm (1,490 µg/m^3) for eight-hour CO.

3.5.3 Methodology

3.5.3.1 Microscale Analysis

The BRA typically requests an analysis of the effect on air quality of the increase in traffic generated by projects subject to Large Project Review. This "microscale" analysis is typically required for any intersection where 1) project traffic would impact intersections or roadway links currently operating at LOS D, E, or F or would cause LOS to decline to D, E, or F; 2) project traffic would increase traffic volumes on nearby roadways by 10% or more (unless the increase in traffic volume is less than 100 vehicles per hour); or, 3) the project will generate 3,000 or more new average daily trips on roadways providing access to a single location. The microscale analysis involves modeling of CO emissions from vehicles idling at and traveling through signaled intersections. Predicted ambient concentrations of CO for the Build and No-Build cases are compared with Federal (and State) ambient air quality standards for CO.

The microscale analysis typically examines ground-level CO impacts due to traffic queues in the immediate vicinity of a project. CO is used in microscale studies to indicate roadway pollutant levels since it is the most abundant pollutant emitted by motor vehicles and can result in so-called "hotspot" (high concentration) locations around congested intersections. The NAAQS standards do not allow ambient CO concentrations to exceed 35 ppm for a one-hour averaging period, and 9 ppm for an eight-hour averaging period, more than once per year at any location. The widespread use of CO catalysts on current vehicles has reduced the occurrences of CO hotspots. Air quality modeling techniques (computer simulation programs) are typically used to predict CO levels for both existing and future conditions to evaluate compliance of the roadways with the standards. The analysis for the Project followed the procedure outlined in EPA's intersection modeling guidance.[3]

The microscale analysis has been conducted using the latest versions of EPA's MOVES and CAL3QHC programs to estimate CO concentrations at sidewalk receptor locations.

Baseline (2015) and future year (2023) emission factor data calculated from the MOVES model, along with traffic data, were input into the CAL3QHC program to determine CO concentrations due to traffic flowing through the selected intersections.

Existing background values of CO at the nearest monitor location at Harrison Avenue were obtained from MassDEP and the EPA. CAL3QHC results were then added to background CO values of 2.2 ppm (one-hour) and 1.9 ppm (eight-hour), as provided by MassDEP, to determine total air quality impacts due to the Project. These values were compared to the NAAQS for CO of 35 ppm (one-hour) and 9 ppm (eight-hour).

The modeling methodology was developed in accordance with the latest MassDEP modeling policies and Federal modeling guidelines.[4]

Modeling assumptions and backup data for results presented in this section are provided in Appendix D.

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3 U.S. EPA, Guideline for Modeling Carbon Monoxide from Roadway Intersections; EPA-454/R-92-005, November 1992.

4 40 CFR 51 Appendix W, Guideline on Air Quality Models, 70 FR 68228, Nov. 9, 2005.

Intersection Selection

Two signalized intersections included in the traffic study meet the conditions described in the above section for microscale analyses (see Chapter 2). The traffic volumes and LOS calculations provided in Chapter 2 and Appendix C form the basis of evaluating the traffic data versus the microscale thresholds. The two intersections found to meet the criteria for inclusion in the microscale analysis are:

- The intersection of I-93 NB Frontage Road, Connector/DPW Driveway, and the I-90 East On-Ramp; and
- The intersection of Albany Street, I-93 SB Frontage Road, and MBTA Driveway/Connector.

Microscale modeling was performed for the intersections based on the aforementioned methodology, as both of these intersections were categorized as LOS D. The 2015 Existing Conditions, and the 2023 No-Build and Build Conditions were each evaluated for both the morning (a.m.) and afternoon (p.m.) peak hour.

Emissions Calculations (MOVES)

The EPA MOVES computer program was used to estimate motor vehicle emission factors on the roadway network. Emission factors calculated by the MOVES model are based on motor vehicle operations typical of daily periods. The Commonwealth's statewide annual Inspection and Maintenance (I&M) program was included, as well as the county specific vehicle age registration distribution, fleet mix, meteorology, and other inputs. The inputs for MOVES for the Existing (2015) and future year (2023) are provided by MassDEP.

All link types for the modeled intersection were input into MOVES. Idle emission factors are obtained from factors for a link average speed of 0 miles per hour (mph). Moving emissions are calculated based on speeds at which free-flowing vehicles travel through the intersection as stated in traffic modeling (SYNCHRO) reports. A speed of 30 mph is used for all free-flow traffic. Speeds of 10 and 15 mph were used for right (and U-turns, if necessary) and left turns, respectively. Roadway emissions factors were obtained from MOVES using EPA guidance.[5]

Winter CO emission factors are typically higher than summer. Therefore, January weekday emission factors were conservatively used in the microscale analyses.

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[5] U.S. EPA, 2010. Using MOVES in Project-Level Carbon Monoxide Analyses. EPA-420-B-10-041.

Receptors & Meteorology Inputs

A set of roughly 100 receptors were placed in the vicinity of the I-93 NB Frontage Road, DPW Driveway/Connector, and I-90 East On-Ramp intersection. Receptors extended approximately 425 feet on the sidewalks along the roadways approaching the intersection.

Approximately 55 receptors were places in the vicinity of the Albany Street, I-93 SB Frontage Road, MBTA Driveway/Connector intersection; extending approximately 380 feet on the sidewalks along the roadways approaching the intersection. The roadway links and receptor locations of the modeled intersections are presented in Figures 3.5-1 and 3.5-2.

For the CAL3QHC model, limited meteorological inputs are required. Following EPA guidance[6], a wind speed of one meter per second, stability class D (4), and a mixing height of 1,000 meters were used. To account for the intersection geometry, wind directions from 0° to 350°, every 10° were selected. A surface roughness length of 321 centimeters was selected.[7]

Impact Calculations (CAL3QHC)

The CAL3QHC model predicts one-hour concentrations using queue-links at intersections, worst-case meteorological conditions, and traffic input data. The one-hour concentrations were scaled by a factor of 0.9 to estimate eight-hour concentrations.[8] The CAL3QHC methodology was based on EPA CO modeling guidance. Signal timings were provided directly from the traffic modeling outputs.

3.5.4 Air Quality Results

The results of the maximum one-hour predicted CO concentrations from CAL3QHC are provided in Tables 3.5-3 through 3.5-5 for the 2015 and 2023 scenarios. Eight-hour average concentrations are calculated by multiplying the maximum one-hour concentrations by a factor of 0.9.[9]

The results of the one-hour and eight-hour maximum modeled CO ground-level concentrations from CAL3QHC were added to EPA supplied background levels for comparison to the NAAQS. These values represent the highest potential concentrations at the intersections as they are predicted during the simultaneous occurrence of "defined"

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6 U.S. EPA, *Guideline for Modeling Carbon Monoxide from Roadway Intersections.* EPA-454/R-92-005, November 1992.

7 U.S. EPA, *User's Guide for CAL3QHC Version 2: A Modeling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections.* EPA –454/R-92-006 (Revised), September 1995.

8 U.S. EPA, AERSCREEN User's Guide; EPA-454/B-11-001, March 2011.

9 U.S. EPA, AERSCREEN User's Guide; EPA-454/B-11-001, March 2011.

worst case meteorology. The highest one-hour traffic-related concentration predicted for both intersections of concern within the Project area for the modeled conditions (0.4 ppm) plus background (2.2 ppm) is 2.6 ppm for all cases. The highest eight-hour traffic-related concentration for both intersections predicted in the area of the Project for the modeled conditions (0.4 ppm) plus background (1.9 ppm) is 2.3 ppm for the same locations and scenarios. All concentrations are well below the one-hour NAAQS of 35 ppm and the eight-hour NAAQS of 9 ppm.

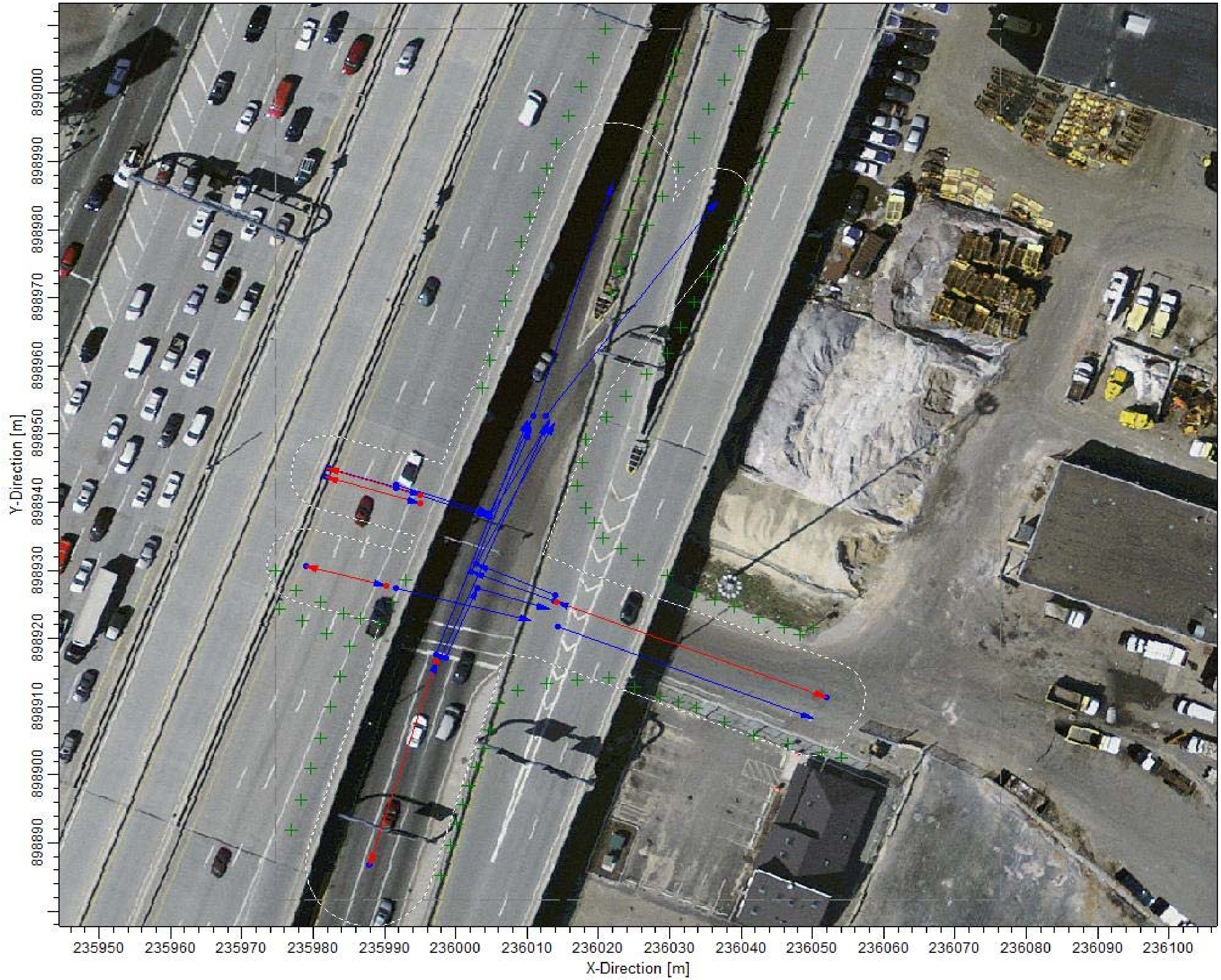
3.5.5 Conclusions

Results of the microscale analysis show that all predicted CO concentrations are well below one-hour and eight-hour NAAQS. The Project adds minimally to the ambient levels of CO in the area. Therefore, it can be concluded that there are no anticipated adverse air quality impacts resulting from increased traffic in the area.

Table 3.5-3 Summary of Microscale Modeling Analysis (Existing 2015)

Intersection	*Peak*	*CAL3QHC Modeled CO Impacts (ppm)*	*Monitored Background Concentration (ppm)*	*Total CO Impacts (ppm)*	*NAAQS (ppm)*
1-Hour					
I-93 NB Frontage Road, Connector/DPW Driveway, I-90 East On-Ramp	AM	0.3	2.2	2.5	35
	PM	0.2	2.2	2.4	35
Albany Street, I-93 SB Frontage Road, MBTA Driveway/Connector	AM	0.2	2.2	2.4	35
	PM	0.4	2.2	2.4	35
8-Hour					
I-93 NB Frontage Road, Connector/DPW Driveway, I-90 East On-Ramp	AM	0.3	1.9	2.2	9
	PM	0.2	1.9	2.1	9
Albany Street, I-93 SB Frontage Road, MBTA Driveway/Connector	AM	0.2	1.9	2.1	9
	PM	0.4	1.9	2.3	9

Notes: CAL3QHC eight-hour impacts were conservatively obtained by multiplying one-hour impacts by a screening factor of 0.9.

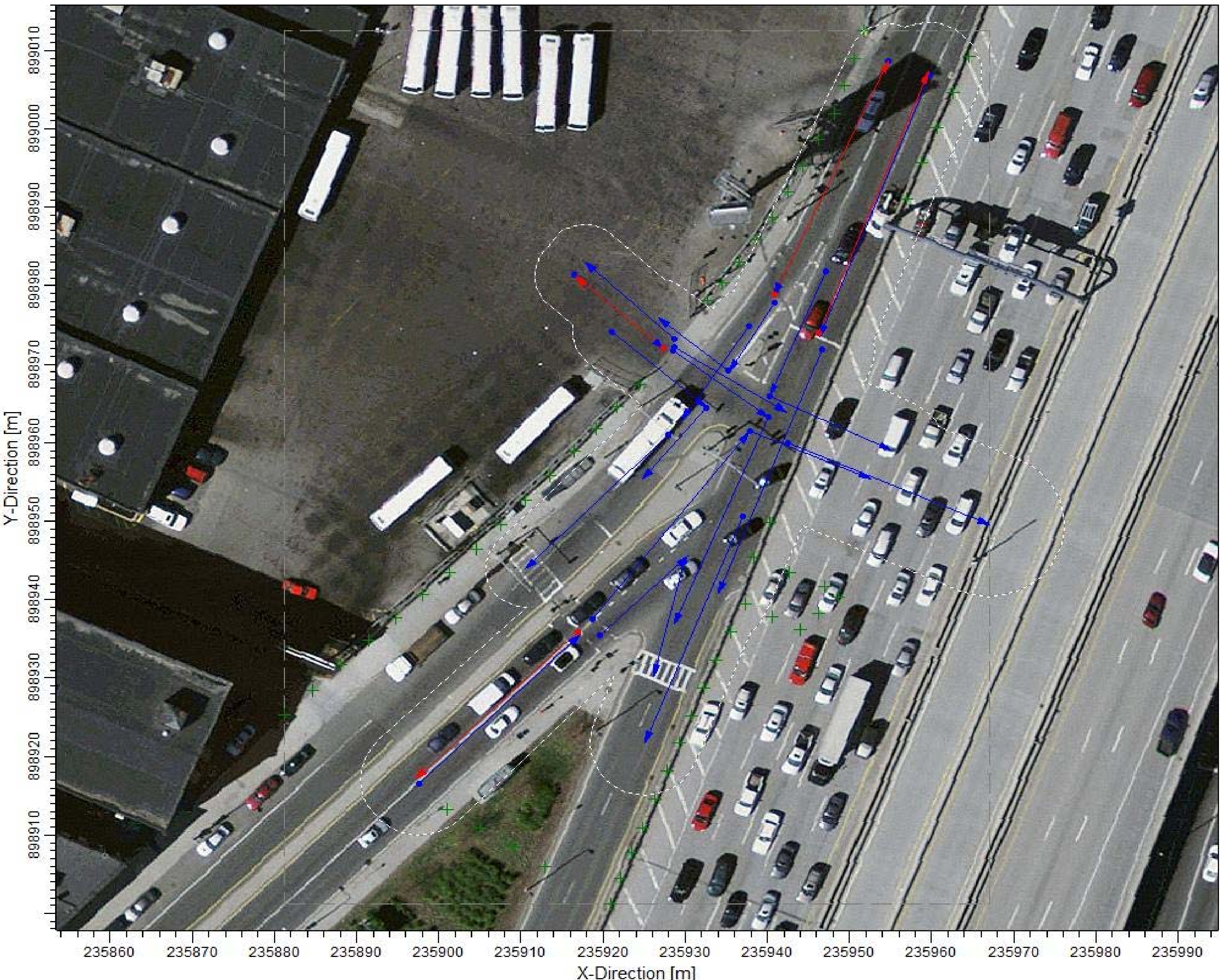


Harrison Albany Block **Boston, Massachusetts**

Epsilon ASSOCIATES INC.

Figure 3.5-1

Link and Receptor Locations for CAL3QHC modeling of Intersection of I-93 NB Frontage Road, Connector/DPW Driveway, and I-90 East On-Ramp



Harrison Albany Block **Boston, Massachusetts**

Epsilon ASSOCIATES INC.

Figure 3.5-2

Link and Receptor Locations for CAL3QHC modeling of Intersection of Albany Street, I-93 SB Frontage Rd., and MBTA Driveway/Connector.

Table 3.5-4 Summary of Microscale Modeling Analysis (No-Build 2023)

Intersection	*Peak*	*CAL3QHC Modeled CO Impacts (ppm)*	*Monitored Background Concentration (ppm)*	*Total CO Impacts (ppm)*	*NAAQS (ppm)*
1-Hour					
I-93 NB Frontage Road, Connector/DPW Driveway, I-90 East On-Ramp	AM	0.2	2.2	2.4	35
	PM	0.2	2.2	2.4	35
Albany Street, I-93 SB Frontage Road, MBTA Driveway/Connector	AM	0.2	2.2	2.4	35
	PM	0.3	2.2	2.5	35
8-Hour					
I-93 NB Frontage Road, Connector/DPW Driveway, I-90 East On-Ramp	AM	0.2	1.9	2.1	9
	PM	0.2	1.9	2.1	9
Albany Street, I-93 SB Frontage Road, MBTA Driveway/Connector	AM	0.2	1.9	2.1	9
	PM	0.3	1.9	2.2	9
Notes: CAL3QHC eight-hour impacts were conservatively obtained by multiplying one-hour impacts by a screening factor of 0.9.					

Table 3.5-5 Summary of Microscale Modeling Analysis (Build 2023)

Intersection	*Peak*	*CAL3QHC Modeled CO Impacts (ppm)*	*Monitored Background Concentration (ppm)*	*Total CO Impacts (ppm)*	*NAAQS (ppm)*
1-Hour					
I-93 NB Frontage Road, Connector/DPW Driveway, I-90 East On-Ramp	AM	0.2	2.2	2.4	35
	PM	0.2	2.2	2.4	35
Albany Street, I-93 SB Frontage Road, MBTA Driveway/Connector	AM	0.2	2.2	2.4	35
	PM	0.3	2.2	2.5	35
8-Hour					
I-93 NB Frontage Road, Connector/DPW Driveway, I-90 East On-Ramp	AM	0.2	1.9	2.1	9
	PM	0.2	1.9	2.1	9
Albany Street, I-93 SB Frontage Road, MBTA Driveway/Connector	AM	0.2	1.9	2.1	9
	PM	0.3	1.9	2.2	9

Notes: CAL3QHC eight-hour impacts were conservatively obtained by multiplying one-hour impacts by a screening factor of 0.9.

3.6 Stormwater/Water Quality

Chapter 7 includes a discussion of stormwater and water quality.

3.7 Flood Hazard Zones/ Wetlands

The most current version of the Federal Emergency Management Agency (FEMA) Floor Insurance Rate Map for this area (25025C0079G) shows that the Project Site is located outside of the 500-year flood zone area. The Project Site remains outside of the 500-year flood zone area in the Preliminary FEMA Flood Hazard Map.

The Project Site does not contain wetlands.

3.8 Geotechnical Impacts

The Geotechnical section includes a description of subsurface soil and groundwater conditions at the Project Site, planned below-grade construction activities, and mitigation measures for protecting adjacent structures and maintaining groundwater levels in the Project's vicinity during foundation and below-grade construction.

3.8.1 Site Conditions

The Project Site, as previously described in Section 1.3.1, is currently occupied by five buildings and a large paved surface parking lot.

The paved portion of the Project Site is relatively level at about El. 18, Boston City Base Datum (BCB). Information on the existing site and abutting buildings is listed In Table 3.8-1 below:

Table 3.8-1 Existing Site Buildings

Building	*Presumed Foundation*	*Other Information*
660 Harrison Avenue (Gambro)	Concrete piles; length not known.	Constructed 1994; 3-stories above grade; no below grade basement levels.
100 East Canton Street	Concrete-filled steel pipe piles supported on bedrock at 130 ft below ground surface.	Constructed 1977; 3-stories above grade; one below grade basement level.
123 East Dedham Street	Wood piles; 28 to 32-ft length; top of piles cut at El. 6 BCB.	Constructed 1924; 1-story above grade; no below grade basement levels.
575 Albany Street	Main Building - Wood piles; length and cut-off not known. Addition - Micropiles supported on bedrock at 120 ft below ground surface.	Constructed 1904 w/addition in 1991; 5-story above grade; no below grade basement levels.
75 East Dedham Street	Wood piles; length and cut-off not known.	Constructed 1913; 3-story above grade; no below grade basement levels.

3.8.2 Subsurface Soil and Bedrock Conditions

Based on available subsurface data, the general Project Site subsurface profile is listed below in Table 3.8-2, in order of increasing depth below ground surface.

Table 3.8-2 Subsurface Soil and Bedrock Conditions

Generalized Subsurface Strata	*Approximate Thickness (Feet)*
Miscellaneous Fill	11 to 25
Organic Deposits	0 to 21
Marine Clay	90 to 105
Bedrock	---

3.8.3 Groundwater

Groundwater level measurements obtained in observation wells installed at the Project Site at different times during the past approximately 40 years have ranged from about El. 7 to El. 10 BCB (depth below ground surface of about 8 to 11 feet). Groundwater level measurements obtained between 2005 and 2015 from nearby off-property observation wells monitored by the Boston Groundwater Trust (BGwT) range from about El. 5 to El. 10 BCB, with the higher water levels measured along the Albany Street side and generally decreasing west to east toward Harrison Avenue.

Groundwater levels in the area could be influenced by leakage into and out of sewers, storm drains and other below grade structures, as well as environmental factors such as precipitation, season, and temperature.

3.8.4 Proposed Conditions

The Project, as previously described in Section 1.3.3, includes demolition of the 75 and 123 East Dedham Street and 100 East Canton Street buildings; structural renovations and improvements to the existing 575 Albany Street building; construction of two residential buildings identified as Building A and Building B, 19 and 11 stories, respectively; and a three level below-grade parking structure beneath the new buildings.

The new buildings and below-grade parking structure are planned to be supported on reinforced concrete footing and mat foundations bearing on the natural, inorganic Marine Deposits. Construction of the foundations and below-grade parking structure will require excavation depths anticipated to be up to 40 feet below ground surface (approximately El. -22 BCB).

The excavation, to be conducted within an engineered lateral earth support system, such as a slurry wall or steel sheetpile wall system, will be designed to provide excavation support, limit ground movements outside the excavation to protect adjacent facilities, and maintain groundwater levels outside the excavation by creating a groundwater "cutoff" between the excavation and the surrounding area. The lateral earth support system will be designed to be installed/ sealed into the clay stratum to isolate the excavation and future below-grade garage from the groundwater table. Due to the depth of excavation, the lateral earth support system will be supported by an internal bracing system. Some pre-excavation will be performed along the building perimeter to remove obstructions prior to installing the excavation support system.

Penetrations through the permanent below-grade walls (such as for utilities) will be permanently sealed.

Temporary dewatering will be required inside the excavation during excavation and foundation construction to remove "free" water from the soils to be excavated as well as precipitation. The essentially watertight excavation support wall will prevent withdrawal of groundwater from outside the excavation. In the unlikely event that leakage occurs through the walls, it will be promptly sealed by grouting of the wall.

A temporary construction dewatering permit will be obtained from governing agencies prior to discharge of dewatering effluent from the Project Site. Testing of the effluent will be conducted prior to and during discharge to confirm compliance with all permit requirements.

3.8.5 Groundwater Conservation Overlay District

The Project Site is located within the Groundwater Conservation Overlay District (GCOD) which is governed by Article 32 of the City of Boston Zoning Code. The Project shall comply with the standards and requirements set forth in Article 32 of the Code. The Proponent shall obtain a written determination from the Boston Water and Sewer Commission (BWSC) as to whether the Project meets the standards and requirements of Article 32. In addition, the Proponent shall demonstrate that the Project meets the requirements of Section 32-6 of the Code by obtaining a stamped certification from the Massachusetts registered engineer that the requirements of Section 32-6 of the Code are met. The Proponent shall provide both a copy of the written determination from BWSC and a copy of the stamped certification from a Massachusetts registered engineer to the BRA and the Boston Groundwater Trust prior to the issuance of a Certificate of Consistency. As such, the Project shall be deemed to be in compliance with Article 32 of the Code and shall not need a conditional use permit from the Board of Appeal for Article 32 purposes.

The Proponent is committed to working with the BGwT and neighborhood to ensure that the Project has no adverse impact on nearby groundwater levels.

3.9 Solid and Hazardous Waste

3.9.1 Hazardous Waste

The Project Site is the location of three former Massachusetts Consistency Plan (MCP) sites, each of which has been closed. Specifically, MassDEP Release Tracking Numbers (RTNs) 3-4734, 3-2197 and 3-29425 pertain to the Project Site. These RTNs previously achieved MCP closure with the filing of Response Action Outcome Statements (RAOs) with MassDEP, as follows:

- RTN 3-4734 is associated with Parcel A (660 Harrison Avenue). A Class A-3 RAO which relies on an activity and use limitation (AUL) was filed for the RTN 3-4734 site in March 1999. The AUL addressed metals in soils. The Proponent intends to terminate the AUL.

- RTN 3-29425 concerns Parcel B (Andrews Street to 575 Albany Street). A Class B-1 RAO was filed for RTN 3-29425 on August 25, 2010, which indicates that a condition of no significant risk (the MCP closure standard) was achieved without the need for remediation, and that contamination was consistent with background. Regulated compounds that were detected at Parcel B included PAHs and metals attributed to urban fill and petroleum due to historic releases from former underground storage tanks (USTs).

- RTN 3-2197 applies to the former UST in the loading dock at the rear of 575 Albany Street. A Class A-2 RAO was filed in 1996 for RTN 3-2197, indicating that MCP closure had been achieved without the need for an AUL.

Perkin Elmer previously held Massachusetts Department of Public Health (MADPH) Radiological Control Program License No. 00-3200 for the buildings at 100 East Canton Street, 123 East Dedham Street and 575 Albany Street. License termination surveys were performed by Philotechnics for Perkin Elmer that resulted in the release of this MADPH license in 2009, indicating that the site had met the applicable MADPH closure standards.

GEI Consultants, Inc. completed an ASTM Phase I Environmental Site Assessment (ESA) for the Project Site in 2014. The Phase I ESA also included a 2010 due diligence survey by Radiation Safety and Control Services (RSCS) to review the MADPH termination of radiological License No. 00-3200. Based on the evaluation of current Property conditions and the review of available records for the Project Site, no recognized environmental conditions were identified, defined as evidence of past, current or future potential releases of oil and hazardous material.

Characterization of the soil and groundwater at the Project Site will be conducted by the Proponent and laboratory testing of soil and groundwater to be generated as a result of construction activity will be performed at the appropriate stage of the design process to further evaluate Project Site environmental conditions. Management of soil and groundwater will be performed in accordance with applicable local, state, and federal laws and regulations.

A hazardous building materials assessment was conducted in November and December of 2014 by Smith and Wessel Associates, Inc., which identified asbestos-containing building materials and lead-based paint were in the 100 East Canton Street and 123 East Dedham Street buildings. MassDEP requires notification of planned demolition or renovation of buildings containing asbestos. Abatement of asbestos containing materials must occur prior to building demolition activities. Notification of abatement work will be made to MassDEP, as specified in 43 CMR 6.12.

3.9.2 Operation Solid and Hazardous Waste Generation

The Project will generate solid waste typical of residential, office, and retail uses. Solid waste is expected to include wastepaper, cardboard, glass bottles and food. Recyclable materials will be recycled through a program implemented by building management. The Project will generate approximately 780 tons of solid waste per year.

With the exception of household hazardous wastes typical of residential and retail/commercial developments (e.g., cleaning fluids and paint), the Project will not involve the generation, use, transportation, storage, release, or disposal of potentially hazardous materials. Typical waste generated by the uses will be handled in compliance with all local, state and federal regulations.

The building will include areas for trash collection on each floor, and a trash room on the ground floor of each building.

3.9.3 Recycling

The building will include areas for recycling collection on each floor, and a trash room in close proximity to the loading dock. Recycling facilities will be provided on-site for paper, glass, plastic and metal.

3.10 Noise Impacts

3.10.1 Introduction

A sound level assessment conducted by Epsilon Associates, Inc. included a baseline sound monitoring program to measure existing sound levels in the vicinity of the Project site, computer modeling to predict operational sound levels from mechanical equipment associated with the Project, and a comparison of future Project sound levels to applicable City of Boston Zoning District Noise Standards.

This analysis, which is consistent with BRA requirements for noise studies, indicates that predicted noise levels from the Project with appropriate noise controls will comply with applicable regulations.

3.10.2 Noise Terminology

There are several ways in which sound (noise) levels are measured and quantified, all of which use the logarithmic decibel (dB) scale. The following section defines the noise terminology used in this analysis.

The decibel scale is logarithmic to accommodate the wide range of sound intensities observed in the environment. A property of the decibel scale is that the sound pressure levels of two distinct sounds are not purely additive. For example, if a sound of 50 dB is added to another sound of 50 dB, the total is only a three-decibel increase (53 dB), not a doubling (100 dB). Thus, every three-decibel change in sound level represents a doubling or halving of sound energy. Related to this is the fact that a change in sound level of less than three dB is generally imperceptible to the human ear.

Another property of the decibel scale is that if one source of noise is 10 dB (or more) louder than another source, then the total combined sound level is simply that of the louder source (i.e., the quieter source contributes negligibly to the overall sound level). For example, a source of sound at 60 dB plus another source at 47 dB is 60 dB.

The sound level meter used to measure noise is a standardized instrument.[10] It contains "weighting networks" to adjust the frequency response of the instrument to approximate that of the human ear under various conditions. One network is the A-weighting network (there are also B- and C-weighting networks), which most closely approximates how the human ear responds to sound as a function of frequency, and is the accepted scale used for community sound level measurements. Sounds are frequently reported as detected with the A-weighting network of the sound level meter in dBA. A-weighted sound levels emphasize the middle frequencies (i.e., middle pitched—around 1,000 Hertz sounds), and de-emphasize lower and higher frequencies.

Because the sounds in our environment vary with time, they cannot simply be represented with a single number. In fact, there are several methods used for quantifying variable sounds which are commonly reported in community noise assessments, as defined below.

- L_{eq}, the equivalent level, in dBA, is the level of a hypothetical steady sound that would have the same energy (i.e., the same time-averaged mean square sound pressure) as the actual fluctuating sound observed.
- L_{90} is the sound level, in dBA, exceeded 90 percent of the time in a given measurement period. The L_{90}, or residual sound level, is close to the lowest sound level observed when there are no obvious nearby intermittent noise sources.
- L_{50} is the median sound level, in dBA, exceeded 50 percent of the time in a given measurement period.
- L_{10} is the sound level, in dBA, exceeded only 10 percent of the time in a given measurement period. The L_{10}, or intrusive sound level, is close to the maximum sound level observed due to occasional louder intermittent noises, like those from passing motor vehicles.

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10 *American National Standard Specification for Sound Level Meters*, ANSI S1.4-1983, published by the Standards Secretariat of the Acoustical Society of America, Melville, NY.

- L_{max} is the maximum instantaneous sound level observed in a given measurement period.

By employing various noise metrics, it is possible to separate prevailing, steady sounds (the L_{90}) from occasional louder sounds (L_{10}) in the noise environment. This analysis treats all noise sources from the Project as though the emissions will be steady and continuous, described most accurately by the L_{90} exceedance level.

In the design of noise controls, which do not function quite like the human ear, it is important to understand the frequency spectrum of the noise source of interest. The spectra of noises are usually stated in terms of octave-band sound pressure levels, in dB, with the octave frequency bands being those established by standard (American National Standards Institute (ANSI) S1.11, 1986). To facilitate the noise-control design process, the estimates of noise levels in this analysis are also presented in terms of octave-band sound pressure levels. Octave-band measurements and modeling are used in assessing compliance with the City of Boston noise regulations.

3.10.3 Noise Regulations and Criteria

The City of Boston has both a noise ordinance and noise regulations. Chapter 16 §26 of the Boston Municipal Code sets the general standard for noise that is unreasonable or excessive: louder than 50 decibels between the hours of 11:00 p.m. and 7:00 a.m., or louder than 70 decibels at all other hours. The Boston Air Pollution Control Commission (APCC) has adopted regulations based on the city's ordinance - "Regulations for the Control of Noise in the City of Boston", which distinguish among residential, business, and industrial districts in the city. In particular, APCC Regulation 2 is applicable to the sounds from the proposed Project and is considered in this noise study.

Table 3.10-1 below presents the "Zoning District Noise Standards" contained in Regulation 2.5 of the APCC "Regulations for the Control of Noise in the City of Boston," adopted December 17, 1976. These maximum allowable sound pressure levels apply at the property line of the receiving property. The "Residential Zoning District" limits apply to any lot located within a residential zoning district or to any residential use located in another zone except an Industrial Zoning District, according to Regulation 2.2. Similarly, per Regulation 2.3, business limits apply to any lot located within a business zoning district not in residential or institutional use.

Table 3.10-1 City Noise Standards, Maximum Allowable Sound Pressure Levels

Octave-band Center	*Residential Zoning District*		*Residential Industrial Zoning District*		*Business Zoning District*	*Industrial Zoning District*
Frequency (Hz)	Daytime (dB)	All Other Times (dB)	Daytime (dB)	All Other Times (dB)	Anytime (dB)	Anytime (dB)
32	76	68	79	72	79	83
63	75	67	78	71	78	82
125	69	61	73	65	73	77
250	62	52	68	57	68	73
500	56	46	62	51	62	67
1000	50	40	56	45	56	61
2000	45	33	51	39	51	57
4000	40	28	47	34	47	53
8000	38	26	44	32	44	50
A-Weighted (dBA)	**60**	**50**	**65**	**55**	**65**	**70**
Notes:	1. Noise standards from Regulation 2.5 “Zoning District Noise Standards”, City of Boston Air Pollution Control Commission, "Regulations for the Control of Noise in the City of Boston", adopted December 17, 1976. 2. All standards apply at the property line of the receiving property. 3. dB and dBA based on a reference pressure of 20 micropascals. 4. Daytime refers to the period between 7:00 a.m. and 6:00 p.m. daily, except Sunday.					

3.10.4 Existing Conditions

A background noise level survey was conducted to characterize the existing “baseline” acoustical environment in the vicinity of the Project, located within the Harrison Albany Corridor of Boston. Existing noise sources in the vicinity of the Project site currently include: vehicle and truck traffic along local roadways; rooftop mechanical equipment; train noise; pedestrian foot traffic; birds; and aircraft flyovers.

3.10.4.1 Noise Monitoring Methodology

Sound level measurements were made on Thursday, February 18, 2016 during the daytime (10:00 a.m. to 12:30 p.m.) and on Friday, February 19, 2016 during nighttime hours (2:00 a.m. to 3:30 a.m.). Since noise impacts from the Project on the community will be highest when background noise levels are the lowest, the study was designed to measure community noise levels under conditions typical of a “quiet period” for the area. Daytime measurements were scheduled to avoid peak traffic conditions. All measurements were 20 minutes in duration.

Sound levels were measured at publicly accessible locations at a height of five feet (1.5 meters) above ground level, under low wind conditions, and with dry roadway surfaces. Wind speed measurements were made with a Davis Instruments TurboMeter electronic wind speed indicator, and temperature and humidity measurements were made using a General Tools digital psychrometer. Unofficial observations about meteorology or land use in the community were made solely to characterize the existing sound levels in the area and to estimate the noise sensitivity at properties near the Project site.

3.10.4.2 Noise Monitoring Locations

Four representative noise monitoring locations were selected based upon a review of zoning and land use in the Project area. These measurement locations are depicted on Figure 3.10-1 and described below.

- **Location ST-1** is located in at the rear of the Boston Police Department along Plympton Street, representative of the closest residential and educational receptors to the east and west of the Project along Plympton Street and East Canton Street.
- **Location ST-2** is located at the intersection of Harrison Avenue and Harrison Archways, representative of the closest residential and institutional receptors to the north of the Project along Harrison Avenue.
- **Location ST-3** is located in front of #91 East Brookline Street, representative of the closest residential and business receptors west, south, and east of the Project along East Brookline Street, East Canton Street, and East Dedham Street.
- **Location ST-4** is located across from #601 Albany Street at the intersection of Albany Street and East Canton Street, representative of the closest educational and industrial receptors south of the Project along Albany Street.

3.10.4.3 Noise Monitoring Equipment

A Larson Davis Model 831 sound level meter equipped with a PRM831 Type I Preamplifier, a 377B20 half-inch microphone, and manufacturer-provided windscreen was used to collect background sound pressure level data. This instrumentation meets the "Type 1 - Precision" requirements set forth in ANSI S1.4 for acoustical measuring devices. The measurement equipment was calibrated in the field before and after the surveys with a Larson Davis CAL200 acoustical calibrator which meets the standards of IEC 942 Class 1L and ANSI S1.40-1984. Statistical descriptors (Leq, L90, etc.) were calculated for each sampling period, with octave-band sound levels corresponding to the same data set processed for the broadband levels.

3.10.4.4 Measured Background Noise Levels

Baseline noise monitoring results are presented in Table 3.10-2, and summarized below:

- The daytime residual background (L90 dBA) measurements ranged from 52 to 64 dBA;
- The nighttime residual background (L90 dBA) measurements ranged from 49 to 51 dBA;
- The daytime equivalent level (Leq dBA) measurements ranged from 61 to 78 dBA;
- The nighttime equivalent level (Leq dBA) measurements ranged from 53 to 59 dBA;

3.10.5 Future Conditions

3.10.5.1 Overview of Potential Project Noise Sources

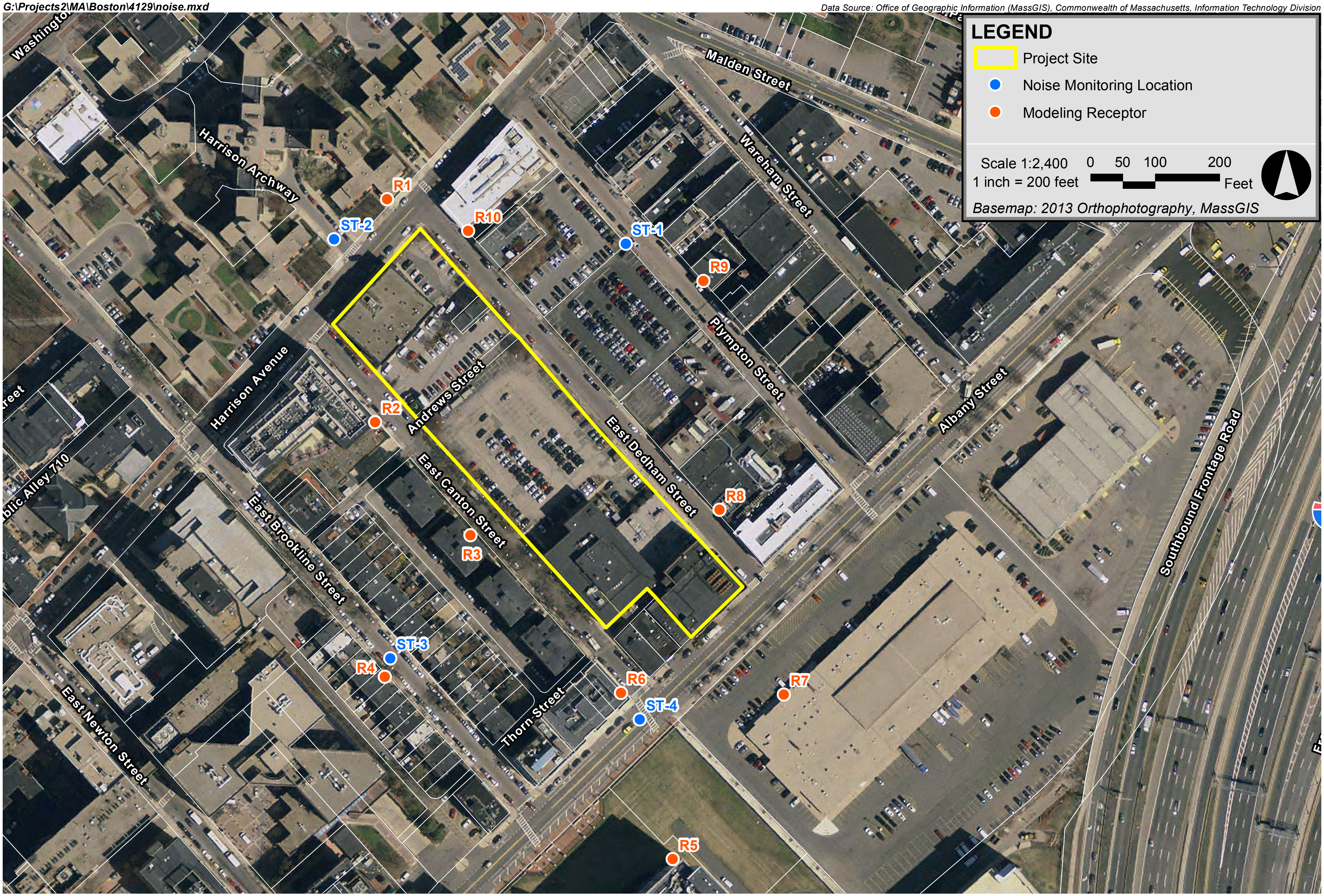
The primary sources of continuous sound exterior to the Project will consist of rooftop cooling towers, garage exhaust fans, kitchen exhaust fans, and emergency power equipment.

The roof of the proposed Building A is anticipated to contain one 500-ton dual cell cooling tower, one 600 ekW standby generator, two 44,000 CFM garage exhaust fans, and one 4,000 CFM kitchen exhaust fan outside of the proposed mechanical penthouse. Similarly, the roof of the proposed Building B is anticipated to contain one 1,000-ton dual cell cooling tower, one 500 ekW standby generator, two 44,000 CFM garage exhaust fans, and one 4,000 CFM kitchen exhaust fan outside of the proposed mechanical penthouse. Equipment outside of the mechanical penthouse on the roof of the existing 575 Albany Street building is expected to be removed and replaced with two 4,000 CFM kitchen exhaust fans and one 600 ekW standby generator.

Other secondary noise sources including air handling units, energy recovery units, smaller exhaust fans, boilers, and pumps will either be fully enclosed within the proposed or existing rooftop penthouses, located inside the building interior, or are assumed to have sound levels 10 dBA lower than the primary sources of noise and were not considered in this analysis to contribute significantly to the overall sound level. Stair pressurization fans were assumed to be emergency-use only and were not included. For this analysis, the mechanical penthouses located on the roofs of Building A, Building B, and 575 Albany Street were assumed to be solid, fully-enclosed structures. A five-foot high parapet wall was included in the model along the perimeter of each building's roof. Although the parapet may not be included in the final design, measures will be included to ensure that the Project complies with applicable noise regulations.

G:\Projects2\MA\Boston\4129\noise.mxd

Data Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division



Harrison Albany Block **Boston, Massachusetts**

Epsilon ASSOCIATES INC.

Figure 3.10-1

Noise Monitoring & Modeling Locations

Table 3.10-2 Summary of Measured Background Noise Levels – February 18, 2016 (Daytime) & February 19, 2016 (Nighttime)

Location	*Period*	*Start Time*	L_{eq}	L_{max}	L_{10}	L_{50}	L_{90}	*L_{90} Sound Pressure Levels by Octave-Band*								
								31.5 Hz	*63 Hz*	*125 Hz*	*250 Hz*	*500 Hz*	*1k Hz*	*2k Hz*	*4k Hz*	*8k Hz*
			dBA	*dBA*	*dBA*	*dBA*	*dBA*	*dB*	*dB*	*dB*	*dB*	*dB*	*dB*	*dB*	*dB*	*dB*
ST-1	Day	11:45 AM	61	75	65	54	52	64	61	56	53	50	46	39	32	23
ST-2	Day	11:14 AM	66	81	70	62	54	63	64	58	54	51	49	42	33	25
ST-3	Day	10:47 AM	62	78	66	56	54	61	59	57	56	52	48	40	31	23
ST-4	Day	10:22 AM	78	104	74	68	64	68	68	65	62	60	59	55	46	37
ST-1	Night	2:48 AM	53	56	55	53	51	60	62	60	54	49	44	37	30	22
ST-2	Night	2:24 AM	59	77	61	51	49	58	58	55	51	47	43	38	30	30
ST-3	Night	2:00 AM	54	73	53	52	51	58	56	58	54	49	43	36	28	20

Note: Location ST-4 representative of daytime-sensitive receptors only. No nighttime measurements made at this location.

Weather Conditions:

	Date	Temp	RH	Sky	Wind
Daytime	Thursday, February 18, 2016	41 °F	20%	Clear/sunny	SE @ 4-6 mph
Nighttime	Friday, February 19, 2016	23 °F	36%	Clear	SW @ 0-2 mph

Monitoring Equipment Used:

	Manufacturer	Model	S/N
Sound Level Meter	Larson Davis	LD831	3752
Microphone	Larson Davis	377B20	142894
Preamp	Larson Davis	PRM831	029563
Calibrator	Larson Davis	Cal200	7147

Mitigation will be applied to sources as needed to ensure compliance with the applicable noise regulations. The noise control features assumed in this analysis consist of sound attenuating enclosures for the three rooftop emergency generators.

A tabular summary of the modeled mechanical equipment proposed for the Project is presented below in Table 3.10-3. Sound power level data for each unit, as provided by the manufacturer or calculated from provided sound pressure level data, is presented in Table 3.10-4. Sound power levels of those units for which data was not provided were assumed based on data for similar or representative equipment. The approximate locations of the mechanical equipment were provided by the Project team through preliminary roof plans.

3.10.5.2 Noise Modeling Methodology

Noise impacts from mechanical equipment associated with the Project were predicted using Cadna/A noise calculation software (DataKustik Corporation, 2015). This software, which uses the ISO 9613-2 international standard for sound propagation (Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation), offers a refined set of computations accounting for local topography, ground attenuation, drop-off with distance, barrier shielding, diffraction around building edges, reflection off building facades, and atmospheric absorption of sound from multiple noise sources.

An initial analysis considered all of the mechanical equipment without the emergency generator running to simulate typical nighttime operating conditions at nearby receptors. A second analysis combined the mechanical equipment and the emergency generator to reflect worst-case daytime conditions during brief, routine, testing of the generator when ambient levels are higher.

3.10.5.3 Noise Modeling Results

Ten modeling locations with a height of 1.5 meters above-grade were included in the analysis representing the nearest noise-sensitive residential, business, industrial, and institutional receptors. Figure 3.10-1 shows the locations of each modeled receptor as well as the monitoring locations selected for background measurements.

The predicted sound levels, presented in Table 3.10-5, from all modeled mechanical equipment operating simultaneously (except the emergency generators) at rated load are expected to range from 31 to 44 dBA at nearby receptors (34 to 44 at the closest residences). Table 3.10-6 presents predicted sound levels from all modeled mechanical equipment including the emergency generator during routine daytime testing periods which are expected to range from 44 to 49 dBA at nearby receptors including the closest residences.

Table 3.10-3 Modeled Noise Sources

Noise Source	*Quantity*	*Equipment Location*	*Size/Capacity per Unit*
Cooling Tower	2	Building A Roof (x1), Building B Roof (x1)	500/1,000 Ton
Garage Exhaust Fan	4	Building A Roof (x2), Building B Roof (x2)	44,000 CFM
Kitchen Exhaust Fan	4	Building A Roof (x1), Building B Roof (x1), 575 Albany Roof (x2)	4,000 CFM
Emergency Generator	3	Building A Roof (x1), Building B Roof (x1), 575 Albany Roof (x1)	500/600 kWe

Table 3.10-4 Modeled Sound Power Levels per Unit

Noise Source	*Broadband*	*32 Hz*	*63 Hz*	*125 Hz*	*250 Hz*	*500 Hz*	*1000 Hz*	*2000 Hz*	*4000 Hz*	*8000 Hz*
	dBA	*dB*	*dB*	*dB*	*dB*	*dB*	*dB*	*dB*	*dB*	*dB*
Cooling Tower[1]	92	99[7]	99	93	92	88	87	84	79	72
Cooling Tower[2]	89	94[7]	94	92	93	86	82	80	75	67
Garage Exhaust Fan[3]	96	104[7]	104	106	95	93	89	84	78	72
Kitchen Exhaust Fan[4]	82	86[7]	86	79	77	77	78	74	69	62
Emergency Generator[5]	104	120[7]	120	110	107	103	96	93	89	91
Emergency Generator[6]	103	117[7]	117	107	106	99	96	94	89	94

Notes:

1. Building A; Marley NC8409PLN2 2-cell 1000 ton Cooling Tower w/ Quiet Fan, or similar; Total PWL
2. Building B; Marley NC8403MLN2 2-cell 500 ton Cooling Tower w/ Quiet Fan, or similar; Total PWL
3. Buildings A & B; Greenheck 40-BIDW-21-3-I-300 Backward Inclined Double Width Fan, 43,750 CFM, or similar; 'Outlet' PWL
4. Buildings A & B & 575 Albany; Greenheck CUBE-300XP-30 Belt Drive Upblast Centrifugal Roof Exhaust Fan, 4,000 CFM, or similar; 'Inlet' PWL
5. Building A; Caterpillar C18 600ekW Diesel Standby Generator, or similar; PWL for total package based on 'SA Canopy' SPL @ 49.2ft,
6. Building B; Caterpillar C15 500ekW Diesel Standby Generator, or similar; PWL for total package based on 'SA Canopy' SPL @ 49.2ft
7. No data available in 32 Hz band. Assumed equal to 63 Hz band.

Table 3.10-5 Modeled Project-Only Sound Levels – Typical Nighttime Operation (No Emergency Generators)

Modeling Location ID	*Zoning / Land Use*	*Evaluation Period*	*Broadband (dBA)*	*Sound Pressure Level (dB) per Octave-band Center Frequency*								
				32 Hz	*63 Hz*	*125 Hz*	*250 Hz*	*500 Hz*	*1k Hz*	*2k Hz*	*4k Hz*	*8k Hz*
R1	Residential	Night	44	56	54	56	46	40	33	27	17	0
R2	Educational	Night	42	57	55	54	42	38	33	27	19	5
R3	Residential	Night	44	58	58	57	44	40	35	29	21	6
R4	Residential	Night	39	53	52	51	38	34	30	22	11	0
R5	Educational	Night[1]	33	46	44	43	34	31	27	20	8	0
R6	Residential	Night	34	49	45	46	34	30	27	21	12	0
R7	Industrial	Night[1]	31	48	45	41	31	28	26	19	10	0
R8	Business	Night	41	56	54	54	41	37	32	26	18	5
R9	Residential	Night	43	57	56	56	44	39	33	26	16	0
R10	Institutional	Night	44	59	57	56	44	39	35	28	19	4
City of Boston Limits	**Residential**	**Night**	**50**	**68**	**67**	**61**	**52**	**46**	**40**	**33**	**28**	**26**
	Business	**Night**	**65**	**79**	**78**	**73**	**68**	**62**	**56**	**51**	**47**	**44**
	Industrial	**Night**	**70**	**83**	**82**	**77**	**73**	**67**	**61**	**57**	**53**	**50**

1. Daytime use only

Table 3.10-6 Modeled Project-Only Sound Levels – Typical Daytime Operation + Routine Emergency Generator Testing

Modeling Location ID	*Zoning / Land Use*	*Evaluation Period*	*Broadband (dBA)*	*Sound Pressure Level (dB) per Octave-band Center Frequency*								
				32 Hz	*63 Hz*	*125 Hz*	*250 Hz*	*500 Hz*	*1k Hz*	*2k Hz*	*4k Hz*	*8k Hz*
R1	Residential	Day	49	68	66	59	53	45	38	33	24	18
R2	Educational[1]	Day	46	67	65	56	48	42	37	33	26	23
R3	Residential	Day	48	67	67	59	49	44	38	33	26	18
R4	Residential	Day	44	65	63	54	45	40	33	27	18	5
R5	Educational[1]	Day	45	64	64	52	49	42	35	30	21	10
R6	Residential	Day	49	71	69	57	51	45	38	34	28	22
R7	Industrial	Day	46	67	64	55	49	43	37	33	26	21
R8	Business	Day	49	72	69	58	50	44	37	33	26	23
R9	Residential	Day	48	69	67	58	51	44	38	32	22	13
R10	Institutional[1]	Day	49	70	68	59	51	44	39	34	26	22
City of Boston Limits	**Residential**	**Day**	**60**	**76**	**75**	**69**	**62**	**56**	**50**	**45**	**40**	**38**
	Business	**Day**	**65**	**79**	**78**	**73**	**68**	**62**	**56**	**51**	**47**	**44**
	Industrial	**Day**	**70**	**83**	**82**	**77**	**73**	**67**	**61**	**57**	**53**	**50**

1. Compared to daytime 'residential' limits

Results of this evaluation demonstrate that sound levels from Project operation are anticipated to fully comply with the City of Boston nighttime broadband and octave-band noise limits described in Table 3.10-1, as shown in Table 3.10-5. Additionally, Project-only sound levels are predicted to remain well below the existing background sound levels in the area shown in Table 3.10-2, which already exceed many of the City of Boston limits without any contribution from the Project. As such, this analysis indicates that the proposed Project can operate without significant impact on the existing acoustical environment.

3.10.6 Conclusions

Baseline noise levels were measured in the vicinity of the Project site and were compared to predicted noise levels based on information provided by the manufacturers of representative mechanical equipment or estimated from the equipment's capacity. With appropriate mitigation (as described in Section 3.10.5.1), the Project is not expected to introduce significant outdoor mechanical equipment noise into the surrounding community.

Results of the analysis indicate that typical nighttime noise levels from the Project as well as noise levels from routine daytime testing of the emergency generator are expected to remain below the City of Boston Noise Zoning requirements. It should be noted that the existing ambient background levels at many locations immediately surrounding the Project already exceed the City of Boston limits without any contribution from the Project. The results presented in Section 3.10.5.3 indicate that the Project is not anticipated to significantly impact the existing acoustical environment.

At this time, the mechanical equipment and noise controls are conceptual in nature and, during the final design phase of the Project, will be specified to meet the applicable City of Boston noise limits. Additional mitigation may include the selection of quieter units, screening walls, mufflers, or equipment enclosures as needed.

3.11 Construction Impacts

3.11.1 Introduction

A Construction Management Plan (CMP) in compliance with the City's Construction Management Program will be submitted to the Boston Transportation Department (BTD) once final plans are developed and the construction schedule is fixed. The construction contractor will be required to comply with the details and conditions of the approved CMP.

Proper pre-planning with the City and neighborhood will be essential to the successful construction of the Project. Construction methodologies, which ensure public safety and protect nearby residences and businesses, will be employed. Techniques such as barricades, walkways and signage will be used. The CMP will include routing plans for trucking and deliveries, plans for the protection of existing utilities, and control of noise and dust.

During the construction phase of the Project, the Proponent will provide the name, telephone number and address of a contact person to communicate with on issues related to the construction.

The Proponent intends to follow the guidelines of the City of Boston and the MassDEP, which direct the evaluation and mitigation of construction impacts.

3.11.2 Construction Methodology/Public Safety

Construction methodologies that ensure public safety and protect nearby tenants will be employed. Techniques such as barricades and signage will be used. Construction management and scheduling will minimize impacts on the surrounding environment and will include plans for construction worker commuting and parking, routing plans for trucking and deliveries, and the control of noise and dust.

As the design of the Project progresses, the Proponent will meet with BTD to discuss the specific location of barricades, the need for lane closures, pedestrian walkways, and truck queuing areas. Secure fencing, signage, and covered walkways may be employed to ensure the safety and efficiency of all pedestrian and vehicular traffic flows. In addition, sidewalk areas and walkways near construction activities will be well marked and lighted to protect pedestrians and ensure their safety. Public safety for pedestrians on abutting sidewalks will also include covered pedestrian walkways when appropriate. If required by BTD and the Boston Police Department, police details will be provided to facilitate traffic flow. These measures will be incorporated into the CMP which will be submitted to BTD for approval prior to the commencement of construction work.

3.11.3 Construction Schedule

It is anticipated that construction activities will start in the first quarter of 2017, with completion by the third quarter of 2022. The Project is proposed to be built in two phases. Phase 1 includes the construction of the parking garage, Building A and the rehabilitation of 575 Albany Street, and will occur over 26 months. Phase 2 will include the construction of Building B and is anticipated to commence upon successful lease-up of Building A and will occur over 18 months.

Typical construction hours will be from 7:00 a.m. to 6:00 p.m., Monday through Friday, with most shifts ordinarily ending at 3:30 p.m. No substantial sound-generating activity will occur before 7:00 a.m. If longer hours, additional shifts, or Saturday work is required, the construction manager will place a work permit request to the Boston Air Pollution Control Commission and BTD in advance. Notification should occur during normal business hours, Monday through Friday. It is noted that some activities such as finishing activities could run beyond 6:00 p.m. to ensure the structural integrity of the finished product; certain components must be completed in a single pour, and placement of concrete cannot be interrupted.

3.11.4 Construction Staging/Access

Access to the Project Site and construction staging areas will be provided in the CMP.

Although specific construction and staging details have not been finalized, the Proponent and its construction management consultant will work to ensure that staging areas will be located to minimize impacts to pedestrian and vehicular flow. Secure fencing and barricades will be used to isolate construction areas from pedestrian traffic adjacent to the Project Site. Construction procedures will be designed to meet all Occupational Safety and Health Administration (OSHA) safety standards for specific site construction activities.

3.11.5 Construction Mitigation

The Proponent will follow City and MassDEP guidelines which will direct the evaluation and mitigation of construction impacts. As part of this process, the Proponent and construction team will evaluate the Commonwealth's Clean Air Construction Initiative.

A CMP will be submitted to BTD for review and approval prior to issuance of a Building Permit. The CMP will include detailed information on specific construction mitigation measures and construction methodologies to minimize impacts to abutters and the local community. The CMP will also define truck routes which will help in minimizing the impact of trucks on City and neighborhood streets.

"Don't Dump - Drains to Boston Harbor" plaques will be installed at storm drains that are replaced or installed as part of the Project.

3.11.6 Construction Employment and Worker Transportation

The number of workers required during the construction period will vary. It is anticipated that approximately 1,250 construction jobs will be created over the length of construction. The Proponent will make reasonable good-faith efforts to have at least 50% of the total employee work hours be for Boston residents, at least 25% of total employee work hours be for minorities and at least 10% of the total employee work hours be for women. The Proponent will enter into jobs agreements with the City of Boston.

To reduce vehicle trips to and from the construction site, minimal construction worker parking will be available at the Project Site and all workers will be strongly encouraged to use public transportation and ridesharing options. The general contractors will work aggressively to ensure that construction workers are well informed of the public transportation options serving the area. Space on-site will be made available for workers' supplies and tools so they do not have to be brought to the Project Site each day.

3.11.7 Construction Truck Routes and Deliveries

Truck traffic will vary throughout the construction period, depending on the activity. The construction team will manage deliveries to the Project Site during morning and afternoon peak hours in a manner that minimizes disruption to traffic flow on adjacent streets. Construction truck routes to and from the Project Site for contractor personnel, supplies, materials, and removal of excavations required for the development will be coordinated with BTD. Traffic logistics and routing will be planned to minimize community impacts. Truck access during construction will be determined by the BTD as part of the CMP. These routes will be mandated as a part of all subcontractors' contracts for the development. The construction team will provide subcontractors and vendors with Construction Vehicle & Delivery Truck Route Brochures in advance of construction activity.

"No Idling" signs will be included at the loading, delivery, pick-up and drop-off areas.

3.11.8 Construction Air Quality

Short-term air quality impacts from fugitive dust may be expected during demolition, excavation and the early phases of construction. Plans for controlling fugitive dust during demolition, excavation and construction include mechanical street sweeping, wetting portions of the Project Site during periods of high wind, and careful removal of debris by covered trucks. The construction contract will provide for a number of strictly enforced measures to be used by contractors to reduce potential emissions and minimize impacts, pursuant to this Article 80 approval. These measures are expected to include:

- Using wetting agents on areas of exposed soil on a scheduled basis;
- Using covered trucks;
- Minimizing spoils on the construction site;
- Monitoring of actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized;
- Minimizing storage of debris on the construction site; and
- Periodic street and sidewalk cleaning with water to minimize dust accumulations.

3.11.9 Construction Noise

The Proponent is committed to mitigating noise impacts from the construction of the Project. Increased community sound levels, however, are an inherent consequence of construction activities. Construction work will comply with the requirements of the City of Boston Noise Ordinance. Every reasonable effort will be made to minimize the noise impact of construction activities.

Mitigation measures are expected to include:

- Instituting a proactive program to ensure compliance with the City of Boston noise limitation policy;
- Using appropriate mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;

- Muffling enclosures on continuously running equipment, such as air compressors and welding generators;

- Replacing specific construction operations and techniques by less noisy ones where feasible;

- Selecting the quietest of alternative items of equipment where feasible;

- Scheduling equipment operations to keep average noise levels low, to synchronize the noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels;

- Turning off idling equipment; and

- Locating noisy equipment at locations that protect sensitive locations by shielding or distance.

3.11.10 Construction Waste

The Proponent will take an active role with regard to the reprocessing and recycling of construction waste. The disposal contract will include specific requirements that will ensure that construction procedures allow for the necessary segregation, reprocessing, reuse and recycling of materials when possible. For those materials that cannot be recycled, solid waste will be transported in covered trucks to an approved solid waste facility, per MassDEP Regulations for Solid Waste Facilities, 310 CMR 16.00. This requirement will be specified in the disposal contract. Construction will be conducted so that materials that may be recycled are segregated from those materials not recyclable to enable disposal at an approved solid waste facility.

3.11.11 Protection of Utilities

Existing public and private infrastructure located within the public right-of-way will be protected during construction. The installation of proposed utilities within the public way will be in accordance with the MWRA, BWSC, Boston Public Works, Dig Safe, and the governing utility company requirements. All necessary permits will be obtained before the commencement of the specific utility installation. Specific methods for constructing proposed utilities where they are near to, or connect with, existing water, sewer and drain facilities will be reviewed by BWSC as part of its Site Plan Review process.

3.11.12 Rodent Control

A rodent extermination certificate will be filed with each building permit application for the Project. Rodent inspection monitoring and treatment will be carried out before, during, and at the completion of all construction work for each phase of the Project, in compliance with the City's requirements.

3.12 Wildlife Habitat

The Project Site is in an established urban neighborhood. There are no wildlife habitats in or adjacent to the Project Site.

Chapter 4.0

Sustainable Design and Climate Change

4.0 SUSTAINABLE DESIGN AND CLIMATE CHANGE PREPAREDNESS

4.1 Introduction

The Project will be designed to meet the requirements of Article 37 of the Code, and is targeting the LEED certification at the Silver level, and assessing the feasibility of achieving the Gold level. The design also considers the future impacts of climate change on the Project and the Project Site by increasing pervious surfaces, raising the first floor, and creating an energy efficient building, while also studying the potential for renewable energy production on-site.

4.2 Sustainable Design

To comply with Article 37 of the Code, the Proponent intends to measure the results of their sustainability initiatives using the framework of the LEED rating system. The two new buildings and 575 Albany Street will be registered under the LEED NC v2009 (New Construction) pursuing a LEED Campus approach targeting LEED certification at the Silver level, and assessing the feasibility of achieving the Gold level.

A commitment to sustainability and environmental best practices is a main goal for the Proponent. The Project team will hold an early design charrette to align sustainability goals and roadmap credits with task responsibilities for the life-cycle of the LEED Campus project. This meeting will clearly define sustainability goals for the Project using a synergistic approach that will be applied to each facet of design development. Using LEED as a tool to bring together diverse team members who typically work in a more linear sequence, this design charrette will promote collaboration starting in the early stages of design development. Environmental goals, responsibilities, fees, and benchmarks will be coordinated and communicated clearly and consistently.

The preliminary LEED NC v2009 checklist is included at the end of this chapter, and illustrates an overview of the credits the Project anticipates achieving on a Campus / Master Site level, as well as on an individual building level within each LEED category: Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, and Innovation in Design. Presently, 55 points have been targeted for Buildings A and B, and 56 points have been targeted for 575 Albany Street. This is a preliminary evaluation of the LEED checklist, and applicable credits may change as the building design advances.

The Proponent's approach to each of the credit categories is described below.

Sustainable Sites

The Project Site is previously developed and located in the South End neighborhood of Boston, a dense urban area close to public transportation including multiple MBTA bus routes and the Silver Line. The Project will include bike racks consistent with BTD guidelines, and will have a transportation demand management program to help minimize transportation impacts. Low-impact development strategies will be utilized to minimize and set monitoring in place to control construction pollution. A stormwater management plan will be implemented to ensure that the Project properly captures and infiltrates stormwater. Hardscape and roofing materials will be selected that minimize the heat island effect.

Water Efficiency

The Project will incorporate low-flow and high efficiency plumbing fixtures to reduce the amount of indoor potable water use by at least 30% compared to a baseline case. Strategies to reduce the amount of potable water used for irrigation will include using native or adapted plant species and an efficient irrigation system.

Energy and Atmosphere

The Proponent will do fundamental commissioning, fundamental refrigerant management, and due to the changes in the State Building Code will exceed the energy performance criteria. The building systems will be designed to optimize energy performance and reduce energy consumption consistent with energy requirements at the time the building permit is issued, which will be far more efficient than ASHRAE 90.1-2007. The Project team plans to optimize energy efficiency through an integrated approach to the building's envelope design and building systems. In all three buildings, the targeted lighting power density is expected to be below code minimums. The Project will be designed without the use of CFC or HCFC refrigerants. The Proponent will evaluate purchasing renewable energy certificates for the building's energy use.

Materials and Resources

The Construction Manager (CM) team will develop and implement a Construction Waste Management plan for waste generation on site. The CM will endeavor to divert as much demolition debris and construction waste from area landfills as possible. Materials are anticipated to be selected that contain recycled and regional content to minimize embodied energy and other impacts associated with the extraction, processing, transport, maintenance, and disposal of building materials.

Indoor Environmental Quality

The Project team is committed to designing an indoor environment that provides a healthy quality of life for tenants and guests. Materials selected for the Project will be low-emitting. A construction Indoor Air Quality Management plan during construction and prior to occupancy will be developed. The building occupants will be provided a comfortable environment through controlled access to thermal comfort and lighting controls. The residential units are anticipated to optimize exposure to daylight and outdoor environment views.

Innovation in Design

The Project team has identified several potential Exemplary Performance credits that the Project may achieve. The Project team also anticipates achieving Innovation in Design criteria utilizing strategies that include but are not limited to green housekeeping procedures and reduced mercury levels in lighting.

Regional Priority Credits

Regional Priority Credits (RPC) are established LEED credits designated by the USGBC to have priority for a particular area of the country. When a project team achieves one of the designated RPCs, an additional credit is awarded to the project. The Project team anticipates achieving three RPCs for the following: SSc3, SSc7.1 and SS7.2.

4.3 Climate Change Resilience

The BRA requires that projects subject to Article 80, Large Project Review complete the Climate Change Preparedness Checklist. Climate change conditions considered include sea level rise, higher maximum and mean temperatures, more frequent and longer extreme heat events, more frequent and longer droughts, more severe rainfall events, and increased wind events.

The expected life of the Project is anticipated to be approximately 50 years. Therefore, the Proponent planned for climate change conditions projected at a 50 year time span. A copy of the completed checklist is included in Appendix E. Given the preliminary level of design, the responses are also preliminary and may be updated as the Project design progresses.

Extreme Heat Events

The Intergovernmental Panel on Climate Change (IPCC) has predicted that in Massachusetts the number of days with temperatures greater than 90°F will increase from the current five-to-twenty days annually, to thirty-to-sixty days annually[1]. The Project design will incorporate a number of measures to minimize the impact of high temperature events, including:

- New street trees;
- Significant new landscaped areas;
- Installing operable windows where possible; and
- High-albedo roofing materials to minimize the heat island effect.

Energy modeling for the Project has not yet been completed; however, as indicated on the LEED Checklist, the Proponent will strive to reduce the Project's overall energy demand and GHG emissions that contribute to global warming. The Project's proposed TDM program will also help to lessen fossil fuel consumption.

Sea Level Rise

According to the IPCC, if the sea level continues to rise at historic rates, the sea level in Massachusetts as a whole will rise by one foot by the year 2100. However, using a high emissions scenario of climate change, sea level rise (SLR) could reach approximately six feet by 2100. As described in "Climate Change and Extreme Weather Vulnerability Assessments and Adaptation Options for the Central Artery" recently released by MassDOT (the "MassDOT Report"), "one of the challenges presented by the wide range of SLR projections is the inability to assign likelihood to any particular [SLR] scenario."[2] To be conservative, in the year 2070, SLR could be as high as approximately four feet, resulting in a mean higher high water (MHHW) level of approximately 15.2 feet Boston City Base (BCB). The elevation of the first floor is approximately 19 feet BCB.

Alone, MHHW of approximately 15.2 feet BCB would have no impact on the Project Site; however, as shown in the MassDOT Report, combined with storm surge at the right tide, flooding would be anticipated to occur at the Project Site.[3] The storms in the Boston area

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[1] IPCC (Intergovernmental Panel on Climate Change), 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Avery, M. Tignor, and H. L. Miller (eds.)]. Cambridge University Press, Cambridge, UK, and New York, 996 pp.

[2] Massachusetts Department of Transportation, et al. "MassDOT-FHWA Pilot Project Report: Climate Change and Extreme Weather Vulnerability Assessments and Adaptation Options for the Central Artery." November 2015.

[3] The MassDOT Report, funded by the Federal Highway Administration, studied the impact of sea level rise and future storm impacts related to climate change on the Central Artery in Boston. As part of this project, a hydrodynamic model was developed for Boston Harbor, including inland areas that cover portions of Boston, including the Project Site. This model is able to provide site-specific information about the risk of potential future flooding in the years 2030, 2070 and 2100 related to storm events, in particular Nor'easters and tropical cyclones (i.e., hurricanes).

that could create these flood conditions would be Nor'easters and tropical storms. Currently, hurricanes occur less frequently than Nor'easters; however, in the future according to the MassDOT Report, it is anticipated that there will be roughly the same number of tropical storms impacting the Boston area as Nor'easters. In addition, the intensity of storms is anticipated to increase. The risks of each type of storm differ: hurricanes are typically shorter in duration, but are more intense and create a larger storm surge; Nor'easters are longer in duration, but create a smaller storm surge. For this reason, a hurricane would need to impact Boston within a short window to create flooding as shown in the MassDOT Report, while Nor'easters are more likely to create flooding given that they have a higher probability of impacting the area during the rising tide and high tide.

The MassDOT Report shows that by 2070, the Project Site is anticipated to have between a 1% and 10% annual chance of flooding by at least 2 inches. By 2070, the 100-year flood is anticipated to have a flood level between 1.0 to 1.5 feet across the Project Site.

To address the potential flooding impact, the Project is anticipated to be flood resistant up to approximately 19 feet BCB, systems located above the first floor, water-tight utility conduits, wastewater and stormwater backflow prevention, and resilient ground floor construction.

Rain Events

As a result of climate change, the Northeast is expected to experience more frequent and intense storms. To mitigate, the Proponent will take measures to minimize stormwater runoff and protect the Project's mechanical equipment. These measures include:

- New landscaped areas to increase stormwater infiltration compared to the existing site;
- Water tight utility conduits;
- Locating critical mechanical and electrical equipment at the highest elevation possible to prevent exposure to flood waters; and
- Wastewater and stormwater back flow prevention.

Drought Conditions

Under the high emissions scenario, the occurrence of droughts lasting one to three months could go up by as much as 75% over existing conditions by the end of the century. To minimize the Project's susceptibility to drought conditions, the landscape design is anticipated to incorporate native and adaptive plant materials and a reduction in potable water use for irrigation when compared to a mid-summer baseline. Aeration fixtures and appliances will be chosen for water conservation qualities, conserving potable water supplies.

4.4 Renewable Energy

The Proponent will evaluate the potential for a roof-mounted solar photovoltaic (PV) system, and the availability of grants and renewables funding. The roofs of both residential buildings will be almost entirely devoted to roof-top mechanical space. There will be limited space available on top of Buildings A and B. With a total of approximately 39,000 sf of available roof area, approximately 19,500 sf would be devoted to rooftop mechanical space. Additionally, approximately 50% of the remaining space would be set aside for space around the panels, between panels, etc. This leaves approximately 9,750 sf available for rooftop solar. Assuming 12 watts per square foot, this allows for an approximately 117 kW array. In the location proposed, an installation of this solar array equals an annual generation of approximately 180 MW hours, or an estimated GHG reduction of 56.6 tons. The feasibility of installing a solar PV system will depend on the incentives at the time of construction.

LEED v2009 for New Construction

Harrison / Albany Block - Master Site: Buildings A, Building B, 575 Albany
Boston, MA 02118
Certification Goal: Silver
PNF Scorecard

VANDERWEIL

MS=Master Site, A=Building A, B= Building B, 575 = 575 Albany

22	1	1	1	**SUSTAINABLE SITES**		**Possible Points: 26**
MS	A	B	575			
	Y			Prereq 1	Construction Activity Pollution Prevention	
1				Credit 1	Site Selection	
5				Credit 2	Development Density and Community Connectivity	
1				Credit 3	Brownfield Redevelopment **(RP)**	
6				Credit 4.1	Alternative Transportation - Public Transportation Access	
1				Credit 4.2	Alternative Transportation - Bicycle Storage and Changing Rooms	
3				Credit 4.3	Alternative Transportation - Low-Emitting and Fuel Efficient Vehicles	
2				Credit 4.4	Alternative Transportation - Parking Capacity	
1				Credit 5.1	Site Development - Protect or Restore Habitat	
1				Credit 5.2	Site Development - Maximize Open Space	
				Credit 6.1	Stormwater Quantity Control **(RP)**	
				Credit 6.2	Stormwater Quality Control	
1				Credit 7.1	Heat Island Reduction—Non-Roof **(RP)**	
	1	1	1	Credit 7.2	Heat Island Reduction—Roof **(RP)**	
				Credit 8	Light Pollution Reduction	

2	2	2	2	**WATER EFFICIENCY**		**Possible Points: 10**
MS	A	B	575			
	Y			Prereq 1	Water Use Reduction	
2				Credit 1	Water Efficient Landscaping	
				Credit 2	Innovative Wastewater Technologies	
	2	2	2	Credit 3	Water Use Reduction	

2	3	3	3	**ENERGY & ATMOSPHERE**		**Possible Points: 35**
MS	A	B	575			
	Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
	Y			Prereq 2	Minimum Energy Performance	
	Y			Prereq 3	Fundamental Refrigerant Management	
	2	2	2	Credit 1	Optimize Energy Performance	
				Credit 2	On-Site Renewable Energy **(RP)**	
				Credit 3	Enhanced Commissioning	
2				Credit 4	Enhanced Refrigerant Management	
	1	1	1	Credit 5	Measurement and Verification	
				Credit 6	Green Power	

0	4	4	4	**MATERIALS & RESOURCES**		**Possible Points: 10**
MS	A	B	575			
	Y			Prereq 1	Storage and Collection of Recyclables	
				Credit 1.1	Building Reuse - Maintain Existing Walls, Floors and Roof **(RP)**	
				Credit 1.2	Building Reuse - Maintain 50% of Interior Non-Structural Elements	
	2	2	2	Credit 2	Construction Waste Management	
				Credit 3	Materials Reuse	

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

MS	A	B	575	**MATERIALS & RESOURCES** - *continued*		
	1	1	1	Credit 4	Recycled Content	
	1	1	1	Credit 5	Regional Materials	
				Credit 6	Rapidly Renewable Materials	
				Credit 7	Certified Wood	

0	10	10	11	**INDOOR ENVIRONMENTAL QUALITY**		**Possible Points: 15**
MS	A	B	575			
	Y			Prereq 1	Minimum Indoor Air Quality Performance	
	Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
				Credit 1	Outdoor Air Delivery Monitoring	
				Credit 2	Increased Ventilation	
	1	1	1	Credit 3.1	Construction IAQ Management Plan - During Construction	
				Credit 3.2	Construction IAQ Management Plan - Before Occupancy	
	1	1	1	Credit 4.1	Low-Emitting Materials - Adhesives and Sealants	
	1	1	1	Credit 4.2	Low-Emitting Materials - Paints and Coatings	
	1	1	1	Credit 4.3	Low-Emitting Materials - Flooring Systems	
	1	1	1	Credit 4.4	Low-Emitting Materials - Composite Wood and Agrifiber Products	
	1	1	1	Credit 5	Indoor Chemical and Pollutant Source Control	
	1	1	1	Credit 6.1	Controllability of Systems - Lighting	
	1	1	1	Credit 6.2	Controllability of Systems - Thermal Comfort	
	1	1	1	Credit 7.1	Thermal Comfort - Design	
			1	Credit 7.2	Thermal Comfort - Verification	
				Credit 8.1	Daylight and Views - Daylight	
	1	1	1	Credit 8.2	Daylight and Views - Views	

4	2	2	2	**INNOVATION IN DESIGN**		**Possible Points: 6**
MS	A	B	575			
1				Credit 1.1	EP: SSc2	
1				Credit 1.2	EP: SSc4.1	
1				Credit 1.3	ID: TBD	
1				Credit 1.4	ID: Green Housekeeping	
	1	1	1	Credit 1.5	ID: Reduced Mercury in Lighting	
	1	1	1	Credit 2	LEED® Accredited Professional	

2	1	1	1	**REGIONAL PRIORITY**		**Possible Points: 4**
MS	A	B	575			
1				Credit 1.1	SSc3 Brownfield Redevelopment	
				Credit 1.2	SSc6.1 Stormwater Design - Quantity Control	
1				Credit 1.3	SSc7.1 Heat Island Reduction—Non-Roof	
	1	1	1	Credit 1.4	SSc7.2 Heat Island Reduction—Roof	
			X		EAc2 Onsite Renewable Energy, 1% Offset	
			X		MRc1.1 Building Reuse - Maintain Existing, 75%	

MS	A	B	575		
32	55	55	56	**TOTALS**	*Pre-certification estimates, subject to change*

Chapter 5.0

Urban Design

5.0 URBAN DESIGN

5.1 Design Goals and Context

5.1.1 Harrison Albany Corridor Strategic Plan

In 2008, the City recommended that a strategic vision be developed for the industrial section of the South End in order to manage its inevitable growth. The Harrison Albany Corridor Strategic Plan (the Plan), released in June of 2012, was the culmination of that vision providing a guideline for zoning and redevelopment of the area. The Plan has divided the overall area into four sub-areas, which include the New York Streets, SOWA, the Back Streets, and the Medical area (see Figure 5-1).

5.1.1.1 New York Streets

The New York Streets sub-area is the northernmost portion of the Plan. There has been significant active and proposed development activity in recent years, including the Ink Block, Troy, 345 Harrison Avenue, and 80 East Berkeley Street.

The Ink Block includes a five- to eight-story mixed-use development with a Whole Foods Market, ground floor retail and apartments above. The project represents the first phase of development of the New York Streets and has successfully utilized the untapped potential of the area. Troy includes a 19-story apartment building that is sharing in the success of the transitioning area. 345 Harrison Avenue is an apartment building with retail on the ground floor that is currently under construction. 80 East Berkeley Street is an 11-story office building with ground floor retail.

5.1.1.2 SOWA

The South of Washington "SOWA" sub-area is perhaps the most vibrant portion of the area, with a longer history and deeper roots than some of the other areas. Many of the industrial buildings have been converted into lofts, which has helped define the Harrison Avenue Creative Use Corridor. Events such as First Friday and the SOWA Art Walk have sprung up in recent years, further defining this sub-area as a creative district. SOWA has a strong urban fabric and sense of place. Some recent projects in the SOWA neighborhood include 600 Harrison Avenue and 477-481 Harrison Avenue.

5.1.1.3 Back Streets

The Project is located in the Back Streets sub-area of the Plan, which is located between the SOWA and Medical sub-areas. The Back Streets is the most distressed area, in that it has some significant gaps in its urban fabric with several surface parking lots in lieu of buildings.

5.1.1.4 Medical Area

The final sub-area is the Medical area, home to the Boston Medical Center and Boston University Medical Campus. This area is successful as a medical and academic hub, and has been a catalyst for new development in the surrounding area.

5.2 Evolution of Design

During the conceptual design and master planning of the Project, the Project team outlined several goals as follows:

- Create a signature transformative development in the center of the Harrison Albany Corridor;
- Create a vibrant mixed-use, residential community;
- Create leafy residential scale streets;
- Provide open space;
- Blend with the character of the neighborhood; and
- Expand SOWA's thriving Creative Use Corridor into the Back Streets neighborhood with a live/work community that focuses on creative uses and possibly art galleries.

5.2.1 A Signature Transformative Development

Located between a thriving creative community and a busy medical campus, the underutilized site has the potential to be the centerpiece that connects the two areas, providing continuity from the New York Streets area to the Medical area. The Project will be a catalyst for the Back Streets area, spearheading the transition from parking lots and disjointed urban fabric to a thriving neighborhood.

5.2.2 A Vibrant, Mixed-Use, Residential Community

With the Mayor's housing production goals, proximity to Boston University Medical Campus and Boston Medical Center, and recent success in the area, a primarily residential development was determined to be the most appropriate to revitalize the underutilized site.

The Project team first analyzed several designs that conformed to the zoning limitations for the Project Site. The challenge with these designs was the feasibility of a development constrained by the necessary footprints that allow for an efficient residential floor plate within the height parameters and avoiding a bulky, monolithic configuration that was out of scale with the surrounding neighborhood.

Figure 5-1

Harrison Albany Corridor Strategic Plan Sub-areas

The most appropriate solution was to go above the 120-foot height limit in strategic places, while sculpting the building mass to provide an appropriate scale for each distinctive urban condition and edge. The result was to bring one building up to 200 feet while maintaining an average height of less than 120 feet across the entire Project Site which generated an appropriate scale and variety of building heights while maintaining enough density for a vibrant mixed used neighborhood. The approach allows more open space and access to sunlight and air while providing a better street level experience.

5.2.3 Blend with the Character of the Neighborhood

Along East Canton Street, the buildings step down well below 120 feet to acknowledge the rhythm and scale of the existing housing. The Project includes a contemporary design to unite the architectural expression of the overall Project, while also being sensitive to the existing surrounding buildings. Stepping back the overall mass of the building and using materials and scale that are relevant to the East Canton Street environment complements and enriches the streetscape.

Along East Dedham Street, the lower levels of Building A are at a pedestrian scale that is maintained by setting back the tower portion. Along Harrison Avenue, the 120 foot tall Building B is the most prominent from key urban vantage points in the South End. In contrast, Building A marks the Project Site from distant views along the I-93 and neighborhoods to the south, adding to the identity of the Harrison Albany Corridor.

5.2.4 Expand SOWA's Thriving Creative Use Corridor into the Back Streets Neighborhood

The Project acknowledges the importance of the corner of East Dedham Street and Harrison Avenue as a visual and direct connection into the Project, as well as a future pedestrian link to SOWA. This connection is creating an attractive and welcoming entry, without taking away from the character of the surrounding area. From East Dedham Street to Albany Street, the building uses landscaping, materials, and building form to scale the Project to the pedestrian experience. The natural progression helps blend the Project with its context while improving the quality of the overall urban experience.

5.2.5 Provide Open Space

The design of the Project includes minimizing the building footprints by increasing the heights of the buildings, which allows for more open space and pedestrian connections through the Project site, totaling more than 30% of the Project Site (see Figure 5-2). Mid-block between East Dedham Street and Canton Street is a new pedestrian space with retail and residential entrances on both sides creating a vibrant space for residents and neighbors. The landscaped area on the corner of East Dedham Street and Harrison Avenue will also draw pedestrian traffic to the Project site from the Harrison Avenue Creative Use Corridor.

Harrison Albany Block **Boston, Massachusetts**

HALVORSON DESIGN PARTNERSHIP
LANDSCAPE ARCHITECTURE

Figure 5-2
Overall Site Plan

In addition to these prominent open spaces, the Project includes two smaller courtyards for residents that are more intimate in nature, and although visually connected to the surroundings, will provide quieter spaces.

5.3 Materials

The design and materials of the new construction have been chosen with respect to the existing patterns, scale, and materials within the adjacent and surrounding South End neighborhood. Though new and distinct, the Project will maintain continuity with its surroundings, celebrate the area's industrial history and respect the nature of the South End (see Figure 5-3). The Project adds a modern sensibility through a juxtaposition of metal and glass with masonry. The use of some cooler materials creates a softer transition into the neighborhood. The large windows provide a modern interpretation of the area's character and will instill a sense of lightness to the building. The lower portions of Buildings A and B will use materials similar in color to the Gambro Building and 575 Albany Street, while the materials within the taller portions of Buildings A and B will be lighter. The tonality change along with the introduction of metal and glass in some corners will help soften and blend the Project into the surrounding neighborhood. The design and tonality will honor the neighborhood's transformation with an understated elegance that heightens, but does not compete with the existing and industrial urban fabric of the South End.

5.4 Corridors

The Plan identifies three major corridors: The Washington Street Retail Corridor, Harrison Avenue Creative Use Corridor, and the Albany Street Wholesale/Medical Corridor. The Project Site is bordered by the Harrison Avenue (Creative Use) and Albany Street (Wholesale/Medical) corridors.

5.4.1 Harrison Albany Creative Use Corridor

The goal of the Creative Use Corridor is to maintain and encourage the creative economy uses that are occupying many of the area buildings: art galleries, artist work space, architecture studios, and other small businesses. As previously mentioned, the SOWA neighborhood is the epicenter of this activity with the Art Walk in the summer and open air markets and food carts popping up throughout the area. The Project intends to continue this Corridor with retail uses and open space that complement the existing Creative Use Corridor in the South End.

5.4.2 Albany Street Wholesale/Medical Use Corridor

The Albany Street Wholesale/Medical Use Corridor is a mixture of medical, labs and wholesale uses like the Flower Exchange. The renovation of 575 Albany Street will include complementary uses to continue this Corridor through the Project Site.

5.4.3 Washington Street Retail Corridor

The active ground floors and lively, mixed-use character of the Washington Street Retail Corridor reinforce the overall vision of the SOWA neighborhood. The Project will further the pedestrian experience in the Corridor with additional ground floor retail space, building design that is congruous with the surrounding area, and accessible open space and pedestrian pathways throughout the Project Site.

5.5 Pedestrian Connectivity

There is a series of open spaces, plazas, service roads, and pedestrian walkways that serve to provide a secondary pedestrian path, nearly uninterrupted, all the way from Massachusetts Avenue to the Ink Block. These spaces provide the area with a campus feel; comfortable for pedestrians to walk, sit, and avoid vehicle traffic.

The Project includes a mid-block pedestrian connection that defines a central pedestrian open space, and creates a node that ties East Dedham and East Canton Streets together. The relocation of Andrews Street also provides another path for pedestrian connectivity across the Project Site.

Harrison Albany Block   Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 5-3

Massing Diagrams
View from South

Chapter 6.0

Historic and Archaeological Resources

6.0 HISTORIC AND ARCHAEOLOGICAL RESOURCES

6.1 Introduction

The following section identifies historic and archaeological resources in the vicinity of the Project and measures to avoid or minimize impacts to them. The Proponent has undertaken a review of the State and National Registers of Historic Places as well as the Inventory of Historic and Archaeological Assets of the Commonwealth (the Inventory) to identify historic resources within the Project's vicinity. The Proponent will undergo review by the Massachusetts Historic Commission and the South End Landmark District Commission. A review of the Inventory determined that the Project would not affect previously identified archaeological resources.

6.2 Historic Resources on the Project Site

As previously described in Section 1.3.1, the Project Site is an approximately three-acre block bounded by Harrison Avenue to the north, East Dedham Street to the east, East Canton Street to the west, and Albany Street to the south. The Project Site includes five existing buildings, including one vacant residential building (75 East Dedham Street), one commercial vacant building (575 Albany Street), and three buildings that include an office, lab and medical office space (Gambro Building, 100 East Canton Street and 123 East Dedham Street), as well as a large surface parking lot.

Located within the South End Landmark District Protection Area, the Project Site abuts the South End Landmark District along Harrison Avenue to the north and East Canton Street to the west. No historic resources listed in the State and National Registers of Historic Places are located on the Project Site. One building within the Project boundaries is included in the Inventory: the Samuel Green Building, 575 Albany Street (BOS.1455). Constructed in 1904, the five-story red brick industrial structure is situated at the southern end of the Project Site bound by Albany Street to the south, East Canton Street to the west, East Dedham Street to the east, and to the north by a surface parking lot and Bush Street.

6.2.1 Historic Resources in the Project Vicinity

Numerous properties included in the State and National Registers of Historic Places are located in the vicinity of the Project Site. The State and National Register-listed properties located within a quarter-mile of the Project Site are listed in Table 6-1. Figure 6-1 depicts the locations of these properties.

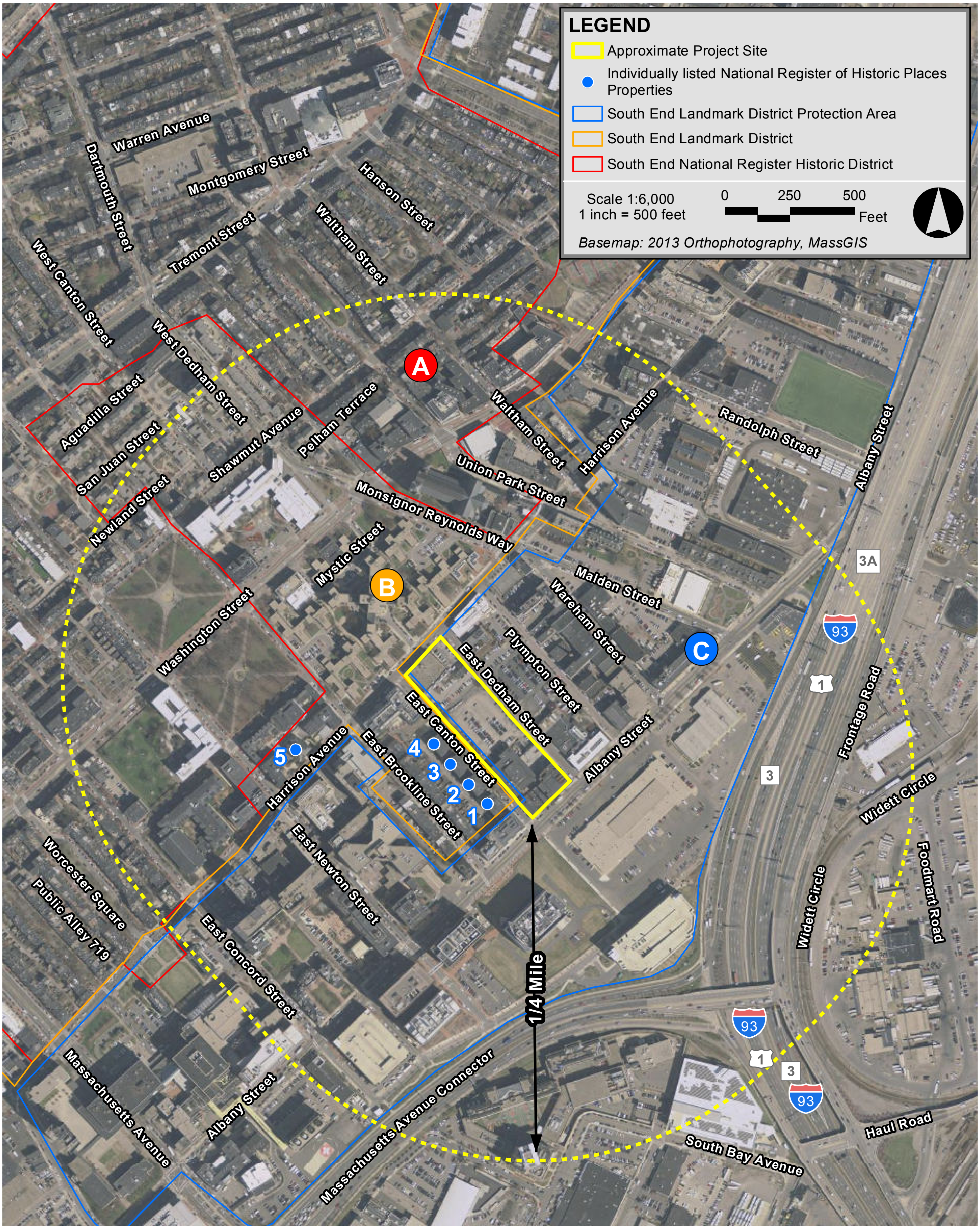
Table 6-1 Historic Resources in the Project Vicinity

Map No	*Name*	*Address*	*Designation*
A	South End National Register Historic District	Roughly bound by Yarmouth Street, Columbus Avenue, Mass. Turnpike, Berkeley Street, Tremont Street, Dwight Street	National Register District
B	South End Landmark District	Roughly bound by Claremont Street, Camden Street, Harrison Avenue, East Berkeley Street, Mass Turnpike	Local Historic District, State Register
C	South End Landmark District Protection Area	Mass Turnpike, Rt. 93, Washington Street, Malden Street, Harrison Avenue, Albany Street, Camden Street	Protection Area
1	The Lawrence Model Lodging Houses- Groton	109 East Canton Street	National Register Individual Listed Property, Local Historic District
2	The Lawrence Model Lodging Houses- Bigelow	99 East Canton Street	National Register Individual Listed Property, Local Historic District
3	The Lawrence Model Lodging Houses- The Abbott	89 East Canton Street	National Register Individual Listed Property, Local Historic District
4	The Lawrence Model Lodging Houses- The Lawrence	79 East Canton Street	National Register Individual Listed Property, Local Historic District
5	Joshua Bates School	731 Harrison Avenue	National Register Individual Listed Property, Local Historic District, Preservation Restriction

6.3 Archaeological Resources

A review of the Inventory determined no previously identified archaeological resources located within the Project Site. The Project Site is a developed urban parcel with early-to-mid 20th century buildings; therefore no previously undisturbed areas will be affected by the proposed Project.

G:\Projects2\MA\Boston\4129\historic_points_REV.mxd



Harrison Albany Block Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 6-1
Historic Resources

6.4 Impacts to Historic Resources

6.4.1 Urban Design

The Project includes the redevelopment of the majority of the underutilized site. The Project Site is dominated by a surface parking lot and medical office buildings. The Project includes mixed-use development with the construction of two new residential buildings and the renovation of one existing building, the 1904 Samuel Green Building, 575 Albany Street. The building will be renovated to provide 5,400 sf of ground floor retail space, and 40,100 sf of office space within the upper levels.

The new buildings will include approximately 710 residential units, approximately 14,100 sf of retail space, and a below grade 745-space parking garage. The proposed new construction will be located in the center of the Project Site bookended by existing buildings; the Gambro Building to the north and 575 Albany Street and three adjacent buildings to the south, therefore minimizing the impact of the new buildings from the adjacent Harrison Avenue and Albany streets. The Project will reengage the street level with retail storefronts, tree-lined streets, public green spaces, and design of street edges. Along with the residential and commercial space the Project will include more than 41,000 sf of open space, representing more than 30% of the Project Site.

The contemporary design of the Project will respect the scale, massing and materiality of the neighboring South End Landmark District while identifying as a contemporary Project. Along East Canton Street, the proposed buildings within the Project will step down to six stories along East Canton Street to respect the scale of the existing buildings within the South End Landmark District. The Project will connect a thriving residential community with the medical campus transforming parking lots and disjoined urban fabric to a thriving neighborhood.

6.4.2 Shadow Impacts

A shadow impact analysis was conducted to investigate shadow impacts from the Project during three time periods (9:00 a.m., 12:00 noon, and 3:00 p.m.) during the vernal equinox, summer solstice, autumnal equinox and winter solstice. Shadow studies were also conducted for the 6:00 p.m. time period during the summer solstice and autumnal equinox. The analysis shows that the Project's impacts will generally be limited to the immediately surrounding streets and sidewalks and the Project Site itself. The four National Register individually listed properties southwest of the Project Site will not be impacted by new shadows created by the Project. New shadows will largely be limited the northeast toward East Dedham Street. These shadows will be within the South End Landmark District Protection Area, but not within the South End Landmark District. Among the periods studied, the only impacts to the Landmark District are on December 21st at 9 a.m. At this time the shadow will extend north into the Landmark District; however, impacts will be mainly limited to the rooftops of the 20th century buildings within the Boston Housing Authority's Cathedral Housing complex.

6.5 Status of Project Review with Historical Agencies

6.5.1 Massachusetts Historical Commission

Portions of the Project Site are subject to Land Disposition Agreements with the BRA while the South End Urban Renewal Plan remains in effect and will trigger review by the Massachusetts Historical Commission (MHC) in accordance with Massachusetts General Laws Chapter 9, ss 26-27C as amended by Chapter 254 of the Acts of 1988 (950 CMR 71.00). The Proponent will be filing an Environmental Notification Form (ENF) for the Project with the Massachusetts Environmental Policy Act (MEPA) office. The ENF will serve as MHC's notification of the Project will initiate MHC's review of the Project.

6.5.2 South End Landmarks Commission

The Project Site is located within the South End Landmark District (SELD) Protection Area. Building demolitions, the height and setback of new construction, and changes to topography and landscaping within the Protection Area are subject to review by the SELD Commission. The Proponent will file a Design Review application for the Project with the SELD Commission and will provide follow-up with the Boston Landmarks Commission staff. Under previous ownership, a demolition application was filed for the building located within the Project Site addressed at 75 East Dedham Street. The application was reviewed and approved by the SELD Commission on November 2013. At the appropriate time, the Proponent will submit a new application for the current Project.

Chapter 7.0

Infrastructure

7.0 INFRASTRUCTURE

7.1 Introduction

This chapter outlines the existing utilities surrounding the Project Site, the proposed connections required to provide service to the new structures, and any impacts on the existing utility systems that may result from the construction of the Project.

7.2 Wastewater

7.2.1 Existing Wastewater

There are existing Boston Water and Sewer Commission (BWSC) sewer mains located in East Dedham Street and East Canton Street. There is a 12-inch sewer main flowing southeast in East Dedham Street. The 12-inch sewer main connects to a 68-inch x 66-inch combined sewer main (New Albany Street Interceptor), which runs southwest in Albany Street. There is a 12-inch sewer main flowing southeast in East Canton Street. The 12-inch sewer main also connects to the 68-inch x 66-inch combined sewer main (New Albany Street Interceptor) in Albany Street. There is a 72-inch combined sewer main flowing northeast in Harrison Avenue.

7.2.2 Wastewater Generation

The Project's sewage generation rates were estimated using the System Sewage Flow Design flows set forth at 310 CMR 15.203 and the proposed building program. 310 CMR 15.203 lists typical design flows for the proposed sources, as shown in Table 7-1. Design flows are equivalent to estimated generated flow for the proposed use plus a factor representing flow variations. 310 CMR 15.203 design flows are used to evaluate new sewage flows or an increase in flows to existing connections. Table 7-1 describes the increased sewage generation in gallons per day (gpd) due to the Project.

Table 7-1 Existing and Proposed Wastewater Generation

Existing Conditions						
Building	**SF**	**Type**	**Notes**	**Unit**	**GPD**	**Total GPD**
575 Albany Street	45,500	Office/Lab	-	per 1000 sq.ft.	75	3,413
100 East Canton/ 123 East Dedham	58,913	Office/Lab	-	per 1000 sq.ft.	75	4,418
75 East Dedham Street	2,480	Residential	5 beds	per bedroom	110	550
					TOTAL =	**8,381**

Table 7-1 Existing and Proposed Wastewater Generation (Continued)

Proposed Conditions						
Building	SF	Type	Notes	Unit	GPD	Total GPD
575 Albany Street	40,100	Office	-	per 1000 sq.ft.	75	3,008
575 Albany Street	5,400	Retail	-	per 1000 sq.ft.	50	270
New Building A	441,862	Residential	610 beds	per bedroom	110	67,100
New Building A	4,200	Retail	-	per 1000 sq.ft.	50	210
New Building B	214,302	Residential	281 beds	per bedroom	110	30,910
New Building B	4,500	Retail	-	per 1000 sq.ft.	50	225
					TOTAL	101,723
					NET CHANGE	93,342 GPD

7.2.3 Proposed Connection

The Proponent will coordinate with the BWSC on the design and capacity of the proposed connections to the sewer system. The Project is expected to generate an increase in wastewater flows of approximately 93,342 gallons per day.

The sewer services for the Project will connect to the sewer main in East Dedham Street or East Canton Street.

All improvements and connections to BWSC infrastructure will be reviewed as part of the BWSC's Site Plan Review process for the Project. This process includes a comprehensive design review of the proposed service connections, an assessment of Project demands and system capacity, and the establishment of service accounts.

7.2.4 Sewage Capacity and Impacts

The capacities of the 12-inch sanitary sewer line in East Dedham Street, the 12-inch sanitary sewer line in East Canton Street, the 68-inch x 66-inch combined sewer main in Albany Street, and the 72-inch combined sewer main in Harrison Avenue are summarized below in Tables 7-2 to 7-5. Pipe diameter and inverts used to calculate the capacities are a combination of information obtained from the BWSC wastewater infrastructure system map (Figures 7-1 and 7-2) and survey information provided by Feldman Land Surveyors. Flow capacities of the existing sanitary sewers were calculated in cubic feet per second (cfs) and million gallons per day (MGD) using Manning's equation.

Table 7-2 Sewer Hydraulic Capacity Analysis – East Dedham Street to Albany Street

Manhole (BWSC Number)	*Distance (feet)*	*Invert Elevation (up)*	*Invert Elevation (down)*	*Slope (%)*	*Diameter (inches)*	*Manning's Number*	*Flow Capacity (cfs)*	*Flow Capacity (MGD)*
510 to 546	307	5.28	3.16	0.7%	12	0.01	3.85	2.49
546 to 210	164	3.16	2.7	0.3%	12	0.01	2.45	1.59
210 to 206	175	2.6	1.7	0.5%	12	0.01	3.32	2.15
206 to 205	83	1.6	0.9	0.8%	12	0.01	4.25	2.75
205 to 203	12	0.8	0.7	0.8%	12	0.01	4.23	2.73
Minimum Flow Analyzed:							2.45	1.59

Table 7-3 Sewer Hydraulic Capacity Analysis – East Canton Street to Albany Street

Manhole (BWSC Number)	*Distance (feet)*	*Invert Elevation (up)*	*Invert Elevation (down)*	*Slope (%)*	*Diameter (inches)*	*Manning's Number*	*Flow Capacity (cfs)*	*Flow Capacity (MGD)*
216 to 213	251	8.4	6.9	0.6%	12	0.01	3.58	2.31
213 to 357	317	6.1	1.9	1.3%	12	0.01	5.33	3.45
357 to 207	10	1.8	1.7	1.0%	12	0.01	4.63	2.99
Minimum Flow Analyzed:							3.58	2.31

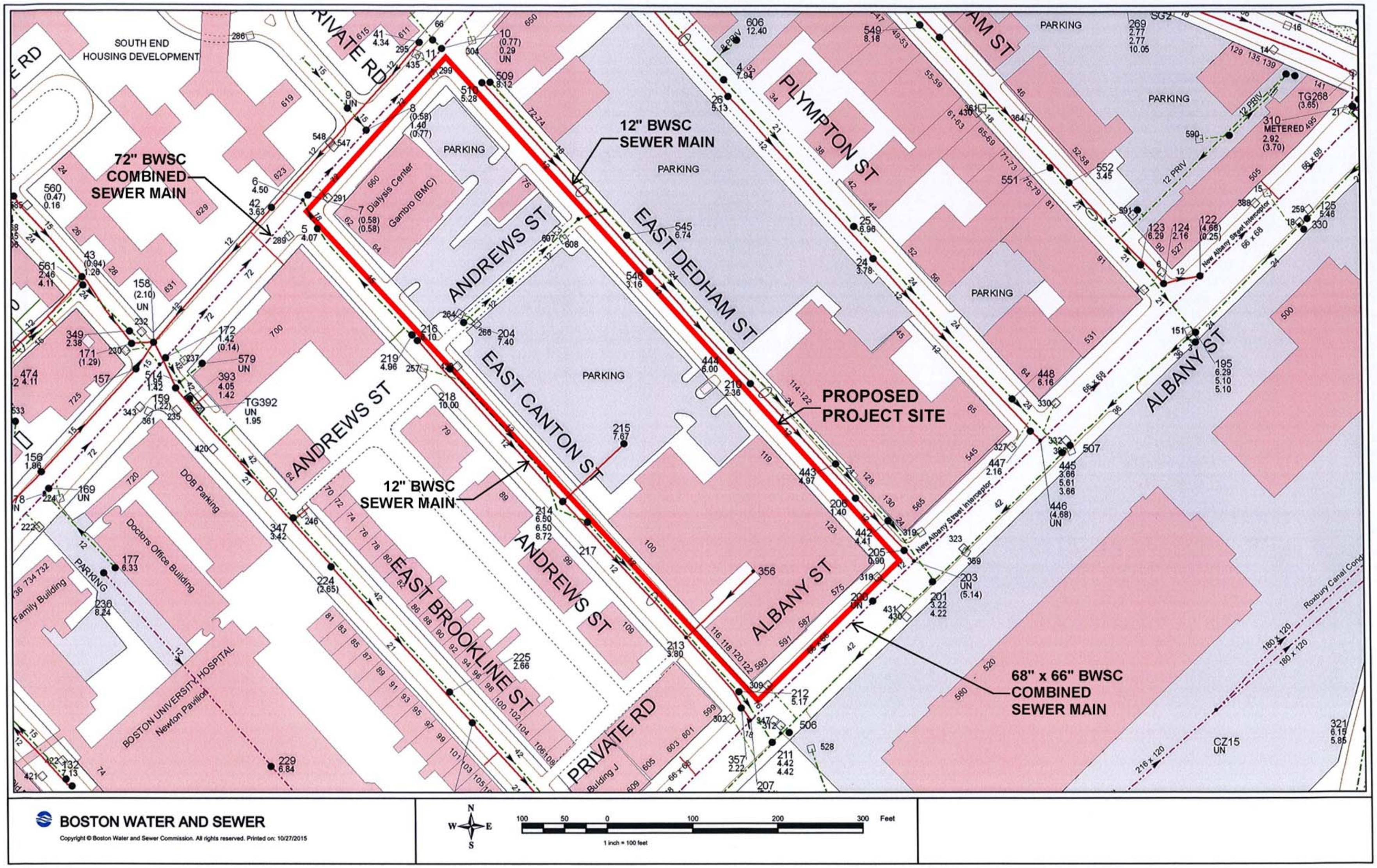
Table 7-4 Combined Sewer Hydraulic Capacity Analysis – Albany Street

Manhole (BWSC Number)	*Distance (feet)*	*Invert Elevation (up)*	*Invert Elevation (down)*	*Slope (%)*	*Diameter (inches)*	*Manning's Number*	*Flow Capacity (cfs)*	*Flow Capacity (MGD)*
199 to 207	250	0.97	0.6	*0.1%	66" x 68"	0.01	222.52	143.82
207 to 200	200	UN	UN	*0.1%	66" x 68"	0.01	222.52	143.82
200 to 203	110	UN	UN	*0.1%	66" x 68"	0.01	222.52	143.82
Minimum Flow Analyzed:							222.52	143.82

Table 7-5 Combined Sewer Hydraulic Capacity Analysis – Harrison Avenue

Manhole (BWSC Number)	*Distance (feet)*	*Invert Elevation (up)*	*Invert Elevation (down)*	*Slope (%)*	*Diameter (inches)*	*Manning's Number*	*Flow Capacity (cfs)*	*Flow Capacity (MGD)*
169 to 172	200	UN	UN	*0.3%	72	0.01	296.49	191.62
172 to 6	240	UN	UN	*0.3%	72	0.01	296.49	191.62
Minimum Flow Analyzed:							296.49	191.62

The Project is not expected to exceed existing sewer capacities.

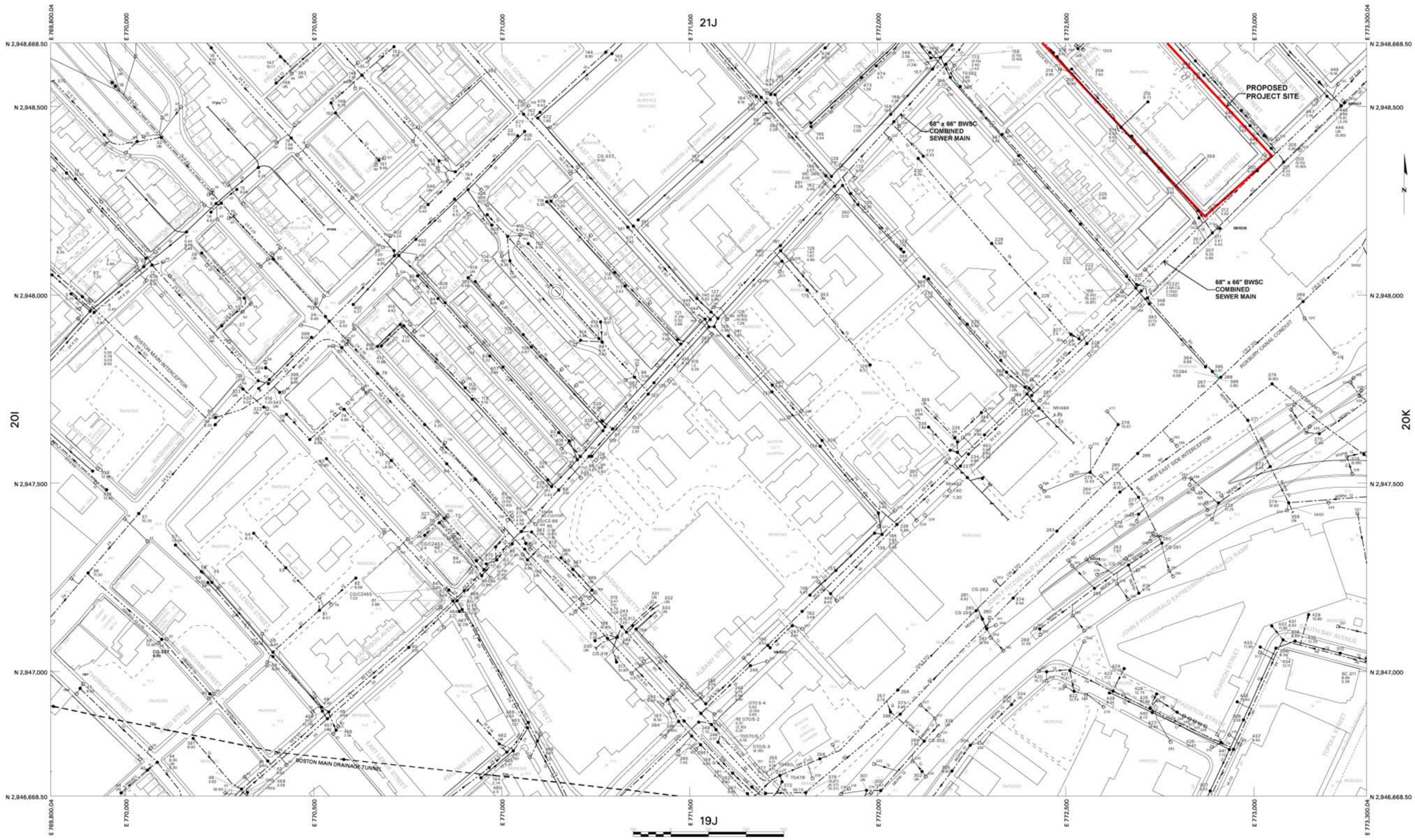


Harrison Albany Block **Boston, Massachusetts**

Figure 7-1

Existing Sewer System

Nitsch Engineering



Harrison Albany Block Boston, Massachusetts

Nitsch Engineering

Figure 7-2

Sewer System Map

7.3 Water Supply

7.3.1 Existing Water Infrastructure

Water for the Project Site will be provided by the BWSC. There are five water systems within the City, and these provide service to portions of the City based on ground surface elevation. The five systems are southern low (SL, commonly known as low service), southern high (SH, commonly known as high service), southern extra high, northern low, and northern high.

BWSC owns and operates a 16-inch SL cast iron water main within Albany Street (constructed 1912, cleaned 1974), a 12-inch SL ductile iron cement lined water main within Albany Street (constructed 1990), a 12-inch SL ductile iron cement lined water main in East Dedham Street (constructed 2013), a 12-inch SL cast iron water main in Harrison Avenue (constructed 1906, cleaned 1972), a 16-inch SH cast iron water main in Harrison Avenue (constructed 1903, cleaned 1972), a 20-inch SL cast iron water main in East Canton Street (constructed 1897, cleaned 1972), and a 12-inch SL cast iron water main in East Canton Street (constructed 1901, cleaned 1972). The existing water system information was obtained from the BWSC water infrastructure system map (see Figure 7-3).

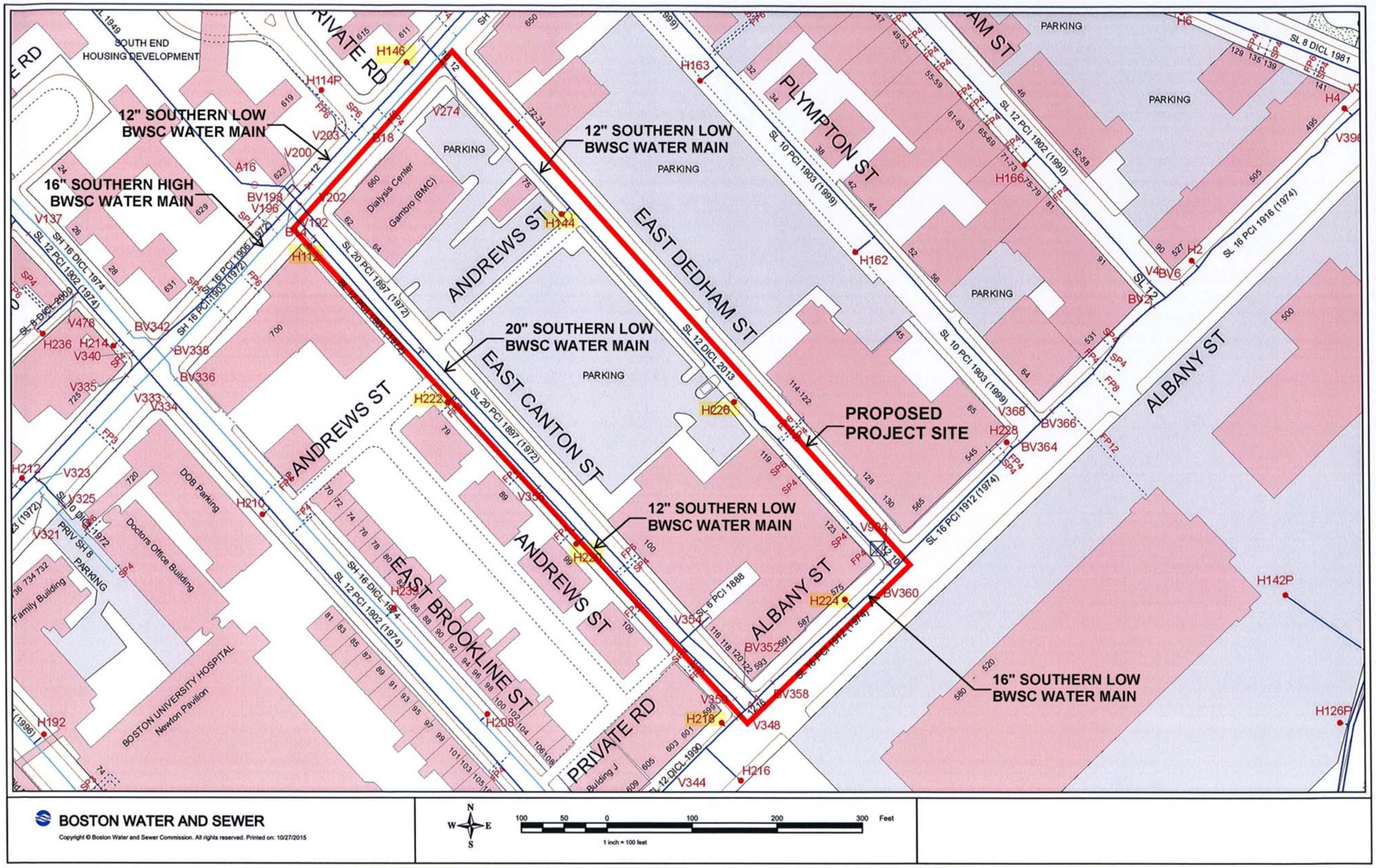
The existing site is serviced by eight fire hydrants: H112, H222, and H220 serviced by the 12-inch main in East Canton Street, H218 serviced by the 12-inch main in Albany Street, H224 serviced by the 16-inch main in Albany Street, H144 and H226 serviced by the 12-inch main in East Dedham Street, and H146 serviced by the 12-inch main in Harrison Avenue.

BWSC flow test data of actual flows and pressures at hydrants within the vicinity of the Project Site will be requested by the Proponent for the design of the building domestic water and fire protection services.

7.3.2 Water Consumption

The Project's water demand estimate for domestic services is based on the Project's estimated sewage generation, described above. A conservative factor of 1.1 (10%) is applied to the estimated average daily wastewater flows calculated with 310 CMR 15.203 values to account for consumption, system losses and other usages to estimate an average daily water demand. The Project's estimated increase in domestic water demand is 102,676 gpd (93,342*1.1). The water for the Project will be supplied by the BWSC systems within East Dedham Street, East Canton Street, Albany Street, and Harrison Avenue.

All reasonable efforts to reduce water consumption will be made. Aeration fixtures and appliances will be chosen for water conservation qualities. In public areas, metering faucets and high-efficiency low flow urinals and toilets are anticipated to be installed.



Harrison Albany Block **Boston, Massachusetts**

Nitsch Engineering

Figure 7-3

Existing Water System

All new water services will be installed in accordance with the latest local, state, and federal codes and standards. Backflow preventers will be installed at both domestic and fire protection service connections. New meters will be installed with Meter Transmitter Units (MTU's) as part of the BWSC's Automatic Meter Reading (AMR) system.

7.3.3 Proposed Water Connections

The proposed domestic water and fire services are proposed to connect to the 12-inch SL ductile iron cement lined water main in East Dedham Street and/or the 12-inch SL cast iron water main in East Canton Street. The domestic and fire protection water service connections required by the Project will meet the applicable local and state codes and standards, including cross-connection backflow prevention. Compliance with the standards for the domestic water system and fire service connections will be reviewed as part of BWSC's Site Plan Review process.

This review includes, but is not limited to, sizing of domestic water and fire protection services, calculation of meter sizing, backflow prevention design, and location of hydrants and siamese connections that conform to BWSC and Boston Fire Department requirements.

7.4 Stormwater Management

7.4.1 Existing Conditions

There are existing BWSC storm drains located in East Dedham Street, Andrews Street, East Canton Street, and Albany Street. There is an existing 18-inch storm drain main in East Dedham Street which increases to a 24-inch storm drain main and flows southeast. The 24-inch storm drain main connects to a 42-inch storm drain main which runs southwest in Albany Street. There is a 12-inch storm drain main in East Canton Street that flows southeast. The 12-inch storm drain main also connects to the 42-inch storm drain main in Albany Street. There is a 15-inch storm drain main in East Canton Street that flows northwest. The 15-inch storm drain main connects to a 72-inch combined sewer main which runs northeast in Harrison Avenue. There is a 12-inch storm drain main in Andrews Street that flows northeast. The 12-inch storm drain main connects to an 18-inch storm drain main which runs southeast in East Dedham Street.

The capacities of the storm drain line in East Dedham Street, storm drain lines in East Canton Street, and the 42-inch storm drain line are summarized below in Tables 7-6 to 7-9. Pipe diameter and inverts used to calculate the capacities are a combination of information obtained from the BWSC wastewater infrastructure system map (Figure 7-4) and survey information provided by Feldman Land Surveyors.

Flow capacity of existing storm drains were calculated in cubic feet per second (cfs) using Manning's Equation.

Table 7-6 Drain Hydraulic Capacity Analysis – East Dedham to Albany Street

Manhole (BWSC Number)	*Distance (feet)*	*Invert Elevation (up)*	*Invert Elevation (down)*	*Slope (%)*	*Diameter (inches)*	*Manning's Number*	*Flow Capacity (cfs)*	*Flow Capacity (MGD)*
509 to 545	246	8.12	6.74	0.6%	10	0.012	1.78	1.15
545 to 444	177	6.74	5.9	0.5%	24	0.012	16.88	10.91
444 to 443	177	5.9	5.1	0.5%	24	0.012	16.48	10.65
443 to 442	89	5.1	4.1	1.1%	24	0.012	25.98	16.79
442 to 201	84	4	3.5	0.6%	24	0.012	18.91	12.22
						Minimum Flow Analyzed:	1.78	1.15

Table 7-7 Drain Hydraulic Capacity Analysis – East Canton to Albany Street

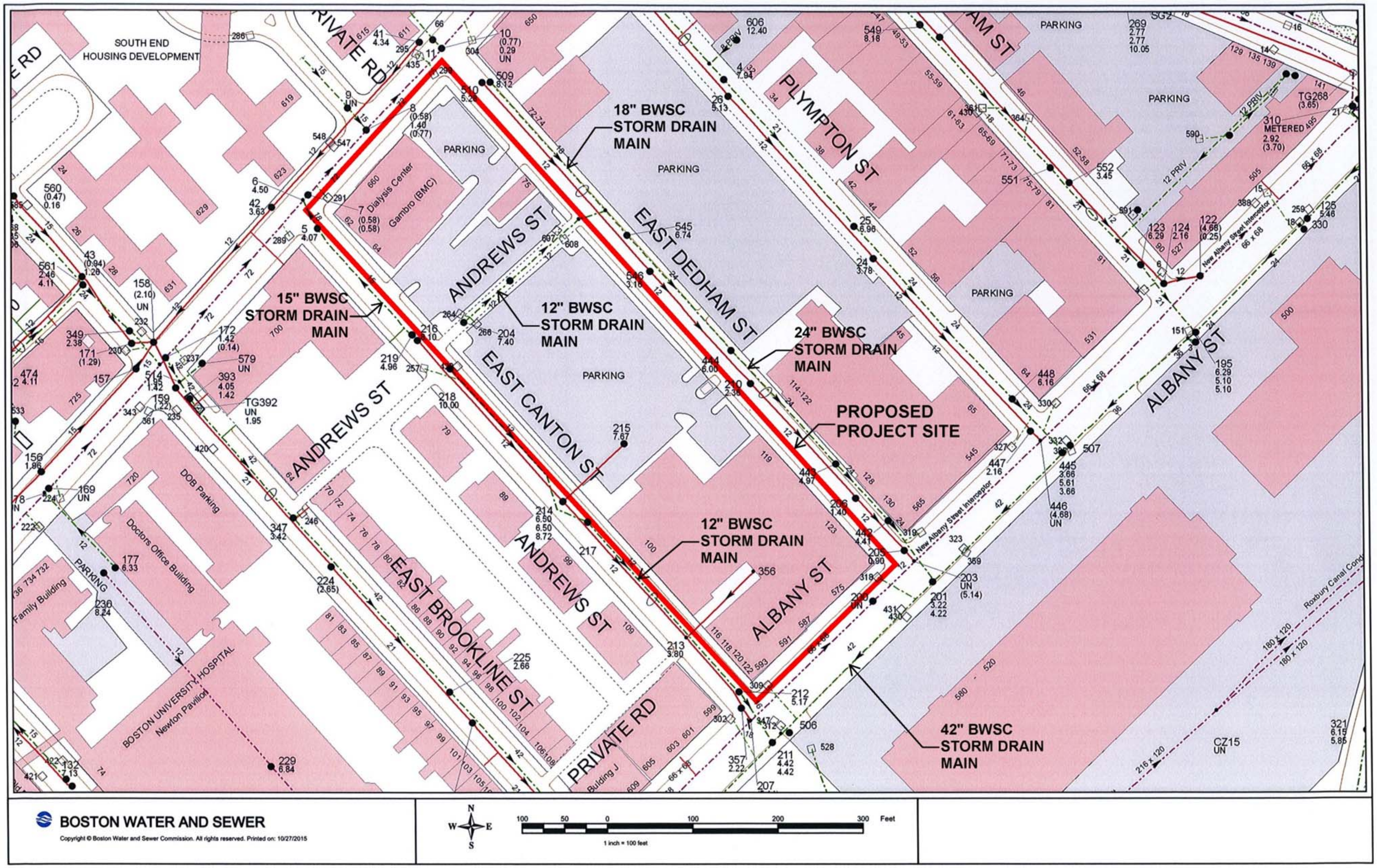
Manhole (BWSC Number)	*Distance (feet)*	*Invert Elevation (up)*	*Invert Elevation (down)*	*Slope (%)*	*Diameter (inches)*	*Manning's Number*	*Flow Capacity (cfs)*	*Flow Capacity (MGD)*
218 to 217	224	10.50	8.80	0.8%	12	0.012	3.36	2.17
217 to 212	284	8.80	4.70	1.4%	12	0.012	4.64	3.00
212 to 211	70	4.60	3.00	2.3%	16	0.012	12.57	8.12
						Minimum Flow Analyzed:	3.36	2.17

Table 7-8 Drain Hydraulic Capacity – East Canton Street to Harrison Avenue

Manhole (BWSC Number)	*Distance (feet)*	*Invert Elevation (up)*	*Invert Elevation (down)*	*Slope (%)*	*Diameter (inches)*	*Manning's Number*	*Flow Capacity (cfs)*
219 to 5	166	6.70	4.70	1.2%	15	0.012	7.68
5 to 6	26	4.10	3.90	0.8%	18	0.012	9.98
						Minimum Flow Analyzed:	7.68

Table 7-9 Drain Hydraulic Capacity Analysis – Albany Street

Manhole (BWSC Number)	*Distance (feet)*	*Invert Elevation (up)*	*Invert Elevation (down)*	*Slope (%)*	*Diameter (inches)*	*Manning's Number*	*Flow Capacity (cfs)*	*Flow Capacity (MGD)*
195 to 445	200	5.10	3.66	0.7%	36	0.012	61.31	39.63
445 to 201	210	3.66	3.40	0.1%	42	0.012	38.35	24.79
201 to 211	268	3.40	2.50	0.3%	42	0.012	63.16	40.82
						Minimum Flow Analyzed:	38.35	24.79



Harrison Albany Block Boston, Massachusetts

Figure 7-4

Existing Storm Drain System

7.4.2 Proposed Conditions

Stormwater runoff from the Project will be directed to storage tanks within the Project limits and overflow to an adjacent BWSC storm drain. Water stored in the tanks will be directed to a recharge system and recharged into the ground. The existing BWSC storm drain system is illustrated in Figure 7-4.

The Project will increase the amount of open space within the limits of the Project Site compared to the existing condition, increasing the pervious area at the surface. The Project will maintain the existing peak rates and volumes of stormwater runoff from the Project Site.

The Project Site is located within the City of Boston's Groundwater Conservation Overlay District, and therefore the Project is required to infiltrate at least one-inch of stormwater runoff from impervious areas into the ground to meet Article 32 of the Boston Zoning Code. The proposed stormwater management system for the Project will include groundwater recharge systems. It is anticipated that the stormwater recharge systems will work to passively infiltrate runoff into the ground with a gravity recharge system and a combination of storage tanks in the buildings and pumps. The underground recharge system, and any required site closed drainage systems, will be designed so there will be no increase in the peak rate of stormwater discharge from the Project Site in the developed condition compared to the existing condition.

All improvements and connections to BWSC infrastructure will be reviewed as part of BWSC's Site Plan Review process. The process includes a comprehensive design review of the proposed service connections, assessment of project demands and system capacity, and compliance with the City of Boston Zoning Code and Article 32.

7.4.3 Water Quality Impact

The Project will not adversely affect the water quality of nearby water bodies. Erosion and sediment control measures will be implemented during construction to minimize the transport of Project Site soils to off-site areas and BWSC storm drain systems. During construction, existing catch basins will be protected with filter fabric, straw bales and/or crushed stone, to provide for sediment removal from runoff. These controls will be inspected and maintained throughout the construction phase until all areas of disturbance have been stabilized through the placement of pavement, structure, or vegetative cover.

All necessary dewatering will be conducted in accordance with applicable MWRA and BWSC discharge permits. Once construction is complete, the Project will be in compliance with all local and state stormwater management policies. See below for additional information.

7.4.4 MassDEP Stormwater Management Policy Standards

Standard 1

No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

Compliance

The proposed design will comply with this Standard. The Project Site is not located near any wetlands or water bodies. Therefore, no new untreated stormwater will be directly discharged to, nor will erosion be caused to wetlands or waters of the Commonwealth as a result of stormwater discharges related to the Project.

Standard 2

Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.

Compliance

The proposed design will comply with this Standard. The post-development peak discharge rates will be less than or equal to the existing discharge rates as a result of the improvements associated with the Project.

Standard 3

For New Construction, loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. The standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

Compliance

The Project is a Redevelopment and will comply with this standard to the maximum extent practicable.

Standard 4

Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This standard is met when: (a) Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained; (b) Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and (c) Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.

Compliance

The proposed design will comply with this standard. Within the Project's limit of work, there will be mostly roof, landscape, parking and pedestrian areas. Any paved areas that would contribute unwanted sediments or pollutants to the existing storm drain systems will be collected by deep sump, hooded catch basins and treated before discharging into the BWSC system.

Standard 5

For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all land uses with higher potential pollutant loads cannot me completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the Proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c.21 §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.

Compliance

The proposed design will comply with this standard. The Project is not associated with Higher Potential Pollutant Loads (per the Policy, Volume I, page 1-6).

Standard 6

Stormwater discharges within Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area if there is a strong likelihood of significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A "storm water discharge" as defined in 314 CMR 3.04(2)(a)1 or (b) to an Outstanding

Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to a Zone I or Zone A are prohibited unless essential to the operation of a public water supply.

Compliance

The Proposed design will comply with this Standard. The Project will not discharge untreated stormwater to a sensitive area or any other area.

Standard 7

A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent possible. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

Compliance

The Project will comply with this standard. The Project complies with the Stormwater Management Standards as applicable to the redevelopment.

Standard 8

Erosion and sediment controls must be implemented to prevent impacts during construction or land disturbance activities.

Compliance

The Project will comply with this standard. Sedimentation and erosion controls will be incorporated as part of the design of this Project and employed during construction.

Standard 9

A Long-Term Operation and Maintenance (O&M) Plan shall be developed and implemented to ensure that stormwater management systems function as designed.

Compliance

The Project will comply with this standard. An O&M Plan including long-term BMP operation requirements will be prepared for the Project and will assume proper maintenance and functioning of the stormwater management system.

Standard 10

All illicit discharges to the stormwater management system are prohibited.

Compliance

The Project will comply with this standard. There will be no illicit connections associated with the Project.

7.5 Anticipated Energy Needs

7.5.1 Natural Gas

The existing site is serviced by the following existing gas lines:

- 18″ gas line in Harrison Avenue
- 6″ gas line in East Dedham Street
- 12″ gas line in Albany Street
- 6″ gas line in East Canton Street

The Proponent will work with the local gas company as the Project moves forward.

7.5.2 Electricity

The existing site is serviced by underground electric lines in East Dedham Street, Albany Street, East Canton Street, Andrews Street, and Harrison Avenue.

The Proponent will work with the appropriate utility as the Project moves forward.

7.5.3 Telecommunications

The Proponent will select private telecommunications companies to provide telephone, cable, and data services. There are several potential candidates with substantial Boston networks capable of providing service. Upon selection of a provider or providers, the Proponent will coordinate service connection locations and obtain appropriate approvals.

Chapter 8.0

Coordination with other Governmental Agencies

8.0 COORDINATION WITH OTHER GOVERNMENTAL AGENCIES

8.1 Architectural Access Board Requirements

The Project will comply with the requirements of the Massachusetts Architectural Access Board and will be designated to comply with the standards of the Americans with Disabilities Act. See Appendix F for the Accessibility Checklist.

8.2 Executive Office of Energy and Environmental Affairs, Massachusetts Environmental Policy Act (MEPA)

The Project is subject to review under the Massachusetts Environmental Policy Act (MEPA) because it requires modifications to the South End Urban Renewal Plan and Land Disposition Agreements as described in Section 1.5.5, which are considered state actions for MEPA purposes, and the Project exceeds a review threshold related to Transportation. An Environmental Notification Form will be filed with the MEPA Office of the Secretary of Energy and Environmental Affairs to initiate MEPA review.

8.3 Massachusetts Historical Commission

The Project will require review by MHC under State Register review regulations (950 CMR 71.00). The Project will commence MHC review through the MEPA process.

8.4 South End Landmark District Commission

The Project Site is located within the Protection Area bordering the South End Landmark District. The Proponent will seek SELDC approval for demolition of three buildings on the Project Site as part of the Project. The Project will also undergo the appropriate design review for new construction in the Protection Area. Under previous ownership, a demolition application was filed for the building located within the Project Site addressed at 75 East Dedham Street. The application was reviewed and approved by the SELD Commission on November 2013. At the appropriate time, the Proponent will submit a new application for the current Project.

8.5 Boston Civic Design Commission

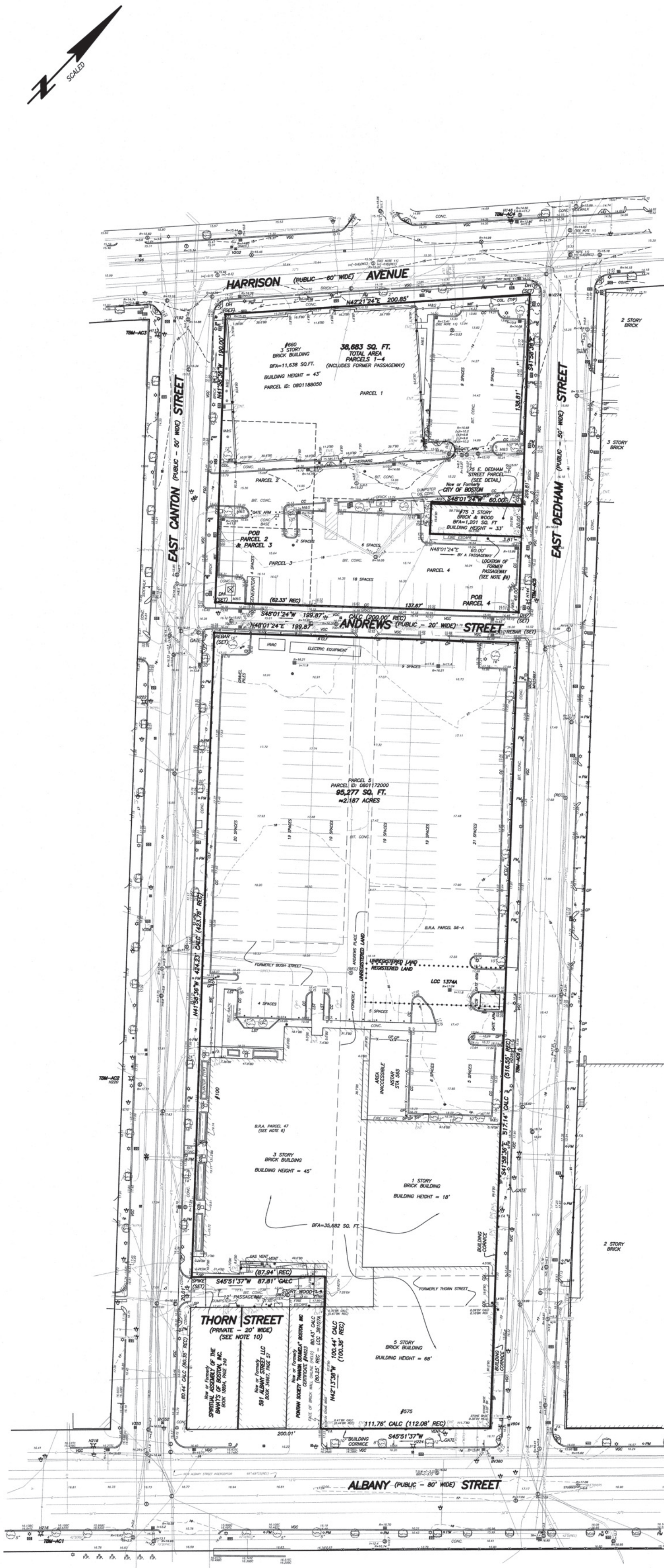
The Project will comply with the provisions of Article 28 of the Boston Zoning Code. This PNF will be submitted to the Boston Civic Design Commission by the BRA as part of the Article 80 process.

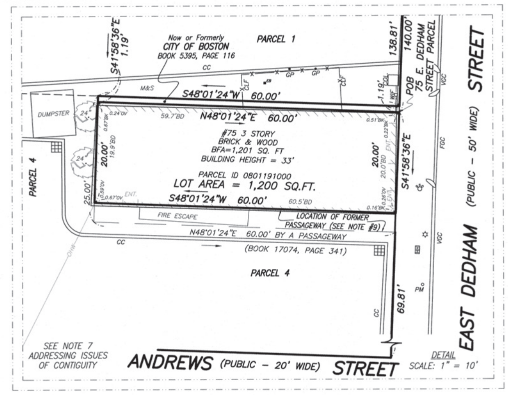
8.6 South End Urban Renewal Plan Consistency

Amendments to the South End URP and LDAs will be required to modify the use, dimensional, and procedural designations for portions of the Property. The necessary modifications will not significantly affect any of the basic elements of the South End URP.

Appendix A

Site Survey





NOTES:

1) BENCH MARK INFORMATION:

BENCH MARK USED:

TBM-MED-1: RIGHT BOLT OVER MAIN OUTLET OF HYDRANT ON THE SOUTH SIDE OF ALBANY STREET AT #650 ALBANY STREET. ELEVATION = 18.67

TBM-MED-2: RIGHT BOLT OVER MAIN OUTLET ON HYDRANT ON THE NORTH SIDE OF ALBANY STREET AT THE INTERSECTION OF EAST NEWTON STREET. ELEVATION = 19.28

TEMPORARY BENCH MARKS SET:

TBM-AC1: X-CUT IN RIGHT BOLT OVER MAIN OUTLET ON HYDRANT ACROSS FROM #601 ALBANY STREET, AS SHOWN HEREON. ELEVATION=19.12

TBM-AC2: X-CUT IN RIGHT BOLT OVER MAIN OUTLET ON HYDRANT IN FRONT OF #99 EAST CANTON STREET, AS SHOWN HEREON. ELEVATION=20.48

TBM-AC3: X-CUT IN RIGHT BOLT OVER MAIN OUTLET ON HYDRANT AT INTERSECTION OF EAST CANTON, AS SHOWN HEREON. ELEVATION=17.56

TBM-AC4: X-CUT ON LEFT BOLT OVER MAIN OUTLET ON HYDRANT ON NORTH SIDE OF HARRISION AVENUE, AS SHOWN HEREON. ELEVATION=16.41

TBM-AC5: X-CUT IN RIGHT BOLT OVER MAIN OUTLET ON HYDRANT AT INTERSECTION OF EAST DEDHAM AND ANDREWS STREET, AS SHOWN HEREON. ELEVATION=18.87

TBM-AC6: X-CUT IN RIGHT BOLT OVER MAIN OUTLET ON HYDRANT ON EAST DEDHAM STREET AS SHOWN HEREON. ELEVATION=20.67

2) ELEVATIONS REFER TO BOSTON CITY BASE.

3) CONTOUR INTERVAL EQUALS ONE (1) FOOT.

4) BY GRAPHIC PLOTTING ONLY, THE PARCEL SHOWN HEREON LIES WITHIN A ZONE "X" (UNSHADED), AN AREA OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN, AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (F.E.M.A) FLOOD INSURANCE RATE MAP (F.I.R.M.) FOR SUFFOLK COUNTY, MASSACHUSETTS, MAP NUMBER 25025C0097G, CITY OF BOSTON COMMUNITY NUMBER 250286, PANEL NUMBER 0079G, HAVING AN EFFECTIVE DATE OF SEPTEMBER 25, 2009.

5) UTILITY INFORMATION SHOWN IS BASED ON BOTH A FIELD SURVEY AND PLANS OF RECORD. THE LOCATIONS OF UNDERGROUND PIPES AND CONDUITS HAVE BEEN DETERMINED FROM THE AFOREMENTIONED RECORD PLANS AND ARE APPROXIMATE ONLY. WE CANNOT ASSUME RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES THAT ARE OMITTED OR INACCURATELY SHOWN ON SAID RECORD PLANS, SINCE SUB-SURFACE UTILITIES CANNOT BE VISIBLY VERIFIED. BEFORE PLANNING FUTURE CONNECTIONS, THE PROPER UTILITY ENGINEERING DEPARTMENT SHOULD BE CONSULTED AND THE ACTUAL LOCATION OF SUB-SURFACE STRUCTURES SHOULD BE DETERMINED IN THE FIELD. CALL, TOLL FREE, THE DIG SAFE CALL CENTER AT 1-888-344-7233 SEVENTY-TWO HOURS PRIOR TO EXCAVATION.

6) STREET LIGHTING RECORDS HAVE NOT BEEN RECEIVED FROM THE CITY OF BOSTON.

7) SEE "ALTA ENDORSEMENT – FORM 19-06 – CONTIGUITY – MULTIPLE PARCELS" ISSUED BY CHICAGO TITLE INSURANCE COMPANY, ATTACHED TO AND MADE A PART OF POLICY No. 1421-0158.

8) THIS DOCUMENT IS AN INSTRUMENT OF SERVICE OF FELDMAN LAND SURVEYORS ISSUED TO OUR CLIENT FOR PURPOSES RELATED DIRECTLY AND SOLELY TO FELDMAN LAND SURVEYORS' SCOPE OF SERVICES UNDER CONTRACT TO OUR CLIENT FOR THIS PROJECT. ANY USE OR REUSE OF THIS DOCUMENT FOR ANY REASON BY ANY PARTY FOR PURPOSES UNRELATED DIRECTLY AND SOLELY TO SAID CONTRACT SHALL BE AT THE USER'S SOLE AND EXCLUSIVE RISK AND LIABILITY, INCLUDING LIABILITY FOR VIOLATION OF COPYRIGHT LAWS, UNLESS WRITTEN CONSENT IS PROVIDED BY FELDMAN LAND SURVEYORS.

9) REFER TO MEMORANDUM BY MARSH, MORIARTY, ONTELL AND GOLDER P.C. DATED JULY 22, 2014, BULLETIN ITEM #7, WHICH STATES "THEREFORE ALL RIGHTS IN SAID PASSAGEWAY HAVE BEEN MERGED OUT."

10) THE CITY OF BOSTON ONLINE STREET BOOK LISTS THORN STREET AS A PRIVATE WAY "CLOSED FROM 123 E DEDHAM WESTERLY"

11) INVERTS ON 3 MANHOLES AND 2 CATCH BASINS IN AND NEAR HARRISON AVENUE WERE UNABLE TO BE VERIFIED. MANHOLES WERE OPENED BUT VISIBILITY IN THE MANHOLES AND CATCH BASINS WAS OBSTRUCTED BY STEAM.

LEGEND

SEWER MANHOLE
DRAIN MANHOLE
ELECTRIC MANHOLE
TELEPHONE MAHOLE
CABLE TV MANHOLE
STEAM MANHOLE
GAS SHUT OFF/GAS GATE
WATER SHUT OFF/WATER GATE
BOLLARD
HYDRANT
CATCH BASIN
UTILITY POLE
LIGHT POLE
BOSTON WATER VALVE
HANDICAP RAMP
MAILBOX
SIGN
PM PARKING METER
DRILL HOLE
FA FIRE ALARM
OBSERVATION WELL
SHRUB(S)
DECIDIOUS TREE
WALK LIGHT
CURB RETURN
SO SHUT OFF (UNKNOWN)
ELECTIC HANDHOLE
FP FLAG POLE
CO CLEAN OUT
GP GATE POST
ELECTRIC METER
GAS METER
TRANSFORMER
SECURITY CAMERA
STANDPIPE/SIAMESE CONNECTION
HANDICAP PARKING SPACES
ECB EMERGENCY CALL BOX

BC	BOTTOM OF CURB
BD	BUILDING DIMENSION
BFA	BUILDING FOOTPRINT AREA
BIT	BITUMINOUS
BK	BACK
BOT=	BOTTOM ELEVATION
CALC	CALCULATED
CC	CONCRETE CURB
CLF	CHAIN LINK FENCE
CONC	CONCRETE
DH	DRILL HOLE
ENT	ENTRANCE
FFE	FINISHED FLOOR ELEVATION
FGC	FLUSH GRANITE CURB
I=	INVERT ELEVATION
INACC.	INACCESSIBLE
LD	LOADING DOCK
LST	LANDSCAPE TIMBER
M&S	MULCH AND SHRUBS
NVP	NO VISIBLE PIPES
OV	OVER
POB	POINT OF BEGINNING
R=	RIM ELEVATION
REC	RECORD
SQ. FT.	SQUARE FEET
TBM	TEMPORARY BENCH MARK
TC	TOP OF CURB
TOD	TOP PF DEBRIS
TOW	TOP OF WATER
TR=	CENTERLINE OF TROUGH
TT=	TOP OF TRAP
TYP	TYPICAL
VGC	VERTICAL GRANITE CURB
WIF	WROUGHT IRON FENCE

REFERENCES

SUFFOLK COUNTY REGISTRY OF DEEDS

BOOK	PAGE
9945	340
18894	249
34967	57
42755	255
46331	180
50018	97
53388	194
53863	236
53863	240

PLAN BOOK	PAGE
931	194
6023	103
17546	46

PLAN NO.
25 OF 2006

MASSACHUSETTS LAND COURT
LCC 1374A
38107A

CERTIFICATE OF TITLE
94623
112665

CITY OF BOSTON ENGINEERING DEPARTMENT

FIELD BOOK	PAGE
757	52-61, 124-125

STREET LINE MAP
SOUTH END PROJECT R-56, SHEET S-23

I CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY AND THE LATEST PLANS AND DEEDS OF RECORD.

KARL A. MCCARTHY, PLS (MA# 38714)
kam@feldmansurveyors.com

10-13-2015
DATE

COMMONWEALTH OF MASSACHUSETTS
KARL A. McCARTHY
NO. 38714
REGISTERED
PROFESSIONAL LAND SURVEYOR

ORIGINALLY PREPARED AT 1"=20'

10/13/2015	REVISED BAR SCALE

EXISTING CONDITIONS PLAN
660 HARRISION AVENUE, 75 EAST DEDHAM STREET & 575 ALBANY STREET
BOSTON, MASS.

FELDMAN LAND SURVEYORS
112 SHAWMUT AVENUE
BOSTON, MASS. 02118

SEPTEMBER 2, 2015
PHONE: (617)357-9740
www.feldmansurveyors.com

FELDMAN
LAND SURVEYORS

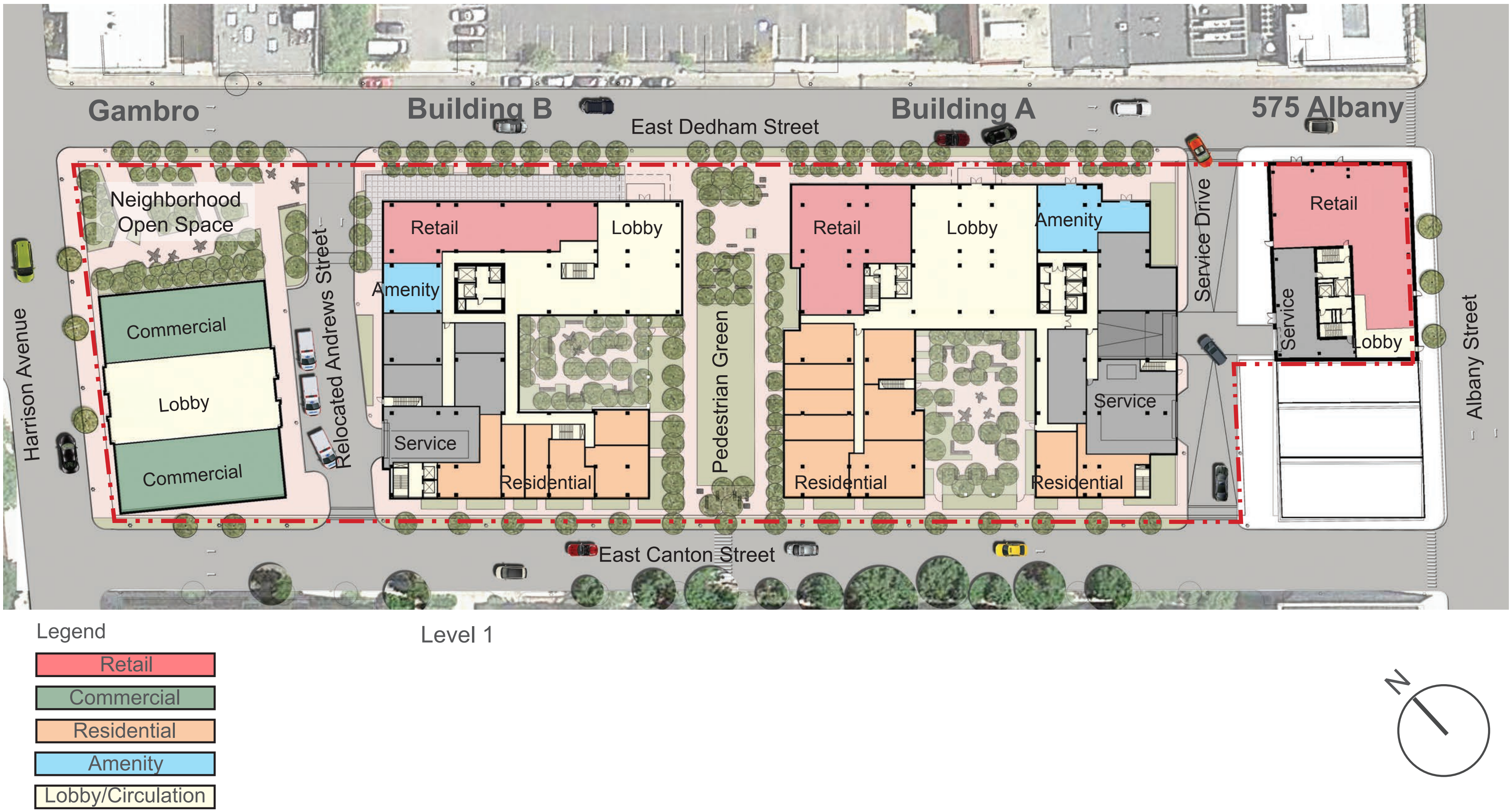
30 0 15 30 60 120
SCALE: 1"=30'

RESEARCH	FIELD CHIEF AC	PROJ MGR KAM	APPROVED	SHEET NO. 1 OF 1
CALC SCH	CADD SCH	FIELD CHECKED	CRD FILE	JOB NO. 14776

FILENAME: S:\PROJECTS\14700s\14776\DWG\14776-EC.dwg

Appendix B

Floor Plans, Sections and Elevations

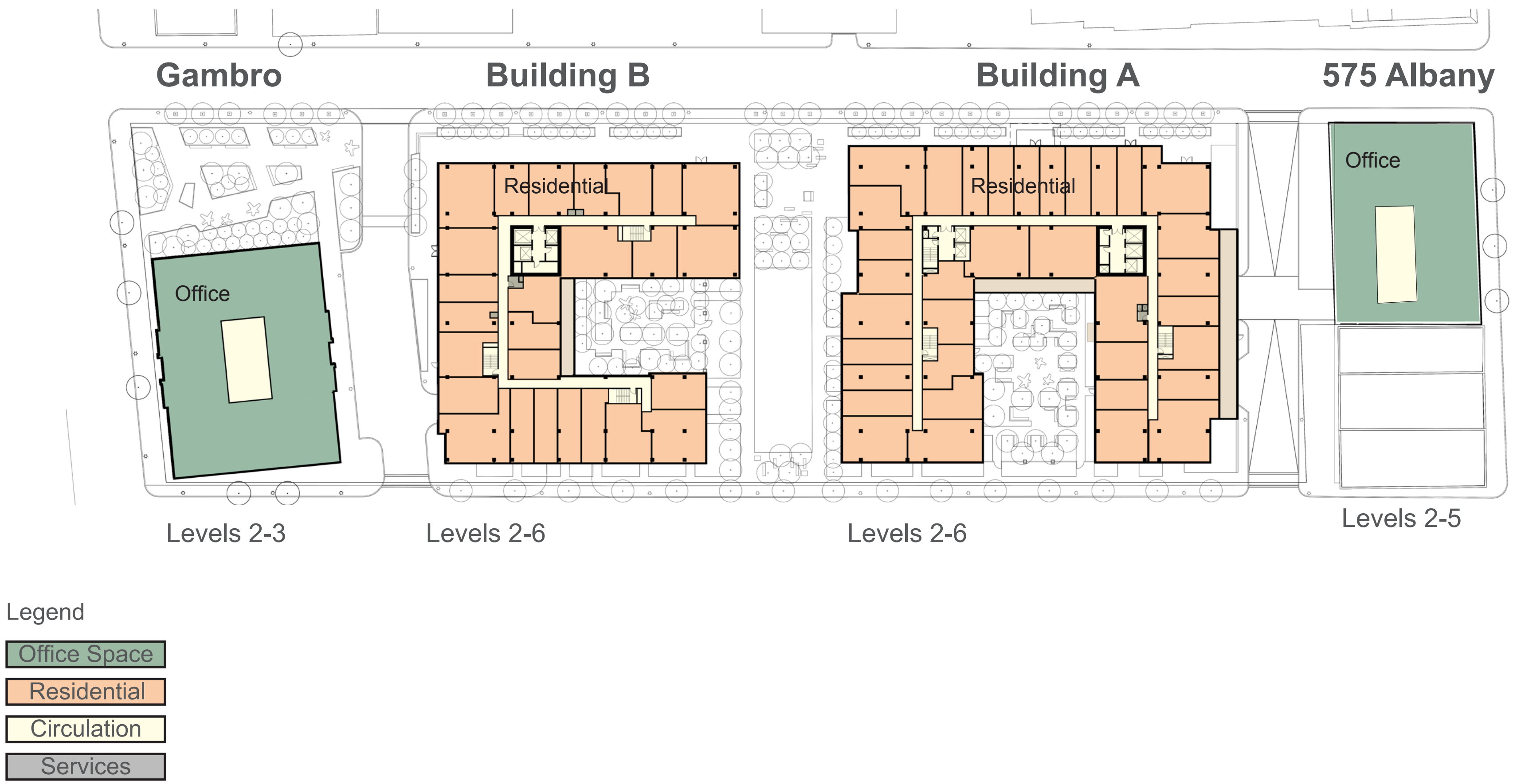


Level 1

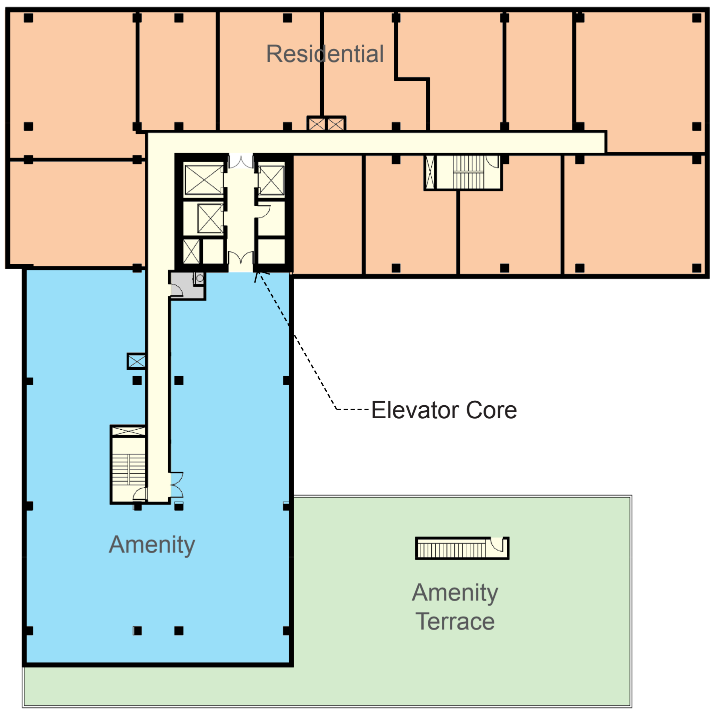
Harrison Albany Block **Boston, Massachusetts**

Epsilon ASSOCIATES INC.

Ground Floor Plan

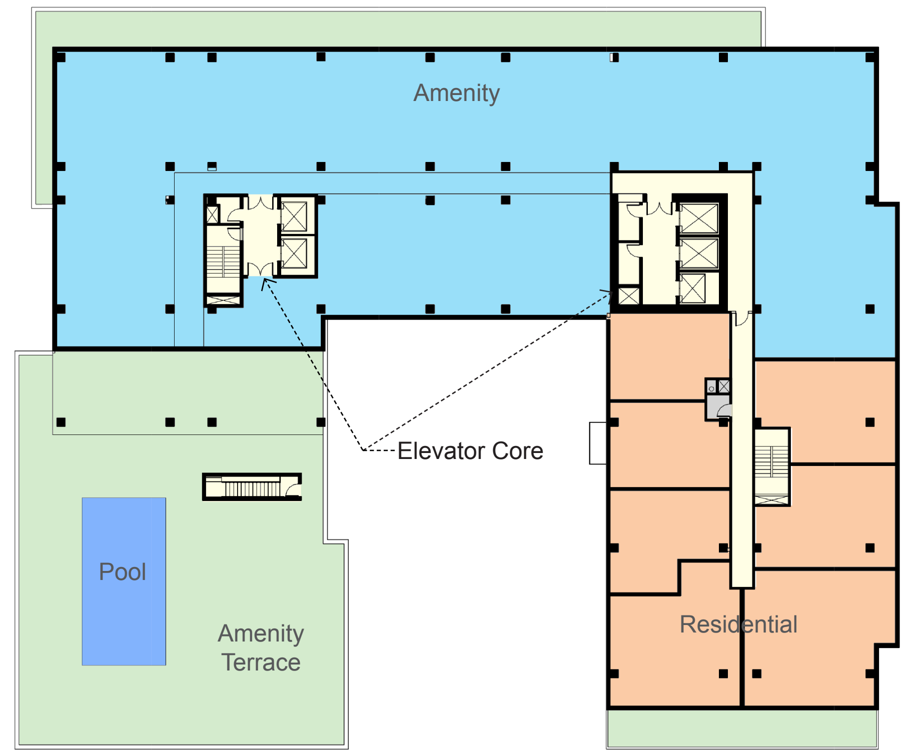

Gambro
Building B
Building A
575 Albany
Office
Residential
Residential
Office
Levels 2-3
Levels 2-6
Levels 2-6
Levels 2-5
Legend
Office Space
Residential
Circulation
Services

Building B



Level 7

Building A

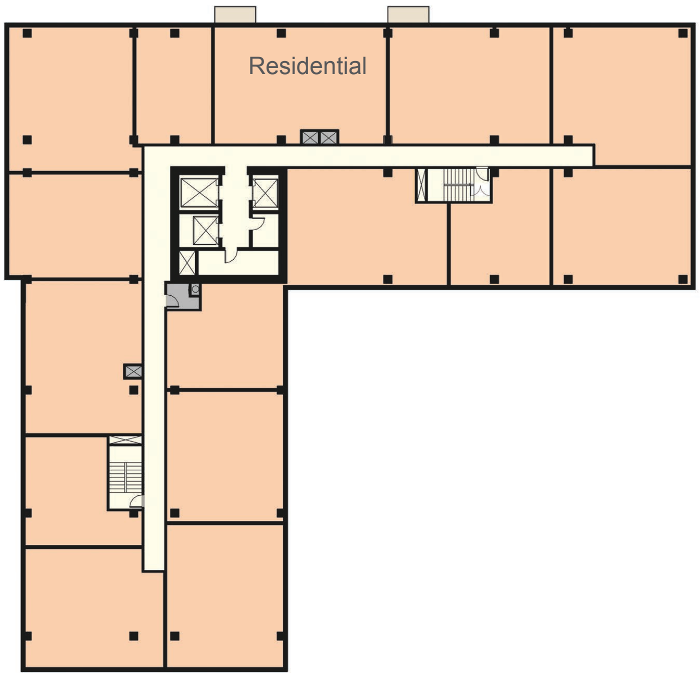


Level 7

Legend

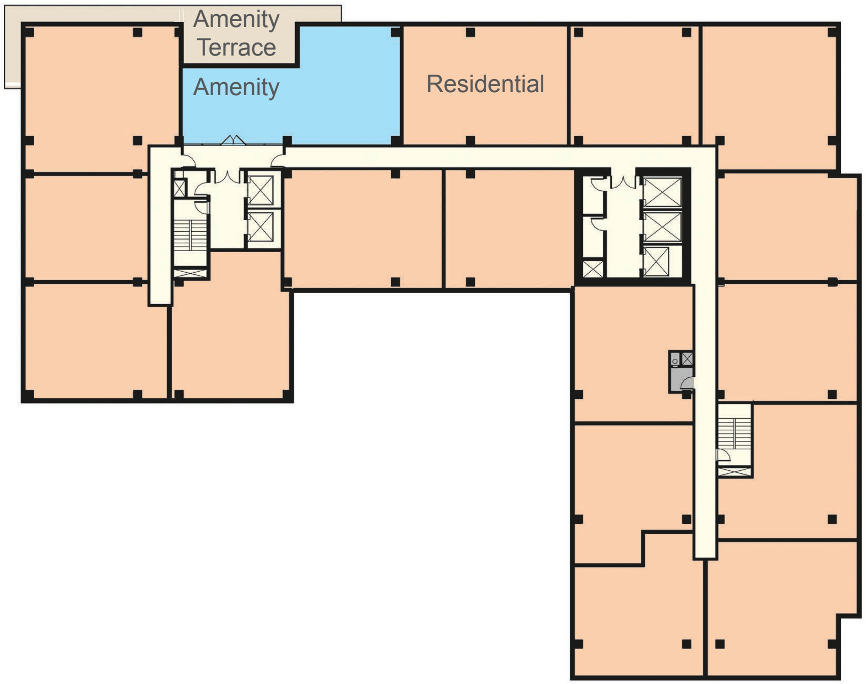
- Residential
- Amenity
- Circulation
- Terrace
- Services

Building B



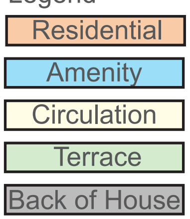
Level 11

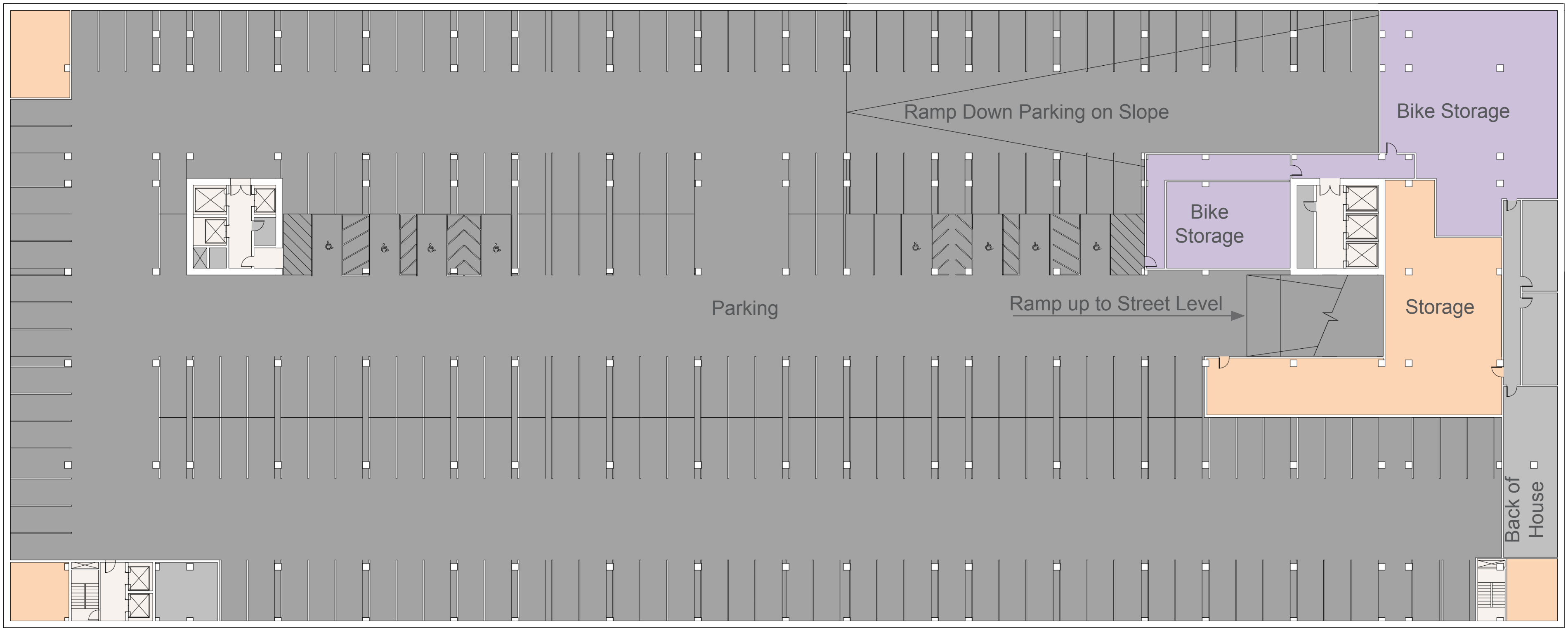
Building A



Level 19

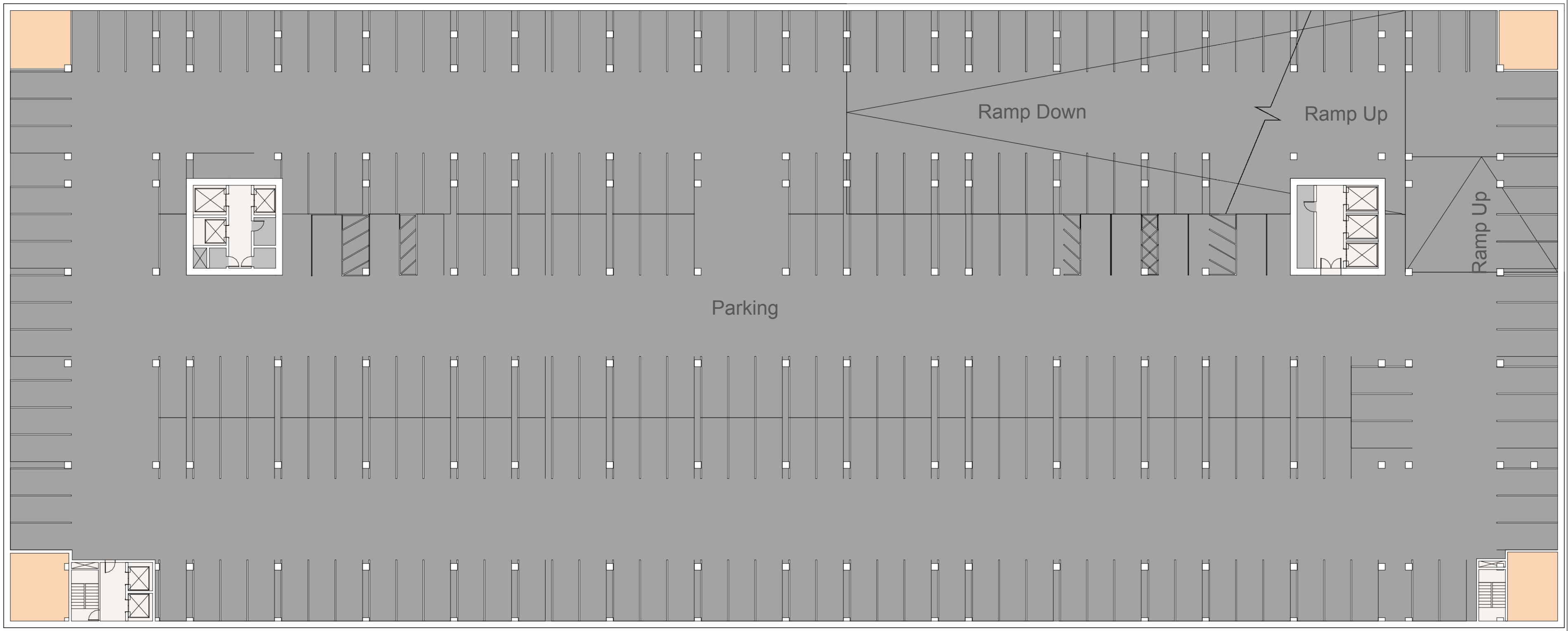
Legend





Parking Level 1

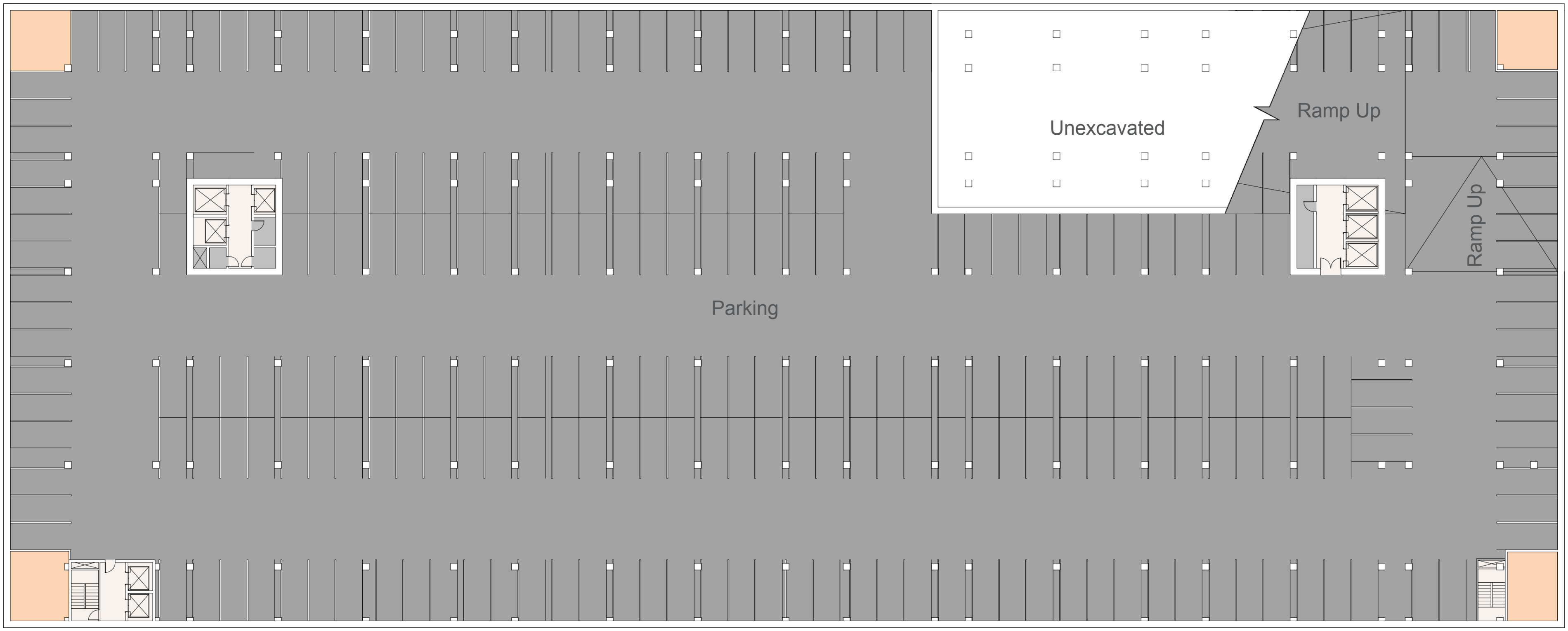
Legend
- Parking
- Storage
- Bike Storage
- Circulation
- Back of House



Parking Level 2

Legend

- Parking
- Storage
- Circulation



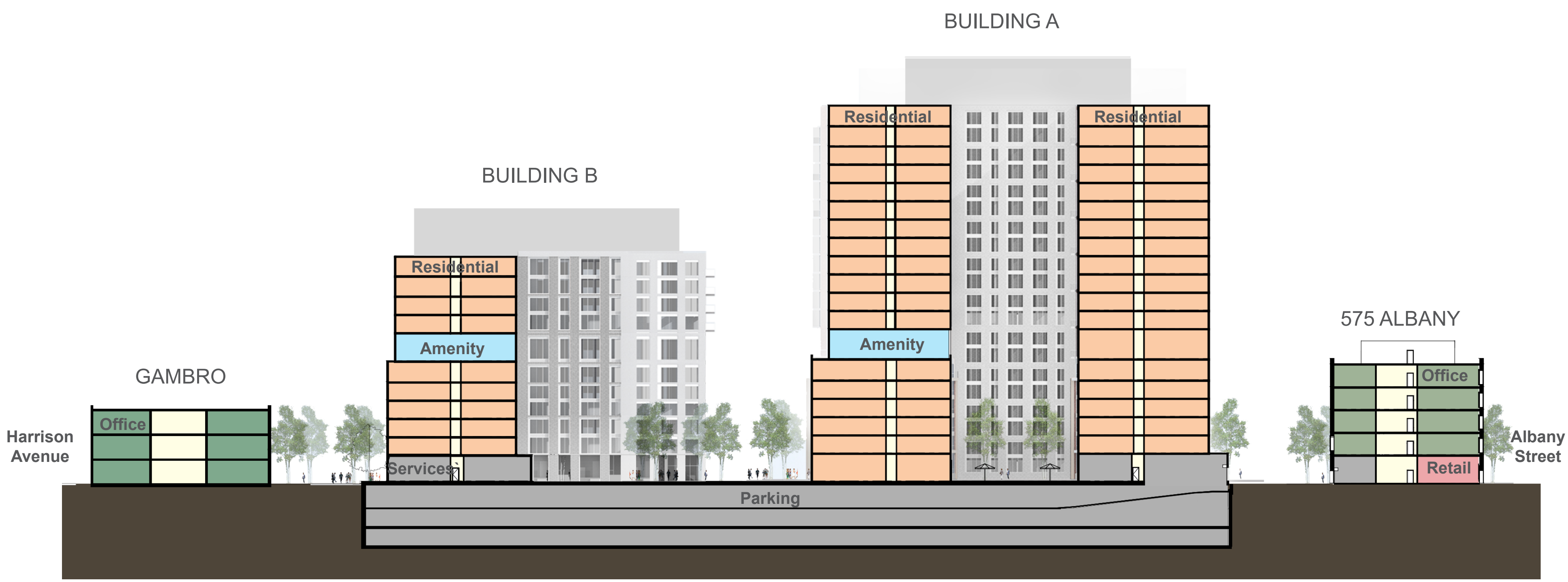
Parking Level 3

Legend

Parking

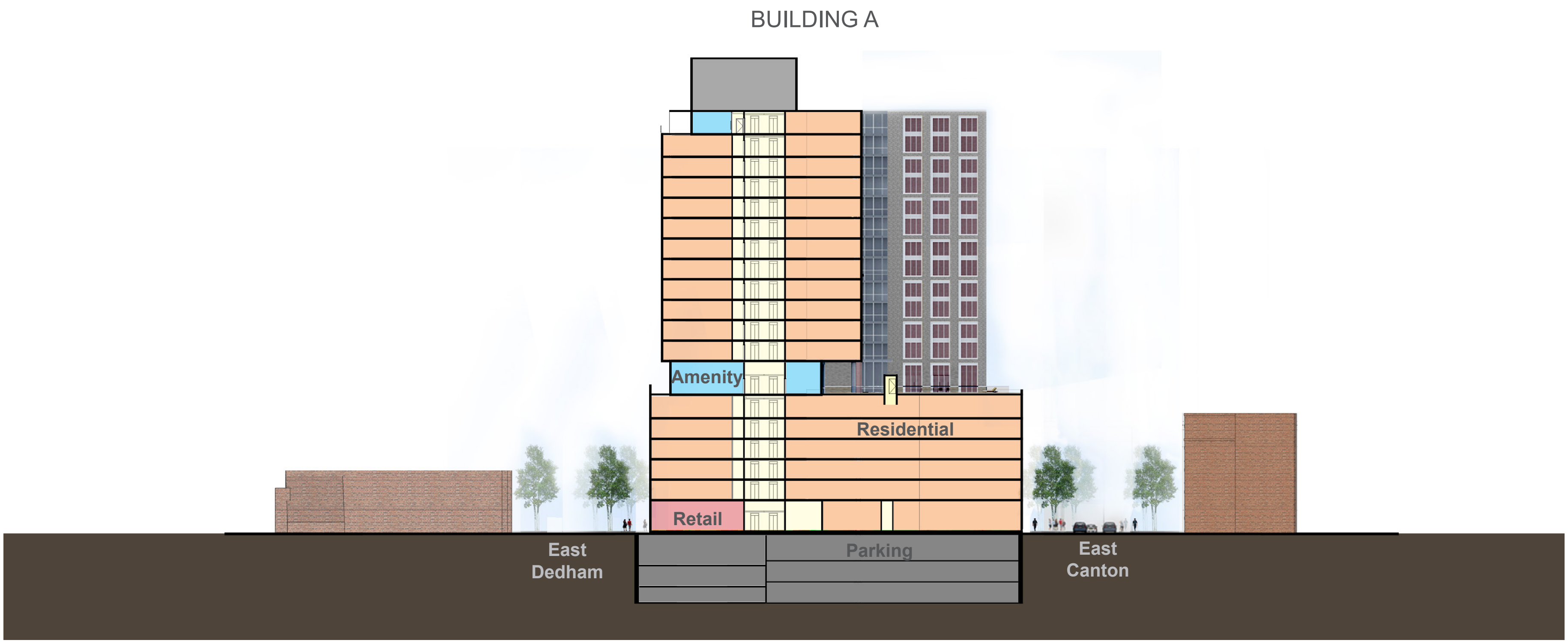
Storage

Circulation



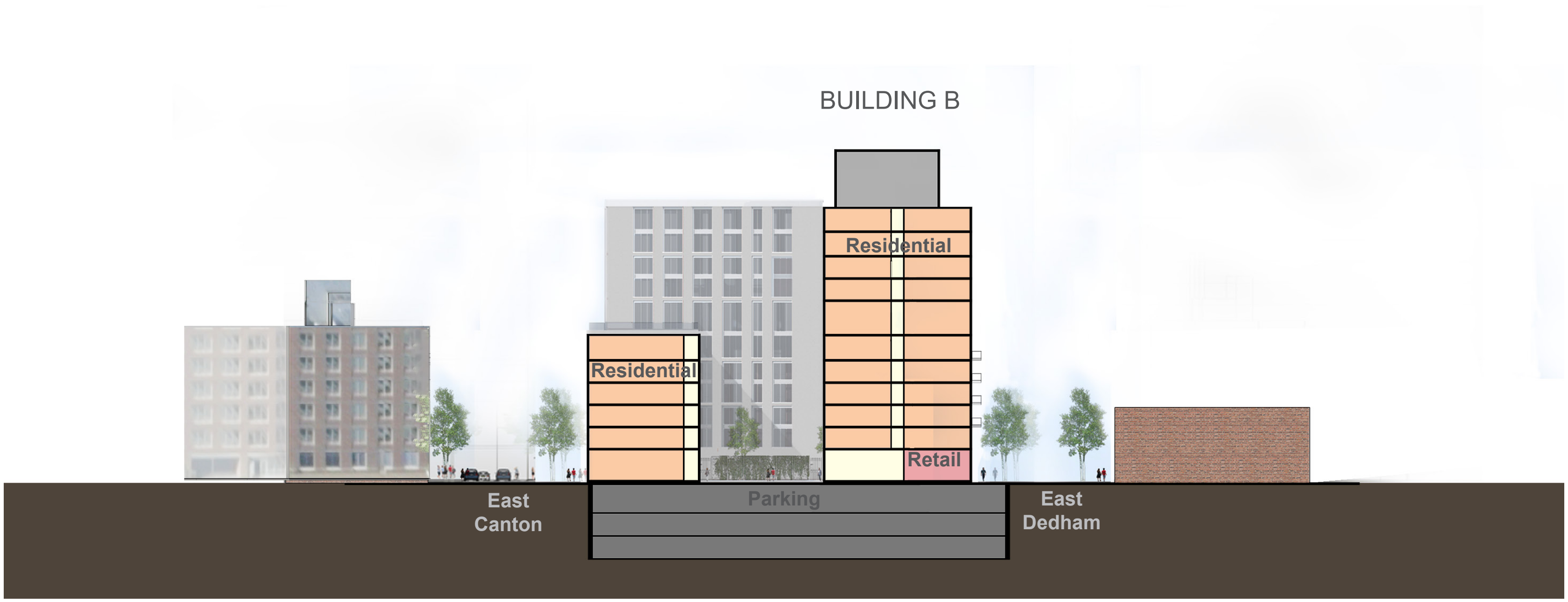
Legend

Retail	Amenity
Office Space	Circulation
Residential	Services



Legend

- Retail
- Office Space
- Residential
- Amenity
- Circulation
- Services



Legend

Retail	Amenity
Office Space	Circulation
Residential	Services


BUILDING A
BUILDING B
575
ALBANY
GAMBRO
Harrison
Avenue
Relocated
Andrews
Street
Pedestrian
Green
Service
Drive
Albany
Street

Harrison Albany Block **Boston, Massachusetts**

Epsilon ASSOCIATES INC.

Elevations
North Elevation, East Dedham Street

BUILDING A

Albany Street

BUILDING B

Andrews Street

BUILDING A

Pedestrian Green

BUILDING B

Pedestrian Green

Appendix C

Transportation

Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Canton Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054010
Site Code : 15054010
Start Date : 11/19/2015

Groups Printed- Cars - Trucks

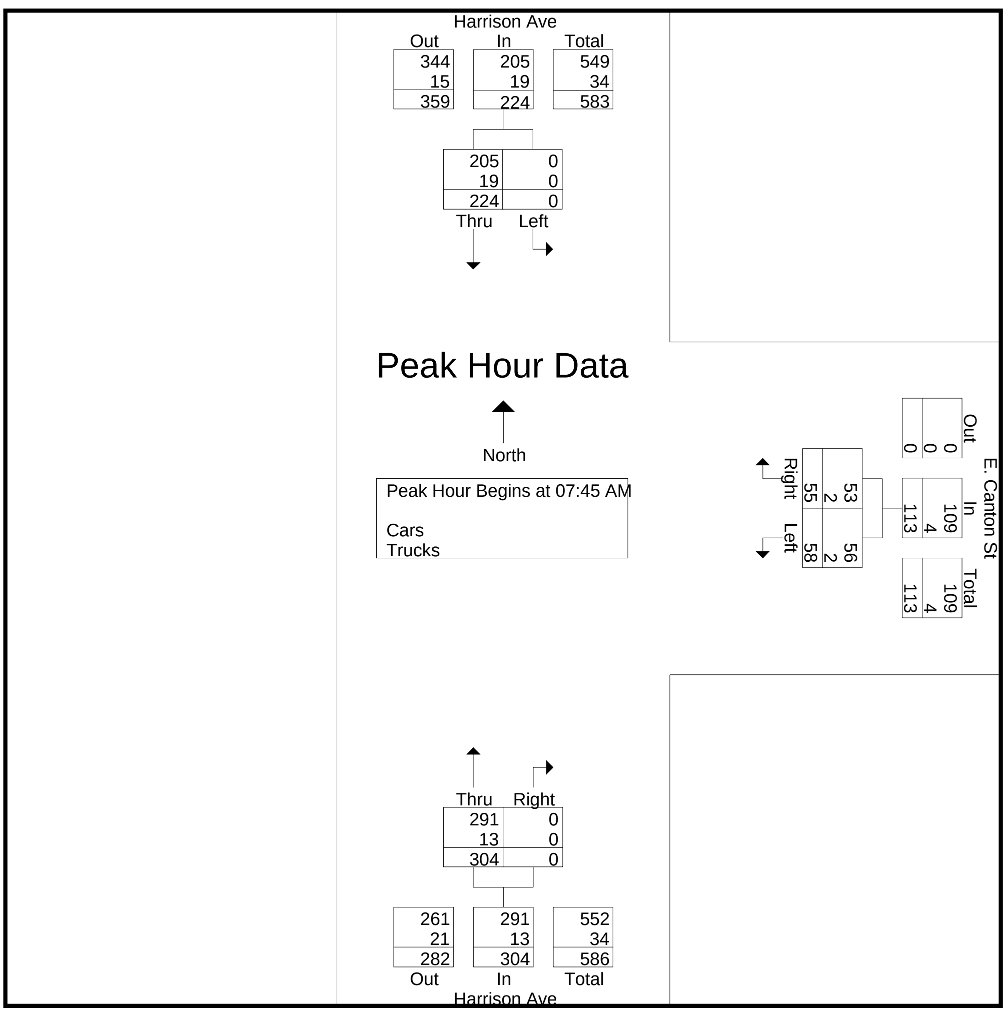
	Harrison Ave From North		E. Canton St From East		Harrison Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	0	41	14	4	54	0	113
07:15 AM	0	41	11	11	64	0	127
07:30 AM	0	40	12	10	57	0	119
07:45 AM	0	45	16	13	72	0	146
Total	0	167	53	38	247	0	505
08:00 AM	0	56	22	14	69	0	161
08:15 AM	0	60	10	14	90	0	174
08:30 AM	0	63	10	14	73	0	160
08:45 AM	0	50	17	11	56	0	134
Total	0	229	59	53	288	0	629
Grand Total	0	396	112	91	535	0	1134
Apprch %	0	100	55.2	44.8	100	0	
Total %	0	34.9	9.9	8	47.2	0	
Cars	0	358	108	88	512	0	1066
% Cars	0	90.4	96.4	96.7	95.7	0	94
Trucks	0	38	4	3	23	0	68
% Trucks	0	9.6	3.6	3.3	4.3	0	6

Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Canton Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054010
Site Code : 15054010
Start Date : 11/19/2015

	Harrison Ave From North			E. Canton St From East			Harrison Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	45	45	16	13	29	72	0	72	146
08:00 AM	0	56	56	22	14	36	69	0	69	161
08:15 AM	0	60	60	10	14	24	90	0	90	174
08:30 AM	0	63	63	10	14	24	73	0	73	160
Total Volume	0	224	224	58	55	113	304	0	304	641
% App. Total	0	100		51.3	48.7		100	0		
PHF	.000	.889	.889	.659	.982	.785	.844	.000	.844	.921
Cars	0	205	205	56	53	109	291	0	291	605
% Cars	0	91.5	91.5	96.6	96.4	96.5	95.7	0	95.7	94.4
Trucks	0	19	19	2	2	4	13	0	13	36
% Trucks	0	8.5	8.5	3.4	3.6	3.5	4.3	0	4.3	5.6



Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Canton Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054010
Site Code : 15054010
Start Date : 11/19/2015

Groups Printed- Bikes Peds

	Harrison Ave From North			E. Canton St From East			Harrison 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	1	0	10	0	0	0	10	1	11
07:15 AM	0	2	2	0	0	10	1	1	0	12	4	16
07:30 AM	0	3	0	1	0	8	1	0	3	11	5	16
07:45 AM	0	1	4	0	0	11	1	0	5	20	2	22
Total	0	6	6	2	0	39	3	1	8	53	12	65
08:00 AM	0	0	1	0	1	9	2	0	1	11	3	14
08:15 AM	0	1	0	0	0	19	6	0	0	19	7	26
08:30 AM	0	1	2	0	0	19	2	0	5	26	3	29
08:45 AM	0	3	1	0	0	19	5	0	1	21	8	29
Total	0	5	4	0	1	66	15	0	7	77	21	98
Grand Total	0	11	10	2	1	105	18	1	15	130	33	163
Apprch %	0	100		66.7	33.3		94.7	5.3				
Total %	0	33.3		6.1	3		54.5	3		79.8	20.2	

Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Canton Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054010
Site Code : 15054010
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

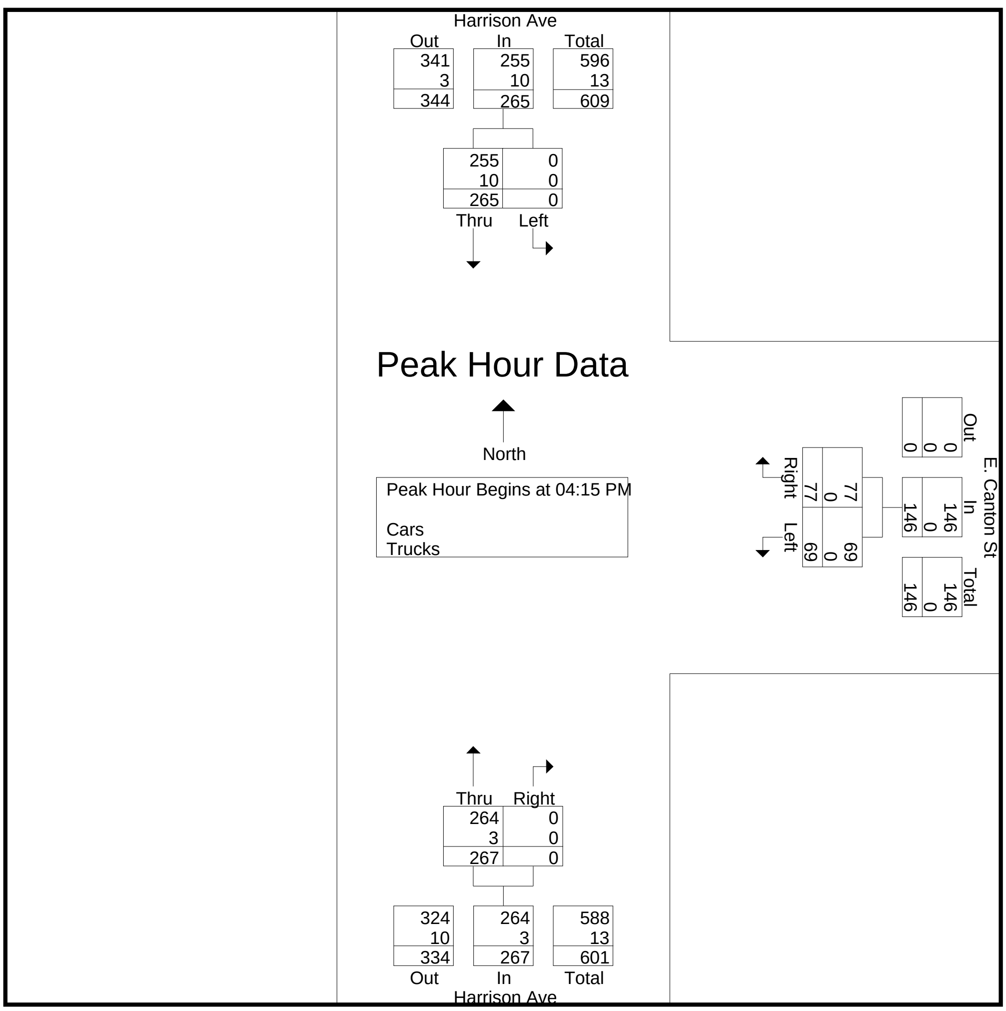
	Harrison Ave From North		E. Canton St From East		Harrison Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	0	69	20	19	65	0	173
04:15 PM	0	72	16	13	71	0	172
04:30 PM	0	65	20	21	63	0	169
04:45 PM	0	62	11	25	63	0	161
Total	0	268	67	78	262	0	675
05:00 PM	0	66	22	18	70	0	176
05:15 PM	0	72	17	17	63	0	169
05:30 PM	1	74	13	15	59	0	162
05:45 PM	0	70	10	18	67	0	165
Total	1	282	62	68	259	0	672
Grand Total	1	550	129	146	521	0	1347
Apprch %	0.2	99.8	46.9	53.1	100	0	
Total %	0.1	40.8	9.6	10.8	38.7	0	
Cars	1	534	129	146	513	0	1323
% Cars	100	97.1	100	100	98.5	0	98.2
Trucks	0	16	0	0	8	0	24
% Trucks	0	2.9	0	0	1.5	0	1.8

Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Canton Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054010
Site Code : 15054010
Start Date : 11/19/2015
Page No : 2

	Harrison Ave From North			E. Canton St From East			Harrison Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	0	72	72	16	13	29	71	0	71	172
04:30 PM	0	65	65	20	21	41	63	0	63	169
04:45 PM	0	62	62	11	25	36	63	0	63	161
05:00 PM	0	66	66	22	18	40	70	0	70	176
Total Volume	0	265	265	69	77	146	267	0	267	678
% App. Total	0	100		47.3	52.7		100	0		
PHF	.000	.920	.920	.784	.770	.890	.940	.000	.940	.963
Cars	0	255	255	69	77	146	264	0	264	665
% Cars	0	96.2	96.2	100	100	100	98.9	0	98.9	98.1
Trucks	0	10	10	0	0	0	3	0	3	13
% Trucks	0	3.8	3.8	0	0	0	1.1	0	1.1	1.9



Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Canton Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054010
Site Code : 15054010
Start Date : 11/19/2015

Groups Printed- Bikes Peds

	Harrison Ave From North			E. Canton St From East			Harrison 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	0	0	0	22	3	0	3	25	3	28
04:15 PM	0	0	1	1	0	14	0	0	4	19	1	20
04:30 PM	0	0	2	0	0	24	1	0	2	28	1	29
04:45 PM	0	1	0	0	0	14	0	0	3	17	1	18
Total	0	1	3	1	0	74	4	0	12	89	6	95
05:00 PM	0	0	1	0	0	23	2	0	3	27	2	29
05:15 PM	0	3	1	0	0	15	2	0	0	16	5	21
05:30 PM	0	2	0	0	0	10	2	0	4	14	4	18
05:45 PM	0	3	0	0	0	6	1	0	5	11	4	15
Total	0	8	2	0	0	54	7	0	12	68	15	83
Grand Total	0	9	5	1	0	128	11	0	24	157	21	178
Apprch %	0	100		100	0		100	0				
Total %	0	42.9		4.8	0		52.4	0		88.2	11.8	

Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Dedham Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054011
Site Code : 15054011
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

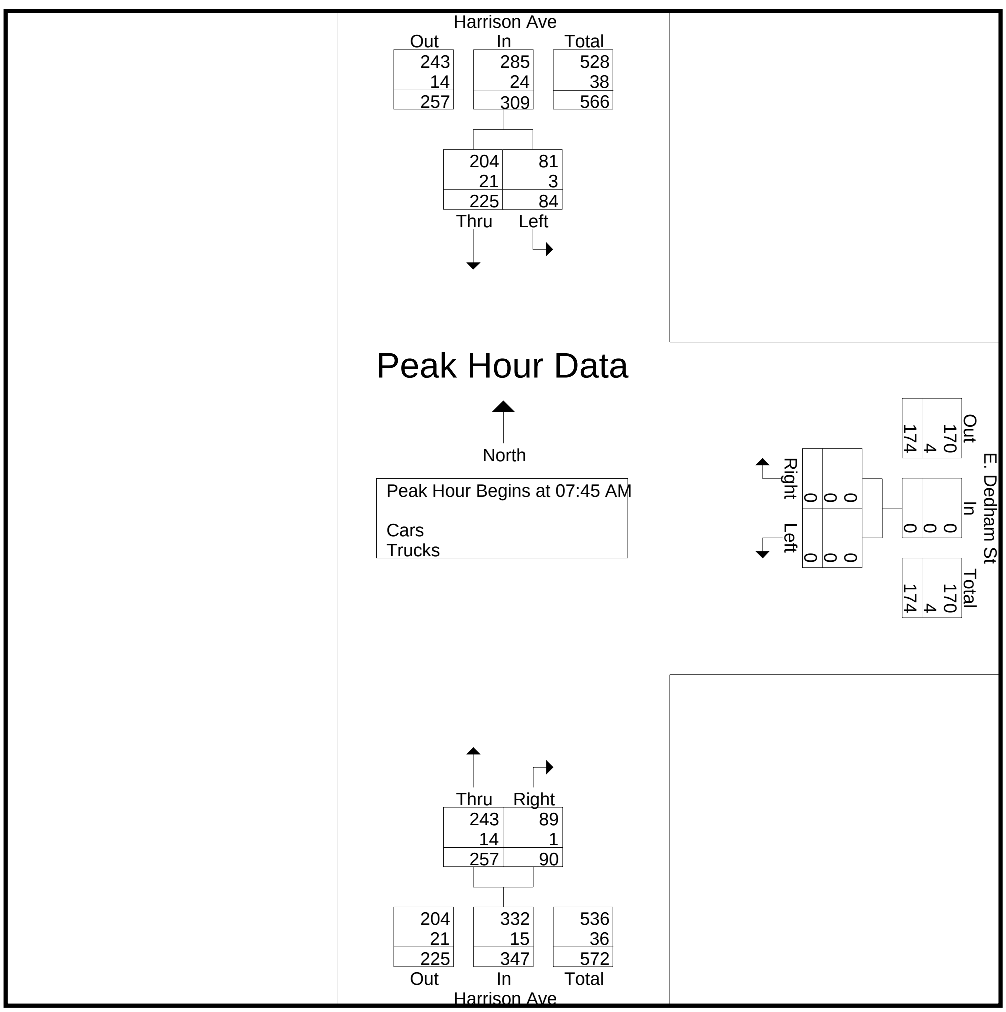
	Harrison Ave From North		E. Dedham St From East		Harrison Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	17	38	0	0	38	19	112
07:15 AM	10	38	0	0	46	24	118
07:30 AM	27	35	1	0	52	17	132
07:45 AM	22	44	0	0	69	21	156
Total	76	155	1	0	205	81	518
08:00 AM	27	62	0	0	62	22	173
08:15 AM	14	50	0	0	65	25	154
08:30 AM	21	69	0	0	61	22	173
08:45 AM	24	42	0	0	52	18	136
Total	86	223	0	0	240	87	636
Grand Total	162	378	1	0	445	168	1154
Apprch %	30	70	100	0	72.6	27.4	
Total %	14	32.8	0.1	0	38.6	14.6	
Cars	156	341	1	0	421	166	1085
% Cars	96.3	90.2	100	0	94.6	98.8	94
Trucks	6	37	0	0	24	2	69
% Trucks	3.7	9.8	0	0	5.4	1.2	6

Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Dedham Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054011
Site Code : 15054011
Start Date : 11/19/2015
Page No : 2

	Harrison Ave From North			E. Dedham St From East			Harrison Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	22	44	66	0	0	0	69	21	90	156
08:00 AM	27	62	89	0	0	0	62	22	84	173
08:15 AM	14	50	64	0	0	0	65	25	90	154
08:30 AM	21	69	90	0	0	0	61	22	83	173
Total Volume	84	225	309	0	0	0	257	90	347	656
% App. Total	27.2	72.8		0	0		74.1	25.9		
PHF	.778	.815	.858	.000	.000	.000	.931	.900	.964	.948
Cars	81	204	285	0	0	0	243	89	332	617
% Cars	96.4	90.7	92.2	0	0	0	94.6	98.9	95.7	94.1
Trucks	3	21	24	0	0	0	14	1	15	39
% Trucks	3.6	9.3	7.8	0	0	0	5.4	1.1	4.3	5.9



Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Dedham Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054011
Site Code : 15054011
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

	Harrison Ave From North		**E. Dedham St From East**		**Harrison Ave From South**		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	19	73	0	0	56	29	177
04:15 PM	17	68	0	0	74	10	169
04:30 PM	14	68	0	0	72	8	162
04:45 PM	12	61	0	0	77	14	164
Total	62	270	0	0	279	61	672
05:00 PM	19	68	0	0	78	18	183
05:15 PM	14	71	0	1	69	8	163
05:30 PM	15	75	0	0	64	8	162
05:45 PM	16	69	1	0	78	7	171
Total	64	283	1	1	289	41	679
Grand Total	126	553	1	1	568	102	1351
Apprch %	18.6	81.4	50	50	84.8	15.2	
Total %	9.3	40.9	0.1	0.1	42	7.5	
Cars	126	537	1	1	560	101	1326
% Cars	100	97.1	100	100	98.6	99	98.1
Trucks	0	16	0	0	8	1	25
% Trucks	0	2.9	0	0	1.4	1	1.9

Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Dedham Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054011
Site Code : 15054011
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

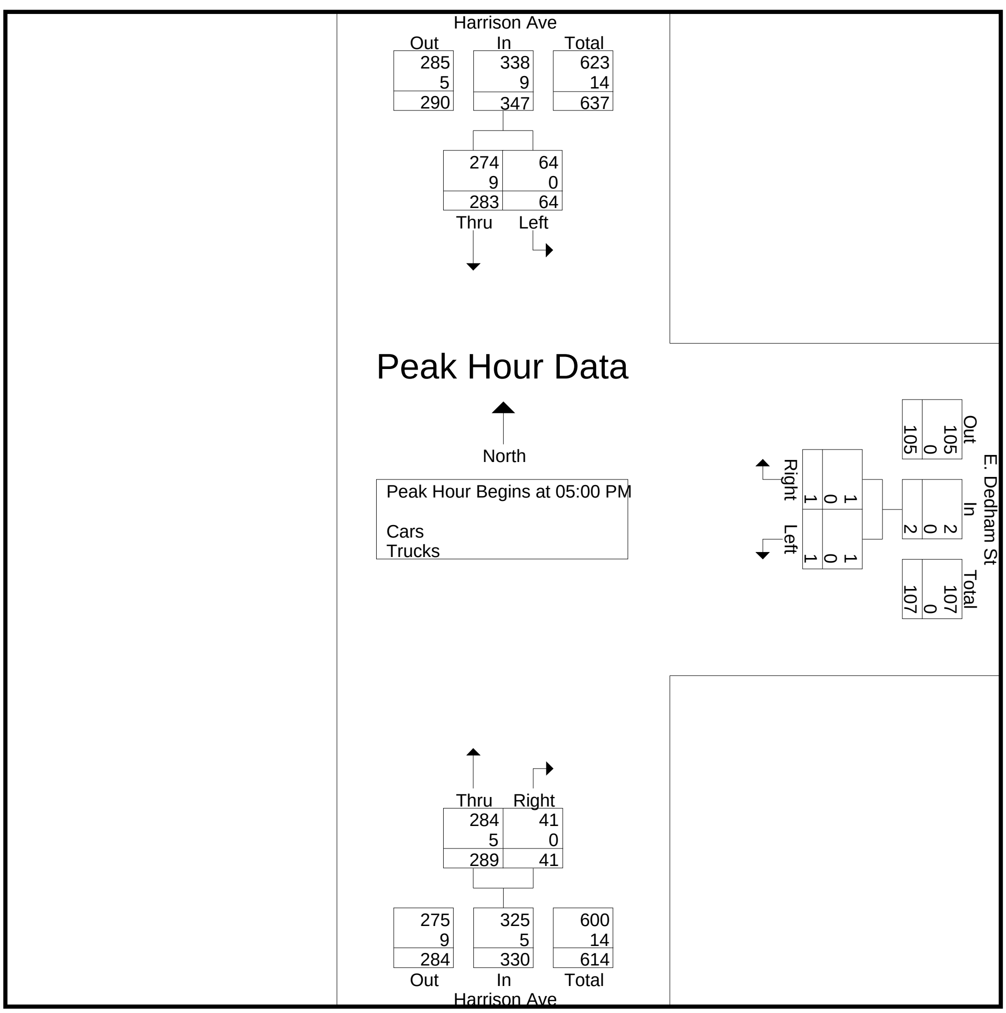
	Harrison Ave From North		E. Dedham St From East		Harrison Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	19	73	0	0	56	29	177
04:15 PM	17	68	0	0	74	10	169
04:30 PM	14	68	0	0	72	8	162
04:45 PM	12	61	0	0	77	14	164
Total	62	270	0	0	279	61	672
05:00 PM	19	68	0	0	78	18	183
05:15 PM	14	71	0	1	69	8	163
05:30 PM	15	75	0	0	64	8	162
05:45 PM	16	69	1	0	78	7	171
Total	64	283	1	1	289	41	679
Grand Total	126	553	1	1	568	102	1351
Apprch %	18.6	81.4	50	50	84.8	15.2	
Total %	9.3	40.9	0.1	0.1	42	7.5	
Cars	126	537	1	1	560	101	1326
% Cars	100	97.1	100	100	98.6	99	98.1
Trucks	0	16	0	0	8	1	25
% Trucks	0	2.9	0	0	1.4	1	1.9

Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Dedham Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054011
Site Code : 15054011
Start Date : 11/19/2015
Page No : 2

	Harrison Ave From North			E. Dedham St From East			Harrison 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	19	68	87	0	0	0	78	18	96	183
05:15 PM	14	71	85	0	1	1	69	8	77	163
05:30 PM	15	75	90	0	0	0	64	8	72	162
05:45 PM	16	69	85	1	0	1	78	7	85	171
Total Volume	64	283	347	1	1	2	289	41	330	679
% App. Total	18.4	81.6		50	50		87.6	12.4		
PHF	.842	.943	.964	.250	.250	.500	.926	.569	.859	.928
Cars	64	274	338	1	1	2	284	41	325	665
% Cars	100	96.8	97.4	100	100	100	98.3	100	98.5	97.9
Trucks	0	9	9	0	0	0	5	0	5	14
% Trucks	0	3.2	2.6	0	0	0	1.7	0	1.5	2.1



Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Dedham Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054011
Site Code : 15054011
Start Date : 11/19/2015
Page No : 10

Groups Printed- Bikes Peds

	Harrison Ave From North			E. Dedham St From East			Harrison 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	8	0	0	24	3	0	1	33	3	36
04:15 PM	0	0	7	0	0	16	0	0	2	25	0	25
04:30 PM	0	0	4	0	0	22	1	0	2	28	1	29
04:45 PM	0	1	6	0	0	17	0	1	1	24	2	26
Total	0	1	25	0	0	79	4	1	6	110	6	116
05:00 PM	0	1	12	0	0	19	4	0	1	32	5	37
05:15 PM	0	2	5	0	0	18	3	0	2	25	5	30
05:30 PM	0	1	5	0	0	12	2	0	0	17	3	20
05:45 PM	0	3	4	0	0	15	1	0	0	19	4	23
Total	0	7	26	0	0	64	10	0	3	93	17	110
Grand Total	0	8	51	0	0	143	14	1	9	203	23	226
Apprch %	0	100		0	0		93.3	6.7				
Total %	0	34.8		0	0		60.9	4.3		89.8	10.2	

Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : WarehamSt / Reynolds Way
City/State : Boston, MA
Weather : Clear

File Name : 15054012
Site Code : 15054012
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

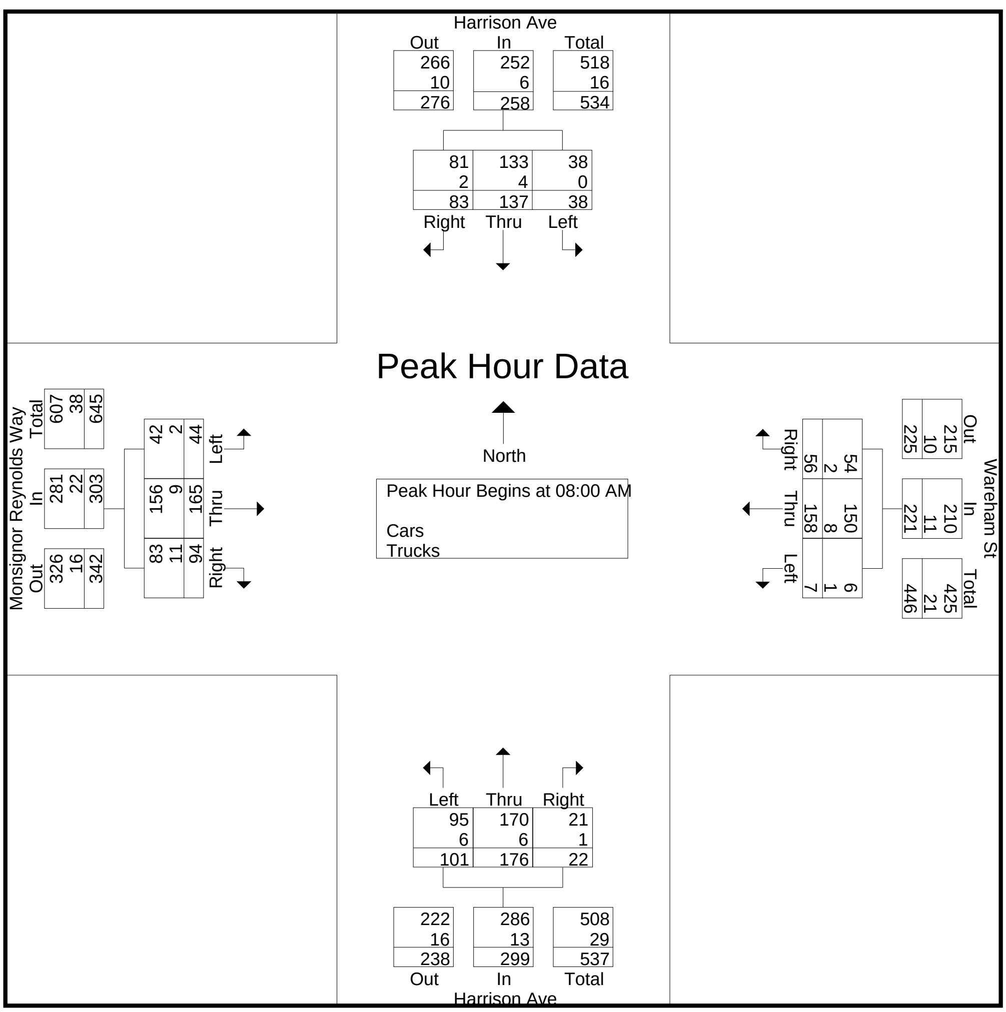
	Harrison Ave From North			Wareham St From East			Harrison Ave From South			Monsignor Reynolds Way From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	10	15	14	2	27	15	16	40	5	5	31	23	203
07:15 AM	19	35	24	2	32	25	21	41	5	13	31	28	276
07:30 AM	6	37	18	2	23	19	21	41	6	13	29	30	245
07:45 AM	11	25	7	1	31	13	29	34	6	5	37	20	219
Total	46	112	63	7	113	72	87	156	22	36	128	101	943
08:00 AM	9	32	19	1	37	18	30	48	2	13	45	21	275
08:15 AM	6	23	18	3	30	13	20	48	5	6	36	23	231
08:30 AM	14	37	22	0	48	13	28	33	9	17	32	30	283
08:45 AM	9	45	24	3	43	12	23	47	6	8	52	20	292
Total	38	137	83	7	158	56	101	176	22	44	165	94	1081
Grand Total	84	249	146	14	271	128	188	332	44	80	293	195	2024
Apprch %	17.5	52	30.5	3.4	65.6	31	33.3	58.9	7.8	14.1	51.6	34.3	
Total %	4.2	12.3	7.2	0.7	13.4	6.3	9.3	16.4	2.2	4	14.5	9.6	
Cars	81	241	142	13	257	124	176	322	43	77	278	175	1929
% Cars	96.4	96.8	97.3	92.9	94.8	96.9	93.6	97	97.7	96.2	94.9	89.7	95.3
Trucks	3	8	4	1	14	4	12	10	1	3	15	20	95
% Trucks	3.6	3.2	2.7	7.1	5.2	3.1	6.4	3	2.3	3.8	5.1	10.3	4.7

Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : WarehamSt / Reynolds Way
City/State : Boston, MA
Weather : Clear

File Name : 15054012
Site Code : 15054012
Start Date : 11/19/2015

	Harrison Ave From North				Wareham St From East				Harrison Ave From South				Monsignor Reynolds Way 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	9	32	19	60	1	37	18	56	30	48	2	80	13	45	21	79	275
08:15 AM	6	23	18	47	3	30	13	46	20	48	5	73	6	36	23	65	231
08:30 AM	14	37	22	73	0	48	13	61	28	33	9	70	17	32	30	79	283
08:45 AM	9	45	24	78	3	43	12	58	23	47	6	76	8	52	20	80	292
Total Volume	38	137	83	258	7	158	56	221	101	176	22	299	44	165	94	303	1081
% App. Total	14.7	53.1	32.2		3.2	71.5	25.3		33.8	58.9	7.4		14.5	54.5	31		
PHF	.679	.761	.865	.827	.583	.823	.778	.906	.842	.917	.611	.934	.647	.793	.783	.947	.926
Cars	38	133	81	252	6	150	54	210	95	170	21	286	42	156	83	281	1029
% Cars	100	97.1	97.6	97.7	85.7	94.9	96.4	95.0	94.1	96.6	95.5	95.7	95.5	94.5	88.3	92.7	95.2
Trucks	0	4	2	6	1	8	2	11	6	6	1	13	2	9	11	22	52
% Trucks	0	2.9	2.4	2.3	14.3	5.1	3.6	5.0	5.9	3.4	4.5	4.3	4.5	5.5	11.7	7.3	4.8



Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : WarehamSt / Reynolds Way
City/State : Boston, MA
Weather : Clear

File Name : 15054012
Site Code : 15054012
Start Date : 11/19/2015
Page No : 10

Groups Printed- Bikes Peds

	Harrison Ave From North				Wareham St From East				Harrison Ave From South				Monsignor Reynolds Way 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	8	0	0	0	21	0	0	0	5	0	0	0	8	42	1	43
07:15 AM	0	1	0	7	0	0	0	27	0	1	0	2	0	0	0	6	42	2	44
07:30 AM	0	1	0	6	0	1	0	13	0	2	0	10	0	0	0	8	37	4	41
07:45 AM	0	1	0	4	0	0	0	8	0	3	0	13	0	0	1	21	46	5	51
Total	0	4	0	25	0	1	0	69	0	6	0	30	0	0	1	43	167	12	179
08:00 AM	1	0	0	0	0	0	0	11	0	2	0	4	0	0	1	18	33	4	37
08:15 AM	1	0	0	2	0	1	2	10	0	9	0	1	0	1	0	19	32	14	46
08:30 AM	0	2	0	4	0	0	0	19	0	0	0	1	0	0	0	13	37	2	39
08:45 AM	0	1	0	2	0	0	0	12	0	2	0	3	0	2	0	19	36	5	41
Total	2	3	0	8	0	1	2	52	0	13	0	9	0	3	1	69	138	25	163
Grand Total	2	7	0	33	0	2	2	121	0	19	0	39	0	3	2	112	305	37	342
Apprch %	22.2	77.8	0		0	50	50		0	100	0		0	60	40				
Total %	5.4	18.9	0		0	5.4	5.4		0	51.4	0		0	8.1	5.4		89.2	10.8	

Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : WarehamSt / Reynolds Way
City/State : Boston, MA
Weather : Clear

File Name : 15054012
Site Code : 15054012
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

	Harrison Ave From North			Wareham St From East			Harrison Ave From South			Monsignor Reynolds Way From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	1	39	17	27	45	15	14	66	23	12	52	30	341
04:15 PM	0	32	17	28	56	10	18	46	24	10	58	14	313
04:30 PM	3	60	13	38	48	2	18	53	18	9	49	18	329
04:45 PM	2	46	26	40	48	7	18	51	20	10	42	19	329
Total	6	177	73	133	197	34	68	216	85	41	201	81	1312
05:00 PM	1	61	23	39	59	7	17	35	17	12	57	32	360
05:15 PM	3	37	26	24	55	9	15	43	20	17	56	24	329
05:30 PM	6	53	18	27	55	6	17	47	21	10	55	21	336
05:45 PM	1	55	27	23	69	7	24	50	24	14	47	27	368
Total	11	206	94	113	238	29	73	175	82	53	215	104	1393
Grand Total	17	383	167	246	435	63	141	391	167	94	416	185	2705
Apprch %	3	67.5	29.5	33.1	58.5	8.5	20.2	55.9	23.9	13.5	59.9	26.6	
Total %	0.6	14.2	6.2	9.1	16.1	2.3	5.2	14.5	6.2	3.5	15.4	6.8	
Cars	17	371	166	243	433	62	136	375	156	90	412	181	2642
% Cars	100	96.9	99.4	98.8	99.5	98.4	96.5	95.9	93.4	95.7	99	97.8	97.7
Trucks	0	12	1	3	2	1	5	16	11	4	4	4	63
% Trucks	0	3.1	0.6	1.2	0.5	1.6	3.5	4.1	6.6	4.3	1	2.2	2.3

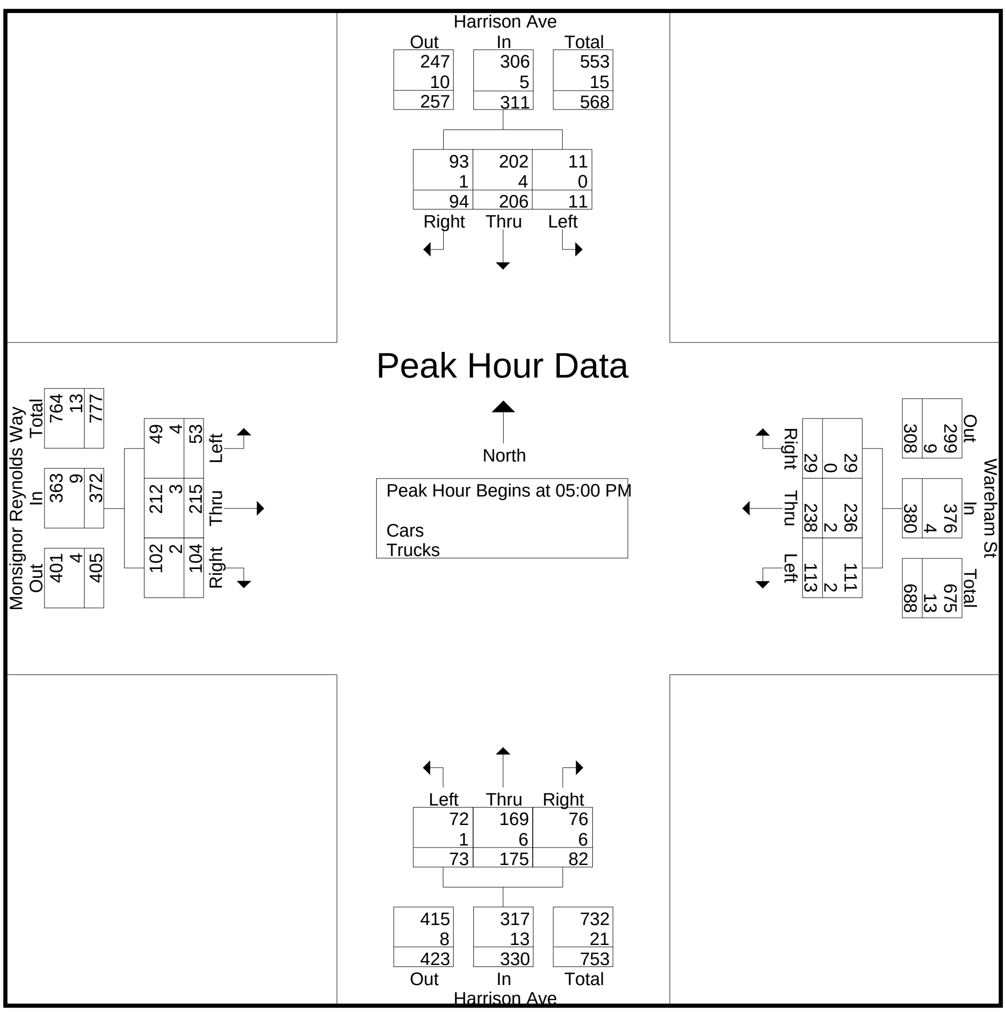
Accurate Counts

978-664-2565

N/S Street : Harrison Avenue
E/W Street : WarehamSt / Reynolds Way
City/State : Boston, MA
Weather : Clear

File Name : 15054012
Site Code : 15054012
Start Date : 11/19/2015

	Harrison Ave From North				**Wareham St From East**				**Harrison Ave From South**				**Monsignor Reynolds Way From West**				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	1	61	23	85	39	59	7	105	17	35	17	69	12	57	32	101	360
05:15 PM	3	37	26	66	24	55	9	88	15	43	20	78	17	56	24	97	329
05:30 PM	6	53	18	77	27	55	6	88	17	47	21	85	10	55	21	86	336
05:45 PM	1	55	27	83	23	69	7	99	24	50	24	98	14	47	27	88	368
Total Volume	11	206	94	311	113	238	29	380	73	175	82	330	53	215	104	372	1393
% App. Total	3.5	66.2	30.2		29.7	62.6	7.6		22.1	53	24.8		14.2	57.8	28		
PHF	.458	.844	.870	.915	.724	.862	.806	.905	.760	.875	.854	.842	.779	.943	.813	.921	.946
Cars	11	202	93	306	111	236	29	376	72	169	76	317	49	212	102	363	1362
% Cars	100	98.1	98.9	98.4	98.2	99.2	100	98.9	98.6	96.6	92.7	96.1	92.5	98.6	98.1	97.6	97.8
Trucks	0	4	1	5	2	2	0	4	1	6	6	13	4	3	2	9	31
% Trucks	0	1.9	1.1	1.6	1.8	0.8	0	1.1	1.4	3.4	7.3	3.9	7.5	1.4	1.9	2.4	2.2



Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : WarehamSt / Reynolds Way
City/State : Boston, MA
Weather : Clear

File Name : 15054012
Site Code : 15054012
Start Date : 11/19/2015
Page No : 10

Groups Printed- Bikes Peds

	Harrison Ave From North				Wareham St From East				Harrison Ave From South				Monsignor Reynolds Way 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	19	1	2	0	1	1	0	0	21	0	0	0	6	47	4	51
04:15 PM	0	1	0	24	0	0	0	1	1	0	0	11	0	0	0	3	39	2	41
04:30 PM	0	0	0	21	1	1	0	2	0	0	0	4	0	1	0	2	29	3	32
04:45 PM	0	0	0	17	1	0	0	0	0	1	1	11	0	2	0	0	28	5	33
Total	0	1	0	81	3	3	0	4	2	1	1	47	0	3	0	11	143	14	157
05:00 PM	0	0	0	12	1	1	0	0	0	0	0	29	0	1	0	0	41	3	44
05:15 PM	0	1	1	19	0	3	0	0	0	0	0	21	0	4	1	8	48	10	58
05:30 PM	0	0	0	16	0	0	1	0	0	1	0	21	1	3	1	8	45	7	52
05:45 PM	0	1	0	19	0	2	0	0	0	0	0	9	0	3	0	10	38	6	44
Total	0	2	1	66	1	6	1	0	0	1	0	80	1	11	2	26	172	26	198
Grand Total	0	3	1	147	4	9	1	4	2	2	1	127	1	14	2	37	315	40	355
Apprch %	0	75	25		28.6	64.3	7.1		40	40	20		5.9	82.4	11.8				
Total %	0	7.5	2.5		10	22.5	2.5		5	5	2.5		2.5	35	5		88.7	11.3	

Accurate Counts
978-664-2565

N/S Street : Washington Street
E/W Street : Monsignor Reynolds Way
City/State : Boston, MA
Weather : Cloudy

File Name : 15054001
Site Code : 15054001
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

	Washington St From North				Mosignor Reynolds Way From East				Washington St From South				Mosignor Reynolds Way From West				Pelham St From Northwest				
Start Time	Left	Thru	Right	Hd Rt	Left	Thru	Br Rt	Right	Left	Br Lt	Thru	Right	Hd Lt	Left	Thru	Right	Hd Lt	Br Lt	Br Rt	Hd Rt	Int. Total
07:00 AM	4	39	15	0	16	35	0	6	33	0	80	15	0	7	44	11	0	0	0	0	305
07:15 AM	1	39	13	0	21	33	0	3	22	0	77	12	0	10	36	16	0	0	0	0	283
07:30 AM	4	28	16	0	35	41	0	11	20	0	113	18	0	16	35	30	0	0	0	0	367
07:45 AM	3	46	14	0	18	53	0	5	37	0	98	20	0	16	36	24	0	0	0	0	370
Total	12	152	58	0	90	162	0	25	112	0	368	65	0	49	151	81	0	0	0	0	1325
08:00 AM	8	43	11	0	28	48	0	9	32	0	86	18	0	2	58	10	0	0	0	0	353
08:15 AM	9	30	8	0	18	42	0	17	51	0	94	20	0	9	38	8	0	0	0	0	344
08:30 AM	4	40	12	0	24	48	0	12	42	0	102	16	0	5	42	13	0	0	0	0	360
08:45 AM	2	53	7	0	19	68	0	11	37	0	87	20	0	5	54	5	0	0	0	0	368
Total	23	166	38	0	89	206	0	49	162	0	369	74	0	21	192	36	0	0	0	0	1425
Grand Total	35	318	96	0	179	368	0	74	274	0	737	139	0	70	343	117	0	0	0	0	2750
Apprch %	7.8	70.8	21.4	0	28.8	59.3	0	11.9	23.8	0	64.1	12.1	0	13.2	64.7	22.1	0	0	0	0	
Total %	1.3	11.6	3.5	0	6.5	13.4	0	2.7	10	0	26.8	5.1	0	2.5	12.5	4.3	0	0	0	0	
Cars	34	281	91	0	168	362	0	68	249	0	683	122	0	65	328	113	0	0	0	0	2564
% Cars	97.1	88.4	94.8	0	93.9	98.4	0	91.9	90.9	0	92.7	87.8	0	92.9	95.6	96.6	0	0	0	0	93.2
Trucks	1	37	5	0	11	6	0	6	25	0	54	17	0	5	15	4	0	0	0	0	186
% Trucks	2.9	11.6	5.2	0	6.1	1.6	0	8.1	9.1	0	7.3	12.2	0	7.1	4.4	3.4	0	0	0	0	6.8

Accurate Counts
978-664-2565

N/S Street : Washington Street
E/W Street : Monsignor Reynolds Way
City/State : Boston, MA
Weather : Cloudy

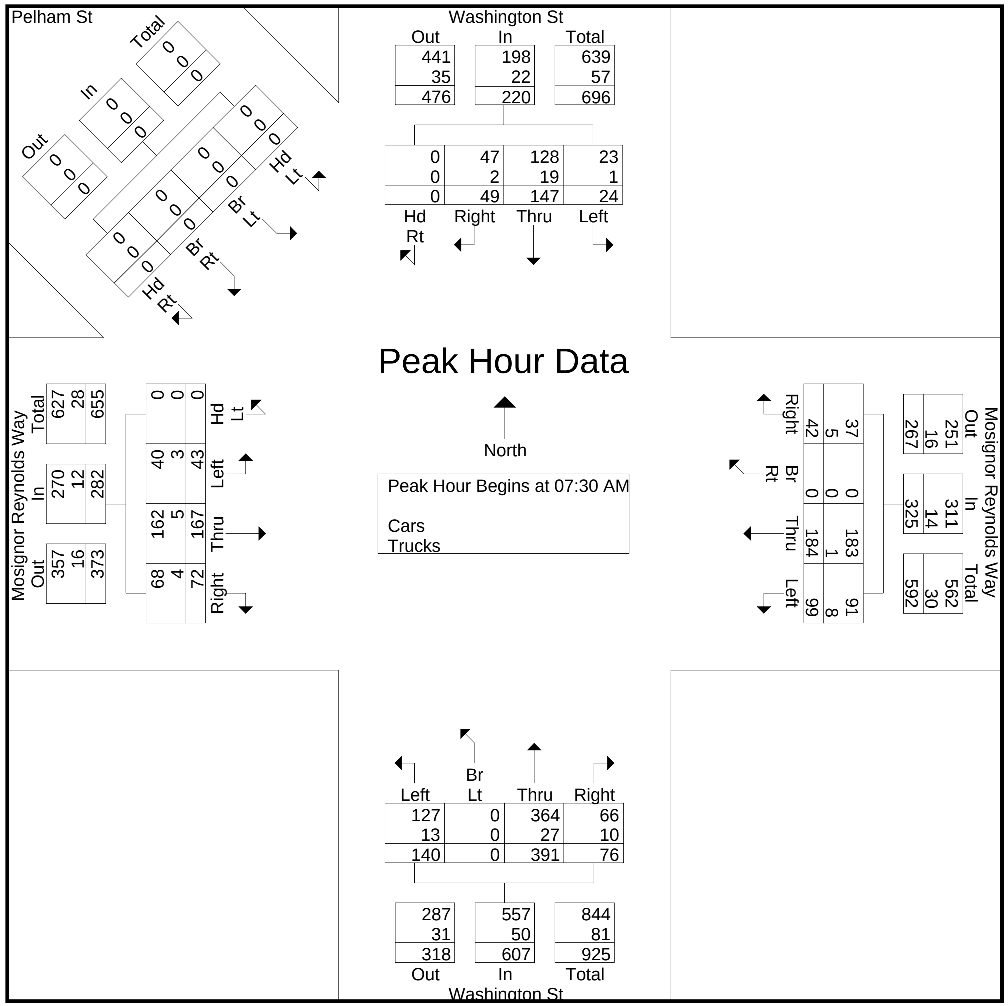
File Name : 15054001
Site Code : 15054001
Start Date : 11/19/2015
Page No : 2

	Washington St From North					Mosignor Reynolds Way From East					Washington St From South					Mosignor Reynolds Way From West					Pelham St From Northwest					
Start Time	Left	Thru	Right	Hd Rt	App. Total	Left	Thru	Br Rt	Right	App. Total	Left	Br Lt	Thru	Right	App. Total	Hd Lt	Left	Thru	Right	App. Total	Hd Lt	Br Lt	Br Rt	Hd Rt	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:30 AM																										
07:30 AM	4	28	16	0	48	35	41	0	11	87	20	0	113	18	151	0	16	35	30	81	0	0	0	0	0	367
07:45 AM	3	46	14	0	63	18	53	0	5	76	37	0	98	20	155	0	16	36	24	76	0	0	0	0	0	370
08:00 AM	8	43	11	0	62	28	48	0	9	85	32	0	86	18	136	0	2	58	10	70	0	0	0	0	0	353
08:15 AM	9	30	8	0	47	18	42	0	17	77	51	0	94	20	165	0	9	38	8	55	0	0	0	0	0	344
Total Volume	24	147	49	0	220	99	184	0	42	325	140	0	391	76	607	0	43	167	72	282	0	0	0	0	0	1434
% App. Total	10.9	66.8	22.3	0		30.5	56.6	0	12.9		23.1	0	64.4	12.5		0	15.2	59.2	25.5		0	0	0	0		
PHF	.667	.799	.766	.000	.873	.707	.868	.000	.618	.934	.686	.000	.865	.950	.920	.000	.672	.720	.600	.870	.000	.000	.000	.000	.000	.969
Cars	23	128	47	0	198	91	183	0	37	311	127	0	364	66	557	0	40	162	68	270	0	0	0	0	0	1336
% Cars	95.8	87.1	95.9	0	90.0	91.9	99.5	0	88.1	95.7	90.7	0	93.1	86.8	91.8	0	93.0	97.0	94.4	95.7	0	0	0	0	0	93.2
Trucks	1	19	2	0	22	8	1	0	5	14	13	0	27	10	50	0	3	5	4	12	0	0	0	0	0	98
% Trucks	4.2	12.9	4.1	0	10.0	8.1	0.5	0	11.9	4.3	9.3	0	6.9	13.2	8.2	0	7.0	3.0	5.6	4.3	0	0	0	0	0	6.8

Accurate Counts
978-664-2565

N/S Street : Washington Street
E/W Street : Monsignor Reynolds Way
City/State : Boston, MA
Weather : Cloudy

File Name : 15054001
Site Code : 15054001
Start Date : 11/19/2015
Page No : 3



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:45 AM					08:00 AM					07:45 AM					07:15 AM					07:00 AM				
+0 mins.	3	46	14	0	63	28	48	0	9	85	37	0	98	20	155	0	10	36	16	62	0	0	0	0	0
+15 mins.	8	43	11	0	62	18	42	0	17	77	32	0	86	18	136	0	16	35	30	81	0	0	0	0	0
+30 mins.	9	30	8	0	47	24	48	0	12	84	51	0	94	20	165	0	16	36	24	76	0	0	0	0	0
+45 mins.	4	40	12	0	56	19	68	0	11	98	42	0	102	16	160	0	2	58	10	70	0	0	0	0	0
Total Volume	24	159	45	0	228	89	206	0	49	344	162	0	380	74	616	0	44	165	80	289	0	0	0	0	0
% App. Total	10.5	69.7	19.7	0		25.9	59.9	0	14.2		26.3	0	61.7	12		0	15.2	57.1	27.7		0	0	0	0	
PHF	.667	.864	.804	.000	.905	.795	.757	.000	.721	.878	.794	.000	.931	.925	.933	.000	.688	.711	.667	.892	.000	.000	.000	.000	.000

Accurate Counts
978-664-2565

N/S Street : Washington Street
E/W Street : Monsignor Reynolds Way
City/State : Boston, MA
Weather : Cloudy

File Name : 15054001
Site Code : 15054001
Start Date : 11/19/2015
Page No : 13

Groups Printed- Bikes Peds

	Washington St From North					Mosignor Reynolds Way From East					Washington St From South					Mosignor Reynolds Way From West					Pelham St From Northwest							
Start Time	Left	Thru	Right	Hd Rt	Peds	Left	Thru	Br Rt	Right	Peds	Left	Br Lt	Thru	Right	Peds	Hd Lt	Left	Thru	Right	Peds	Hd Lt	Br Lt	Br Rt	Hd Rt	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	10	0	0	0	0	4	0	0	1	1	2	0	0	0	0	15	0	0	0	0	20	51	2	53
07:15 AM	0	0	0	0	12	0	1	0	0	10	0	0	3	0	17	0	0	0	0	16	0	0	0	0	17	72	4	76
07:30 AM	0	0	1	0	8	0	0	0	0	19	0	0	6	0	5	0	0	1	0	11	0	0	0	0	10	53	8	61
07:45 AM	0	0	0	0	5	1	1	0	0	26	0	0	2	0	15	0	0	2	0	9	0	0	0	0	6	61	6	67
Total	0	0	1	0	35	1	2	0	0	59	0	0	12	1	39	0	0	3	0	51	0	0	0	0	53	237	20	257
08:00 AM	0	5	0	0	8	0	0	0	0	20	2	0	5	0	15	0	0	0	0	22	0	0	0	0	16	81	12	93
08:15 AM	1	0	0	0	11	1	1	0	0	23	1	0	8	0	36	0	1	1	0	46	0	0	0	0	13	129	14	143
08:30 AM	0	2	1	0	7	0	0	0	1	30	0	0	9	0	24	0	0	0	0	41	0	0	0	0	12	114	13	127
08:45 AM	0	0	0	0	10	0	1	0	0	31	0	0	12	2	3	0	1	1	0	21	0	0	0	0	12	77	17	94
Total	1	7	1	0	36	1	2	0	1	104	3	0	34	2	78	0	2	2	0	130	0	0	0	0	53	401	56	457
Grand Total	1	7	2	0	71	2	4	0	1	163	3	0	46	3	117	0	2	5	0	181	0	0	0	0	106	638	76	714
Apprch %	10	70	20	0		28.6	57.1	0	14.3		5.8	0	88.5	5.8		0	28.6	71.4	0		0	0	0	0				
Total %	1.3	9.2	2.6	0		2.6	5.3	0	1.3		3.9	0	60.5	3.9		0	2.6	6.6	0		0	0	0	0		89.4	10.6	

Accurate Counts
978-664-2565

N/S Street : Washington Street
E/W Street : Monsignor Reynolds Way
City/State : Boston, MA
Weather : Cloudy

File Name : 15054001
Site Code : 15054001
Start Date : 11/19/2015

Groups Printed- Cars - Trucks

	Washington St From North				Mosignor Reynolds Way From East				Washington St From South				Mosignor Reynolds Way From West				Pelham St From Northwest				
Start Time	Left	Thru	Right	Hd Rt	Left	Thru	Br Rt	Right	Left	Br Lt	Thru	Right	Hd Lt	Left	Thru	Right	Hd Lt	Br Lt	Br Rt	Hd Rt	Int. Total
04:00 PM	5	50	11	0	29	61	0	9	24	0	72	27	0	7	82	13	0	0	0	0	390
04:15 PM	7	51	10	0	14	50	0	6	18	0	70	20	0	11	69	14	0	0	0	0	340
04:30 PM	5	51	11	0	34	73	0	10	33	0	74	23	0	12	68	15	0	0	0	0	409
04:45 PM	13	49	10	0	31	74	0	25	21	0	63	21	0	17	79	10	0	0	0	0	413
Total	30	201	42	0	108	258	0	50	96	0	279	91	0	47	298	52	0	0	0	0	1552
05:00 PM	5	68	23	0	33	96	0	20	21	0	86	17	0	12	67	22	0	0	0	0	470
05:15 PM	6	66	8	0	33	57	0	13	24	0	87	12	0	11	70	12	0	0	0	0	399
05:30 PM	7	58	14	0	30	66	0	13	29	0	95	10	0	16	89	16	0	0	0	0	443
05:45 PM	7	60	15	0	37	65	0	13	32	0	85	22	0	19	89	11	0	0	0	0	455
Total	25	252	60	0	133	284	0	59	106	0	353	61	0	58	315	61	0	0	0	0	1767
Grand Total	55	453	102	0	241	542	0	109	202	0	632	152	0	105	613	113	0	0	0	0	3319
Apprch %	9	74.3	16.7	0	27	60.8	0	12.2	20.5	0	64.1	15.4	0	12.6	73.8	13.6	0	0	0	0	
Total %	1.7	13.6	3.1	0	7.3	16.3	0	3.3	6.1	0	19	4.6	0	3.2	18.5	3.4	0	0	0	0	
Cars	54	427	101	0	231	532	0	109	193	0	604	143	0	104	589	108	0	0	0	0	3195
% Cars	98.2	94.3	99	0	95.9	98.2	0	100	95.5	0	95.6	94.1	0	99	96.1	95.6	0	0	0	0	96.3
Trucks	1	26	1	0	10	10	0	0	9	0	28	9	0	1	24	5	0	0	0	0	124
% Trucks	1.8	5.7	1	0	4.1	1.8	0	0	4.5	0	4.4	5.9	0	1	3.9	4.4	0	0	0	0	3.7

Accurate Counts
978-664-2565

N/S Street : Washington Street
E/W Street : Monsignor Reynolds Way
City/State : Boston, MA
Weather : Cloudy

File Name : 15054001
Site Code : 15054001
Start Date : 11/19/2015

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

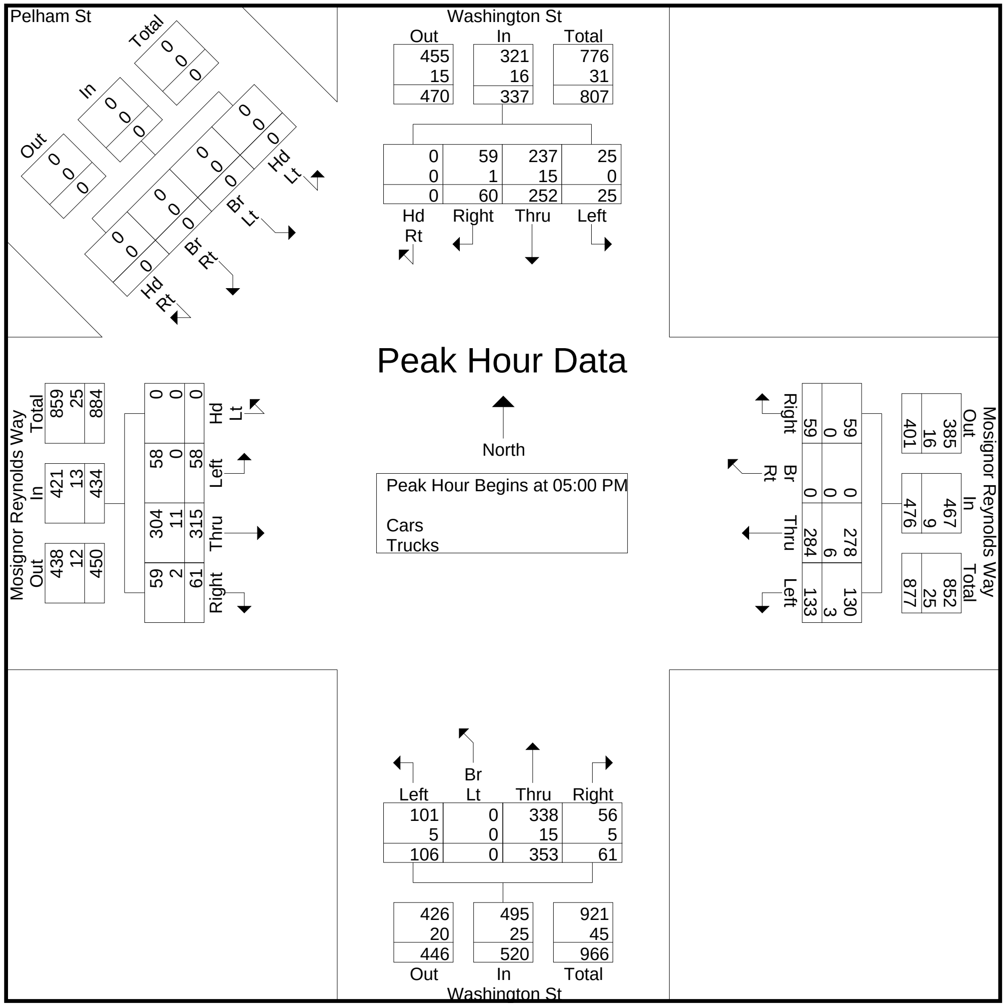
Peak Hour for Entire Intersection Begins at 05:00 PM

	Washington St From North					Mosignor Reynolds Way From East					Washington St From South					Mosignor Reynolds Way From West					Pelham St From Northwest					
Start Time	Left	Thru	Right	Hd Rt	App. Total	Left	Thru	Br Rt	Right	App. Total	Left	Br Lt	Thru	Right	App. Total	Hd Lt	Left	Thru	Right	App. Total	Hd Lt	Br Lt	Br Rt	Hd Rt	App. Total	Int. Total
05:00 PM	5	68	23	0	96	33	96	0	20	149	21	0	86	17	124	0	12	67	22	101	0	0	0	0	0	470
05:15 PM	6	66	8	0	80	33	57	0	13	103	24	0	87	12	123	0	11	70	12	93	0	0	0	0	0	399
05:30 PM	7	58	14	0	79	30	66	0	13	109	29	0	95	10	134	0	16	89	16	121	0	0	0	0	0	443
05:45 PM	7	60	15	0	82	37	65	0	13	115	32	0	85	22	139	0	19	89	11	119	0	0	0	0	0	455
Total Volume	25	252	60	0	337	133	284	0	59	476	106	0	353	61	520	0	58	315	61	434	0	0	0	0	0	1767
% App. Total	7.4	74.8	17.8	0		27.9	59.7	0	12.4		20.4	0	67.9	11.7		0	13.4	72.6	14.1		0	0	0	0		
PHF	.893	.926	.652	.000	.878	.899	.740	.000	.738	.799	.828	.000	.929	.693	.935	.000	.763	.885	.693	.897	.000	.000	.000	.000	.000	.940
Cars	25	237	59	0	321	130	278	0	59	467	101	0	338	56	495	0	58	304	59	421	0	0	0	0	0	1704
% Cars	100	94.0	98.3	0	95.3	97.7	97.9	0	100	98.1	95.3	0	95.8	91.8	95.2	0	100	96.5	96.7	97.0	0	0	0	0	0	96.4
Trucks	0	15	1	0	16	3	6	0	0	9	5	0	15	5	25	0	0	11	2	13	0	0	0	0	0	63
% Trucks	0	6.0	1.7	0	4.7	2.3	2.1	0	0	1.9	4.7	0	4.2	8.2	4.8	0	0	3.5	3.3	3.0	0	0	0	0	0	3.6

Accurate Counts
978-664-2565

N/S Street : Washington Street
E/W Street : Monsignor Reynolds Way
City/State : Boston, MA
Weather : Cloudy

File Name : 15054001
Site Code : 15054001
Start Date : 11/19/2015



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:00 PM					04:30 PM					05:00 PM					05:00 PM					04:00 PM				
+0 mins.	5	68	23	0	96	34	73	0	10	117	21	0	86	17	124	0	12	67	22	101	0	0	0	0	0
+15 mins.	6	66	8	0	80	31	74	0	25	130	24	0	87	12	123	0	11	70	12	93	0	0	0	0	0
+30 mins.	7	58	14	0	79	33	96	0	20	149	29	0	95	10	134	0	16	89	16	121	0	0	0	0	0
+45 mins.	7	60	15	0	82	33	57	0	13	103	32	0	85	22	139	0	19	89	11	119	0	0	0	0	0
Total Volume	25	252	60	0	337	131	300	0	68	499	106	0	353	61	520	0	58	315	61	434	0	0	0	0	0
% App. Total	7.4	74.8	17.8	0		26.3	60.1	0	13.6		20.4	0	67.9	11.7		0	13.4	72.6	14.1		0	0	0	0	
PHF	.893	.926	.652	.000	.878	.963	.781	.000	.680	.837	.828	.000	.929	.693	.935	.000	.763	.885	.693	.897	.000	.000	.000	.000	.000

Accurate Counts
978-664-2565

N/S Street : Washington Street
E/W Street : Monsignor Reynolds Way
City/State : Boston, MA
Weather : Cloudy

File Name : 15054001
Site Code : 15054001
Start Date : 11/19/2015

Groups Printed- Bikes Peds

	Washington St From North					Mosignor Reynolds Way From East					Washington St From South					Mosignor Reynolds Way From West					Pelham St From Northwest							
Start Time	Left	Thru	Right	Hd Rt	Peds	Left	Thru	Br Rt	Right	Peds	Left	Br Lt	Thru	Right	Peds	Hd Lt	Left	Thru	Right	Peds	Hd Lt	Br Lt	Br Rt	Hd Rt	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	3	0	0	14	0	2	0	0	10	0	0	1	1	2	0	0	0	0	15	0	0	0	0	12	53	7	60
04:15 PM	0	2	0	0	11	0	1	0	0	15	1	0	2	0	7	0	0	1	0	31	0	0	0	0	23	87	7	94
04:30 PM	0	1	0	0	9	0	1	0	0	27	1	0	4	0	10	0	0	0	0	34	0	0	0	0	21	101	7	108
04:45 PM	0	3	0	0	10	0	2	0	0	23	1	0	0	0	3	0	0	4	0	48	0	0	0	0	32	116	10	126
Total	0	9	0	0	44	0	6	0	0	75	3	0	7	1	22	0	0	5	0	128	0	0	0	0	88	357	31	388
05:00 PM	0	2	1	0	16	0	0	0	0	15	1	0	1	0	6	0	0	0	0	36	0	0	0	0	19	92	5	97
05:15 PM	0	6	0	0	16	0	2	0	0	31	0	0	2	0	13	0	0	1	0	35	0	0	0	0	38	133	11	144
05:30 PM	0	7	1	0	16	0	2	0	0	21	0	0	1	0	17	0	0	1	0	23	0	0	0	0	27	104	12	116
05:45 PM	0	4	1	0	9	0	1	0	0	12	0	0	1	0	8	0	0	1	0	37	0	0	0	0	28	94	8	102
Total	0	19	3	0	57	0	5	0	0	79	1	0	5	0	44	0	0	3	0	131	0	0	0	0	112	423	36	459
Grand Total	0	28	3	0	101	0	11	0	0	154	4	0	12	1	66	0	0	8	0	259	0	0	0	0	200	780	67	847
Apprch %	0	90.3	9.7	0		0	100	0	0		23.5	0	70.6	5.9		0	0	100	0		0	0	0	0				
Total %	0	41.8	4.5	0		0	16.4	0	0		6	0	17.9	1.5		0	0	11.9	0		0	0	0	0		92.1	7.9	

Accurate Counts
978-664-2565

N/S Street : Frontage Rd / Albany St
E/W Street : MBTA Dwy / Connector
City/State : Boston, MA
Weather : Cloudy

File Name : 15054002
Site Code : 15054002
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

	Frontage Rd From North				Connector From East				Frontage Rd From South				Albany St From West				MBTA Dwy From Northwest				
Start Time	Left	Thru	Right	Hd Rt	Left	Thru	Br Rt	Right	Left	Br Lt	Thru	Right	Hd Lt	Left	Thru	Right	Hd Lt	Br Lt	Br Rt	Hd Rt	Int. Total
07:00 AM	33	22	158	0	0	0	0	0	0	0	0	0	0	0	140	0	0	7	2	1	363
07:15 AM	34	36	156	0	0	0	0	0	0	0	0	0	0	0	114	0	0	1	0	0	341
07:30 AM	34	29	161	0	0	0	0	0	0	0	0	0	0	0	155	0	0	2	1	0	382
07:45 AM	55	43	120	0	0	0	0	0	0	0	0	0	0	0	131	0	0	0	0	1	350
Total	156	130	595	0	0	0	0	0	0	0	0	0	0	0	540	0	0	10	3	2	1436
08:00 AM	42	32	155	0	0	0	0	0	0	0	0	0	0	2	203	0	0	1	0	0	435
08:15 AM	35	46	174	0	0	0	0	0	0	0	0	0	0	0	143	0	0	0	0	2	400
08:30 AM	41	35	160	0	0	0	0	0	0	0	0	0	0	0	183	2	0	0	0	0	421
08:45 AM	48	41	163	0	0	0	0	0	0	0	0	0	0	0	171	0	0	1	1	1	426
Total	166	154	652	0	0	0	0	0	0	0	0	0	0	2	700	2	0	2	1	3	1682
Grand Total	322	284	1247	0	0	0	0	0	0	0	0	0	0	2	1240	2	0	12	4	5	3118
Apprch %	17.4	15.3	67.3	0	0	0	0	0	0	0	0	0	0	0.2	99.7	0.2	0	57.1	19	23.8	
Total %	10.3	9.1	40	0	0	0	0	0	0	0	0	0	0	0.1	39.8	0.1	0	0.4	0.1	0.2	
Cars	314	272	1220	0	0	0	0	0	0	0	0	0	0	2	1216	2	0	4	3	0	3033
% Cars	97.5	95.8	97.8	0	0	0	0	0	0	0	0	0	0	100	98.1	100	0	33.3	75	0	97.3
Trucks	8	12	27	0	0	0	0	0	0	0	0	0	0	0	24	0	0	8	1	5	85
% Trucks	2.5	4.2	2.2	0	0	0	0	0	0	0	0	0	0	0	1.9	0	0	66.7	25	100	2.7

Accurate Counts
978-664-2565

N/S Street : Frontage Rd / Albany St
E/W Street : MBTA Dwy / Connector
City/State : Boston, MA
Weather : Cloudy

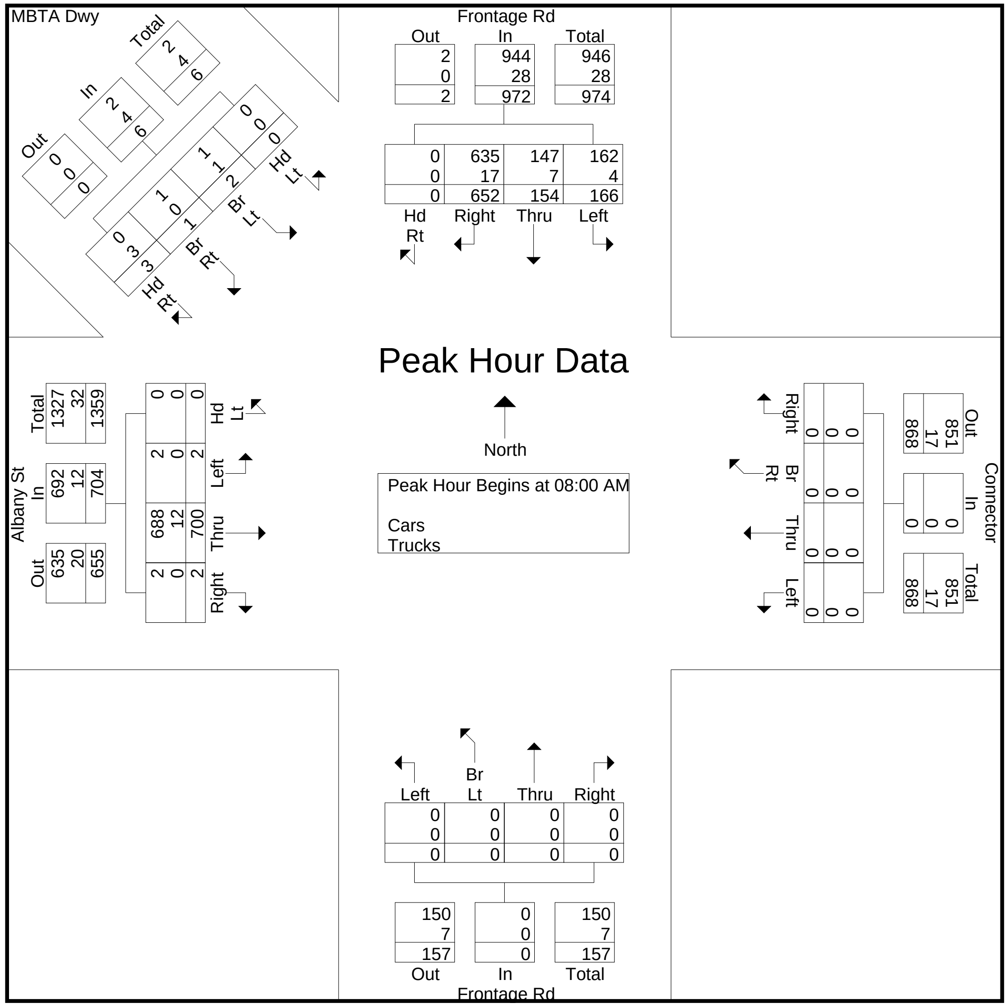
File Name : 15054002
Site Code : 15054002
Start Date : 11/19/2015

	Frontage Rd From North					Connector From East					Frontage Rd From South					Albany St From West					MBTA Dwy From Northwest					
Start Time	Left	Thru	Right	Hd Rt	App. Total	Left	Thru	Br Rt	Right	App. Total	Left	Br Lt	Thru	Right	App. Total	Hd Lt	Left	Thru	Right	App. Total	Hd Lt	Br Lt	Br Rt	Hd Rt	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	42	32	155	0	229	0	0	0	0	0	0	0	0	0	0	0	2	203	0	205	0	1	0	0	1	435
08:15 AM	35	46	174	0	255	0	0	0	0	0	0	0	0	0	0	0	0	143	0	143	0	0	0	2	2	400
08:30 AM	41	35	160	0	236	0	0	0	0	0	0	0	0	0	0	0	0	183	2	185	0	0	0	0	0	421
08:45 AM	48	41	163	0	252	0	0	0	0	0	0	0	0	0	0	0	0	171	0	171	0	1	1	1	3	426
Total Volume	166	154	652	0	972	0	0	0	0	0	0	0	0	0	0	0	2	700	2	704	0	2	1	3	6	1682
% App. Total	17.1	15.8	67.1	0		0	0	0	0		0	0	0	0		0	0.3	99.4	0.3		0	33.3	16.7	50		
PHF	.865	.837	.937	.000	.953	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.862	.250	.859	.000	.500	.250	.375	.500	.967
Cars	162	147	635	0	944	0	0	0	0	0	0	0	0	0	0	0	2	688	2	692	0	1	1	0	2	1638
% Cars	97.6	95.5	97.4	0	97.1	0	0	0	0	0	0	0	0	0	0	0	100	98.3	100	98.3	0	50.0	100	0	33.3	97.4
Trucks	4	7	17	0	28	0	0	0	0	0	0	0	0	0	0	0	0	12	0	12	0	1	0	3	4	44
% Trucks	2.4	4.5	2.6	0	2.9	0	0	0	0	0	0	0	0	0	0	0	0	1.7	0	1.7	0	50.0	0	100	66.7	2.6

Accurate Counts
978-664-2565

N/S Street : Frontage Rd / Albany St
E/W Street : MBTA Dwy / Connector
City/State : Boston, MA
Weather : Cloudy

File Name : 15054002
Site Code : 15054002
Start Date : 11/19/2015
Page No : 3



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	08:00 AM					07:00 AM					07:00 AM					08:00 AM					07:00 AM				
+0 mins.	42	32	155	0	229	0	0	0	0	0	0	0	0	0	0	0	2	203	0	205	0	7	2	1	10
+15 mins.	35	46	174	0	255	0	0	0	0	0	0	0	0	0	0	0	0	143	0	143	0	1	0	0	1
+30 mins.	41	35	160	0	236	0	0	0	0	0	0	0	0	0	0	0	0	183	2	185	0	2	1	0	3
+45 mins.	48	41	163	0	252	0	0	0	0	0	0	0	0	0	0	0	0	171	0	171	0	0	0	1	1
Total Volume	166	154	652	0	972	0	0	0	0	0	0	0	0	0	0	0	2	700	2	704	0	10	3	2	15
% App. Total	17.1	15.8	67.1	0		0	0	0	0		0	0	0	0		0	0.3	99.4	0.3		0	66.7	20	13.3	
PHF	.865	.837	.937	.000	.953	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.862	.250	.859	.000	.357	.375	.500	.375

Accurate Counts
978-664-2565

N/S Street : Frontage Rd / Albany St
E/W Street : MBTA Dwy / Connector
City/State : Boston, MA
Weather : Cloudy

File Name : 15054002
Site Code : 15054002
Start Date : 11/19/2015
Page No : 13

Groups Printed- Bikes Peds

	Frontage Rd From North					Connector From East					Frontage Rd From South					Albany St From West					MBTA Dwy From Northwest							
Start Time	Left	Thru	Right	Hd Rt	Peds	Left	Thru	Br Rt	Right	Peds	Left	Br Lt	Thru	Right	Peds	Hd Lt	Left	Thru	Right	Peds	Hd Lt	Br Lt	Br Rt	Hd Rt	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	5	6	2	8
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0	0	0	9	13	0	13
07:30 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	7	10	2	12
07:45 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	5	0	0	0	0	3	9	4	13
Total	0	0	6	0	1	0	0	0	0	0	0	0	0	0	4	0	0	2	0	9	0	0	0	0	24	38	8	46
08:00 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	17	19	2	21
08:15 AM	0	0	4	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	16	16	6	22
08:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	3	5	2	7
08:45 AM	0	0	2	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2	0	1	0	0	0	0	23	25	5	30
Total	0	0	9	0	0	0	0	0	0	0	1	0	0	2	3	0	0	3	0	3	0	0	0	0	59	65	15	80
Grand Total	0	0	15	0	1	0	0	0	0	0	1	0	0	2	7	0	0	5	0	12	0	0	0	0	83	103	23	126
Apprch %	0	0	100	0		0	0	0	0		33.3	0	0	66.7		0	0	100	0		0	0	0	0				
Total %	0	0	65.2	0		0	0	0	0		4.3	0	0	8.7		0	0	21.7	0		0	0	0	0		81.7	18.3	

Accurate Counts
978-664-2565

N/S Street : Frontage Rd / Albany St
E/W Street : MBTA Dwy / Connector
City/State : Boston, MA
Weather : Cloudy

File Name : 15054002
Site Code : 15054002
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

	Frontage Rd From North				Connector From East				Frontage Rd From South				Albany St From West				MBTA Dwy From Northwest				
Start Time	Left	Thru	Right	Hd Rt	Left	Thru	Br Rt	Right	Left	Br Lt	Thru	Right	Hd Lt	Left	Thru	Right	Hd Lt	Br Lt	Br Rt	Hd Rt	Int. Total
04:00 PM	67	92	123	0	0	0	0	0	0	0	0	0	0	0	223	0	0	2	0	0	507
04:15 PM	51	84	129	0	0	0	0	0	0	0	1	0	0	0	256	0	0	0	2	0	523
04:30 PM	48	109	143	0	0	0	0	0	0	0	0	0	0	0	240	3	0	3	3	1	550
04:45 PM	55	100	139	0	0	0	0	0	0	0	0	0	0	0	289	0	0	5	2	5	595
Total	221	385	534	0	0	0	0	0	0	0	1	0	0	0	1008	3	0	10	7	6	2175
05:00 PM	69	94	132	0	0	0	0	0	0	0	0	0	0	0	218	0	0	3	2	1	519
05:15 PM	67	99	125	0	0	0	0	0	0	0	0	0	0	0	226	0	0	0	0	2	519
05:30 PM	52	82	146	0	0	0	0	0	0	0	0	0	0	0	192	0	0	1	1	3	477
05:45 PM	55	93	157	0	0	0	0	0	0	0	0	0	0	0	185	0	0	1	0	0	491
Total	243	368	560	0	0	0	0	0	0	0	0	0	0	0	821	0	0	5	3	6	2006
Grand Total	464	753	1094	0	0	0	0	0	0	0	1	0	0	0	1829	3	0	15	10	12	4181
Apprch %	20.1	32.6	47.3	0	0	0	0	0	0	0	100	0	0	0	99.8	0.2	0	40.5	27	32.4	
Total %	11.1	18	26.2	0	0	0	0	0	0	0	0	0	0	0	43.7	0.1	0	0.4	0.2	0.3	
Cars	453	738	1079	0	0	0	0	0	0	0	0	0	0	0	1805	2	0	2	3	3	4085
% Cars	97.6	98	98.6	0	0	0	0	0	0	0	0	0	0	0	98.7	66.7	0	13.3	30	25	97.7
Trucks	11	15	15	0	0	0	0	0	0	0	1	0	0	0	24	1	0	13	7	9	96
% Trucks	2.4	2	1.4	0	0	0	0	0	0	0	100	0	0	0	1.3	33.3	0	86.7	70	75	2.3

Accurate Counts
978-664-2565

N/S Street : Frontage Rd / Albany St
E/W Street : MBTA Dwy / Connector
City/State : Boston, MA
Weather : Cloudy

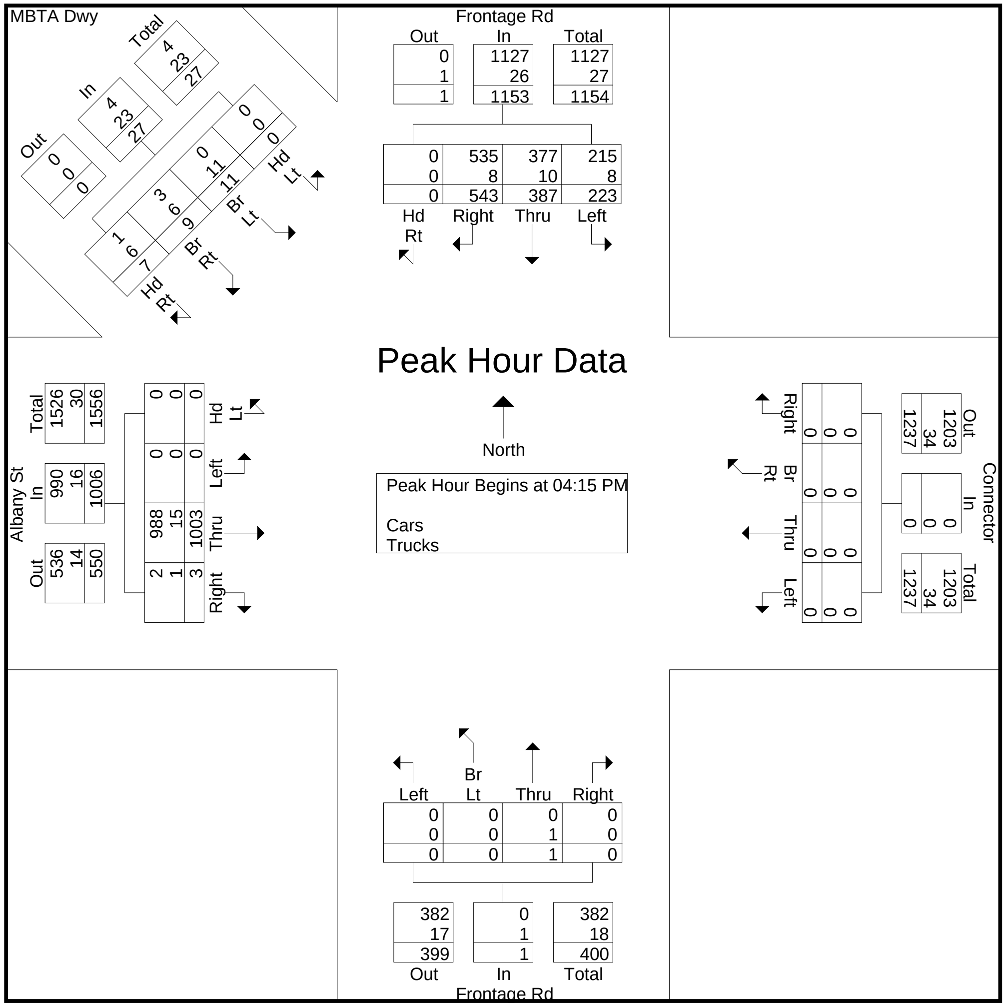
File Name : 15054002
Site Code : 15054002
Start Date : 11/19/2015
Page No : 2

	Frontage Rd From North					Connector From East					Frontage Rd From South					Albany St From West					MBTA Dwy From Northwest					
Start Time	Left	Thru	Right	Hd Rt	App. Total	Left	Thru	Br Rt	Right	App. Total	Left	Br Lt	Thru	Right	App. Total	Hd Lt	Left	Thru	Right	App. Total	Hd Lt	Br Lt	Br Rt	Hd Rt	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:15 PM																										
04:15 PM	51	84	129	0	264	0	0	0	0	0	0	0	1	0	1	0	0	256	0	256	0	0	2	0	2	523
04:30 PM	48	109	143	0	300	0	0	0	0	0	0	0	0	0	0	0	0	240	3	243	0	3	3	1	7	550
04:45 PM	55	100	139	0	294	0	0	0	0	0	0	0	0	0	0	0	0	289	0	289	0	5	2	5	12	595
05:00 PM	69	94	132	0	295	0	0	0	0	0	0	0	0	0	0	0	0	218	0	218	0	3	2	1	6	519
Total Volume	223	387	543	0	1153	0	0	0	0	0	0	0	1	0	1	0	0	1003	3	1006	0	11	9	7	27	2187
% App. Total	19.3	33.6	47.1	0		0	0	0	0		0	0	100	0		0	0	99.7	0.3		0	40.7	33.3	25.9		
PHF	.808	.888	.949	.000	.961	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.868	.250	.870	.000	.550	.750	.350	.563	.919
Cars	215	377	535	0	1127	0	0	0	0	0	0	0	0	0	0	0	0	988	2	990	0	0	3	1	4	2121
% Cars	96.4	97.4	98.5	0	97.7	0	0	0	0	0	0	0	0	0	0	0	0	98.5	66.7	98.4	0	0	33.3	14.3	14.8	97.0
Trucks	8	10	8	0	26	0	0	0	0	0	0	0	1	0	1	0	0	15	1	16	0	11	6	6	23	66
% Trucks	3.6	2.6	1.5	0	2.3	0	0	0	0	0	0	0	100	0	100	0	0	1.5	33.3	1.6	0	100	66.7	85.7	85.2	3.0

Accurate Counts
978-664-2565

N/S Street : Frontage Rd / Albany St
E/W Street : MBTA Dwy / Connector
City/State : Boston, MA
Weather : Cloudy

File Name : 15054002
Site Code : 15054002
Start Date : 11/19/2015
Page No : 3



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM					04:00 PM					04:00 PM					04:00 PM					04:15 PM				
+0 mins.	48	109	143	0	300	0	0	0	0	0	0	0	0	0	0	0	0	223	0	223	0	0	2	0	2
+15 mins.	55	100	139	0	294	0	0	0	0	0	0	0	1	0	1	0	0	256	0	256	0	3	3	1	7
+30 mins.	69	94	132	0	295	0	0	0	0	0	0	0	0	0	0	0	0	240	3	243	0	5	2	5	12
+45 mins.	67	99	125	0	291	0	0	0	0	0	0	0	0	0	0	0	0	289	0	289	0	3	2	1	6
Total Volume	239	402	539	0	1180	0	0	0	0	0	0	0	1	0	1	0	0	1008	3	1011	0	11	9	7	27
% App. Total	20.3	34.1	45.7	0		0	0	0	0		0	0	100	0		0	0	99.7	0.3		0	40.7	33.3	25.9	
PHF	.866	.922	.942	.000	.983	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.872	.250	.875	.000	.550	.750	.350	.563

Accurate Counts
978-664-2565

N/S Street : Frontage Rd / Albany St
E/W Street : MBTA Dwy / Connector
City/State : Boston, MA
Weather : Cloudy

File Name : 15054002
Site Code : 15054002
Start Date : 11/19/2015
Page No : 13

Groups Printed- Bikes Peds

	Frontage Rd From North					Connector From East					Frontage Rd From South					Albany St From West					MBTA Dwy From Northwest							
Start Time	Left	Thru	Right	Hd Rt	Peds	Left	Thru	Br Rt	Right	Peds	Left	Br Lt	Thru	Right	Peds	Hd Lt	Left	Thru	Right	Peds	Hd Lt	Br Lt	Br Rt	Hd Rt	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	5	6	2	8
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	6	8	1	9
04:30 PM	0	1	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	10	13	4	17
04:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0	2	0	2	0	0	0	0	0	6	2	8
Total	0	2	4	0	0	0	0	0	0	1	0	0	1	0	7	0	0	2	0	4	0	0	0	0	21	33	9	42
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	1	0	3	0	0	0	0	12	18	1	19
05:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	6	8	1	9
05:30 PM	0	0	3	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	2	4	5	9
05:45 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	3
Total	1	0	5	0	0	0	0	0	1	0	0	0	0	0	5	0	0	2	0	5	0	0	0	0	21	31	9	40
Grand Total	1	2	9	0	0	0	0	0	1	1	0	0	1	0	12	0	0	4	0	9	0	0	0	0	42	64	18	82
Apprch %	8.3	16.7	75	0		0	0	0	100		0	0	100	0		0	0	100	0		0	0	0	0				
Total %	5.6	11.1	50	0		0	0	0	5.6		0	0	5.6	0		0	0	22.2	0		0	0	0	0		78	22	

Accurate Counts
978-664-2565

N/S Street : Frontage Road NB
E/W Street : Connector / DPW Dwy
City/State : Boston, MA
Weather : Cloudy

File Name : 15054003
Site Code : 15054003
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

	Frontage Rd NB From North				Mass Pike Ramp From Northeast				DPW Dwy From East				Frontage Rd NB From South				Connector From West				
Start Time	Hd Lt	Left	Thru	Right	Hd Lt	Br Lt	Br Rt	Hd Rt	Left	Thru	Right	Hd Rt	Left	Thru	Br Rt	Right	Left	Br Lt	Thru	Right	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	10	0	0	237	87	29	115	58	6	0	542
07:15 AM	0	0	0	0	0	0	0	0	0	0	10	0	0	237	85	7	98	46	1	0	484
07:30 AM	0	0	0	0	0	0	0	0	0	0	9	1	0	266	76	6	144	44	2	0	548
07:45 AM	0	0	0	0	0	0	0	0	0	0	7	2	0	251	65	3	124	61	4	0	517
Total	0	0	0	0	0	0	0	0	0	0	36	3	0	991	313	45	481	209	13	0	2091
08:00 AM	0	0	0	0	0	0	0	0	0	0	11	1	0	262	83	2	166	74	6	0	605
08:15 AM	0	0	0	0	0	0	0	0	0	0	9	1	0	256	85	3	115	61	1	0	531
08:30 AM	0	0	0	0	0	0	0	0	0	0	6	2	0	277	93	7	156	60	6	0	607
08:45 AM	0	0	0	0	0	0	0	0	0	0	8	2	0	224	82	6	148	73	6	0	549
Total	0	0	0	0	0	0	0	0	0	0	34	6	0	1019	343	18	585	268	19	0	2292
Grand Total	0	0	0	0	0	0	0	0	0	0	70	9	0	2010	656	63	1066	477	32	0	4383
Apprch %	0	0	0	0	0	0	0	0	0	0	88.6	11.4	0	73.7	24	2.3	67.7	30.3	2	0	
Total %	0	0	0	0	0	0	0	0	0	0	1.6	0.2	0	45.9	15	1.4	24.3	10.9	0.7	0	
Cars	0	0	0	0	0	0	0	0	0	0	57	8	0	1903	624	61	1042	465	28	0	4188
% Cars	0	0	0	0	0	0	0	0	0	0	81.4	88.9	0	94.7	95.1	96.8	97.7	97.5	87.5	0	95.6
Trucks	0	0	0	0	0	0	0	0	0	0	13	1	0	107	32	2	24	12	4	0	195
% Trucks	0	0	0	0	0	0	0	0	0	0	18.6	11.1	0	5.3	4.9	3.2	2.3	2.5	12.5	0	4.4

Accurate Counts
978-664-2565

N/S Street : Frontage Road NB
E/W Street : Connector / DPW Dwy
City/State : Boston, MA
Weather : Cloudy

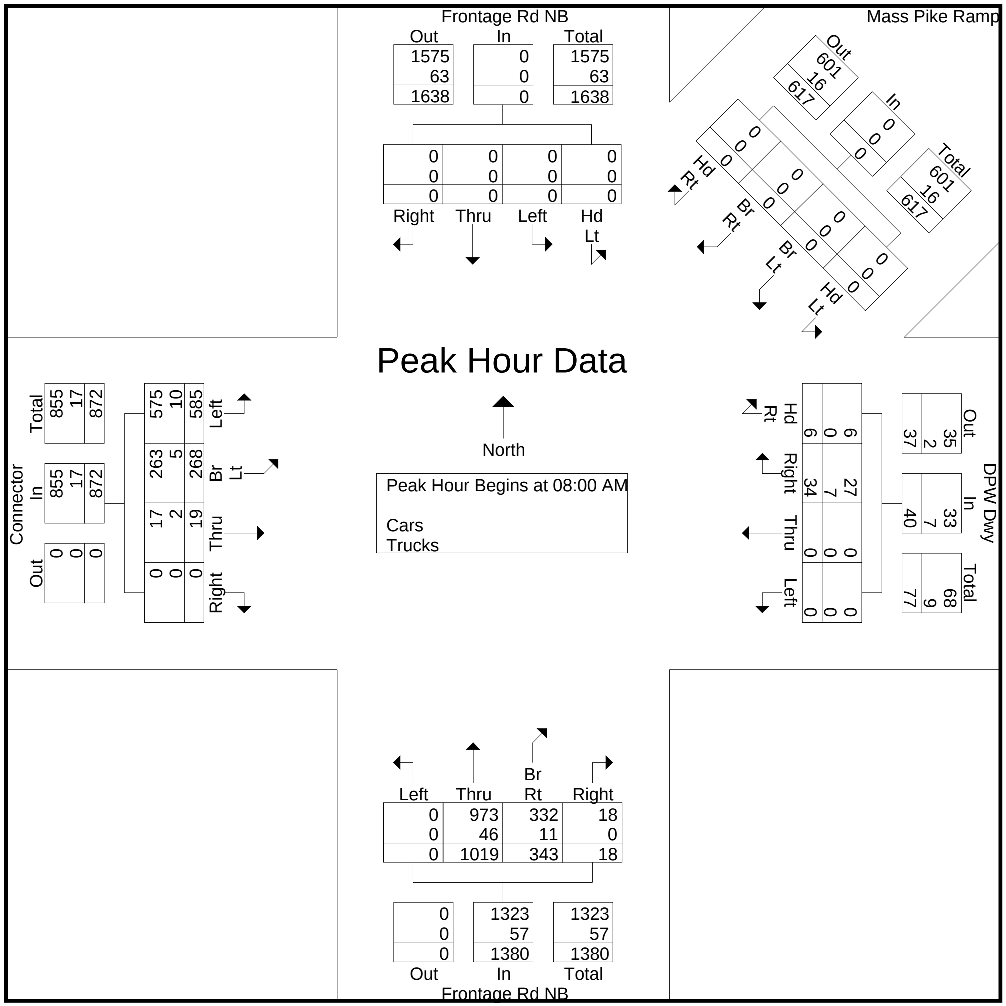
File Name : 15054003
Site Code : 15054003
Start Date : 11/19/2015

	Frontage Rd NB From North					Mass Pike Ramp From Northeast					DPW Dwy From East					Frontage Rd NB From South					Connector From West					
Start Time	Hd Lt	Left	Thru	Right	App. Total	Hd Lt	Br Lt	Br Rt	Hd Rt	App. Total	Left	Thru	Right	Hd Rt	App. Total	Left	Thru	Br Rt	Right	App. Total	Left	Br Lt	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 08:00 AM																										
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	11	1	12	0	262	83	2	347	166	74	6	0	246	605
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	9	1	10	0	256	85	3	344	115	61	1	0	177	531
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	6	2	8	0	277	93	7	377	156	60	6	0	222	607
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	8	2	10	0	224	82	6	312	148	73	6	0	227	549
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	34	6	40	0	1019	343	18	1380	585	268	19	0	872	2292
% App. Total	0	0	0	0		0	0	0	0		0	0	85	15		0	73.8	24.9	1.3		67.1	30.7	2.2	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.773	.750	.833	.000	.920	.922	.643	.915	.881	.905	.792	.000	.886	.944
Cars	0	0	0	0	0	0	0	0	0	0	0	0	27	6	33	0	973	332	18	1323	575	263	17	0	855	2211
% Cars	0	0	0	0	0	0	0	0	0	0	0	0	79.4	100	82.5	0	95.5	96.8	100	95.9	98.3	98.1	89.5	0	98.1	96.5
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	0	46	11	0	57	10	5	2	0	17	81
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	20.6	0	17.5	0	4.5	3.2	0	4.1	1.7	1.9	10.5	0	1.9	3.5

Accurate Counts
978-664-2565

N/S Street : Frontage Road NB
E/W Street : Connector / DPW Dwy
City/State : Boston, MA
Weather : Cloudy

File Name : 15054003
Site Code : 15054003
Start Date : 11/19/2015



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM					07:00 AM					07:15 AM					07:45 AM					08:00 AM				
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	10	0	10	0	251	65	3	319	166	74	6	0	246
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	9	1	10	0	262	83	2	347	115	61	1	0	177
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	7	2	9	0	256	85	3	344	156	60	6	0	222
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	11	1	12	0	277	93	7	377	148	73	6	0	227
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	37	4	41	0	1046	326	15	1387	585	268	19	0	872
% App. Total	0	0	0	0		0	0	0	0		0	0	90.2	9.8		0	75.4	23.5	1.1		67.1	30.7	2.2	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.841	.500	.854	.000	.944	.876	.536	.920	.881	.905	.792	.000	.886

Accurate Counts
978-664-2565

N/S Street : Frontage Road NB
E/W Street : Connector / DPW Dwy
City/State : Boston, MA
Weather : Cloudy

File Name : 15054003
Site Code : 15054003
Start Date : 11/19/2015
Page No : 13

Groups Printed- Bikes Peds

	Frontage Rd NB From North					Mass Pike Ramp From Northeast					DPW Dwy From East					Frontage Rd NB From South					Connector From West							
Start Time	Hd Lt	Left	Thru	Right	Peds	Hd Lt	Br Lt	Br Rt	Hd Rt	Peds	Left	Thru	Right	Hd Rt	Peds	Left	Thru	Br Rt	Right	Peds	Left	Br Lt	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	1	3
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	2
07:45 AM	0	0	1	1	1	0	0	0	0	0	0	0	0	0	4	0	0	0	0	2	1	0	0	0	0	7	3	10
Total	0	0	1	1	1	0	0	0	0	0	1	1	0	0	4	0	0	0	0	4	1	0	0	0	1	10	5	15
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	1	0	0	0	0	3	1	4
08:15 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	2	3
08:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	2
08:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	2	0	0	0	0	2	4	6
Total	0	0	0	2	1	0	0	0	0	0	0	0	0	0	3	0	1	0	0	3	4	0	0	0	1	8	7	15
Grand Total	0	0	1	3	2	0	0	0	0	0	1	1	0	0	7	0	1	0	0	7	5	0	0	0	2	18	12	30
Apprch %	0	0	25	75		0	0	0	0		50	50	0	0		0	100	0	0		100	0	0	0				
Total %	0	0	8.3	25		0	0	0	0		8.3	8.3	0	0		0	8.3	0	0		41.7	0	0	0		60	40	

Accurate Counts
978-664-2565

N/S Street : Frontage Road NB
E/W Street : Connector / DPW Dwy
City/State : Boston, MA
Weather : Cloudy

File Name : 15054003
Site Code : 15054003
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

	Frontage Rd NB From North				Mass Pike Ramp From Northeast				DPW Dwy From East				Frontage Rd NB From South				Connector From West				
Start Time	Hd Lt	Left	Thru	Right	Hd Lt	Br Lt	Br Rt	Hd Rt	Left	Thru	Right	Hd Rt	Left	Thru	Br Rt	Right	Left	Br Lt	Thru	Right	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	6	3	0	224	78	6	237	51	2	0	607
04:15 PM	0	0	0	0	0	0	0	0	0	0	7	1	0	208	77	6	243	61	1	0	604
04:30 PM	0	0	0	0	0	0	0	0	0	0	10	1	0	196	88	4	248	45	3	0	595
04:45 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	200	76	4	289	59	2	0	634
Total	0	0	0	0	0	0	0	0	0	0	27	5	0	828	319	20	1017	216	8	0	2440
05:00 PM	0	0	0	0	0	0	0	0	0	0	6	0	0	190	62	1	225	62	3	0	549
05:15 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	166	71	4	243	50	0	0	539
05:30 PM	0	0	0	0	0	0	0	0	0	0	5	1	0	199	77	4	192	51	1	0	530
05:45 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	232	82	1	190	51	2	0	561
Total	0	0	0	0	0	0	0	0	0	0	19	1	0	787	292	10	850	214	6	0	2179
Grand Total	0	0	0	0	0	0	0	0	0	0	46	6	0	1615	611	30	1867	430	14	0	4619
Apprch %	0	0	0	0	0	0	0	0	0	0	88.5	11.5	0	71.6	27.1	1.3	80.8	18.6	0.6	0	
Total %	0	0	0	0	0	0	0	0	0	0	1	0.1	0	35	13.2	0.6	40.4	9.3	0.3	0	
Cars	0	0	0	0	0	0	0	0	0	0	44	5	0	1558	599	29	1825	424	12	0	4496
% Cars	0	0	0	0	0	0	0	0	0	0	95.7	83.3	0	96.5	98	96.7	97.8	98.6	85.7	0	97.3
Trucks	0	0	0	0	0	0	0	0	0	0	2	1	0	57	12	1	42	6	2	0	123
% Trucks	0	0	0	0	0	0	0	0	0	0	4.3	16.7	0	3.5	2	3.3	2.2	1.4	14.3	0	2.7

Accurate Counts
978-664-2565

N/S Street : Frontage Road NB
E/W Street : Connector / DPW Dwy
City/State : Boston, MA
Weather : Cloudy

File Name : 15054003
Site Code : 15054003
Start Date : 11/19/2015
Page No : 2

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

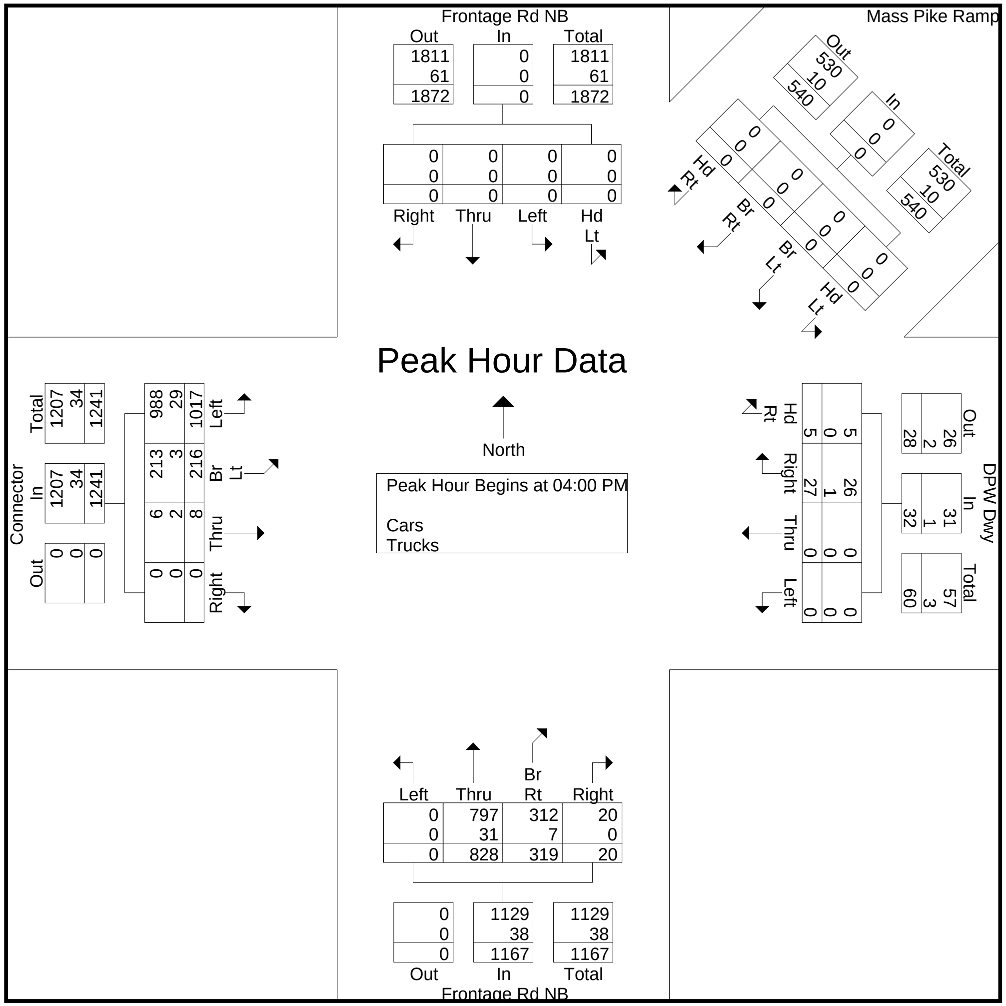
Peak Hour for Entire Intersection Begins at 04:00 PM

	Frontage Rd NB From North					Mass Pike Ramp From Northeast					DPW Dwy From East					Frontage Rd NB From South					Connector From West					
Start Time	Hd Lt	Left	Thru	Right	App. Total	Hd Lt	Br Lt	Br Rt	Hd Rt	App. Total	Left	Thru	Right	Hd Rt	App. Total	Left	Thru	Br Rt	Right	App. Total	Left	Br Lt	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	6	3	9	0	224	78	6	308	237	51	2	0	290	607
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	7	1	8	0	208	77	6	291	243	61	1	0	305	604
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	10	1	11	0	196	88	4	288	248	45	3	0	296	595
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	200	76	4	280	289	59	2	0	350	634
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	27	5	32	0	828	319	20	1167	1017	216	8	0	1241	2440
% App. Total	0	0	0	0		0	0	0	0		0	0	84.4	15.6		0	71	27.3	1.7		82	17.4	0.6	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.675	.417	.727	.000	.924	.906	.833	.947	.880	.885	.667	.000	.886	.962
Cars	0	0	0	0	0	0	0	0	0	0	0	0	26	5	31	0	797	312	20	1129	988	213	6	0	1207	2367
% Cars	0	0	0	0	0	0	0	0	0	0	0	0	96.3	100	96.9	0	96.3	97.8	100	96.7	97.1	98.6	75.0	0	97.3	97.0
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	31	7	0	38	29	3	2	0	34	73
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	3.7	0	3.1	0	3.7	2.2	0	3.3	2.9	1.4	25.0	0	2.7	3.0

Accurate Counts
978-664-2565

N/S Street : Frontage Road NB
E/W Street : Connector / DPW Dwy
City/State : Boston, MA
Weather : Cloudy

File Name : 15054003
Site Code : 15054003
Start Date : 11/19/2015
Page No : 3



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM					04:00 PM					04:00 PM					04:00 PM					04:00 PM				
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	6	3	9	0	224	78	6	308	237	51	2	0	290
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	7	1	8	0	208	77	6	291	243	61	1	0	305
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	10	1	11	0	196	88	4	288	248	45	3	0	296
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	200	76	4	280	289	59	2	0	350
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	27	5	32	0	828	319	20	1167	1017	216	8	0	1241
% App. Total	0	0	0	0		0	0	0	0		0	0	84.4	15.6		0	71	27.3	1.7		82	17.4	0.6	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.675	.417	.727	.000	.924	.906	.833	.947	.880	.885	.667	.000	.886

Accurate Counts
978-664-2565

N/S Street : Frontage Road NB
E/W Street : Connector / DPW Dwy
City/State : Boston, MA
Weather : Cloudy

File Name : 15054003
Site Code : 15054003
Start Date : 11/19/2015

Groups Printed- Bikes Peds

	Frontage Rd NB From North					Mass Pike Ramp From Northeast					DPW Dwy From East					Frontage Rd NB From South					Connector From West							
Start Time	Hd Lt	Left	Thru	Right	Peds	Hd Lt	Br Lt	Br Rt	Hd Rt	Peds	Left	Thru	Right	Hd Rt	Peds	Left	Thru	Br Rt	Right	Peds	Left	Br Lt	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	3	1	4
04:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	3	0	3
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0	0	0	0	4	0	4
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	1	0	0	2	2	4
Total	0	0	0	0	2	0	0	0	0	0	0	0	0	0	3	0	1	0	0	7	1	0	1	0	0	12	3	15
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	3	4	0	0	0	0	7	4	11
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	1	0	0	0	0	2	2	4
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	3	2	0	0	0	0	5	3	8
05:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	3	1	4
Total	0	0	0	0	1	0	0	0	0	0	0	1	0	0	6	1	0	0	0	9	8	0	0	0	1	17	10	27
Grand Total	0	0	0	0	3	0	0	0	0	0	0	1	0	0	9	1	1	0	0	16	9	0	1	0	1	29	13	42
Apprch %	0	0	0	0		0	0	0	0		0	100	0	0		50	50	0	0		90	0	10	0				
Total %	0	0	0	0		0	0	0	0		0	7.7	0	0		7.7	7.7	0	0		69.2	0	7.7	0		69	31	

Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street : Malden Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054004
Site Code : 15054004
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

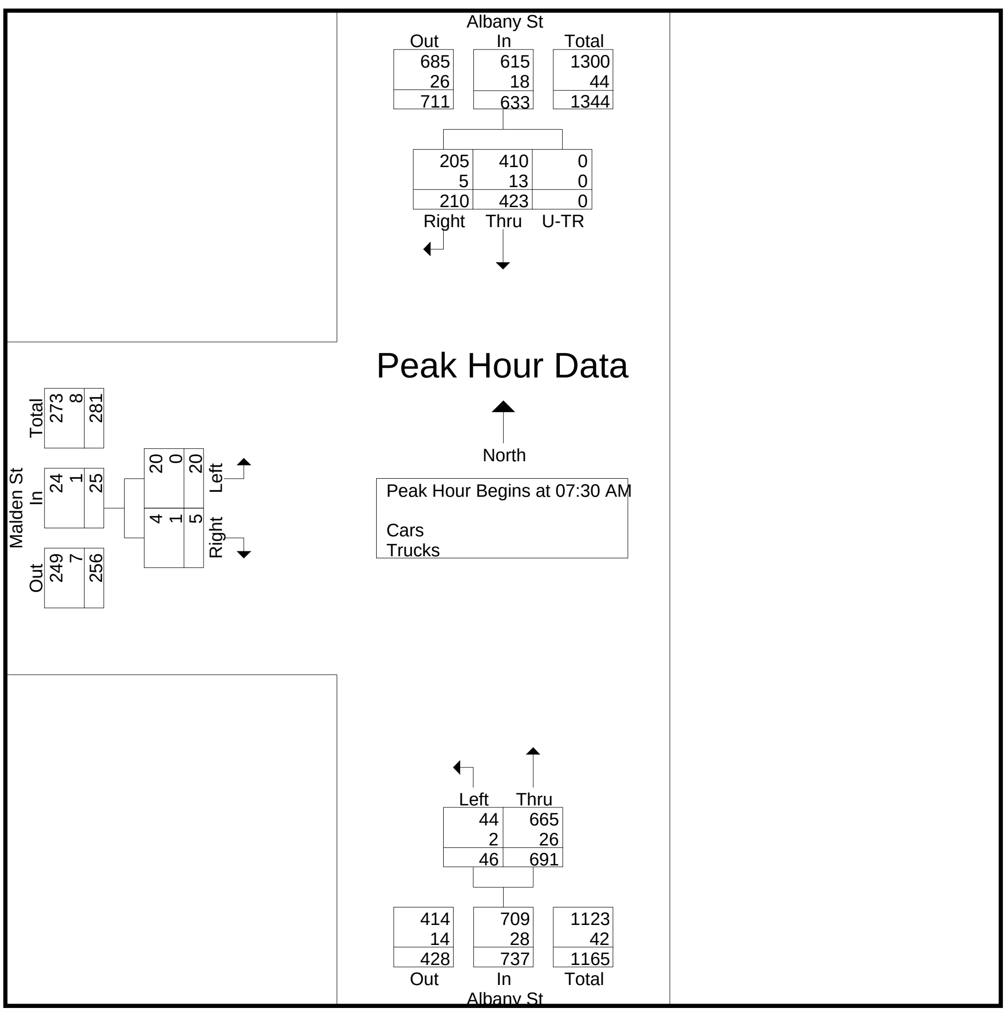
	Albany St From North			Albany St From South		Malden St From West		
Start Time	Thru	Right	U-TR	Left	Thru	Left	Right	Int. Total
07:00 AM	122	45	0	13	155	0	3	338
07:15 AM	118	33	0	9	131	3	1	295
07:30 AM	114	48	0	19	212	7	0	400
07:45 AM	86	47	0	8	169	2	1	313
Total	440	173	0	49	667	12	5	1346
08:00 AM	104	60	0	12	175	3	3	357
08:15 AM	119	55	0	7	135	8	1	325
08:30 AM	113	52	0	21	153	4	4	347
08:45 AM	127	62	0	9	154	1	2	355
Total	463	229	0	49	617	16	10	1384
Grand Total	903	402	0	98	1284	28	15	2730
Apprch %	69.2	30.8	0	7.1	92.9	65.1	34.9	
Total %	33.1	14.7	0	3.6	47	1	0.5	
Cars	869	393	0	95	1227	28	14	2626
% Cars	96.2	97.8	0	96.9	95.6	100	93.3	96.2
Trucks	34	9	0	3	57	0	1	104
% Trucks	3.8	2.2	0	3.1	4.4	0	6.7	3.8

Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street : Malden Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054004
Site Code : 15054004
Start Date : 11/19/2015
Page No : 2

	Albany St From North				Albany St From South			Malden St From West			
Start Time	Thru	Right	U-TR	App. Total	Left	Thru	App. Total	Left	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	114	48	0	162	19	212	231	7	0	7	400
07:45 AM	86	47	0	133	8	169	177	2	1	3	313
08:00 AM	104	60	0	164	12	175	187	3	3	6	357
08:15 AM	119	55	0	174	7	135	142	8	1	9	325
Total Volume	423	210	0	633	46	691	737	20	5	25	1395
% App. Total	66.8	33.2	0		6.2	93.8		80	20		
PHF	.889	.875	.000	.909	.605	.815	.798	.625	.417	.694	.872
Cars	410	205	0	615	44	665	709	20	4	24	1348
% Cars	96.9	97.6	0	97.2	95.7	96.2	96.2	100	80.0	96.0	96.6
Trucks	13	5	0	18	2	26	28	0	1	1	47
% Trucks	3.1	2.4	0	2.8	4.3	3.8	3.8	0	20.0	4.0	3.4



Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street : Malden Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054004
Site Code : 15054004
Start Date : 11/19/2015

Groups Printed- Bikes Peds

	Albany St From North			Albany St From South			Malden St From West					
Start Time	Thru	Right	Peds	Left	Thru	Peds	Left	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	1	0	0	2	0	0	6	9	0	9
07:15 AM	0	0	0	0	0	8	0	0	9	17	0	17
07:30 AM	1	0	2	0	1	3	0	0	8	13	2	15
07:45 AM	3	0	0	0	0	3	0	0	16	19	3	22
Total	4	0	3	0	1	16	0	0	39	58	5	63
08:00 AM	2	0	1	0	0	1	0	0	14	16	2	18
08:15 AM	2	0	0	0	3	1	0	0	20	21	5	26
08:30 AM	2	0	0	0	1	7	0	0	23	30	3	33
08:45 AM	5	0	0	0	1	3	0	0	21	24	6	30
Total	11	0	1	0	5	12	0	0	78	91	16	107
Grand Total	15	0	4	0	6	28	0	0	117	149	21	170
Apprch %	100	0		0	100		0	0				
Total %	71.4	0		0	28.6		0	0		87.6	12.4	

Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street : Malden Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054004
Site Code : 15054004
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

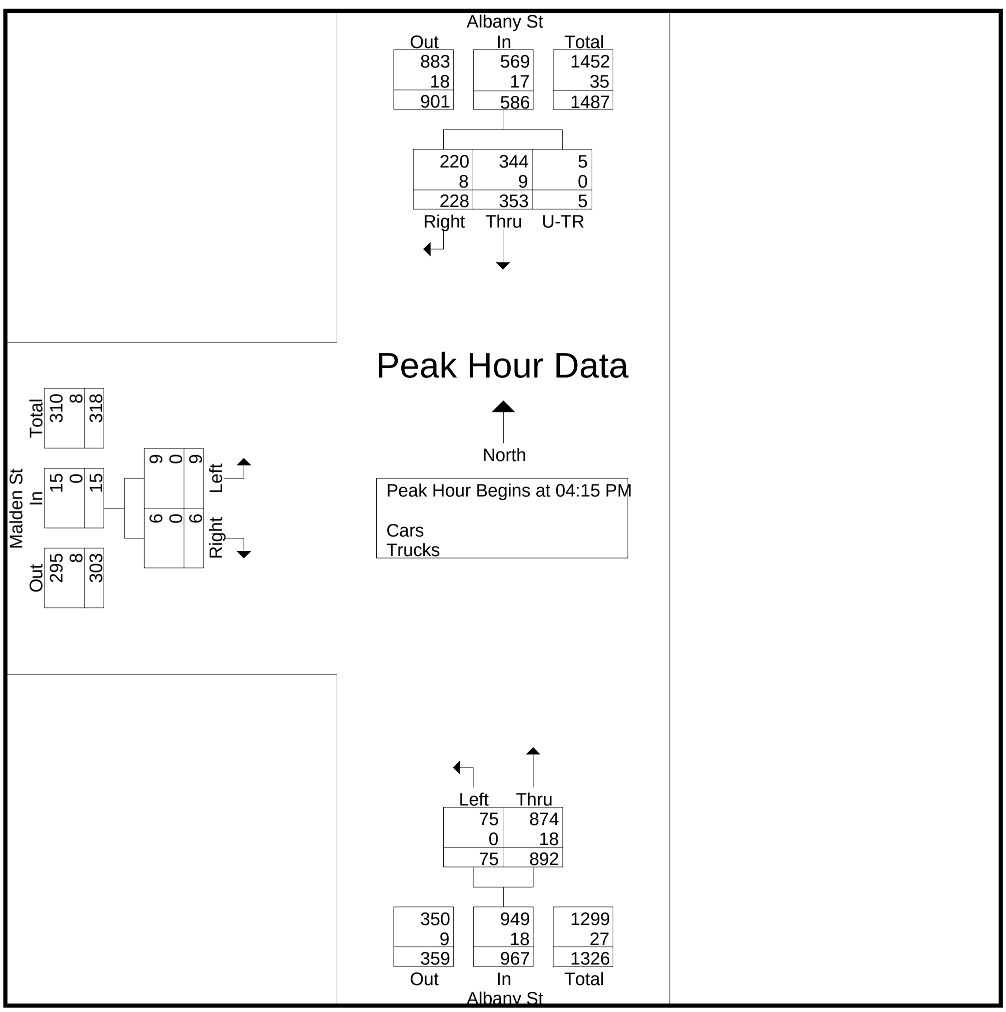
	Albany St From North			Albany St From South		Malden St From West		
Start Time	Thru	Right	U-TR	Left	Thru	Left	Right	Int. Total
04:00 PM	94	45	0	8	227	4	0	378
04:15 PM	83	51	0	19	219	2	2	376
04:30 PM	97	55	1	17	227	1	0	398
04:45 PM	89	55	4	24	202	4	1	379
Total	363	206	5	68	875	11	3	1531
05:00 PM	84	67	0	15	244	2	3	415
05:15 PM	73	61	2	15	220	3	0	374
05:30 PM	97	58	2	24	210	1	0	392
05:45 PM	89	84	1	11	184	4	0	373
Total	343	270	5	65	858	10	3	1554
Grand Total	706	476	10	133	1733	21	6	3085
Apprch %	59.2	39.9	0.8	7.1	92.9	77.8	22.2	
Total %	22.9	15.4	0.3	4.3	56.2	0.7	0.2	
Cars	690	465	10	133	1699	21	6	3024
% Cars	97.7	97.7	100	100	98	100	100	98
Trucks	16	11	0	0	34	0	0	61
% Trucks	2.3	2.3	0	0	2	0	0	2

Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street : Malden Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054004
Site Code : 15054004
Start Date : 11/19/2015
Page No : 2

	Albany St From North				Albany St From South			Malden St From West			
Start Time	Thru	Right	U-TR	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 04:15 PM											
04:15 PM	83	51	0	134	19	219	238	2	2	4	376
04:30 PM	97	55	1	153	17	227	244	1	0	1	398
04:45 PM	89	55	4	148	24	202	226	4	1	5	379
05:00 PM	84	67	0	151	15	244	259	2	3	5	415
Total Volume	353	228	5	586	75	892	967	9	6	15	1568
% App. Total	60.2	38.9	0.9		7.8	92.2		60	40		
PHF	.910	.851	.313	.958	.781	.914	.933	.563	.500	.750	.945
Cars	344	220	5	569	75	874	949	9	6	15	1533
% Cars	97.5	96.5	100	97.1	100	98.0	98.1	100	100	100	97.8
Trucks	9	8	0	17	0	18	18	0	0	0	35
% Trucks	2.5	3.5	0	2.9	0	2.0	1.9	0	0	0	2.2



Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street : Malden Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054004
Site Code : 15054004
Start Date : 11/19/2015
Page No : 1

Groups Printed- Bikes Peds

	Albany St From North			Albany St From South			Malden St From West					
Start Time	Thru	Right	Peds	Left	Thru	Peds	Left	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	2	0	0	0	1	1	0	0	9	10	3	13
04:15 PM	0	0	0	0	0	0	0	0	7	7	0	7
04:30 PM	2	0	0	0	0	0	0	0	6	6	2	8
04:45 PM	0	0	0	0	3	0	0	0	9	9	3	12
Total	4	0	0	0	4	1	0	0	31	32	8	40
05:00 PM	1	0	1	0	2	1	0	0	6	8	3	11
05:15 PM	1	1	0	0	1	2	0	0	9	11	3	14
05:30 PM	3	0	0	0	3	1	0	0	13	14	6	20
05:45 PM	1	1	0	0	0	0	0	0	3	3	2	5
Total	6	2	1	0	6	4	0	0	31	36	14	50
Grand Total	10	2	1	0	10	5	0	0	62	68	22	90
Apprch %	83.3	16.7		0	100		0	0				
Total %	45.5	9.1		0	45.5		0	0		75.6	24.4	

Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street : East Dedham Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054005
Site Code : 15054005
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

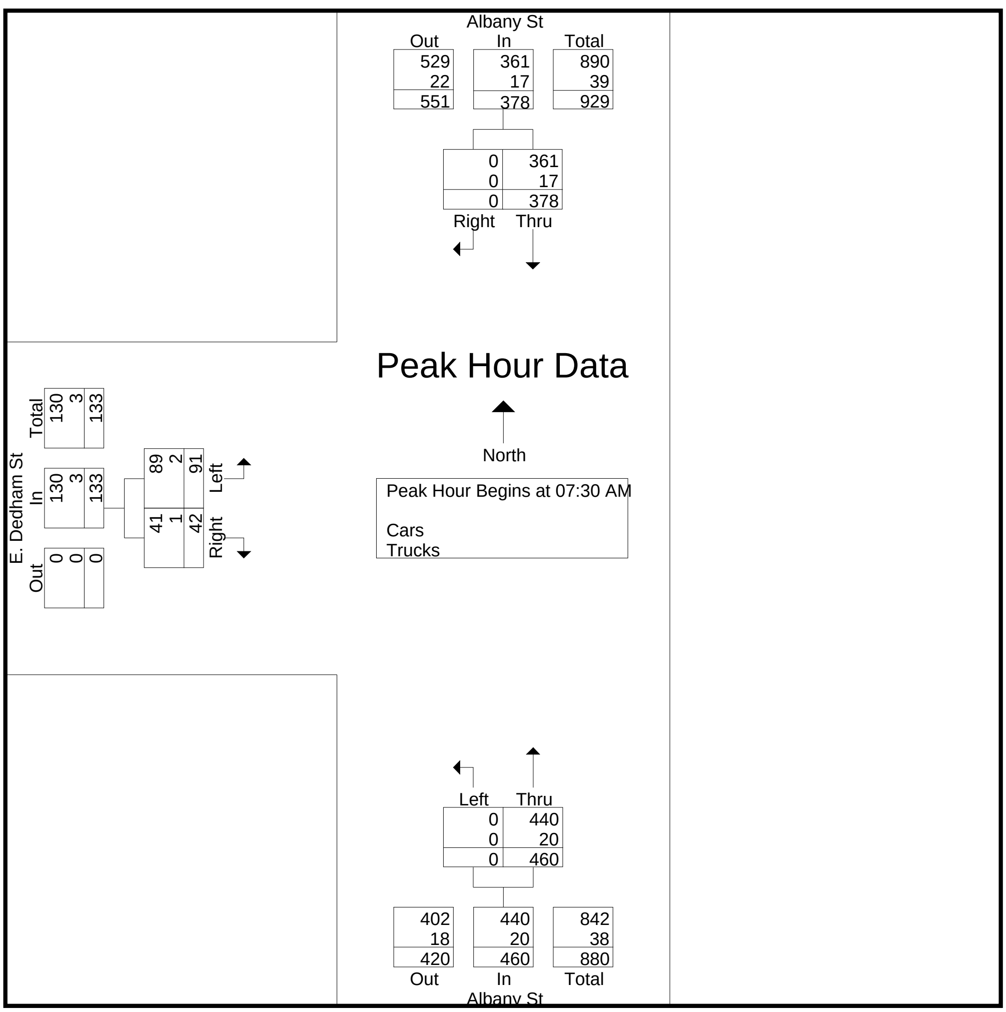
	Albany St From North		Albany St From South		E. Dedham St From West		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
07:00 AM	102	0	0	106	17	7	232
07:15 AM	77	0	0	98	14	6	195
07:30 AM	101	0	0	122	20	6	249
07:45 AM	83	0	0	123	22	11	239
Total	363	0	0	449	73	30	915
08:00 AM	97	0	0	111	31	11	250
08:15 AM	97	0	0	104	18	14	233
08:30 AM	100	0	0	102	16	10	228
08:45 AM	81	0	0	85	12	16	194
Total	375	0	0	402	77	51	905
Grand Total	738	0	0	851	150	81	1820
Apprch %	100	0	0	100	64.9	35.1	
Total %	40.5	0	0	46.8	8.2	4.5	
Cars	703	0	0	813	146	77	1739
% Cars	95.3	0	0	95.5	97.3	95.1	95.5
Trucks	35	0	0	38	4	4	81
% Trucks	4.7	0	0	4.5	2.7	4.9	4.5

Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street : East Dedham Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054005
Site Code : 15054005
Start Date : 11/19/2015

	Albany St From North			Albany St From South			E. Dedham St From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	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	101	0	101	0	122	122	20	6	26	249
07:45 AM	83	0	83	0	123	123	22	11	33	239
08:00 AM	97	0	97	0	111	111	31	11	42	250
08:15 AM	97	0	97	0	104	104	18	14	32	233
Total Volume	378	0	378	0	460	460	91	42	133	971
% App. Total	100	0		0	100		68.4	31.6		
PHF	.936	.000	.936	.000	.935	.935	.734	.750	.792	.971
Cars	361	0	361	0	440	440	89	41	130	931
% Cars	95.5	0	95.5	0	95.7	95.7	97.8	97.6	97.7	95.9
Trucks	17	0	17	0	20	20	2	1	3	40
% Trucks	4.5	0	4.5	0	4.3	4.3	2.2	2.4	2.3	4.1



Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street : East Dedham Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054005
Site Code : 15054005
Start Date : 11/19/2015
Page No : 10

Groups Printed- Bikes Peds

	Albany St From North			Albany St From South			E. Dedham St From West					
Start Time	Thru	Right	Peds	Left	Thru	Peds	Left	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	1	0	1	0	1	0	0	0	4	5	2	7
07:15 AM	0	0	0	0	0	0	0	0	5	5	0	5
07:30 AM	1	0	0	0	1	1	0	0	10	11	2	13
07:45 AM	1	0	1	0	0	0	0	0	11	12	1	13
Total	3	0	2	0	2	1	0	0	30	33	5	38
08:00 AM	1	0	0	0	4	0	0	0	16	16	5	21
08:15 AM	4	0	0	0	1	0	0	0	12	12	5	17
08:30 AM	1	0	0	0	2	1	0	0	13	14	3	17
08:45 AM	0	0	2	0	2	0	0	0	7	9	2	11
Total	6	0	2	0	9	1	0	0	48	51	15	66
Grand Total	9	0	4	0	11	2	0	0	78	84	20	104
Apprch %	100	0		0	100		0	0				
Total %	45	0		0	55		0	0		80.8	19.2	

Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street : East Dedham Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054005
Site Code : 15054005
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

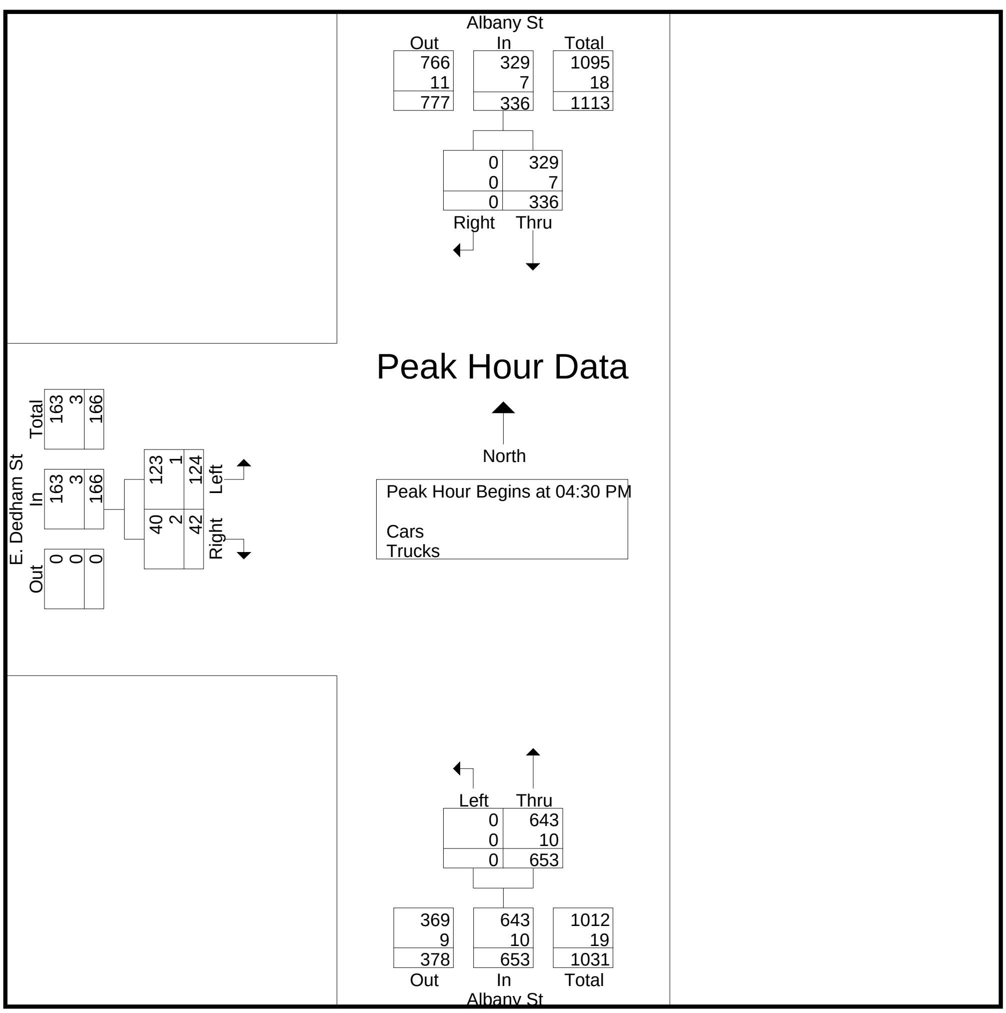
	Albany St From North		**Albany St From South**		**E. Dedham St From West**		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
04:00 PM	74	0	0	153	40	10	277
04:15 PM	81	0	0	147	28	11	267
04:30 PM	105	0	0	158	25	8	296
04:45 PM	71	0	0	162	27	9	269
Total	331	0	0	620	120	38	1109
05:00 PM	77	0	0	161	46	14	298
05:15 PM	83	0	0	172	26	11	292
05:30 PM	71	0	0	144	28	13	256
05:45 PM	82	0	0	128	24	11	245
Total	313	0	0	605	124	49	1091
Grand Total	644	0	0	1225	244	87	2200
Apprch %	100	0	0	100	73.7	26.3	
Total %	29.3	0	0	55.7	11.1	4	
Cars	632	0	0	1207	243	85	2167
% Cars	98.1	0	0	98.5	99.6	97.7	98.5
Trucks	12	0	0	18	1	2	33
% Trucks	1.9	0	0	1.5	0.4	2.3	1.5

Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street : East Dedham Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054005
Site Code : 15054005
Start Date : 11/19/2015
Page No : 2

	Albany St From North			Albany St From South			E. Dedham St From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	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	105	0	105	0	158	158	25	8	33	296
04:45 PM	71	0	71	0	162	162	27	9	36	269
05:00 PM	77	0	77	0	161	161	46	14	60	298
05:15 PM	83	0	83	0	172	172	26	11	37	292
Total Volume	336	0	336	0	653	653	124	42	166	1155
% App. Total	100	0		0	100		74.7	25.3		
PHF	.800	.000	.800	.000	.949	.949	.674	.750	.692	.969
Cars	329	0	329	0	643	643	123	40	163	1135
% Cars	97.9	0	97.9	0	98.5	98.5	99.2	95.2	98.2	98.3
Trucks	7	0	7	0	10	10	1	2	3	20
% Trucks	2.1	0	2.1	0	1.5	1.5	0.8	4.8	1.8	1.7



Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street : East Dedham Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054005
Site Code : 15054005
Start Date : 11/19/2015

Groups Printed- Bikes Peds

	Albany St From North			Albany St From South			E. Dedham St From West					
Start Time	Thru	Right	Peds	Left	Thru	Peds	Left	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	3	0	3	0	1	0	0	0	6	9	4	13
04:15 PM	0	0	0	0	0	1	0	0	5	6	0	6
04:30 PM	2	0	0	0	0	0	0	0	4	4	2	6
04:45 PM	1	0	0	0	0	2	1	0	7	9	2	11
Total	6	0	3	0	1	3	1	0	22	28	8	36
05:00 PM	0	0	0	0	1	0	0	0	2	2	1	3
05:15 PM	0	0	0	0	1	0	0	0	3	3	1	4
05:30 PM	2	0	0	0	3	1	0	0	2	3	5	8
05:45 PM	0	0	0	0	1	0	0	0	2	2	1	3
Total	2	0	0	0	6	1	0	0	9	10	8	18
Grand Total	8	0	3	0	7	4	1	0	31	38	16	54
Apprch %	100	0		0	100		100	0				
Total %	50	0		0	43.8		6.2	0		70.4	29.6	

Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street :Parking / E. Canton Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054006
Site Code : 15054006
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

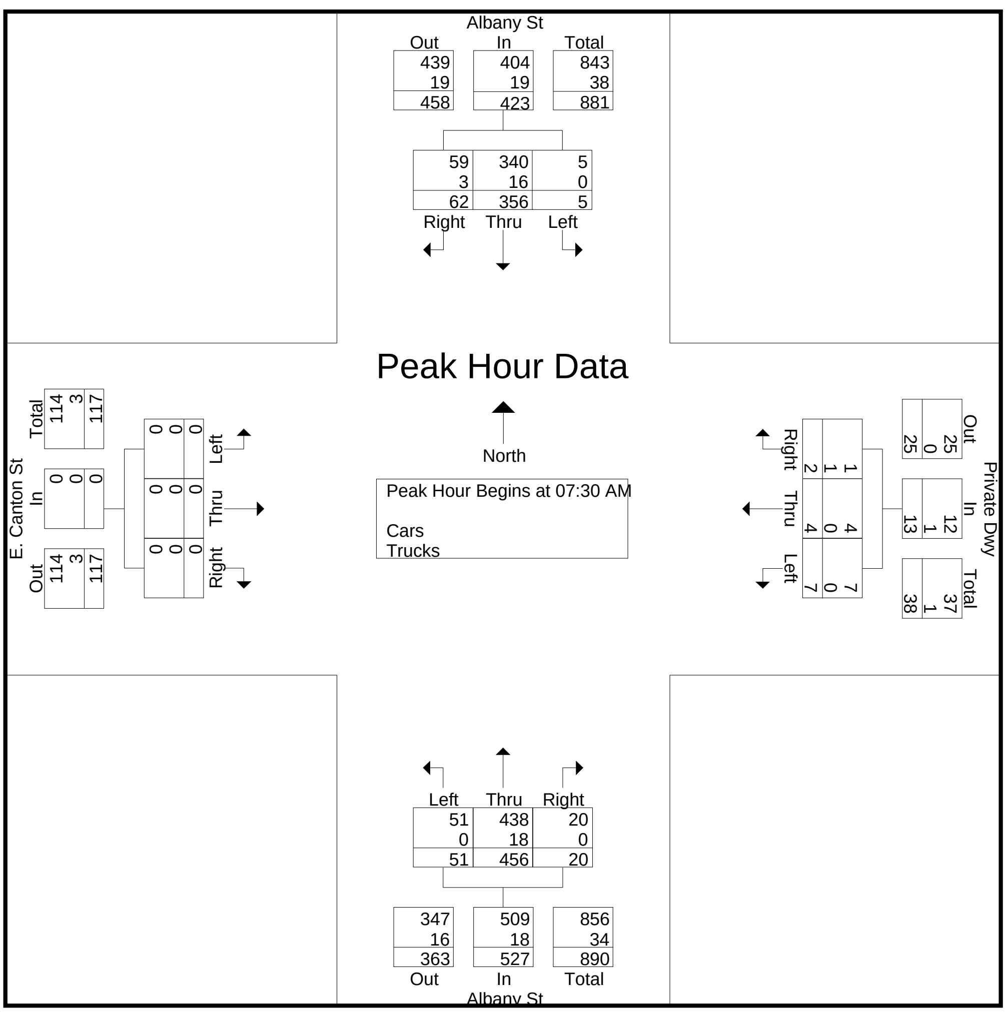
	Albany St From North			Private Dwy From East			Albany St From South			E. Canton St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	1	81	22	1	0	1	7	110	1	0	0	0	224
07:15 AM	1	70	16	2	0	1	10	96	1	0	0	0	197
07:30 AM	1	90	17	1	0	0	10	121	5	0	0	0	245
07:45 AM	1	82	13	0	1	1	11	122	8	0	0	0	239
Total	4	323	68	4	1	3	38	449	15	0	0	0	905
08:00 AM	1	98	15	6	2	1	13	112	3	0	0	0	251
08:15 AM	2	86	17	0	1	0	17	101	4	0	0	0	228
08:30 AM	6	83	14	1	0	3	11	93	3	0	0	0	214
08:45 AM	3	83	16	2	0	2	9	84	5	0	0	0	204
Total	12	350	62	9	3	6	50	390	15	0	0	0	897
Grand Total	16	673	130	13	4	9	88	839	30	0	0	0	1802
Apprch %	2	82.2	15.9	50	15.4	34.6	9.2	87.7	3.1	0	0	0	
Total %	0.9	37.3	7.2	0.7	0.2	0.5	4.9	46.6	1.7	0	0	0	
Cars	15	641	127	11	4	7	85	801	30	0	0	0	1721
% Cars	93.8	95.2	97.7	84.6	100	77.8	96.6	95.5	100	0	0	0	95.5
Trucks	1	32	3	2	0	2	3	38	0	0	0	0	81
% Trucks	6.2	4.8	2.3	15.4	0	22.2	3.4	4.5	0	0	0	0	4.5

Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street :Parking / E. Canton Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054006
Site Code : 15054006
Start Date : 11/19/2015
Page No : 2

	Albany St From North				Private Dwy From East				Albany St From South				E. Canton St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	1	90	17	108	1	0	0	1	10	121	5	136	0	0	0	0	245
07:45 AM	1	82	13	96	0	1	1	2	11	122	8	141	0	0	0	0	239
08:00 AM	1	98	15	114	6	2	1	9	13	112	3	128	0	0	0	0	251
08:15 AM	2	86	17	105	0	1	0	1	17	101	4	122	0	0	0	0	228
Total Volume	5	356	62	423	7	4	2	13	51	456	20	527	0	0	0	0	963
% App. Total	1.2	84.2	14.7		53.8	30.8	15.4		9.7	86.5	3.8		0	0	0		
PHF	.625	.908	.912	.928	.292	.500	.500	.361	.750	.934	.625	.934	.000	.000	.000	.000	.959
Cars	5	340	59	404	7	4	1	12	51	438	20	509	0	0	0	0	925
% Cars	100	95.5	95.2	95.5	100	100	50.0	92.3	100	96.1	100	96.6	0	0	0	0	96.1
Trucks	0	16	3	19	0	0	1	1	0	18	0	18	0	0	0	0	38
% Trucks	0	4.5	4.8	4.5	0	0	50.0	7.7	0	3.9	0	3.4	0	0	0	0	3.9



Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street :Parking / E. Canton Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054006
Site Code : 15054006
Start Date : 11/19/2015
Page No : 10

Groups Printed- Bikes Peds

	Albany St From North				Private Dwy From East				Albany St From South				E. Canton 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	2	0	0	0	0	0	1	0	15	0	0	0	5	22	3	25
07:15 AM	0	0	1	0	0	0	0	0	0	0	0	15	1	0	0	8	23	2	25
07:30 AM	0	1	0	1	0	0	0	0	0	1	0	7	0	0	0	1	9	2	11
07:45 AM	0	1	0	0	0	0	0	0	0	0	0	22	0	0	0	15	37	1	38
Total	0	3	2	3	0	0	0	0	0	2	0	59	1	0	0	29	91	8	99
08:00 AM	0	1	0	1	0	0	0	1	0	4	0	15	0	0	0	11	28	5	33
08:15 AM	0	2	0	1	0	0	0	0	0	1	0	17	0	0	0	9	27	3	30
08:30 AM	0	2	0	1	0	0	0	0	0	1	0	9	0	0	0	12	22	3	25
08:45 AM	0	1	0	4	0	0	0	0	0	2	0	7	0	0	0	11	22	3	25
Total	0	6	0	7	0	0	0	1	0	8	0	48	0	0	0	43	99	14	113
Grand Total	0	9	2	10	0	0	0	1	0	10	0	107	1	0	0	72	190	22	212
Apprch %	0	81.8	18.2		0	0	0		0	100	0		100	0	0				
Total %	0	40.9	9.1		0	0	0		0	45.5	0		4.5	0	0		89.6	10.4	

Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street :Parking / E. Canton Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054006
Site Code : 15054006
Start Date : 11/19/2015

Groups Printed- Cars - Trucks

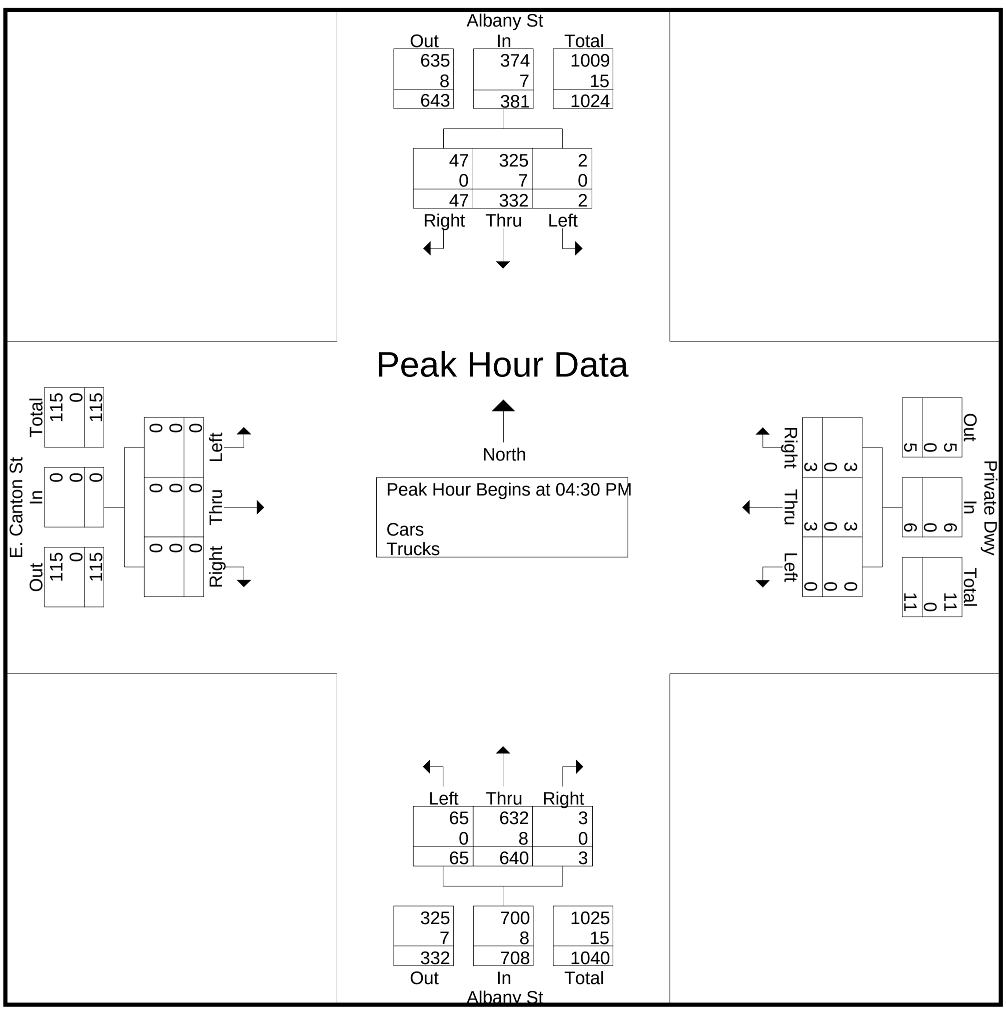
	Albany St From North			Private Dwy From East			Albany St From South			E. Canton St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	2	72	14	0	0	0	20	148	0	0	0	0	256
04:15 PM	0	78	11	1	2	0	11	150	1	0	0	0	254
04:30 PM	0	97	12	0	2	1	19	151	1	0	0	0	283
04:45 PM	1	73	15	0	1	1	14	154	0	0	0	0	259
Total	3	320	52	1	5	2	64	603	2	0	0	0	1052
05:00 PM	0	83	14	0	0	0	16	171	2	0	0	0	286
05:15 PM	1	79	6	0	0	1	16	164	0	0	0	0	267
05:30 PM	0	77	10	1	0	0	16	140	1	0	0	0	245
05:45 PM	1	80	14	0	0	2	11	120	0	0	0	0	228
Total	2	319	44	1	0	3	59	595	3	0	0	0	1026
Grand Total	5	639	96	2	5	5	123	1198	5	0	0	0	2078
Apprch %	0.7	86.4	13	16.7	41.7	41.7	9.3	90.3	0.4	0	0	0	
Total %	0.2	30.8	4.6	0.1	0.2	0.2	5.9	57.7	0.2	0	0	0	
Cars	5	626	96	2	5	5	123	1184	5	0	0	0	2051
% Cars	100	98	100	100	100	100	100	98.8	100	0	0	0	98.7
Trucks	0	13	0	0	0	0	0	14	0	0	0	0	27
% Trucks	0	2	0	0	0	0	0	1.2	0	0	0	0	1.3

Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street :Parking / E. Canton Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054006
Site Code : 15054006
Start Date : 11/19/2015
Page No : 2

	Albany St From North				Private Dwy From East				Albany St From South				E. Canton St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	97	12	109	0	2	1	3	19	151	1	171	0	0	0	0	283
04:45 PM	1	73	15	89	0	1	1	2	14	154	0	168	0	0	0	0	259
05:00 PM	0	83	14	97	0	0	0	0	16	171	2	189	0	0	0	0	286
05:15 PM	1	79	6	86	0	0	1	1	16	164	0	180	0	0	0	0	267
Total Volume	2	332	47	381	0	3	3	6	65	640	3	708	0	0	0	0	1095
% App. Total	0.5	87.1	12.3		0	50	50		9.2	90.4	0.4		0	0	0		
PHF	.500	.856	.783	.874	.000	.375	.750	.500	.855	.936	.375	.937	.000	.000	.000	.000	.957
Cars	2	325	47	374	0	3	3	6	65	632	3	700	0	0	0	0	1080
% Cars	100	97.9	100	98.2	0	100	100	100	100	98.8	100	98.9	0	0	0	0	98.6
Trucks	0	7	0	7	0	0	0	0	0	8	0	8	0	0	0	0	15
% Trucks	0	2.1	0	1.8	0	0	0	0	0	1.3	0	1.1	0	0	0	0	1.4



Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street :Parking / E. Canton Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054006
Site Code : 15054006
Start Date : 11/19/2015
Page No : 10

Groups Printed- Bikes Peds

	Albany St From North				Private Dwy From East				Albany St From South				E. Canton 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	2	1	0	0	0	0	0	1	1	0	5	0	0	0	7	12	5	17
04:15 PM	0	0	0	2	0	0	0	0	0	0	0	8	0	0	0	3	13	0	13
04:30 PM	0	1	0	0	0	0	0	0	0	0	0	13	0	0	0	0	13	1	14
04:45 PM	0	0	0	1	0	0	0	0	0	1	0	7	0	0	0	0	8	1	9
Total	0	3	1	3	0	0	0	0	1	2	0	33	0	0	0	10	46	7	53
05:00 PM	0	0	0	0	0	0	0	0	0	2	0	12	0	0	0	3	15	2	17
05:15 PM	0	0	0	0	0	0	0	0	1	1	0	11	0	0	0	0	11	2	13
05:30 PM	0	2	0	0	0	0	0	0	0	2	0	6	0	0	0	1	7	4	11
05:45 PM	0	3	0	1	0	0	0	0	0	0	0	7	0	0	0	0	8	3	11
Total	0	5	0	1	0	0	0	0	1	5	0	36	0	0	0	4	41	11	52
Grand Total	0	8	1	4	0	0	0	0	2	7	0	69	0	0	0	14	87	18	105
Apprch %	0	88.9	11.1		0	0	0		22.2	77.8	0		0	0	0				
Total %	0	44.4	5.6		0	0	0		11.1	38.9	0		0	0	0		82.9	17.1	

Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street : East Brookline Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054007
Site Code : 15054007
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

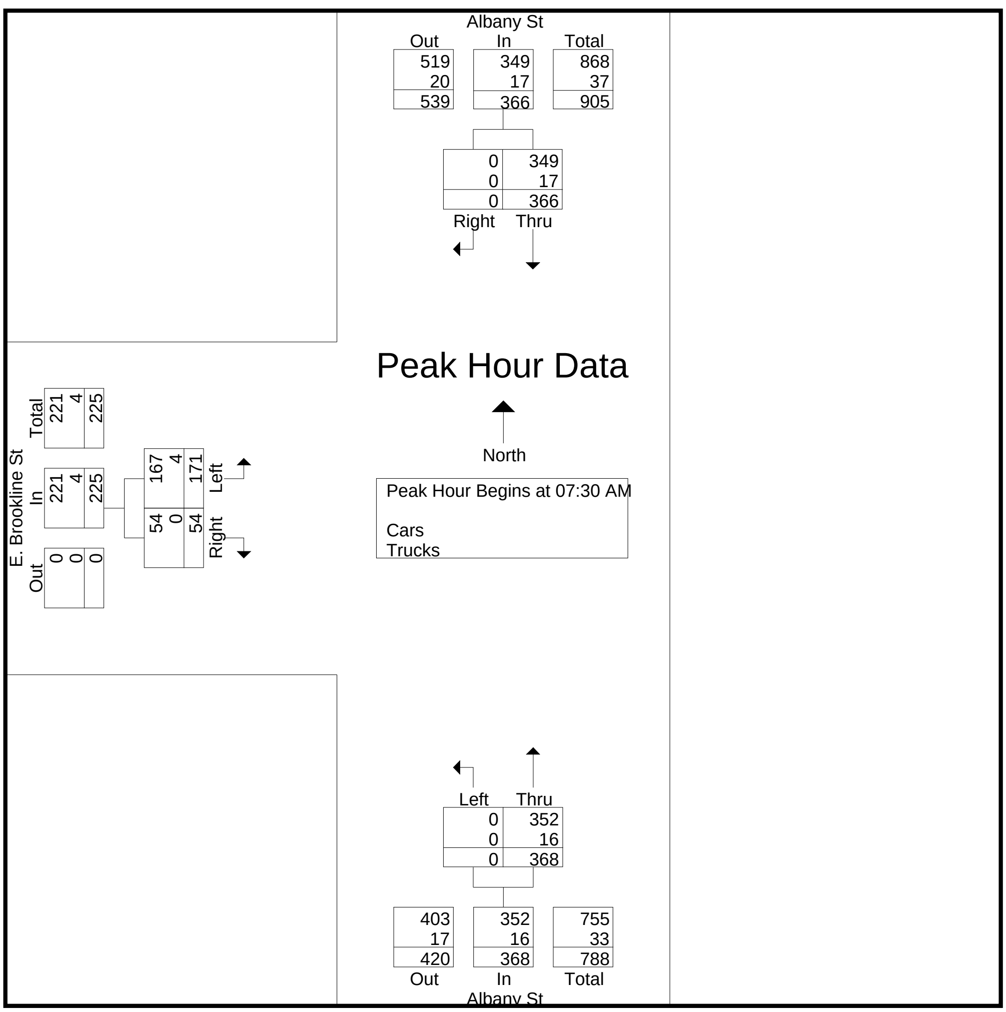
	Albany St From North		Albany St From South		E. Brookline St From West		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
07:00 AM	76	0	0	86	27	6	195
07:15 AM	65	0	0	88	15	4	172
07:30 AM	95	0	0	98	45	16	254
07:45 AM	80	0	0	99	39	10	228
Total	316	0	0	371	126	36	849
08:00 AM	103	0	0	88	45	15	251
08:15 AM	88	0	0	83	42	13	226
08:30 AM	91	0	0	77	33	8	209
08:45 AM	81	0	0	72	25	11	189
Total	363	0	0	320	145	47	875
Grand Total	679	0	0	691	271	83	1724
Apprch %	100	0	0	100	76.6	23.4	
Total %	39.4	0	0	40.1	15.7	4.8	
Cars	641	0	0	661	265	83	1650
% Cars	94.4	0	0	95.7	97.8	100	95.7
Trucks	38	0	0	30	6	0	74
% Trucks	5.6	0	0	4.3	2.2	0	4.3

Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street : East Brookline Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054007
Site Code : 15054007
Start Date : 11/19/2015
Page No : 2

	Albany St From North			Albany St From South			E. Brookline St From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	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	95	0	95	0	98	98	45	16	61	254
07:45 AM	80	0	80	0	99	99	39	10	49	228
08:00 AM	103	0	103	0	88	88	45	15	60	251
08:15 AM	88	0	88	0	83	83	42	13	55	226
Total Volume	366	0	366	0	368	368	171	54	225	959
% App. Total	100	0		0	100		76	24		
PHF	.888	.000	.888	.000	.929	.929	.950	.844	.922	.944
Cars	349	0	349	0	352	352	167	54	221	922
% Cars	95.4	0	95.4	0	95.7	95.7	97.7	100	98.2	96.1
Trucks	17	0	17	0	16	16	4	0	4	37
% Trucks	4.6	0	4.6	0	4.3	4.3	2.3	0	1.8	3.9



Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street : East Brookline Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054007
Site Code : 15054007
Start Date : 11/19/2015
Page No : 10

Groups Printed- Bikes Peds

	Albany St From North			Albany St From South			E. Brookline St From West					
Start Time	Thru	Right	Peds	Left	Thru	Peds	Left	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	1	0	0	0	0	3	0	0	16	19	1	20
07:15 AM	0	0	0	0	0	1	0	0	6	7	0	7
07:30 AM	1	0	0	0	1	2	0	0	8	10	2	12
07:45 AM	1	0	0	0	0	3	0	0	35	38	1	39
Total	3	0	0	0	1	9	0	0	65	74	4	78
08:00 AM	1	0	0	0	3	8	0	0	28	36	4	40
08:15 AM	3	0	0	0	0	4	1	0	26	30	4	34
08:30 AM	1	0	0	0	0	7	0	0	19	26	1	27
08:45 AM	1	0	0	0	0	4	1	0	21	25	2	27
Total	6	0	0	0	3	23	2	0	94	117	11	128
Grand Total	9	0	0	0	4	32	2	0	159	191	15	206
Apprch %	100	0		0	100		100	0				
Total %	60	0		0	26.7		13.3	0		92.7	7.3	

Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street : East Brookline Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054007
Site Code : 15054007
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

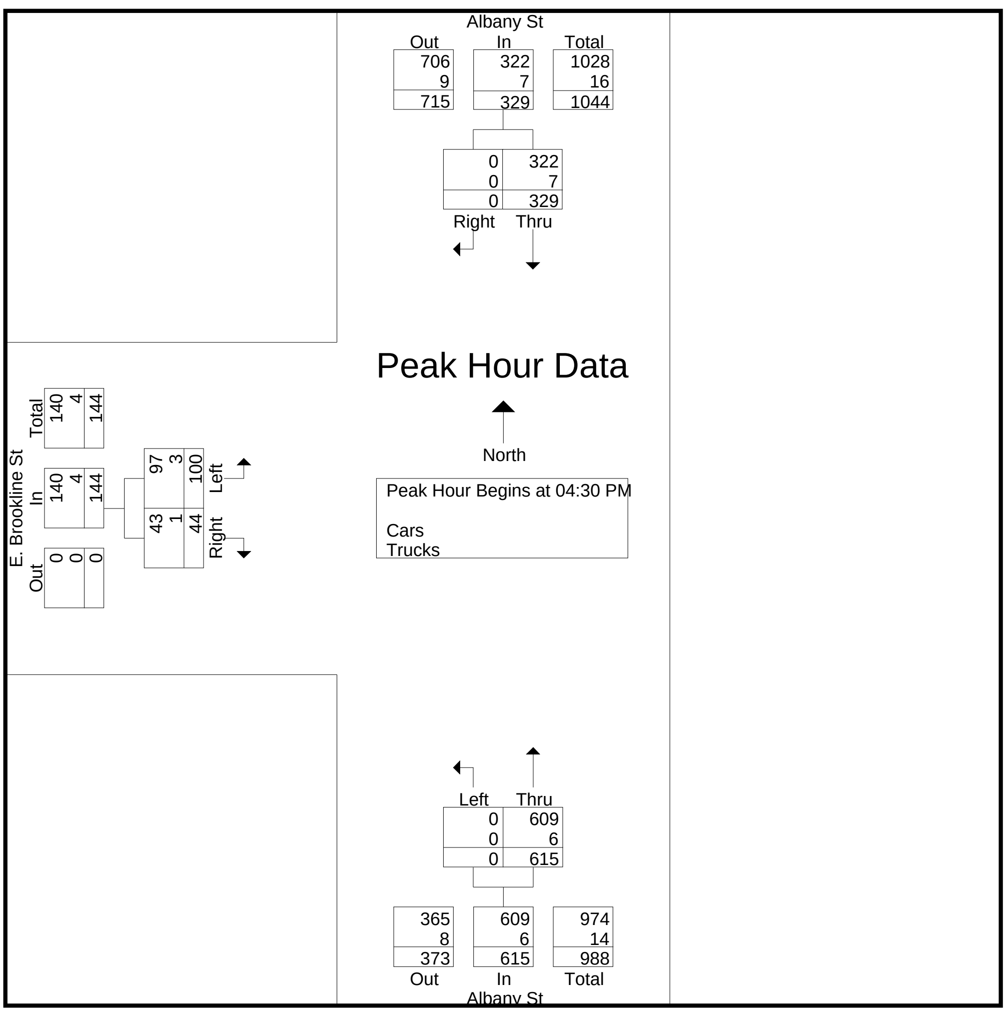
	Albany St From North		Albany St From South		E. Brookline St From West		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
04:00 PM	70	1	0	145	24	14	254
04:15 PM	80	0	0	133	27	11	251
04:30 PM	93	0	0	144	29	18	284
04:45 PM	76	0	0	150	21	14	261
Total	319	1	0	572	101	57	1050
05:00 PM	77	0	0	155	33	7	272
05:15 PM	83	0	0	166	17	5	271
05:30 PM	75	0	0	140	19	9	243
05:45 PM	87	0	1	103	31	10	232
Total	322	0	1	564	100	31	1018
Grand Total	641	1	1	1136	201	88	2068
Apprch %	99.8	0.2	0.1	99.9	69.6	30.4	
Total %	31	0	0	54.9	9.7	4.3	
Cars	628	1	1	1124	197	87	2038
% Cars	98	100	100	98.9	98	98.9	98.5
Trucks	13	0	0	12	4	1	30
% Trucks	2	0	0	1.1	2	1.1	1.5

Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street : East Brookline Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054007
Site Code : 15054007
Start Date : 11/19/2015

	Albany St From North			Albany St From South			E. Brookline St From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	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	93	0	93	0	144	144	29	18	47	284
04:45 PM	76	0	76	0	150	150	21	14	35	261
05:00 PM	77	0	77	0	155	155	33	7	40	272
05:15 PM	83	0	83	0	166	166	17	5	22	271
Total Volume	329	0	329	0	615	615	100	44	144	1088
% App. Total	100	0		0	100		69.4	30.6		
PHF	.884	.000	.884	.000	.926	.926	.758	.611	.766	.958
Cars	322	0	322	0	609	609	97	43	140	1071
% Cars	97.9	0	97.9	0	99.0	99.0	97.0	97.7	97.2	98.4
Trucks	7	0	7	0	6	6	3	1	4	17
% Trucks	2.1	0	2.1	0	1.0	1.0	3.0	2.3	2.8	1.6



Accurate Counts
978-664-2565

N/S Street : Albany Street
E/W Street : East Brookline Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054007
Site Code : 15054007
Start Date : 11/19/2015

Groups Printed- Bikes Peds

	Albany St From North			Albany St From South			E. Brookline St From West					
Start Time	Thru	Right	Peds	Left	Thru	Peds	Left	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	2	0	0	0	2	0	0	0	0	0	4	4
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	1	0	1	0	0	0	0	0	0	1	1	2
04:45 PM	0	0	0	0	1	0	0	0	0	0	1	1
Total	3	0	1	0	3	0	0	0	0	1	6	7
05:00 PM	0	0	0	0	2	0	0	0	0	0	2	2
05:15 PM	1	0	1	0	1	0	1	0	0	1	3	4
05:30 PM	1	1	0	0	2	0	0	0	0	0	4	4
05:45 PM	3	0	0	0	0	0	0	0	0	0	3	3
Total	5	1	1	0	5	0	1	0	0	1	12	13
Grand Total	8	1	2	0	8	0	1	0	0	2	18	20
Apprch %	88.9	11.1		0	100		100	0				
Total %	44.4	5.6		0	44.4		5.6	0		10	90	

Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Newton Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054008
Site Code : 15054008
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

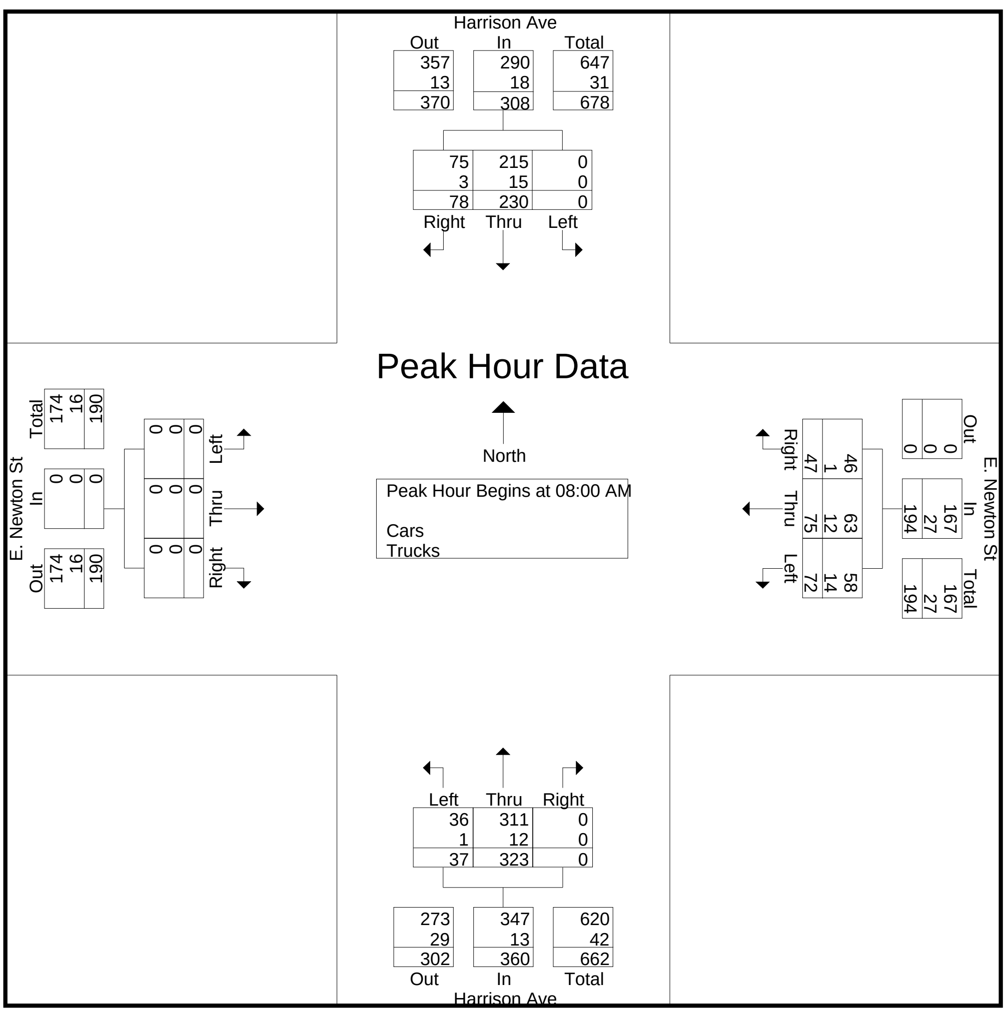
	Harrison Ave From North			E. Newton St From East			Harrison Ave From South			E. Newton St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	48	17	18	13	12	3	64	0	0	0	0	175
07:15 AM	0	56	9	14	15	10	5	64	0	0	0	0	173
07:30 AM	0	48	9	17	12	6	14	55	0	0	0	0	161
07:45 AM	0	59	19	19	19	14	8	74	0	0	0	0	212
Total	0	211	54	68	59	42	30	257	0	0	0	0	721
08:00 AM	0	54	26	17	15	8	10	87	0	0	0	0	217
08:15 AM	0	55	17	17	21	10	8	90	0	0	0	0	218
08:30 AM	0	66	13	16	20	15	10	71	0	0	0	0	211
08:45 AM	0	55	22	22	19	14	9	75	0	0	0	0	216
Total	0	230	78	72	75	47	37	323	0	0	0	0	862
Grand Total	0	441	132	140	134	89	67	580	0	0	0	0	1583
Apprch %	0	77	23	38.6	36.9	24.5	10.4	89.6	0	0	0	0	
Total %	0	27.9	8.3	8.8	8.5	5.6	4.2	36.6	0	0	0	0	
Cars	0	407	124	112	116	87	66	562	0	0	0	0	1474
% Cars	0	92.3	93.9	80	86.6	97.8	98.5	96.9	0	0	0	0	93.1
Trucks	0	34	8	28	18	2	1	18	0	0	0	0	109
% Trucks	0	7.7	6.1	20	13.4	2.2	1.5	3.1	0	0	0	0	6.9

Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Newton Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054008
Site Code : 15054008
Start Date : 11/19/2015
Page No : 2

	Harrison Ave From North				E. Newton St From East				Harrison Ave From South				E. Newton 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	54	26	80	17	15	8	40	10	87	0	97	0	0	0	0	217
08:15 AM	0	55	17	72	17	21	10	48	8	90	0	98	0	0	0	0	218
08:30 AM	0	66	13	79	16	20	15	51	10	71	0	81	0	0	0	0	211
08:45 AM	0	55	22	77	22	19	14	55	9	75	0	84	0	0	0	0	216
Total Volume	0	230	78	308	72	75	47	194	37	323	0	360	0	0	0	0	862
% App. Total	0	74.7	25.3		37.1	38.7	24.2		10.3	89.7	0		0	0	0		
PHF	.000	.871	.750	.963	.818	.893	.783	.882	.925	.897	.000	.918	.000	.000	.000	.000	.989
Cars	0	215	75	290	58	63	46	167	36	311	0	347	0	0	0	0	804
% Cars	0	93.5	96.2	94.2	80.6	84.0	97.9	86.1	97.3	96.3	0	96.4	0	0	0	0	93.3
Trucks	0	15	3	18	14	12	1	27	1	12	0	13	0	0	0	0	58
% Trucks	0	6.5	3.8	5.8	19.4	16.0	2.1	13.9	2.7	3.7	0	3.6	0	0	0	0	6.7



Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Newton Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054008
Site Code : 15054008
Start Date : 11/19/2015

Groups Printed- Bikes Peds

	Harrison Ave From North				E. Newton St From East				Harrison Ave From South				E. Newton 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	0	16	0	0	0	9	0	1	0	11	0	0	0	0	36	2	38
07:15 AM	0	2	0	33	0	0	0	10	0	1	0	13	0	0	0	1	57	3	60
07:30 AM	0	4	1	23	0	0	0	13	0	1	0	23	0	2	0	4	63	8	71
07:45 AM	0	2	0	37	0	0	0	19	0	1	1	40	0	2	0	1	97	6	103
Total	0	9	1	109	0	0	0	51	0	4	1	87	0	4	0	6	253	19	272
08:00 AM	0	0	0	45	0	1	0	20	0	0	0	42	0	1	1	1	108	3	111
08:15 AM	0	0	1	40	0	0	0	14	0	4	1	41	0	1	0	2	97	7	104
08:30 AM	0	1	0	39	0	1	1	31	0	1	0	40	0	3	0	2	112	7	119
08:45 AM	0	2	0	46	0	0	0	21	0	1	0	31	0	0	0	1	99	3	102
Total	0	3	1	170	0	2	1	86	0	6	1	154	0	5	1	6	416	20	436
Grand Total	0	12	2	279	0	2	1	137	0	10	2	241	0	9	1	12	669	39	708
Apprch %	0	85.7	14.3		0	66.7	33.3		0	83.3	16.7		0	90	10				
Total %	0	30.8	5.1		0	5.1	2.6		0	25.6	5.1		0	23.1	2.6		94.5	5.5	

Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Newton Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054008
Site Code : 15054008
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

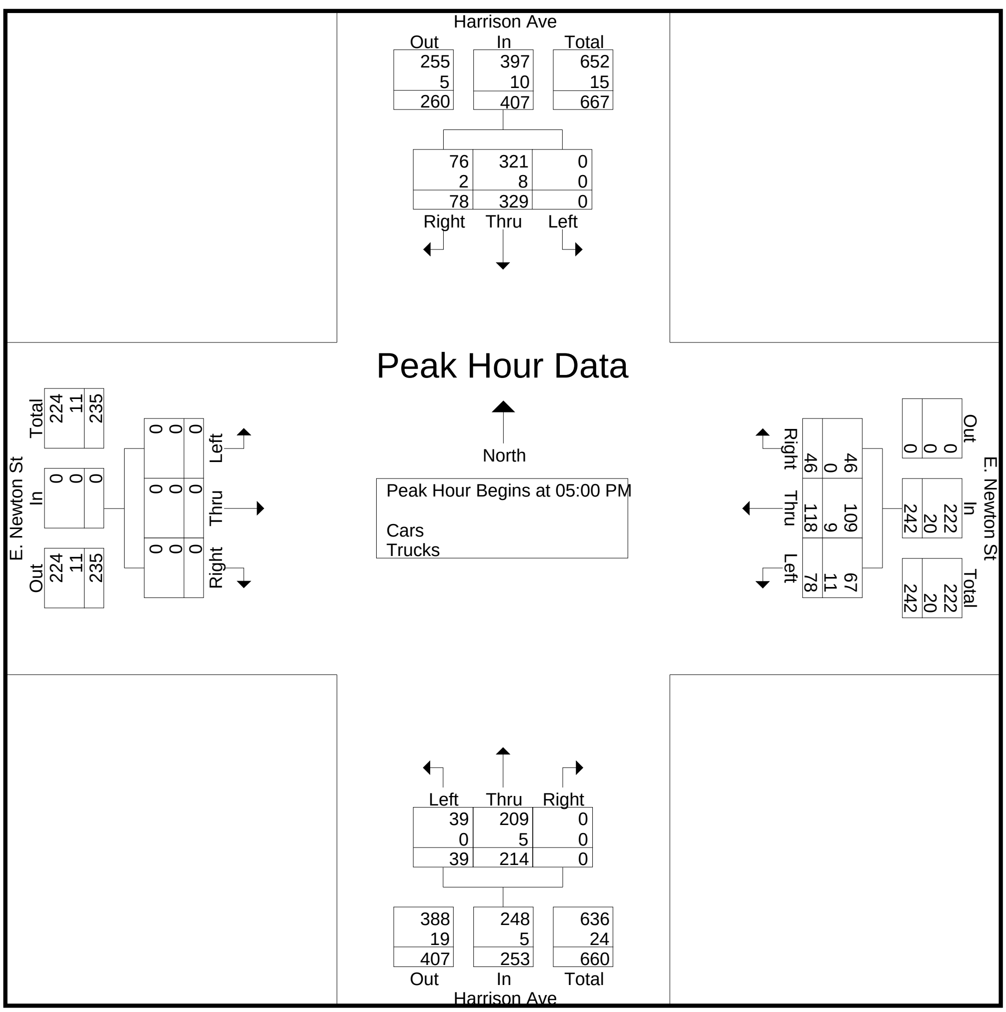
	Harrison Ave From North			E. Newton St From East			Harrison Ave From South			E. Newton St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	80	27	23	26	18	6	54	0	0	0	0	234
04:15 PM	0	79	20	22	20	13	3	68	0	0	0	0	225
04:30 PM	0	73	18	22	36	14	8	58	0	0	0	0	229
04:45 PM	0	73	12	23	26	8	5	56	0	0	0	0	203
Total	0	305	77	90	108	53	22	236	0	0	0	0	891
05:00 PM	0	86	17	28	28	14	4	55	0	0	0	0	232
05:15 PM	0	88	23	21	28	10	8	50	0	0	0	0	228
05:30 PM	0	82	16	10	32	11	14	44	0	0	0	0	209
05:45 PM	0	73	22	19	30	11	13	65	0	0	0	0	233
Total	0	329	78	78	118	46	39	214	0	0	0	0	902
Grand Total	0	634	155	168	226	99	61	450	0	0	0	0	1793
Apprch %	0	80.4	19.6	34.1	45.8	20.1	11.9	88.1	0	0	0	0	
Total %	0	35.4	8.6	9.4	12.6	5.5	3.4	25.1	0	0	0	0	
Cars	0	618	153	144	210	98	61	444	0	0	0	0	1728
% Cars	0	97.5	98.7	85.7	92.9	99	100	98.7	0	0	0	0	96.4
Trucks	0	16	2	24	16	1	0	6	0	0	0	0	65
% Trucks	0	2.5	1.3	14.3	7.1	1	0	1.3	0	0	0	0	3.6

Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Newton Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054008
Site Code : 15054008
Start Date : 11/19/2015
Page No : 2

	Harrison Ave From North				E. Newton St From East				Harrison Ave From South				E. Newton 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	86	17	103	28	28	14	70	4	55	0	59	0	0	0	0	232
05:15 PM	0	88	23	111	21	28	10	59	8	50	0	58	0	0	0	0	228
05:30 PM	0	82	16	98	10	32	11	53	14	44	0	58	0	0	0	0	209
05:45 PM	0	73	22	95	19	30	11	60	13	65	0	78	0	0	0	0	233
Total Volume	0	329	78	407	78	118	46	242	39	214	0	253	0	0	0	0	902
% App. Total	0	80.8	19.2		32.2	48.8	19		15.4	84.6	0		0	0	0		
PHF	.000	.935	.848	.917	.696	.922	.821	.864	.696	.823	.000	.811	.000	.000	.000	.000	.968
Cars	0	321	76	397	67	109	46	222	39	209	0	248	0	0	0	0	867
% Cars	0	97.6	97.4	97.5	85.9	92.4	100	91.7	100	97.7	0	98.0	0	0	0	0	96.1
Trucks	0	8	2	10	11	9	0	20	0	5	0	5	0	0	0	0	35
% Trucks	0	2.4	2.6	2.5	14.1	7.6	0	8.3	0	2.3	0	2.0	0	0	0	0	3.9



Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Newton Street
City/State : Boston, MA
Weather : Cloudy

File Name : 15054008
Site Code : 15054008
Start Date : 11/19/2015

Groups Printed- Bikes Peds

	Harrison Ave From North				E. Newton St From East				Harrison Ave From South				E. Newton St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	26	0	1	0	27	0	1	0	41	0	0	0	0	94	2	96
04:15 PM	0	0	1	29	0	3	0	37	0	0	0	36	0	0	0	1	103	4	107
04:30 PM	0	0	0	37	1	3	0	26	0	0	0	35	0	0	0	0	98	4	102
04:45 PM	0	1	0	27	0	4	0	22	0	1	0	42	0	1	0	0	91	7	98
Total	0	1	1	119	1	11	0	112	0	2	0	154	0	1	0	1	386	17	403
05:00 PM	0	1	0	49	0	8	0	23	0	3	0	38	0	0	0	0	110	12	122
05:15 PM	0	1	1	33	2	4	0	19	0	1	0	28	0	0	0	0	80	9	89
05:30 PM	0	2	0	28	1	4	0	20	0	1	0	31	0	1	0	0	79	9	88
05:45 PM	0	4	0	19	1	5	1	10	0	1	0	29	0	0	0	0	58	12	70
Total	0	8	1	129	4	21	1	72	0	6	0	126	0	1	0	0	327	42	369
Grand Total	0	9	2	248	5	32	1	184	0	8	0	280	0	2	0	1	713	59	772
Apprch %	0	81.8	18.2		13.2	84.2	2.6		0	100	0		0	100	0				
Total %	0	15.3	3.4		8.5	54.2	1.7		0	13.6	0		0	3.4	0		92.4	7.6	

Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Brookline Street
City/State : Boston, MA
Weather : Clear

File Name : 15054009
Site Code : 15054009
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

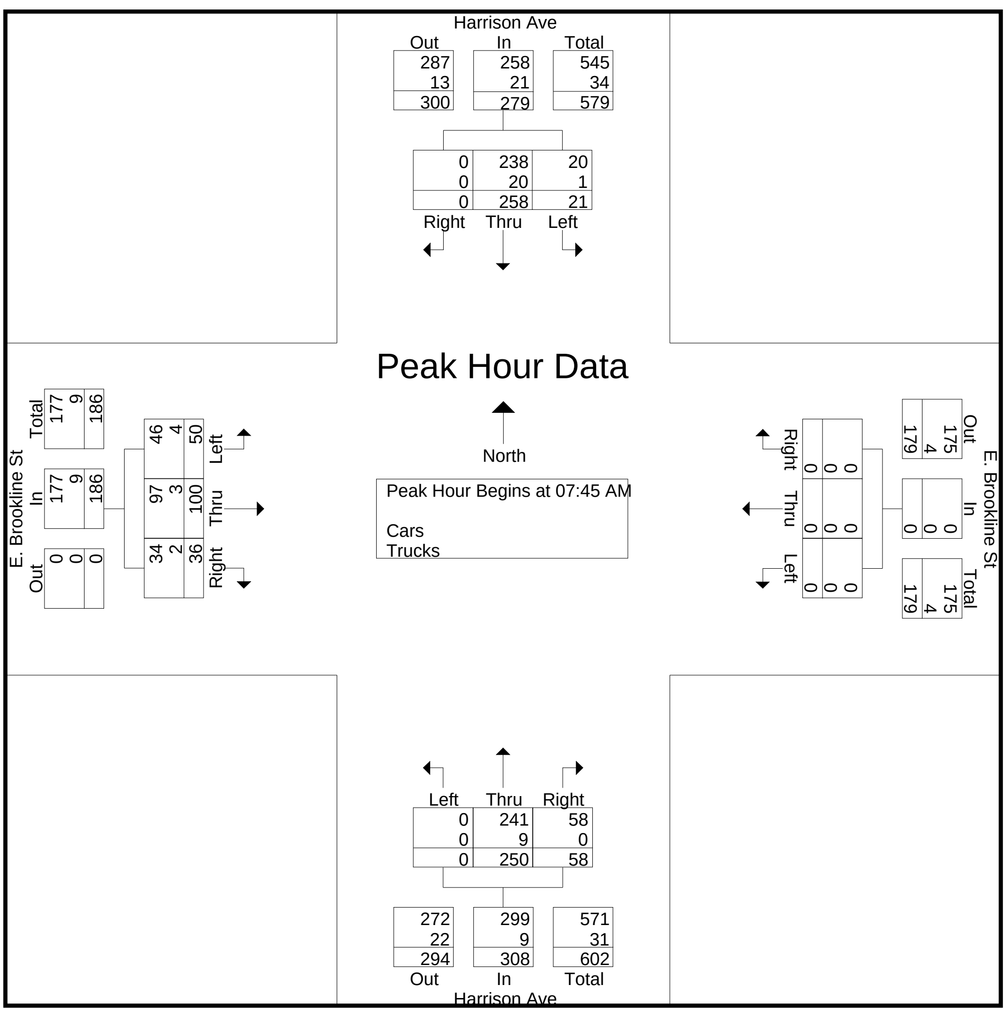
	Harrison Ave From North			E. Brookline St From East			Harrison Ave From South			E. Brookline St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	2	50	0	0	0	0	0	46	19	7	12	13	149
07:15 AM	3	47	0	0	0	0	0	52	9	10	13	8	142
07:30 AM	5	48	0	0	0	0	0	45	6	13	31	7	155
07:45 AM	4	55	0	0	0	0	0	57	16	13	23	15	183
Total	14	200	0	0	0	0	0	200	50	43	79	43	629
08:00 AM	8	72	0	0	0	0	0	53	19	14	22	2	190
08:15 AM	6	62	0	0	0	0	0	82	13	9	27	11	210
08:30 AM	3	69	0	0	0	0	0	58	10	14	28	8	190
08:45 AM	1	65	1	0	0	0	0	50	13	8	16	12	166
Total	18	268	1	0	0	0	0	243	55	45	93	33	756
Grand Total	32	468	1	0	0	0	0	443	105	88	172	76	1385
Apprch %	6.4	93.4	0.2	0	0	0	0	80.8	19.2	26.2	51.2	22.6	
Total %	2.3	33.8	0.1	0	0	0	0	32	7.6	6.4	12.4	5.5	
Cars	30	428	1	0	0	0	0	426	105	82	167	74	1313
% Cars	93.8	91.5	100	0	0	0	0	96.2	100	93.2	97.1	97.4	94.8
Trucks	2	40	0	0	0	0	0	17	0	6	5	2	72
% Trucks	6.2	8.5	0	0	0	0	0	3.8	0	6.8	2.9	2.6	5.2

Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Brookline Street
City/State : Boston, MA
Weather : Clear

File Name : 15054009
Site Code : 15054009
Start Date : 11/19/2015
Page No : 2

	Harrison Ave From North				E. Brookline St From East				Harrison Ave From South				E. Brookline 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	4	55	0	59	0	0	0	0	0	57	16	73	13	23	15	51	183
08:00 AM	8	72	0	80	0	0	0	0	0	53	19	72	14	22	2	38	190
08:15 AM	6	62	0	68	0	0	0	0	0	82	13	95	9	27	11	47	210
08:30 AM	3	69	0	72	0	0	0	0	0	58	10	68	14	28	8	50	190
Total Volume	21	258	0	279	0	0	0	0	0	250	58	308	50	100	36	186	773
% App. Total	7.5	92.5	0		0	0	0		0	81.2	18.8		26.9	53.8	19.4		
PHF	.656	.896	.000	.872	.000	.000	.000	.000	.000	.762	.763	.811	.893	.893	.600	.912	.920
Cars	20	238	0	258	0	0	0	0	0	241	58	299	46	97	34	177	734
% Cars	95.2	92.2	0	92.5	0	0	0	0	0	96.4	100	97.1	92.0	97.0	94.4	95.2	95.0
Trucks	1	20	0	21	0	0	0	0	0	9	0	9	4	3	2	9	39
% Trucks	4.8	7.8	0	7.5	0	0	0	0	0	3.6	0	2.9	8.0	3.0	5.6	4.8	5.0



Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Brookline Street
City/State : Boston, MA
Weather : Clear

File Name : 15054009
Site Code : 15054009
Start Date : 11/19/2015
Page No : 10

Groups Printed- Bikes Peds

	Harrison Ave From North				E. Brookline St From East				Harrison Ave From South				E. Brookline 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	0	7	0	0	0	12	0	0	0	7	0	0	1	2	28	2	30
07:15 AM	0	3	0	3	0	0	1	7	0	1	0	12	0	0	0	1	23	5	28
07:30 AM	0	2	0	8	0	0	0	13	0	1	0	14	0	2	0	2	37	5	42
07:45 AM	0	2	0	6	0	0	0	14	0	1	0	12	0	0	0	3	35	3	38
Total	0	8	0	24	0	0	1	46	0	3	0	45	0	2	1	8	123	15	138
08:00 AM	0	0	0	8	0	0	0	7	0	0	0	2	2	1	0	3	20	3	23
08:15 AM	0	1	0	18	0	0	0	23	0	4	0	11	1	2	0	1	53	8	61
08:30 AM	0	1	0	12	0	0	0	11	0	2	1	16	1	0	0	1	40	5	45
08:45 AM	1	1	1	13	0	0	0	16	0	1	0	6	1	1	0	0	35	6	41
Total	1	3	1	51	0	0	0	57	0	7	1	35	5	4	0	5	148	22	170
Grand Total	1	11	1	75	0	0	1	103	0	10	1	80	5	6	1	13	271	37	308
Apprch %	7.7	84.6	7.7		0	0	100		0	90.9	9.1		41.7	50	8.3				
Total %	2.7	29.7	2.7		0	0	2.7		0	27	2.7		13.5	16.2	2.7		88	12	

Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Brookline Street
City/State : Boston, MA
Weather : Clear

File Name : 15054009
Site Code : 15054009
Start Date : 11/19/2015
Page No : 1

Groups Printed- Cars - Trucks

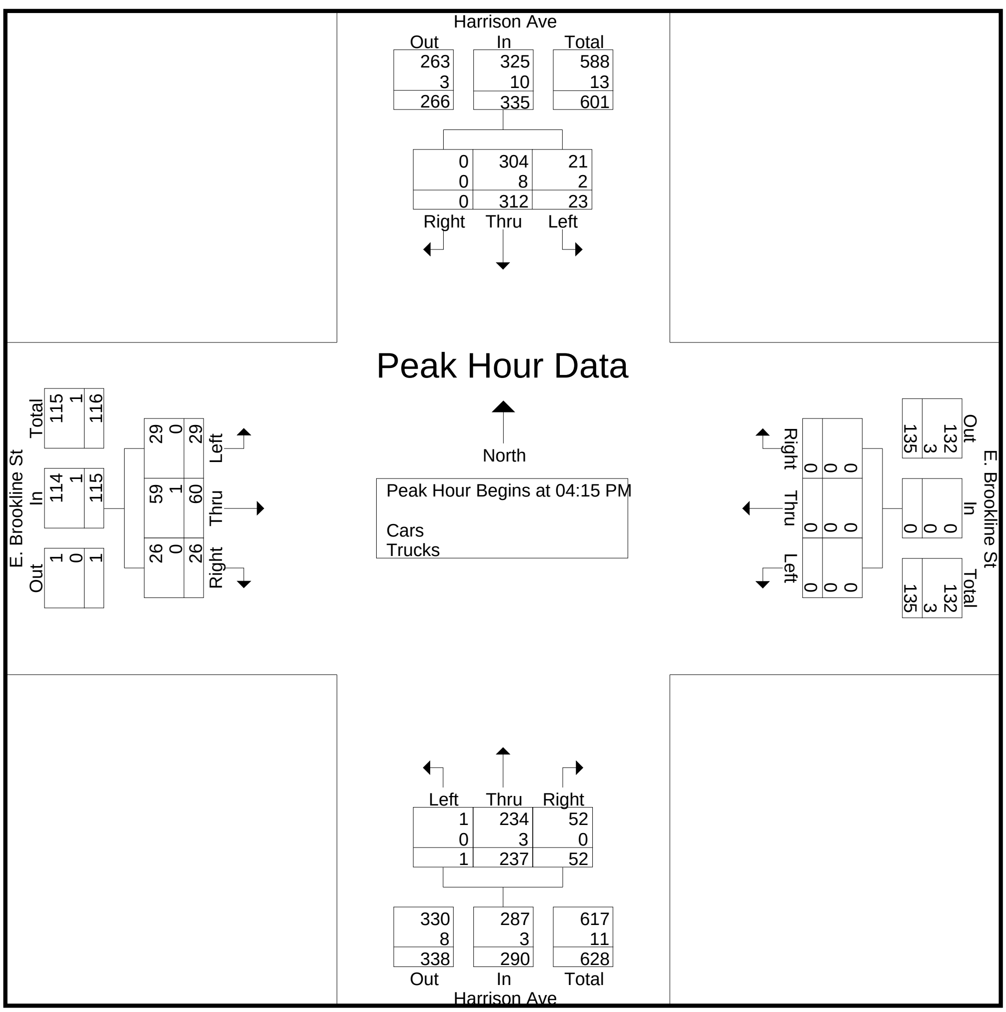
	Harrison Ave From North			E. Brookline St From East			Harrison Ave From South			E. Brookline St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	4	85	0	1	0	0	0	55	19	8	14	4	190
04:15 PM	6	84	0	0	0	0	0	64	20	6	11	4	195
04:30 PM	8	76	0	0	0	0	0	59	9	7	19	9	187
04:45 PM	5	69	0	0	0	0	0	54	10	7	18	3	166
Total	23	314	0	1	0	0	0	232	58	28	62	20	738
05:00 PM	4	83	0	0	0	0	1	60	13	9	12	10	192
05:15 PM	4	86	0	0	0	0	1	54	12	9	12	7	185
05:30 PM	5	82	0	0	0	0	0	50	8	7	11	9	172
05:45 PM	6	72	0	0	0	0	0	56	14	12	21	4	185
Total	19	323	0	0	0	0	2	220	47	37	56	30	734
Grand Total	42	637	0	1	0	0	2	452	105	65	118	50	1472
Apprch %	6.2	93.8	0	100	0	0	0.4	80.9	18.8	27.9	50.6	21.5	
Total %	2.9	43.3	0	0.1	0	0	0.1	30.7	7.1	4.4	8	3.4	
Cars	40	623	0	1	0	0	2	445	104	64	117	49	1445
% Cars	95.2	97.8	0	100	0	0	100	98.5	99	98.5	99.2	98	98.2
Trucks	2	14	0	0	0	0	0	7	1	1	1	1	27
% Trucks	4.8	2.2	0	0	0	0	0	1.5	1	1.5	0.8	2	1.8

Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Brookline Street
City/State : Boston, MA
Weather : Clear

File Name : 15054009
Site Code : 15054009
Start Date : 11/19/2015

	Harrison Ave From North				E. Brookline St From East				Harrison Ave From South				E. Brookline St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	6	84	0	90	0	0	0	0	0	64	20	84	6	11	4	21	195
04:30 PM	8	76	0	84	0	0	0	0	0	59	9	68	7	19	9	35	187
04:45 PM	5	69	0	74	0	0	0	0	0	54	10	64	7	18	3	28	166
05:00 PM	4	83	0	87	0	0	0	0	1	60	13	74	9	12	10	31	192
Total Volume	23	312	0	335	0	0	0	0	1	237	52	290	29	60	26	115	740
% App. Total	6.9	93.1	0		0	0	0		0.3	81.7	17.9		25.2	52.2	22.6		
PHF	.719	.929	.000	.931	.000	.000	.000	.000	.250	.926	.650	.863	.806	.789	.650	.821	.949
Cars	21	304	0	325	0	0	0	0	1	234	52	287	29	59	26	114	726
% Cars	91.3	97.4	0	97.0	0	0	0	0	100	98.7	100	99.0	100	98.3	100	99.1	98.1
Trucks	2	8	0	10	0	0	0	0	0	3	0	3	0	1	0	1	14
% Trucks	8.7	2.6	0	3.0	0	0	0	0	0	1.3	0	1.0	0	1.7	0	0.9	1.9



Accurate Counts
978-664-2565

N/S Street : Harrison Avenue
E/W Street : East Brookline Street
City/State : Boston, MA
Weather : Clear

File Name : 15054009
Site Code : 15054009
Start Date : 11/19/2015
Page No : 10

Groups Printed- Bikes Peds

	Harrison Ave From North				E. Brookline St From East				Harrison Ave From South				E. Brookline St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	9	0	0	0	18	0	1	0	9	0	0	0	9	45	1	46
04:15 PM	0	1	0	8	0	0	0	17	0	0	0	7	0	0	0	8	40	1	41
04:30 PM	0	0	0	6	0	0	0	21	0	0	0	10	0	0	0	4	41	0	41
04:45 PM	0	1	0	10	0	0	0	16	0	0	0	6	0	0	0	5	37	1	38
Total	0	2	0	33	0	0	0	72	0	1	0	32	0	0	0	26	163	3	166
05:00 PM	0	1	0	5	0	0	0	17	0	4	0	6	0	1	0	2	30	6	36
05:15 PM	1	2	0	9	0	0	0	22	0	1	0	6	0	0	0	5	42	4	46
05:30 PM	0	2	0	9	0	0	0	16	0	1	0	8	1	1	0	8	41	5	46
05:45 PM	0	1	0	5	0	0	0	6	0	1	0	8	0	0	0	0	19	2	21
Total	1	6	0	28	0	0	0	61	0	7	0	28	1	2	0	15	132	17	149
Grand Total	1	8	0	61	0	0	0	133	0	8	0	60	1	2	0	41	295	20	315
Apprch %	11.1	88.9	0		0	0	0		0	100	0		33.3	66.7	0				
Total %	5	40	0		0	0	0		0	40	0		5	10	0		93.7	6.3	

2015054: Harrison-Albany

Existing Trip Generation

HOWARD STEIN HUDSON

6-Jan-16

Land Use	Size	Category	Trip Rates (Trips/ksf or unit)	Unadjusted Vehicle Trips	Internal trips	Pass-by %	Less capture trips	Assumed national vehicle occupancy rate[1]	Converted to Person trips	Transit Share[2]	Transit Trips	Walk/Bike/ Other Share[2]	Walk/ Bike/ Other Trips	Vehicle Share[2]	Total Vehicle Person Trips	Assumed local auto occupancy rate for autos [4]	Total Adjusted Auto Trips
Daily Peak Hour																	
Medical Office[6]	34	Total	36.13	1,246	0	0%	1,246	1.84	**2,293**		**550**		**390**		**1,353**	1.84	**736**
	KSF	In	18.07	623	0	0%	623	1.84	**1,146**	24%	**275**	17%	**195**	59%	**676**	1.84	**368**
		Out	18.07	623	0	0%	623	1.84	**1,146**	24%	**275**	17%	**195**	59%	**676**	1.84	**368**
Office[9]	59	Total	11.03	650	0	0%	650	1.13	**734**		**176**		**124**		**433**	1.13	**384**
	KSF	In	5.52	325	0	0%	325	1.13	**367**	24%	**88**	17%	**62**	59%	**217**	1.13	**192**
		Out	5.52	325	0	0%	325	1.13	**367**	24%	**88**	17%	**62**	59%	**217**	1.13	**192**
Parking[7]	194	Total	2.00	388	388	0%	0	1.13	**0**		**0**		**0**		**0**	1.13	**0**
	Spaces	In	1.00	194	194	0%	0	1.13	**0**	0%	**0**	100%	**0**	100%	**0**	1.13	**0**
		Out	1.00	194	194	0%	0	1.13	**0**	0%	**0**	100%	**0**	100%	**0**	1.13	**0**
Total		Total		**2,284**			**1,896**		**3,027**		**726**		**514**		**1,786**		**1,120**
		In		**1,142**			**948**		**1,513**		**363**		**257**		**893**		**560**
		Out		**1,142**			**948**		**1,513**		**363**		**257**		**893**		**560**
AM Peak Hour																	
Medical Office	34	Total	2.39	82	0	0%	82	1.84	**152**		**45**		**27**		**80**	1.84	**43**
	KSF	In	1.89	65	0	0%	65	1.84	**120**	27%	**32**	18%	**22**	55%	**66**	1.84	**36**
		Out	0.50	17	0	0%	17	1.84	**32**	40%	**13**	17%	**5**	43%	**14**	1.84	**7**
Office	59	Total	1.56	92	0	0%	92	1.13	**104**		**30**		**18**		**56**	1.13	**49**
	KSF	In	1.37	81	0	0%	81	1.13	**91**	27%	**25**	18%	**16**	55%	**50**	1.13	**44**
		Out	0.19	11	0	0%	11	1.13	**12**	40%	**5**	17%	**2**	43%	**5**	1.13	**5**
Parking	194	Total	0.38	74	74	0%	0	1.13	**0**		**0**		**0**		**0**	1.13	**0**
	Spaces	In	0.34	67	67	0%	0	1.13	**0**	0%	**0**	100%	**0**	100%	**0**	1.13	**0**
		Out	0.04	8	8	0%	0	1.13	**0**	0%	**0**	100%	**0**	100%	**0**	1.13	**0**
Total		Total		**249**					**255**		**75**		**45**		**135**		**92**
		In		**213**					**211**		**57**		**38**		**116**		**80**
		Out		**36**					**44**		**18**		**7**		**19**		**12**
PM Peak Hour																	
Medical Office	34	Total	3.57	123	0	0%	123	1.84	**226**		**69**		**40**		**117**	1.84	**64**
	KSF	In	1.00	34	0	0%	34	1.84	**63**	40%	**25**	17%	**11**	43%	**27**	1.84	**15**
		Out	2.57	89	0	0%	89	1.84	**163**	27%	**44**	18%	**29**	55%	**90**	1.84	**49**
Office	59	Total	1.49	88	0	0%	88	1.13	**99**		**29**		**18**		**53**	1.13	**46**
	KSF	In	0.25	15	0	0%	15	1.13	**17**	40%	**7**	17%	**3**	43%	**7**	1.13	**6**
		Out	1.24	73	0	0%	73	1.13	**82**	27%	**22**	18%	**15**	55%	**45**	1.13	**40**
Parking	194	Total	0.19	37	37	0%	0	1.13	**0**		**0**		**0**		**0**	1.13	**0**
	Spaces	In	0.03	6	6	0%	0	1.13	**0**	0%	**0**	100%	**0**	100%	**0**	1.13	**0**
		Out	0.16	31	31	0%	0	1.13	**0**	0%	**0**	100%	**0**	100%	**0**	1.13	**0**
Total		Total		**248**					**326**		**98**		**58**		**169**		**110**
		In		**55**					**80**		**32**		**14**		**35**		**21**
		Out		**192**					**245**		**66**		**44**		**135**		**89**

1. 2009 National vehicle occupancy rates - 1.13:home to work; 1.84: family/personal business; 1.78: shopping; 2.2 social/recreational
2. Mode shares based on peak-hour BTD Data for Area 1
3. Vehicle Trips = 70% Private Auto and 30% Taxi. Taxi trip rate based on CTPS Taxi activity rates for Hotel lane use, as adopted by Central Artery/Tunnel Project.
4. Local vehicle occupancy rates based on 2009 National vehicle occupancy rates.
5. For taxi cabs, 1.1 passengers per cab. (2.2 minus 1 driver equals 1.2)
6. ITE Trip Generation Rate, 9th Edition, LUC 220 (Apartment), average rate
7. ITE Trip Generation Rate, 9th Edition, LUC 310 (Hotel), average rate
8. ITE Trip Generation Rate, 9th Edition, LUC 931 (Quality Restaurant), average rate

2015054: Harrison-Albany

Trip Generation Assessment

HOWARD STEIN HUDSON

6-Jan-16

Land Use	Size	Category	Trip Rates (Trips/ksf or unit)	Unadjusted Vehicle Trips	Internal trips	Pass-by %	Pass-by Trips	Unadjusted Primary trips	Assumed national vehicle occupancy rate[1]	Converted to Person trips	Transit Share[2]	Transit Trips	Walk/Bike/ Other Share[2]	Walk/ Bike/ Other Trips	Vehicle Share[2]	Total Vehicle Person Trips	Assumed local auto occupancy rate for autos[4]	Total Adjusted Auto Trips
Daily Peak Hour																		
Apartment[6]	710	Total	6.65	4,722	100	0%	0	4,622	1.13	**5,223**		**1,776**		**1,358**		**2,089**	1.13	**1,848**
	units	In	3.33	2,361	50	0%	0	2,311	1.13	**2,611**	34%	**888**	26%	**679**	40%	**1,045**	1.13	**924**
		Out	3.33	2,361	50	0%	0	2,311	1.13	**2,611**	34%	**888**	26%	**679**	40%	**1045**	1.13	**924**
Retail[7]	13.988	Total	42.70	598	78	25%	150	371	1.84	**682**		**82**		**238**		**361**	1.84	**196**
	KSF	In	21.35	299	39	25%	75	185	1.84	**341**	12%	**41**	35%	**119**	53%	**181**	1.84	**98**
		Out	21.35	299	39	25%	75	185	1.84	**341**	12%	**41**	35%	**119**	53%	**181**	1.84	**98**
Office[9]	40.056	Total	11.03	442	32	0%	0	410	1.13	**463**		**112**		**78**		**273**	1.13	**242**
	KSF	In	5.52	221	16	0%	0	205	1.13	**232**	24%	**56**	17%	**39**	59%	**137**	1.13	**121**
		Out	5.52	221	16	0%	0	205	1.13	**232**	24%	**56**	17%	**39**	59%	**137**	1.13	**121**
Medical Office[8]	34.467	Total	36.13	1,246	26	0%	0	1,220	1.84	**2,245**		**538**		**382**		**1,324**	1.84	**720**
	KSF	In	18.07	623	13	0%	0	610	1.84	**1,122**	24%	**269**	17%	**191**	59%	**662**	1.84	**360**
		Out	18.07	623	13	0%	0	610	1.84	**1,122**	24%	**269**	17%	**191**	59%	**662**	1.84	**360**
Parking	306	Total	2.00	612		0%		612	1.13	**692**		**0**		**692**		**692**	1.13	**612**
	Spaces	In	1.00	306		0%		306	1.13	**346**	0%	**0**	100%	**346**	100%	**346**	1.13	**306**
		Out	1.00	306		0%		306	1.13	**346**	0%	**0**	100%	**346**	100%	**346**	1.13	**306**
Total		Total		**7,620**				7,235		**9,304**		**2,508**		**2,748**		**4,740**		**3,618**
		In		**3,810**				3,617		**4,652**		**1,254**		**1,374**		**2,370**		**1,809**
		Out		**3,810**				3,617		**4,652**		**1,254**		**1,374**		**2,370**		**1,809**
AM Peak Hour																		
Apartment	710	Total	0.51	362	6	0%	0	356	1.13	**402**		**108**		**109**		**185**	1.13	**163**
	units	In	0.10	72	1	0%	0	71	1.13	**80**	19%	**15**	27%	**22**	54%	**43**	1.13	**38**
		Out	0.41	290	5	0%	0	285	1.13	**322**	29%	**93**	27%	**87**	44%	**142**	1.13	**125**
Retail	13.988	Total	0.96	13	7	25%	3	3	1.84	**5**		**0**		**2**		**2**	1.84	**1**
	KSF	In	0.60	8	4	25%	2	2	1.84	**4**	13%	**0**	36%	**1**	51%	**2**	1.84	**1**
		Out	0.36	5	3	25%	1	1	1.84	**1**	21%	**0**	37%	**1**	42%	**1**	1.84	**0**
Office	40.056	Total	1.56	62	5	0%	0	57	1.13	**64**		**18**		**12**		**35**	1.13	**31**
	KSF	In	1.37	55	3	0%	0	52	1.13	**59**	27%	**16**	18%	**11**	55%	**32**	1.13	**29**
		Out	0.19	7	2	0%	0	5	1.13	**6**	40%	**2**	17%	**1**	43%	**2**	1.13	**2**
Medical Office	34.467	Total	2.39	82	4	0%	0	78	1.84	**144**		**43**		**26**		**75**	1.84	**41**
	KSF	In	1.89	65	3	0%	0	62	1.84	**114**	27%	**31**	18%	**21**	55%	**63**	1.84	**34**
		Out	0.50	17	1	0%	0	16	1.84	**29**	40%	**12**	17%	**5**	43%	**13**	1.84	**7**
Parking	306	Total	0.38	117	0	0%		117	1.13	**132**		**0**		**133**		**132**	1.13	**117**
	Spaces	In	0.34	105	0	0%		105	1.13	**119**	0%	**0**	100%	**119**	100%	**119**	1.13	**105**
		Out	0.04	12	0	0%		12	1.13	**14**	0%	**0**	100%	**14**	100%	**14**	1.13	**12**
Total		Total		**636**						**747**		**169**		**282**		**430**		**353**
		In		**305**						**375**		**62**		**174**		**259**		**207**
		Out		**331**						**372**		**107**		**108**		**171**		**146**
PM Peak Hour																		
Apartment	710	Total	0.62	440	20	0%	0	420	1.13	**475**		**121**		**128**		**225**	1.13	**199**
	units	In	0.40	286	10	0%	0	276	1.13	**312**	29%	**90**	27%	**84**	44%	**137**	1.13	**121**
		Out	0.22	154	10	0%	0	144	1.13	**163**	19%	**31**	27%	**44**	54%	**88**	1.13	**78**
Retail	13.988	Total	3.71	52	15	25%	13	24	1.84	**44**		**8**		**16**		**21**	1.84	**11**
	KSF	In	1.78	25	7	25%	6	12	1.84	**22**	21%	**5**	37%	**8**	42%	**9**	1.84	**5**
		Out	1.93	27	8	25%	7	12	1.84	**23**	13%	**3**	36%	**8**	51%	**11**	1.84	**6**
Office	40.056	Total	1.49	60	7	0%	0	53	1.13	**60**		**17**		**11**		**32**	1.13	**29**
	KSF	In	0.25	10	4	0%	0	6	1.13	**7**	40%	**3**	17%	**1**	43%	**3**	1.13	**3**
		Out	1.24	50	3	0%	0	47	1.13	**53**	27%	**14**	18%	**10**	55%	**29**	1.13	**26**
Medical Office	34.467	Total	3.57	123	6	0%	0	117	1.84	**215**		**66**		**38**		**112**	1.84	**60**
	KSF	In	1.00	34	3	0%	0	31	1.84	**57**	40%	**23**	17%	**10**	43%	**25**	1.84	**13**
		Out	2.57	89	3	0%	0	86	1.84	**158**	27%	**43**	18%	**28**	55%	**87**	1.84	**47**
Parking	306	Total	0.19	58		0%		58	1.13	**66**		**0**		**65**		**66**	1.13	**58**
	Spaces	In	0.03	9		0%		9	1.13	**10**	0%	**0**	100%	**10**	100%	**10**	1.13	**9**
		Out	0.16	49		0%		49	1.13	**55**	0%	**0**	100%	**55**	100%	**55**	1.13	**49**
Total		Total		**733**						**859**		**212**		**258**		**455**		**357**
		In		**364**						**407**		**121**		**113**		**184**		**151**
		Out		**369**						**452**		**91**		**145**		**271**		**206**

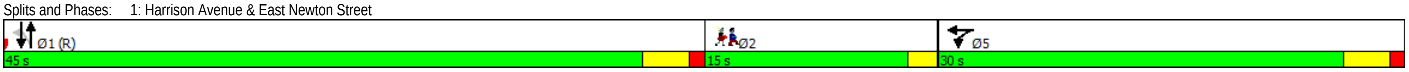
1. 2009 National vehicle occupancy rates - 1.13:home to work; 1.84: family/personal business; 1.78: shopping; 2.2 social/recreational
2. Mode shares based on peak-hour BTD Data for Area 15
3. Local vehicle occupancy rates based on 2009 National vehicle occupancy rates.
4. ITE Trip Generation Rate, 9th Edition, LUC 220 (Apartment), average rate
5. ITE Trip Generation Rate, 9th Edition, LUC 710 (General Office Building), average rate
6. ITE Trip Generation Rate, 9th Edition, LUC 720 (Medical-Dental Office Building), average rate
7. ITE Trip Generation Rate, 9th Edition, LUC 820 (Shopping Center), average rate

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	0	0	0	72	75	47	37	323	0	0	230	78	
Future Volume (vph)	0	0	0	72	75	47	37	323	0	0	230	78	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	16	12	12	12	12	12	12	12	
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	
Ped Bike Factor					0.99						0.99		
Frt					0.967						0.966		
Flt Protected					0.982			0.995					
Satd. Flow (prot)	0	0	0	0	1448	0	0	1474	0	0	1391	0	
Flt Permitted					0.982			0.944					
Satd. Flow (perm)	0	0	0	0	1448	0	0	1398	0	0	1391	0	
Right Turn on Red			No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		669			643			495			409		
Travel Time (s)		15.2			14.6			11.3			9.3		
Confl. Bikes (#/hr)						2						3	
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.92	0.92	0.92	0.96	0.96	0.96	
Heavy Vehicles (%)	0%	0%	0%	19%	16%	2%	3%	4%	0%	0%	7%	4%	
Parking (#/hr)				0	0	0	0	0			0	0	
Adj. Flow (vph)	0	0	0	82	85	53	40	351	0	0	240	81	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	0	0	0	220	0	0	391	0	0	321	0	
Turn Type				Split	NA		Perm	NA			NA		
Protected Phases				5	5			1			1		2
Permitted Phases							1						
Detector Phase				5	5		1	1			1		
Switch Phase													
Minimum Initial (s)				8.0	8.0		8.0	8.0			8.0		7.0
Minimum Split (s)				14.0	14.0		23.0	23.0			23.0		15.0
Total Split (s)				30.0	30.0		45.0	45.0			45.0		15.0
Total Split (%)				33.3%	33.3%		50.0%	50.0%			50.0%		17%
Maximum Green (s)				26.0	26.0		41.0	41.0			41.0		13.0
Yellow Time (s)				3.0	3.0		3.0	3.0			3.0		2.0
All-Red Time (s)				1.0	1.0		1.0	1.0			1.0		0.0
Lost Time Adjust (s)					0.0			0.0			0.0		
Total Lost Time (s)					4.0			4.0			4.0		
Lead/Lag							Lead	Lead			Lead		Lag
Lead-Lag Optimize?													
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0		2.0
Recall Mode				None	None		C-Max	C-Max			C-Max		None
Walk Time (s)							7.0	7.0			7.0		7.0
Flash Dont Walk (s)							8.0	8.0			8.0		6.0
Pedestrian Calls (#/hr)							0	0			0		20
Act Effct Green (s)					18.0			58.0			58.0		
Actuated g/C Ratio					0.20			0.64			0.64		
v/c Ratio					0.76			0.43			0.36		
Control Delay					50.1			9.2			7.3		
Queue Delay					0.0			0.0			0.0		
Total Delay					50.1			9.2			7.3		
LOS					D			A			A		
Approach Delay					50.1			9.2			7.3		
Approach LOS					D			A			A		
Queue Length 50th (ft)					119			56			44		
Queue Length 95th (ft)					174			100			73		
Internal Link Dist (ft)		589			563			415			329		
Turn Bay Length (ft)													
Base Capacity (vph)					418			900			896		
Starvation Cap Reductn					0			0			0		
Spillback Cap Reductn					0			0			0		
Storage Cap Reductn					0			0			0		
Reduced v/c Ratio					0.53			0.43			0.36		

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 75 (83%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 18.2 Intersection LOS: B
Intersection Capacity Utilization 61.9% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Harrison Avenue & East Newton Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	51	100	36	0	0	0	0	253	58	21	261	0	
Future Volume (vph)	51	100	36	0	0	0	0	253	58	21	261	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	16	12	12	12	12	12	12	12	12	12	12	
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	
Ped Bike Factor		1.00						1.00					
Frt		0.974						0.975					
Flt Protected		0.987									0.996		
Satd. Flow (prot)	0	1767	0	0	0	0	0	1458	0	0	1422	0	
Flt Permitted		0.987									0.962		
Satd. Flow (perm)	0	1767	0	0	0	0	0	1458	0	0	1374	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		13						18					
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		609			799			409			251		
Travel Time (s)		13.8			18.2			9.3			5.7		
Confl. Bikes (#/hr)			4						7				
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.81	0.81	0.81	0.87	0.87	0.87	
Heavy Vehicles (%)	8%	3%	6%	0%	0%	0%	0%	3%	0%	5%	8%	0%	
Parking (#/hr)				0	0	0	0	0	0	0	0	0	
Adj. Flow (vph)	56	110	40	0	0	0	0	312	72	24	300	0	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	206	0	0	0	0	0	384	0	0	324	0	
Turn Type	Split	NA						NA		Perm	NA		
Protected Phases	5	5						1			1		2
Permitted Phases										1			
Detector Phase	5	5						1		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0						8.0		8.0	8.0		7.0
Minimum Split (s)	14.0	14.0						23.0		23.0	23.0		15.0
Total Split (s)	28.0	28.0						47.0		47.0	47.0		15.0
Total Split (%)	31.1%	31.1%						52.2%		52.2%	52.2%		17%
Maximum Green (s)	24.0	24.0						43.0		43.0	43.0		13.0
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0		2.0
All-Red Time (s)	1.0	1.0						1.0		1.0	1.0		0.0
Lost Time Adjust (s)		0.0						0.0			0.0		
Total Lost Time (s)		4.0						4.0			4.0		
Lead/Lag								Lead		Lead	Lead		Lag
Lead-Lag Optimize?													
Vehicle Extension (s)	2.0	2.0						2.0		2.0	2.0		2.0
Recall Mode	None	None						C-Max		C-Max	C-Max		None
Walk Time (s)								7.0		7.0	7.0		7.0
Flash Dont Walk (s)								8.0		8.0	8.0		6.0
Pedestrian Calls (#/hr)								0		0	0		10
Act Effct Green (s)		14.2						64.8			64.8		
Actuated g/C Ratio		0.16						0.72			0.72		
v/c Ratio		0.71						0.36			0.33		
Control Delay		47.2						2.5			10.4		
Queue Delay		0.0						0.2			0.0		
Total Delay		47.2						2.7			10.4		
LOS		D						A			B		
Approach Delay		47.2						2.7			10.4		
Approach LOS		D						A			B		
Queue Length 50th (ft)		102						29			75		
Queue Length 95th (ft)		175						35			188		
Internal Link Dist (ft)		529			719			329			171		
Turn Bay Length (ft)													
Base Capacity (vph)		480						1054			988		
Starvation Cap Reductn		0						153			0		
Spillback Cap Reductn		0						0			0		
Storage Cap Reductn		0						0			0		
Reduced v/c Ratio		0.43						0.43			0.33		

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 82 (91%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 15.4 Intersection LOS: B
Intersection Capacity Utilization 52.6% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Harrison Avenue & East Brookline Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	167	72	104	194	44	140	391	76	24	147	49
Future Volume (vph)	43	167	72	104	194	44	140	391	76	24	147	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	11	12	12	10	11	10	11	12
Storage Length (ft)	0		0	0		0	200		53	125		150
Storage Lanes	0		0	1		0	1		1	1		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.96		0.94	0.99		0.84		0.88	0.95		0.77
Frt		0.965			0.972				0.850			0.850
Flt Protected		0.992		0.950			0.950			0.950		
Satd. Flow (prot)	0	1717	0	1504	1392	0	1490	1492	1119	1458	1463	1398
Flt Permitted		0.862		0.384			0.650			0.459		
Satd. Flow (perm)	0	1487	0	572	1392	0	852	1492	982	672	1463	1078
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			14				52			56
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1149			630			643			361	
Travel Time (s)		26.1			14.3			14.6			8.2	
Confl. Peds. (#/hr)	36		78	78		36	130		104	104		130
Confl. Bikes (#/hr)			2			2			34			7
Peak Hour Factor	0.87	0.87	0.87	0.93	0.93	0.93	0.92	0.92	0.92	0.87	0.87	0.87
Heavy Vehicles (%)	7%	3%	6%	8%	1%	12%	9%	7%	13%	4%	13%	4%
Parking (#/hr)					0				0			
Adj. Flow (vph)	49	192	83	112	209	47	152	425	83	28	169	56
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	324	0	112	256	0	152	425	83	28	169	56
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		5			5			1			1	
Permitted Phases	5			5			1		1	1		1
Detector Phase	5	5		5	5		1	1	1	1	1	1
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	35.0	35.0		35.0	35.0		32.0	32.0	32.0	32.0	32.0	32.0
Total Split (s)	38.0	38.0		38.0	38.0		52.0	52.0	52.0	52.0	52.0	52.0
Total Split (%)	42.2%	42.2%		42.2%	42.2%		57.8%	57.8%	57.8%	57.8%	57.8%	57.8%
Maximum Green (s)	34.0	34.0		34.0	34.0		48.0	48.0	48.0	48.0	48.0	48.0
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)	1.0	1.0		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	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.0		4.0	4.0		4.0	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	2.0	2.0
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	8.0	8.0		8.0	8.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)	23.0	23.0		23.0	23.0		18.0	18.0	18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)	20	20		20	20		0	0	0	0	0	0
Act Effct Green (s)		24.8		24.8	24.8		57.2	57.2	57.2	57.2	57.2	57.2
Actuated g/C Ratio		0.28		0.28	0.28		0.64	0.64	0.64	0.64	0.64	0.64
v/c Ratio		0.76		0.71	0.65		0.28	0.45	0.13	0.07	0.18	0.08
Control Delay		30.8		65.5	47.2		7.2	9.0	2.8	5.3	5.3	0.8
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		30.8		65.5	47.2		7.2	9.0	2.8	5.3	5.3	0.8
LOS		C		E	D		A	A	A	A	A	A
Approach Delay		30.8			52.8			7.8			4.3	
Approach LOS		C			D			A			A	
Queue Length 50th (ft)		95		70	152		28	105	3	3	18	0
Queue Length 95th (ft)		172		m120	231		66	203	m5	12	44	2
Internal Link Dist (ft)		1069			550			563			281	
Turn Bay Length (ft)							200		53	125		150
Base Capacity (vph)		575		216	534		541	948	643	427	930	706
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		0.56		0.52	0.48		0.28	0.45	0.13	0.07	0.18	0.08

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 10 (11%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 22.2 Intersection LOS: C
Intersection Capacity Utilization 101.7% ICU Level of Service G
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Washington Street & West Dedham Street/Monsignor Reynolds Way

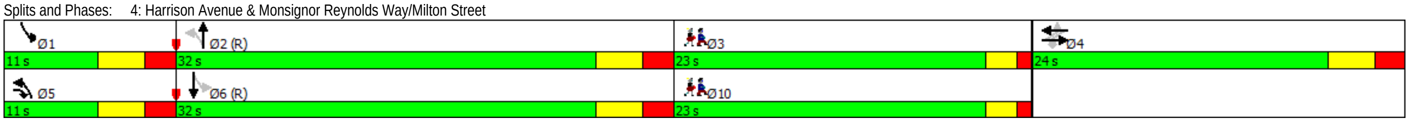
Ø1 (R)	Ø5
52 s	38 s

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø3	Ø10
Lane Configurations														
Traffic Volume (vph)	44	165	94	7	158	56	101	176	22	38	137	83		
Future Volume (vph)	44	165	94	7	158	56	101	176	22	38	137	83		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	11	16	12	16	12	12	11	12	11	11	11		
Storage Length (ft)	0		0	0		0	100		0	100		0		
Storage Lanes	0		1	0		0	1		0	1		0		
Taper Length (ft)	25			25			25			25				
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		
Ped Bike Factor					0.99			1.00			0.99			
Frt			0.850		0.966			0.983			0.943			
Flt Protected		0.990			0.998		0.950			0.950				
Satd. Flow (prot)	0	1547	1471	0	1769	0	1533	1569	0	1570	1510	0		
Flt Permitted		0.767			0.988		0.479			0.619				
Satd. Flow (perm)	0	1198	1471	0	1751	0	773	1569	0	1023	1510	0		
Right Turn on Red			Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)			99		18			7			35			
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		630			893			431			319			
Travel Time (s)		14.3			20.3			9.8			7.3			
Confl. Bikes (#/hr)						1			6			4		
Peak Hour Factor	0.95	0.95	0.95	0.91	0.91	0.91	0.93	0.93	0.93	0.83	0.83	0.83		
Heavy Vehicles (%)	5%	6%	12%	14%	5%	4%	6%	3%	5%	0%	3%	2%		
Adj. Flow (vph)	46	174	99	8	174	62	109	189	24	46	165	100		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	220	99	0	244	0	109	213	0	46	265	0		
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA			
Protected Phases		4	5		4		5	2		1	6		3	10
Permitted Phases	4		4	4			2			6				
Detector Phase	4	4	5	4	4		5	2		1	6			
Switch Phase														
Minimum Initial (s)	8.0	8.0	6.0	8.0	8.0		6.0	22.0		6.0	22.0		7.0	7.0
Minimum Split (s)	13.0	13.0	11.0	13.0	13.0		11.0	27.0		11.0	27.0		23.0	23.0
Total Split (s)	24.0	24.0	11.0	24.0	24.0		11.0	32.0		11.0	32.0		23.0	23.0
Total Split (%)	26.7%	26.7%	12.2%	26.7%	26.7%		12.2%	35.6%		12.2%	35.6%		26%	26%
Maximum Green (s)	19.0	19.0	6.0	19.0	19.0		6.0	27.0		6.0	27.0		20.0	20.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0		2.0	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0		1.0	1.0
Lost Time Adjust (s)		-1.0	-1.0		-1.0		-1.0	-1.0		-1.0	-1.0			
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0			
Lead/Lag			Lead				Lead	Lag		Lead	Lag			
Lead-Lag Optimize?														
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max		None	None
Walk Time (s)								7.0			7.0		7.0	7.0
Flash Dont Walk (s)								7.0			15.0		13.0	13.0
Pedestrian Calls (#/hr)								0			0		30	30
Act Effct Green (s)		18.5	29.5		18.5		47.3	43.1		45.7	38.7			
Actuated g/C Ratio		0.21	0.33		0.21		0.53	0.48		0.51	0.43			
v/c Ratio		0.89	0.18		0.65		0.23	0.28		0.08	0.40			
Control Delay		60.5	2.9		38.9		10.8	16.5		10.4	14.0			
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.2			
Total Delay		60.5	2.9		38.9		10.8	16.5		10.4	14.1			
LOS		E	A		D		B	B		B	B			
Approach Delay		42.6			38.9			14.5			13.6			
Approach LOS		D			D			B			B			
Queue Length 50th (ft)		91	0		116		36	101		12	89			
Queue Length 95th (ft)		#238	m6		194		44	142		17	83			
Internal Link Dist (ft)		550			813			351			239			
Turn Bay Length (ft)							100			100				
Base Capacity (vph)		266	548		403		465	754		562	669			
Starvation Cap Reductn		0	0		0		0	0		0	65			
Spillback Cap Reductn		0	0		0		0	0		0	0			
Storage Cap Reductn		0	0		0		0	0		0	0			
Reduced v/c Ratio		0.83	0.18		0.61		0.23	0.28		0.08	0.44			

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 25 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 26.7 Intersection LOS: C
Intersection Capacity Utilization 63.7% ICU Level of Service B
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Harrison Avenue & Monsignor Reynolds Way/Milton Street

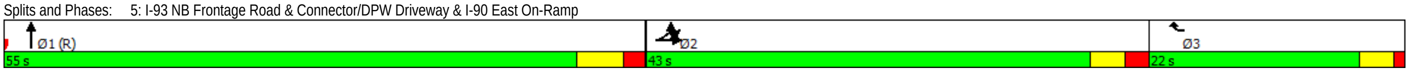


Lane Group	EBL2	EBL	EBT	WBR	WBR2	NBT	NBR	NBR2
Lane Configurations								
Traffic Volume (vph)	585	268	19	34	6	1019	343	18
Future Volume (vph)	585	268	19	34	6	1019	343	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	16	12	13	12	12
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.91	0.91	0.91
Ped Bike Factor						0.99		
Frt				0.865		0.961		
Flt Protected	0.950	0.950						
Satd. Flow (prot)	1513	1513	1746	1421	0	4379	0	0
Flt Permitted	0.950	0.950						
Satd. Flow (perm)	1513	1513	1746	1421	0	4379	0	0
Right Turn on Red	No				Yes			Yes
Satd. Flow (RTOR)				73		2		
Link Speed (mph)			30			30		
Link Distance (ft)			195			616		
Travel Time (s)			4.4			14.0		
Confl. Peds. (#/hr)								6
Peak Hour Factor	0.89	0.89	0.89	0.83	0.83	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	11%	21%	0%	5%	3%	4%
Adj. Flow (vph)	657	301	21	41	7	1108	373	20
Shared Lane Traffic (%)	27%							
Lane Group Flow (vph)	480	478	21	48	0	1501	0	0
Turn Type	Split	Split	NA	Prot		NA		
Protected Phases	2	2	2	3		1		
Permitted Phases								
Detector Phase	2	2	2	3		1		
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0		10.0		
Minimum Split (s)	28.0	28.0	28.0	13.0		23.0		
Total Split (s)	43.0	43.0	43.0	22.0		55.0		
Total Split (%)	35.8%	35.8%	35.8%	18.3%		45.8%		
Maximum Green (s)	38.0	38.0	38.0	18.0		49.0		
Yellow Time (s)	3.0	3.0	3.0	3.0		4.0		
All-Red Time (s)	2.0	2.0	2.0	1.0		2.0		
Lost Time Adjust (s)	-1.0	0.0	-1.0	-2.0		-2.0		
Total Lost Time (s)	4.0	5.0	4.0	2.0		4.0		
Lead/Lag	Lead	Lead	Lead	Lag				
Lead-Lag Optimize?								
Vehicle Extension (s)	2.0	2.0	2.0	2.0		3.0		
Recall Mode	Max	Max	Max	None		C-Max		
Walk Time (s)	7.0	7.0	7.0			7.0		
Flash Dont Walk (s)	15.0	15.0	15.0			5.0		
Pedestrian Calls (#/hr)	0	0	0			0		
Act Effct Green (s)	39.0	38.0	39.0	10.0		63.4		
Actuated g/C Ratio	0.32	0.32	0.32	0.08		0.53		
v/c Ratio	0.98	1.00	0.04	0.26		0.65		
Control Delay	52.9	59.3	24.4	8.5		22.5		
Queue Delay	40.4	36.1	0.0	0.0		0.0		
Total Delay	93.2	95.4	24.4	8.5		22.5		
LOS	F	F	C	A		C		
Approach Delay			92.8			22.5		
Approach LOS			F			C		
Queue Length 50th (ft)	286	302	7	0		307		
Queue Length 95th (ft)	m301	m#340	m9	13		361		
Internal Link Dist (ft)			115			536		
Turn Bay Length (ft)								
Base Capacity (vph)	491	479	567	297		2314		
Starvation Cap Reductn	133	130	0	0		0		
Spillback Cap Reductn	0	0	0	0		0		
Storage Cap Reductn	0	0	0	0		0		
Reduced v/c Ratio	1.34	1.37	0.04	0.16		0.65		

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 56 (47%), Referenced to phase 1:NBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 49.5 Intersection LOS: D
Intersection Capacity Utilization 73.9% 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: 5: I-93 NB Frontage Road & Connector/DPW Driveway & I-90 East On-Ramp

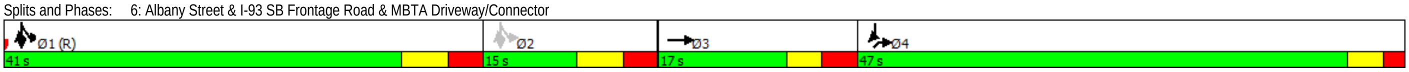


Lane Group	EBT	EBR	EBR2	SBL	SBT	SBR	NER	NER2	Ø2
Lane Configurations									
Traffic Volume (vph)	2	1	3	167	154	652	703	198	
Future Volume (vph)	2	1	3	167	154	652	703	198	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	11	12	12	12	
Storage Length (ft)		0		60		0	0		
Storage Lanes		0		1		1	2		
Taper Length (ft)				25					
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00	0.88	1.00	
Ped Bike Factor	0.96					0.59			
Frt	0.910					0.850	0.850		
Flt Protected				0.950	0.990				
Satd. Flow (prot)	892	0	0	1449	2853	1411	2497	0	
Flt Permitted				0.950	0.990				
Satd. Flow (perm)	892	0	0	1449	2853	833	2497	0	
Right Turn on Red			Yes	No				Yes	
Satd. Flow (RTOR)	6						155		
Link Speed (mph)	30				30				
Link Distance (ft)	432				701				
Travel Time (s)	9.8				15.9				
Confl. Peds. (#/hr)		4	7			53			
Confl. Bikes (#/hr)								1	
Peak Hour Factor	0.50	0.50	0.50	0.95	0.95	0.95	0.86	0.86	
Heavy Vehicles (%)	50%	0%	100%	2%	5%	3%	2%	4%	
Adj. Flow (vph)	4	2	6	176	162	686	817	230	
Shared Lane Traffic (%)				23%					
Lane Group Flow (vph)	12	0	0	136	202	686	1047	0	
Turn Type	NA			custom	NA	custom	Prot		
Protected Phases	3			1	1	1 4	4		2
Permitted Phases				2	2	2			
Detector Phase	3			1	1	1 4	4		
Switch Phase									
Minimum Initial (s)	10.0			10.0	10.0		10.0		8.0
Minimum Split (s)	17.0			20.0	20.0		18.0		15.0
Total Split (s)	17.0			41.0	41.0		47.0		15.0
Total Split (%)	14.2%			34.2%	34.2%		39.2%		13%
Maximum Green (s)	11.0			34.0	34.0		42.0		8.0
Yellow Time (s)	3.0			4.0	4.0		3.0		4.0
All-Red Time (s)	3.0			3.0	3.0		2.0		3.0
Lost Time Adjust (s)	-3.0			-2.0	-2.0		-2.0		
Total Lost Time (s)	3.0			5.0	5.0		3.0		
Lead/Lag	Lead			Lead	Lead		Lag		Lag
Lead-Lag Optimize?									
Vehicle Extension (s)	2.0			2.0	2.0		2.0		2.0
Recall Mode	Max			C-Max	C-Max		Max		None
Walk Time (s)				7.0	7.0		7.0		7.0
Flash Dont Walk (s)				1.0	1.0		5.0		1.0
Pedestrian Calls (#/hr)				0	0		0		5
Act Effct Green (s)	14.0			51.0	51.0	97.0	44.0		
Actuated g/C Ratio	0.12			0.42	0.42	0.81	0.37		
v/c Ratio	0.11			0.22	0.17	0.61	1.03		
Control Delay	36.7			19.3	18.0	6.5	69.5		
Queue Delay	0.0			0.3	0.1	0.3	25.6		
Total Delay	36.7			19.7	18.2	6.8	95.1		
LOS	D			B	B	A	F		
Approach Delay	36.7				10.7				
Approach LOS	D				B				
Queue Length 50th (ft)	4			75	52	91	~448		
Queue Length 95th (ft)	11			m125	76	140	#546		
Internal Link Dist (ft)	352				621				
Turn Bay Length (ft)				60					
Base Capacity (vph)	109			615	1212	1131	1013		
Starvation Cap Reductn	0			0	0	98	0		
Spillback Cap Reductn	0			188	371	0	71		
Storage Cap Reductn	0			0	0	0	0		
Reduced v/c Ratio	0.11			0.32	0.24	0.66	1.11		

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 37 (31%), Referenced to phase 1:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 53.3 — Intersection LOS: D
Intersection Capacity Utilization 64.8% — 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: 6: Albany Street & I-93 SB Frontage Road & MBTA Driveway/Connector



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	5	46	691	423	210
Future Volume (Veh/h)	20	5	46	691	423	210
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.69	0.69	0.80	0.80	0.91	0.91
Hourly flow rate (vph)	29	7	58	864	465	231
Pedestrians	78			12	1	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	7			1	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					831	
pX, platoon unblocked						
vC, conflicting volume	1208	670	774			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1208	670	774			
tC, single (s)	6.8	7.3	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.5	2.2			
p0 queue free %	81	98	92			
cM capacity (veh/h)	154	333	771			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	36	346	576	696
Volume Left	29	58	0	0
Volume Right	7	0	0	231
cSH	172	771	1700	1700
Volume to Capacity	0.21	0.08	0.34	0.41
Queue Length 95th (ft)	19	6	0	0
Control Delay (s)	31.3	2.4	0.0	0.0
Lane LOS	D	A		
Approach Delay (s)	31.3	0.9		0.0
Approach LOS	D			

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	91	42	0	464	381	0
Future Volume (Veh/h)	91	42	0	464	381	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	115	53	0	494	405	0
Pedestrians	47			1	1	
Lane Width (ft)	12.0			12.0	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)						
pX, platoon unblocked						
vC, conflicting volume	947	453	452			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	947	453	452			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	59	91	100			
cM capacity (veh/h)	278	583	1075			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	168	494	405
Volume Left	115	0	0
Volume Right	53	0	0
cSH	333	1700	1700
Volume to Capacity	0.50	0.29	0.24
Queue Length 95th (ft)	67	0	0
Control Delay (s)	26.3	0.0	0.0
Lane LOS	D		
Approach Delay (s)	26.3	0.0	0.0
Approach LOS	D		

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	7	4	2	51	462	20	5	356	62
Future Volume (Veh/h)	0	0	0	7	4	2	51	462	20	5	356	62
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.36	0.36	0.36	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	0	0	19	11	6	55	497	22	5	383	67
Pedestrians		47			1			63			1	
Lane Width (ft)		0.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			5			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1104	1104	526	1108	1126	510	497			520		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1104	1104	526	1108	1126	510	497			520		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.7	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.8	2.2			2.2		
p0 queue free %	100	100	100	89	94	99	95			100		
cM capacity (veh/h)	172	201	526	171	195	478	1077			1056		

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	36	574	455
Volume Left	19	55	5
Volume Right	6	22	67
cSH	200	1077	1056
Volume to Capacity	0.18	0.05	0.00
Queue Length 95th (ft)	16	4	0
Control Delay (s)	26.9	1.4	0.1
Lane LOS	D	A	A
Approach Delay (s)	26.9	1.4	0.1
Approach LOS	D		

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	169	54	0	364	363	0
Future Volume (Veh/h)	169	54	0	364	363	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.93	0.93	0.89	0.89
Hourly flow rate (vph)	184	59	0	391	408	0
Pedestrians	108			22		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	9			2		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	907	538	516			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	907	538	516			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	34	88	100			
cM capacity (veh/h)	279	489	965			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	243	391	408
Volume Left	184	0	0
Volume Right	59	0	0
cSH	311	1700	1700
Volume to Capacity	0.78	0.23	0.24
Queue Length 95th (ft)	155	0	0
Control Delay (s)	47.9	0.0	0.0
Lane LOS	E		
Approach Delay (s)	47.9	0.0	0.0
Approach LOS	E		

Intersection Summary			
Average Delay	11.2		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	58	55	304	0	0	224
Future Volume (Veh/h)	58	55	304	0	0	224
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.79	0.79	0.84	0.84	0.89	0.89
Hourly flow rate (vph)	73	70	362	0	0	252
Pedestrians	66		7			4
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	6		1			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			251			679
pX, platoon unblocked	0.93	0.93			0.93	
vC, conflicting volume	687	432			428	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	630	357			353	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	81	88			100	
cM capacity (veh/h)	390	601			1075	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	143	362	252
Volume Left	73	0	0
Volume Right	70	0	0
cSH	471	1700	1700
Volume to Capacity	0.30	0.21	0.15
Queue Length 95th (ft)	32	0	0
Control Delay (s)	15.9	0.0	0.0
Lane LOS	C		
Approach Delay (s)	15.9	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	257	90	84	225
Future Volume (Veh/h)	0	0	257	90	84	225
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.96	0.96	0.86	0.86
Hourly flow rate (vph)	0	0	268	94	98	262
Pedestrians	66		2			31
Lane Width (ft)	0.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		0			3
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			499			431
pX, platoon unblocked						
vC, conflicting volume	841	412			428	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	841	412			428	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			91	
cM capacity (veh/h)	308	628			1121	

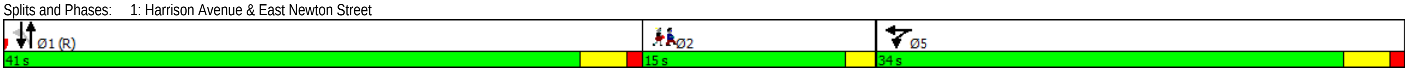
Direction, Lane #	NB 1	SB 1
Volume Total	362	360
Volume Left	0	98
Volume Right	94	0
cSH	1700	1121
Volume to Capacity	0.21	0.09
Queue Length 95th (ft)	0	7
Control Delay (s)	0.0	3.0
Lane LOS		A
Approach Delay (s)	0.0	3.0
Approach LOS		

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	0	0	0	78	118	46	39	214	0	0	329	78	
Future Volume (vph)	0	0	0	78	118	46	39	214	0	0	329	78	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	16	12	12	12	12	12	12	12	
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	
Ped Bike Factor					0.99						1.00		
Frt					0.975						0.974		
Flt Protected					0.984			0.992					
Satd. Flow (prot)	0	0	0	0	1532	0	0	1501	0	0	1461	0	
Flt Permitted					0.984			0.895					
Satd. Flow (perm)	0	0	0	0	1532	0	0	1354	0	0	1461	0	
Right Turn on Red			No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		669			643			495			409		
Travel Time (s)		15.2			14.6			11.3			9.3		
Confl. Bikes (#/hr)						18						2	
Peak Hour Factor	0.92	0.92	0.92	0.86	0.86	0.86	0.81	0.81	0.81	0.92	0.92	0.92	
Heavy Vehicles (%)	0%	0%	0%	14%	8%	0%	0%	2%	0%	0%	2%	3%	
Parking (#/hr)				0	0	0	0	0			0	0	
Adj. Flow (vph)	0	0	0	91	137	53	48	264	0	0	358	85	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	0	0	0	281	0	0	312	0	0	443	0	
Turn Type				Split	NA		Perm	NA			NA		
Protected Phases				5	5			1			1		2
Permitted Phases							1						
Detector Phase				5	5		1	1			1		
Switch Phase													
Minimum Initial (s)				8.0	8.0		8.0	8.0			8.0		7.0
Minimum Split (s)				14.0	14.0		23.0	23.0			23.0		15.0
Total Split (s)				34.0	34.0		41.0	41.0			41.0		15.0
Total Split (%)				37.8%	37.8%		45.6%	45.6%			45.6%		17%
Maximum Green (s)				30.0	30.0		37.0	37.0			37.0		13.0
Yellow Time (s)				3.0	3.0		3.0	3.0			3.0		2.0
All-Red Time (s)				1.0	1.0		1.0	1.0			1.0		0.0
Lost Time Adjust (s)					0.0			0.0			0.0		
Total Lost Time (s)					4.0			4.0			4.0		
Lead/Lag							Lead	Lead			Lead		Lag
Lead-Lag Optimize?													
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0		2.0
Recall Mode				None	None		C-Max	C-Max			C-Max		None
Walk Time (s)							7.0	7.0			7.0		7.0
Flash Dont Walk (s)							8.0	8.0			8.0		6.0
Pedestrian Calls (#/hr)							0	0			0		15
Act Effct Green (s)					21.0			58.0			58.0		
Actuated g/C Ratio					0.23			0.64			0.64		
v/c Ratio					0.79			0.36			0.47		
Control Delay					47.7			11.8			14.7		
Queue Delay					0.0			0.0			0.3		
Total Delay					47.7			11.8			14.9		
LOS					D			B			B		
Approach Delay					47.7			11.8			14.9		
Approach LOS					D			B			B		
Queue Length 50th (ft)					150			61			102		
Queue Length 95th (ft)					202			143			259		
Internal Link Dist (ft)		589			563			415			329		
Turn Bay Length (ft)													
Base Capacity (vph)					510			873			942		
Starvation Cap Reductn					0			0			120		
Spillback Cap Reductn					0			0			0		
Storage Cap Reductn					0			0			0		
Reduced v/c Ratio					0.55			0.36			0.54		

Intersection Summary	
Area Type: CBD	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 68 (76%), Referenced to phase 1:NBSB, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 22.9	Intersection LOS: C
Intersection Capacity Utilization 64.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Harrison Avenue & East Newton Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	29	60	26	0	0	0	0	238	52	23	312	0	
Future Volume (vph)	29	60	26	0	0	0	0	238	52	23	312	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	16	12	12	12	12	12	12	12	12	12	12	
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		0.969						0.976					
Flt Protected		0.988									0.997		
Satd. Flow (prot)	0	1836	0	0	0	0	0	1490	0	0	1484	0	
Flt Permitted		0.988									0.967		
Satd. Flow (perm)	0	1836	0	0	0	0	0	1490	0	0	1439	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		15						18					
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		609			799			409			251		
Travel Time (s)		13.8			18.2			9.3			5.7		
Peak Hour Factor	0.82	0.82	0.82	0.92	0.92	0.92	0.86	0.86	0.86	0.93	0.93	0.93	
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	1%	0%	9%	3%	0%	
Parking (#/hr)				0	0	0	0	0	0	0	0	0	
Adj. Flow (vph)	35	73	32	0	0	0	0	277	60	25	335	0	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	140	0	0	0	0	0	337	0	0	360	0	
Turn Type	Split	NA						NA		Perm	NA		
Protected Phases	5	5						1			1		2
Permitted Phases										1			
Detector Phase	5	5						1		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0						8.0		8.0	8.0		7.0
Minimum Split (s)	14.0	14.0						23.0		23.0	23.0		15.0
Total Split (s)	25.0	25.0						50.0		50.0	50.0		15.0
Total Split (%)	27.8%	27.8%						55.6%		55.6%	55.6%		17%
Maximum Green (s)	21.0	21.0						46.0		46.0	46.0		13.0
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0		2.0
All-Red Time (s)	1.0	1.0						1.0		1.0	1.0		0.0
Lost Time Adjust (s)		0.0						0.0			0.0		
Total Lost Time (s)		4.0						4.0			4.0		
Lead/Lag								Lead		Lead	Lead		Lag
Lead-Lag Optimize?													
Vehicle Extension (s)	2.0	2.0						2.0		2.0	2.0		2.0
Recall Mode	None	None						C-Max		C-Max	C-Max		None
Walk Time (s)								7.0		7.0	7.0		7.0
Flash Dont Walk (s)								8.0		8.0	8.0		6.0
Pedestrian Calls (#/hr)								0		0	0		10
Act Effct Green (s)		11.0						68.0			68.0		
Actuated g/C Ratio		0.12						0.76			0.76		
v/c Ratio		0.59						0.30			0.33		
Control Delay		46.6						5.9			6.7		
Queue Delay		0.0						0.4			0.0		
Total Delay		46.6						6.4			6.7		
LOS		D						A			A		
Approach Delay		46.6						6.4			6.7		
Approach LOS		D						A			A		
Queue Length 50th (ft)		77						64			35		
Queue Length 95th (ft)		114						185			m148		
Internal Link Dist (ft)		529			719			329			171		
Turn Bay Length (ft)													
Base Capacity (vph)		439						1130			1087		
Starvation Cap Reductn		0						398			0		
Spillback Cap Reductn		0						0			0		
Storage Cap Reductn		0						0			0		
Reduced v/c Ratio		0.32						0.46			0.33		

Intersection Summary	
Area Type: CBD	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay: 13.3	Intersection LOS: B
Intersection Capacity Utilization 53.0%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 2: Harrison Avenue & East Brookline Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	315	61	133	284	59	106	353	61	25	252	60
Future Volume (vph)	58	315	61	133	284	59	106	353	61	25	252	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	11	12	12	10	11	10	11	12
Storage Length (ft)	0		0	0		0	200		53	125		150
Storage Lanes	0		0	1		0	1		1	1		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99		0.98	0.99		0.86		0.90	0.96		0.75
Frt		0.981			0.974				0.850			0.850
Flt Protected		0.993		0.950			0.950			0.950		
Satd. Flow (prot)	0	1808	0	1577	1410	0	1547	1535	1171	1516	1559	1425
Flt Permitted		0.709		0.347			0.538			0.461		
Satd. Flow (perm)	0	1287	0	563	1410	0	752	1535	1055	703	1559	1063
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			14				44			68
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1149			630			643			361	
Travel Time (s)		26.1			14.3			14.6			8.2	
Confl. Peds. (#/hr)	58		39	39		58	142		90	90		142
Confl. Bikes (#/hr)						6			4			18
Peak Hour Factor	0.90	0.90	0.90	0.80	0.80	0.80	0.94	0.94	0.94	0.88	0.88	0.88
Heavy Vehicles (%)	0%	4%	3%	3%	2%	0%	5%	4%	8%	0%	6%	2%
Parking (#/hr)					0				0			
Adj. Flow (vph)	64	350	68	166	355	74	113	376	65	28	286	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	482	0	166	429	0	113	376	65	28	286	68
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		5			5			1			1	
Permitted Phases	5			5			1		1	1		1
Detector Phase	5	5		5	5		1	1	1	1	1	1
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	35.0	35.0		35.0	35.0		32.0	32.0	32.0	32.0	32.0	32.0
Total Split (s)	40.0	40.0		40.0	40.0		50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	44.4%	44.4%		44.4%	44.4%		55.6%	55.6%	55.6%	55.6%	55.6%	55.6%
Maximum Green (s)	36.0	36.0		36.0	36.0		46.0	46.0	46.0	46.0	46.0	46.0
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)	1.0	1.0		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	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.0		4.0	4.0		4.0	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	2.0	2.0
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	8.0	8.0		8.0	8.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)	23.0	23.0		23.0	23.0		18.0	18.0	18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)	20	20		20	20		0	0	0	0	0	0
Act Effct Green (s)		33.5		33.5	33.5		48.5	48.5	48.5	48.5	48.5	48.5
Actuated g/C Ratio		0.37		0.37	0.37		0.54	0.54	0.54	0.54	0.54	0.54
v/c Ratio		0.99		0.79	0.80		0.28	0.46	0.11	0.07	0.34	0.11
Control Delay		57.8		41.6	35.4		16.6	18.8	7.6	8.6	10.2	1.5
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.4	0.0
Total Delay		57.8		41.6	35.4		16.6	18.8	7.6	8.6	10.6	1.5
LOS		E		D	D		B	B	A	A	B	A
Approach Delay		57.8			37.2			17.0			8.8	
Approach LOS		E			D			B			A	
Queue Length 50th (ft)		276		75	188		46	169	12	5	60	0
Queue Length 95th (ft)		#466		m78	m174		m95	301	m24	14	84	4
Internal Link Dist (ft)		1069			550			563			281	
Turn Bay Length (ft)							200		53	125		150
Base Capacity (vph)		521		225	572		405	826	588	378	839	603
Starvation Cap Reductn		0		0	0		0	0	0	0	221	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		0.93		0.74	0.75		0.28	0.46	0.11	0.07	0.46	0.11

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 19 (21%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 31.2 Intersection LOS: C
Intersection Capacity Utilization 105.1% 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.
m Volume for 95th percentile queue is metered by upstream signal.

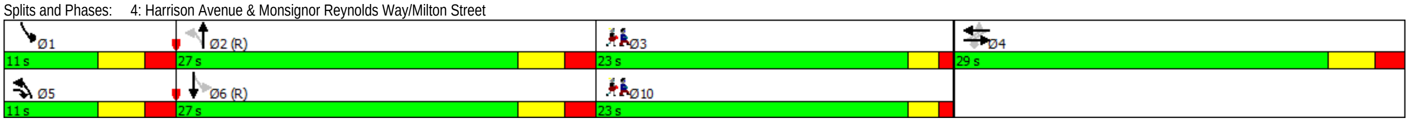
Splits and Phases: 3: Washington Street & West Dedham Street/Monsignor Reynolds Way

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø3	Ø10
Lane Configurations														
Traffic Volume (vph)	53	215	104	113	280	29	86	175	82	11	206	110		
Future Volume (vph)	53	215	104	113	280	29	86	175	82	11	206	110		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	11	16	12	16	12	12	11	12	11	11	11		
Storage Length (ft)	0		0	0		0	100		0	100		0		
Storage Lanes	0		1	0		0	1		0	1		0		
Taper Length (ft)	25			25			25			25				
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		
Ped Bike Factor			0.97		1.00			0.99			1.00			
Frt			0.850		0.991			0.952			0.948			
Flt Protected		0.990			0.987		0.950			0.950				
Satd. Flow (prot)	0	1598	1615	0	1870	0	1608	1499	0	1570	1534	0		
Flt Permitted		0.765			0.540		0.387			0.563				
Satd. Flow (perm)	0	1235	1564	0	1023	0	655	1499	0	931	1534	0		
Right Turn on Red			Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)			113		4			25			29			
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		630			893			431			319			
Travel Time (s)		14.3			20.3			9.8			7.3			
Confl. Bikes (#/hr)			11			6			1			2		
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.84	0.84	0.84	0.92	0.92	0.92		
Heavy Vehicles (%)	8%	1%	2%	2%	1%	0%	1%	3%	7%	0%	2%	1%		
Adj. Flow (vph)	58	234	113	124	308	32	102	208	98	12	224	120		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	292	113	0	464	0	102	306	0	12	344	0		
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA			
Protected Phases		4	5		4		5	2		1	6		3	10
Permitted Phases	4		4	4			2			6				
Detector Phase	4	4	5	4	4		5	2		1	6			
Switch Phase														
Minimum Initial (s)	8.0	8.0	6.0	8.0	8.0		6.0	22.0		6.0	22.0		7.0	7.0
Minimum Split (s)	13.0	13.0	11.0	13.0	13.0		11.0	27.0		11.0	27.0		23.0	23.0
Total Split (s)	29.0	29.0	11.0	29.0	29.0		11.0	27.0		11.0	27.0		23.0	23.0
Total Split (%)	32.2%	32.2%	12.2%	32.2%	32.2%		12.2%	30.0%		12.2%	30.0%		26%	26%
Maximum Green (s)	24.0	24.0	6.0	24.0	24.0		6.0	22.0		6.0	22.0		20.0	20.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0		2.0	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0		1.0	1.0
Lost Time Adjust (s)		-1.0	-1.0		-1.0		-1.0	-1.0		-1.0	-1.0			
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0			
Lead/Lag			Lead				Lead	Lag		Lead	Lag			
Lead-Lag Optimize?														
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max		None	None
Walk Time (s)								7.0			7.0		7.0	7.0
Flash Dont Walk (s)								7.0			15.0		13.0	13.0
Pedestrian Calls (#/hr)								0			0		10	10
Act Effct Green (s)		25.0	32.0		25.0		51.6	50.2		48.4	41.4			
Actuated g/C Ratio		0.28	0.36		0.28		0.57	0.56		0.54	0.46			
v/c Ratio		0.85	0.18		1.62		0.23	0.36		0.02	0.48			
Control Delay		43.4	1.6		319.5		8.7	13.1		7.1	17.3			
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.8			
Total Delay		43.4	1.6		319.5		8.7	13.1		7.1	18.2			
LOS		D	A		F		A	B		A	B			
Approach Delay		31.8			319.5			12.0			17.8			
Approach LOS		C			F			B			B			
Queue Length 50th (ft)		95	0		~386		21	74		2	125			
Queue Length 95th (ft)		m147	m0		#576		37	#245		m8	#322			
Internal Link Dist (ft)		550			813			351			239			
Turn Bay Length (ft)							100			100				
Base Capacity (vph)		343	632		287		449	847		550	721			
Starvation Cap Reductn		0	0		0		0	0		0	159			
Spillback Cap Reductn		0	0		0		0	0		0	0			
Storage Cap Reductn		0	0		0		0	0		0	0			
Reduced v/c Ratio		0.85	0.18		1.62		0.23	0.36		0.02	0.61			

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 30 (33%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.62
Intersection Signal Delay: 105.5 Intersection LOS: F
Intersection Capacity Utilization 79.2% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Harrison Avenue & Monsignor Reynolds Way/Milton Street

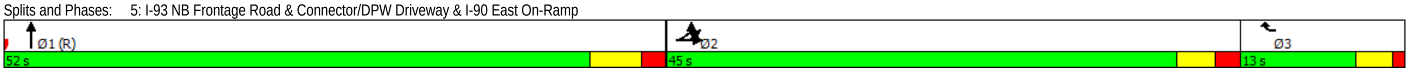


Lane Group	EBL2	EBL	EBT	WBR	WBR2	NBT	NBR	NBR2
Lane Configurations								
Traffic Volume (vph)	1017	216	8	27	5	828	319	20
Future Volume (vph)	1017	216	8	27	5	828	319	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	16	12	13	12	12
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.91	0.91	0.91
Ped Bike Factor						0.99		
Frt				0.865		0.956		
Flt Protected	0.950	0.950						
Satd. Flow (prot)	1498	1509	1550	1622	0	4394	0	0
Flt Permitted	0.950	0.950						
Satd. Flow (perm)	1498	1509	1550	1622	0	4394	0	0
Right Turn on Red	No				Yes			Yes
Satd. Flow (RTOR)				79		3		
Link Speed (mph)			30			30		
Link Distance (ft)			195			616		
Travel Time (s)			4.4			14.0		
Confl. Peds. (#/hr)								7
Peak Hour Factor	0.89	0.89	0.89	0.73	0.73	0.95	0.95	0.95
Heavy Vehicles (%)	3%	1%	25%	4%	0%	4%	2%	0%
Adj. Flow (vph)	1143	243	9	37	7	872	336	21
Shared Lane Traffic (%)	39%							
Lane Group Flow (vph)	697	689	9	44	0	1229	0	0
Turn Type	Split	Split	NA	Prot		NA		
Protected Phases	2	2	2	3		1		
Permitted Phases								
Detector Phase	2	2	2	3		1		
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0		10.0		
Minimum Split (s)	28.0	28.0	28.0	13.0		23.0		
Total Split (s)	45.0	45.0	45.0	13.0		52.0		
Total Split (%)	40.9%	40.9%	40.9%	11.8%		47.3%		
Maximum Green (s)	40.0	40.0	40.0	9.0		46.0		
Yellow Time (s)	3.0	3.0	3.0	3.0		4.0		
All-Red Time (s)	2.0	2.0	2.0	1.0		2.0		
Lost Time Adjust (s)	-1.0	0.0	-1.0	-2.0		-2.0		
Total Lost Time (s)	4.0	5.0	4.0	2.0		4.0		
Lead/Lag	Lead	Lead	Lead	Lag				
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	2.0		3.0		
Recall Mode	Max	Max	Max	None		C-Max		
Walk Time (s)	7.0	7.0	7.0			7.0		
Flash Dont Walk (s)	15.0	15.0	15.0			5.0		
Pedestrian Calls (#/hr)	0	0	0			0		
Act Effct Green (s)	41.0	40.0	41.0	10.0		53.8		
Actuated g/C Ratio	0.37	0.36	0.37	0.09		0.49		
v/c Ratio	1.25	1.26	0.02	0.20		0.57		
Control Delay	136.6	141.2	14.4	4.9		22.1		
Queue Delay	2.3	2.4	0.0	0.0		0.0		
Total Delay	138.9	143.6	14.4	4.9		22.1		
LOS	F	F	B	A		C		
Approach Delay			140.4			22.1		
Approach LOS			F			C		
Queue Length 50th (ft)	~636	~632	2	0		238		
Queue Length 95th (ft)	m#477	m#476	m2	0		287		
Internal Link Dist (ft)			115			536		
Turn Bay Length (ft)								
Base Capacity (vph)	558	548	577	233		2150		
Starvation Cap Reductn	132	134	0	0		0		
Spillback Cap Reductn	0	0	0	0		0		
Storage Cap Reductn	0	0	0	0		0		
Reduced v/c Ratio	1.64	1.66	0.02	0.19		0.57		

Intersection Summary

Area Type: CBD
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 84 (76%), Referenced to phase 1:NBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.26
Intersection Signal Delay: 83.7 — Intersection LOS: F
Intersection Capacity Utilization 81.0% — ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: I-93 NB Frontage Road & Connector/DPW Driveway & I-90 East On-Ramp



Lane Group	EBT	EBR	EBR2	SBL	SBT	SBR	NER	NER2	Ø2
Lane Configurations									
Traffic Volume (vph)	11	9	7	224	387	543	1006	230	
Future Volume (vph)	11	9	7	224	387	543	1006	230	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	11	12	12	12	
Storage Length (ft)		0		60		0	0		
Storage Lanes		0		1		1	2		
Taper Length (ft)				25					
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00	0.88	1.00	
Ped Bike Factor						0.62			
Frt	0.920					0.850	0.850		
Flt Protected				0.950	0.994				
Satd. Flow (prot)	848	0	0	1421	2900	1425	2508	0	
Flt Permitted				0.950	0.994				
Satd. Flow (perm)	848	0	0	1421	2900	885	2508	0	
Right Turn on Red			Yes	No				Yes	
Satd. Flow (RTOR)	13						169		
Link Speed (mph)	30				30				
Link Distance (ft)	432				701				
Travel Time (s)	9.8				15.9				
Confl. Peds. (#/hr)						53			
Confl. Bikes (#/hr)						6	1		
Peak Hour Factor	0.56	0.56	0.56	0.96	0.96	0.96	0.87	0.87	
Heavy Vehicles (%)	100%	67%	86%	4%	3%	2%	2%	2%	
Adj. Flow (vph)	20	16	13	233	403	566	1156	264	
Shared Lane Traffic (%)				23%					
Lane Group Flow (vph)	49	0	0	179	457	566	1420	0	
Turn Type	NA			Perm	NA	custom	Prot		
Protected Phases	3				1	1 4	4		2
Permitted Phases				1	2	2			
Detector Phase	3			1	1	1 4	4		
Switch Phase									
Minimum Initial (s)	10.0			10.0	10.0		10.0		8.0
Minimum Split (s)	17.0			20.0	20.0		18.0		15.0
Total Split (s)	17.0			31.0	31.0		47.0		15.0
Total Split (%)	15.5%			28.2%	28.2%		42.7%		14%
Maximum Green (s)	11.0			24.0	24.0		42.0		8.0
Yellow Time (s)	3.0			4.0	4.0		3.0		4.0
All-Red Time (s)	3.0			3.0	3.0		2.0		3.0
Lost Time Adjust (s)	-3.0			-2.0	-2.0		-2.0		
Total Lost Time (s)	3.0			5.0	5.0		3.0		
Lead/Lag	Lead			Lead	Lead		Lag		Lag
Lead-Lag Optimize?									
Vehicle Extension (s)	2.0			2.0	2.0		2.0		2.0
Recall Mode	Max			C-Max	C-Max		Max		None
Walk Time (s)				7.0	7.0		7.0		7.0
Flash Dont Walk (s)				1.0	1.0		5.0		1.0
Pedestrian Calls (#/hr)				0	0		0		5
Act Effct Green (s)	14.0			38.0	41.0	87.0	44.0		
Actuated g/C Ratio	0.13			0.35	0.37	0.79	0.40		
v/c Ratio	0.41			0.37	0.42	0.51	1.29		
Control Delay	46.0			29.2	26.0	4.5	163.0		
Queue Delay	6.1			0.6	0.5	0.0	0.5		
Total Delay	52.1			29.8	26.5	4.5	163.5		
LOS	D			C	C	A	F		
Approach Delay	52.1				16.6				
Approach LOS	D				B				
Queue Length 50th (ft)	24			108	143	76	~686		
Queue Length 95th (ft)	34			m158	132	103	#792		
Internal Link Dist (ft)	352				621				
Turn Bay Length (ft)				60					
Base Capacity (vph)	119			490	1080	1117	1104		
Starvation Cap Reductn	0			0	0	0	0		
Spillback Cap Reductn	37			110	270	0	103		
Storage Cap Reductn	0			0	0	0	0		
Reduced v/c Ratio	0.60			0.47	0.56	0.51	1.42		

Intersection Summary

Area Type: CBD
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 68 (62%), Referenced to phase 1:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.29
Intersection Signal Delay: 95.3 Intersection LOS: F
Intersection Capacity Utilization 80.0% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Albany Street & I-93 SB Frontage Road & MBTA Driveway/Connector

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	6	75	892	353	228
Future Volume (Veh/h)	9	6	75	892	353	228
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.93	0.93	0.96	0.96
Hourly flow rate (vph)	12	8	81	959	368	238
Pedestrians	37			9	1	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	3			1	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					831	
pX, platoon unblocked						
vC, conflicting volume	1166	533	643			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1166	533	643			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	98	91			
cM capacity (veh/h)	168	478	922			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	20	401	639	606
Volume Left	12	81	0	0
Volume Right	8	0	0	238
cSH	227	922	1700	1700
Volume to Capacity	0.09	0.09	0.38	0.36
Queue Length 95th (ft)	7	7	0	0
Control Delay (s)	22.4	2.7	0.0	0.0
Lane LOS	C	A		
Approach Delay (s)	22.4	1.0		0.0
Approach LOS	C			

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	124	42	0	650	336	0
Future Volume (Veh/h)	124	42	0	650	336	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.69	0.69	0.95	0.95	0.80	0.80
Hourly flow rate (vph)	180	61	0	684	420	0
Pedestrians	22			3	3	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	2			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1129	445	442			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1129	445	442			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	19	90	100			
cM capacity (veh/h)	222	594	1108			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	241	684	420
Volume Left	180	0	0
Volume Right	61	0	0
cSH	264	1700	1700
Volume to Capacity	0.91	0.40	0.25
Queue Length 95th (ft)	205	0	0
Control Delay (s)	76.6	0.0	0.0
Lane LOS	F		
Approach Delay (s)	76.6	0.0	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	13.7		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	3	3	65	648	3	2	329	47
Future Volume (Veh/h)	0	0	0	0	3	3	65	648	3	2	329	47
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.50	0.50	0.50	0.94	0.94	0.94	0.87	0.87	0.87
Hourly flow rate (vph)	0	0	0	0	6	6	69	689	3	2	378	54
Pedestrians		3						43			3	
Lane Width (ft)		0.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						4			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1252	1242	451	1280	1268	694	435			692		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1252	1242	451	1280	1268	694	435			692		
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	96	99	94			100		
cM capacity (veh/h)	137	165	591	132	159	445	1135			912		

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	12	761	434
Volume Left	0	69	2
Volume Right	6	3	54
cSH	235	1135	912
Volume to Capacity	0.05	0.06	0.00
Queue Length 95th (ft)	4	5	0
Control Delay (s)	21.2	1.5	0.1
Lane LOS	C	A	A
Approach Delay (s)	21.2	1.5	0.1
Approach LOS	C		

Intersection Summary				
Average Delay		1.2		
Intersection Capacity Utilization		79.1%	ICU Level of Service	D
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	100	44	0	615	329	0
Future Volume (Veh/h)	100	44	0	615	329	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.77	0.77	0.93	0.93	0.88	0.88
Hourly flow rate (vph)	130	57	0	661	374	0
Pedestrians					1	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1036	374	374			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1036	374	374			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	49	92	100			
cM capacity (veh/h)	255	672	1196			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	187	661	374
Volume Left	130	0	0
Volume Right	57	0	0
cSH	315	1700	1700
Volume to Capacity	0.59	0.39	0.22
Queue Length 95th (ft)	90	0	0
Control Delay (s)	31.9	0.0	0.0
Lane LOS	D		
Approach Delay (s)	31.9	0.0	0.0
Approach LOS	D		

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	69	77	267	0	0	266
Future Volume (Veh/h)	69	77	267	0	0	266
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.94	0.94	0.92	0.92
Hourly flow rate (vph)	78	87	284	0	0	289
Pedestrians	76		8			4
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	6		1			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			251			679
pX, platoon unblocked	0.97	0.97			0.97	
vC, conflicting volume	657	364			360	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	634	334			329	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	81	87			100	
cM capacity (veh/h)	404	648			1132	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	165	284	289
Volume Left	78	0	0
Volume Right	87	0	0
cSH	504	1700	1700
Volume to Capacity	0.33	0.17	0.17
Queue Length 95th (ft)	35	0	0
Control Delay (s)	15.6	0.0	0.0
Lane LOS	C		
Approach Delay (s)	15.6	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	30.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	289	41	64	283
Future Volume (Veh/h)	0	0	289	41	64	283
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.86	0.86	0.96	0.96
Hourly flow rate (vph)	0	0	336	48	67	295
Pedestrians	76		6			27
Lane Width (ft)	0.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		1			2
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			499			431
pX, platoon unblocked						
vC, conflicting volume	871	463			460	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	871	463			460	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			94	
cM capacity (veh/h)	303	590			1112	

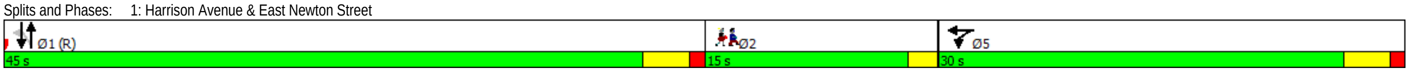
Direction, Lane #	NB 1	SB 1
Volume Total	384	362
Volume Left	0	67
Volume Right	48	0
cSH	1700	1112
Volume to Capacity	0.23	0.06
Queue Length 95th (ft)	0	5
Control Delay (s)	0.0	2.1
Lane LOS		A
Approach Delay (s)	0.0	2.1
Approach LOS		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	0	0	0	84	78	59	39	348	0	0	254	81	
Future Volume (vph)	0	0	0	84	78	59	39	348	0	0	254	81	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	16	12	12	12	12	12	12	12	
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	
Ped Bike Factor					0.99						0.99		
Frt					0.964						0.968		
Flt Protected					0.981			0.995					
Satd. Flow (prot)	0	0	0	0	1446	0	0	1474	0	0	1394	0	
Flt Permitted					0.981			0.941					
Satd. Flow (perm)	0	0	0	0	1446	0	0	1394	0	0	1394	0	
Right Turn on Red			No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		669			643			495			409		
Travel Time (s)		15.2			14.6			11.3			9.3		
Confl. Bikes (#/hr)						2						3	
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.92	0.92	0.92	0.96	0.96	0.96	
Heavy Vehicles (%)	0%	0%	0%	19%	16%	2%	3%	4%	0%	0%	7%	4%	
Parking (#/hr)				0	0	0	0	0			0	0	
Adj. Flow (vph)	0	0	0	95	89	67	42	378	0	0	265	84	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	0	0	0	251	0	0	420	0	0	349	0	
Turn Type				Split	NA		Perm	NA			NA		
Protected Phases				5	5			1			1		2
Permitted Phases							1						
Detector Phase				5	5		1	1			1		
Switch Phase													
Minimum Initial (s)				8.0	8.0		8.0	8.0			8.0		7.0
Minimum Split (s)				14.0	14.0		23.0	23.0			23.0		15.0
Total Split (s)				30.0	30.0		45.0	45.0			45.0		15.0
Total Split (%)				33.3%	33.3%		50.0%	50.0%			50.0%		17%
Maximum Green (s)				26.0	26.0		41.0	41.0			41.0		13.0
Yellow Time (s)				3.0	3.0		3.0	3.0			3.0		2.0
All-Red Time (s)				1.0	1.0		1.0	1.0			1.0		0.0
Lost Time Adjust (s)					0.0			0.0			0.0		
Total Lost Time (s)					4.0			4.0			4.0		
Lead/Lag							Lead	Lead			Lead		Lag
Lead-Lag Optimize?													
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0		2.0
Recall Mode				None	None		C-Max	C-Max			C-Max		None
Walk Time (s)							7.0	7.0			7.0		7.0
Flash Dont Walk (s)							8.0	8.0			8.0		6.0
Pedestrian Calls (#/hr)							0	0			0		20
Act Effct Green (s)					19.6			56.4			56.4		
Actuated g/C Ratio					0.22			0.63			0.63		
v/c Ratio					0.80			0.48			0.40		
Control Delay					51.3			10.5			8.1		
Queue Delay					0.0			0.0			0.2		
Total Delay					51.3			10.5			8.3		
LOS					D			B			A		
Approach Delay					51.3			10.5			8.3		
Approach LOS					D			B			A		
Queue Length 50th (ft)					135			62			51		
Queue Length 95th (ft)					197			107			81		
Internal Link Dist (ft)		589			563			415			329		
Turn Bay Length (ft)													
Base Capacity (vph)					417			873			873		
Starvation Cap Reductn					0			0			123		
Spillback Cap Reductn					0			0			0		
Storage Cap Reductn					0			0			0		
Reduced v/c Ratio					0.60			0.48			0.47		

Intersection Summary	
Area Type: CBD	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 75 (83%), Referenced to phase 1:NBSB, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 19.8	Intersection LOS: B
Intersection Capacity Utilization 66.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Harrison Avenue & East Newton Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	53	104	37	0	0	0	0	285	60	22	287	0	
Future Volume (vph)	53	104	37	0	0	0	0	285	60	22	287	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	16	12	12	12	12	12	12	12	12	12	12	
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	
Ped Bike Factor		1.00						1.00					
Frt		0.974						0.977					
Flt Protected		0.987									0.996		
Satd. Flow (prot)	0	1767	0	0	0	0	0	1461	0	0	1422	0	
Flt Permitted		0.987									0.960		
Satd. Flow (perm)	0	1767	0	0	0	0	0	1461	0	0	1371	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		13						16					
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		609			799			409			251		
Travel Time (s)		13.8			18.2			9.3			5.7		
Confl. Bikes (#/hr)			4						7				
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.81	0.81	0.81	0.87	0.87	0.87	
Heavy Vehicles (%)	8%	3%	6%	0%	0%	0%	0%	3%	0%	5%	8%	0%	
Parking (#/hr)				0	0	0	0	0	0	0	0	0	
Adj. Flow (vph)	58	114	41	0	0	0	0	352	74	25	330	0	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	213	0	0	0	0	0	426	0	0	355	0	
Turn Type	Split	NA						NA		Perm	NA		
Protected Phases	5	5						1			1		2
Permitted Phases										1			
Detector Phase	5	5						1		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0						8.0		8.0	8.0		7.0
Minimum Split (s)	14.0	14.0						23.0		23.0	23.0		15.0
Total Split (s)	28.0	28.0						47.0		47.0	47.0		15.0
Total Split (%)	31.1%	31.1%						52.2%		52.2%	52.2%		17%
Maximum Green (s)	24.0	24.0						43.0		43.0	43.0		13.0
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0		2.0
All-Red Time (s)	1.0	1.0						1.0		1.0	1.0		0.0
Lost Time Adjust (s)		0.0						0.0			0.0		
Total Lost Time (s)		4.0						4.0			4.0		
Lead/Lag								Lead		Lead	Lead		Lag
Lead-Lag Optimize?													
Vehicle Extension (s)	2.0	2.0						2.0		2.0	2.0		2.0
Recall Mode	None	None						C-Max		C-Max	C-Max		None
Walk Time (s)								7.0		7.0	7.0		7.0
Flash Dont Walk (s)								8.0		8.0	8.0		6.0
Pedestrian Calls (#/hr)								0		0	0		10
Act Effct Green (s)		14.6						64.4			64.4		
Actuated g/C Ratio		0.16						0.72			0.72		
v/c Ratio		0.72						0.41			0.36		
Control Delay		47.2						2.9			11.2		
Queue Delay		0.0						0.1			0.0		
Total Delay		47.2						3.0			11.2		
LOS		D						A			B		
Approach Delay		47.2						3.0			11.2		
Approach LOS		D						A			B		
Queue Length 50th (ft)		107						37			85		
Queue Length 95th (ft)		183						45			208		
Internal Link Dist (ft)		529			719			329			171		
Turn Bay Length (ft)													
Base Capacity (vph)		480						1049			980		
Starvation Cap Reductn		0						123			0		
Spillback Cap Reductn		0						0			0		
Storage Cap Reductn		0						0			0		
Reduced v/c Ratio		0.44						0.46			0.36		

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 82 (91%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 15.4 Intersection LOS: B
Intersection Capacity Utilization 55.4% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 2: Harrison Avenue & East Brookline Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	203	75	108	217	46	146	407	79	25	153	51
Future Volume (vph)	45	203	75	108	217	46	146	407	79	25	153	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	11	12	12	10	11	10	11	12
Storage Length (ft)	0		0	0		0	200		53	125		150
Storage Lanes	0		0	1		0	1		1	1		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.97		0.95	0.99		0.84		0.88	0.96		0.77
Frt		0.969			0.974				0.850			0.850
Flt Protected		0.993		0.950			0.950			0.950		
Satd. Flow (prot)	0	1734	0	1504	1397	0	1490	1492	1119	1458	1463	1398
Flt Permitted		0.834		0.353			0.646			0.442		
Satd. Flow (perm)	0	1452	0	529	1397	0	849	1492	982	648	1463	1078
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			14				52			59
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1149			630			643			361	
Travel Time (s)		26.1			14.3			14.6			8.2	
Confl. Peds. (#/hr)	36		78	78		36	130		104	104		130
Confl. Bikes (#/hr)			2			2			34			7
Peak Hour Factor	0.87	0.87	0.87	0.93	0.93	0.93	0.92	0.92	0.92	0.87	0.87	0.87
Heavy Vehicles (%)	7%	3%	6%	8%	1%	12%	9%	7%	13%	4%	13%	4%
Parking (#/hr)					0				0			
Adj. Flow (vph)	52	233	86	116	233	49	159	442	86	29	176	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	371	0	116	282	0	159	442	86	29	176	59
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		5			5			1			1	
Permitted Phases	5			5			1		1	1		1
Detector Phase	5	5		5	5		1	1	1	1	1	1
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	35.0	35.0		35.0	35.0		32.0	32.0	32.0	32.0	32.0	32.0
Total Split (s)	38.0	38.0		38.0	38.0		52.0	52.0	52.0	52.0	52.0	52.0
Total Split (%)	42.2%	42.2%		42.2%	42.2%		57.8%	57.8%	57.8%	57.8%	57.8%	57.8%
Maximum Green (s)	34.0	34.0		34.0	34.0		48.0	48.0	48.0	48.0	48.0	48.0
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)	1.0	1.0		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	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.0		4.0	4.0		4.0	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	2.0	2.0
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	8.0	8.0		8.0	8.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)	23.0	23.0		23.0	23.0		18.0	18.0	18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)	20	20		20	20		0	0	0	0	0	0
Act Effct Green (s)		26.1		26.1	26.1		55.9	55.9	55.9	55.9	55.9	55.9
Actuated g/C Ratio		0.29		0.29	0.29		0.62	0.62	0.62	0.62	0.62	0.62
v/c Ratio		0.85		0.76	0.68		0.30	0.48	0.14	0.07	0.19	0.09
Control Delay		38.7		69.0	47.0		8.5	10.8	3.3	6.0	5.8	0.9
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		38.7		69.0	47.0		8.5	10.8	3.3	6.0	5.8	0.9
LOS		D		E	D		A	B	A	A	A	A
Approach Delay		38.7			53.4			9.3			4.7	
Approach LOS		D			D			A			A	
Queue Length 50th (ft)		134		72	169		38	142	6	3	25	0
Queue Length 95th (ft)		236		m111	m234		87	269	m15	12	46	2
Internal Link Dist (ft)		1069			550			563			281	
Turn Bay Length (ft)							200		53	125		150
Base Capacity (vph)		560		199	536		527	926	630	402	909	692
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		0.66		0.58	0.53		0.30	0.48	0.14	0.07	0.19	0.09

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 10 (11%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 25.1 Intersection LOS: C
Intersection Capacity Utilization 102.3% ICU Level of Service G
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

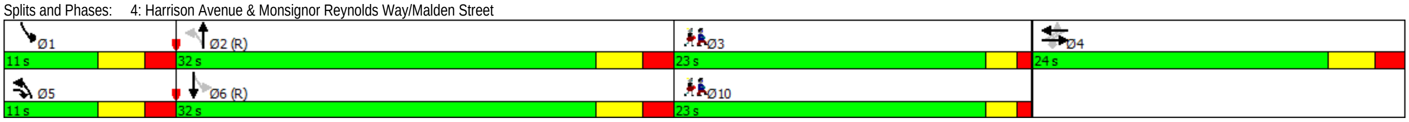
Splits and Phases: 3: Washington Street & West Dedham Street/Monsignor Reynolds Way

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø3	Ø10
Lane Configurations														
Traffic Volume (vph)	46	201	98	17	173	60	111	189	33	52	148	86		
Future Volume (vph)	46	201	98	17	173	60	111	189	33	52	148	86		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	11	16	12	16	12	12	11	12	11	11	11		
Storage Length (ft)	0		0	0		0	100		0	100		0		
Storage Lanes	0		1	0		0	1		0	1		0		
Taper Length (ft)	25			25			25			25				
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		
Ped Bike Factor					0.99			1.00			0.99			
Frt			0.850		0.968			0.978			0.945			
Flt Protected		0.991			0.997		0.950			0.950				
Satd. Flow (prot)	0	1548	1471	0	1766	0	1533	1559	0	1570	1514	0		
Flt Permitted		0.783			0.931		0.470			0.561				
Satd. Flow (perm)	0	1223	1471	0	1649	0	758	1559	0	927	1514	0		
Right Turn on Red			Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)			103		16			10			34			
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		630			893			431			319			
Travel Time (s)		14.3			20.3			9.8			7.3			
Confl. Bikes (#/hr)						1			6			4		
Peak Hour Factor	0.95	0.95	0.95	0.91	0.91	0.91	0.93	0.93	0.93	0.83	0.83	0.83		
Heavy Vehicles (%)	5%	6%	12%	14%	5%	4%	6%	3%	5%	0%	3%	2%		
Adj. Flow (vph)	48	212	103	19	190	66	119	203	35	63	178	104		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	260	103	0	275	0	119	238	0	63	282	0		
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA			
Protected Phases		4	5		4		5	2		1	6		3	10
Permitted Phases	4		4	4			2			6				
Detector Phase	4	4	5	4	4		5	2		1	6			
Switch Phase														
Minimum Initial (s)	8.0	8.0	6.0	8.0	8.0		6.0	22.0		6.0	22.0		7.0	7.0
Minimum Split (s)	13.0	13.0	11.0	13.0	13.0		11.0	27.0		11.0	27.0		23.0	23.0
Total Split (s)	24.0	24.0	11.0	24.0	24.0		11.0	32.0		11.0	32.0		23.0	23.0
Total Split (%)	26.7%	26.7%	12.2%	26.7%	26.7%		12.2%	35.6%		12.2%	35.6%		26%	26%
Maximum Green (s)	19.0	19.0	6.0	19.0	19.0		6.0	27.0		6.0	27.0		20.0	20.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0		2.0	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0		1.0	1.0
Lost Time Adjust (s)		-1.0	-1.0		-1.0		-1.0	-1.0		-1.0	-1.0			
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0			
Lead/Lag			Lead				Lead	Lag		Lead	Lag			
Lead-Lag Optimize?														
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max		None	None
Walk Time (s)								7.0			7.0		7.0	7.0
Flash Dont Walk (s)								7.0			15.0		13.0	13.0
Pedestrian Calls (#/hr)								0			0		30	30
Act Effct Green (s)		20.0	31.0		20.0		45.0	39.4		44.2	37.2			
Actuated g/C Ratio		0.22	0.34		0.22		0.50	0.44		0.49	0.41			
v/c Ratio		0.96	0.18		0.73		0.27	0.35		0.12	0.44			
Control Delay		70.1	2.2		43.2		10.8	17.5		10.6	14.9			
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.2			
Total Delay		70.1	2.2		43.2		10.8	17.5		10.6	15.1			
LOS		E	A		D		B	B		B	B			
Approach Delay		50.8			43.2			15.3			14.3			
Approach LOS		D			D			B			B			
Queue Length 50th (ft)		104	0		137		36	114		17	96			
Queue Length 95th (ft)		#292	m4		#248		44	150		21	90			
Internal Link Dist (ft)		550			813			351			239			
Turn Bay Length (ft)							100			100				
Base Capacity (vph)		271	574		378		439	687		505	645			
Starvation Cap Reductn		0	0		0		0	0		0	64			
Spillback Cap Reductn		0	0		0		0	0		0	0			
Storage Cap Reductn		0	0		0		0	0		0	0			
Reduced v/c Ratio		0.96	0.18		0.73		0.27	0.35		0.12	0.49			

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 25 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 30.4 Intersection LOS: C
Intersection Capacity Utilization 65.4% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Harrison Avenue & Monsignor Reynolds Way/Malden Street

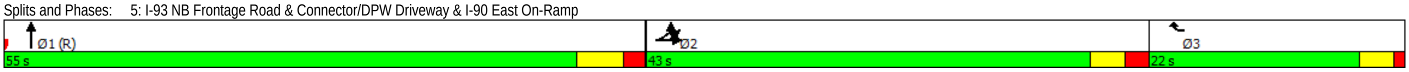


Lane Group	EBL2	EBL	EBT	WBR	WBR2	NBT	NBR	NBR2
Lane Configurations								
Traffic Volume (vph)	633	279	19	34	6	1098	357	18
Future Volume (vph)	633	279	19	34	6	1098	357	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	16	12	13	12	12
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.91	0.91	0.91
Ped Bike Factor						0.99		
Frt				0.865		0.962		
Flt Protected	0.950	0.950						
Satd. Flow (prot)	1513	1513	1746	1421	0	4385	0	0
Flt Permitted	0.950	0.950						
Satd. Flow (perm)	1513	1513	1746	1421	0	4385	0	0
Right Turn on Red	No				Yes			Yes
Satd. Flow (RTOR)				73		2		
Link Speed (mph)			30			30		
Link Distance (ft)			195			616		
Travel Time (s)			4.4			14.0		
Confl. Peds. (#/hr)								6
Peak Hour Factor	0.89	0.89	0.89	0.83	0.83	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	11%	21%	0%	5%	3%	4%
Adj. Flow (vph)	711	313	21	41	7	1193	388	20
Shared Lane Traffic (%)	28%							
Lane Group Flow (vph)	512	512	21	48	0	1601	0	0
Turn Type	Split	Split	NA	Prot		NA		
Protected Phases	2	2	2	3		1		
Permitted Phases								
Detector Phase	2	2	2	3		1		
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0		10.0		
Minimum Split (s)	28.0	28.0	28.0	13.0		23.0		
Total Split (s)	43.0	43.0	43.0	22.0		55.0		
Total Split (%)	35.8%	35.8%	35.8%	18.3%		45.8%		
Maximum Green (s)	38.0	38.0	38.0	18.0		49.0		
Yellow Time (s)	3.0	3.0	3.0	3.0		4.0		
All-Red Time (s)	2.0	2.0	2.0	1.0		2.0		
Lost Time Adjust (s)	-1.0	0.0	-1.0	-2.0		-2.0		
Total Lost Time (s)	4.0	5.0	4.0	2.0		4.0		
Lead/Lag	Lead	Lead	Lead	Lag				
Lead-Lag Optimize?								
Vehicle Extension (s)	2.0	2.0	2.0	2.0		3.0		
Recall Mode	Max	Max	Max	None		C-Max		
Walk Time (s)	7.0	7.0	7.0			7.0		
Flash Dont Walk (s)	15.0	15.0	15.0			5.0		
Pedestrian Calls (#/hr)	0	0	0			0		
Act Effct Green (s)	39.0	38.0	39.0	10.0		63.4		
Actuated g/C Ratio	0.32	0.32	0.32	0.08		0.53		
v/c Ratio	1.04	1.07	0.04	0.26		0.69		
Control Delay	63.8	74.1	24.3	8.5		23.6		
Queue Delay	23.8	14.9	0.0	0.0		0.0		
Total Delay	87.6	89.0	24.3	8.5		23.6		
LOS	F	F	C	A		C		
Approach Delay			87.0			23.6		
Approach LOS			F			C		
Queue Length 50th (ft)	~437	~448	7	0		339		
Queue Length 95th (ft)	m284	m#308	m8	13		398		
Internal Link Dist (ft)			115			536		
Turn Bay Length (ft)								
Base Capacity (vph)	491	479	567	297		2318		
Starvation Cap Reductn	140	136	0	0		0		
Spillback Cap Reductn	0	0	0	0		0		
Storage Cap Reductn	0	0	0	0		0		
Reduced v/c Ratio	1.46	1.49	0.04	0.16		0.69		

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 56 (47%), Referenced to phase 1:NBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 47.9 Intersection LOS: D
Intersection Capacity Utilization 77.8% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: I-93 NB Frontage Road & Connector/DPW Driveway & I-90 East On-Ramp

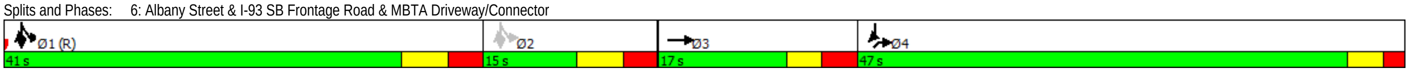


Lane Group	EBT	EBR	EBR2	SBL	SBT	SBR	NER	NER2	Ø2
Lane Configurations									
Traffic Volume (vph)	2	1	3	174	199	702	756	240	
Future Volume (vph)	2	1	3	174	199	702	756	240	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	11	12	12	12	
Storage Length (ft)		0		60		0	0		
Storage Lanes		0		1		1	2		
Taper Length (ft)				25					
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00	0.88	1.00	
Ped Bike Factor	0.96					0.59			
Frt	0.910					0.850	0.850		
Flt Protected				0.950	0.992				
Satd. Flow (prot)	892	0	0	1449	2856	1411	2496	0	
Flt Permitted				0.950	0.992				
Satd. Flow (perm)	892	0	0	1449	2856	833	2496	0	
Right Turn on Red			Yes	No				Yes	
Satd. Flow (RTOR)	6						155		
Link Speed (mph)	30				30				
Link Distance (ft)	432				701				
Travel Time (s)	9.8				15.9				
Confl. Peds. (#/hr)		4	7			53			
Confl. Bikes (#/hr)								1	
Peak Hour Factor	0.50	0.50	0.50	0.95	0.95	0.95	0.86	0.86	
Heavy Vehicles (%)	50%	0%	100%	2%	5%	3%	2%	4%	
Adj. Flow (vph)	4	2	6	183	209	739	879	279	
Shared Lane Traffic (%)				23%					
Lane Group Flow (vph)	12	0	0	141	251	739	1158	0	
Turn Type	NA			custom	NA	custom	Prot		
Protected Phases	3			1	1	1 4	4		2
Permitted Phases				2	2	2			
Detector Phase	3			1	1	1 4	4		
Switch Phase									
Minimum Initial (s)	10.0			10.0	10.0		10.0		8.0
Minimum Split (s)	17.0			20.0	20.0		18.0		15.0
Total Split (s)	17.0			41.0	41.0		47.0		15.0
Total Split (%)	14.2%			34.2%	34.2%		39.2%		13%
Maximum Green (s)	11.0			34.0	34.0		42.0		8.0
Yellow Time (s)	3.0			4.0	4.0		3.0		4.0
All-Red Time (s)	3.0			3.0	3.0		2.0		3.0
Lost Time Adjust (s)	-3.0			-2.0	-2.0		-2.0		
Total Lost Time (s)	3.0			5.0	5.0		3.0		
Lead/Lag	Lead			Lead	Lead		Lag		Lag
Lead-Lag Optimize?									
Vehicle Extension (s)	2.0			2.0	2.0		2.0		2.0
Recall Mode	Max			C-Max	C-Max		Max		None
Walk Time (s)				7.0	7.0		7.0		7.0
Flash Dont Walk (s)				1.0	1.0		5.0		1.0
Pedestrian Calls (#/hr)				0	0		0		5
Act Effct Green (s)	14.0			51.0	51.0	97.0	44.0		
Actuated g/C Ratio	0.12			0.42	0.42	0.81	0.37		
v/c Ratio	0.11			0.23	0.21	0.65	1.14		
Control Delay	36.7			19.9	19.1	7.5	107.6		
Queue Delay	0.0			0.4	0.2	0.4	0.4		
Total Delay	36.7			20.3	19.2	7.8	108.0		
LOS	D			C	B	A	F		
Approach Delay	36.7				11.9				
Approach LOS	D				B				
Queue Length 50th (ft)	4			79	68	105	~552		
Queue Length 95th (ft)	11			m130	96	166	#647		
Internal Link Dist (ft)	352				621				
Turn Bay Length (ft)				60					
Base Capacity (vph)	109			615	1213	1131	1013		
Starvation Cap Reductn	0			0	0	90	0		
Spillback Cap Reductn	0			190	375	0	71		
Storage Cap Reductn	0			0	0	0	0		
Reduced v/c Ratio	0.11			0.33	0.30	0.71	1.23		

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 37 (31%), Referenced to phase 1:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.14
Intersection Signal Delay: 60.4 Intersection LOS: E
Intersection Capacity Utilization 68.3% ICU Level of Service C
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Albany Street & I-93 SB Frontage Road & MBTA Driveway/Connector



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	65	5	67	733	452	230
Future Volume (Veh/h)	65	5	67	733	452	230
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.69	0.69	0.80	0.80	0.91	0.91
Hourly flow rate (vph)	94	7	84	916	497	253
Pedestrians	78			12	1	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	7			1	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					831	
pX, platoon unblocked						
vC, conflicting volume	1328	714	828			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1328	714	828			
tC, single (s)	6.8	7.3	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.5	2.2			
p0 queue free %	24	98	89			
cM capacity (veh/h)	123	311	735			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	101	389	611	750
Volume Left	94	84	0	0
Volume Right	7	0	0	253
cSH	129	735	1700	1700
Volume to Capacity	0.79	0.11	0.36	0.44
Queue Length 95th (ft)	117	10	0	0
Control Delay (s)	95.2	3.4	0.0	0.0
Lane LOS	F	A		
Approach Delay (s)	95.2	1.3		0.0
Approach LOS	F			

Intersection Summary			
Average Delay	5.9		
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	95	44	0	505	422	0
Future Volume (Veh/h)	95	44	0	505	422	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	120	56	0	537	449	0
Pedestrians	47			1	1	
Lane Width (ft)	12.0			12.0	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)						
pX, platoon unblocked						
vC, conflicting volume	1034	497	496			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1034	497	496			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	51	90	100			
cM capacity (veh/h)	247	550	1036			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	176	537	449
Volume Left	120	0	0
Volume Right	56	0	0
cSH	299	1700	1700
Volume to Capacity	0.59	0.32	0.26
Queue Length 95th (ft)	87	0	0
Control Delay (s)	32.8	0.0	0.0
Lane LOS	D		
Approach Delay (s)	32.8	0.0	0.0
Approach LOS	D		

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	7	4	2	53	503	20	5	395	65
Future Volume (Veh/h)	0	0	0	7	4	2	53	503	20	5	395	65
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.36	0.36	0.36	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	0	0	19	11	6	57	541	22	5	425	70
Pedestrians		47			1			63			1	
Lane Width (ft)		0.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			5			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1196	1195	570	1200	1219	554	542			564		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1196	1195	570	1200	1219	554	542			564		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.7	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.8	2.2			2.2		
p0 queue free %	100	100	100	87	94	99	95			100		
cM capacity (veh/h)	147	177	497	148	171	450	1037			1017		

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	36	620	500
Volume Left	19	57	5
Volume Right	6	22	70
cSH	174	1037	1017
Volume to Capacity	0.21	0.05	0.00
Queue Length 95th (ft)	19	4	0
Control Delay (s)	30.9	1.4	0.1
Lane LOS	D	A	A
Approach Delay (s)	30.9	1.4	0.1
Approach LOS	D		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	176	56	0	401	403	0
Future Volume (Veh/h)	176	56	0	401	403	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.93	0.93	0.89	0.89
Hourly flow rate (vph)	191	61	0	431	453	0
Pedestrians	108			22		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	9			2		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	992	583	561			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	992	583	561			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	23	87	100			
cM capacity (veh/h)	248	461	928			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	252	431	453
Volume Left	191	0	0
Volume Right	61	0	0
cSH	279	1700	1700
Volume to Capacity	0.90	0.25	0.27
Queue Length 95th (ft)	204	0	0
Control Delay (s)	71.6	0.0	0.0
Lane LOS	F		
Approach Delay (s)	71.6	0.0	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	15.9		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	60	57	338	0	0	248
Future Volume (Veh/h)	60	57	338	0	0	248
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.79	0.79	0.84	0.84	0.89	0.89
Hourly flow rate (vph)	76	72	402	0	0	279
Pedestrians	66		7			4
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	6		1			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			251			679
pX, platoon unblocked	0.91	0.91			0.91	
vC, conflicting volume	754	472			468	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	683	374			370	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	79	87			100	
cM capacity (veh/h)	355	574			1035	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	148	402	279
Volume Left	76	0	0
Volume Right	72	0	0
cSH	436	1700	1700
Volume to Capacity	0.34	0.24	0.16
Queue Length 95th (ft)	37	0	0
Control Delay (s)	17.5	0.0	0.0
Lane LOS	C		
Approach Delay (s)	17.5	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	32.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	289	94	87	249
Future Volume (Veh/h)	0	0	289	94	87	249
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.96	0.96	0.86	0.86
Hourly flow rate (vph)	0	0	301	98	101	290
Pedestrians	66		2			31
Lane Width (ft)	0.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		0			3
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			499			431
pX, platoon unblocked						
vC, conflicting volume	910	447			465	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	910	447			465	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			91	
cM capacity (veh/h)	278	600			1086	

Direction, Lane #	NB 1	SB 1
Volume Total	399	391
Volume Left	0	101
Volume Right	98	0
cSH	1700	1086
Volume to Capacity	0.23	0.09
Queue Length 95th (ft)	0	8
Control Delay (s)	0.0	3.0
Lane LOS		A
Approach Delay (s)	0.0	3.0
Approach LOS		

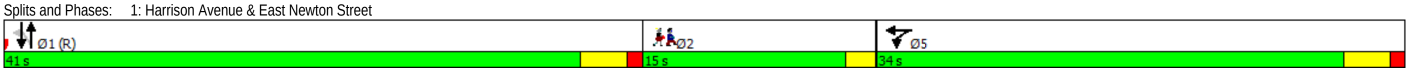
Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	0	0	0	102	123	69	41	246	0	0	358	81	
Future Volume (vph)	0	0	0	102	123	69	41	246	0	0	358	81	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	16	12	12	12	12	12	12	12	
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	
Ped Bike Factor					0.99						1.00		
Frt					0.968						0.975		
Flt Protected					0.983			0.993					
Satd. Flow (prot)	0	0	0	0	1519	0	0	1502	0	0	1463	0	
Flt Permitted					0.983			0.892					
Satd. Flow (perm)	0	0	0	0	1519	0	0	1350	0	0	1463	0	
Right Turn on Red			No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		669			643			495			409		
Travel Time (s)		15.2			14.6			11.3			9.3		
Confl. Bikes (#/hr)						18						2	
Peak Hour Factor	0.92	0.92	0.92	0.86	0.86	0.86	0.81	0.81	0.81	0.92	0.92	0.92	
Heavy Vehicles (%)	0%	0%	0%	14%	8%	0%	0%	2%	0%	0%	2%	3%	
Parking (#/hr)				0	0	0	0	0			0	0	
Adj. Flow (vph)	0	0	0	119	143	80	51	304	0	0	389	88	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	0	0	0	342	0	0	355	0	0	477	0	
Turn Type				Split	NA		Perm	NA			NA		
Protected Phases				5	5			1			1		2
Permitted Phases							1						
Detector Phase				5	5		1	1			1		
Switch Phase													
Minimum Initial (s)				8.0	8.0		8.0	8.0			8.0		7.0
Minimum Split (s)				14.0	14.0		23.0	23.0			23.0		15.0
Total Split (s)				34.0	34.0		41.0	41.0			41.0		15.0
Total Split (%)				37.8%	37.8%		45.6%	45.6%			45.6%		17%
Maximum Green (s)				30.0	30.0		37.0	37.0			37.0		13.0
Yellow Time (s)				3.0	3.0		3.0	3.0			3.0		2.0
All-Red Time (s)				1.0	1.0		1.0	1.0			1.0		0.0
Lost Time Adjust (s)					0.0			0.0			0.0		
Total Lost Time (s)					4.0			4.0			4.0		
Lead/Lag							Lead	Lead			Lead		Lag
Lead-Lag Optimize?													
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0		2.0
Recall Mode				None	None		C-Max	C-Max			C-Max		None
Walk Time (s)							7.0	7.0			7.0		7.0
Flash Dont Walk (s)							8.0	8.0			8.0		6.0
Pedestrian Calls (#/hr)							0	0			0		15
Act Effct Green (s)					24.0			55.0			55.0		
Actuated g/C Ratio					0.27			0.61			0.61		
v/c Ratio					0.84			0.43			0.53		
Control Delay					49.7			13.7			18.2		
Queue Delay					0.0			0.0			0.3		
Total Delay					49.7			13.7			18.4		
LOS					D			B			B		
Approach Delay					49.7			13.7			18.4		
Approach LOS					D			B			B		
Queue Length 50th (ft)					182			73			152		
Queue Length 95th (ft)					247			161			#379		
Internal Link Dist (ft)		589			563			415			329		
Turn Bay Length (ft)													
Base Capacity (vph)					506			825			894		
Starvation Cap Reductn					0			0			86		
Spillback Cap Reductn					0			13			0		
Storage Cap Reductn					0			0			0		
Reduced v/c Ratio					0.68			0.44			0.59		

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 68 (76%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 26.1 Intersection LOS: C
Intersection Capacity Utilization 71.4% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Harrison Avenue & East Newton Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	30	62	27	0	0	0	0	292	54	24	341	0	
Future Volume (vph)	30	62	27	0	0	0	0	292	54	24	341	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	16	12	12	12	12	12	12	12	12	12	12	
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		0.969						0.979					
Flt Protected		0.987									0.997		
Satd. Flow (prot)	0	1834	0	0	0	0	0	1494	0	0	1484	0	
Flt Permitted		0.987									0.964		
Satd. Flow (perm)	0	1834	0	0	0	0	0	1494	0	0	1435	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		15						15					
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		609			799			409			251		
Travel Time (s)		13.8			18.2			9.3			5.7		
Peak Hour Factor	0.82	0.82	0.82	0.92	0.92	0.92	0.86	0.86	0.86	0.93	0.93	0.93	
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	1%	0%	9%	3%	0%	
Parking (#/hr)				0	0	0	0	0	0	0	0	0	
Adj. Flow (vph)	37	76	33	0	0	0	0	340	63	26	367	0	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	146	0	0	0	0	0	403	0	0	393	0	
Turn Type	Split	NA						NA		Perm	NA		
Protected Phases	5	5						1			1		2
Permitted Phases										1			
Detector Phase	5	5						1		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0						8.0		8.0	8.0		7.0
Minimum Split (s)	14.0	14.0						23.0		23.0	23.0		15.0
Total Split (s)	25.0	25.0						50.0		50.0	50.0		15.0
Total Split (%)	27.8%	27.8%						55.6%		55.6%	55.6%		17%
Maximum Green (s)	21.0	21.0						46.0		46.0	46.0		13.0
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0		2.0
All-Red Time (s)	1.0	1.0						1.0		1.0	1.0		0.0
Lost Time Adjust (s)		0.0						0.0			0.0		
Total Lost Time (s)		4.0						4.0			4.0		
Lead/Lag								Lead		Lead	Lead		Lag
Lead-Lag Optimize?													
Vehicle Extension (s)	2.0	2.0						2.0		2.0	2.0		2.0
Recall Mode	None	None						C-Max		C-Max	C-Max		None
Walk Time (s)								7.0		7.0	7.0		7.0
Flash Dont Walk (s)								8.0		8.0	8.0		6.0
Pedestrian Calls (#/hr)								0		0	0		10
Act Effct Green (s)		11.3						67.7			67.7		
Actuated g/C Ratio		0.13						0.75			0.75		
v/c Ratio		0.60						0.36			0.36		
Control Delay		46.9						6.5			6.8		
Queue Delay		0.0						0.5			0.0		
Total Delay		46.9						7.0			6.9		
LOS		D						A			A		
Approach Delay		46.9						7.0			6.9		
Approach LOS		D						A			A		
Queue Length 50th (ft)		82						80			41		
Queue Length 95th (ft)		119						258			m151		
Internal Link Dist (ft)		529			719			329			171		
Turn Bay Length (ft)													
Base Capacity (vph)		439						1128			1079		
Starvation Cap Reductn		0						365			0		
Spillback Cap Reductn		0						0			19		
Storage Cap Reductn		0						0			0		
Reduced v/c Ratio		0.33						0.53			0.37		

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 13.1 — Intersection LOS: B
Intersection Capacity Utilization 55.8% — ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Harrison Avenue & East Brookline Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	355	63	138	323	62	110	367	63	26	262	62
Future Volume (vph)	60	355	63	138	323	62	110	367	63	26	262	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	11	12	12	10	11	10	11	12
Storage Length (ft)	0		0	0		0	200		53	125		150
Storage Lanes	0		0	1		0	1		1	1		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99		0.98	0.99		0.86		0.90	0.96		0.75
Frt		0.982			0.976				0.850			0.850
Flt Protected		0.994		0.950			0.950			0.950		
Satd. Flow (prot)	0	1812	0	1577	1413	0	1547	1535	1171	1516	1559	1425
Flt Permitted		0.679		0.338			0.519			0.437		
Satd. Flow (perm)	0	1235	0	550	1413	0	728	1535	1055	667	1559	1063
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			13				44			70
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1149			630			643			361	
Travel Time (s)		26.1			14.3			14.6			8.2	
Confl. Peds. (#/hr)	58		39	39		58	142		90	90		142
Confl. Bikes (#/hr)						6			4			18
Peak Hour Factor	0.90	0.90	0.90	0.80	0.80	0.80	0.94	0.94	0.94	0.88	0.88	0.88
Heavy Vehicles (%)	0%	4%	3%	3%	2%	0%	5%	4%	8%	0%	6%	2%
Parking (#/hr)					0				0			
Adj. Flow (vph)	67	394	70	173	404	78	117	390	67	30	298	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	531	0	173	482	0	117	390	67	30	298	70
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		5			5			1			1	
Permitted Phases	5			5			1		1	1		1
Detector Phase	5	5		5	5		1	1	1	1	1	1
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	35.0	35.0		35.0	35.0		32.0	32.0	32.0	32.0	32.0	32.0
Total Split (s)	40.0	40.0		40.0	40.0		50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	44.4%	44.4%		44.4%	44.4%		55.6%	55.6%	55.6%	55.6%	55.6%	55.6%
Maximum Green (s)	36.0	36.0		36.0	36.0		46.0	46.0	46.0	46.0	46.0	46.0
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)	1.0	1.0		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	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.0		4.0	4.0		4.0	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	2.0	2.0
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	8.0	8.0		8.0	8.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)	23.0	23.0		23.0	23.0		18.0	18.0	18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)	20	20		20	20		0	0	0	0	0	0
Act Effct Green (s)		36.0		36.0	36.0		46.0	46.0	46.0	46.0	46.0	46.0
Actuated g/C Ratio		0.40		0.40	0.40		0.51	0.51	0.51	0.51	0.51	0.51
v/c Ratio		1.06		0.79	0.84		0.31	0.50	0.12	0.09	0.37	0.12
Control Delay		78.8		34.9	32.2		18.0	20.6	7.9	9.0	11.5	1.6
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.6	0.0
Total Delay		78.8		34.9	32.2		18.0	20.6	7.9	9.0	12.1	1.6
LOS		E		C	C		B	C	A	A	B	A
Approach Delay		78.8			32.9			18.6			10.0	
Approach LOS		E			C			B			B	
Queue Length 50th (ft)		~334		79	217		49	177	12	6	68	0
Queue Length 95th (ft)		#547		m76	m178		m103	311	m25	15	89	4
Internal Link Dist (ft)		1069			550			563			281	
Turn Bay Length (ft)							200		53	125		150
Base Capacity (vph)		500		220	573		372	784	560	340	796	577
Starvation Cap Reductn		0		0	0		0	0	0	0	218	0
Spillback Cap Reductn		0		0	0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0		0	0	0	0	0	0
Reduced v/c Ratio		1.06		0.79	0.84		0.31	0.50	0.12	0.09	0.52	0.12

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 19 (21%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 36.2 Intersection LOS: D
Intersection Capacity Utilization 108.0% ICU Level of Service G
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.

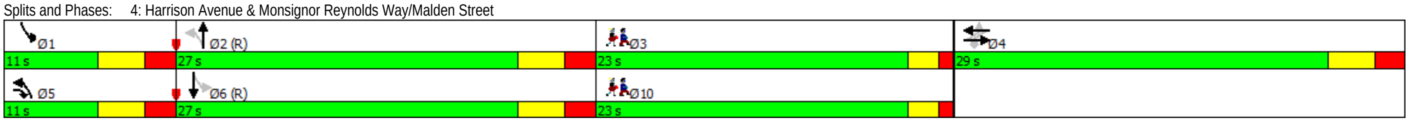
Splits and Phases: 3: Washington Street & West Dedham Street/Monsignor Reynolds Way

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø3	Ø10
Lane Configurations														
Traffic Volume (vph)	55	251	108	131	307	34	102	196	103	21	217	114		
Future Volume (vph)	55	251	108	131	307	34	102	196	103	21	217	114		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	11	16	12	16	12	12	11	12	11	11	11		
Storage Length (ft)	0		0	0		0	100		0	100		0		
Storage Lanes	0		1	0		0	1		0	1		0		
Taper Length (ft)	25			25			25			25				
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		
Ped Bike Factor			0.97		1.00			0.99			1.00			
Frt			0.850		0.990			0.948			0.948			
Flt Protected		0.991			0.986		0.950			0.950				
Satd. Flow (prot)	0	1602	1615	0	1865	0	1608	1490	0	1570	1534	0		
Flt Permitted		0.766			0.451		0.378			0.486				
Satd. Flow (perm)	0	1238	1564	0	853	0	640	1490	0	803	1534	0		
Right Turn on Red			Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)			117		4			28			28			
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		630			893			431			319			
Travel Time (s)		14.3			20.3			9.8			7.3			
Confl. Bikes (#/hr)			11			6			1			2		
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.84	0.84	0.84	0.92	0.92	0.92		
Heavy Vehicles (%)	8%	1%	2%	2%	1%	0%	1%	3%	7%	0%	2%	1%		
Adj. Flow (vph)	60	273	117	144	337	37	121	233	123	23	236	124		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	333	117	0	518	0	121	356	0	23	360	0		
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA			
Protected Phases		4	5		4		5	2		1	6		3	10
Permitted Phases	4		4	4			2			6				
Detector Phase	4	4	5	4	4		5	2		1	6			
Switch Phase														
Minimum Initial (s)	8.0	8.0	6.0	8.0	8.0		6.0	22.0		6.0	22.0		7.0	7.0
Minimum Split (s)	13.0	13.0	11.0	13.0	13.0		11.0	27.0		11.0	27.0		23.0	23.0
Total Split (s)	29.0	29.0	11.0	29.0	29.0		11.0	27.0		11.0	27.0		23.0	23.0
Total Split (%)	32.2%	32.2%	12.2%	32.2%	32.2%		12.2%	30.0%		12.2%	30.0%		26%	26%
Maximum Green (s)	24.0	24.0	6.0	24.0	24.0		6.0	22.0		6.0	22.0		20.0	20.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0		2.0	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0		1.0	1.0
Lost Time Adjust (s)		-1.0	-1.0		-1.0		-1.0	-1.0		-1.0	-1.0			
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0			
Lead/Lag			Lead				Lead	Lag		Lead	Lag			
Lead-Lag Optimize?														
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max		None	None
Walk Time (s)								7.0			7.0		7.0	7.0
Flash Dont Walk (s)								7.0			15.0		13.0	13.0
Pedestrian Calls (#/hr)								0			0		10	10
Act Effct Green (s)		25.0	32.0		25.0		50.8	48.0		48.4	41.4			
Actuated g/C Ratio		0.28	0.36		0.28		0.56	0.53		0.54	0.46			
v/c Ratio		0.97	0.18		2.17		0.28	0.44		0.05	0.50			
Control Delay		57.6	1.4		560.6		8.7	16.1		7.4	18.4			
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	1.0			
Total Delay		57.6	1.4		560.6		8.7	16.1		7.4	19.4			
LOS		E	A		F		A	B		A	B			
Approach Delay		43.0			560.6			14.3			18.7			
Approach LOS		D			F			B			B			
Queue Length 50th (ft)		136	0		~482		24	97		4	132			
Queue Length 95th (ft)		m#153	m0		#680		38	#311		m13	#345			
Internal Link Dist (ft)		550			813			351			239			
Turn Bay Length (ft)							100			100				
Base Capacity (vph)		343	635		239		436	807		491	720			
Starvation Cap Reductn		0	0		0		0	0		0	159			
Spillback Cap Reductn		0	0		0		0	0		0	0			
Storage Cap Reductn		0	0		0		0	0		0	0			
Reduced v/c Ratio		0.97	0.18		2.17		0.28	0.44		0.05	0.64			

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 30 (33%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 2.17
Intersection Signal Delay: 177.1 Intersection LOS: F
Intersection Capacity Utilization 86.4% ICU Level of Service E
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: Harrison Avenue & Monsignor Reynolds Way/Malden Street

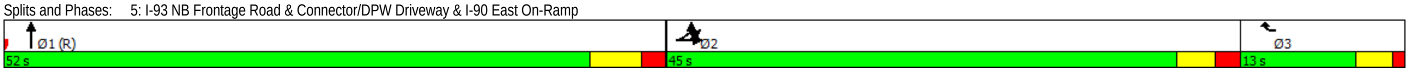


Lane Group	EBL2	EBL	EBT	WBR	WBR2	NBT	NBR	NBR2
Lane Configurations								
Traffic Volume (vph)	1089	225	8	27	5	914	332	20
Future Volume (vph)	1089	225	8	27	5	914	332	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	16	12	13	12	12
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.91	0.91	0.91
Ped Bike Factor						0.99		
Frt				0.865		0.958		
Flt Protected	0.950	0.950						
Satd. Flow (prot)	1498	1508	1550	1622	0	4405	0	0
Flt Permitted	0.950	0.950						
Satd. Flow (perm)	1498	1508	1550	1622	0	4405	0	0
Right Turn on Red	No				Yes			Yes
Satd. Flow (RTOR)				79		3		
Link Speed (mph)			30			30		
Link Distance (ft)			195			616		
Travel Time (s)			4.4			14.0		
Confl. Peds. (#/hr)								7
Peak Hour Factor	0.89	0.89	0.89	0.73	0.73	0.95	0.95	0.95
Heavy Vehicles (%)	3%	1%	25%	4%	0%	4%	2%	0%
Adj. Flow (vph)	1224	253	9	37	7	962	349	21
Shared Lane Traffic (%)	40%							
Lane Group Flow (vph)	734	743	9	44	0	1332	0	0
Turn Type	Split	Split	NA	Prot		NA		
Protected Phases	2	2	2	3		1		
Permitted Phases								
Detector Phase	2	2	2	3		1		
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0		10.0		
Minimum Split (s)	28.0	28.0	28.0	13.0		23.0		
Total Split (s)	45.0	45.0	45.0	13.0		52.0		
Total Split (%)	40.9%	40.9%	40.9%	11.8%		47.3%		
Maximum Green (s)	40.0	40.0	40.0	9.0		46.0		
Yellow Time (s)	3.0	3.0	3.0	3.0		4.0		
All-Red Time (s)	2.0	2.0	2.0	1.0		2.0		
Lost Time Adjust (s)	-1.0	0.0	-1.0	-2.0		-2.0		
Total Lost Time (s)	4.0	5.0	4.0	2.0		4.0		
Lead/Lag	Lead	Lead	Lead	Lag				
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	2.0		3.0		
Recall Mode	Max	Max	Max	None		C-Max		
Walk Time (s)	7.0	7.0	7.0			7.0		
Flash Dont Walk (s)	15.0	15.0	15.0			5.0		
Pedestrian Calls (#/hr)	0	0	0			0		
Act Effct Green (s)	41.0	40.0	41.0	10.0		53.8		
Actuated g/C Ratio	0.37	0.36	0.37	0.09		0.49		
v/c Ratio	1.32	1.36	0.02	0.20		0.62		
Control Delay	165.9	184.7	14.6	4.9		23.0		
Queue Delay	2.5	2.4	0.0	0.0		0.0		
Total Delay	168.4	187.1	14.6	4.9		23.0		
LOS	F	F	B	A		C		
Approach Delay			176.8			23.0		
Approach LOS			F			C		
Queue Length 50th (ft)	~693	~714	2	0		266		
Queue Length 95th (ft)	m#465	m#483	m2	0		320		
Internal Link Dist (ft)			115			536		
Turn Bay Length (ft)								
Base Capacity (vph)	558	548	577	233		2155		
Starvation Cap Reductn	140	135	0	0		0		
Spillback Cap Reductn	0	0	0	0		0		
Storage Cap Reductn	0	0	0	0		0		
Reduced v/c Ratio	1.76	1.80	0.02	0.19		0.62		

Intersection Summary

Area Type: CBD
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 84 (76%), Referenced to phase 1:NBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.36
Intersection Signal Delay: 102.6 Intersection LOS: F
Intersection Capacity Utilization 85.7% ICU Level of Service E
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: 5: I-93 NB Frontage Road & Connector/DPW Driveway & I-90 East On-Ramp



Lane Group	EBT	EBR	EBR2	SBL	SBT	SBR	NER	NER2	Ø2
Lane Configurations									
Traffic Volume (vph)	11	9	7	233	428	587	1078	267	
Future Volume (vph)	11	9	7	233	428	587	1078	267	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	11	12	12	12	
Storage Length (ft)		0		60		0	0		
Storage Lanes		0		1		1	2		
Taper Length (ft)				25					
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00	0.88	1.00	
Ped Bike Factor						0.62			
Frt	0.920					0.850	0.850		
Flt Protected				0.950	0.994				
Satd. Flow (prot)	848	0	0	1421	2900	1425	2508	0	
Flt Permitted				0.950	0.994				
Satd. Flow (perm)	848	0	0	1421	2900	885	2508	0	
Right Turn on Red			Yes	No				Yes	
Satd. Flow (RTOR)	13						169		
Link Speed (mph)	30				30				
Link Distance (ft)	432				701				
Travel Time (s)	9.8				15.9				
Confl. Peds. (#/hr)						53			
Confl. Bikes (#/hr)						6	1		
Peak Hour Factor	0.56	0.56	0.56	0.96	0.96	0.96	0.87	0.87	
Heavy Vehicles (%)	100%	67%	86%	4%	3%	2%	2%	2%	
Adj. Flow (vph)	20	16	13	243	446	611	1239	307	
Shared Lane Traffic (%)				23%					
Lane Group Flow (vph)	49	0	0	187	502	611	1546	0	
Turn Type	NA			Perm	NA	custom	Prot		
Protected Phases	3				1	1 4	4		2
Permitted Phases				1	2	2			
Detector Phase	3			1	1	1 4	4		
Switch Phase									
Minimum Initial (s)	10.0			10.0	10.0		10.0		8.0
Minimum Split (s)	17.0			20.0	20.0		18.0		15.0
Total Split (s)	17.0			31.0	31.0		47.0		15.0
Total Split (%)	15.5%			28.2%	28.2%		42.7%		14%
Maximum Green (s)	11.0			24.0	24.0		42.0		8.0
Yellow Time (s)	3.0			4.0	4.0		3.0		4.0
All-Red Time (s)	3.0			3.0	3.0		2.0		3.0
Lost Time Adjust (s)	-3.0			-2.0	-2.0		-2.0		
Total Lost Time (s)	3.0			5.0	5.0		3.0		
Lead/Lag	Lead			Lead	Lead		Lag		Lag
Lead-Lag Optimize?									
Vehicle Extension (s)	2.0			2.0	2.0		2.0		2.0
Recall Mode	Max			C-Max	C-Max		Max		None
Walk Time (s)				7.0	7.0		7.0		7.0
Flash Dont Walk (s)				1.0	1.0		5.0		1.0
Pedestrian Calls (#/hr)				0	0		0		5
Act Effct Green (s)	14.0			38.0	41.0	87.0	44.0		
Actuated g/C Ratio	0.13			0.35	0.37	0.79	0.40		
v/c Ratio	0.41			0.38	0.46	0.55	1.40		
Control Delay	46.0			29.8	26.9	5.2	212.2		
Queue Delay	6.1			0.7	0.7	0.0	0.5		
Total Delay	52.1			30.5	27.5	5.2	212.6		
LOS	D			C	C	A	F		
Approach Delay	52.1				17.5				
Approach LOS	D				B				
Queue Length 50th (ft)	24			114	159	87	~794		
Queue Length 95th (ft)	34			m171	156	129	#897		
Internal Link Dist (ft)	352				621				
Turn Bay Length (ft)				60					
Base Capacity (vph)	119			490	1080	1117	1104		
Starvation Cap Reductn	0			0	0	0	0		
Spillback Cap Reductn	37			113	275	0	103		
Storage Cap Reductn	0			0	0	0	0		
Reduced v/c Ratio	0.60			0.50	0.62	0.55	1.54		

Intersection Summary

Area Type: CBD
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 68 (62%), Referenced to phase 1:SBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.40
Intersection Signal Delay: 122.3 Intersection LOS: F
Intersection Capacity Utilization 85.2% ICU Level of Service E
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: 6: Albany Street & I-93 SB Frontage Road & MBTA Driveway/Connector

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	47	6	110	949	375	251
Future Volume (Veh/h)	47	6	110	949	375	251
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.93	0.93	0.96	0.96
Hourly flow rate (vph)	63	8	118	1020	391	261
Pedestrians	37			9	1	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	3			1	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					831	
pX, platoon unblocked						
vC, conflicting volume	1306	568	689			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1306	568	689			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	51	98	87			
cM capacity (veh/h)	129	454	887			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	71	458	680	652
Volume Left	63	118	0	0
Volume Right	8	0	0	261
cSH	141	887	1700	1700
Volume to Capacity	0.50	0.13	0.40	0.38
Queue Length 95th (ft)	60	11	0	0
Control Delay (s)	54.1	3.7	0.0	0.0
Lane LOS	F	A		
Approach Delay (s)	54.1	1.5		0.0
Approach LOS	F			

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	129	44	0	704	377	0
Future Volume (Veh/h)	129	44	0	704	377	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.69	0.69	0.95	0.95	0.80	0.80
Hourly flow rate (vph)	187	64	0	741	471	0
Pedestrians	22			3	3	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	2			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1237	496	493			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1237	496	493			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	2	88	100			
cM capacity (veh/h)	191	556	1061			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	251	741	471
Volume Left	187	0	0
Volume Right	64	0	0
cSH	230	1700	1700
Volume to Capacity	1.09	0.44	0.28
Queue Length 95th (ft)	278	0	0
Control Delay (s)	132.1	0.0	0.0
Lane LOS	F		
Approach Delay (s)	132.1	0.0	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	22.7		
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	3	3	68	702	3	2	369	49
Future Volume (Veh/h)	0	0	0	0	3	3	68	702	3	2	369	49
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.50	0.50	0.50	0.94	0.94	0.94	0.87	0.87	0.87
Hourly flow rate (vph)	0	0	0	0	6	6	72	747	3	2	424	56
Pedestrians		3						43			3	
Lane Width (ft)		0.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						4			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1364	1353	498	1392	1380	752	483			750		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1364	1353	498	1392	1380	752	483			750		
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	96	99	93			100		
cM capacity (veh/h)	114	141	556	110	136	413	1090			868		

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	12	822	482
Volume Left	0	72	2
Volume Right	6	3	56
cSH	204	1090	868
Volume to Capacity	0.06	0.07	0.00
Queue Length 95th (ft)	5	5	0
Control Delay (s)	23.7	1.7	0.1
Lane LOS	C	A	A
Approach Delay (s)	23.7	1.7	0.1
Approach LOS	C		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	104	46	0	668	369	0
Future Volume (Veh/h)	104	46	0	668	369	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.77	0.77	0.93	0.93	0.88	0.88
Hourly flow rate (vph)	135	60	0	718	419	0
Pedestrians					1	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1138	419	419			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1138	419	419			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	39	91	100			
cM capacity (veh/h)	222	634	1151			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	195	718	419
Volume Left	135	0	0
Volume Right	60	0	0
cSH	277	1700	1700
Volume to Capacity	0.70	0.42	0.25
Queue Length 95th (ft)	121	0	0
Control Delay (s)	43.8	0.0	0.0
Lane LOS	E		
Approach Delay (s)	43.8	0.0	0.0
Approach LOS	E		

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	72	80	322	0	0	293
Future Volume (Veh/h)	72	80	322	0	0	293
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.94	0.94	0.92	0.92
Hourly flow rate (vph)	81	90	343	0	0	318
Pedestrians	76		8			4
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	6		1			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			251			679
pX, platoon unblocked	0.95	0.95			0.95	
vC, conflicting volume	745	423			419	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	702	361			357	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	77	85			100	
cM capacity (veh/h)	359	607			1074	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	171	343	318
Volume Left	81	0	0
Volume Right	90	0	0
cSH	457	1700	1700
Volume to Capacity	0.37	0.20	0.19
Queue Length 95th (ft)	43	0	0
Control Delay (s)	17.5	0.0	0.0
Lane LOS	C		
Approach Delay (s)	17.5	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	33.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	345	43	67	311
Future Volume (Veh/h)	0	0	345	43	67	311
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.86	0.86	0.96	0.96
Hourly flow rate (vph)	0	0	401	50	70	324
Pedestrians	76		6			27
Lane Width (ft)	0.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		1			2
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			499			431
pX, platoon unblocked	0.98	0.98			0.98	
vC, conflicting volume	972	529			527	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	964	513			511	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			93	
cM capacity (veh/h)	261	543			1047	

Direction, Lane #	NB 1	SB 1
Volume Total	451	394
Volume Left	0	70
Volume Right	50	0
cSH	1700	1047
Volume to Capacity	0.27	0.07
Queue Length 95th (ft)	0	5
Control Delay (s)	0.0	2.1
Lane LOS		A
Approach Delay (s)	0.0	2.1
Approach LOS		

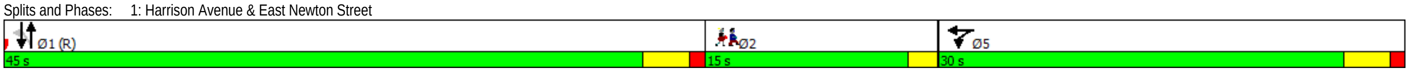
Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	0	0	0	84	78	59	39	374	0	0	281	81	
Future Volume (vph)	0	0	0	84	78	59	39	374	0	0	281	81	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	16	12	12	12	12	12	12	12	
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	
Ped Bike Factor					0.99						1.00		
Frt					0.964						0.970		
Flt Protected					0.981			0.995					
Satd. Flow (prot)	0	0	0	0	1446	0	0	1474	0	0	1397	0	
Flt Permitted					0.981			0.942					
Satd. Flow (perm)	0	0	0	0	1446	0	0	1395	0	0	1397	0	
Right Turn on Red			No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		669			643			495			409		
Travel Time (s)		15.2			14.6			11.3			9.3		
Confl. Bikes (#/hr)						2						3	
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.92	0.92	0.92	0.96	0.96	0.96	
Heavy Vehicles (%)	0%	0%	0%	19%	16%	2%	3%	4%	0%	0%	7%	4%	
Parking (#/hr)				0	0	0	0	0			0	0	
Adj. Flow (vph)	0	0	0	95	89	67	42	407	0	0	293	84	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	0	0	0	251	0	0	449	0	0	377	0	
Turn Type				Split	NA		Perm	NA			NA		
Protected Phases				5	5			1			1		2
Permitted Phases							1						
Detector Phase				5	5		1	1			1		
Switch Phase													
Minimum Initial (s)				8.0	8.0		8.0	8.0			8.0		7.0
Minimum Split (s)				14.0	14.0		23.0	23.0			23.0		15.0
Total Split (s)				30.0	30.0		45.0	45.0			45.0		15.0
Total Split (%)				33.3%	33.3%		50.0%	50.0%			50.0%		17%
Maximum Green (s)				26.0	26.0		41.0	41.0			41.0		13.0
Yellow Time (s)				3.0	3.0		3.0	3.0			3.0		2.0
All-Red Time (s)				1.0	1.0		1.0	1.0			1.0		0.0
Lost Time Adjust (s)					0.0			0.0			0.0		
Total Lost Time (s)					4.0			4.0			4.0		
Lead/Lag							Lead	Lead			Lead		Lag
Lead-Lag Optimize?													
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0		2.0
Recall Mode				None	None		C-Max	C-Max			C-Max		None
Walk Time (s)							7.0	7.0			7.0		7.0
Flash Dont Walk (s)							8.0	8.0			8.0		6.0
Pedestrian Calls (#/hr)							0	0			0		20
Act Effct Green (s)					19.6			56.4			56.4		
Actuated g/C Ratio					0.22			0.63			0.63		
v/c Ratio					0.80			0.51			0.43		
Control Delay					51.3			11.1			8.7		
Queue Delay					0.0			0.1			0.2		
Total Delay					51.3			11.2			9.0		
LOS					D			B			A		
Approach Delay					51.3			11.2			9.0		
Approach LOS					D			B			A		
Queue Length 50th (ft)					135			67			55		
Queue Length 95th (ft)					197			113			94		
Internal Link Dist (ft)		589			563			415			329		
Turn Bay Length (ft)													
Base Capacity (vph)					417			874			875		
Starvation Cap Reductn					0			51			109		
Spillback Cap Reductn					0			0			0		
Storage Cap Reductn					0			0			0		
Reduced v/c Ratio					0.60			0.55			0.49		

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 75 (83%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 19.8 Intersection LOS: B
Intersection Capacity Utilization 69.9% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Harrison Avenue & East Newton Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	53	104	37	0	0	0	0	311	60	22	314	0	
Future Volume (vph)	53	104	37	0	0	0	0	311	60	22	314	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	16	12	12	12	12	12	12	12	12	12	12	
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	
Ped Bike Factor		1.00						1.00					
Frt		0.974						0.978					
Flt Protected		0.987									0.997		
Satd. Flow (prot)	0	1767	0	0	0	0	0	1462	0	0	1423	0	
Flt Permitted		0.987									0.961		
Satd. Flow (perm)	0	1767	0	0	0	0	0	1462	0	0	1372	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		13						15					
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		609			799			409			251		
Travel Time (s)		13.8			18.2			9.3			5.7		
Confl. Bikes (#/hr)			4						7				
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.81	0.81	0.81	0.87	0.87	0.87	
Heavy Vehicles (%)	8%	3%	6%	0%	0%	0%	0%	3%	0%	5%	8%	0%	
Parking (#/hr)				0	0	0	0	0	0	0	0	0	
Adj. Flow (vph)	58	114	41	0	0	0	0	384	74	25	361	0	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	213	0	0	0	0	0	458	0	0	386	0	
Turn Type	Split	NA						NA		Perm	NA		
Protected Phases	5	5						1			1		2
Permitted Phases										1			
Detector Phase	5	5						1		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0						8.0		8.0	8.0		7.0
Minimum Split (s)	14.0	14.0						23.0		23.0	23.0		15.0
Total Split (s)	28.0	28.0						47.0		47.0	47.0		15.0
Total Split (%)	31.1%	31.1%						52.2%		52.2%	52.2%		17%
Maximum Green (s)	24.0	24.0						43.0		43.0	43.0		13.0
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0		2.0
All-Red Time (s)	1.0	1.0						1.0		1.0	1.0		0.0
Lost Time Adjust (s)		0.0						0.0			0.0		
Total Lost Time (s)		4.0						4.0			4.0		
Lead/Lag								Lead		Lead	Lead		Lag
Lead-Lag Optimize?													
Vehicle Extension (s)	2.0	2.0						2.0		2.0	2.0		2.0
Recall Mode	None	None						C-Max		C-Max	C-Max		None
Walk Time (s)								7.0		7.0	7.0		7.0
Flash Dont Walk (s)								8.0		8.0	8.0		6.0
Pedestrian Calls (#/hr)								0		0	0		10
Act Effct Green (s)		14.6						64.4			64.4		
Actuated g/C Ratio		0.16						0.72			0.72		
v/c Ratio		0.72						0.44			0.39		
Control Delay		47.0						2.9			11.2		
Queue Delay		0.0						0.1			0.0		
Total Delay		47.0						3.0			11.2		
LOS		D						A			B		
Approach Delay		47.0						3.0			11.2		
Approach LOS		D						A			B		
Queue Length 50th (ft)		107						38			89		
Queue Length 95th (ft)		182						45			224		
Internal Link Dist (ft)		529			719			329			171		
Turn Bay Length (ft)													
Base Capacity (vph)		480						1050			981		
Starvation Cap Reductn		0						98			0		
Spillback Cap Reductn		0						0			0		
Storage Cap Reductn		0						0			0		
Reduced v/c Ratio		0.44						0.48			0.39		

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 82 (91%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 14.9 Intersection LOS: B
Intersection Capacity Utilization 57.0% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 2: Harrison Avenue & East Brookline Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	229	75	108	231	59	146	407	79	25	153	51
Future Volume (vph)	45	229	75	108	231	59	146	407	79	25	153	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	11	12	12	10	11	10	11	12
Storage Length (ft)	0		0	0		0	200		53	125		150
Storage Lanes	0		0	1		0	1		1	1		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.97		0.95	0.99		0.84		0.88	0.96		0.77
Frt		0.971			0.970				0.850			0.850
Flt Protected		0.994		0.950			0.950			0.950		
Satd. Flow (prot)	0	1745	0	1504	1386	0	1490	1492	1119	1458	1463	1398
Flt Permitted		0.804		0.334			0.646			0.439		
Satd. Flow (perm)	0	1408	0	502	1386	0	849	1492	982	643	1463	1078
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			16				52			59
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1149			630			643			361	
Travel Time (s)		26.1			14.3			14.6			8.2	
Confl. Peds. (#/hr)	36		78	78		36	130		104	104		130
Confl. Bikes (#/hr)			2			2			34			7
Peak Hour Factor	0.87	0.87	0.87	0.93	0.93	0.93	0.92	0.92	0.92	0.87	0.87	0.87
Heavy Vehicles (%)	7%	3%	6%	8%	1%	12%	9%	7%	13%	4%	13%	4%
Parking (#/hr)					0				0			
Adj. Flow (vph)	52	263	86	116	248	63	159	442	86	29	176	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	401	0	116	311	0	159	442	86	29	176	59
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		5			5			1			1	
Permitted Phases	5			5			1		1	1		1
Detector Phase	5	5		5	5		1	1	1	1	1	1
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	35.0	35.0		35.0	35.0		32.0	32.0	32.0	32.0	32.0	32.0
Total Split (s)	38.0	38.0		38.0	38.0		52.0	52.0	52.0	52.0	52.0	52.0
Total Split (%)	42.2%	42.2%		42.2%	42.2%		57.8%	57.8%	57.8%	57.8%	57.8%	57.8%
Maximum Green (s)	34.0	34.0		34.0	34.0		48.0	48.0	48.0	48.0	48.0	48.0
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)	1.0	1.0		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	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.0		4.0	4.0		4.0	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	2.0	2.0
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	8.0	8.0		8.0	8.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)	23.0	23.0		23.0	23.0		18.0	18.0	18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)	20	20		20	20		0	0	0	0	0	0
Act Effct Green (s)		26.9		26.9	26.9		55.1	55.1	55.1	55.1	55.1	55.1
Actuated g/C Ratio		0.30		0.30	0.30		0.61	0.61	0.61	0.61	0.61	0.61
v/c Ratio		0.93		0.78	0.73		0.31	0.48	0.14	0.07	0.20	0.09
Control Delay		48.4		70.8	48.6		9.0	11.4	3.5	6.1	6.0	0.9
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		48.4		70.8	48.6		9.0	11.4	3.5	6.1	6.0	0.9
LOS		D		E	D		A	B	A	A	A	A
Approach Delay		48.4			54.7			9.9			4.8	
Approach LOS		D			D			A			A	
Queue Length 50th (ft)		179		72	186		44	165	8	4	29	0
Queue Length 95th (ft)		308		m112	m257		87	269	m15	12	46	2
Internal Link Dist (ft)		1069			550			563			281	
Turn Bay Length (ft)							200		53	125		150
Base Capacity (vph)		543		189	533		519	913	621	393	895	682
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		0.74		0.61	0.58		0.31	0.48	0.14	0.07	0.20	0.09

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 10 (11%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 28.5 — Intersection LOS: C
Intersection Capacity Utilization 102.9% — ICU Level of Service G
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

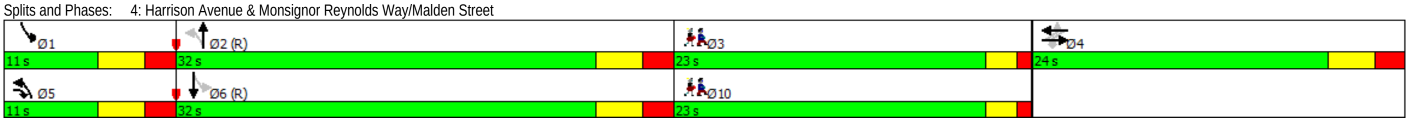
Splits and Phases: 3: Washington Street & West Dedham Street/Monsignor Reynolds Way

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø3	Ø10
Lane Configurations														
Traffic Volume (vph)	46	201	124	17	173	60	138	196	33	52	155	86		
Future Volume (vph)	46	201	124	17	173	60	138	196	33	52	155	86		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	11	16	12	16	12	12	11	12	11	11	11		
Storage Length (ft)	0		0	0		0	100		0	100		0		
Storage Lanes	0		1	0		0	1		0	1		0		
Taper Length (ft)	25			25			25			25				
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		
Ped Bike Factor					0.99			1.00			0.99			
Frt			0.850		0.968			0.979			0.946			
Flt Protected		0.991			0.997		0.950			0.950				
Satd. Flow (prot)	0	1548	1471	0	1766	0	1533	1561	0	1570	1515	0		
Flt Permitted		0.783			0.931		0.460			0.552				
Satd. Flow (perm)	0	1223	1471	0	1649	0	742	1561	0	912	1515	0		
Right Turn on Red			Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)			131		16			10			32			
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		630			893			431			319			
Travel Time (s)		14.3			20.3			9.8			7.3			
Confl. Bikes (#/hr)						1			6			4		
Peak Hour Factor	0.95	0.95	0.95	0.91	0.91	0.91	0.93	0.93	0.93	0.83	0.83	0.83		
Heavy Vehicles (%)	5%	6%	12%	14%	5%	4%	6%	3%	5%	0%	3%	2%		
Adj. Flow (vph)	48	212	131	19	190	66	148	211	35	63	187	104		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	260	131	0	275	0	148	246	0	63	291	0		
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA			
Protected Phases		4	5		4		5	2		1	6		3	10
Permitted Phases	4		4	4			2			6				
Detector Phase	4	4	5	4	4		5	2		1	6			
Switch Phase														
Minimum Initial (s)	8.0	8.0	6.0	8.0	8.0		6.0	22.0		6.0	22.0		7.0	7.0
Minimum Split (s)	13.0	13.0	11.0	13.0	13.0		11.0	27.0		11.0	27.0		23.0	23.0
Total Split (s)	24.0	24.0	11.0	24.0	24.0		11.0	32.0		11.0	32.0		23.0	23.0
Total Split (%)	26.7%	26.7%	12.2%	26.7%	26.7%		12.2%	35.6%		12.2%	35.6%		26%	26%
Maximum Green (s)	19.0	19.0	6.0	19.0	19.0		6.0	27.0		6.0	27.0		20.0	20.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0		2.0	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0		1.0	1.0
Lost Time Adjust (s)		-1.0	-1.0		-1.0		-1.0	-1.0		-1.0	-1.0			
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0			
Lead/Lag			Lead				Lead	Lag		Lead	Lag			
Lead-Lag Optimize?														
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max		None	None
Walk Time (s)								7.0			7.0		7.0	7.0
Flash Dont Walk (s)								7.0			15.0		13.0	13.0
Pedestrian Calls (#/hr)								0			0		30	30
Act Effct Green (s)		20.0	31.0		20.0		45.0	39.4		44.2	37.2			
Actuated g/C Ratio		0.22	0.34		0.22		0.50	0.44		0.49	0.41			
v/c Ratio		0.96	0.22		0.73		0.34	0.36		0.13	0.45			
Control Delay		69.2	1.8		43.2		11.7	17.6		10.7	15.5			
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.2			
Total Delay		69.2	1.8		43.2		11.7	17.6		10.7	15.7			
LOS		E	A		D		B	B		B	B			
Approach Delay		46.6			43.2			15.4			14.8			
Approach LOS		D			D			B			B			
Queue Length 50th (ft)		97	0		137		46	117		17	102			
Queue Length 95th (ft)		m#267	m0		#248		56	152		21	96			
Internal Link Dist (ft)		550			813			351			239			
Turn Bay Length (ft)							100			100				
Base Capacity (vph)		271	592		378		432	688		498	645			
Starvation Cap Reductn		0	0		0		0	0		0	62			
Spillback Cap Reductn		0	0		0		0	0		0	0			
Storage Cap Reductn		0	0		0		0	0		0	0			
Reduced v/c Ratio		0.96	0.22		0.73		0.34	0.36		0.13	0.50			

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 25 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 29.3 Intersection LOS: C
Intersection Capacity Utilization 67.1% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Harrison Avenue & Monsignor Reynolds Way/Malden Street

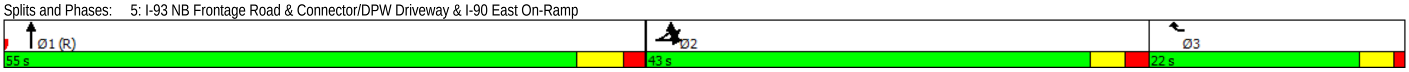


Lane Group	EBL2	EBL	EBT	WBR	WBR2	NBT	NBR	NBR2
Lane Configurations								
Traffic Volume (vph)	633	306	19	34	6	1144	357	18
Future Volume (vph)	633	306	19	34	6	1144	357	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	16	12	13	12	12
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.91	0.91	0.91
Ped Bike Factor						0.99		
Frt				0.865		0.963		
Flt Protected	0.950	0.950						
Satd. Flow (prot)	1513	1513	1746	1421	0	4390	0	0
Flt Permitted	0.950	0.950						
Satd. Flow (perm)	1513	1513	1746	1421	0	4390	0	0
Right Turn on Red	No				Yes			Yes
Satd. Flow (RTOR)				73		2		
Link Speed (mph)			30			30		
Link Distance (ft)			195			616		
Travel Time (s)			4.4			14.0		
Confl. Peds. (#/hr)								6
Peak Hour Factor	0.89	0.89	0.89	0.83	0.83	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	11%	21%	0%	5%	3%	4%
Adj. Flow (vph)	711	344	21	41	7	1243	388	20
Shared Lane Traffic (%)	26%							
Lane Group Flow (vph)	526	529	21	48	0	1651	0	0
Turn Type	Split	Split	NA	Prot		NA		
Protected Phases	2	2	2	3		1		
Permitted Phases								
Detector Phase	2	2	2	3		1		
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0		10.0		
Minimum Split (s)	28.0	28.0	28.0	13.0		23.0		
Total Split (s)	43.0	43.0	43.0	22.0		55.0		
Total Split (%)	35.8%	35.8%	35.8%	18.3%		45.8%		
Maximum Green (s)	38.0	38.0	38.0	18.0		49.0		
Yellow Time (s)	3.0	3.0	3.0	3.0		4.0		
All-Red Time (s)	2.0	2.0	2.0	1.0		2.0		
Lost Time Adjust (s)	-1.0	0.0	-1.0	-2.0		-2.0		
Total Lost Time (s)	4.0	5.0	4.0	2.0		4.0		
Lead/Lag	Lead	Lead	Lead	Lag				
Lead-Lag Optimize?								
Vehicle Extension (s)	2.0	2.0	2.0	2.0		3.0		
Recall Mode	Max	Max	Max	None		C-Max		
Walk Time (s)	7.0	7.0	7.0			7.0		
Flash Dont Walk (s)	15.0	15.0	15.0			5.0		
Pedestrian Calls (#/hr)	0	0	0			0		
Act Effct Green (s)	39.0	38.0	39.0	10.0		63.4		
Actuated g/C Ratio	0.32	0.32	0.32	0.08		0.53		
v/c Ratio	1.07	1.10	0.04	0.26		0.71		
Control Delay	67.4	82.1	24.0	8.5		24.1		
Queue Delay	14.3	3.5	0.0	0.0		0.0		
Total Delay	81.7	85.6	24.0	8.5		24.1		
LOS	F	F	C	A		C		
Approach Delay			82.5			24.1		
Approach LOS			F			C		
Queue Length 50th (ft)	~461	~476	7	0		356		
Queue Length 95th (ft)	m257	m281	m7	13		416		
Internal Link Dist (ft)			115			536		
Turn Bay Length (ft)								
Base Capacity (vph)	491	479	567	297		2320		
Starvation Cap Reductn	149	143	0	0		0		
Spillback Cap Reductn	0	0	0	0		0		
Storage Cap Reductn	0	0	0	0		0		
Reduced v/c Ratio	1.54	1.57	0.04	0.16		0.71		

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 56 (47%), Referenced to phase 1:NBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 46.5 — Intersection LOS: D
Intersection Capacity Utilization 79.6% — ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: I-93 NB Frontage Road & Connector/DPW Driveway & I-90 East On-Ramp

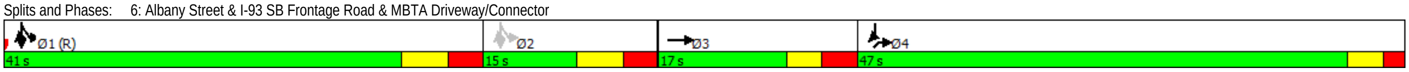


Lane Group	EBT	EBR	EBR2	SBL	SBT	SBR	NER	NER2	Ø2
Lane Configurations									
Traffic Volume (vph)	2	1	3	174	199	775	783	287	
Future Volume (vph)	2	1	3	174	199	775	783	287	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	11	12	12	12	
Storage Length (ft)		0		60		0	0		
Storage Lanes		0		1		1	2		
Taper Length (ft)				25					
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00	0.88	1.00	
Ped Bike Factor	0.96					0.59			
Frt	0.910					0.850	0.850		
Flt Protected				0.950	0.992				
Satd. Flow (prot)	892	0	0	1449	2856	1411	2495	0	
Flt Permitted				0.950	0.992				
Satd. Flow (perm)	892	0	0	1449	2856	833	2495	0	
Right Turn on Red			Yes	No				Yes	
Satd. Flow (RTOR)	6						155		
Link Speed (mph)	30				30				
Link Distance (ft)	432				701				
Travel Time (s)	9.8				15.9				
Confl. Peds. (#/hr)		4	7			53			
Confl. Bikes (#/hr)								1	
Peak Hour Factor	0.50	0.50	0.50	0.95	0.95	0.95	0.86	0.86	
Heavy Vehicles (%)	50%	0%	100%	2%	5%	3%	2%	4%	
Adj. Flow (vph)	4	2	6	183	209	816	910	334	
Shared Lane Traffic (%)				23%					
Lane Group Flow (vph)	12	0	0	141	251	816	1244	0	
Turn Type	NA			custom	NA	custom	Prot		
Protected Phases	3			1	1	1 4	4		2
Permitted Phases				2	2	2			
Detector Phase	3			1	1	1 4	4		
Switch Phase									
Minimum Initial (s)	10.0			10.0	10.0		10.0		8.0
Minimum Split (s)	17.0			20.0	20.0		18.0		15.0
Total Split (s)	17.0			41.0	41.0		47.0		15.0
Total Split (%)	14.2%			34.2%	34.2%		39.2%		13%
Maximum Green (s)	11.0			34.0	34.0		42.0		8.0
Yellow Time (s)	3.0			4.0	4.0		3.0		4.0
All-Red Time (s)	3.0			3.0	3.0		2.0		3.0
Lost Time Adjust (s)	-3.0			-2.0	-2.0		-2.0		
Total Lost Time (s)	3.0			5.0	5.0		3.0		
Lead/Lag	Lead			Lead	Lead		Lag		Lag
Lead-Lag Optimize?									
Vehicle Extension (s)	2.0			2.0	2.0		2.0		2.0
Recall Mode	Max			C-Max	C-Max		Max		None
Walk Time (s)				7.0	7.0		7.0		7.0
Flash Dont Walk (s)				1.0	1.0		5.0		1.0
Pedestrian Calls (#/hr)				0	0		0		5
Act Effct Green (s)	14.0			51.0	51.0	97.0	44.0		
Actuated g/C Ratio	0.12			0.42	0.42	0.81	0.37		
v/c Ratio	0.11			0.23	0.21	0.72	1.23		
Control Delay	36.7			20.1	19.3	9.5	141.8		
Queue Delay	0.0			0.4	0.2	0.5	0.4		
Total Delay	36.7			20.5	19.5	10.1	142.2		
LOS	D			C	B	B	F		
Approach Delay	36.7				13.2				
Approach LOS	D				B				
Queue Length 50th (ft)	4			78	68	124	~632		
Queue Length 95th (ft)	11			m130	96	207	#725		
Internal Link Dist (ft)	352				621				
Turn Bay Length (ft)				60					
Base Capacity (vph)	109			615	1213	1131	1013		
Starvation Cap Reductn	0			0	0	82	0		
Spillback Cap Reductn	0			193	380	0	72		
Storage Cap Reductn	0			0	0	0	0		
Reduced v/c Ratio	0.11			0.33	0.30	0.78	1.32		

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 37 (31%), Referenced to phase 1:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.23
Intersection Signal Delay: 78.5 — Intersection LOS: E
Intersection Capacity Utilization 73.3% — ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Albany Street & I-93 SB Frontage Road & MBTA Driveway/Connector



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	65	5	67	807	525	230
Future Volume (Veh/h)	65	5	67	807	525	230
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.69	0.69	0.80	0.80	0.91	0.91
Hourly flow rate (vph)	94	7	84	1009	577	253
Pedestrians	78			12	1	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	7			1	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					831	
pX, platoon unblocked						
vC, conflicting volume	1455	794	908			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1455	794	908			
tC, single (s)	6.8	7.3	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.5	2.2			
p0 queue free %	7	97	88			
cM capacity (veh/h)	101	273	685			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	101	420	673	830
Volume Left	94	84	0	0
Volume Right	7	0	0	253
cSH	106	685	1700	1700
Volume to Capacity	0.96	0.12	0.40	0.49
Queue Length 95th (ft)	147	10	0	0
Control Delay (s)	151.1	3.5	0.0	0.0
Lane LOS	F	A		
Approach Delay (s)	151.1	1.4		0.0
Approach LOS	F			

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	169	44	0	505	495	0
Future Volume (Veh/h)	169	44	0	505	495	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	214	56	0	537	527	0
Pedestrians	47			1	1	
Lane Width (ft)	12.0			12.0	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)						
pX, platoon unblocked						
vC, conflicting volume	1112	575	574			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1112	575	574			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	3	89	100			
cM capacity (veh/h)	222	497	970			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	270	537	527
Volume Left	214	0	0
Volume Right	56	0	0
cSH	251	1700	1700
Volume to Capacity	1.08	0.32	0.31
Queue Length 95th (ft)	284	0	0
Control Delay (s)	122.2	0.0	0.0
Lane LOS	F		
Approach Delay (s)	122.2	0.0	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	24.7		
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	7	4	2	53	503	20	5	395	138
Future Volume (Veh/h)	0	0	0	7	4	2	53	503	20	5	395	138
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.36	0.36	0.36	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	0	0	19	11	6	57	541	22	5	425	148
Pedestrians		47			1			63			1	
Lane Width (ft)		0.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			5			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1234	1234	609	1239	1297	554	620			564		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1234	1234	609	1239	1297	554	620			564		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.7	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.8	2.2			2.2		
p0 queue free %	100	100	100	86	93	99	94			100		
cM capacity (veh/h)	137	167	473	138	153	450	970			1017		

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	36	620	578
Volume Left	19	57	5
Volume Right	6	22	148
cSH	162	970	1017
Volume to Capacity	0.22	0.06	0.00
Queue Length 95th (ft)	20	5	0
Control Delay (s)	33.5	1.5	0.1
Lane LOS	D	A	A
Approach Delay (s)	33.5	1.5	0.1
Approach LOS	D		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	176	56	0	401	403	0
Future Volume (Veh/h)	176	56	0	401	403	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.93	0.93	0.89	0.89
Hourly flow rate (vph)	191	61	0	431	453	0
Pedestrians	108			22		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	9			2		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	992	583	561			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	992	583	561			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	23	87	100			
cM capacity (veh/h)	248	461	928			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	252	431	453
Volume Left	191	0	0
Volume Right	61	0	0
cSH	279	1700	1700
Volume to Capacity	0.90	0.25	0.27
Queue Length 95th (ft)	204	0	0
Control Delay (s)	71.6	0.0	0.0
Lane LOS	F		
Approach Delay (s)	71.6	0.0	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	15.9		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	87	91	364	0	0	248
Future Volume (Veh/h)	87	91	364	0	0	248
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.79	0.79	0.84	0.84	0.89	0.89
Hourly flow rate (vph)	110	115	433	0	0	279
Pedestrians	66		7			4
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	6		1			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			251			679
pX, platoon unblocked	0.90	0.90			0.90	
vC, conflicting volume	785	503			499	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	703	389			384	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	68	79			100	
cM capacity (veh/h)	339	554			1005	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	225	433	279
Volume Left	110	0	0
Volume Right	115	0	0
cSH	423	1700	1700
Volume to Capacity	0.53	0.25	0.16
Queue Length 95th (ft)	76	0	0
Control Delay (s)	22.8	0.0	0.0
Lane LOS	C		
Approach Delay (s)	22.8	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	5.5		
Intersection Capacity Utilization	36.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	323	120	120	249
Future Volume (Veh/h)	0	0	323	120	120	249
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.96	0.96	0.86	0.86
Hourly flow rate (vph)	0	0	336	125	140	290
Pedestrians	66		2			31
Lane Width (ft)	0.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		0			3
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			499			431
pX, platoon unblocked						
vC, conflicting volume	1036	496			527	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1036	496			527	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			86	
cM capacity (veh/h)	223	563			1030	

Direction, Lane #	NB 1	SB 1
Volume Total	461	430
Volume Left	0	140
Volume Right	125	0
cSH	1700	1030
Volume to Capacity	0.27	0.14
Queue Length 95th (ft)	0	12
Control Delay (s)	0.0	3.9
Lane LOS		A
Approach Delay (s)	0.0	3.9
Approach LOS		

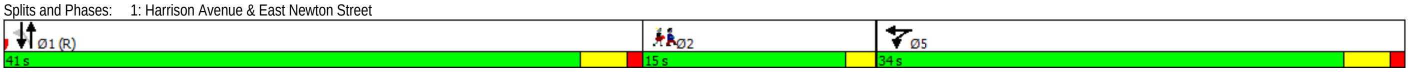
Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	0	0	0	102	123	69	41	272	0	0	382	81	
Future Volume (vph)	0	0	0	102	123	69	41	272	0	0	382	81	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	16	12	12	12	12	12	12	12	
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	
Ped Bike Factor					0.99						1.00		
Frt					0.968						0.976		
Flt Protected					0.983			0.993					
Satd. Flow (prot)	0	0	0	0	1519	0	0	1502	0	0	1464	0	
Flt Permitted					0.983			0.896					
Satd. Flow (perm)	0	0	0	0	1519	0	0	1355	0	0	1464	0	
Right Turn on Red			No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		669			643			495			409		
Travel Time (s)		15.2			14.6			11.3			9.3		
Confl. Bikes (#/hr)						18						2	
Peak Hour Factor	0.92	0.92	0.92	0.86	0.86	0.86	0.81	0.81	0.81	0.92	0.92	0.92	
Heavy Vehicles (%)	0%	0%	0%	14%	8%	0%	0%	2%	0%	0%	2%	3%	
Parking (#/hr)				0	0	0	0	0			0	0	
Adj. Flow (vph)	0	0	0	119	143	80	51	336	0	0	415	88	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	0	0	0	342	0	0	387	0	0	503	0	
Turn Type				Split	NA		Perm	NA			NA		
Protected Phases				5	5			1			1		2
Permitted Phases							1						
Detector Phase				5	5		1	1			1		
Switch Phase													
Minimum Initial (s)				8.0	8.0		8.0	8.0			8.0		7.0
Minimum Split (s)				14.0	14.0		23.0	23.0			23.0		15.0
Total Split (s)				34.0	34.0		41.0	41.0			41.0		15.0
Total Split (%)				37.8%	37.8%		45.6%	45.6%			45.6%		17%
Maximum Green (s)				30.0	30.0		37.0	37.0			37.0		13.0
Yellow Time (s)				3.0	3.0		3.0	3.0			3.0		2.0
All-Red Time (s)				1.0	1.0		1.0	1.0			1.0		0.0
Lost Time Adjust (s)					0.0			0.0			0.0		
Total Lost Time (s)					4.0			4.0			4.0		
Lead/Lag							Lead	Lead			Lead		Lag
Lead-Lag Optimize?													
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0		2.0
Recall Mode				None	None		C-Max	C-Max			C-Max		None
Walk Time (s)							7.0	7.0			7.0		7.0
Flash Dont Walk (s)							8.0	8.0			8.0		6.0
Pedestrian Calls (#/hr)							0	0			0		15
Act Effct Green (s)					24.0			55.0			55.0		
Actuated g/C Ratio					0.27			0.61			0.61		
v/c Ratio					0.84			0.47			0.56		
Control Delay					49.7			14.2			19.1		
Queue Delay					0.0			0.1			0.3		
Total Delay					49.7			14.2			19.3		
LOS					D			B			B		
Approach Delay					49.7			14.2			19.3		
Approach LOS					D			B			B		
Queue Length 50th (ft)					182			80			161		
Queue Length 95th (ft)					247			174			#415		
Internal Link Dist (ft)		589			563			415			329		
Turn Bay Length (ft)													
Base Capacity (vph)					506			828			894		
Starvation Cap Reductn					0			0			73		
Spillback Cap Reductn					0			26			0		
Storage Cap Reductn					0			0			0		
Reduced v/c Ratio					0.68			0.48			0.61		

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 68 (76%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 26.2 Intersection LOS: C
Intersection Capacity Utilization 74.4% 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: 1: Harrison Avenue & East Newton Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations													
Traffic Volume (vph)	30	62	27	0	0	0	0	318	54	24	365	0	
Future Volume (vph)	30	62	27	0	0	0	0	318	54	24	365	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	16	12	12	12	12	12	12	12	12	12	12	
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		0.969						0.980					
Flt Protected		0.987									0.997		
Satd. Flow (prot)	0	1834	0	0	0	0	0	1495	0	0	1484	0	
Flt Permitted		0.987									0.964		
Satd. Flow (perm)	0	1834	0	0	0	0	0	1495	0	0	1435	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		15						14					
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		609			799			409			251		
Travel Time (s)		13.8			18.2			9.3			5.7		
Peak Hour Factor	0.82	0.82	0.82	0.92	0.92	0.92	0.86	0.86	0.86	0.93	0.93	0.93	
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	1%	0%	9%	3%	0%	
Parking (#/hr)				0	0	0	0	0	0	0	0	0	
Adj. Flow (vph)	37	76	33	0	0	0	0	370	63	26	392	0	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	146	0	0	0	0	0	433	0	0	418	0	
Turn Type	Split	NA						NA		Perm	NA		
Protected Phases	5	5						1			1		2
Permitted Phases										1			
Detector Phase	5	5						1		1	1		
Switch Phase													
Minimum Initial (s)	8.0	8.0						8.0		8.0	8.0		7.0
Minimum Split (s)	14.0	14.0						23.0		23.0	23.0		15.0
Total Split (s)	25.0	25.0						50.0		50.0	50.0		15.0
Total Split (%)	27.8%	27.8%						55.6%		55.6%	55.6%		17%
Maximum Green (s)	21.0	21.0						46.0		46.0	46.0		13.0
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0		2.0
All-Red Time (s)	1.0	1.0						1.0		1.0	1.0		0.0
Lost Time Adjust (s)		0.0						0.0			0.0		
Total Lost Time (s)		4.0						4.0			4.0		
Lead/Lag								Lead		Lead	Lead		Lag
Lead-Lag Optimize?													
Vehicle Extension (s)	2.0	2.0						2.0		2.0	2.0		2.0
Recall Mode	None	None						C-Max		C-Max	C-Max		None
Walk Time (s)								7.0		7.0	7.0		7.0
Flash Dont Walk (s)								8.0		8.0	8.0		6.0
Pedestrian Calls (#/hr)								0		0	0		10
Act Effct Green (s)		11.3						67.7			67.7		
Actuated g/C Ratio		0.13						0.75			0.75		
v/c Ratio		0.60						0.38			0.39		
Control Delay		46.9						6.5			6.9		
Queue Delay		0.0						0.6			0.0		
Total Delay		46.9						7.1			7.0		
LOS		D						A			A		
Approach Delay		46.9						7.1			7.0		
Approach LOS		D						A			A		
Queue Length 50th (ft)		82						88			44		
Queue Length 95th (ft)		119						266			m161		
Internal Link Dist (ft)		529			719			329			171		
Turn Bay Length (ft)													
Base Capacity (vph)		439						1128			1079		
Starvation Cap Reductn		0						353			0		
Spillback Cap Reductn		5						0			29		
Storage Cap Reductn		0						0			0		
Reduced v/c Ratio		0.34						0.56			0.40		

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 12.9 Intersection LOS: B
Intersection Capacity Utilization 57.2% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Harrison Avenue & East Brookline Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	381	63	138	335	74	110	367	63	26	262	62
Future Volume (vph)	60	381	63	138	335	74	110	367	63	26	262	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	11	12	12	10	11	10	11	12
Storage Length (ft)	0		0	0		0	200		53	125		150
Storage Lanes	0		0	1		0	1		1	1		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99		0.98	0.99		0.86		0.90	0.96		0.75
Frt		0.983			0.973				0.850			0.850
Flt Protected		0.994		0.950			0.950			0.950		
Satd. Flow (prot)	0	1814	0	1577	1408	0	1547	1535	1171	1516	1559	1425
Flt Permitted		0.638		0.320			0.519			0.437		
Satd. Flow (perm)	0	1162	0	521	1408	0	728	1535	1055	667	1559	1063
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			15				44			70
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1149			630			643			361	
Travel Time (s)		26.1			14.3			14.6			8.2	
Confl. Peds. (#/hr)	58		39	39		58	142		90	90		142
Confl. Bikes (#/hr)						6			4			18
Peak Hour Factor	0.90	0.90	0.90	0.80	0.80	0.80	0.94	0.94	0.94	0.88	0.88	0.88
Heavy Vehicles (%)	0%	4%	3%	3%	2%	0%	5%	4%	8%	0%	6%	2%
Parking (#/hr)					0				0			
Adj. Flow (vph)	67	423	70	173	419	93	117	390	67	30	298	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	560	0	173	512	0	117	390	67	30	298	70
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		5			5			1			1	
Permitted Phases	5			5			1		1	1		1
Detector Phase	5	5		5	5		1	1	1	1	1	1
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	35.0	35.0		35.0	35.0		32.0	32.0	32.0	32.0	32.0	32.0
Total Split (s)	40.0	40.0		40.0	40.0		50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	44.4%	44.4%		44.4%	44.4%		55.6%	55.6%	55.6%	55.6%	55.6%	55.6%
Maximum Green (s)	36.0	36.0		36.0	36.0		46.0	46.0	46.0	46.0	46.0	46.0
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)	1.0	1.0		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	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.0		4.0	4.0		4.0	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	2.0	2.0
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	8.0	8.0		8.0	8.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)	23.0	23.0		23.0	23.0		18.0	18.0	18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)	20	20		20	20		0	0	0	0	0	0
Act Effct Green (s)		36.0		36.0	36.0		46.0	46.0	46.0	46.0	46.0	46.0
Actuated g/C Ratio		0.40		0.40	0.40		0.51	0.51	0.51	0.51	0.51	0.51
v/c Ratio		1.19		0.83	0.90		0.31	0.50	0.12	0.09	0.37	0.12
Control Delay		127.6		37.0	34.0		18.0	20.6	7.9	9.0	11.5	1.6
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.6	0.0
Total Delay		127.6		37.0	34.0		18.0	20.6	7.9	9.0	12.1	1.6
LOS		F		D	C		B	C	A	A	B	A
Approach Delay		127.6			34.8			18.6			10.0	
Approach LOS		F			C			B			B	
Queue Length 50th (ft)		~388		81	237		49	177	12	6	68	0
Queue Length 95th (ft)		#604		m79	m195		m103	311	m25	15	89	4
Internal Link Dist (ft)		1069			550			563			281	
Turn Bay Length (ft)							200		53	125		150
Base Capacity (vph)		470		208	572		372	784	560	340	796	577
Starvation Cap Reductn		0		0	0		0	0	0	0	218	0
Spillback Cap Reductn		0		0	0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0		0	0	0	0	0	0
Reduced v/c Ratio		1.19		0.83	0.90		0.31	0.50	0.12	0.09	0.52	0.12

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 19 (21%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.19
Intersection Signal Delay: 49.6 — Intersection LOS: D
Intersection Capacity Utilization 109.7% — ICU Level of Service H
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: 3: Washington Street & West Dedham Street/Monsignor Reynolds Way

Ø1 (R)	Ø5
50 s	40 s

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø3	Ø10
Lane Configurations														
Traffic Volume (vph)	55	251	134	131	307	34	126	202	103	21	224	114		
Future Volume (vph)	55	251	134	131	307	34	126	202	103	21	224	114		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	11	16	12	16	12	12	11	12	11	11	11		
Storage Length (ft)	0		0	0		0	100		0	100		0		
Storage Lanes	0		1	0		0	1		0	1		0		
Taper Length (ft)	25			25			25			25				
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		
Ped Bike Factor			0.97		1.00			0.99			1.00			
Frt			0.850		0.990			0.949			0.949			
Flt Protected		0.991			0.986		0.950			0.950				
Satd. Flow (prot)	0	1602	1615	0	1865	0	1608	1492	0	1570	1536	0		
Flt Permitted		0.766			0.451		0.372			0.479				
Satd. Flow (perm)	0	1238	1564	0	853	0	630	1492	0	792	1536	0		
Right Turn on Red			Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)			146		4			28			27			
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		630			893			431			319			
Travel Time (s)		14.3			20.3			9.8			7.3			
Confl. Bikes (#/hr)			11			6			1			2		
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.84	0.84	0.84	0.92	0.92	0.92		
Heavy Vehicles (%)	8%	1%	2%	2%	1%	0%	1%	3%	7%	0%	2%	1%		
Adj. Flow (vph)	60	273	146	144	337	37	150	240	123	23	243	124		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	333	146	0	518	0	150	363	0	23	367	0		
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA			
Protected Phases		4	5		4		5	2		1	6		3	10
Permitted Phases	4		4	4			2			6				
Detector Phase	4	4	5	4	4		5	2		1	6			
Switch Phase														
Minimum Initial (s)	8.0	8.0	6.0	8.0	8.0		6.0	22.0		6.0	22.0		7.0	7.0
Minimum Split (s)	13.0	13.0	11.0	13.0	13.0		11.0	27.0		11.0	27.0		23.0	23.0
Total Split (s)	29.0	29.0	11.0	29.0	29.0		11.0	27.0		11.0	27.0		23.0	23.0
Total Split (%)	32.2%	32.2%	12.2%	32.2%	32.2%		12.2%	30.0%		12.2%	30.0%		26%	26%
Maximum Green (s)	24.0	24.0	6.0	24.0	24.0		6.0	22.0		6.0	22.0		20.0	20.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0		2.0	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0		1.0	1.0
Lost Time Adjust (s)		-1.0	-1.0		-1.0		-1.0	-1.0		-1.0	-1.0			
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0			
Lead/Lag			Lead				Lead	Lag		Lead	Lag			
Lead-Lag Optimize?														
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max		None	None
Walk Time (s)								7.0			7.0		7.0	7.0
Flash Dont Walk (s)								7.0			15.0		13.0	13.0
Pedestrian Calls (#/hr)								0			0		10	10
Act Effct Green (s)		25.0	32.0		25.0		50.8	48.0		48.4	41.4			
Actuated g/C Ratio		0.28	0.36		0.28		0.56	0.53		0.54	0.46			
v/c Ratio		0.97	0.22		2.17		0.35	0.45		0.05	0.51			
Control Delay		49.9	1.1		560.6		9.5	16.1		7.5	18.9			
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	1.0			
Total Delay		49.9	1.1		560.6		9.5	16.1		7.5	19.9			
LOS		D	A		F		A	B		A	B			
Approach Delay		35.0			560.6			14.2			19.1			
Approach LOS		D			F			B			B			
Queue Length 50th (ft)		135	0		~482		30	99		4	135			
Queue Length 95th (ft)		m122	m0		#680		48	#312		m13	#355			
Internal Link Dist (ft)		550			813			351			239			
Turn Bay Length (ft)							100			100				
Base Capacity (vph)		343	654		239		432	809		486	721			
Starvation Cap Reductn		0	0		0		0	0		0	157			
Spillback Cap Reductn		0	0		0		0	0		0	0			
Storage Cap Reductn		0	0		0		0	0		0	0			
Reduced v/c Ratio		0.97	0.22		2.17		0.35	0.45		0.05	0.65			

Intersection Summary

Area Type: CBD

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 30 (33%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 2.17

Intersection Signal Delay: 169.4 Intersection LOS: F

Intersection Capacity Utilization 88.3% ICU Level of Service E

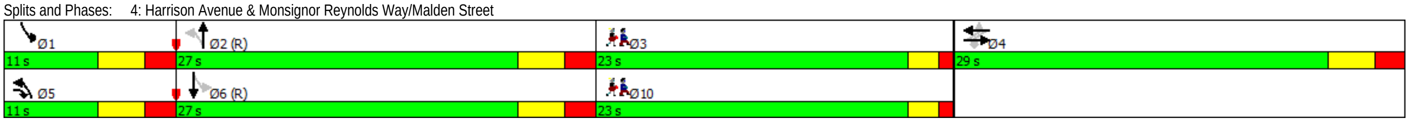
Analysis Period (min) 15

~ 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: Harrison Avenue & Monsignor Reynolds Way/Malden Street

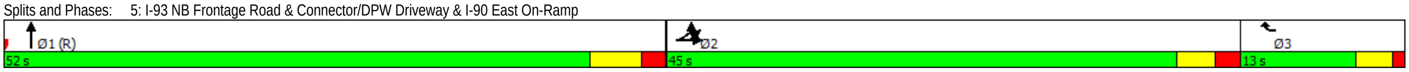


Lane Group	EBL2	EBL	EBT	WBR	WBR2	NBT	NBR	NBR2
Lane Configurations								
Traffic Volume (vph)	1089	249	8	27	5	960	332	20
Future Volume (vph)	1089	249	8	27	5	960	332	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	16	12	13	12	12
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.91	0.91	0.91
Ped Bike Factor						0.99		
Frt				0.865		0.960		
Flt Protected	0.950	0.950						
Satd. Flow (prot)	1498	1509	1550	1622	0	4416	0	0
Flt Permitted	0.950	0.950						
Satd. Flow (perm)	1498	1509	1550	1622	0	4416	0	0
Right Turn on Red	No				Yes			Yes
Satd. Flow (RTOR)				79		3		
Link Speed (mph)			30			30		
Link Distance (ft)			195			616		
Travel Time (s)			4.4			14.0		
Confl. Peds. (#/hr)								7
Peak Hour Factor	0.89	0.89	0.89	0.73	0.73	0.95	0.95	0.95
Heavy Vehicles (%)	3%	1%	25%	4%	0%	4%	2%	0%
Adj. Flow (vph)	1224	280	9	37	7	1011	349	21
Shared Lane Traffic (%)	39%							
Lane Group Flow (vph)	747	757	9	44	0	1381	0	0
Turn Type	Split	Split	NA	Prot		NA		
Protected Phases	2	2	2	3		1		
Permitted Phases								
Detector Phase	2	2	2	3		1		
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0		10.0		
Minimum Split (s)	28.0	28.0	28.0	13.0		23.0		
Total Split (s)	45.0	45.0	45.0	13.0		52.0		
Total Split (%)	40.9%	40.9%	40.9%	11.8%		47.3%		
Maximum Green (s)	40.0	40.0	40.0	9.0		46.0		
Yellow Time (s)	3.0	3.0	3.0	3.0		4.0		
All-Red Time (s)	2.0	2.0	2.0	1.0		2.0		
Lost Time Adjust (s)	-1.0	0.0	-1.0	-2.0		-2.0		
Total Lost Time (s)	4.0	5.0	4.0	2.0		4.0		
Lead/Lag	Lead	Lead	Lead	Lag				
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	2.0		3.0		
Recall Mode	Max	Max	Max	None		C-Max		
Walk Time (s)	7.0	7.0	7.0			7.0		
Flash Dont Walk (s)	15.0	15.0	15.0			5.0		
Pedestrian Calls (#/hr)	0	0	0			0		
Act Effct Green (s)	41.0	40.0	41.0	10.0		53.8		
Actuated g/C Ratio	0.37	0.36	0.37	0.09		0.49		
v/c Ratio	1.34	1.38	0.02	0.20		0.64		
Control Delay	176.2	195.9	14.4	4.9		23.5		
Queue Delay	2.6	2.6	0.0	0.0		0.0		
Total Delay	178.8	198.5	14.4	4.9		23.5		
LOS	F	F	B	A		C		
Approach Delay			187.7			23.5		
Approach LOS			F			C		
Queue Length 50th (ft)	~713	~736	2	0		280		
Queue Length 95th (ft)	m#386	m#464	m2	0		335		
Internal Link Dist (ft)			115			536		
Turn Bay Length (ft)								
Base Capacity (vph)	558	548	577	233		2161		
Starvation Cap Reductn	146	142	0	0		0		
Spillback Cap Reductn	0	0	0	0		0		
Storage Cap Reductn	0	0	0	0		0		
Reduced v/c Ratio	1.81	1.86	0.02	0.19		0.64		

Intersection Summary

Area Type: CBD
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 84 (76%), Referenced to phase 1:NBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.38
Intersection Signal Delay: 107.7 Intersection LOS: F
Intersection Capacity Utilization 87.4% ICU Level of Service E
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: 5: I-93 NB Frontage Road & Connector/DPW Driveway & I-90 East On-Ramp



Lane Group	EBT	EBR	EBR2	SBL	SBT	SBR	NER	NER2	Ø2
Lane Configurations									
Traffic Volume (vph)	11	9	7	233	428	659	1102	307	
Future Volume (vph)	11	9	7	233	428	659	1102	307	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	11	12	12	12	
Storage Length (ft)		0		60		0	0		
Storage Lanes		0		1		1	2		
Taper Length (ft)				25					
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00	0.88	1.00	
Ped Bike Factor						0.62			
Frt	0.920					0.850	0.850		
Flt Protected				0.950	0.994				
Satd. Flow (prot)	848	0	0	1421	2900	1425	2508	0	
Flt Permitted				0.950	0.994				
Satd. Flow (perm)	848	0	0	1421	2900	885	2508	0	
Right Turn on Red			Yes	No				Yes	
Satd. Flow (RTOR)	13						169		
Link Speed (mph)	30				30				
Link Distance (ft)	432				701				
Travel Time (s)	9.8				15.9				
Confl. Peds. (#/hr)						53			
Confl. Bikes (#/hr)						6	1		
Peak Hour Factor	0.56	0.56	0.56	0.96	0.96	0.96	0.87	0.87	
Heavy Vehicles (%)	100%	67%	86%	4%	3%	2%	2%	2%	
Adj. Flow (vph)	20	16	13	243	446	686	1267	353	
Shared Lane Traffic (%)				23%					
Lane Group Flow (vph)	49	0	0	187	502	686	1620	0	
Turn Type	NA			Perm	NA	custom	Prot		
Protected Phases	3				1	1 4	4		2
Permitted Phases				1	2	2			
Detector Phase	3			1	1	1 4	4		
Switch Phase									
Minimum Initial (s)	10.0			10.0	10.0		10.0		8.0
Minimum Split (s)	17.0			20.0	20.0		18.0		15.0
Total Split (s)	17.0			31.0	31.0		47.0		15.0
Total Split (%)	15.5%			28.2%	28.2%		42.7%		14%
Maximum Green (s)	11.0			24.0	24.0		42.0		8.0
Yellow Time (s)	3.0			4.0	4.0		3.0		4.0
All-Red Time (s)	3.0			3.0	3.0		2.0		3.0
Lost Time Adjust (s)	-3.0			-2.0	-2.0		-2.0		
Total Lost Time (s)	3.0			5.0	5.0		3.0		
Lead/Lag	Lead			Lead	Lead		Lag		Lag
Lead-Lag Optimize?									
Vehicle Extension (s)	2.0			2.0	2.0		2.0		2.0
Recall Mode	Max			C-Max	C-Max		Max		None
Walk Time (s)				7.0	7.0		7.0		7.0
Flash Dont Walk (s)				1.0	1.0		5.0		1.0
Pedestrian Calls (#/hr)				0	0		0		5
Act Effct Green (s)	14.0			38.0	41.0	87.0	44.0		
Actuated g/C Ratio	0.13			0.35	0.37	0.79	0.40		
v/c Ratio	0.41			0.38	0.46	0.61	1.47		
Control Delay	46.0			29.9	26.9	6.9	241.3		
Queue Delay	6.1			0.7	0.7	0.0	0.5		
Total Delay	52.1			30.6	27.6	6.9	241.8		
LOS	D			C	C	A	F		
Approach Delay	52.1				17.7				
Approach LOS	D				B				
Queue Length 50th (ft)	24			113	158	103	~857		
Queue Length 95th (ft)	34			m174	159	200	#959		
Internal Link Dist (ft)	352				621				
Turn Bay Length (ft)				60					
Base Capacity (vph)	119			490	1080	1117	1104		
Starvation Cap Reductn	0			0	0	0	0		
Spillback Cap Reductn	37			114	277	0	103		
Storage Cap Reductn	0			0	0	0	0		
Reduced v/c Ratio	0.60			0.50	0.63	0.61	1.62		

Intersection Summary

Area Type: CBD
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 68 (62%), Referenced to phase 1:SBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.47
Intersection Signal Delay: 137.5 Intersection LOS: F
Intersection Capacity Utilization 87.7% ICU Level of Service E
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: 6: Albany Street & I-93 SB Frontage Road & MBTA Driveway/Connector

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	47	6	110	1013	447	251
Future Volume (Veh/h)	47	6	110	1013	447	251
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.93	0.93	0.96	0.96
Hourly flow rate (vph)	63	8	118	1089	466	261
Pedestrians	37			9	1	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	3			1	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					831	
pX, platoon unblocked						
vC, conflicting volume	1415	642	764			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1415	642	764			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	42	98	86			
cM capacity (veh/h)	109	405	831			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	71	481	726	727
Volume Left	63	118	0	0
Volume Right	8	0	0	261
cSH	118	831	1700	1700
Volume to Capacity	0.60	0.14	0.43	0.43
Queue Length 95th (ft)	75	12	0	0
Control Delay (s)	73.1	3.8	0.0	0.0
Lane LOS	F	A		
Approach Delay (s)	73.1	1.5		0.0
Approach LOS	F			

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	193	44	0	704	449	0
Future Volume (Veh/h)	193	44	0	704	449	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.69	0.69	0.95	0.95	0.80	0.80
Hourly flow rate (vph)	280	64	0	741	561	0
Pedestrians	22			3	3	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	2			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1327	586	583			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1327	586	583			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	87	100			
cM capacity (veh/h)	169	494	983			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	344	741	561
Volume Left	280	0	0
Volume Right	64	0	0
cSH	192	1700	1700
Volume to Capacity	1.79	0.44	0.33
Queue Length 95th (ft)	607	0	0
Control Delay (s)	417.7	0.0	0.0
Lane LOS	F		
Approach Delay (s)	417.7	0.0	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	87.3		
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	3	3	68	702	3	2	369	121
Future Volume (Veh/h)	0	0	0	0	3	3	68	702	3	2	369	121
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.50	0.50	0.50	0.94	0.94	0.94	0.87	0.87	0.87
Hourly flow rate (vph)	0	0	0	0	6	6	72	747	3	2	424	139
Pedestrians		3						43			3	
Lane Width (ft)		0.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						4			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1405	1394	540	1433	1462	752	566			750		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1405	1394	540	1433	1462	752	566			750		
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	95	99	93			100		
cM capacity (veh/h)	105	132	526	103	120	413	1016			868		

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	12	822	565
Volume Left	0	72	2
Volume Right	6	3	139
cSH	186	1016	868
Volume to Capacity	0.06	0.07	0.00
Queue Length 95th (ft)	5	6	0
Control Delay (s)	25.6	1.8	0.1
Lane LOS	D	A	A
Approach Delay (s)	25.6	1.8	0.1
Approach LOS	D		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	88.8%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	104	46	0	668	369	0
Future Volume (Veh/h)	104	46	0	668	369	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.77	0.77	0.93	0.93	0.88	0.88
Hourly flow rate (vph)	135	60	0	718	419	0
Pedestrians					1	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1138	419	419			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1138	419	419			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	39	91	100			
cM capacity (veh/h)	222	634	1151			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	195	718	419
Volume Left	135	0	0
Volume Right	60	0	0
cSH	277	1700	1700
Volume to Capacity	0.70	0.42	0.25
Queue Length 95th (ft)	121	0	0
Control Delay (s)	43.8	0.0	0.0
Lane LOS	E		
Approach Delay (s)	43.8	0.0	0.0
Approach LOS	E		

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	96	110	348	0	0	293
Future Volume (Veh/h)	96	110	348	0	0	293
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.94	0.94	0.92	0.92
Hourly flow rate (vph)	108	124	370	0	0	318
Pedestrians	76		8			4
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	6		1			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			251			679
pX, platoon unblocked	0.93	0.93			0.93	
vC, conflicting volume	772	450			446	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	720	374			370	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	69	79			100	
cM capacity (veh/h)	345	589			1048	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	232	370	318
Volume Left	108	0	0
Volume Right	124	0	0
cSH	443	1700	1700
Volume to Capacity	0.52	0.22	0.19
Queue Length 95th (ft)	74	0	0
Control Delay (s)	21.7	0.0	0.0
Lane LOS	C		
Approach Delay (s)	21.7	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	5.5		
Intersection Capacity Utilization	37.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	375	69	100	311
Future Volume (Veh/h)	0	0	375	69	100	311
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.86	0.86	0.96	0.96
Hourly flow rate (vph)	0	0	436	80	104	324
Pedestrians	76		6			27
Lane Width (ft)	0.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		1			2
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			499			431
pX, platoon unblocked	0.97	0.97			0.97	
vC, conflicting volume	1090	579			592	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1077	549			562	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			89	
cM capacity (veh/h)	211	511			987	

Direction, Lane #	NB 1	SB 1
Volume Total	516	428
Volume Left	0	104
Volume Right	80	0
cSH	1700	987
Volume to Capacity	0.30	0.11
Queue Length 95th (ft)	0	9
Control Delay (s)	0.0	3.1
Lane LOS		A
Approach Delay (s)	0.0	3.1
Approach LOS		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

Appendix D

Air Quality

APPENDIX D AIR QUALITY

Introduction

This Air Quality Appendix provides modeling assumptions and backup for results presented in Section 3.5 of the report. Included within this documentation is a brief description of the methodology employed along with pertinent calculations and data used in the emissions and dispersion calculations supporting the microscale air quality analysis.

Motor Vehicle Emissions

The EPA MOVES computer program generated motor vehicle emissions used in the garage stationary source analysis along with the mobile source CAL3QHC modeling and mesoscale analysis. The model input parameters were provided by MassDEP. Emission rates were derived for 2015 and 2023 for speed limits of idle, 10, 15, and 30 mph for use in the microscale analyses.

MOVES CO Emission Factor Summary

Carbon Monoxide Only

		2015	2023
Free Flow	30 mph	2.018	1.844
Right Turns	10 mph	3.484	2.956
Left Turns	15 mph	2.920	2.586
Queues	Idle	7.654	4.102

Notes: Winter CO emission factors are higher than Summer and are conservatively used
Urban Unrestricted Roadway type used

CAL3QHC

For the intersection studied, the CAL3QHC model was applied to calculate CO concentrations at sensitive receptor locations using emission rates derived in MOVES. The intersection's queue links and free flow links were input to the model along with sensitive receptors at all locations nearby each intersection. The meteorological assumptions input into the model were a 1.0 meter per second wind speed, Pasquill-Gifford Class D stability combined with a mixing height of 1000 meters. For each direction, the full range of wind directions at 10 degree intervals was examined. In addition, a surface roughness (z_0) of 321 cm was used for the intersection. Idle emission rates for queue links were based on 0 mph emission rates derived in MOVES. Emission rates for speeds of 10, 15, and 30 mph were used for right turn, left turn, and free flow links, respectively.

Harrison Albany Block, Boston, MA
Background Concentrations

POLLUTANT	AVERAGING TIME	Form	2012	2013	2014	Units	ppm/ppb to $\mu g/m^3$ Conversion Factor	2013-2015 Background Concentration ($\mu g/m^3$)	Location	
SO_2 (1)(6)	1-Hour (5)	99th %	12.1	10.9	12.3	ppb	2.62	30.8	Harrison Ave., Boston	.93 miles NW of project
	3-Hour	H2H	11.8	9.7	21.5	ppb	2.62	56.3	Harrison Ave., Boston	
	24-Hour	H2H	5	5	5.1	ppb	2.62	13.4	Harrison Ave., Boston	
	Annual	H	1.1	1.1	1.1	ppb	2.62	2.9	Harrison Ave., Boston	
PM-10	24-Hour	H2H	31.5	34	61	$\mu g/m^3$	1	61	Harrison Ave., Boston	
	Annual	H	13.9	15.2	13.9	$\mu g/m^3$	1	15.2	Harrison Ave., Boston	
PM-2.5	24-Hour (5)	98th %	20.6	15.9	12.7	$\mu g/m^3$	1	16.4	Harrison Ave., Boston	
	Annual (5)	H	8.3	7.3	6.0	$\mu g/m^3$	1	7.2	Harrison Ave., Boston	
NO_2 (3)	1-Hour (5)	98th %	44	50	51	ppb	1.88	90.9	Harrison Ave., Boston	
	Annual	H	15.8	17.4	15.8	ppb	1.88	32.8	Harrison Ave., Boston	
CO (2)	1-Hour	H2H	2.2	1.9	1.7	ppm	1146	2474.2	Harrison Ave., Boston	
	8-Hour	H2H	1.9	1.2	1.3	ppm	1146	2177.4	Harrison Ave., Boston	
Ozone (4)	8-Hour	H4H	0.062	0.059	0.054	ppm	1963	121.7	Harrison Ave., Boston	
Lead	Rolling 3-Month	H	0.013	0.006	0.014	$\mu g/m^3$	1	0.014	Harrison Ave., Boston	

Notes:
From 2012-2014 EPA's AirData Website
1 SO_2 reported ppb. Converted to $\mu g/m^3$ using factor of 1 ppm = 2.62 $\mu g/m^3$.
2 CO reported in ppm. Converted to $\mu g/m^3$ using factor of 1 ppm = 1146 $\mu g/m^3$.
3 NO_2 reported in ppb. Converted to $\mu g/m^3$ using factor of 1 ppm = 1.88 $\mu g/m^3$.
4 O_3 reported in ppm. Converted to $\mu g/m^3$ using factor of 1 ppm = 1963 $\mu g/m^3$.
5 Background level is the average concentration of the three years.
6 The 24-hour and Annual standards were revoked by EPA on June 22, 2010, Federal Register 75-119, p. 35520.

POLLUTANT	AVERAGING TIME	Form	2012	2013	2014	Background Concentration ($\mu g/m^3$)	NAAQS	Percent of NAAQS
SO2 (1)(6)	1-Hour (5)	99th %	31.7	28.6	32.2	30.8	196.0	16%
	3-Hour	H2H	30.9	25.4	56.3	56.3	1300.0	4%
	24-Hour	H2H	13.1	13.1	13.4	13.4	365.0	4%
	Annual	H	2.9	2.8	2.8	2.9	80.0	4%
PM-10	24-Hour	H2H	31.5	34.0	61.0	61.0	150.0	41%
	Annual	H	13.9	15.2	13.9	15.2	50.0	30%
PM-2.5	24-Hour (5)	98th %	20.6	15.9	12.7	16.4	35.0	47%
	Annual (5)	H	8.3	7.3	6.0	7.2	12.0	60%
NO2 (3)	1-Hour (5)	98th %	82.7	94.0	95.9	90.9	188.0	48%
	Annual	H	29.7	32.8	29.6	32.8	100.0	33%
CO (2)	1-Hour	H2H	2474.2	2145.3	1963.1	2474.2	40000.0	6%
	8-Hour	H2H	2177.4	1375.2	1489.8	2177.4	10000.0	22%
Ozone (4)	8-Hour	H4H	121.7	115.8	106.0	121.7	147.0	83%
Lead	Rolling 3-Month	H	0.013	0.006	0.014	0.014	0.15	9%

Notes:

From 2012-2014 EPA's AirData Website

1 SO2 reported ppb. Converted to μg/m3 using factor of 1 ppm = 2.62 μg/m3.

2 CO reported in ppm. Converted to μg/m3 using factor of 1 ppm = 1146 μg/m3.

3 NO2 reported in ppb. Converted to μg/m3 using factor of 1 ppm = 1.88 μg/m3.

4 O3 reported in ppm. Converted to μg/m3 using factor of 1 ppm = 1963 μg/m3.

5 Background level is the average concentration of the three years.

6 The 24-hour and Annual standards were revoked by EPA on June 22, 2010, Federal Register 75-119, p. 35520.

Due to excessive size, CAL3QHC and MOVES input and output files are available on digital media upon request.

Appendix E

Climate Change Checklist

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:	Harrison Albany Block
Project Address Primary:	75-123 East Dedham and 62-100 East Canton
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	Harry Nash / Senior Vice President / Leggat McCall Properties / harry.nash@lmp.com / 617.422.7076

A.2 - Team Description

Owner / Developer:	MEPT/LMP Harrison/Albany Block LLC
Architect:	CBT
Engineer (building systems):	RW Sullivan Engineering
Sustainability / LEED:	Vanderweil Engineers
Permitting:	Epsilon Associates, Inc.
Construction Management:	N/A
Climate Change Expert:	Epsilon Associates, Inc.

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:	Residential, Garage, Retail, Office
List the First Floor Uses:	Residential, Lobbies, Loading, Back of House, MEP, Retail

What is the principal Construction Type – select most appropriate type?

Wood Frame	Masonry	Steel Frame	☑ Concrete

Describe the building?

Site Area:	*135,160 SF*	Building Area (new and renovated):	*710,500 SF*
Building Height:	*Varies from 43 Ft. to 200 Ft.*	Number of Stories:	*Varies from 3 to 19 Flrs.*
First Floor Elevation (reference Boston City Base):	*19' Elev.*	Are there below grade spaces/levels, if yes how many:	*3 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*	Certified:	*Yes*

A.6 - Building Energy

What are the base and peak operating energy loads for the building?

Electric:	*4206/8417 (kW)*	Heating:	*27.7(MMBtu/hr)*
What is the planned building Energy Use Intensity:	*15.7(kbut/SF or kWh/SF)*	Cooling:	*1300(Tons/hr)*

What are the peak energy demands of your critical systems in the event of a service interruption?

Electric:	*930 (kW)*	Heating:	*N/A (MMBtu/hr)*
		Cooling:	*N/A (Tons/hr)*

What is nature and source of your back-up / emergency generators?

Electrical Generation:	*1000(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?

7/ 87.6 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	*Once Every 5 yrs.*

What Extreme Rain Event characteristics will be used for project planning – Seasonal Rain Fall, Peak Rain Fall, and Frequency of Events per year?

45 In. / yr.	*6.4 In. / one 24hr*	*Once every 10 yrs*

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?

105 mph Peak	*10 Hours*	*Once every 4 yrs*

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:	*10 %*
How is performance determined:	Energy Model

What specific measures will the project employ to reduce building energy consumption?

Select all appropriate:	☑High performance building envelop	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 = 31.25*	Walls / Curtain Wall Assembly:	*R = 22.27*
Foundation:	*R = 7.5*	Basement / Slab:	*R = 10*
Windows:	*R = / U =0.42*	Doors:	*R = / U = 0.42*

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:	Studying the feasibility of solar pv			

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?

	No	If yes, for how long:	*Days*
If Yes, is building "Islandable?			
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 Envelop
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 & ponds	☑Infiltration galleries & areas	vegetated water capture systems	Vegetated roofs
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:				

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

Describe site conditions?

Site Elevation – Low/High Points:	*Low: 13.33'* *High: 19.08'*
Building Proximity to Water:	*2,625 Ft.*

Is the site or building located in any of the following?

Coastal Zone:	*No*	Velocity Zone:	*No*
Flood Zone:	*No*	Area Prone to Flooding:	*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:	*No*	Future floodplain delineation updates:	*No*

What is the project or building proximity to nearest Coastal, Velocity or Flood Zone or Area Prone to Flooding?

680 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:	*3 Ft.*	Frequency of storms:	*0.1 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. 19 Ft.*	First Floor Elevation:	*Boston City Base Elev. 19 Ft.*

Will the project employ temporary measures to prevent building flooding (e.g. barricades, flood gates):

	Yes	If Yes, to what elevation	*TBD*
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

Will the project site / building(s) be accessible during periods of inundation or limited access to transportation:

	Yes	If yes, to what height above 100 Year Floodplain:	*TBD*

Will the project employ hard and / or soft landscape elements as velocity barriers to reduce wind or wave impacts?

	No
If Yes, describe:	

Will the building remain occupiable without utility power during an extended period of inundation:

	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*	Hardened / Resilient Ground Floor Construction	☑Temporary shutters and or barricades	Resilient site design, materials and construction

Can the site and building be reasonably modified to increase Building Flood Proof Elevation?

Select appropriate:	*Yes*	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:	*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 F

Accessibility Checklist

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:	Harrison Albany Block
Project Address Primary:	75-123 East Dedham and 62-100 East Canton
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	Harry Nash / Senior Vice President / Leggat McCall Properties / harry.nash@lmp.com / 617.422.7076

Team Description

Owner / Developer:	MEPT/LMP Harrison/Albany Block LLC
Architect:	CBT
Engineer (building systems):	RW Sullivan Engineering
Sustainability / LEED:	Vanderweil Engineers
Permitting:	Epsilon Associates, Inc.
Construction Management:	N/A

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, Retail, Commercial, Lobbies, Loading, Back of House, MEP*

What is the Construction Type – select most appropriate type?

Wood Frame	Masonry	Steel Frame	Concrete

Describe the building?

Site Area:	*135,160 SF*	Building Area (new and renovated):	*710,500 SF*
Building Height:	*Varies from 43' Ft. to 200 Ft.*	Number of Stories:	*Varies from 3 to 19 Flrs*
First Floor Elevation:	*19' Elev.*	Are there below grade spaces:	*Yes / No*

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.	The proposed project site is located in the Harrison Albany Corridor located in the southernmost portion of Boston's South End neighborhood. The site boundaries include Harrison Avenue to the northwest, East Dedham to the Northeast, East Canton to the Southwest, and Albany Street to the Southwest.
List the surrounding ADA compliant MBTA transit lines and the proximity to the development site: Commuter rail, subway, bus, etc.	The #47 Central Square accessible bus has a stop at the proposed site on Albany Street and East Dedham Street. The #8 and #10 accessible buses have stops at Harrison Avenue at East Brookline Street, about one block away. The closest accessible Silver Line stops are located along Washington Street at East Newton Street, about two blocks away, and Union Park Street, also two blocks away.

List the surrounding institutions: hospitals, public housing and elderly and disabled housing developments, educational facilities, etc.	Boston Medical Center, South End Community Health Center, Boston University School of Medicine, Pine Village Preschool, Media and Technology Charter School, Cathedral Grammar School, William Blackstone Elementary, Public Housing: Cathedral, Washington Manor, Torre Unidad, Rutland/East Springfield, Frederick Douglass.
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.	No. Boston Police District D-4, South End Branch Library, JHCC, Boston Sports Club, Union Park Street Playground, Franklin Square, Blackstone Square.

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.
If yes above, list the existing sidewalk and pedestrian ramp materials and physical condition at the development site.	Concrete sidewalks, some asphalt. Mostly in poor condition.
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.	No, to be replaced. Sidewalks have not been design in that level of detail.
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	Yes
If yes above, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, Boulevard.	Our site consists of the following Complete Street Types: a. Albany Street is an Industrial Street, b. Harrison Avenue as one Neighborhood Connector Street and c. East Dedham and East Canton Streets as Neighborhood Residential Streets.
What is the total width of the proposed sidewalk? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone.	Albany Street Sidewalk: 12’ Total Width; 6’ Greenscape-Furnishings Zone; 6’ Pedestrian Zone; 0’ Frontage Zone Harrison Avenue Sidewalk: 15’ Total Width; 6’ Greenscape-Furnishings Zone; 5’ Pedestrian Zone; 4’ Frontage Zone East Dedham Street Sidewalk : Varies 20’ to 29’ Total Width; 8’ Greenscape-Furnishings Zone; 6’ Pedestrian Zone; Varies 6’ to 15’ Frontage Zone East Canton Street Sidewalk : 17.5’ Total Width; 6’ Greenscape-Furnishings Zone; 5’ Pedestrian Zone; Varies Approx 6.5’ Frontage Zone
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?	Albany Street: Greenscape-Furnishings Zone – Permeable Pavers with Flush Tree Plantings; Pedestrian Zone – Concrete Paving; Frontage Zone – N/A; Materials on Public and Private Property - Greenscape-Furnishings and Pedestrian Zone on Public Property Harrison Avenue Sidewalk: Greenscape-Furnishings Zone- Permeable Pavers with Flush Tree Plantings; Pedestrian Zone – Concrete Paving; Frontage Zone – Concrete Paving; Materials on Public and Private Property – Greenscape-Furnishings Zone on Public Property , Pedestrian Zone and Frontage Zone partially on Public and Private Property East Dedham Street Sidewalk: Greenscape-Furnishings Zone Permeable Pavers with Flush Tree Plantings; Pedestrian Zone – Concrete Paving; Frontage Zone – Raised and Curbed Tree Planters and combination of Unit Pavers, Permeable Pavers and Concrete Paving; Materials on Public and Private Property – Greenscape-Furnishings Zone on Public Property , Pedestrian Zone partially on Public and Private Property and Frontage Zones on Private Property East Canton Street Sidewalk: Greenscape-Furnishings Zone - Permeable Pavers with Flush Tree Plantings; Pedestrian Zone – Concrete Paving; Frontage Zone – Raised and Curbed Planters at Residential Units; Materials on Public and Private

	Property – Greenscape-Furnishings Zone on Public Property , Pedestrian Zone partially on Public and Private Property and Frontage Zones on Private Property
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?	If the final landscape plan locates the pedestrian right of way inside of the property, the proponent will seek a pedestrian easement.
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way?	Sidewalk cafes will be inside the property line, not in the pedestrian right of way.
If yes above, what are the proposed dimensions of the sidewalk café or furnishings and what will the right-of-way clearance be?	N/A

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?	745 below grade parking spaces and 5 spaces along the relocated Andrews Street.
What is the total number of accessible spaces provided at the development site?	15 Spaces
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?	No.
Where is accessible visitor parking	In the below grade garage

located?	
Has a drop-off area been identified? If yes, will it be accessible?	Yes, adjacent to residential lobbies. See Attachment 1
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 Attachments 1 – 3.

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 attachment 4.
Describe accessibility at each entryway: Flush Condition, Stairs, Ramp Elevator.	Main lobby entries will be flush with the sidewalk entrances. On the ground floor, ramps will be provided at 8% or less slope where there are changes in elevations.
Are the accessible entrance and the standard entrance integrated?	Yes.
If no above, what is the reason?	
Will there be a roof deck or outdoor courtyard space? If yes, include diagram of the accessible route.	Yes.
Has an accessible routes way-finding and signage package been developed? If yes, please describe.	Not yet.

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.

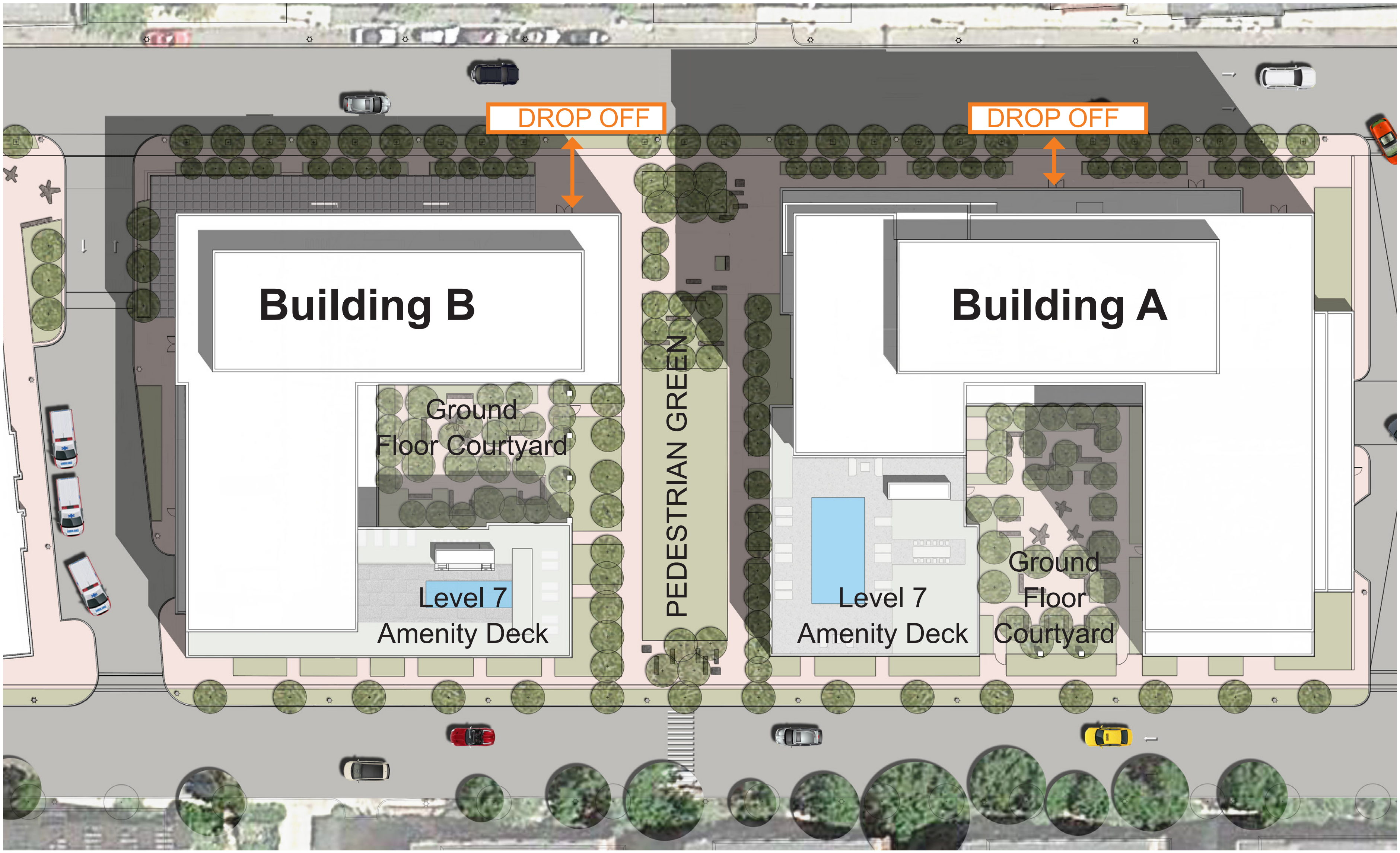
What is the total number of proposed units for the development?	710
How many units are for sale; how many are for rent? What is the market value vs. affordable breakdown?	All units are for rent apartments.
How many accessible units are being proposed?	36 units (5% of all units) will be accessible.
Please provide plan and diagram of the accessible units.	Not available yet.
How many accessible units will also be affordable? If none, please describe reason.	5% of all on-site affordable units will be accessible.
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?	No.
Did the Advisory Board vote to support this project? If no, what recommendations did the Advisory Board give to make this project more accessible?	No.

Article 80 | ACCESSIBILTY CHECKLIST

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

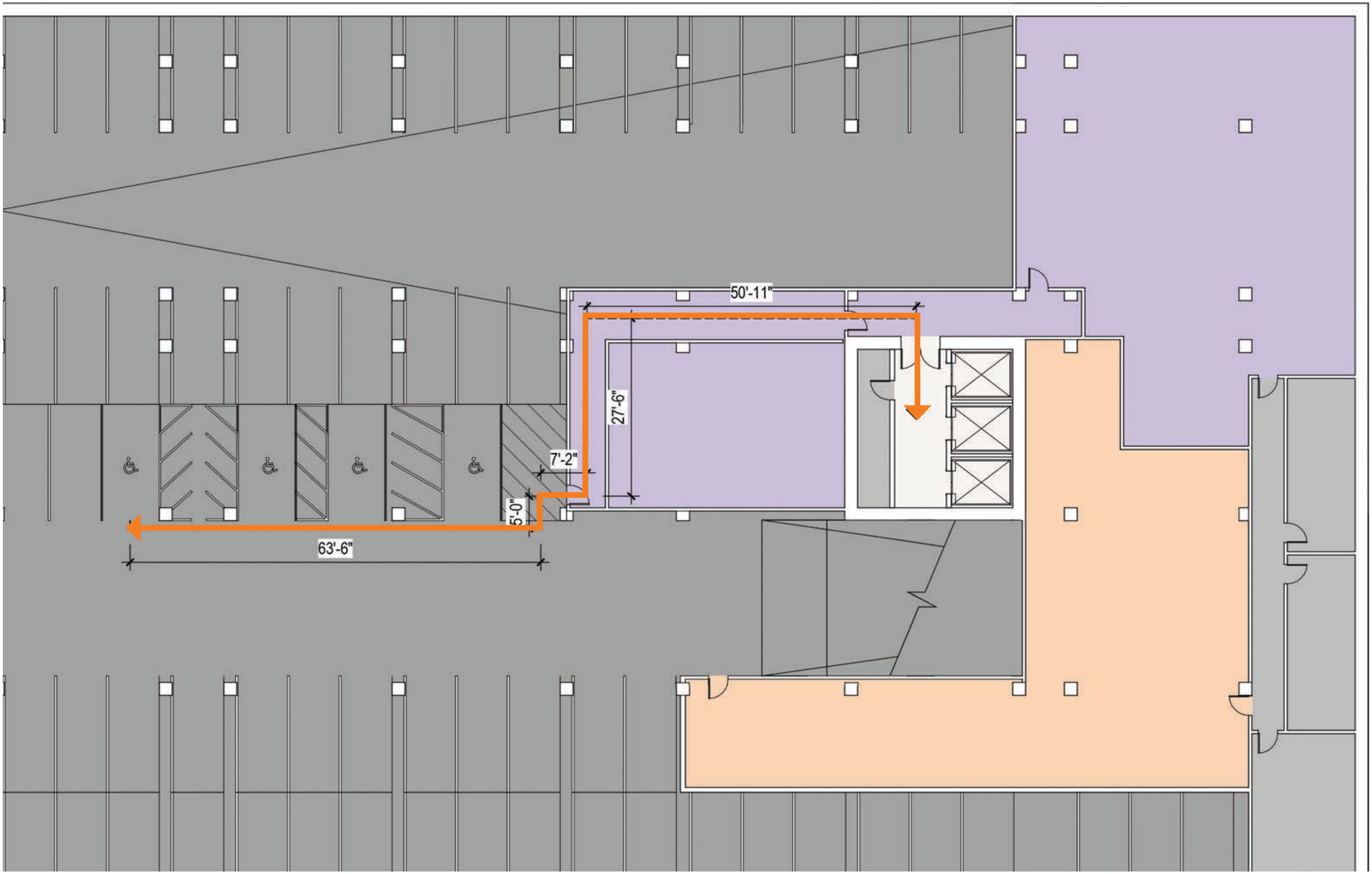


Harrison Albany Block Boston, Massachusetts

Epsilon ASSOCIATES INC.

Attachment 1

Accessible Routes - Parking Building B Garage

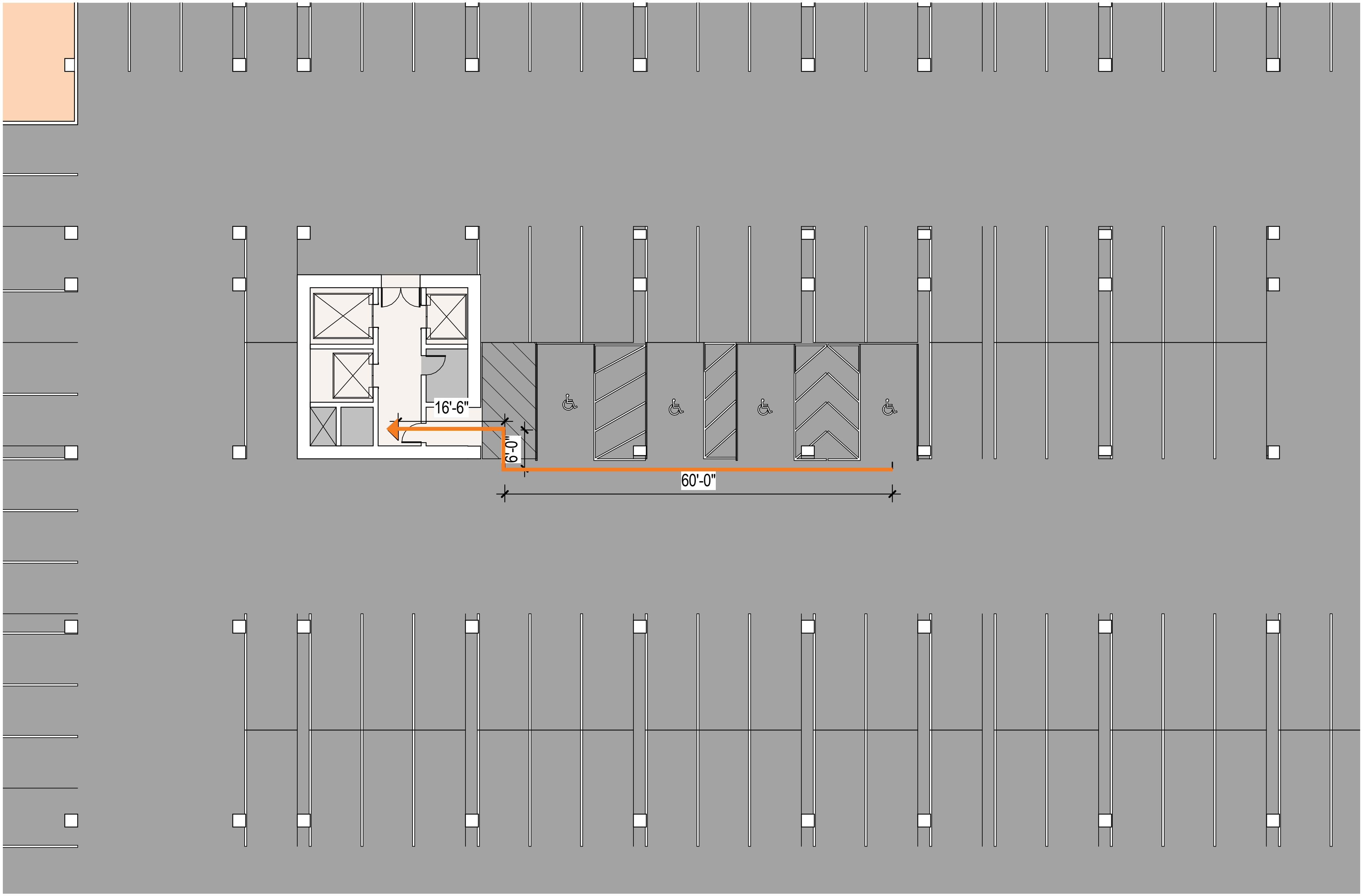


Harrison Albany Block Boston, Massachusetts

Epsilon ASSOCIATES INC.

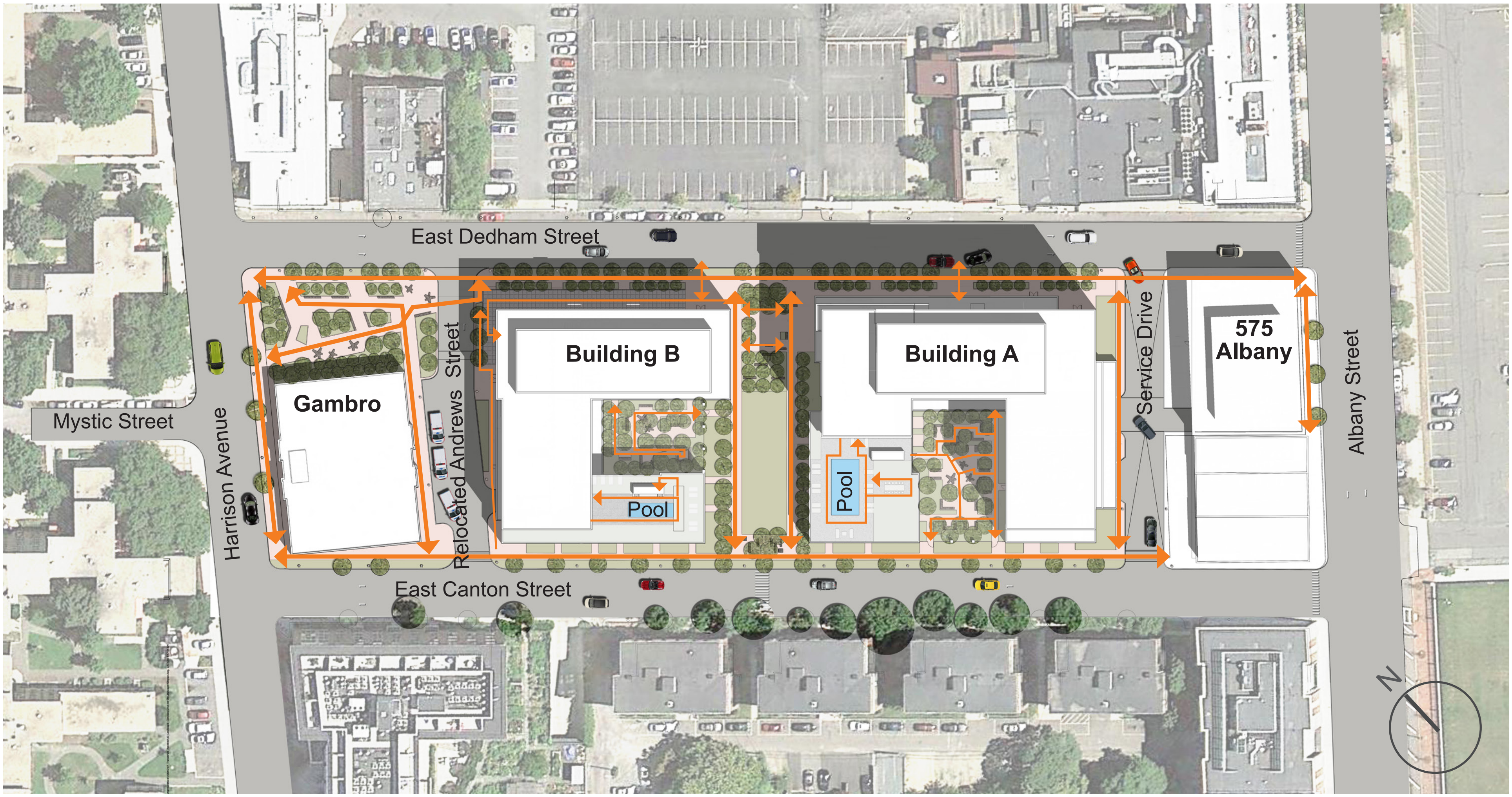
Attachment 2

Accessible Routes - Parking Building A Garage



Attachment 3

Accessible Routes - Parking Building B Garage



Harrison Albany Block **Boston, Massachusetts**

Epsilon ASSOCIATES INC.

Attachment 4

Accessibile Routes Throught Site - Public and Private