Project Notification Form

Submitted Pursuant to Article 80 of the Boston Zoning Code

95 Saint Alphonsus Street

Submitted to:
Boston Planning & Development Agency
One City Hall Square
Boston, MA 02201

Submitted by:
Wingate Companies
100 Wells Avenue
Newton, MA 02459

Prepared by:
Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, MA 01754

In Association with:
HDS Architecture
Howard Stein Hudson
H.W. Moore Associates, Inc.
Allied Consulting Engineering Services, Inc.
McPhail Associates, LLC
Pressley Associates
Resilient Buildings Group, Inc.

June 13, 2017

Epsilon
ASSOCIATES INC.

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Chapter 1

Project Description and General Information

1.0 PROJECT DESCRIPTION/GENERAL INFORMATION

1.1 Introduction

Wingate Companies (the Proponent) proposes the development of up to 115 residential units and a 108-space parking structure located at 95 St. Alphonsus Street, with the parking to be shared with the existing 1575 Tremont Street building, and additional open space, landscaping and access improvements at 1575 Tremont Street and 95 St. Alphonsus Street in the Mission Hill neighborhood of Boston (the Project). The existing 175 space parking structure at 95 St. Alphonsus Street which serves the adjacent 1575 Tremont Street will be replaced with a new structured parking garage that will be shared between the 115 residential units in the new building and the existing 147 units at 1575 Tremont Street.

The Project's new residential building will include market-rate and affordable units totaling approximately 111,665 square feet (sf). The Project also includes below-grade and surface parking. The Project's use and materials will blend with the existing uses of the predominantly residential neighborhood. The materials and form of the building are proposed to mirror those of adjacent buildings, while being a unique focal point in the neighborhood. As a true connector of its surroundings, the building will fill the void along the St. Alphonsus Street frontage.

The Project is less than one half mile from Brigham Circle, Fenwood Road and Mission Park Massachusetts Bay Transportation Authority (MBTA) Green Line stations and is along the routes of multiple major bus lines. The Project is ideally located next to public transit and various amenities, institutions, businesses and attractions.

This Expanded Project Notification Form (PNF) is being submitted to the BRA doing business as Boston Planning and Development Agency (herein, the BPDA), to initiate review of the Project under Article 80B, Large Project Review, of the Boston Zoning Code. The PNF offers a description of the Project, its minimal impacts and its benefits to the City of Boston.

1.2 Project Description

The development of the proposed Project requires the subdivision of the 1575 Tremont Street parcel (referred to as 1575 Tremont or Existing Site) containing 88,454 sf (2.03 acres) located at the corner of Tremont Street and St. Alphonsus Street into two parcels. After subdivision, the 1575 Tremont Street parcel, which contains an existing 14-story 147-unit rental building known as The Longwood and referred to throughout the PNF as 1575 Tremont Street, would contain 50,720 sf of lot area (Lot 1 or 1575 Tremont Street parcel). The building at 95 St. Alphonsus Street would be developed on the remaining lot containing 37,734 sf of lot area (Lot 2 or 95 St. Alphonsus Street parcel) and referred to throughout the PNF as 95 St. Alphonsus Street. The development requires the subdivision of the Existing Site so that the proposed Project may be subject to a separate ownership structure and be eligible for United States Department of Housing and Urban Development (HUD) financing through the Section 241a Program of HUD. The Proponent has also entered into discussions to submit 1575 Tremont Street to a similar HUD Program known as 223f. Although the Existing Site will be subdivided and 1575 Tremont Street and 95 St. Alphonsus Street will be considered to be separate buildings separated by a rear and side yard of approximately 44 feet, the development of the proposed Project to the rear of 1575 Tremont Street provides opportunities for shared parking, access, landscaping, open space, loading facilities, trash and recycling facilities, and driveways, which will result in a more efficient operation for both buildings. The Property Line dividing the two parcels is indicated on Figures 1-1 and 1-2 Basement Level Plan and First Floor Plan, respectively. Figures 1-3 and 1-4 include a Typical Upper Floor Plan and a Roof Plan.

Because of such joint or shared facilities, the shared facilities for both parcels will be described in Article 80B Large Project Review and Related Approvals process (Article 80B Process). Pursuant to the Article 80B Process the BPDA will ensure that the planning and development of the proposed Project will also result in improvements to the building at 1575 Tremont Street. Such improvements are shown on the Project plans included in the PNF. In connection with the subdivision of the property, both properties will be subject to a comprehensive Declaration of Covenants, Restrictions, and Easements (DEC) which will be recorded at the Suffolk Registry of Deeds. Such agreement will set forth the relationship between both parcels including the sharing of joint facilities and parking.

The parcel located at 95 St. Alphonsus Street currently consists of a 175 car parking structure which will be demolished for the development of the proposed Project. The structure was developed with 175 parking spaces for the 147 unit rental apartment building at 1575 Tremont Street, or the equivalent of 1.19 spaces per unit. The current demand for parking in the structure, after adjusting for building occupancy of 96%, is about 0.40 spaces per occupied unit. This demand level of 0.40 spaces per unit at 1575 Longwood Avenue is reflective of the trend of reduced auto ownership occurring throughout the City. The availability of alternative means of transportation, such as the nearby MBTA Green Line and bus routes, improved bicycle infrastructure and facilities, and increased reliance on shared car services such as Zip Car, Uber and Lyft, combine to lower residential parking demand. The Proponent is confident that the new garage containing approximately 108 spaces and 22 surface spaces (located on the 1575 Tremont Street parcel) will be sufficient for the operation of both buildings. The combined parking ratio would be about 0.41 spaces per unit, excluding the surface parking, which is an acceptable and average parking ratio for new residential projects in Boston located close to transit service. The location of the proposed Project and 1575 Tremont Street within a transit oriented corridor supports the reduction in the number of parking spaces from 197 parking spaces (structured and surface) to 130 parking spaces (structured and surface).

In addition to the shared operations and facilities as outlined above, the PNF contains in the Transportation Chapter a detailed and thorough analysis of the intended operation of the proposed Project's parking garage and the surface spaces located at 1575 Tremont Street. As noted in the Transportation Chapter, the curb cuts on St. Alphonsus Street and Tremont Street will serve different levels of the proposed Project garage. Additionally, the 1575 Tremont Street access drive will benefit the occupants of the proposed Project without a detrimental impact on 1575 Tremont Street. Such analysis is provided to the BPDA to support a determination by the BPDA that the shared parking facility for both parcels is an appropriate and needed element of the proposed Project and its approval by the BPDA is consistent with the authority and findings under the Article 59, Mission Hill Neighborhood District, and Article 80B of the Code.

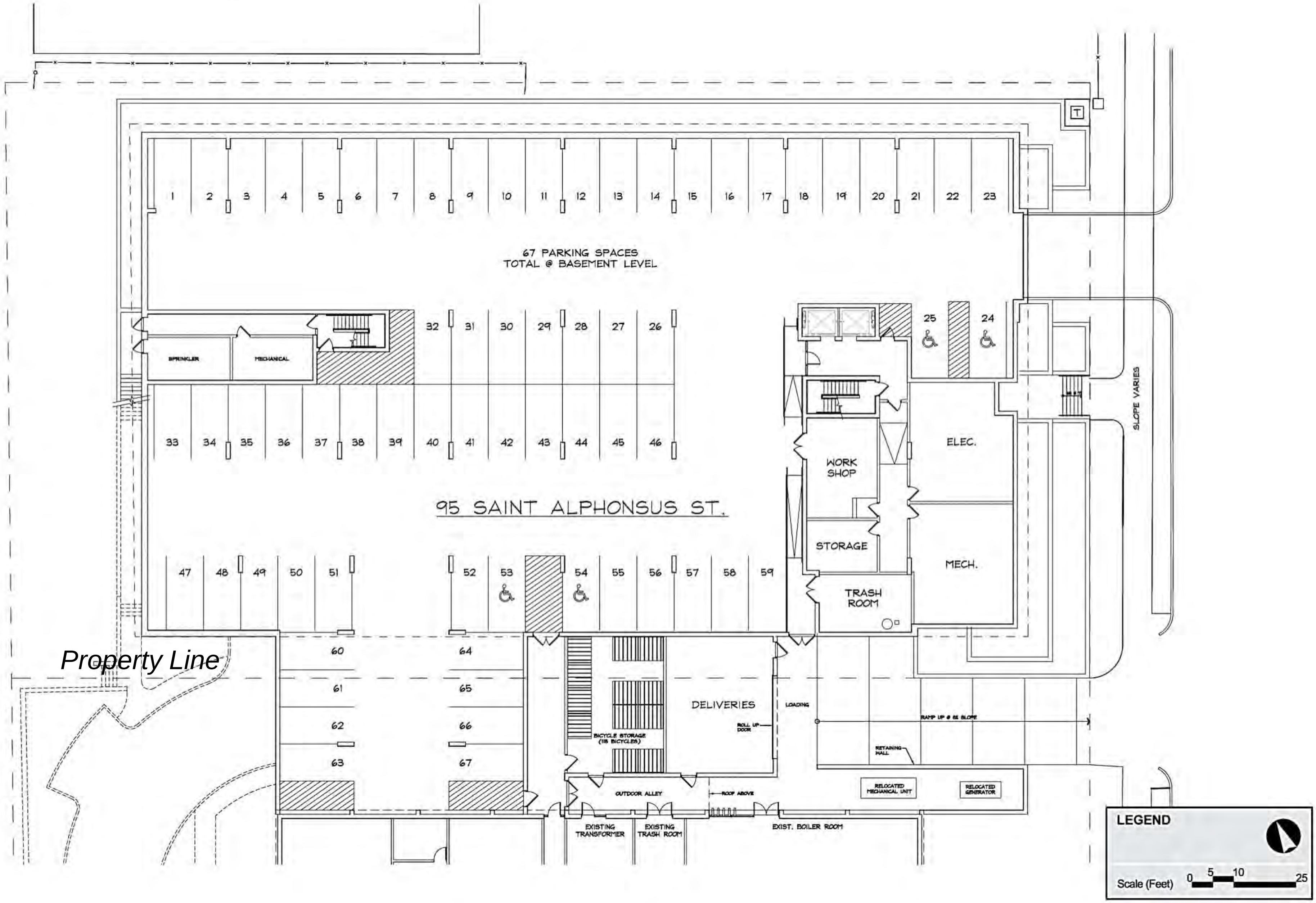
Although the Proponent has filed an appeal with the Zoning Board of Appeal (ZBA) to allow for the subdivision of the 1575 Tremont Street parcel and to seek approval by the ZBA of the resulting parking variances as cited by ISD, the approval by the BPDA pursuant to Article 80B for the proposed Project, which includes the parking protocol as outlined above, will supplement, to the extent applicable and appropriate, the findings issued by the ZBA in connection with the subdivision. The approval by the BPDA of the shared parking protocol shall not be deemed to negate the ability of the ZBA to issue its decision with respect to the subdivision, but is in recognition of the provisions of Article 59, Mission Hill Neighborhood District, and Article 80B of the Code.

1.2.1 95 St. Alphonsus Street

The 95 St. Alphonsus Street parcel is approximately 37,734 sf (0.87-acre) located at 95 St. Alphonsus Street in the Mission Hill neighborhood of Boston and is bound by the residential building at 1575 Tremont Street to the south, the Equity Residential high-rise apartment building to the north, the rear yards of the Worthington Street townhouses to the west and St. Alphonsus Street to the east. Currently, the 95 St. Alphonsus Street parcel includes a 175-space parking garage structure which serves 1575 Tremont Street. See Figure 1-5 through 1-10 for an aerial view of the existing conditions, Existing Site plan and photographs of the parcels.

1.2.2 Area Context

The Project is located in the Mission Hill neighborhood, which is recognized by traditional brick row houses and triple-decker homes situated on steep winding roads with iconic views of Boston. The majority of the surrounding area consists of residential homes accented with local restaurants and shops. There are multiple high-rise buildings located adjacent to the Project, including The Longwood directly south of the Project, and the Equity Residential apartment building directly north of the Project. Brigham Circle, located



95 St. Alphonsus Street Boston, Massachusetts

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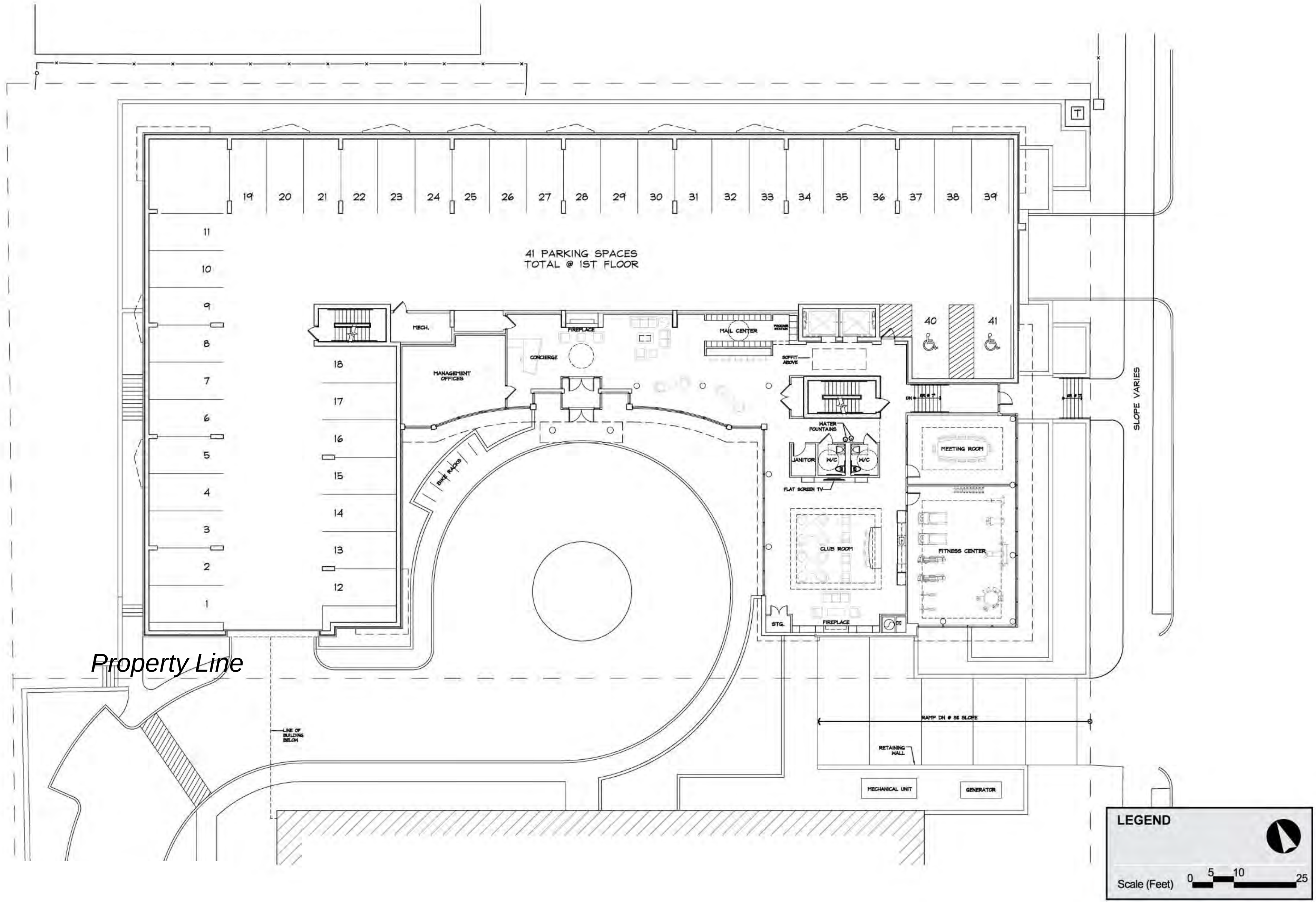
Figure 1-1

Basement Level



95 St. Alphonsus Street Boston, Massachusetts

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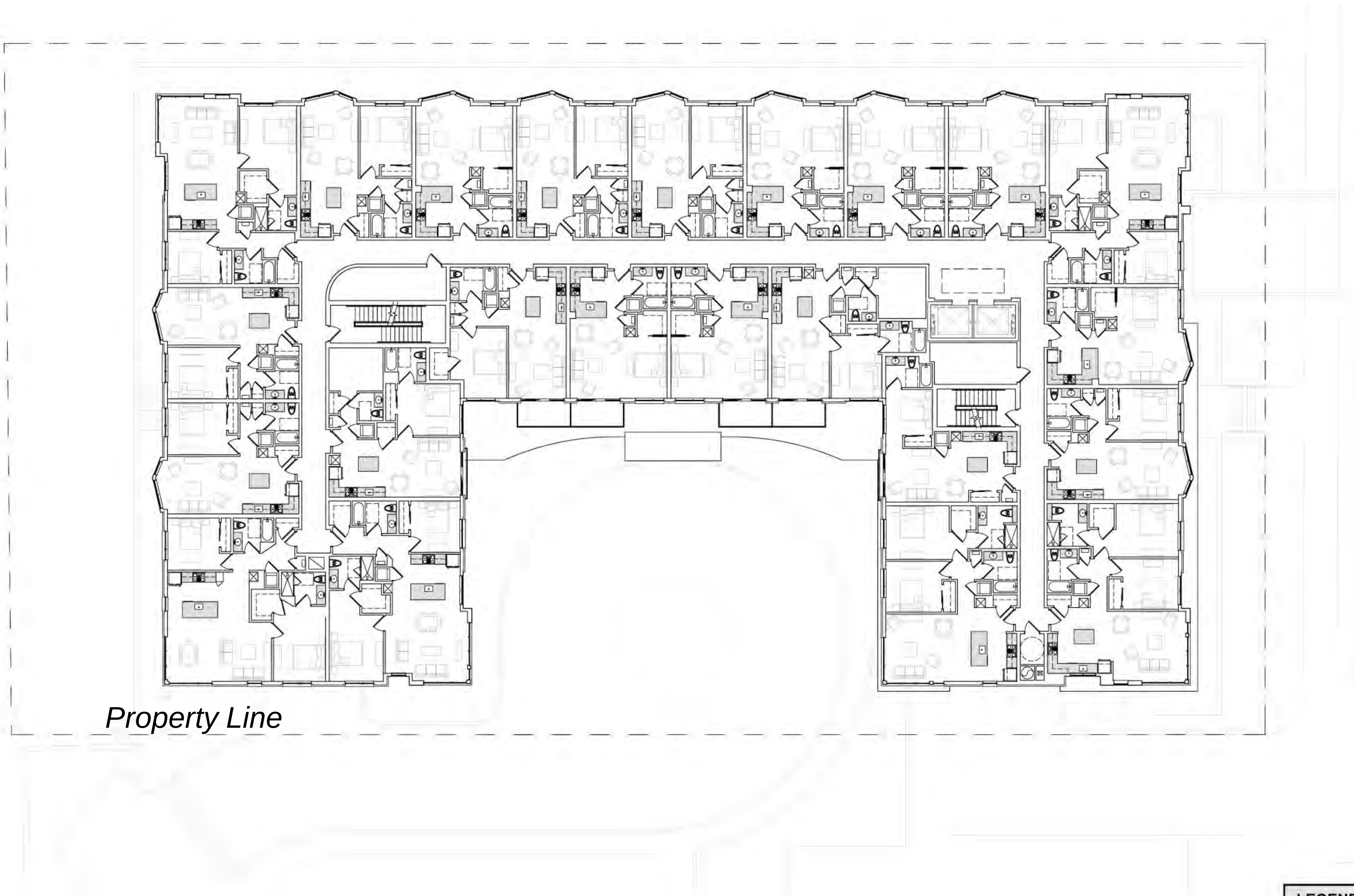
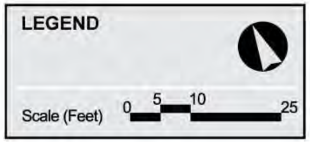
Figure 1-2
First Floor Plan





95 St. Alphonsus Street Boston, Massachusetts

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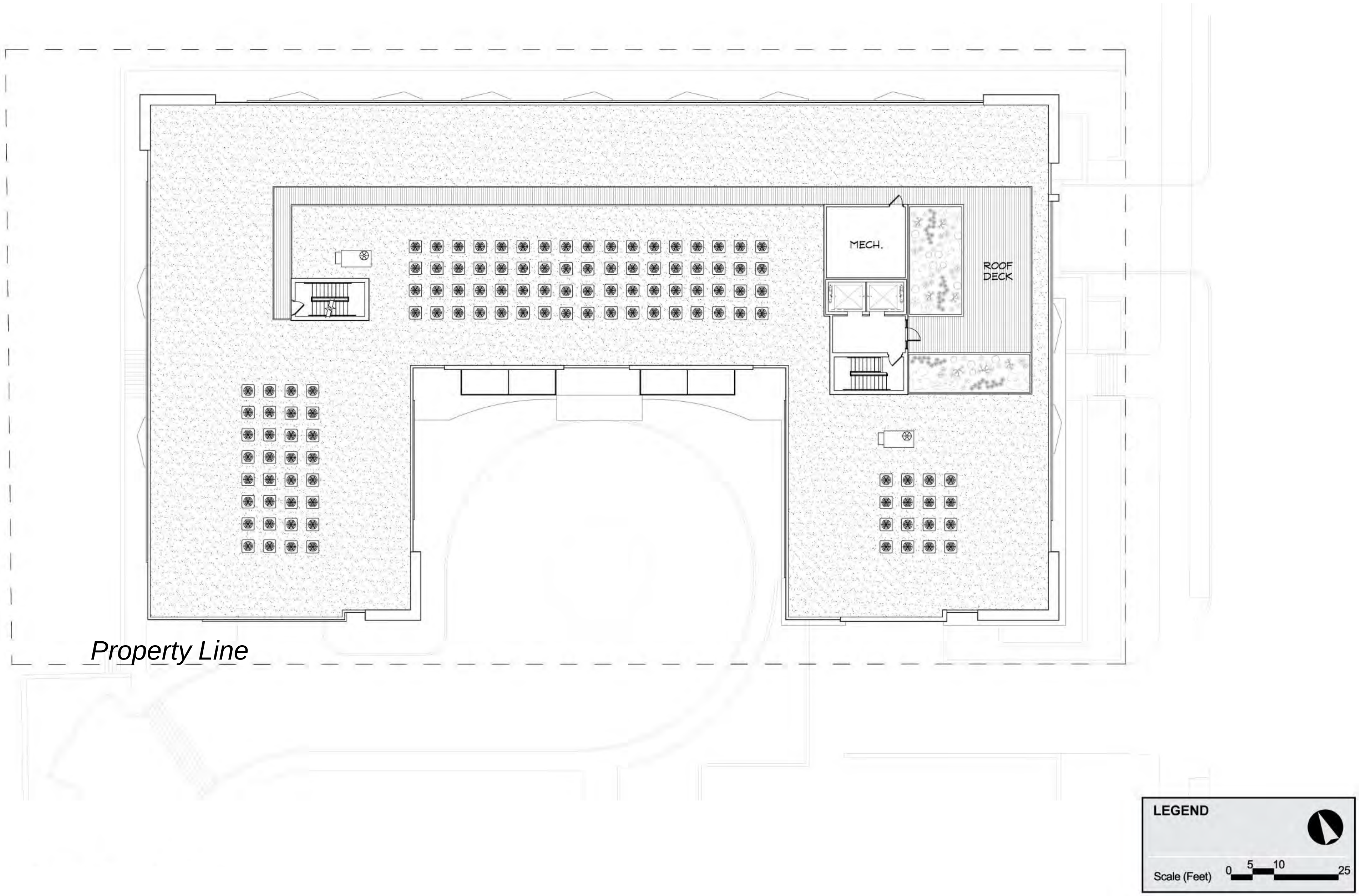
Figure 1-3
Typical Upper Floor Plan



95 St. Alphonsus Street Boston, Massachusetts

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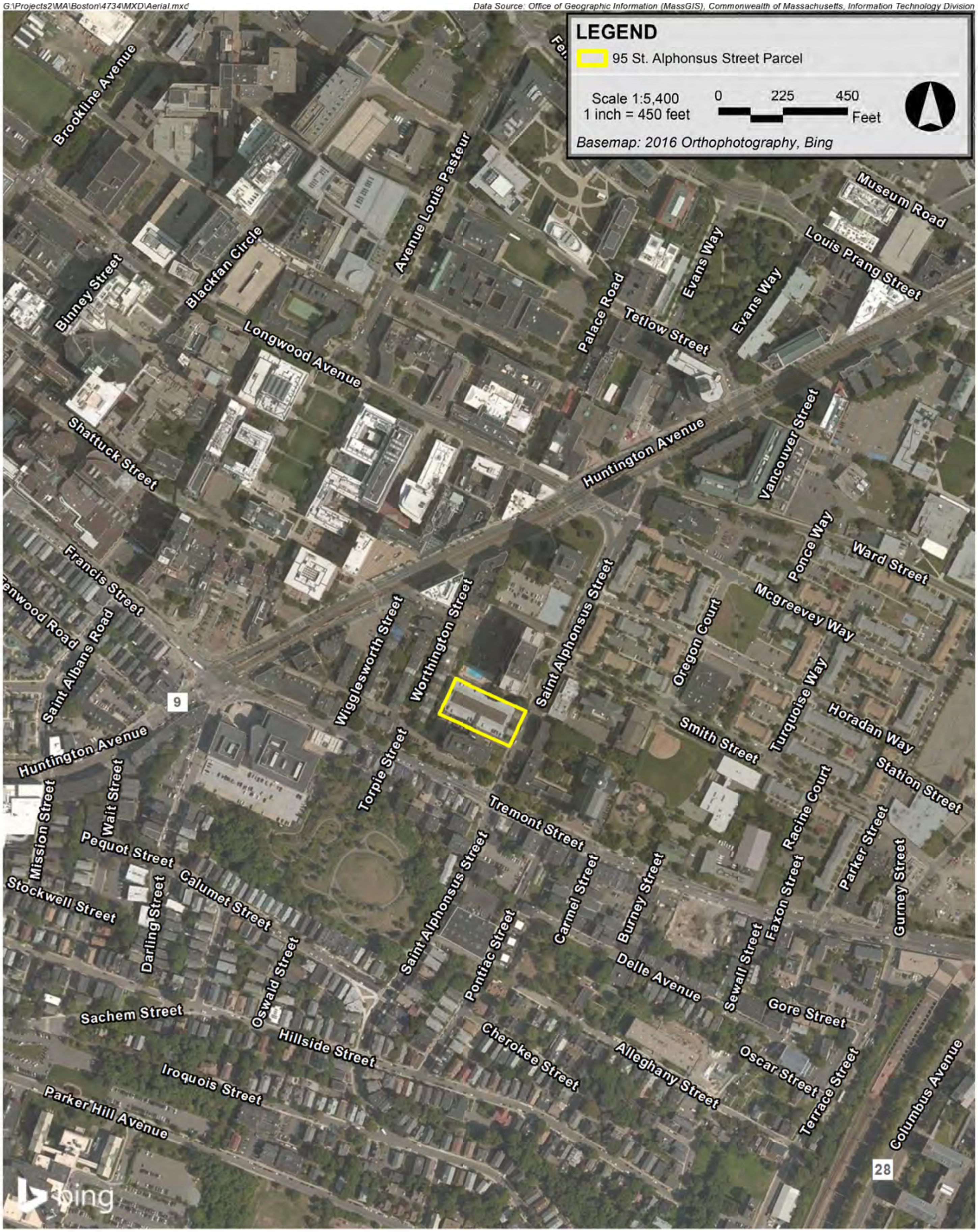
Figure 1-4
Roof Plan



95 St. Alphonsus Street Boston, Massachusetts

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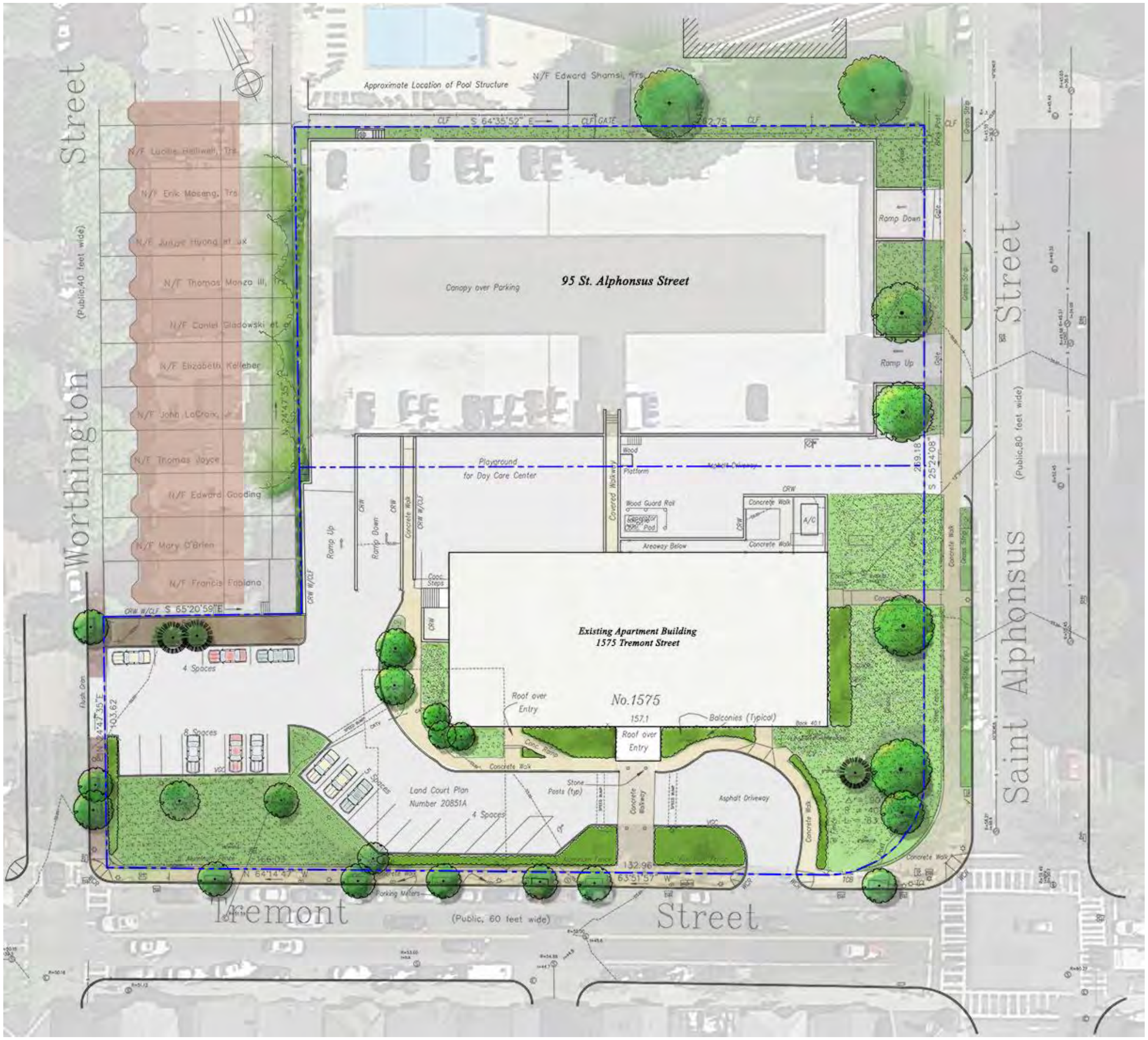
Figure 1-5

Aerial Locus Map



95 St. Alphonsus Street Boston, Massachusetts

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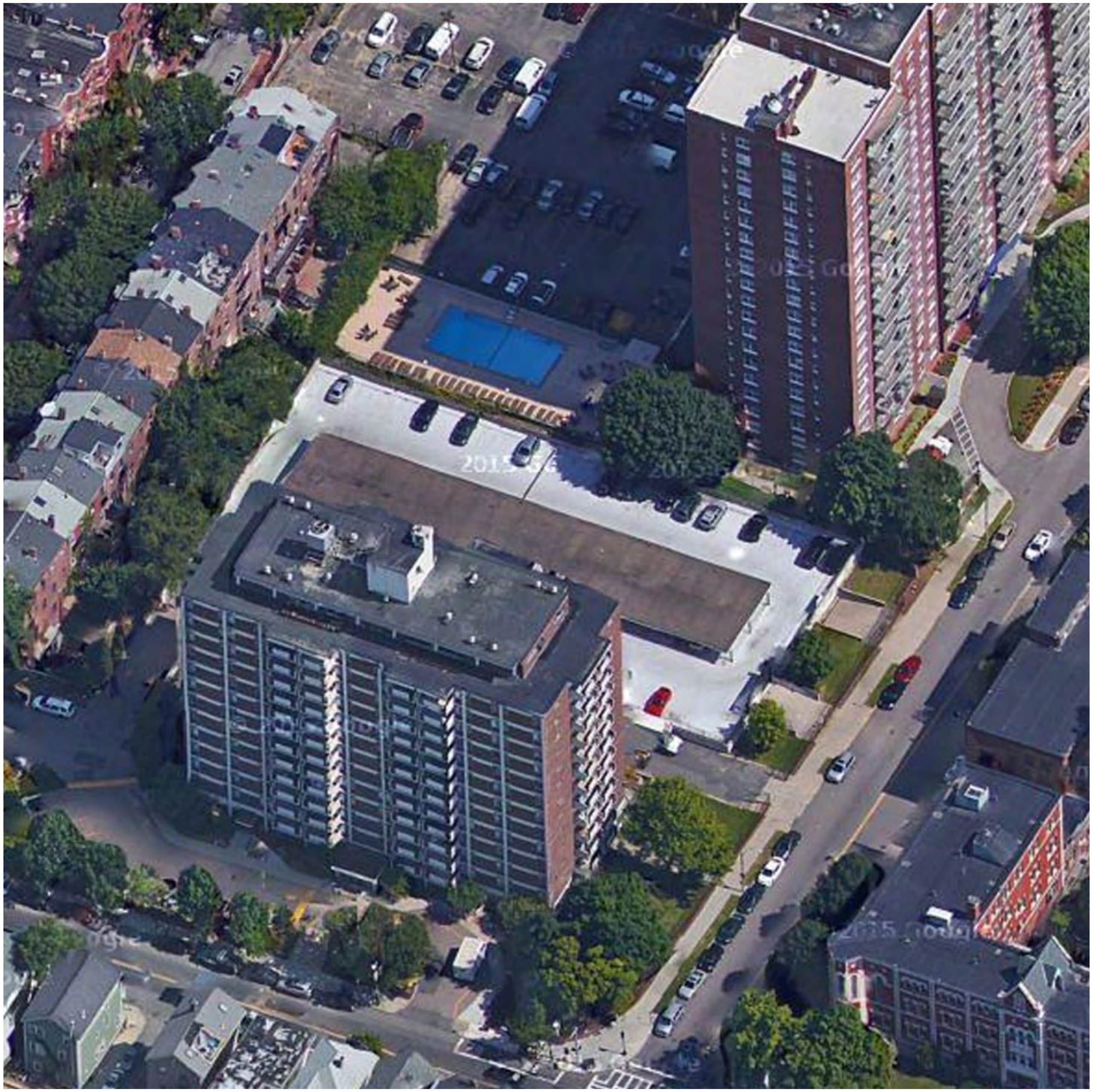
Figure 1-6
Existing Site Plan



95 St. Alphonsus Street **Boston, Massachusetts**

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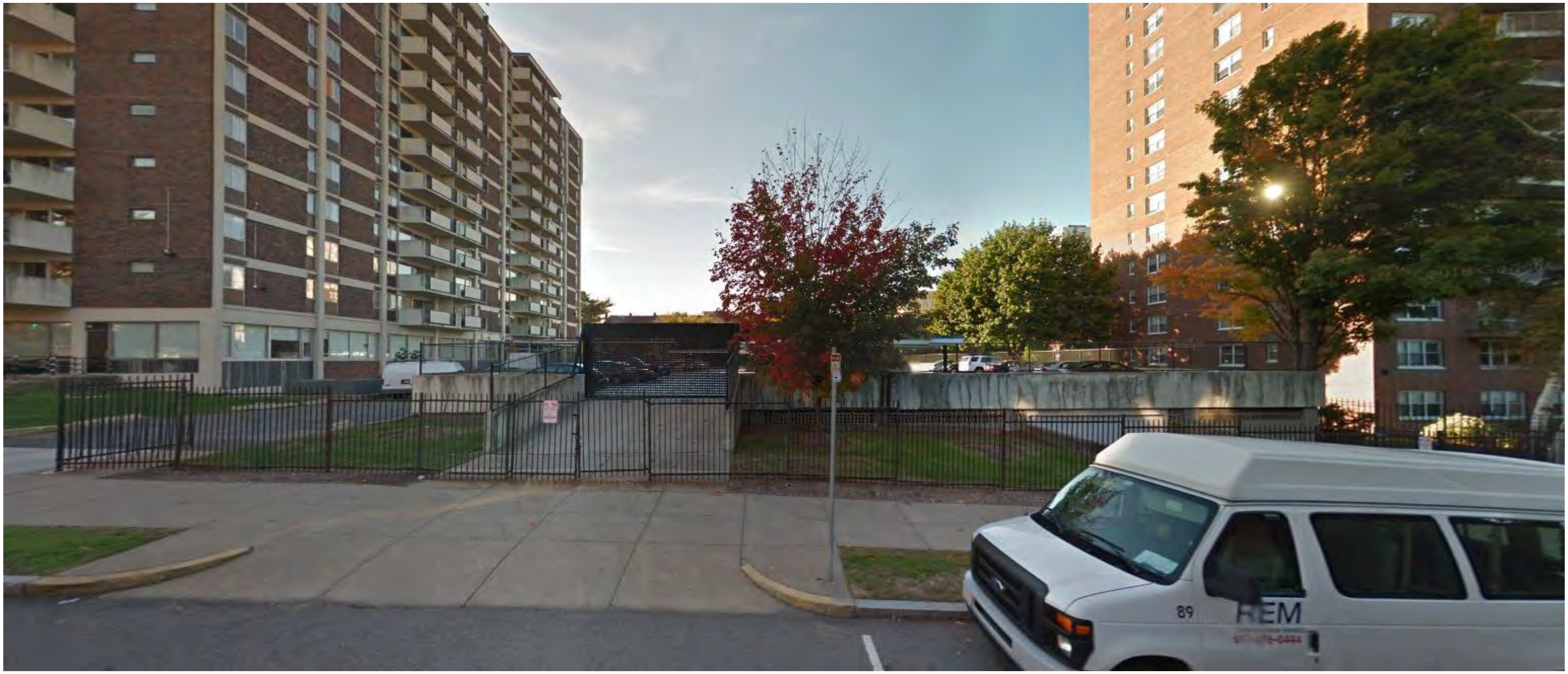
Figure 1-7

Existing Conditions Aerial View



95 St. Alphonsus Street   Boston, Massachusetts

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Figure 1-8
Existing Parking Lot

95 St. Alphonsus Street **Boston, Massachusetts**

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Figure 1-9
Existing View Across 1575 Tremont Street Parking Lot

View North On Worthington Street

View South On Worthington Street

View North At Existing Alleyway

View South At Existing Alleyway

95 St. Alphonsus Street Boston, Massachusetts

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Figure 1-10

Existing Views of the Project Site

directly east of the Project at the intersection of Tremont Street and Huntington Avenue, indicates the transition from the residential neighborhood of Mission Hill to the medical and commercial area of the Longwood Medical and Academic Area (LMA). See Figures 1-11 through 1-12 for an area context map and area photographs.

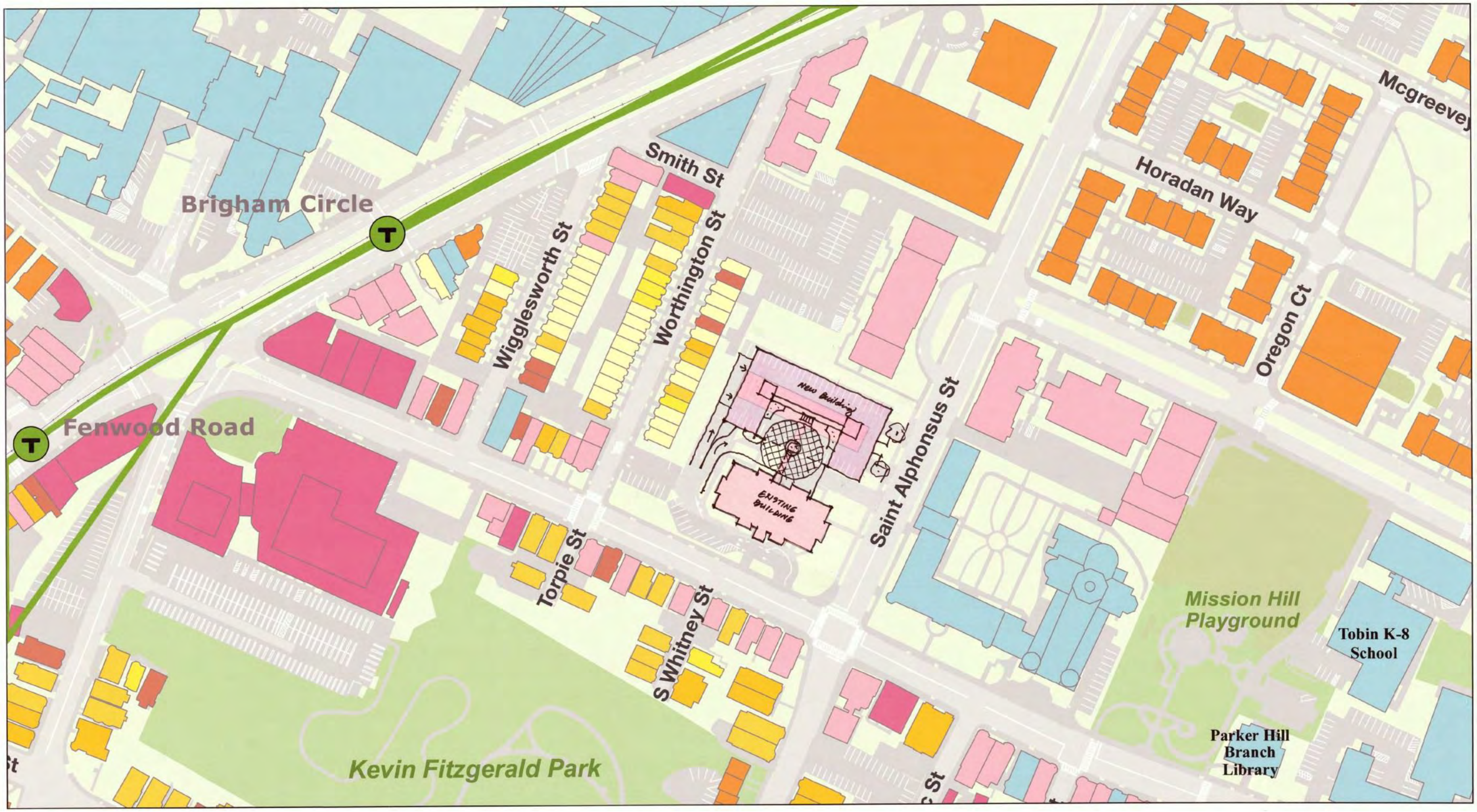
The LMA hosts multiple institutional uses within mid- and high-rise structures. A few examples include New England Baptist Hospital, Boston Children's Hospital, Beth Israel Deaconess Medical Center, Harvard Medical School, Massachusetts College of Pharmacy and Health Science and Simmons College, among others.

The Project is located within one quarter mile of the MBTA Green Line Brigham Circle, Fenwood Road, and LMA stations and several bus routes. The local car sharing provider, Zipcar, has three locations within one quarter mile radius around the Project and two locations just outside the one quarter mile radius. This proximity to public transit makes the area an ideal location for transit-oriented development.

Additionally, a number of public space amenities are in proximity to the Project. Directly south of Tremont Street is Kevin W. Fitzgerald Park, directly east of St. Alphonsus Street is the Mission Hill Playground, and less than one half mile away from the Project is the McLaughlin Playground. Multiple Emerald Necklace parks fall within the larger context of the Project to the west, within walking distance.

1.2.3 Proposed Project

The existing 175-space parking garage structure will be demolished and replaced with a five-story, approximately 75 foot tall residential building. See Figures 1-13 and 1-14 for an aerial view of the Project and the proposed Site Plan. The Site Plan shows the shared parking, access, landscaping, open space, loading facilities, trash and recycling facilities which will result in a more efficient operation for both buildings. See Figure 1-15 for a perspective of the proposed Project. The Project will include approximately 115 units with a unit mix of approximately 40 studio units, approximately 35 one-bedroom units, approximately 10 one-bedroom units with dens and approximately 30 two-bedroom units. See Figures 1-16 through 1-21 for building sections and elevations. Approximately 15 of the units will be designated as affordable housing in accordance with the Mayor's Inclusionary Development Policy. The unit mix for the 15 units includes approximately five studio units, approximately six one-bedroom units and approximately four two-bedroom units. Table 1-1 includes the Project program.



95 St. Alphonsus Street **Boston, Massachusetts**

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Figure 1-11

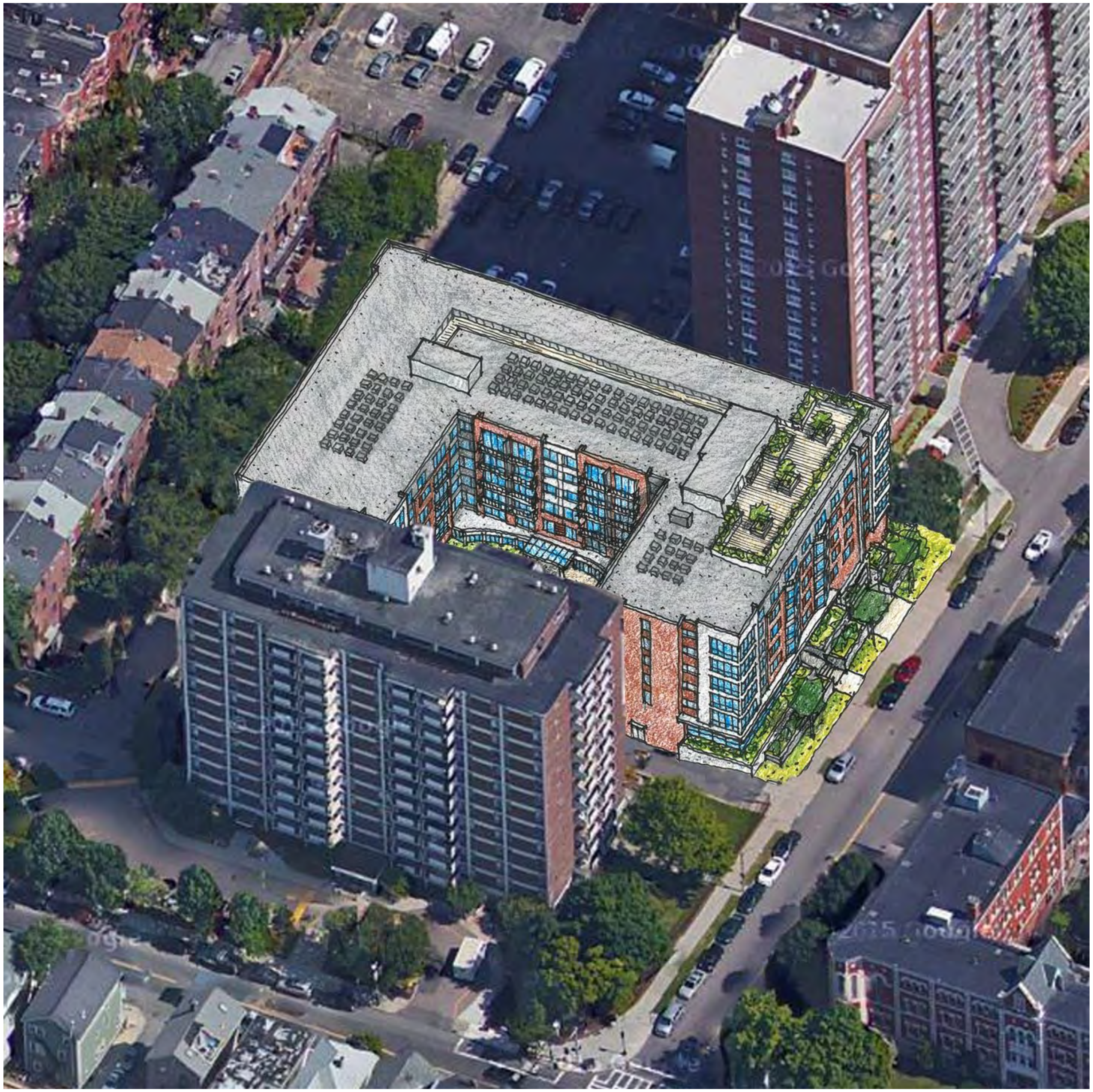
Area Context Map

View North On St. Alphonsus Street

View South On St. Alphonsus Street

View East On Tremont Street

View West On Tremont Street



95 St. Alphonsus Street   Boston, Massachusetts

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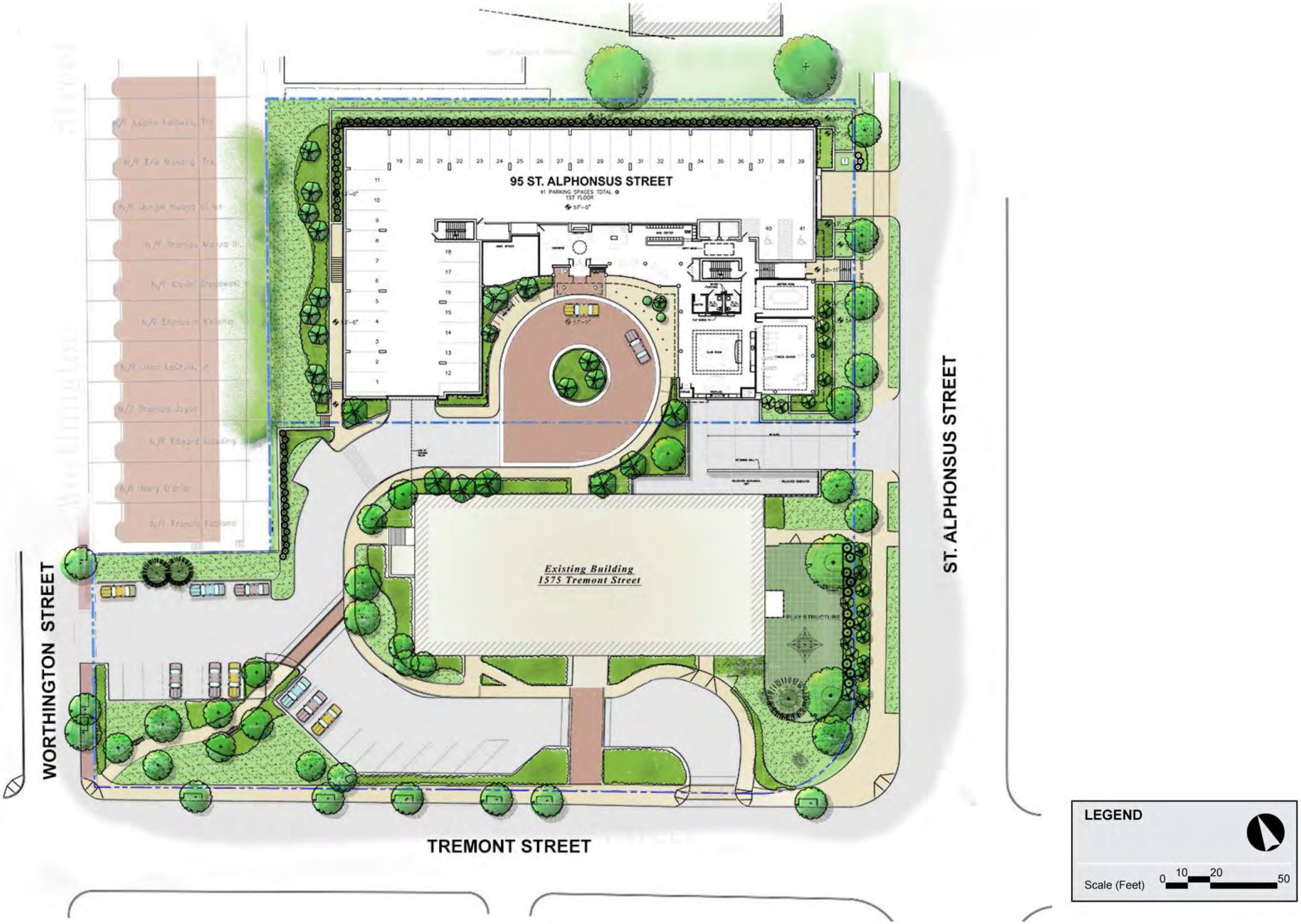
Figure 1-13
Proposed Conditions Aerial View



95 St. Alphonsus Street Boston, Massachusetts

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Figure 1-14
Proposed Site Plan

95 St. Alphonsus Street   Boston, Massachusetts

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Figure 1-15
Perspective Looking South from St. Alphonsus Street

95 St. Alphonsus Street **Boston, Massachusetts**

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Figure 1-16

East Elevation Along St. Alphonsus Street

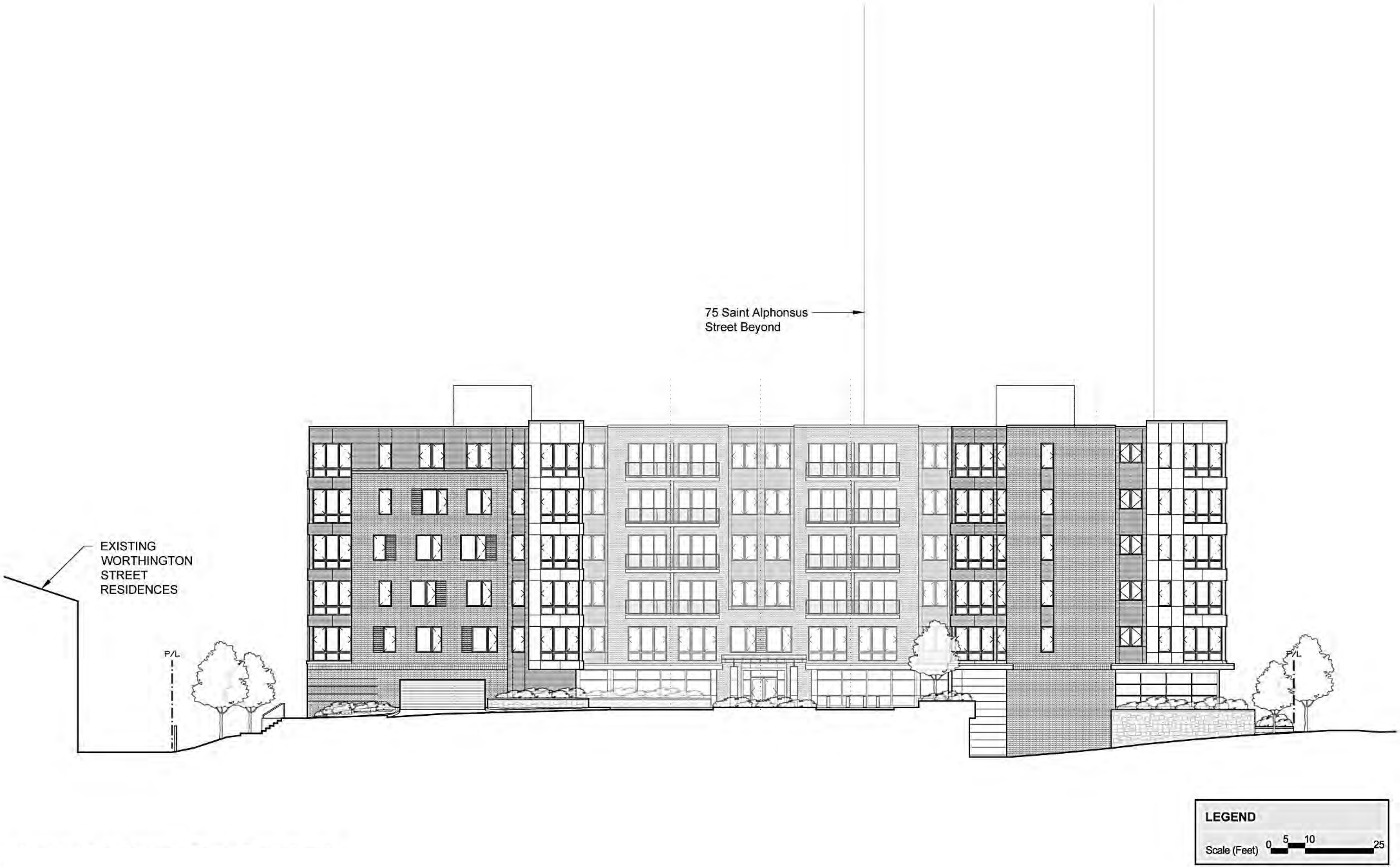

Figure 1-17

South Elevation at Entry Courtyard

95 St. Alphonsus Street Boston, Massachusetts

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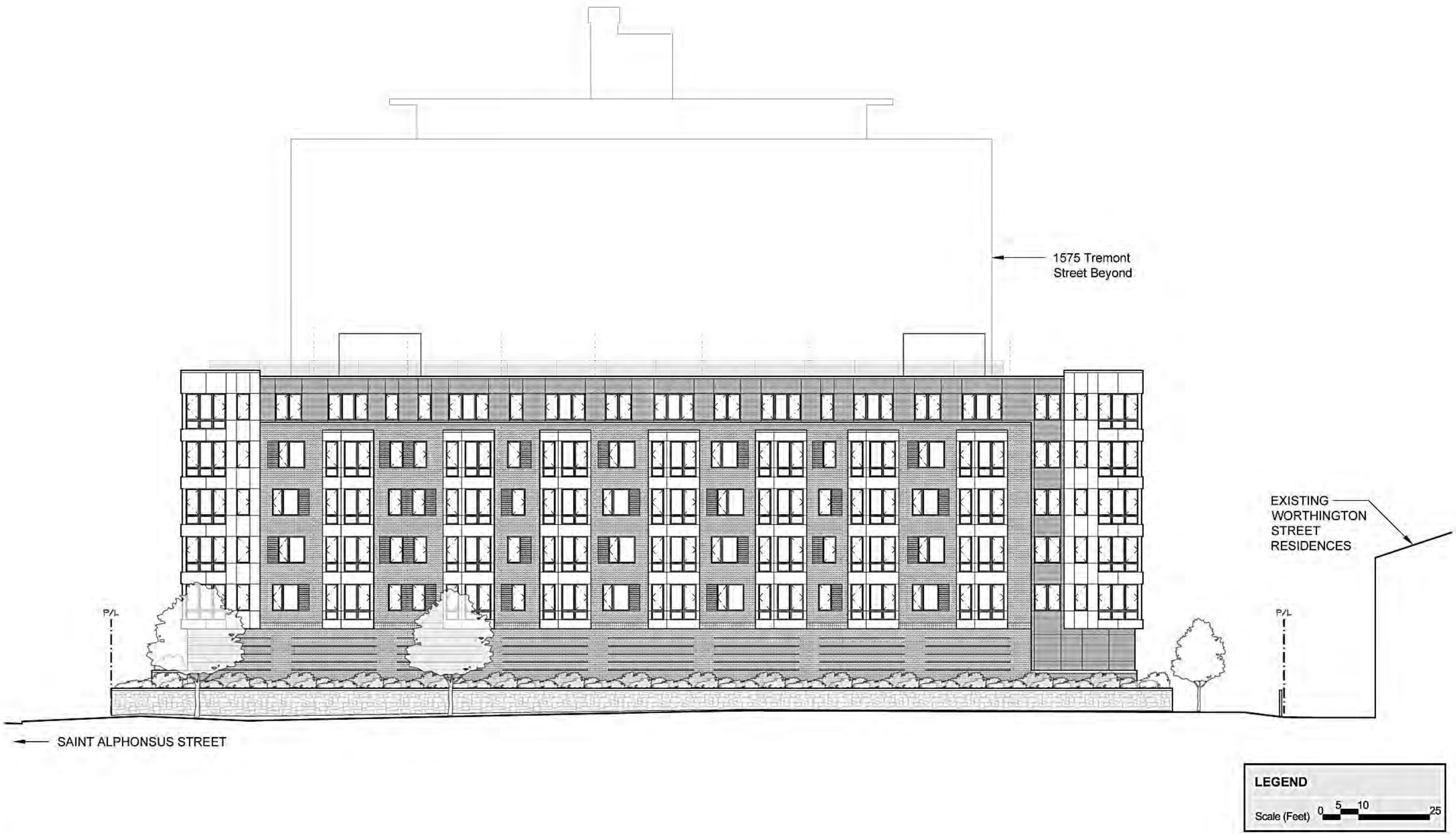
Figure 1-18

West Elevation



95 St. Alphonsus Street Boston, Massachusetts

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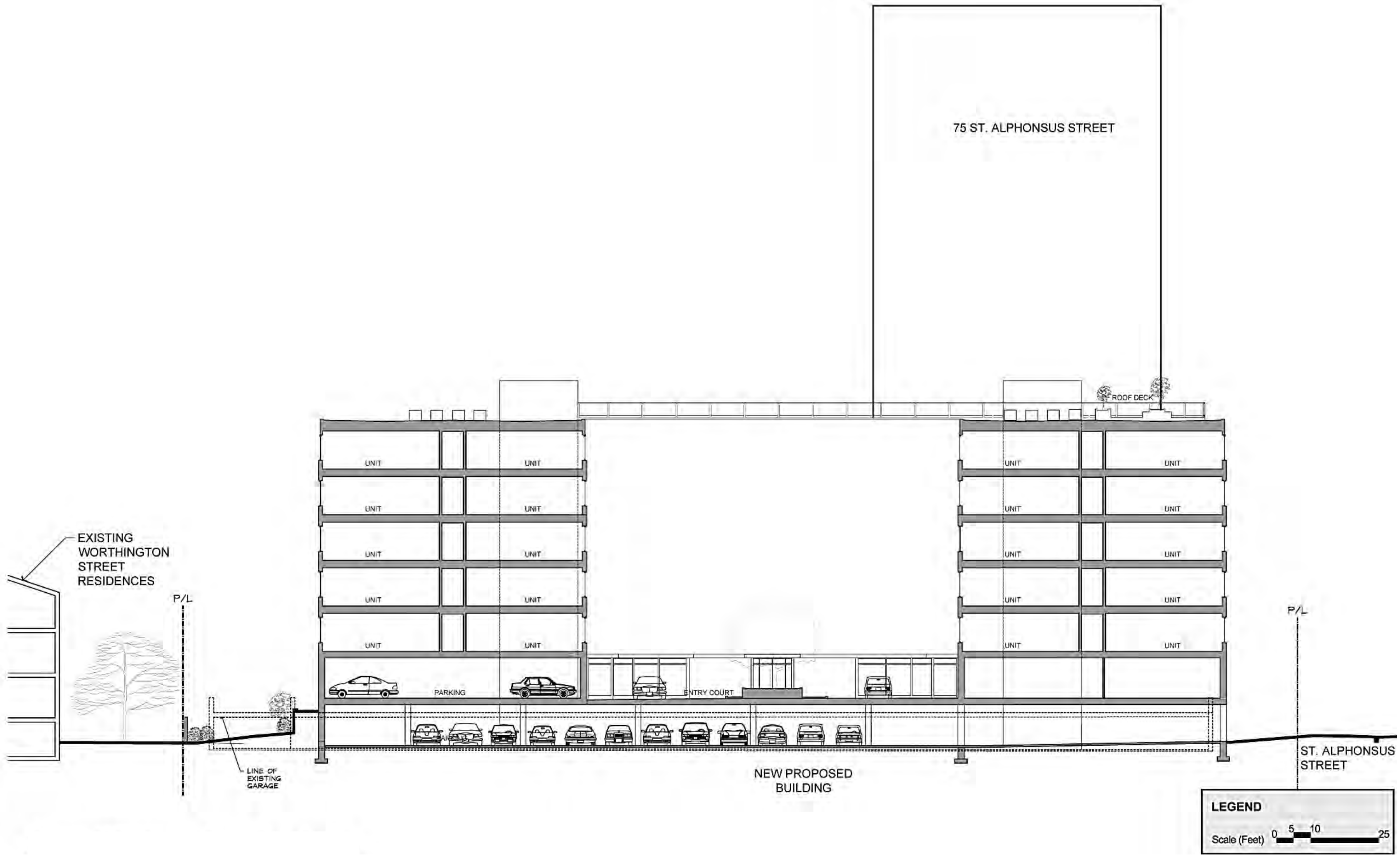
Figure 1-19
North Elevation



95 St. Alphonsus Street   Boston, Massachusetts

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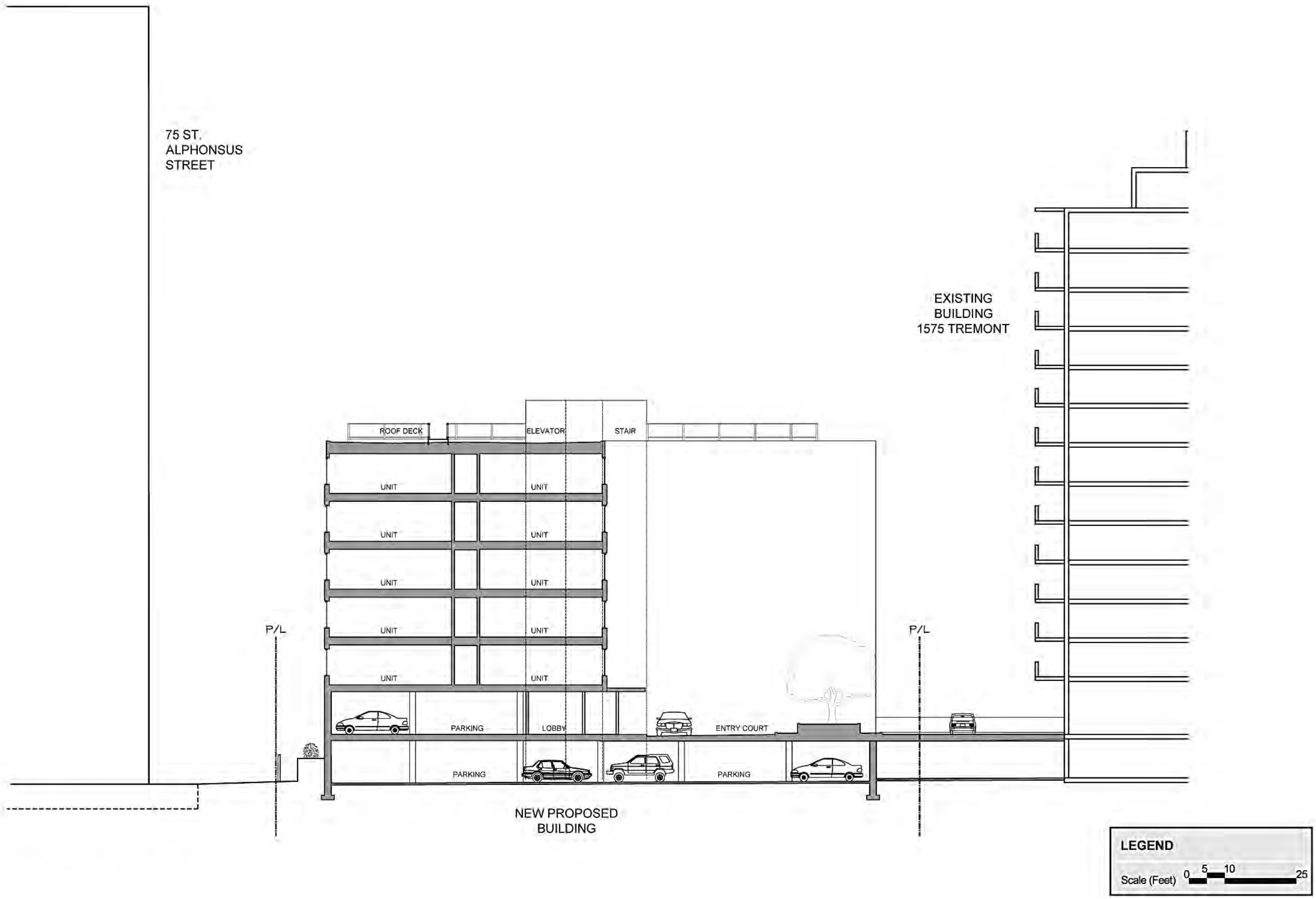
Figure 1-20

Building Section



95 St. Alphonsus Street Boston, Massachusetts

Figure 1-21

Building Section

Table 1-1 Proposed Program

Project Element	Approximate Dimension
Residential	
Studio	40 units
1-bedroom	35 units
1-bedroom with den	10 units
2-bedroom	30 units
Total Units	**115 units**
Total Square Footage	**111,665 sf**
Parking	108 below-grade spaces, 22 surface spaces
Total Parking	**130 spaces**
Zoning Height	74′ 10″
Parcel Area	37,734 square feet (0.87 acres)
FAR	3.0

A courtyard will be established between 1575 Tremont Street and 95 St. Alphonsus Street which will serve as the vehicle drop-off area and entrance to the lobby and amenity spaces. The courtyard will be a serene, landscaped area with an entrance that has been carefully designed to offer a secure, intimate setting that is set back from the main thoroughfare. A combination of large, fixed lite glass windows and modest-sized operable windows in the lobby will create a space that is inviting and unified while respecting the pedestrian scale. Enhancement of the building frontage along Alphonsus Street will be achieved through the introduction of extensive new landscaping, paving and lighting.

A total of approximately 108 below-grade parking spaces and approximately 22 surface parking spaces will be provided for use by residents of both 1575 Tremont Street and 95 St. Alphonsus Street. Loading will continue to be provided on the existing off-street service area and loading dock along St. Alphonsus Street. The loading zone will handle all move-in activity.

The 95 St. Alphonsus Street building will be similar in height or shorter than existing buildings in the area, including The Equity Residential and 1575 Tremont Street apartment buildings, located directly north and south of the Project, respectively.

1.3 Public Benefits

The development of the Project will transform a surface parking lot into a high-quality building that will seamlessly blend into the existing area context while creating a continuous street frontage.

The Project will include numerous benefits to the neighborhood and the City of Boston through the improvement of the pedestrian environment, affordable housing, and the urban design and architectural character of this area of Boston. Specific benefits are described below.

Urban Design Benefits

Enhanced Streetscape and Public Realm – Enhance the streetscape and the pedestrian experience through the use of lighting, landscaping, decorative paving and the enclosed courtyard.

High Quality Architecture – Improve the urban design characteristics and aesthetic character of the Project surroundings through the introduction of high-quality architecture.

Sustainable Development – Comply with the state's building and energy requirements. In compliance with Article 37 of the Boston Zoning Code, the Project, which is greater than 50,000 sf, will pursue a minimum of Silver level certifiability under the United Stated Green Building Council's Leadership in Energy and Environmental Design for Building Design and Construction (LEED for Mid-Rise v4).

Economic and Community Benefits

New Housing Units – Provide approximately 115 new units in the Mission Hill neighborhood of Boston located within one quarter mile of the MBTA Green Line, Brigham Circle, Fenwood Road, and LMA stations and several bus routes and three Zipcar locations within one quarter mile radius around the Project. The Project is also within one third mile of the Orange Line Roxbury Station.

Increase of the City's Affordable Housing Stock – The Project will be consistent with the Mayor's Executive Order Relative to Affordable Housing; the Project will provide approximately 15 affordable housing units.

Increased Tax Revenue – Provide property tax revenues to the City of Boston by increasing the assessed value of the Property.

Increased Employment – The Project will create approximately 189 construction jobs and approximately six permanent jobs. The Proponent will make reasonable good-faith efforts to have at least 51% of the total employee work hours be for Boston residents, at least 40% of total employee work hours be for minorities and at least 12% of the total employee work hours be for women.

1.4 Legal Information

1.4.1 Legal Judgements Adverse to the Project

There are no legal judgements or actions pending concerning the proposed Project.

1.4.2 History of Tax Arrears on the Property

All taxes due for the property have been timely paid by the Proponent, including the current FY taxes.

1.4.3 *Site Control/Public Easements*

Title to the Existing Site is held by Bluestone Tremont, LLC, Trustee of 1575 Tremont Realty Trust, which is acting through its development entity, Wingate, to undertake the proposed Project. The Existing Site was acquired from the BPDA by deed dated November 15, 2007 and recorded at Suffolk Registry of Deeds, Book 42734, Page 295. The Existing Site is not subject to any public easement, but is subject to an existing Affordable Rental Housing Agreement and Restriction ("ARHAR") dated November 15, 2007 with the BPDA, which will be amended as a result of the subdivision of the Existing Site. As described previously, the Proponent intends to subdivide the Parcel into two lots: Lot 1 (1575 Tremont Street) with a lot area of 50,720 sf, and Lot 2 to become 95 St. Alphonsus Street with a lot area of 37,734 sf, as shown on the plan entitled: "Subdivision Plan", prepared by R.E. Cameron & Associates, Inc., Land Surveyors, Civil Engineers dated November 9, 2016 (Subdivision Plan). Appendix A includes a survey plan indicating Lot 1 and Lot 2.

1.5 Zoning

1.5.1 *Existing Zoning*

The Project is located within the Mission Hill Neighborhood Zoning District, Article 59 of the Code, and specifically, the MFR-3 Subdistrict (multi-family residential subdistrict with a density factor of 3.0 and height limit of 75 feet. The Project is not within the Restricted Parking District or the Groundwater Conservation Overlay District (GCOD). The proposed uses of the Project, which include multi-family residential and accessory parking, are allowed within the MFR-3 subdistrict. The Project has been designed to comply with applicable zoning requirements.

With respect to the dimensional requirements of the Code, as set forth in Table E of Article 59 of the Code, the proposed Project has been designed to comply with such requirements, as noted in the Table 1-2 below.

Table 1-2 Existing Zoning

Category	Any Dwelling Requirement	95 St. Alphonsus Street	Compliance
Lot Area	None	N/A	N/A
Additional Lot Area	None	N/A	N/A
Lot Width	None	N/A	N/A
Lot Frontage	None	N/A	N/A
FAR	3.0	111,665 GSF/37,734 SF = 2.9 (accessory residential garage excluded)	Yes
Height	75 Feet	74'10"	Yes
Usable Open Space	100 SF/DU: 115 DU = 11,500 SF	12,107 SF (see Open Space Area Calculations Plan)	Yes
Front Yard	15 Feet	17 Feet	Yes
Side Yard	10 Feet	12 Feet & 12.1 Feet	Yes
Rear Yard	30 Feet	31.8 Feet	Yes
Off-Street Parking	1 Space/DU	N/A – Subject to BPDA review under Article 80B, Large Project Review	Yes
Off-Street Loading Bays	1 Loading bay for projects of 15,000 to 49,999 SF	N/A – Subject to BPDA review under Article 80B, Large Project Review	Yes

1.5.2 Zoning Relief and Article 80B, Large Project Review

Under the provisions of Section 59-37 of the Code, for projects subject to Large Project Review under Article 80B, the required off-street parking spaces and the loading facilities shall be determined through such review in accordance with the provisions of Article 80. It is contemplated that the joint parking and loading plan requirements for both the Project and The Longwood at 1575 Tremont Street, which are set forth in the PNF, will be considered by the BPDA under Section 59-37 and Tables J & K of Article 59 of the Code. It is contemplated that upon the successful completion of the Article 80B Large Project Review process, the BPDA will approve the joint parking and loading plan requirements for both the Project and The Longwood at 1575 Tremont Street.

After the subdivision, 1575 Tremont Street will continue to comply with the Code, except for the provision of parking, which will be located on the adjoining lot at 95 St. Alphonsus Street. The Proponent has received from ISD a zoning turn-down letter for the subdivision, which allows the Proponent to seek Board of Appeal (ZBA) approval of a variance from the parking requirements of Article 59, In addition to ZBA approval, the Proponent seeks BPDA approval of the shared parking protocol through the Article 80B, Large Project Review. Approval by the BPDA would include the incorporation of the parking and loading plan requirements for both the Project and The Longwood at 1575 Tremont Street.

1.6 Anticipated Permits and Approvals

Table 1-3 presents a preliminary list of permits and approvals from governmental agencies that are expected to be required for the Project. 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 Name	Permit / Approval
Federal	
U.S. Environmental Protection Agency	Notice of Intent for EPA Construction Activities General Discharge Permit, if required.
U.S. Department of Housing and Urban Development	
Commonwealth of Massachusetts	
Massachusetts Department of Environmental Protection, Division of Air Quality Control	Fossil Fuel Permit (if required)
City of Boston	
Boston Air Pollution Control Commission	Parking Freeze Permit
Boston Civic Design Commission	Review and approval pursuant to Article 28 of the Boston Zoning Code
Boston Fire Department	Fuel Storage Permit; Approval of Fire Safety Equipment
Boston Inspectional Service Department	Building Permit; Certificate of Occupancy
Boston Public Improvement Commission/ Department of Public Works	Specific Repair Approvals; Sidewalk Occupancy Permit
Boston Public Safety Commission, Committee on Licenses	License for Storage of Flammables
Boston Public Works Department	Street/Sidewalk Occupancy Permits
Boston Planning and Development Agency	Article 80 Review and Execution of Related Agreements; Cooperation Agreement; Boston Residents Construction Employment Plan Agreement; Affordable Housing Agreement

Table 1-3 Anticipated Permits and Approvals (Continued)

Agency Name	Permit / Approval
City of Boston	
Boston Transportation Department	Transportation Access Plan Agreement; Review and Approval of a Construction Management Plan
Boston Water and Sewer Commission	Site Plan Approval and related approvals
Boston Zoning Board of Appeal	Zoning Code variance(s) for 1575 Tremont Street (if required), Conditional Use Permits (if required)
Boston Landmarks Commission	Article 85 (Demolition Delay) Review

1.7 Community Outreach Overview

As part of its planning efforts, the Proponent and its Project team have met with elected officials, the City of Boston, abutters, neighborhood groups and other interested parties to discuss the Project. As of March 13, 2017, the Proponent has met with the following interested parties:

- Representative Jeffery Sanchez
- Councilor Josh Zakim
- Patricia Flaherty and Board Members of Mission Hill Neighborhood Housing Services
- Richard Rouse, Executive Director, Mission Hill Main Streets
- David Welch, Longwood Tenant Association
- Chad Rosner, Community Alliance of Mission Hill
- Ellen Moore, member, Mission Hill Triangle Neighborhood Association

The Proponent continues to be committed to a comprehensive and effective community outreach and will continue to engage the community to ensure public input on the Project. The Proponent looks forward to working with the BPDA and city agencies, local officials, neighbors and others as the design and review process move forward.

1.8 Schedule

Construction is anticipated to commence in the second quarter of 2018, with completion anticipated in approximately 16 months.

1.9 Project Identification and Team

Address/Location:	95 St. Alphonsus Street, Boston MA 02120
Proponent:	Wingate Companies 100 Wells Avenue Newton, MA 02459 (617) 307-6530 J. Ralph Cole Michael Siciliano Elizabeth Schuster
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Chapter 2

Transportation

2.0 TRANSPORTATION

2.1 Introduction

Howard Stein Hudson (HSH) has conducted an evaluation of the transportation impacts of the proposed Project. The transportation study adheres to the Boston Transportation Department (BTD) Transportation Access Plan Guidelines and Boston Planning and Development Agency BPDA Article 80 Large Project Review process. The study includes an evaluation of existing conditions, future conditions with and without the Project, projected parking demand, loading operations, transit services, and pedestrian activity.

2.1.1 Project Description

The Project is located in the Mission Hill neighborhood of Boston. The adjacent 1575 Tremont Street parcel is currently occupied by a 14-story building at 1575 Tremont Street consisting of 147 residential units, ground floor retail space, (currently occupied by a post office and a day care) and 22 surface parking spaces used by the US Postal Office, a daycare, building management and visitors. The 95 St. Alphonsus Street parcel also includes approximately 175 parking spaces within a parking structure used by the residents of 1575 Tremont Street. The Project includes the redevelopment of the existing 175 space parking structure to allow for the construction of a new residential Project consisting of up to 115 residential units. The new building will include a 108-space parking structure that will serve the Project and the existing residential units at the adjacent 1575 Tremont Street. The development of the proposed Project to the rear of 1575 Tremont Street provides opportunities for shared parking, access, landscaping, open space, loading facilities, trash and recycling facilities, and driveways, which will result in a more efficient operation for both buildings.

There is currently direct vehicle access from one curb cut on Tremont Street, one curb cut on Worthington Street, and three curb cuts on St. Alphonsus Street. The Project will close one curb cut on St. Alphonsus Street and retain the existing curb cuts on Tremont Street and Worthington Street. Access to the lower level of the parking garage and loading area will be provided on St. Alphonsus Street. Access to the upper level of the garage will be provided via Tremont Street/Worthington Street. All loading, trash, and recycling pick-up, and move-in/move-out activity will continue to take place on-site via the existing on-site loading area off of St. Alphonsus Street.

The primary pedestrian access to the residential buildings will be provided off of Tremont Street and St. Alphonsus Street.

2.1.2 *Methodology*

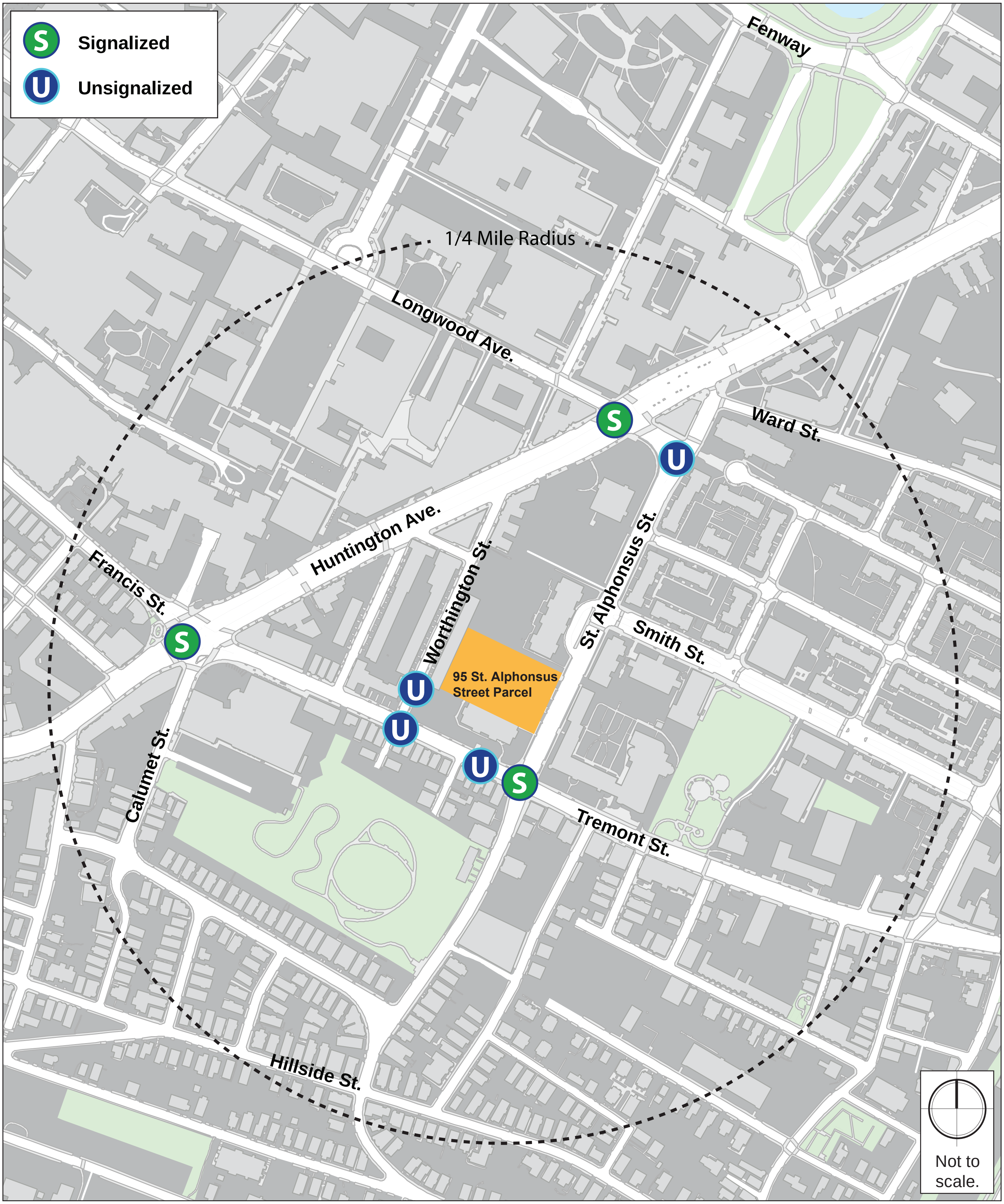
As described above, in accordance with the BTD Transportation Access Plan Guidelines, the study team conducted a transportation analysis for the Project. The analysis is summarized in the following sections:

- The first section comprises an inventory of existing (2017) transportation conditions, including roadway and intersection conditions, parking, transit, and pedestrian and bicycle circulation.
- The future transportation conditions analyses evaluate potential transportation impacts associated with the Project. The long-term transportation impacts are evaluated for the year 2024, based on a seven-year horizon from the year of the filing of this traffic study.
    - The No-Build (2024) Condition analysis includes general background growth and any proposed or planned projects (not including this Project) and transportation improvements that are large enough to potentially impact transportation conditions in the vicinity of the Project.
    - The Build (2024) 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 (2024) Condition analysis.
- 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 the short-term traffic impacts associated with construction activities is also provided at the end of the analysis.

2.1.3 *Study Area*

The study area includes the following seven intersections (see Figure 2-1)

1. Huntington Avenue/Tremont Street/Francis Street/Calumet Street (Brigham Circle), (signalized);
2. Huntington Avenue/Longwood Avenue (signalized);
3. Tremont Street/St. Alphonsus Street (signalized);
4. St. Alphonsus Street/Longwood Avenue (unsignalized);
5. Tremont Street/Worthington Street/Torpie Street (unsignalized);



95 St. Alphonsus Street / Boston, MA

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Figure 2-1
Study Area

6. Tremont Street/Site Driveway (unsignalized); and
7. Worthington Street/Site Driveway (unsignalized).

2.2 Existing (2017) Conditions

- This section includes descriptions of existing study area roadway geometries, intersection geometry and traffic control, parking and curbs usage, public transportation services, peak-hour traffic volumes for vehicles, bicycles, and pedestrians, and intersection traffic operations.

2.2.1 Roadway Network

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

Huntington Avenue, an urban principal arterial, runs east-west from Copley Square to the Riverway/Jamaicaway. Huntington Avenue generally consists of four travel lanes, two in each direction with additional turning lanes at Brigham Circle and Longwood Avenue. To the west of Brigham Circle, the inside travel lanes are shared use with the Massachusetts Bay Transportation Authority (MBTA) Green Line E tracks; to the east of Brigham Circle, the Huntington Avenue eastbound and westbound travel lanes are separated by a dedicated right-of-way for the Green Line. Huntington Avenue provides shared-use bicycle accommodations through the use of sharrow pavement markings. Huntington Avenue is a major pedestrian route, bounded by dense retail, medical, and institutional use within the study area. Wide, decorative crosswalks up to 17 feet in width are provided frequently along the corridor. Sidewalks range in width from five to 11 feet, but trees, waste receptacles, light poles, sign posts, and other obstructions limit the effective sidewalk width. In the vicinity of the study area, metered, on-street parking is provided along both sides of the roadway. The MBTA bus route 39 has frequent stops along both sides of the roadway.

Tremont Street, an urban minor arterial, runs north–south from Columbus Avenue to Huntington Avenue, where it becomes Francis Street at Brigham Circle. In the study area, Tremont Street is a two-way roadway, with one travel lane in each direction and shared-use bicycle accommodations through the use of sharrow pavement markings. A mix of two-hour and metered on-street parking is allowed on Tremont Street near the study area. Sidewalks are provided on both sides of the street within the study area and range in width from six to 12 feet. Along the street near the Project, land uses include a mix of commercial, religious and residential uses.

Francis Street, an urban minor arterial that runs north-south between Brigham Circle and the Riverway. Francis Street is approximately 40 feet wide, accommodating one lane of traffic in each direction and at some points, on-street parking for residents only. Sidewalks are provided on both sides of the street and range in width from seven to 12 feet.

Calumet Street, a local street that connects Brigham Circle and St. Alphonsus Street. Calumet Street provides one travel lane in each direction Within the study area, Calumet Street is about 32 feet wide and resident parking is allowed along the west side of the roadway. Sidewalks are provided along both sides of the roadway and range in width from eight to nine feet.

Longwood Avenue, an urban minor arterial, generally runs north-south from Harvard Street in Brookline to St. Alphonsus Street in Boston. Within the study area, it comprises one lane in each direction, with parking allowed along the east side of the street except between 7:00 and 9:30 a.m. Sidewalks are provided along both sides of the roadway and range in width from seven to 14 feet.

St. Alphonsus Street, an urban minor arterial, runs east–west from Calumet Street to Huntington Avenue. Within the study area, St. Alphonsus Street consists of one travel-lane in each direction. Unrestricted parking is generally allowed on both sides of the street, except on the east side of the street adjacent to the Mission Grammar School between 7:00 a.m. and 4:00 p.m. on school days. Sidewalks are provided along both sides of the roadway and are approximately six to 11 feet wide.

Worthington Street, a local street, runs one-way eastbound from Smith Street to Huntington Avenue, but west of Smith Street becomes one-way westbound until Tremont Street. The roadway is approximately 25 feet wide. Sidewalks and resident parking is provided on both sides of the street. Sidewalks range in width from four to seven feet, but trees, light posts, sign posts, and other sidewalk obstructions limit the effective width of the sidewalk.

Torpie Street, a local street, extends approximately 118 feet west from Tremont Street before dead-ending against a steep stone outcropping of Mission Hill. The roadway is approximately 19 feet wide with unrestricted parking permitted on the west side of the street only. Sidewalks are provided along both sides of Torpie Street and are approximately five feet wide.

2.2.2 Intersection Conditions

2.2.2.1 Signalized Intersections

1. Huntington Avenue/Tremont Street/Francis Street/Calumet Street (Brigham Circle) is a five-way, signalized intersection. The three-phase signal provides a leading phase to Tremont Street westbound. The Green Line E branch separates the Huntington Avenue eastbound and westbound lanes. The MBTA median and train tracks are approximately 37 feet wide. The Green Line E branch tracks proceed through the center of the intersection. The Huntington Avenue eastbound approach consists of an 11-foot shared left-turn/through lane and an 11-foot shared through/right-turn lane.

The Huntington Avenue westbound consists of an 11-foot left-turn lane with 80 feet of storage, an 11-foot through lane, and an 11-foot shared through/right-turn lane. The Tremont Street northbound approach consists of an 11-foot shared hard-left-turn/bear-left-turn and an 11-foot through/right-turn lane with 50 feet of storage. The Calumet Street northeast-bound approach consists of one 12-foot channelized right-turn lane. The Francis Street southbound approach consists of an 11-foot shared left-turn/through lane and an 11-foot shared through/right-turn lane with 50 feet of storage. Right-turn on red is prohibited along both Huntington Avenue approaches and the Francis Street southbound approach.

Bus stops are adjacent to the Tremont Street northbound approach, on both sides of the roadway. The Green Line E branch Brigham Circle station is located just east of the intersection on Huntington Avenue. Pedestrian crossings are an exclusive phase within the signal phasing. Sidewalks are provided along both sides of Huntington Avenue, Tremont Street, Calumet Street, and Francis Street. Sidewalks range in width from five to 10 feet. Crosswalks with handicap-accessible ramps and pedestrian signals are provided across every intersection approach. Crosswalk pavement markings are faded and in poor condition.

2. Huntington Avenue/Longwood Avenue is a four-way, signalized intersection. The Green Line E branch separates the Huntington Avenue eastbound and westbound lanes. The Green Line median and train tracks are approximately 36 to 40 feet wide. The Huntington Avenue eastbound approach consists of a 12-foot left-turn lane, a 12-foot through lane, and a 12-foot shared through/right-turn lane. The Huntington Avenue westbound approach consists of a 12-foot left-turn lane, a 12-foot through lane, and a 12-foot shared through/right-turn lane. The Longwood Avenue northbound approach consists of a 12-foot shared left-turn/through/right-turn lane with adjacent on-street parking. The Longwood Avenue approach consists of a 12-foot shared left-turn lane/through lane and a 12-foot shared through/right-turn lane. Right-turn on red is prohibited at all intersection approaches.

Pedestrian crossings are concurrent with the signal phasing. Bus stops are located to the west of the intersection on both sides of Huntington Avenue. Sidewalks are provided along both sides of Huntington Avenue and Longwood Avenue. Sidewalks range in width from seven to 14 feet. Crosswalks with handicap-accessible ramps are provided across all approaches to the intersection. Crosswalks range in width from 10 to 15 feet and in length from 28 to 46 feet. The intersection is painted with do not block the box pavement markings.

3. Tremont Street/St. Alphonsus Street is a four-way, signalized intersection. The Tremont Street eastbound approach consists of one 12-foot shared left-turn/through/right-turn lane with adjacent two-hour, on-street parking. The Tremont Street westbound approach consists of one approximately 12-foot shared left-turn/through/right-turn lane with adjacent two-hour, on-street parking. The St. Alphonsus Street northbound approach is unmarked but behaves as one 15-foot shared left-turn/through/right-turn lane with adjacent resident, on-street parking. The St. Alphonsus southbound approach consists of one approximately 16-foot shared left-turn/through/right-turn lane with adjacent unrestricted, on-street parking. An exclusive pedestrian phase with an audible chirp for the visually impaired is pushbutton-actuated at the intersection.

Sidewalks are provided along both sides of Tremont Street and St. Alphonsus Street. Sidewalks range in width from six to 12 feet. Crosswalks, handicap-accessible ramps, and count-down pedestrian signals are provided across all intersection approaches. Crosswalks are approximately 10 to 11 feet wide and range in length from 50 to 62 feet. Crosswalk pavement markings are in poor condition. Pavement is in fair to poor condition.

2.2.2.2 Unsignalized Intersections

4. St. Alphonsus Street/Longwood Avenue is an unsignalized, T intersection. The St. Alphonsus Street northbound approach consists of one 12-foot left-turn lane and a 14-foot through lane. The St. Alphonsus Street southbound approach consists of one 16-foot shared through/right-turn lane. Both St. Alphonsus Street approaches are free movements. The Longwood Avenue southeast approach consists of a stop-controlled, 14-foot left-turn lane and a yield-controlled, channelized, 20-foot right-turn lane. The Longwood Avenue southbound left-turn and right-turn lanes are separated by a splitter island.

There is unrestricted, on-street parking permitted along the north side of St. Alphonsus Street in the vicinity of the intersection. No on-street parking is allowed on the east side of St. Alphonsus Street adjacent to the northbound travel lane. There is on-street parking allowed along the east side of Longwood Avenue except from 7:00-9:30 a.m. Sidewalks are provided along both sides of St. Alphonsus Street and Longwood Avenue. Sidewalks range in width from six to 10 feet. A crosswalk with handicap-accessible ramps is provided across St. Alphonsus Street on the north side of the intersection. The crosswalk is approximately 11 feet wide and 45 feet long. Pavement markings along the St. Alphonsus Street northbound approach is faded and in fair condition.

5. Tremont Street/Worthington Street/Torpie Street is a four-way, unsignalized intersection. The Tremont Street eastbound approach consists of a 12-foot shared left-turn/through lane with an adjacent MBTA bus stop. The westbound Tremont Street approach consists of a 13-foot shared through/right-turn lane with adjacent two-hour, on-street parking. The northbound Torpie Street approach consists of a 12-foot shared left-turn/right-turn lane.

Parking is prohibited along the west side of Torpie Street. The Worthington Street one-way southbound approach consists of an 11-foot shared left-turn/through/right-turn lane with adjacent resident, on-street parking along both sides.

There are no stop signs at this intersection; however the Torpie Street and Worthington Street approaches behave like stop-controlled approaches. Sidewalks are provided along both sides of Torpie Street, Worthington Street, and Tremont Street. Sidewalks range in width from five to nine feet. Crosswalks with handicap-accessible ramps are provided across all intersection approaches except the Torpie Street southbound approach. Crosswalks are approximately 10 feet wide and range in length from 30 to 45 feet. Torpie Street and Worthington Street are free of pavement markings. Pavement and pavement markings are in fair condition.

6. Tremont Street/Site Driveway is an unsignalized, T-intersection. The Site Driveway is 22 feet wide and one-way eastbound. The Tremont Street northbound approach consists of a 13-foot shared through/right-turn lane with adjacent metered, on-street parking. The Tremont Street southbound approach consists of an approximately 12-foot shared left-turn/through lane with adjacent two-hour, on-street parking. Sidewalks are provided along the south side of the Site Driveway and both sides of Tremont Street. Sidewalks range in width from five to 12 feet. No crosswalks are provided at this intersection, however handicap-accessible ramps are provided on both sides of the Site Driveway.

7. Worthington Street/Site Driveway is an unsignalized intersection with two approaches. The site driveway approach is one-way westbound and is 33-feet wide. The Worthington Street southbound approach consists of an 11-foot through lane with adjacent resident, on-street parking along both sides. Sidewalks are provided along both sides of Worthington Street and are approximately four to five feet wide. There are no crosswalks provided at this intersection. Handicap-accessible ramps are provided on each side of the Site Driveway.

2.2.3 Traffic Conditions

Turning movement counts were based on data collected during the weekday morning (7:00 a.m. to 9:00 a.m.) and evening (4:00 p.m. to 6:00 p.m.) peak periods. Data at all intersections were collected on Wednesday, March 1, 2017. Based on these counts, the weekday peak hours were identified as 7:15–8:15 a.m. and 4:30–5:30 p.m. Figures 2-2 and 2-3 show the existing peak-hour turning volumes for the a.m. and p.m. peak hour, respectively. Complete traffic count data are provided in Appendix B.

2.2.3.1 Traffic Operations

The study team used Trafficware's Synchro 9 software to analyze delay and the existing Level of Service (LOS) at study area intersections. This tool is based on the methodology specified in the Transportation Research Board's 2000 Highway Capacity Manual (HCM).

HCM methods analyze the capacity of an intersection by determining the LOS, delay (in seconds), volume-to-capacity (v/c) ratio, and 95th percentile queue length (in feet), based on the intersection geometry, traffic control, and available traffic data for each intersection.

The v/c ratio is a measure of congestion at an intersection approach. A v/c ratio of one or greater indicates that the traffic volume on the intersection approach exceeds capacity.

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

The 95th percentile queue length, measured in feet, represents the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line during 5% of all signal cycles. The 95th percentile queue will not be seen during each cycle. The queue would be this long only 5% of the time and would typically not occur during off-peak hours.

Table 2-1, derived from the HCM, provides LOS criteria for signalized and unsignalized intersections. LOS A defines the most favorable condition, with minimum traffic delay. LOS F represents the worst condition. LOS D is generally considered acceptable in an urban environment for signalized intersections, while LOS F is not uncommon for stop controlled approaches on minor streets intersecting a major roadway.

Table 2-1 Level of Service Criteria

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

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

Table 2-2 and Table 2-3 summarize the existing weekday a.m. peak hour and p.m. peak hour LOS results for the study area intersections. Capacity analysis reports are provided in Appendix B.

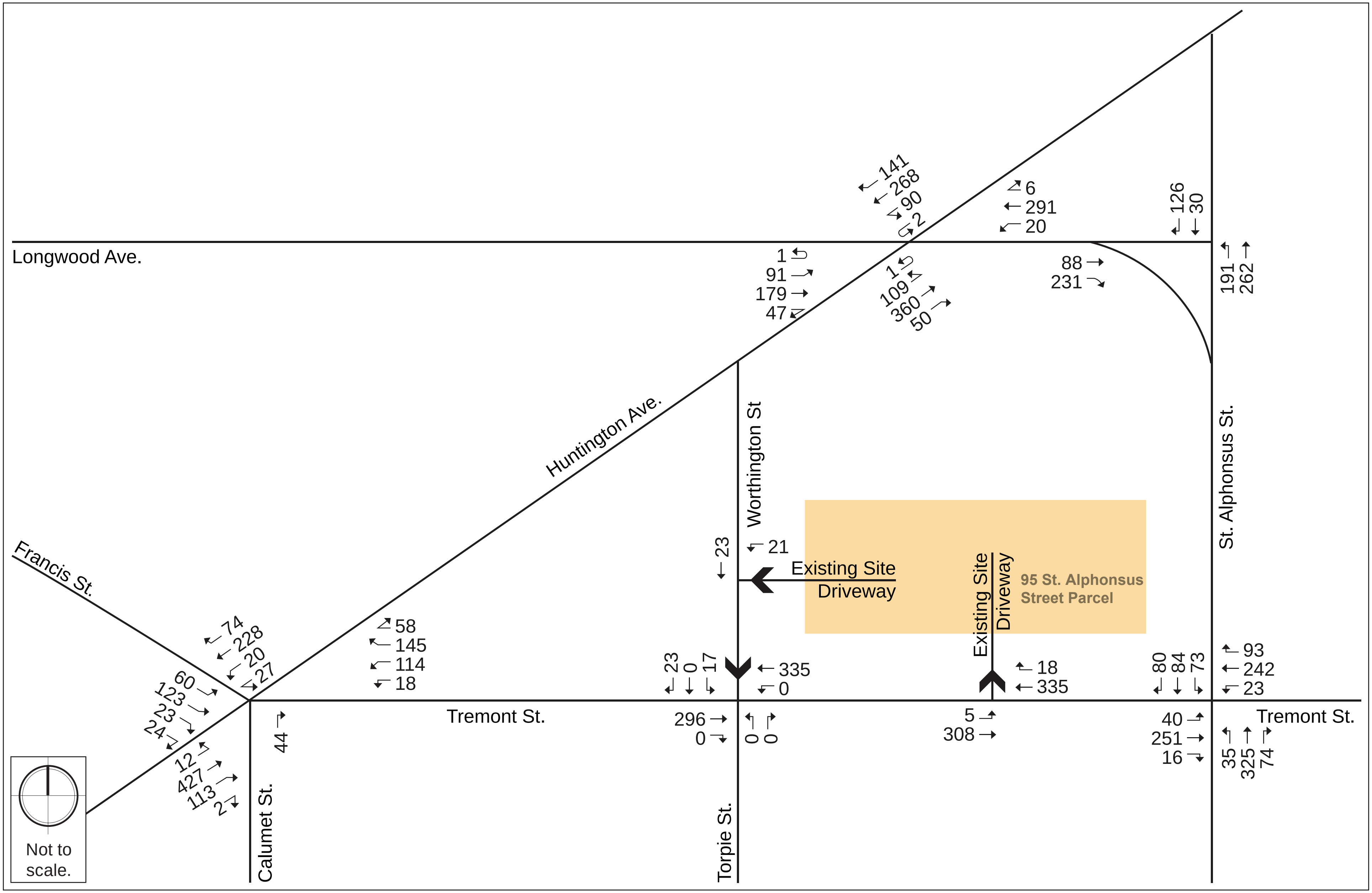

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Figure 2-2
Existing (2017) Condition Traffic Volumes, Weekday a.m. Peak Hour

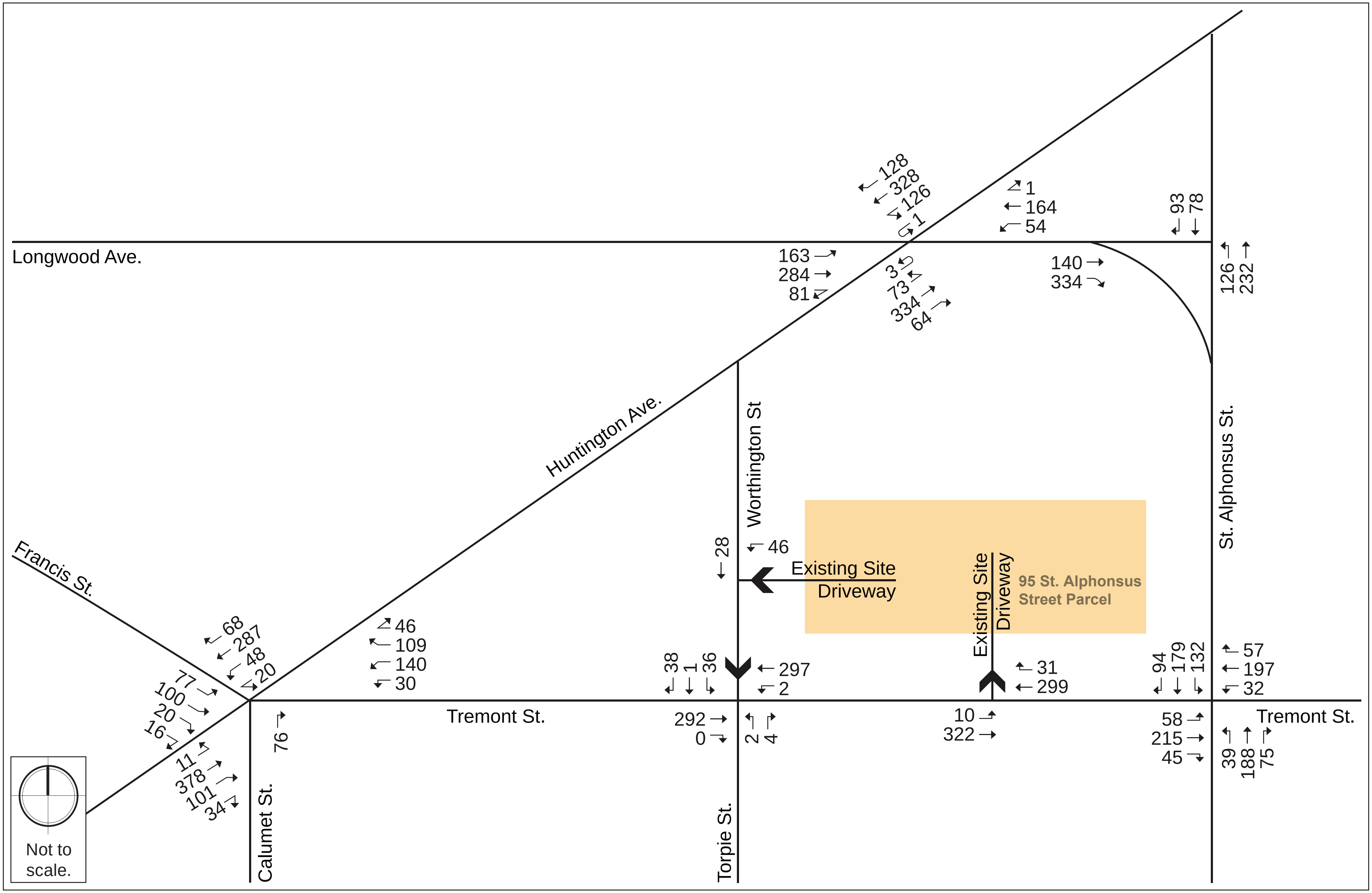

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Figure 2-3

Existing (2017) Condition Traffic Volumes, Weekday p.m. Peak Hour

Table 2-2 Existing (2017) Condition Capacity Analysis Summary, Weekday a.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
1. Huntington Avenue/Tremont Street/Francis Street/ Calumet Street (Brigham Circle)	**D**	**43.3**	-	-	-
Huntington EB left/thru I thru/right	D	54.4	0.85	234	#360
Huntington WB left	C	26.0	0.19	25	54
Huntington WB thru I thru/right	C	22.4	0.25	78	118
Tremont NWB hard left/bear left	D	44.6	0.58	85	138
Tremont NWB thru/right	D	37.5	0.50	128	200
Francis SEB left/thru I thru/right	E	61.9	0.73	97	142
Calumet NEB right	A	0.2	0.08	0	0
2. Huntington Avenue/Longwood Avenue	**D**	**36.8**	-	-	-
Huntington EB left	D	51.1	0.43	79	136
Huntington EB thru I thru/right	B	19.8	0.28	96	154
Huntington WB left	E	56.0	0.46	69	125
Huntington WB thru I thru/right	C	23.7	0.37	112	177
Longwood NB left/thru/right	D	52.5	0.79	254	330
Longwood SB left/thru | thru/right	D	47.2	0.73	131	166
3. Tremont Street/St. Alphonsus Street	**D**	**43.9**	-	-	-
Tremont EB left/thru	C	22.8	0.42	140	219
Tremont EB right	B	19.1	0.03	6	20
Tremont WB left/thru	C	22.1	0.38	130	205
Tremont WB right	C	20.2	0.16	41	79
St. Alphonsus NB left/thru/right	E	56.7	0.90	271	#441
St. Alphonsus SB left/thru/right	E	77.9	0.95	165	#301
Unsignalized					
4. St. Alphonsus Street/Longwood Avenue	-	-	-	-	-
St. Alphonsus NB left	A	8.4	0.16	-	14
St. Alphonsus NB thru	A	0.0	0.16	-	0
St. Alphonsus SB thru/right	A	0.0	0.11	-	0
Longwood SEB left	E	35.0	0.44	-	53
Longwood SEB right	B	11.6	0.31	-	33

Table 2-2 Existing (2017) Condition Capacity Analysis Summary, Weekday a.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Unsignalized					
5. Tremont Street/Worthington Street/Torpie Street	-	-	-	-	-
Tremont EB thru/right	A	0.0	0.18	-	0
Tremont WB left/thru	A	0.0	0.00	-	0
Torpie NB left/right	A	0.0	0.00	-	0
Worthington SB left/thru/right	C	19.3	0.18	-	16
6. Tremont Street/Existing Site Driveway	-	-	-	-	-
Tremont EB left/thru	A	0.2	0.00	-	0
Tremont WB thru/right	A	0.0	0.21	-	0
7. Worthington Street/Existing Site Driveway	-	-	-	-	-
Site Driveway WB left	A	8.7	0.02	-	2
Worthington SB thru	A	0.0	0.02	-	0

\# 95th percentile volume exceeds capacity.
~ 50th percentile volume exceeds capacity. Queue shown is the maximum after two cycles.
Grey shading indicates LOS E or F.

Table 2-3 Existing (2017) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
1. Huntington Avenue/Tremont Street/Francis Street/ Calumet Street (Brigham Circle)	C	**32.8**	-	-	-
Huntington EB left/thru l thru/right	D	39.8	0.70	198	#295
Huntington WB left	C	23.2	0.23	32	65
Huntington WB thru l thru/right	C	20.2	0.25	88	127
Tremont NWB hard left/bear left	D	38.0	0.75	74	m106
Tremont NWB thru/right	B	17.8	0.43	55	m86
Francis SEB left/thru l thru/right	E	60.2	0.73	82	126
Calumet NEB right	A	0.4	0.13	0	0

Table 2-3 Existing (2017) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
2. Huntington Avenue/Longwood Avenue	**D**	**36.1**	-	-	-
Huntington EB left	D	36.9	0.25	42	84
Huntington EB thru I thru/right	C	21.6	0.33	92	141
Huntington WB left	D	44.2	0.49	79	132
Huntington WB thru I thru/right	C	24.9	0.46	120	167
Longwood NB left/thru/right	D	43.1	0.70	130	220
Longwood SB left/thru | thru/right	D	51.9	0.89	173	#270
3. Tremont Street/St. Alphonsus Street	**E**	**63.0**	-	-	-
Tremont EB left/thru	D	36.2	0.42	243205	294
Tremont EB right	C	27.7	0.08	28	m47
Tremont WB left/thru	C	24.1	0.36	125	192
Tremont WB right	C	20.9	0.10	28	57
St. Alphonsus NB left/thru/right	D	41.8	0.63	212	314
St. Alphonsus SB left/thru/right	F	>80.0	>1.00	~383	#583
Unsignalized					
4. St. Alphonsus Street/Longwood Avenue	-	-	-	-	-
St. Alphonsus NB left	A	8.4	0.11	-	9
St. Alphonsus NB thru	A	0.0	0.14	-	0
St. Alphonsus SB thru/right	A	0.0	0.10	-	0
Longwood SEB left	E	40.5	0.60	-	87
Longwood SEB right	C	19.8	0.59	-	95
5. Tremont Street/Worthington Street/Torpie Street	-	-	-	-	-
Tremont EB thru/right	A	0.0	0.18	-	0
Tremont WB left/thru	A	0.1	0.00	-	0
Torpie NB left/right	C	23.3	0.04	-	3
Worthington SB left/thru/right	D	32.3	0.38	-	41

Table 2-3 Existing (2017) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Unsignalized					
6. Tremont Street/Existing Site Driveway	-	-	-	-	-
Tremont EB left/thru	A	0.3	0.01	-	1
Tremont WB thru/right	A	0.0	0.21	-	0
7. Worthington Street/Existing Site Driveway	-	-	-	-	-
Site Driveway WB left	A	8.9	0.07	-	5
Worthington SB thru	A	0.0	0.02	-	0

\# 95th percentile volume exceeds capacity.
~ 50th percentile volume exceeds capacity. Queue shown is the maximum after two cycles.
Grey shading indicates LOS E or F.

All of the study area intersections operate at an acceptable overall LOS (typically LOS D or better) with the following exceptions:

- The signalized intersection of Huntington Avenue/Tremont Street/Francis Street/Calumet Street operates at an acceptable overall LOS, except for the Francis Street approach which operates at LOS E during both the a.m. and p.m. peak hours.
- The signalized intersection of Huntington Avenue/Longwood Avenue operates at an acceptable overall LOS, except for the Huntington Avenue westbound left approach which operates at LOS E during the a.m. peak hour.
- The signalized intersection of Tremont Street/St. Alphonsus Street currently operates at an acceptable overall LOS during the a.m. peak hour and at LOS E during the p.m. peak hour. The St. Alphonsus Street northbound and southbound approaches operate at LOS E during the a.m. peak hour and the St. Alphonsus Street southbound approach operates at LOS F during the p.m. peak hour.
- The Longwood Avenue southeast-bound left lane, of the unsignalized intersection of St. Alphonsus Street/Longwood Avenue, operates at LOS E during both the a.m. and p.m. peak hours. All other movements operate at acceptable LOS.

2.2.4 Parking

This section documents the existing curbside inventory as well as the off-street parking in the study area.

2.2.4.1 On-Street Parking

On-street parking adjacent to the Project consists of a mix of metered, two-hour, unrestricted, and resident, as shown in Figure 2-4. Parking along the east and west side of Tremont Street is metered and two-hour parking, respectively. Parking along St. Alphonsus Street is a mix of unrestricted and restricted. Parking along Worthington Street is for Mission Hill Resident permits only.

2.2.4.2 Off-Street Parking

Approximately 241 off-street, public spaces are available to the public in lots within one quarter-mile (5 to 10-minute walk) radius of the Project. The majority of these spaces are available at an hourly or flat rate basis according to the market rates. These parking facilities and their capacities are identified in Figure 2-5 and Table 2-4.

Table 2-4 Off-Street Parking in the Study Area

Map No.	Facility	Capacity (spaces)
	Parking Lots	
A	25 Calumet Street	60
B	One Brigham Circle[1]	130
C	690 Huntington Avenue	51
	Total	**241**

1. 30-minute parking is free for patrons of the retail uses at One Brigham Circle.

2.2.5 Public Transportation in the Study Area

MBTA Service

The Project is located within 1/4 of a mile of the MBTA Green Line Brigham Circle, Fenwood Road, and Longwood Medical and Academic Area (LMA) stations and several bus routes. The Project is also located approximately 1/3 of a mile from the Orange Line Roxbury Crossing Station.

Public transportation services within approximately one quarter mile (5 to 10-minute walk) of the Project are summarized in Table 2-5 and illustrated in Figure 2-6.

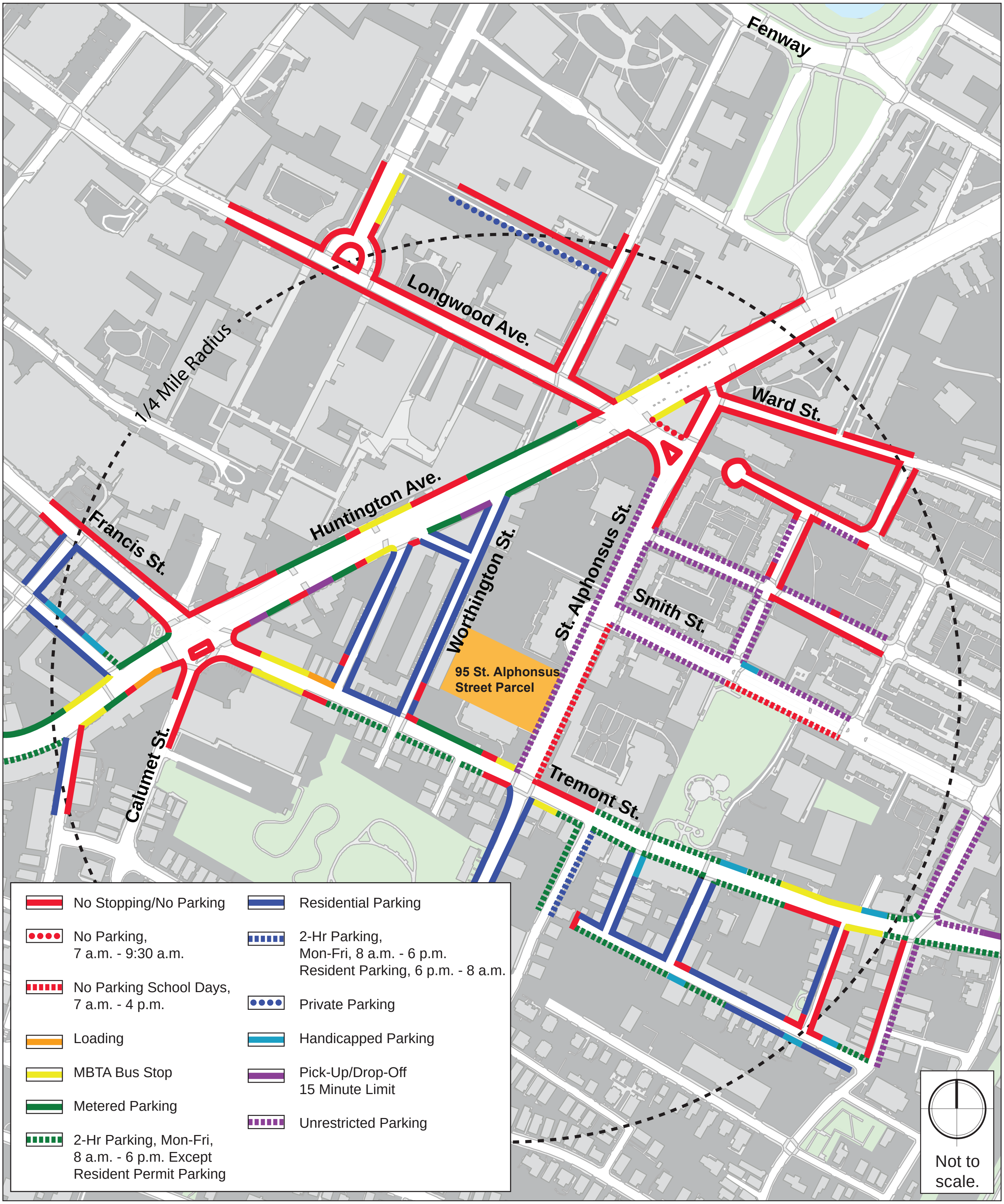

Figure 2-4
On-Street Parking

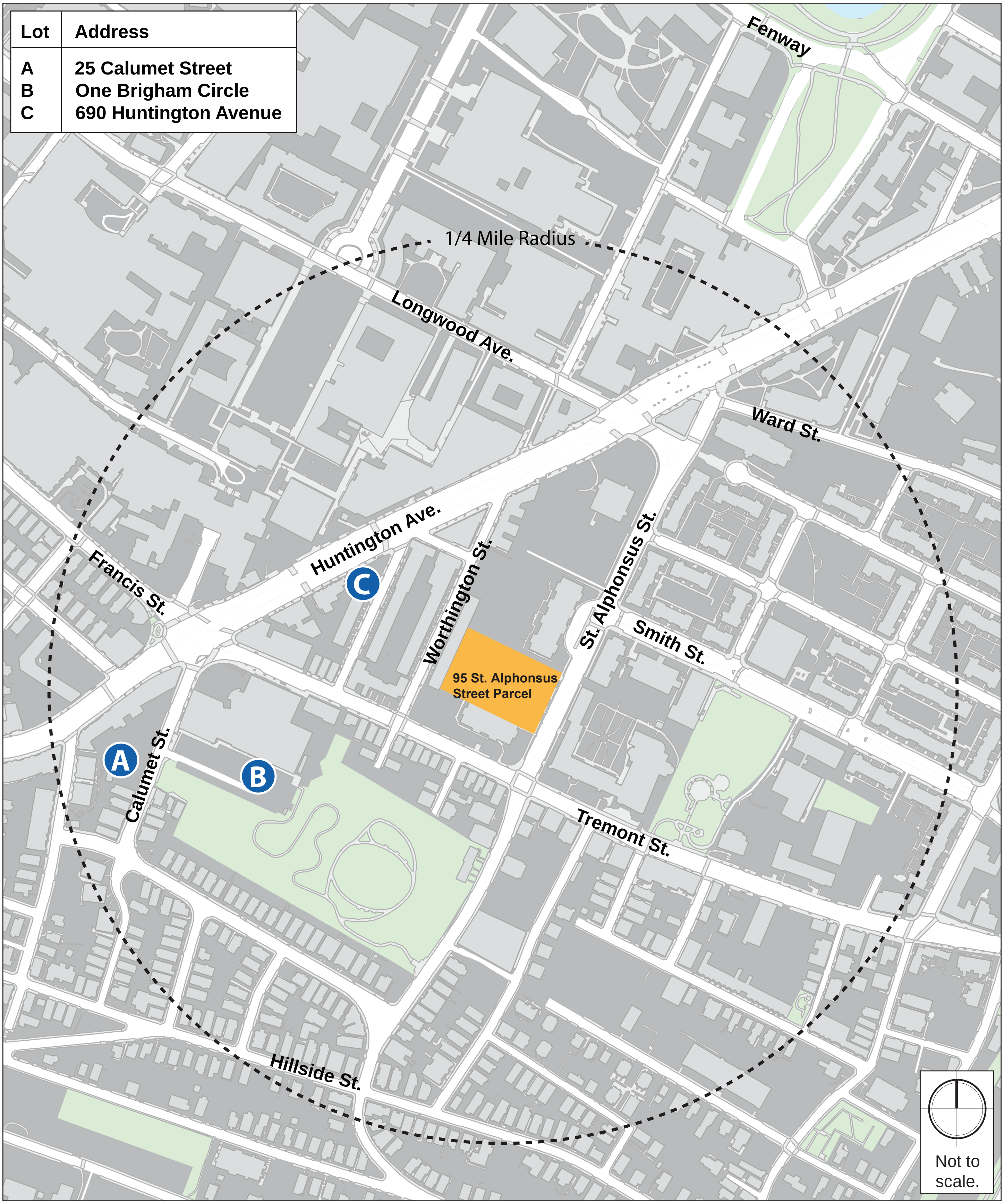

Figure 2-5
Off-Street Parking

Table 2-5 MBTA Transit Service in the Study Area

Transit Service	Description	Peak-Hour Headway (minutes)[1]
	Subway Lines	
Green Line	E Line – Lechmere Station – Heath Street Station	6
Orange Line	Oak Grove – Forest Hills Station	6
	Bus Routes	
CT2	Sullivan Station – Ruggles Station via Kendall/MIT	20
39	Forest Hills Station: Back Bay Station via Huntington Avenue	6
66	Harvard Square: Dudley Station via Allston	9

1. Headways are approximate.
Source: ww.mbta.com, February 2017.

Private Shuttle Bus Services

MASCO Shuttle Bus Service. The Medical Academic and Scientific Community Organization (MASCO) operates three shuttle bus services within one quarter-mile of the Project that provide access to nearby colleges/universities, hospitals, and other institutions within the Longwood Medical and Academic Area. MASCO's Wentworth & JKF/UMass, M2 Cambridge and Landmark shuttles all serve passengers at Brigham Circle, located approximately less than one quarter of a mile from the Project. MASCO's Wentworth, shuttle also serves St. Alphonsus Street/Longwood Avenue as a flag stop. In addition, the Landmark shuttle serves passengers at Smith Building, located at Smith Street/St. Alphonsus Street, less than one quarter mile away from the Project. Detailed information on shuttle bus services is summarized in Table 2-6.

Table 2-6 Private Shuttle Bus Service in the Study Area

Shuttle Route	Route Description	Peak Period Headway (minutes)[1]
Mission Hill Link Bus (MIS)	Brigham Circle-Mission Hill[2]	30
MASCO M2 Cambridge-HMS	Simmons & Emmanuel Colleges – Kenmore Square	10
MASCO JFK-Crosstown-Wentworth	Wentworth & Prentiss Lots, Ruggles & JFK Stations – LMA	10-15
MASCO Landmark HSPH	20 Overland Street-LMA	25

1. MASCO.org, April 2017. Headways are approximate
2. www.nebh.org, April 2017. Headways are approximate.

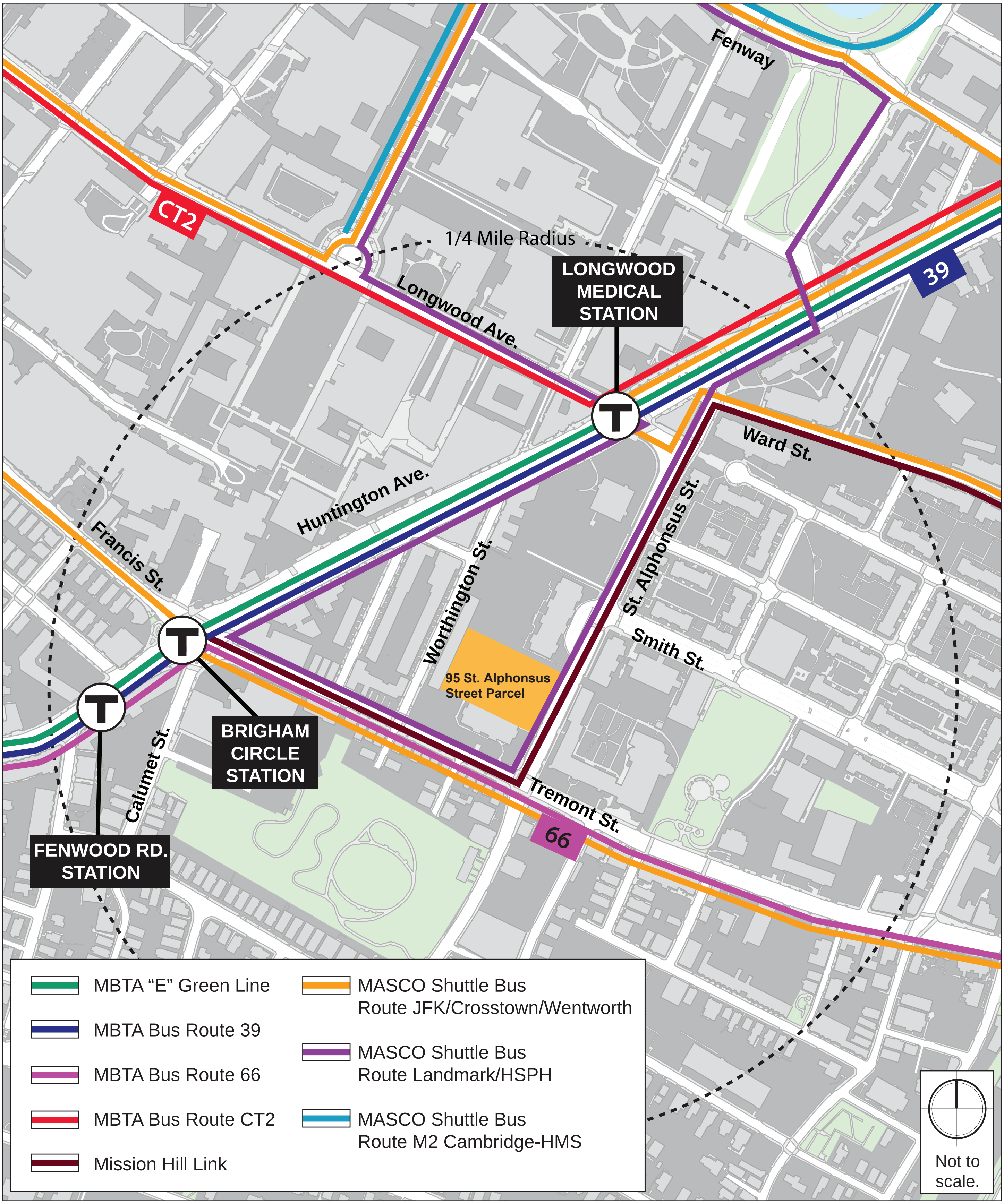

Figure 2-6
Public Transportation

Mission Hill Link Bus

The Mission Hill Link, a contracted bus service, operates adjacent to the Project along Tremont Street and St. Alphonsus Street. Brigham Circle is one of the main pick-up and drop-off locations for the Mission Hill Link bus service. This service operates a handicapped-accessible mini-bus on three routes around Mission Hill and the Mission Extension Area. Bus drivers recognize flag stop requests. Service runs every 30 minutes from Monday to Friday, 7:00 a.m. to 6:00 p.m. Saturday service operates from 9:00 a.m. to noon. The shuttle does not make an 11:00 a.m. run to provide a break for its driver. The fee for students and seniors is 50 cents per ride. Children under age 12 and New England Baptist Hospital employees ride for free. The adult fare is $1.00 per ride. Funding for the Mission Hill Link comes from local businesses, institutions, the MBTA, and fare collections.

2.2.6 Pedestrian Access and Circulation

Existing Pedestrian Conditions

Sidewalks are provided on all streets within the study area. All sidewalks in the study area are in good condition; handicap-accessible ramps, pedestrian pushbuttons, and marked crosswalks are provided at all signalized intersections. As is common in many urban settings, the effective width of sidewalks in the study area is narrowed due to light posts, mailboxes, newspaper boxes, street trees, parking meters, and other obstacles located along the sidewalk path.

Pedestrian counts were conducted at the study area intersections on March 1, 2017 from 7:00 to 9:00 a.m. and from 4:00 to 6:00 p.m. Existing a.m. and p.m. peak hour pedestrian volumes appear in Figure 2-7.

Sidewalk locations and conditions throughout the study area are summarized below.

Huntington Avenue has high pedestrian volumes due to its location near businesses, residences, schools, and the MBTA Green Line. Sidewalks on the north side range from five to 11 feet wide, while sidewalks on the south side range from five to 10 feet wide. Crosswalk widths across Huntington Avenue in the study area range from 10 to 16 feet. The crosswalk pavement markings are in poor condition at Brigham Circle.

Tremont Street has sidewalks on both sides of the roadway. Sidewalks on the east side range from approximately six to nine feet wide. The sidewalks on the west side range from seven to 12 feet wide. Crosswalks located across Tremont Street are approximately 10 to 16 feet wide. Tremont Street provides access to both the MBTA Orange Line Roxbury Crossing Station and the Green Line Brigham Circle Station, as well as nearby businesses.

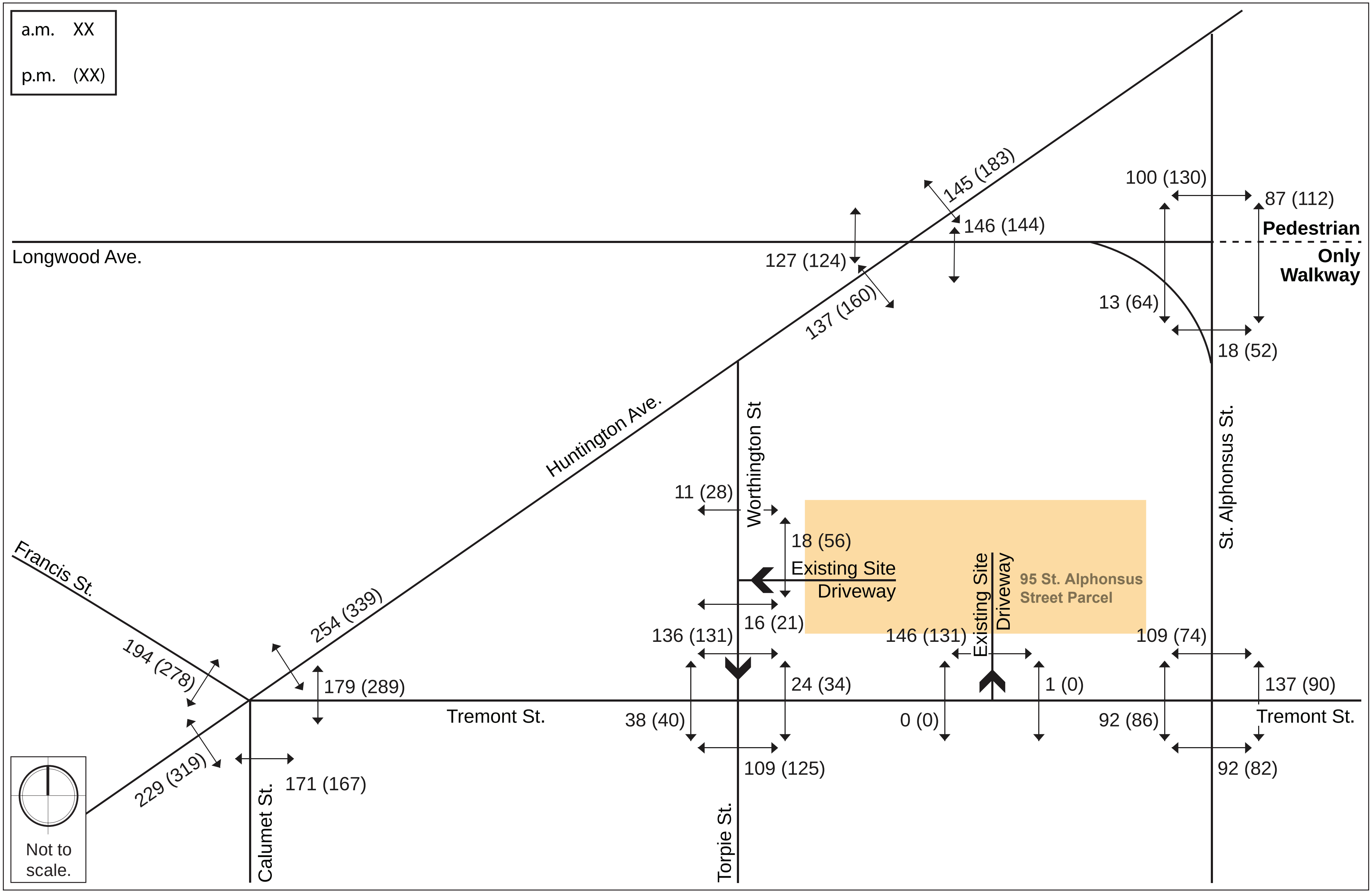

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Figure 2-7
Existing (2017) Condition Pedestrian Volumes, Weekday a.m. and p.m. Peak Hours

Francis Street has sidewalks on both sides of the street. Sidewalks range from seven feet wide on the east street to as wide as 12 feet on the west side. There are crosswalks located at multiple points along Francis Street and at least one crosswalk is provided at each intersection along the entire length of the road. These crosswalks vary between 10 and 15 feet wide. From Francis Street, pedestrians can access residential buildings, Brigham and Women's Hospital and several parking garages.

Calumet Street has sidewalks on both sides of the street. Sidewalks on the east side range between 10 and eight feet, while the western sidewalk is approximately eight feet wide. The only crosswalk on Calumet Street is where the roadway enters Brigham Circle. This crosswalk is approximately 14 feet wide. Calumet Street primarily provides pedestrians with access to the residences on Mission Hill and the commercial amenities at Brigham Circle.

Longwood Avenue has sidewalks along both sides of the roadway. Within the study area, sidewalks are range in width from seven to 14 feet, with crosswalks approximately 10 to15 feet wide. Longwood Avenue has high pedestrian volumes due to its proximity to the Longwood Medical and Academic Area, schools, and residential areas. There is no crosswalk provided across the Longwood Avenue southbound approach at the intersection of St. Alphonsus Street/Longwood Avenue. The sidewalks along Longwood Avenue are in good condition.

A pedestrian-only passageway is located on the east side of the intersection of Longwood Avenue, McGreevey Way, and St. Alphonsus Street. This passageway reduces cut-through traffic in the Mission Main residential development. At the intersection, the passageway is approximately 20 feet wide and can be used by emergency vehicles if needed. The passageway is constructed of brick and uses benches and landscaping to provide a pedestrian safe zone.

St. Alphonsus Street has sidewalks on both sides of the street. Sidewalks on the north side range between six to 12 feet wide, while those on the south side range from six to 10 feet wide. Crosswalks located across St. Alphonsus Street are approximately 10 to 11 feet wide. An exclusive pedestrian phase is included at Tremont Street/St. Alphonsus Street. Pedestrians can access nearby businesses and universities, as well as the MBTA Green Line from St. Alphonsus Street. The sidewalks along St. Alphonsus Street are in fair condition.

Worthington Street has brick sidewalks on both sides of the street. Sidewalks on the north side range are approximately five to six feet wide, while those on the south side range in width from four to seven feet. There is only one crosswalk on Worthington Street which is located at the intersection of Worthington Street/Tremont Street along with a handicapped ramp. Worthington Street provides pedestrians with a connection between Tremont Street and Huntington Avenue and access to residential buildings on both the east and west sides of the street. Sidewalks are generally in fair condition.

Torpie Street has sidewalks on both sides of the street that are approximately 5 feet wide. Pedestrians can access residential buildings via the sidewalks on Torpie Street. Handicap ramps are provided where Torpie Street intersects with Tremont Street, but a crosswalk is not provided at the Torpie Street approach.

2.2.7 Bicycle Accommodations

Huntington Avenue and Tremont Street are both classified as suitable for "advanced" cyclists according to the 2010 Bike Routes of Boston Map. Huntington Avenue and Tremont Street provides shared-use bicycle accommodations through the use of sharrow pavement markings. In addition, St. Alphonsus Street has a dedicated bike lane on both directions. The Project is located approximately 1/3 of a mile from the Southwest Corridor Bicycle Path via Tremont Street. Less confident cyclists can take a slightly longer route to this bicycle path via St. Alphonsus Street, Ward Street, Parker Street and Ruggles Street which the Bike Routes map all classifies as suitable for "intermediate" cyclists.

The Project is located approximately 2/3 of a mile from the Jamaicaway Bicycle Path along the Muddy River via Tremont Street and Francis Street. Less confident cyclists can access the Jamaicaway Bicycle Path via a slightly longer route which includes St. Alphonsus Street and Longwood Avenue both of which are classified as suitable for "intermediate cyclists."

Bicycle volumes during the weekday a.m. and p.m. peak hour are illustrated in Figure 2-8; bicycle volumes in the study area are generally moderate. Bicycle volumes are also included as part of the traffic count data in Appendix B.

In July 2011, the City of Boston launched Hubway, a bicycle sharing program which currently consists of more than 1,600 shared bicycles at more than 185 stations throughout Boston, Brookline, Cambridge, and Somerville. The nearby bicycle sharing locations within one quarter-mile of the Project are shown in Figure 2-9.

2.2.8 Car Sharing Services

The increasingly popular car-sharing services provide easy access to vehicular transportation for urban residents who do not own cars. The local car sharing provider – Zipcar – offers short-term rental service for members. Vehicles are rented on an hourly and per-mile 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.

The nearby Zipcar services will provide an important transportation option and reduce the need for private vehicle ownership. As summarized in Table 2-7, Zipcar has three locations within the one quarter mile radius around the Project and two locations just outside the one quarter mile radius. The nearby car sharing locations within one half-mile of the Project are shown in Figure 2-9.

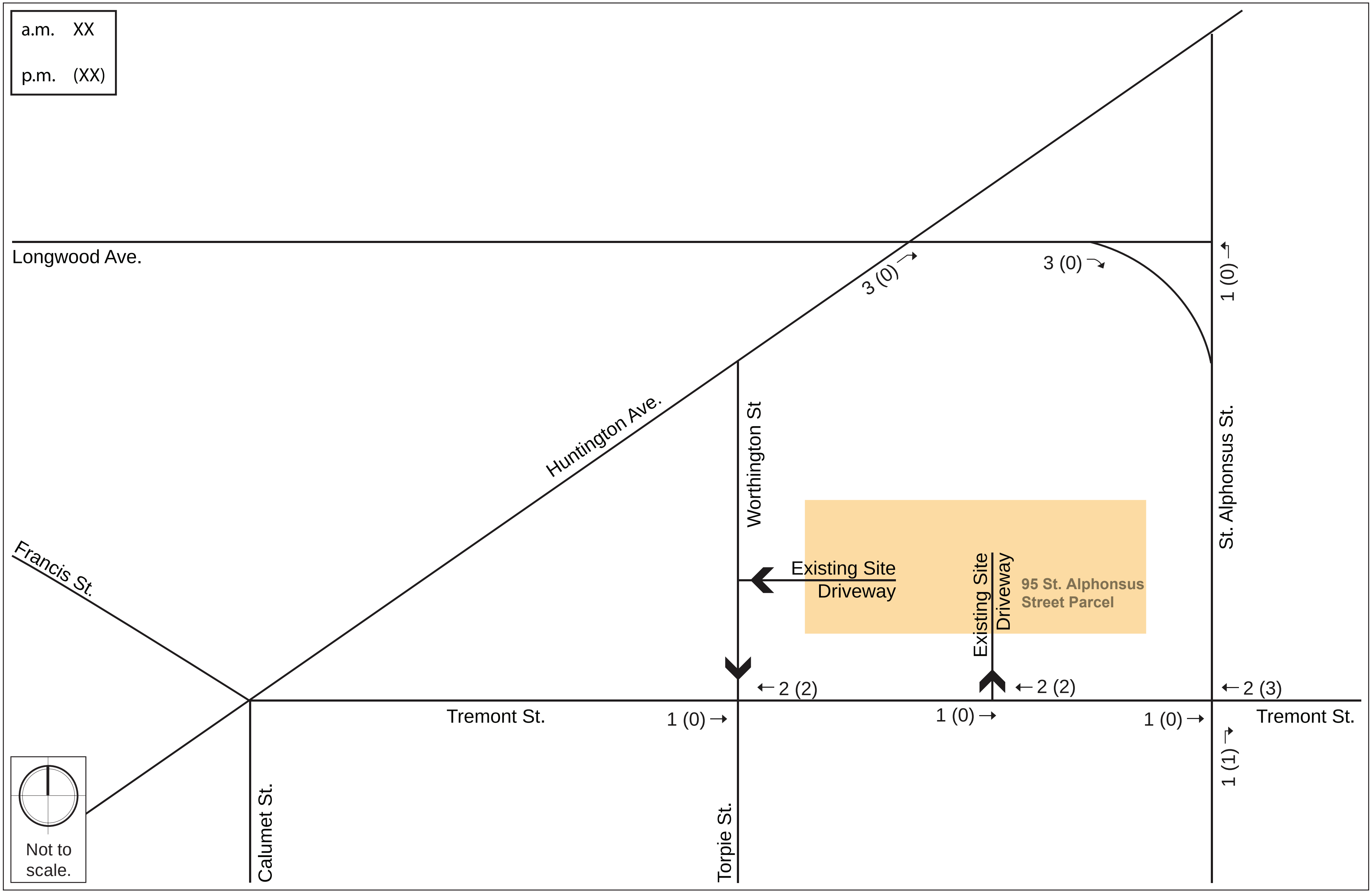

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Figure 2-8

Existing (2017) Condition Bicycle Volumes, Weekday a.m. and p.m. Peak Hours

Table 2-7 Car-Sharing Services within ½ Mile Radius

Zipcar Location[1]	Number of Zipcars
75 St. Alphonsus Street/City View Apartments	4
713 Huntington Avenue/Countway Lot – Harvard Medical School	2
28 St. Albans Road	1
Vancouver Street/Ward Street – MassArt (on-street)	1
Blackfan Circle/ Longwood Avenue – Boston Children's Hospital	3

1. Source: Zipcar website, February 2017.

2.3 No-Build (2024) Condition

The No-Build (2024) 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. The No-Build (2024) Condition does not include the Project-related impacts. These infrastructure improvements include roadway, public transportation, pedestrian and bicycle improvements.

2.3.1 Background Traffic Growth

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

The first procedure is to estimate and distribute specific traffic volumes generated by planned new major developments and anticipated roadway changes. Additional traffic generated by the following projects, depicted in Figure 2-10, was included in this background analysis:

- ***Basilica Court.*** There are two additional buildings, 80 and 100 Smith Street, that have yet to be renovated, but may include 229 residential units. This project is board approved. The buildings are currently vacant.
- ***Mission Hill Parcel 25.*** Upon completion, this development will consist of approximately 305,750 gross square feet (gsf) to be completed in three phases. At full-build, the project will include 88 apartment units, 10,000 gsf of retail space, 1,250 gsf of community space, 196,500 gsf of office space, and 201 surface and

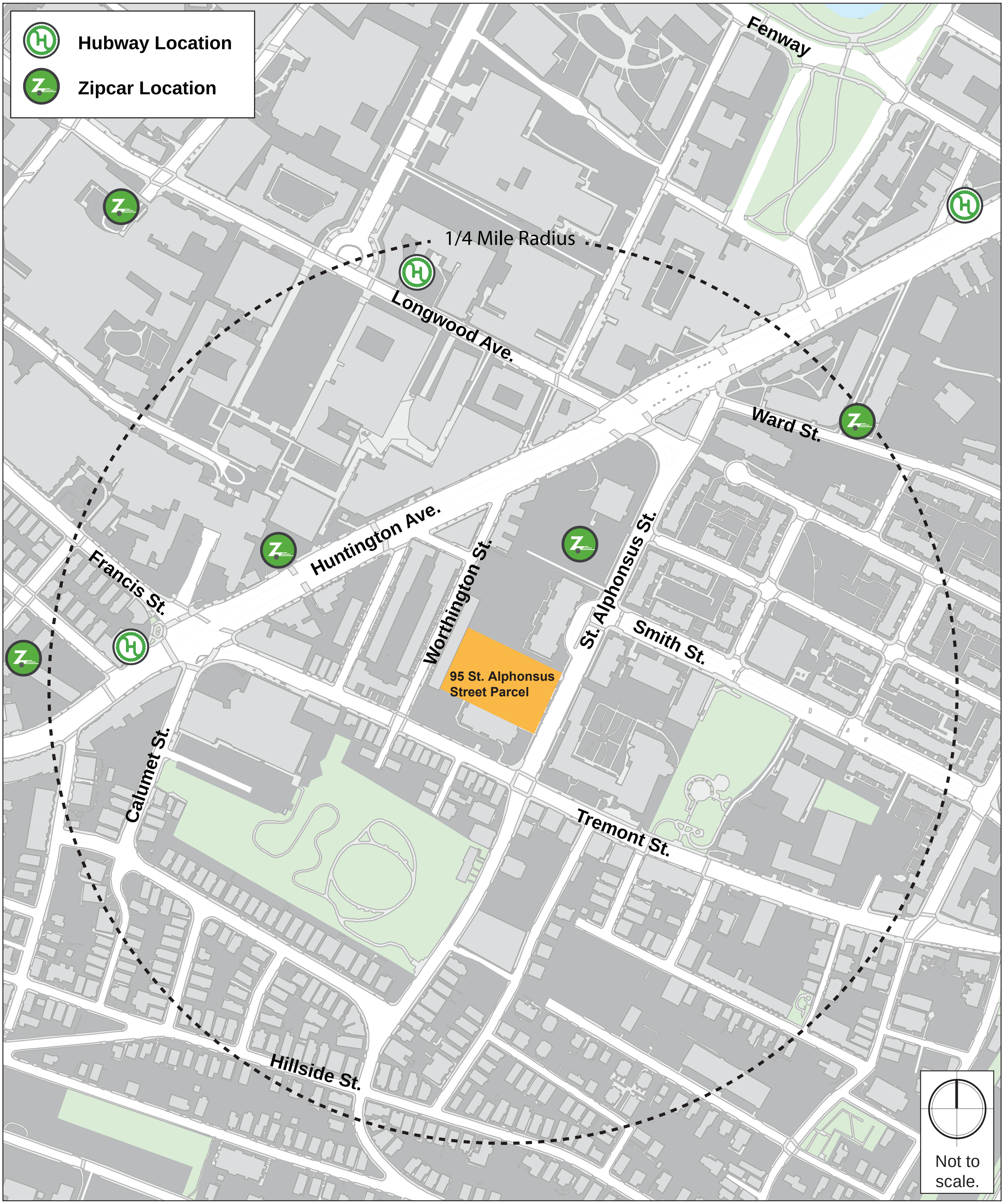

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Figure 2-9
Bicycle and Car Sharing Services

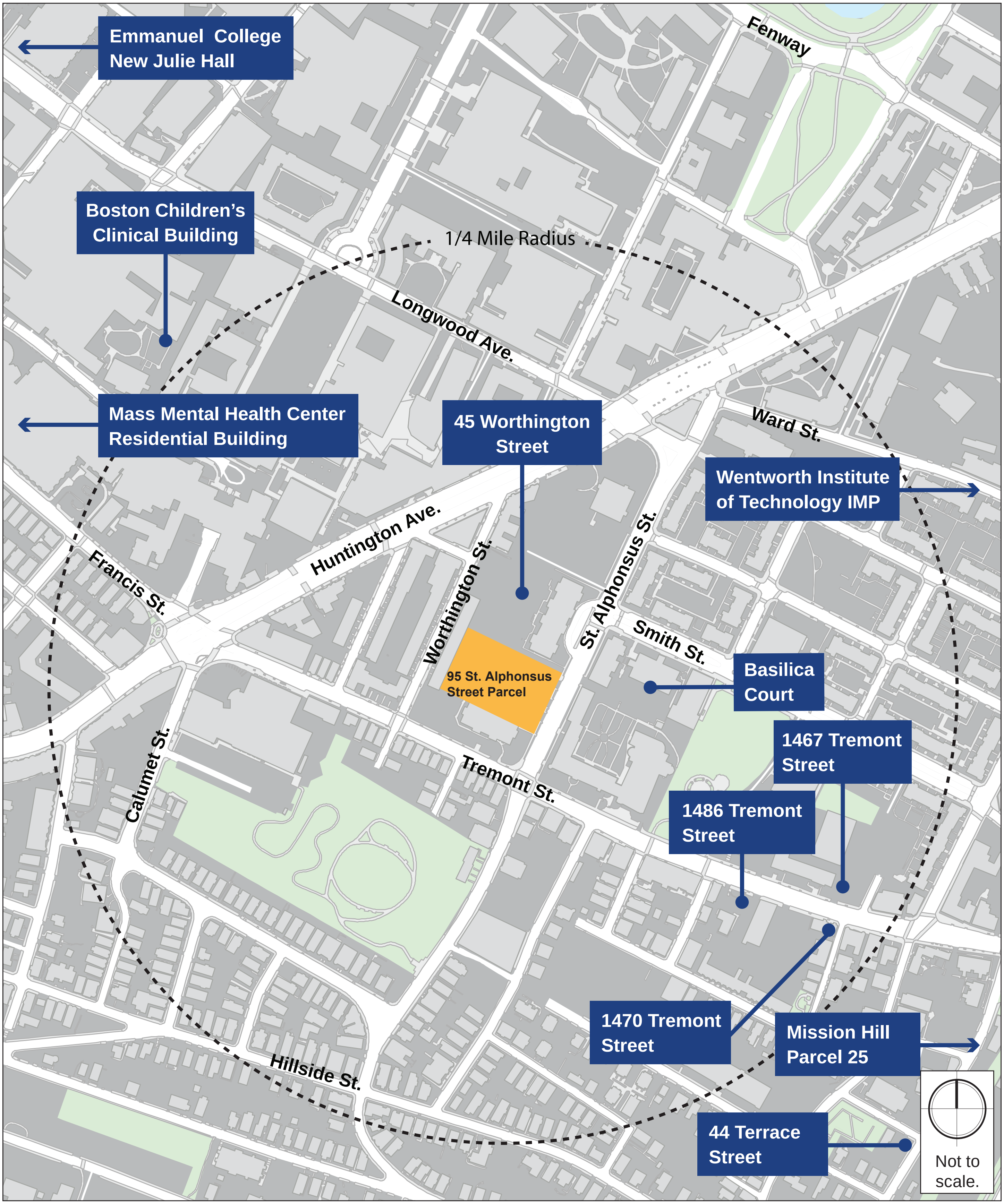

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Figure 2-10
Area Development Projects

below grade parking spaces. This project is board approved and phase I is currently under construction. Phase I includes 40 apartment units, 10,000 gsf of retail space, 35,000 gsf of office space, the community center, and 56 surface parking spaces.

- ***Boston Children's Clinical Building***. Located on Shattuck Street, this project will consists of approximately 445,000 sf of clinical and clinical support spaces on the Core Campus, as well as green and gathering spaces. Additionally, the Patient and Family Parking Garage will add a new level of parking containing 86 new spaces to the existing garage. The clinical building project is currently approved and the garage is currently under construction.

- **Mass Mental Health Center – Residential Building**. Located at 75 Francis Street, the project will include 136 units, including 66 affordable rental units and approximately 70 condominiums. This project is currently under construction.

The second method of determining background growth rate is to apply a general growth rate to account for changes in demographics, auto usage, and ownership. To provide a conservative estimate, this analysis assumes a general background growth rate of one half percent per year. The background growth rate is assumed to include traffic volumes for all other nearby development projects, listed in Table 2-8.

Table 2-8 Other Development Projects in the Project Vicinity

Project	Program Description	Status
45 Worthington Street	395 residential units and 270 parking spaces	Letter of Intent
1470 Tremont Street	33 residential units, 10 garage parking spaces, covered storage for 33 bicycles, and 1,480 gsf of retail space.	Board Approved
44 Terrace Street	21 condominium units and 20 parking spaces	Board Approved
Wentworth Institute of Technology IMP	69,000 gross square feet of laboratories, collaborative learning and group study space, office, and support space.	Board Approved
1467 Tremont Street	18 rental units and 1,774 sf of ground floor commercial space	Under Construction
Emmanuel College	New Julie Hall (691 beds)	Under Construction
1486 Tremont Street	66 Condominium units, 60 parking spaces, and 6,200 sf of ground retail space.	Construction Completed

2.3.2 No-Build Conditions Traffic Operations

The 2024 No-Build analysis uses the methodology described under Existing Conditions. No-Build traffic volumes are shown in Figures 2-11 and 2-12 for a.m. and p.m. peak hours, respectively. The resulting intersection operations are shown in Table 2-9 and Table 2-10. Complete Synchro reports are provided in Appendix B.

Table 2-9 No-Build (2024) Condition Capacity Analysis Summary, Weekday a.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
1. Huntington Avenue/Tremont Street/Francis Street/ Calumet Street (Brigham Circle)	**D**	**48.9**	-	-	-
Huntington EB left/thru l thru/right	E	66.7	0.94	262	#396
Huntington WB left	C	26.8	0.22	26	55
Huntington WB thru l thru/right	C	23.1	0.26	84	123
Tremont NWB hard left/bear left	D	47.3	0.64	93	152
Tremont NWB thru/right	D	38.1	0.52	138	219
Francis SEB left/thru l thru/right	E	64.8	0.78	109	160
Calumet NEB right	A	0.2	0.08	0	0
2. Huntington Avenue/Longwood Avenue	**D**	**37.9**	-	-	-
Huntington EB left	D	51.5	0.44	82	141
Huntington EB thru l thru/right	C	21.1	0.30	107	161
Huntington WB left	E	56.9	0.48	73	130
Huntington WB thru l thru/right	C	25.4	0.41	125	188
Longwood NB left/thru/right	D	53.7	0.82	276	367
Longwood SB left/thru | thru/right	D	46.6	0.74	140	181
3. Tremont Street/St. Alphonsus Street	**D**	**43.5**	-	-	-
Tremont EB left/thru	C	24.8	0.49	161	250
Tremont EB right	B	19.2	0.03	7	22
Tremont WB left/thru	C	23.3	0.43	139	217
Tremont WB right	C	20.8	0.19	46	86
St. Alphonsus NB left/thru/right	D	51.9	0.88	285	#467
St. Alphonsus SB left/thru/right	F	>80.0	0.97	189	#343

Table 2-9 No-Build (2024) Condition Capacity Analysis Summary, Weekday a.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Unsignalized					
4. St. Alphonsus Street/Longwood Avenue	-	-	-	-	-
St. Alphonsus NB left	A	8.5	0.18	-	16
St. Alphonsus NB thru	A	0.0	0.17	-	0
St. Alphonsus SB thru/right	A	0.0	0.12	-	0
Longwood SEB left	E	43.4	0.53	-	67
Longwood SEB right	B	11.9	0.34	-	37
5. Tremont Street/Worthington Street/Torpie Street	-	-	-	-	-
Tremont EB thru/right	A	0.0	0.20	-	0
Tremont WB left/thru	A	0.0	0.0	-	0
Torpie NB left/right	A	0.0	0.0	-	0
Worthington SB left/thru/right	C	21.0	0.20	-	18
6. Tremont Street/Existing Site Driveway	-	-	-	-	-
Tremont EB left/thru	A	0.2	0.00	-	0
Tremont WB thru/right	A	0.0	0.23	-	0
7. Worthington Street/Existing Site Driveway	-	-	-	-	-
Site Driveway WB left	A	8.8	0.03	-	2
Worthington SB thru	A	0.0	0.02	-	0

95th percentile volume exceeds capacity.
~ 50th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after two cycles.
Grey shading indicates a decrease to LOS E or F from Existing (2017) Condition.

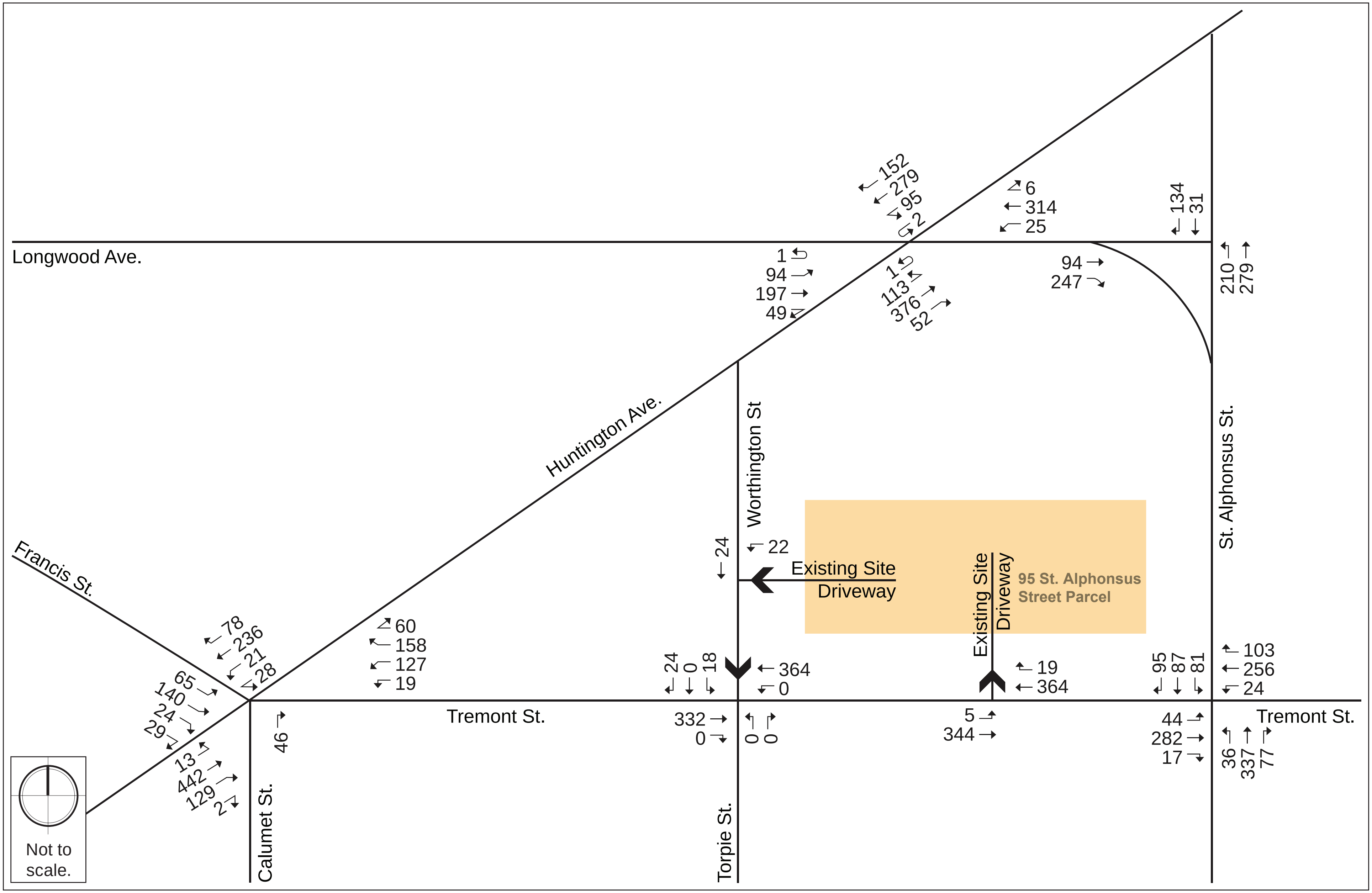

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Figure 2-11

No-Build (2024) Condition Traffic Volumes, Weekday a.m. Peak Hour

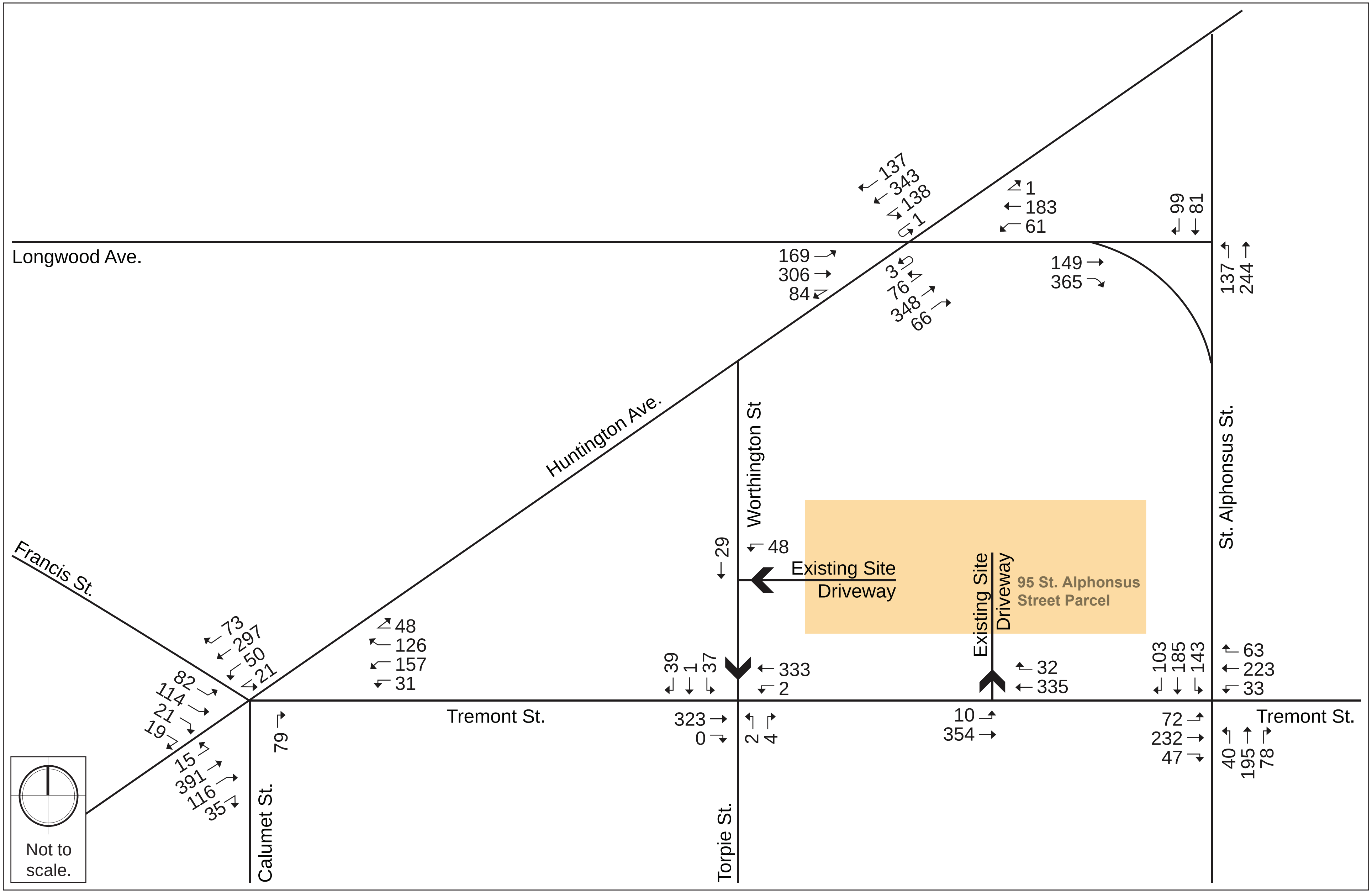

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Figure 2-12
No-Build (2024) Condition Traffic Volumes, Weekday p.m. Peak Hour

Table 2-10 No-Build (2024) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
1. Huntington Avenue/Tremont Street/Francis Street/ Calumet Street (Brigham Circle)	**D**	**36.3**	-	-	-
Huntington EB left/thru l thru/right	D	45.6	0.80	224	#340
Huntington WB left	C	23.9	0.26	35	68
Huntington WB thru l thru/right	C	20.7	0.27	94	133
Tremont NWB hard left/bear left	D	44.5	0.83	80	m#137
Tremont NWB thru/right	B	18.6	0.46	64	m96
Francis SEB left/thru l thru/right	E	62.8	0.78	91	#143
Calumet NEB right	A	0.4	0.14	0	0
2. Huntington Avenue/Longwood Avenue	**D**	**39.4**	-	-	-
Huntington EB left	D	37.1	0.26	43	86
Huntington EB thru l thru/right	C	22.1	0.35	97	147
Huntington WB left	D	45.0	0.53	86	143
Signalized					
Huntington WB thru l thru/right	C	25.5	0.49	127	177
Longwood NB left/thru/right	E	57.4	0.84	155	#297
Longwood SB left/thru | thru/right	D	54.9	0.92	186	#291
3. Tremont Street/St. Alphonsus Street	**E**	**74.5**	-	-	-
Tremont EB left/thru	D	38.0	0.49	233	m318
Tremont EB right	C	27.6	0.08	28	m45
Tremont WB left/thru	C	24.8	0.40	143	216
Tremont WB right	C	21.0	0.12	31	61
St. Alphonsus NB left/thru/right	D	43.1	0.66	223	329
St. Alphonsus SB left/thru/right	F	>80.0	>1.00	~433	#637
Unsignalized					
4. St. Alphonsus Street/Longwood Avenue	-	-	-	-	-
St. Alphonsus NB left	A	8.5	0.12	-	10
St. Alphonsus NB thru	A	0.0	0.15	-	0
St. Alphonsus SB thru/right	A	0.0	0.11	-	0
Longwood SEB left	F	50.5	0.69	-	109
Longwood SEB right	C	22.1	0.65	-	117

Table 2-10 No-Build (2024) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Unsignalized					
5. Tremont Street/Worthington Street/Torpie Street	-	-	-	-	-
Tremont EB thru/right	A	0.0	0.20	-	0
Tremont WB left/thru	A	0.1	0.00	-	0
Torpie NB left/right	C	24.5	0.04	-	3
Worthington SB left/thru/right	E	35.4	0.41	-	46
+6. Tremont Street/Existing Site Driveway	-	-	-	-	-
Tremont EB left/thru	A	0.3	0.01	-	1
Tremont WB thru/right	A	0.0	0.23	-	0
7. Worthington Street/Existing Site Driveway	-	-	-	-	-
Site Driveway WB left	A	9.0	0.07	-	6
Worthington SB thru	A	0.0	0.02	-	0

95th percentile volume exceeds capacity.
~ 50th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after two cycles.
Grey shading indicates a decrease to LOS E or F from Existing (2017) Condition.

As shown in Table 2-9 and Table 2-10, the study area intersections will continue to operate at the same LOS as under the 2017 Existing Conditions with the following exceptions:

- The signalized intersection of Huntington Avenue/Tremont Street/Francis Street/Calumet Street continues to operate at the same LOS as the Existing (2017) Conditions during the a.m. peak hour and decreases from LOS C to LOS D during the p.m. peak hour. All movements continue to operate at the same LOS with the exception of Huntington Avenue eastbound approaches, which decreases from LOS D to LOS E during the a.m. peak hour.

- The signalized intersection of Huntington Avenue/Longwood Avenue continues to operate at the same LOS as the Existing (2017) Conditions with the exception of Huntington Avenue eastbound through and shared through/right-turn lanes, which decreases from LOS B to LOS C during the a.m. peak hour and the Longwood Avenue northbound lane, which decreases from LOS D to LOS E during the p.m. peak hour.

- The signalized intersection of Tremont Street/St. Alphonsus Street continues to operate at the same LOS as the Existing (2017) Conditions with the exception of St. Alphonsus Street southbound approach, which decreases from LOS E to LOS F during the a.m. peak hour. However, the St. Alphonsus Street northbound approach improves from LOS E to LOS D during the a.m. peak hour.

- All movements continue to operate at the same LOS as the Existing (2017) Conditions at the unsignalized intersection of St. Alphonsus Street/Longwood Avenue with the exception of Longwood Avenue eastbound left-turn, which decreases from LOS E to LOS F during the p.m. peak hour.

- All movements continue to operate at the same LOS as the Existing (2017) Conditions at the unsignalized intersection of Tremont Street/Worthington Street/Torpie Street with the exception of Worthington Street southbound approach, which decrease from LOS D to LOS E during the p.m. peak hour.

2.4 Build Condition

As summarized in Section 2.1.1, the Project will result in the construction of approximately 115 residential apartments and a 108-space parking structure to be shared between the Project and the existing residential units at 1575 Tremont Street.

2.4.1 Access and Circulation

Access to the lower level of the parking garage (67 parking spaces) will be provided by the driveway on St. Alphonsus Street and access to the ground parking level (41 spaces) and surface parking (22 spaces) will be provided via the existing Tremont Street and Worthington Street driveways. An internal pick-up/drop-off area will be provided on-site via the driveway on Tremont Street and Worthington Street.

95 St. Alphonsus Street / Boston, MA

2.4.2 *Trip Generation and Mode Split*

Today, the existing 1575 Tremont Street building generates vehicle trips that park in the surface parking spaces (adjacent to Tremont Street) and in the current parking structure on the 95 St. Alphonsus Street parcel. These vehicle trips are included in the Existing Conditions and No-Build Condition analysis previously presented. When the Project is completed (Build Condition), the new parking facility at 95 St. Alphonsus Street will serve tenants of the Project and existing tenants of the 1575 Tremont Street building. The Build Condition includes new trips generated by the Project and retains the trips generated by the 1575 Tremont Street building. This section presents the trip generation for the Project and a summary of trips by travel mode. Trip generation for the proposed residential use was derived from the Institute of Transportation Engineers' (ITE) publication Trip Generation (9th edition, 2012), using Land Use Code (LUC) 220 – Apartment.

Apartment is used for rental dwelling units located within the same building with at least three other dwelling units, for example, quadraplexes and all types of apartment buildings. The average rate was used to estimate the person trips associated with the proposed rental units.

BTD publishes transit, walk/bike, and vehicle mode split rates for different areas of Boston; the Project is located within designated Area 5. Mode split assumptions based on BTD's Area 5 data and local vehicle occupancy rates from 2009 National Household Travel Survey and the 2000 U.S. Census are summarized in Table 2-11.

Table 2-11 Peak-Hour Mode Split

Land Use/Period	Direction	Transit Share[1]	Walk/Bike Share[1]	Auto Share[1]	Local Vehicle Occupancy Rate[2]
Daily					
Residential	In	15%	38%	47%	1.13
	Out	15%	38%	47%	1.13
a.m. Peak Hour					
Residential	In	22%	39%	39%	1.13
	Out	18%	45%	37%	1.13
p.m. Peak Hour					
Residential	In	18%	45%	37%	1.13
	Out	22%	39%	39%	1.13

1. Boston Transportation Department mode share data for Area 5.
2. 2000 Census data and 2009 National Household Travel Survey.

Based on the land use trip rates, mode split assumptions, and local vehicle occupancy rates, the resulting transit, walk/bike, and vehicle trips were identified. The Project-generated trips are summarized in Table 2-12, with detailed trip generation information provided in Appendix B.

Table 2-12 Project Trip Generation

Land Use	Direction	Transit Trips	Walk/Bike Trips	Auto Trips
Daily				
Residential	In	69	176	193
	Out	69	176	193
	Total	**138**	**352**	**386**
a.m. Peak Hour				
Residential	In	3	5	5
	Out	10	24	18
	Total	**13**	**29**	**23**
p.m. Peak Hour				
Residential	In	11	27	19
	Out	7	12	12
	Total	**18**	**39**	**31**

As shown in Table 2-12, the Project will only generate approximately 23 vehicle trips (five trips entering and 18 trips exiting) during the a.m. peak hour and 31 vehicle trips (19 trips entering and 12 trips exiting) during the p.m. peak hour. This corresponds to about three new vehicle trips per minute during the a.m. and about two new vehicle trips during p.m. peak hour on the adjacent roadway network, a negligible increase.

2.4.3 Existing Vehicle Trips

The 95 St. Alphonsus Street parcel currently serves as a parking garage for 1575 Tremont Street (The Longwood) residents and other outside monthly users.

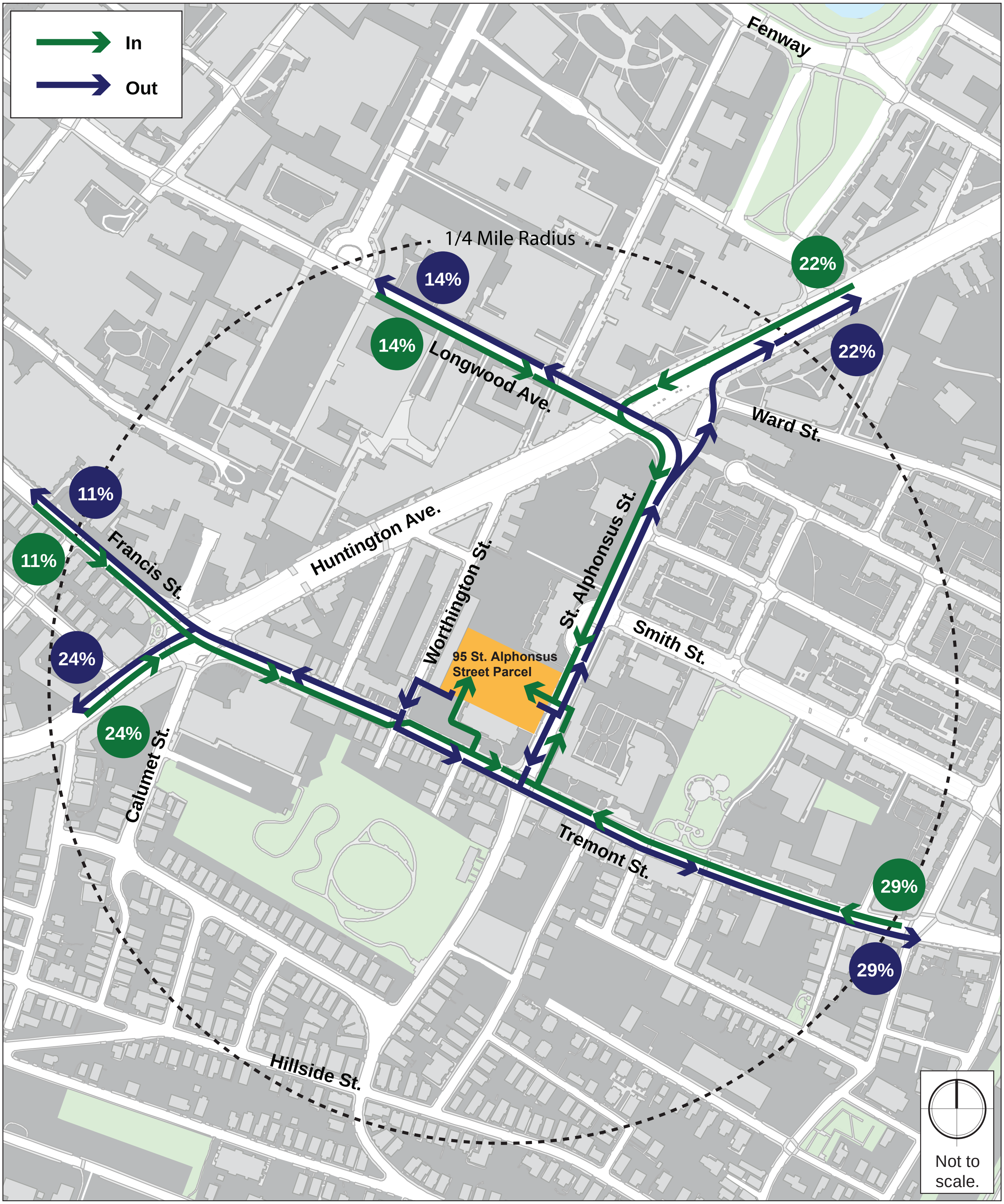
The proposed Project includes parking for the existing residents at 1575 Tremont Street, but monthly third party users would no longer park on-site. Therefore, vehicle trips associated with the monthly users were subtracted from the Build Conditions roadway network. In addition, the existing vehicle trips associated with the 1575 Tremont Street were redistributed on the network to reflect the availability of the new driveway on St. Alphonsus Street.

2.4.4 Trip Distribution

Vehicular trip distribution was developed using origin-destination data from BTD for Area 5 and knowledge of the local roadway network. The trip distribution is shown in Figure 2-14. The Project-generated vehicle trips during the a.m. and p.m. peak hour were assigned to the roadway network using the resulting trip distribution and are illustrated in Figure 2-15 and Figure 2-16, respectively.

2.4.5 Build Conditions Traffic Operations

Figures 2-17 and Figure 2-18 show the 2024 Build a.m. and p.m. peak-hour traffic volumes, accounting for background growth rate, anticipated development by others, and Project-generated trips. The LOS analysis for the Build Conditions, which was conducted using the methodology described for Existing and No-Build Conditions, appears in Table 2-13 and Table 2-14. Capacity analysis reports are provided in Appendix B.



95 St. Alphonsus Street / Boston, MA

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Figure 2-14
Trip Distribution

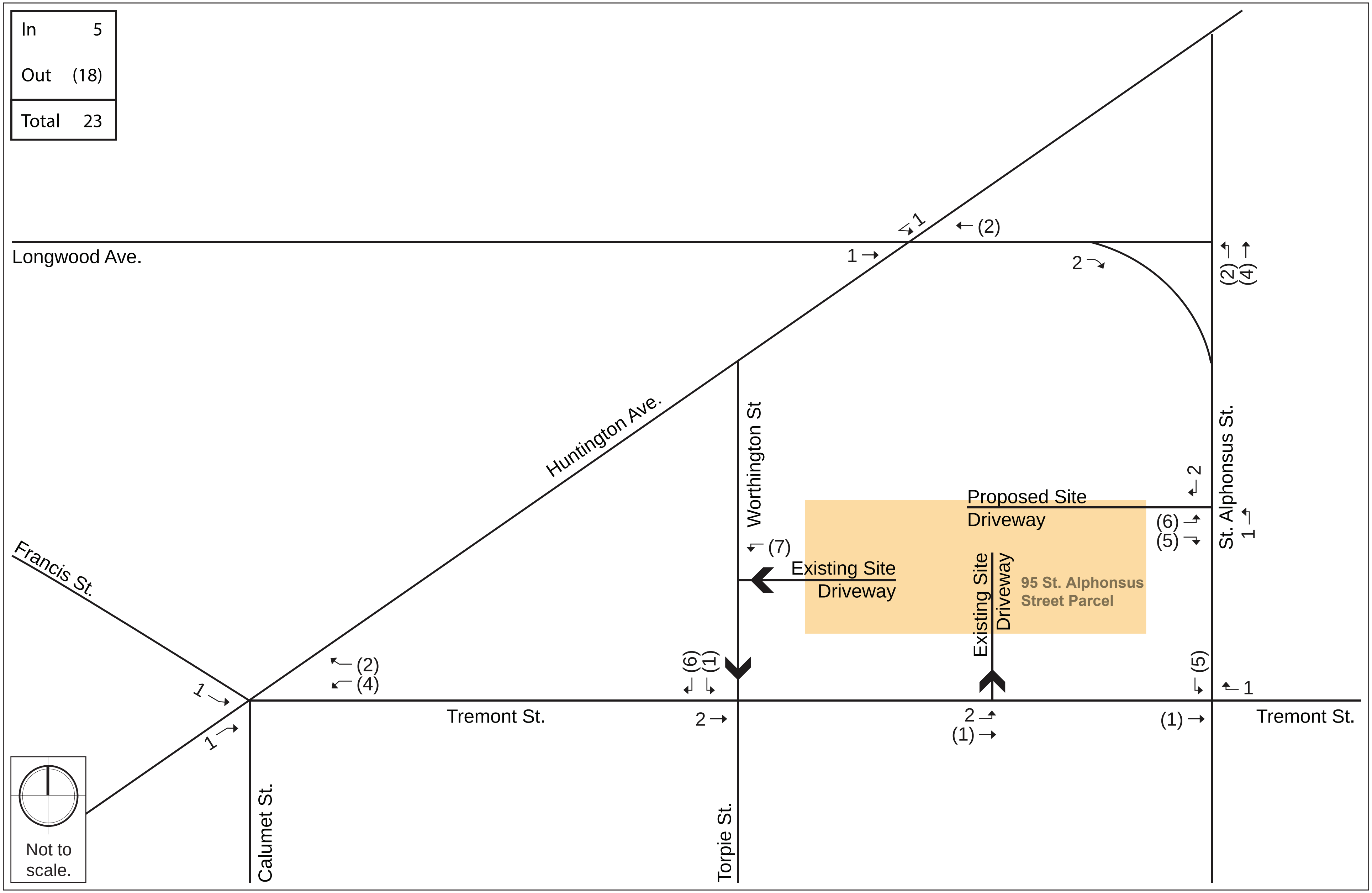

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Figure 2-15
Project Generated Traffic Volumes, Weekday a.m. Peak Hour

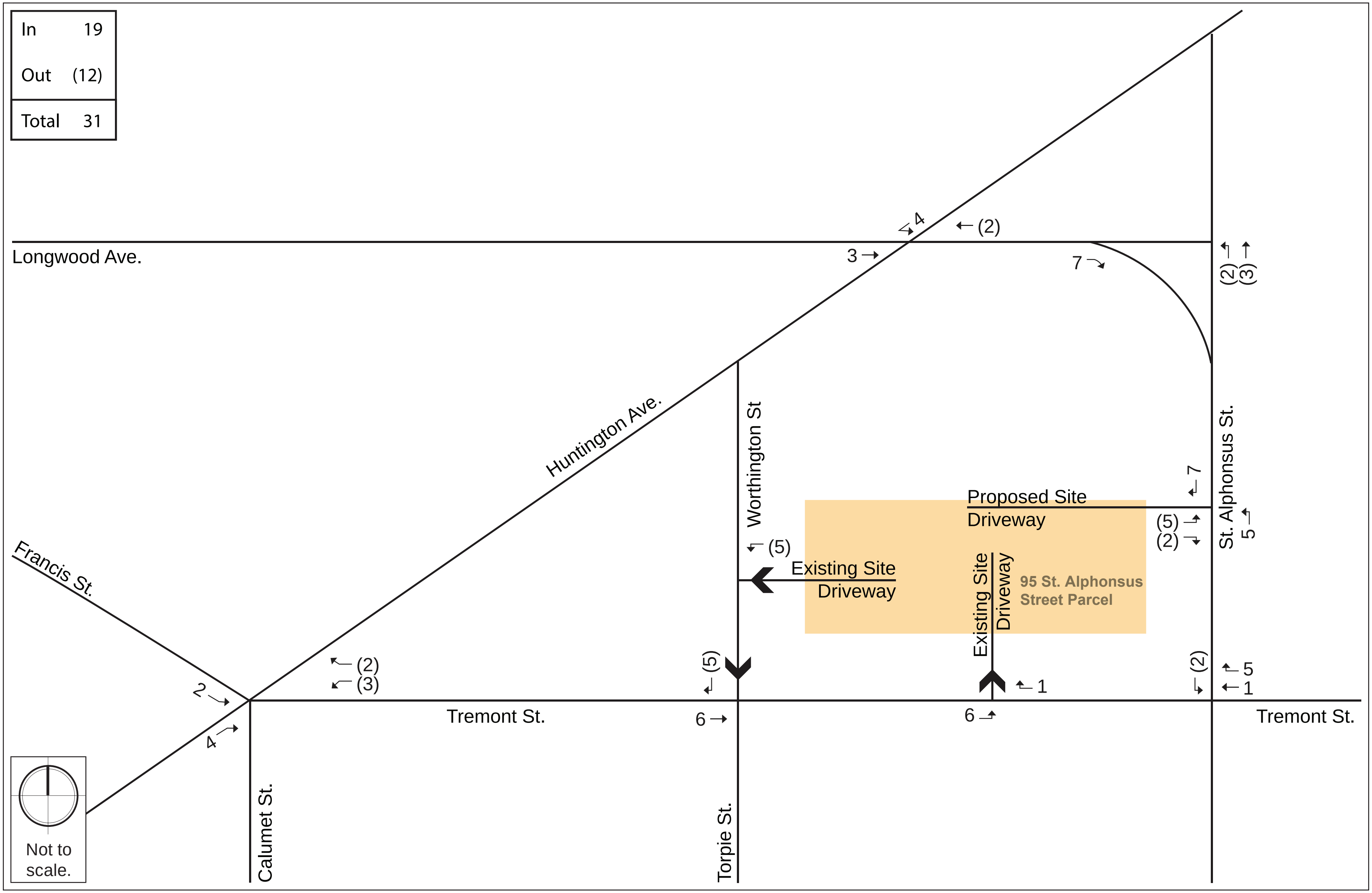

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Figure 2-16
Project Generated Traffic Volumes, Weekday p.m. Peak Hour

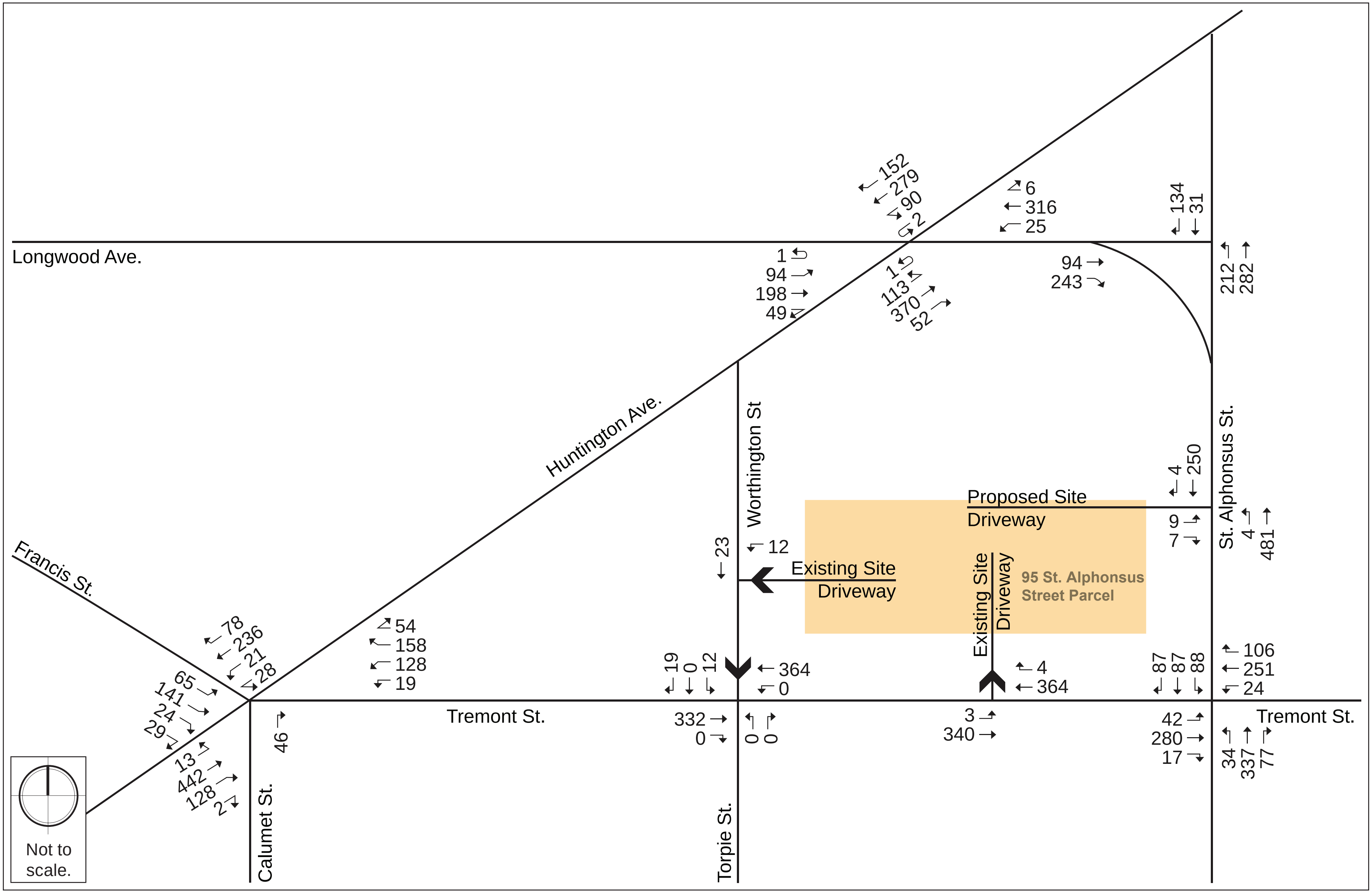

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Figure 2-17
Build (2024) Condition Traffic Volumes, Weekday a.m. Peak Hour

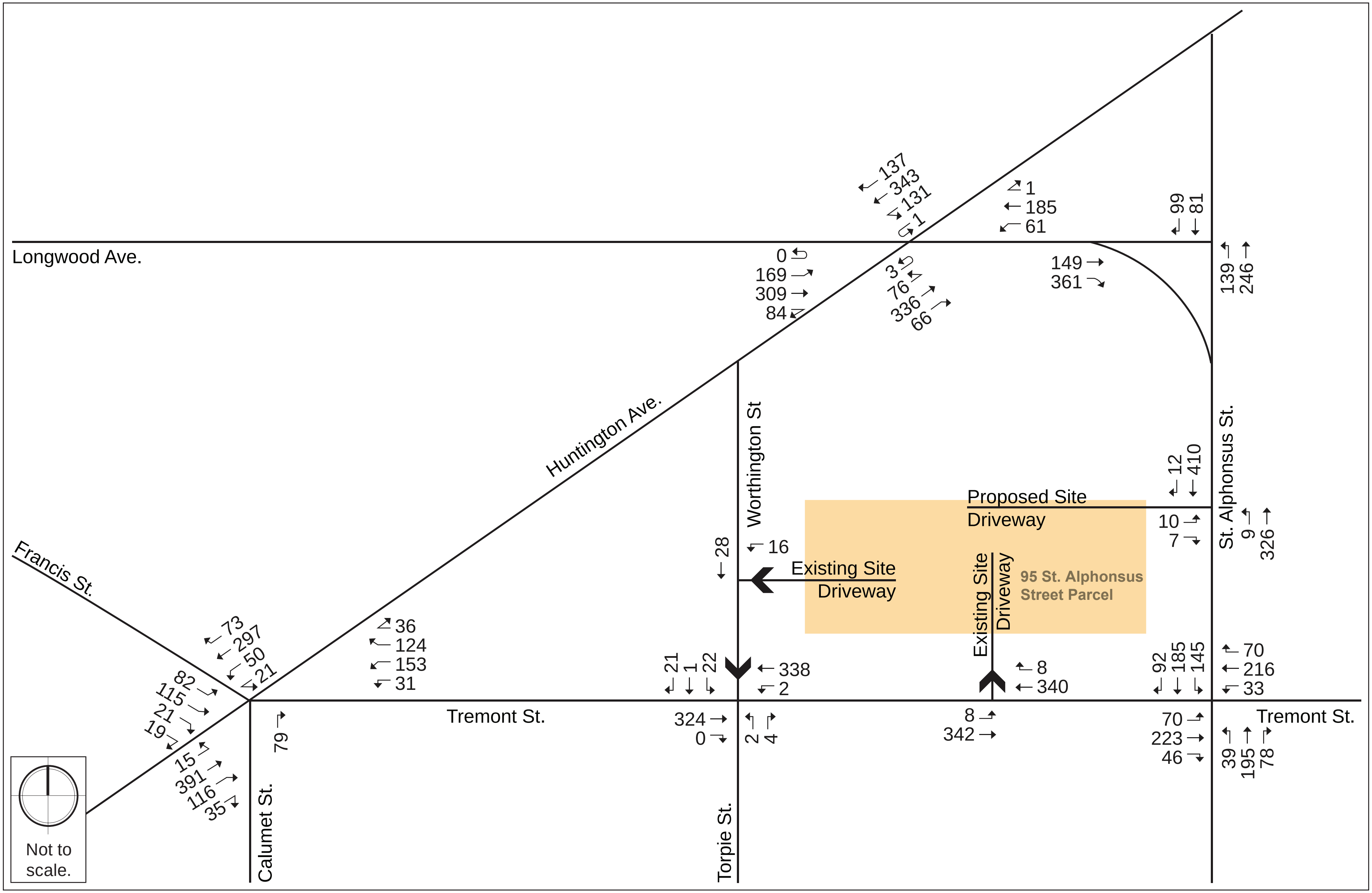

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Figure 2-18

Build (2024) Condition Traffic Volumes, Weekday p.m. Peak Hour

Table 2-13 Build (2024) Condition Capacity Analysis Summary, Weekday a.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
1. Huntington Avenue/Tremont Street/Francis Street/ Calumet Street (Brigham Circle)	**D**	**48.8**	-	-	-
Huntington EB left/thru l thru/right	E	66.3	0.94	261	#395
Huntington WB left	C	26.8	0.22	26	55
Huntington WB thru l thru/right	C	23.1	0.26	84	123
Tremont NWB hard left/bear left	D	47.7	0.65	94	153
Tremont NWB thru/right	D	37.8	0.51	135	213
Francis SEB left/thru l thru/right	E	64.7	0.78	110	161
Calumet NEB right	A	0.2	0.08	0	0
2. Huntington Avenue/Longwood Avenue	**D**	**37.9**	-	-	-
Huntington EB left	D	51.5	0.44	82	141
Huntington EB thru l thru/right	C	21.1	0.30	105	159
Huntington WB left	E	56.0	0.46	69	125
Huntington WB thru l thru/right	C	25.5	0.41	125	188
Longwood NB left/thru/right	D	53.8	0.82	277	371
Longwood SB left/thru | thru/right	D	46.5	0.74	140	182
3. Tremont Street/St. Alphonsus Street	**D**	**46.7**	-	-	-
Tremont EB left/thru	C	24.6	0.48	159	246
Tremont EB right	B	19.2	0.03	7	22
Tremont WB left/thru/right	C	23.2	0.42	136	213
Tremont WB right	C	20.9	0.19	48	88
St. Alphonsus NB left/thru/right	D	51.0	0.87	283	#461
St. Alphonsus SB left/thru/right	F	>80.0	>1.00	~208	#355
Unsignalized					
4. St. Alphonsus Street/Longwood Avenue	-	-	-	-	-
St. Alphonsus NB left	A	8.5	0.18	-	16
St. Alphonsus NB thru	A	0.0	0.18	-	0
St. Alphonsus SB thru/right	A	0.0	0.12	-	0
Longwood SEB left	E	44.5	0.54	-	69
Longwood SEB right	B	11.8	0.33	-	36

Table 2-13 Build (2024) Condition Capacity Analysis Summary, Weekday a.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Unsignalized					
5. Tremont Street/Worthington Street/Torpie Street	-	-	-	-	-
Tremont EB thru/right	A	0.0	0.20	-	0
Tremont WB left/thru	A	0.0	0.00	-	0
Torpie NB left/right	A	0.0	0.00	-	0
Worthington SB left/thru/right	C	17.7	0.13	-	11
6. Tremont Street/Existing Site Driveway	-	-	-	-	-
Tremont EB left/thru	A	0.1	0.00	-	0
Tremont WB thru/right	A	0.0	0.22	-	0
7. Worthington Street/Existing Site Driveway	-	-	-	-	-
Site Driveway WB left	A	8.7	0.01	-	1
Worthington SB thru	A	0.0	0.02	-	0
8. St. Alphonsus Street/Proposed Site Driveway	-	-	-	-	-
Site Driveway EB left/right	C	16.6	0.05	-	4
St. Alphonsus NB left/thru	A	0.1	0.00	-	0
St. Alphonsus SB thru/right	A	0.0	0.29	-	0

95th percentile volume exceeds capacity.
~ 50th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after two cycles.
Grey shading indicates a decrease to LOS E or F from No-Build (2024) Condition.

Table 2-14 Build (2024) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
1. Huntington Avenue/Tremont Street/Francis Street/ Calumet Street (Brigham Circle)	**D**	**36.3**	-	-	-
Huntington EB left/thru l thru/right	D	45.6	0.80	224	#340
Huntington WB left	C	23.9	0.26	35	68
Huntington WB thru l thru/right	C	20.7	0.27	94	133
Tremont NWB hard left/bear left	D	44.1	0.81	75	m#128
Tremont NWB thru/right	B	17.5	0.42	57	m84
Francis SEB left/thru l thru/right	E	62.8	0.78	92	#143
Calumet NEB right	A	0.4	0.14	0	0
2. Huntington Avenue/Longwood Avenue	**D**	**39.7**	-	-	-
Huntington EB left	D	37.1	0.26	43	86
Huntington EB thru l thru/right	C	21.9	0.34	93	143
Huntington WB left	D	44.6	0.51	82	137
Huntington WB thru l thru/right	C	25.6	0.49	127	177
Longwood NB left/thru/right	E	57.9	0.85	157	#299
Longwood SB left/thru | thru/right	E	55.6	0.92	187	#294
3. Tremont Street/St. Alphonsus Street	**E**	**72.4**	-	-	-
Tremont EB left/thru	D	37.8	0.47	227	m309
Tremont EB right	C	27.8	0.08	28	m45
Tremont WB left/thru	C	24.7	0.39	139	210
Tremont WB right	C	21.2	0.13	35	67
St. Alphonsus NB left/thru/right	D	42.5	0.65	220	326
St. Alphonsus SB left/thru/right	F	>80.0	>1.00	~421	#624
Unsignalized					
4. St. Alphonsus Street/Longwood Avenue	-	-	-	-	-
St. Alphonsus NB left	A	8.5	0.12	-	10
St. Alphonsus NB thru	A	0.0	0.15	-	0
St. Alphonsus SB thru/right	A	0.0	0.11	-	0
Longwood SEB left	F	51.6	0.69	-	111
Longwood SEB right	C	21.9	0.64	-	114

Table 2-14 Build (2024) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue	95th Percentile Queue (ft)
Unsignalized					
5. Tremont Street/Worthington Street/Torpie Street	-	-	-	-	-
Tremont EB thru/right	A	0.0	0.20	-	0
Tremont WB left/thru	A	0.1	0.00	-	0
Torpie NB left/right	C	23.6	0.04	-	3
Worthington SB left/thru/right	D	29.9	0.24	-	23
6. Tremont Street/Existing Site Driveway	-	-	-	-	-
Tremont EB left/thru	A	0.3	0.01	-	1
Tremont WB thru/right	A	0.0	0.22	-	0
7. Worthington Street/Existing Site Driveway	-	-	-	-	-
Site Driveway WB left	A	8.8	0.02	-	2
Worthington SB thru	A	0.0	0.02	-	0
8. St. Alphonsus Street/Proposed Site Driveway	-	-	-	-	-
Site Driveway EB left/right	B	14.1	0.05	-	4
St. Alphonsus NB left/thru	A	0.3	0.01	-	1
St. Alphonsus SB thru/right	A	0.0	0.27	-	0

95th percentile volume exceeds capacity.
~ 50th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after two cycles.
Grey shading indicates a decrease to LOS E or F from No-Build (2024) Condition.

As shown in Table 2-13 and Table 2-14, the study area intersections will continue to operate at the same overall LOS as under the No-Build (2024) Condition. While the signalized intersection of Huntington Avenue/Longwood Avenue continues to operate at the same overall LOS as the No-Build (2024) Conditions, the Longwood southbound approach decreases from LOS D to LOS E during the p.m. peak hour.

These Build (2024) Condition results show that the proposed Project will not significantly impact peak hour traffic operations in the area.

2.4.6 Parking Supply and Demand

The St. Alphonsus Street parcel includes approximately 175 parking spaces within a parking structure used by the residents of 1575 Tremont Street and the 1575 Tremont Street parcel includes 22 surface parking spaces used by the US Postal Office, a daycare, building management and visitors. The 175 structured spaces are currently dedicated for the 147 residential units in 1575 Tremont, which corresponds to a parking supply ratio of 1.19 parking spaces per unit – this ratio is well above the BTD's parking ratio guidelines that recommend a maximum of 0.5 – 1.0 spaces per unit. Meanwhile, only approximately 57 parking permits are currently being utilized by the 147 residential units at 1575 Tremont Street. With an approximately 96% unit occupancy, which is typical of a larger residential building, the effective parking demand ratio is just 0.40 parking spaces per occupied unit. Therefore, the current parking supply is well above what is needed for the existing residential building.

The Project proposes to demolish the existing parking structure and provide 108 parking spaces within a new structured garage that would be shared between the 115 residential units in the new building and the existing 147 existing units at 1575 Tremont Street. The resulting combined parking ratio would be about 0.41 spaces per unit, excluding the surface parking. This ratio is consistent with BTD's maximum parking ratio guidelines and current residential demand.

2.4.7 Public Transportation

As shown in Table 2-12, the Project will generate a combined estimated 138 daily transit trips; with 13 transit trips (10 boarding and 3 alighting) during the a.m. peak hour and 18 new trips (7 boarding and 11 alighting) during the p.m. peak hour. The small number of Project-generated transit trips is not expected to affect transit service adversely in the study area. The Proponent is committed to promoting transit use among Project residents and visitors, as discussed under the Transportation Demand Management section below.

2.4.8 Pedestrian Access and Circulation

Pedestrian access to the Project will be provided on St. Alphonsus Street and Tremont Street. The Project is conveniently located within walking distance to public transit, the Longwood Medical and Academic Area, and commercial uses in the area.

The Project will generate a combined estimated 352 pedestrian and bicycle trips daily in addition to the 138 new transit trips that will require a walk to or from the Project. Approximately 29 pedestrian and bicycle trips in and out of the Project will occur during the a.m. peak hour, and 39 pedestrian or bicycle trips in and out will occur during the p.m. peak hour, plus the additional 13 and 18 transit trips, respectively.

Pedestrian and bicycle trip generation is summarized in Table 2-12, with detailed trip generation data provided in Appendix B.

2.4.9 Bicycle Accommodations

Secure bicycle storage for 115 bicycles will be made available for Project residents in a dedicated bicycle room in the lower garage level of the building per City of Boston Bicycle Parking Guidelines, which require a minimum of one bicycle parking space per residential unit. In addition, bicycle racks for about 12 bikes will be provided near the building's drop-off area, serving workers and visitors.

All bicycle racks, signs, and parking areas will conform to BTD standards and be sited in safe, secure locations.

2.4.10 Loading and Service

All loading, trash pick-up, and move-in/move-out activities for the Project will occur on-site in the existing loading area on St. Alphonsus Street (See Figure 2-13). Smaller deliveries would occur either in the loading area or within the internal pick-up/drop-off area. With the exception of trash pick-up and move-in/move-out activities, most residential and retail deliveries are made via smaller vehicles – cars, vans, or small panel trucks.

A Transportation Coordinator will be appointed by building management to oversee loading activity and to coordinate residential move-in/move-out activities. Where possible, these activities will be scheduled during off-peak hours. Permanent "No Idling" signs will be posted in the loading and parking areas.

2.5 Transportation Mitigation Measures

Due to the low volume of Project-generated vehicle trips, the operations at the study area intersections will remain relatively unchanged from No-Build Conditions. As such, mitigation is not warranted beyond providing safe vehicular and pedestrian access to and from the Project and provision of transportation demand management (TDM) measures in support of the City's efforts to reduce dependency on the automobile. The Proponent will work with the BTD as part of the TAPA process to identify appropriate TDM measures.

TDM measures encourage travelers to use alternatives to driving, especially during peak periods, and will be facilitated by the nature of the Project and its proximity to public transit. The Proponent will emphasize the convenient transit and pedestrian access in marketing the Project to future residents and tenants. On-site management will provide transit information (schedules, maps, fare information) in the building lobbies for residents, workers, and visitors. Additional TDM measures may include, but are not limited to, the following:

- Bicycle Storage – The Proponent will provide secure bicycle storage for residents, workers, and visitors in accordance with the City of Boston Bicycle Parking Guidelines.

- ♦ Constrained Parking – The Project does not exceed BTD district maximum parking ratios. Residents will take advantage of the Project's transit oriented nature and proximity to area institutions and businesses.

- ♦ Electric Vehicle Charging – The Proponent will explore the feasibility of providing electric vehicle charging stations on-site.

- ♦ Project Web Site – The Proponent will include public transportation information for residents and visitors on the Project's Web Site.

- ♦ Shared-Car Service -- The Proponent will also evaluate the feasibility of providing shared cars on-site (e.g., Zipcar) in an effort to reduce automobile ownership among residents.

- ♦ Tenant Orientation Packet – These packets will provide all new tenants with information concerning available TDM programs and public transportation in the area, including route maps, schedules, and fare information.

- ♦ Transportation Coordinator – An on-site transportation coordinator will oversee transportation issues, including parking, residential move-in and move-out, and service and loading. The transportation coordinator will also work with residents as they move in to raise awareness of public transportation alternatives.

2.6 Evolution of Short-term Construction Impacts

Details of the overall construction schedule, working hours, number of construction workers, worker transportation and parking, number of construction vehicles, and routes will be addressed in detail in a Construction Management Plan to be filed with BTD in accordance with the City's transportation maintenance plan requirements. The CMP will also address the need for pedestrian detours, lane closures, and/or parking restrictions, if necessary, to accommodate a safe and secure work zone.

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

- ♦ Construction worker parking will be limited on-site. Workers will be encouraged to use public transportation and/or carpool;

- ♦ A subsidy for MBTA passes will be considered for full-time employees; and

- ♦ Secure spaces will be provided on-site for workers' supplies and tools so they do not have to be brought to the site each day.

Chapter 3

Environmental Review Component

3.0 ENVIRONMENTAL REVIEW COMPONENT

3.1 Wind

3.1.1 Introduction

Rowan Williams Davies & Irwin Inc. (RWDI) was retained by the Proponent to assess the pedestrian wind conditions for the proposed 95 St. Alphonsus Project. The assessment is based on the following:

- A review of regional long-term meteorological data from Boston Logan International Airport;
- Design drawings provided by the Project architects;
- Wind-tunnel studies undertaken by RWDI for similar projects in the Boston area;
- RWDI's engineering judgement and knowledge of wind flows around buildings[1,2,3] and
- Use of software (Windestimator[3]) for estimating the potential wind conditions around generalized building forms.

This qualitative approach provides a screening-level estimation of potential wind conditions. The Project is only five stories in height and it will not have a significant wind impact on the surrounding areas.

3.1.2 Building and Site Information

The Project is located on the west side of St. Alphonsus Street between two existing residential towers, as shown on Figure 1-2. It will be five stories in height and U-shaped in plan. The 95 St. Alphonsus Street parcel includes a raised parking lot and surrounded by dense, taller buildings to the northwest through northeast directions.

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1 H. Wu and F. Kriksic (2012). "Designing for Pedestrian Comfort in Response to Local Climate", Journal of Wind Engineering and Industrial Aerodynamics, vol. 104-106, pp.397-407.

2 C.J. Williams, H. Wu, W.F. Waechter and H.A. Baker (1999), "Experience with Remedial Solutions to Control Pedestrian Wind Problems", 10th International Conference on Wind Engineering, Copenhagen, Denmark.

3 H. Wu, C.J. Williams, H.A. Baker and W.F. Waechter (2004), "Knowledge-based Desk-Top Analysis of Pedestrian Wind Conditions", ASCE Structure Congress 2004, Nashville, Tennessee.

The pedestrian areas of interest include the main entrance to the Project, walkways and parking spaces between the existing and proposed buildings, public sidewalks along St. Alphonsus and Tremont streets, and the pool structure and playground adjacent to the existing buildings.

3.1.3 Meteorological Data

Wind statistics at Boston Logan International Airport between 1990 and 2015, inclusive, were analyzed for the spring (March to May), summer (June to August), fall (September to November) and winter (December to February) seasons. Figures 3.1-1 to 3.1-3 graphically depict the distributions of wind frequency and directionality for the four seasons and for the annual period. When all winds are considered, winds from the northwest and southwest quadrants are predominant. Northeasterly winds are also frequent, especially in the spring.

Strong winds with mean speeds greater than 20 mph (red bands in the images) are prevalently from the northwesterly directions throughout the year, while the southwesterly and northeasterly winds are also frequent.

Winds from the northwest, west, southwest and northeast directions are considered most relevant to the current study, although winds from other directions were also considered in the assessment.

3.1.4 BPDA Wind Criteria

The BPDA has adopted two standards for assessing the wind comfort of pedestrians.

First, the BPDA wind design guidance criterion states that an effective gust velocity (hourly mean wind speed +1.5 times the root-mean-square wind speed) of 31 mph should not be exceeded more than one percent of the time.

The second set of criteria used by the BPDA to determine the acceptability of specific locations is based on the work of Melbourne[4]. This set of criteria is used to determine the relative level of pedestrian wind comfort for activities such as sitting, standing or walking. The criteria are expressed in terms of benchmarks for the one-hour mean wind speed exceeded one percent of the time (i.e., the 99-percentile mean wind speed), as shown in Table 3.1-1.

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

Table 3.1-1 BPDA Mean Wind Criteria*

Level of Comfort	Wind Speed
Dangerous	>27
Uncomfortable for Walking	>19 and ≤ 27 mph
Comfortable for Walking	>15 and ≤ 19 mph
Comfortable for Standing	> 12 and ≤ 15 mph
Comfortable for Sitting	< 12 mph

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

Pedestrians on walkways, sidewalks and parking lots will be active and wind speeds comfortable for walking are appropriate. Lower wind speeds comfortable for standing are desired for the building's main entrance where people are apt to linger. For any outdoor amenity, low wind speeds comfortable for sitting are desired in the summer, when it is typically in use.

The wind climate found in a typical location in Boston is generally comfortable for the pedestrian use of sidewalks and thoroughfares and meets the BPDA effective gust velocity criterion of 31 mph at most areas, while windier conditions may be expected near the corners of tall buildings exposed to the prevailing winds. However, without any mitigation measures, this wind climate is likely to be frequently unsuitable for more passive activities such as sitting.

The following discussions related to pedestrian wind comfort and safety are based on the annual wind climate. Typically the summer and fall winds tend to be more comfortable than the annual winds while the winter and spring winds are less comfortable than the annual winds.

3.1.5 Pedestrian Wind Conditions

3.1.5.1 Background

Predicting wind speeds and occurrence frequencies is complicated. It involves building geometry, orientation, position and height of the surrounding buildings, upstream terrain and the local wind climate. Over the years, RWDI has conducted thousands of wind-tunnel model studies regarding pedestrian wind conditions around buildings, yielding a broad knowledge base. This knowledge has been incorporated into RWDI's proprietary software that allows, in many situations, for a qualitative, screening-level numerical estimation of pedestrian wind conditions without wind-tunnel testing.

Buildings taller than immediate surroundings tend to intercept the stronger winds at higher elevations and redirect them to the ground level. Such a downwashing flow (see Image 1a on Figure 3.1-4) is the main cause for increased wind activity around tall buildings at the grade level. This is not a concern for the proposed five-story building. When two buildings are located side by side, wind flow accelerations are expected to occur in the gap between the buildings due to the channeling effect (see Image 1b on Figure 3.1-4). If these building/wind combinations occur for prevailing winds, there is a greater potential for increased wind activity.

The Project is only five stories in height and it will not have a significant wind impact on the surrounding areas. The Triangle Neighborhood District is located on the west side of the proposed development. Due to its location and distance from the proposed development, the existing wind conditions in the District will not be negatively affected by the proposed development. Detailed discussions on the potential wind comfort conditions at key pedestrian areas are provided in the next sections.

3.1.5.2 Main Entrance

The main entrance to the Project is located in a well-protected area (Location A on Figure 3.1-5). It also includes a vestibule and a canopy, which are positive design features for wind control. As a result, suitable wind conditions are expected around the entrance year around.

3.1.5.3 Walkways and Parking Spaces

Walkways and parking spaces are located to the southwest of the Project (Location B on Figure 3.1-5). Wind conditions in these areas are not affected by the Project and are suitable for the intended use throughout the year. Higher wind speeds are expected at building corners (Locations B1 and B2 on Figure 3.1-5) due to wind acceleration around building corners and the channeling effect between the buildings. The resultant wind conditions are predicted to be similar to those that currently exist (since the proposed building is only five stories in height) and generally appropriate for sidewalks. The proposed landscaping, which will include coniferous plant materials, may improve these wind conditions in the winter and spring.

3.1.5.4 Public Sidewalks

Sidewalks along Tremont Street (Location C1 on Figure 3.1-5) will not be altered by the Project. Along St. Alphonsus Street, some local wind impact is expected, including reduced wind activity at Location C2 due to the sheltering offered by the new building from the westerly winds, and increased wind speeds at Location C3 due to channeling of winds between the existing and proposed buildings. Since the Project is much shorter than the two existing towers, the increase in wind speeds is not expected to be significant.

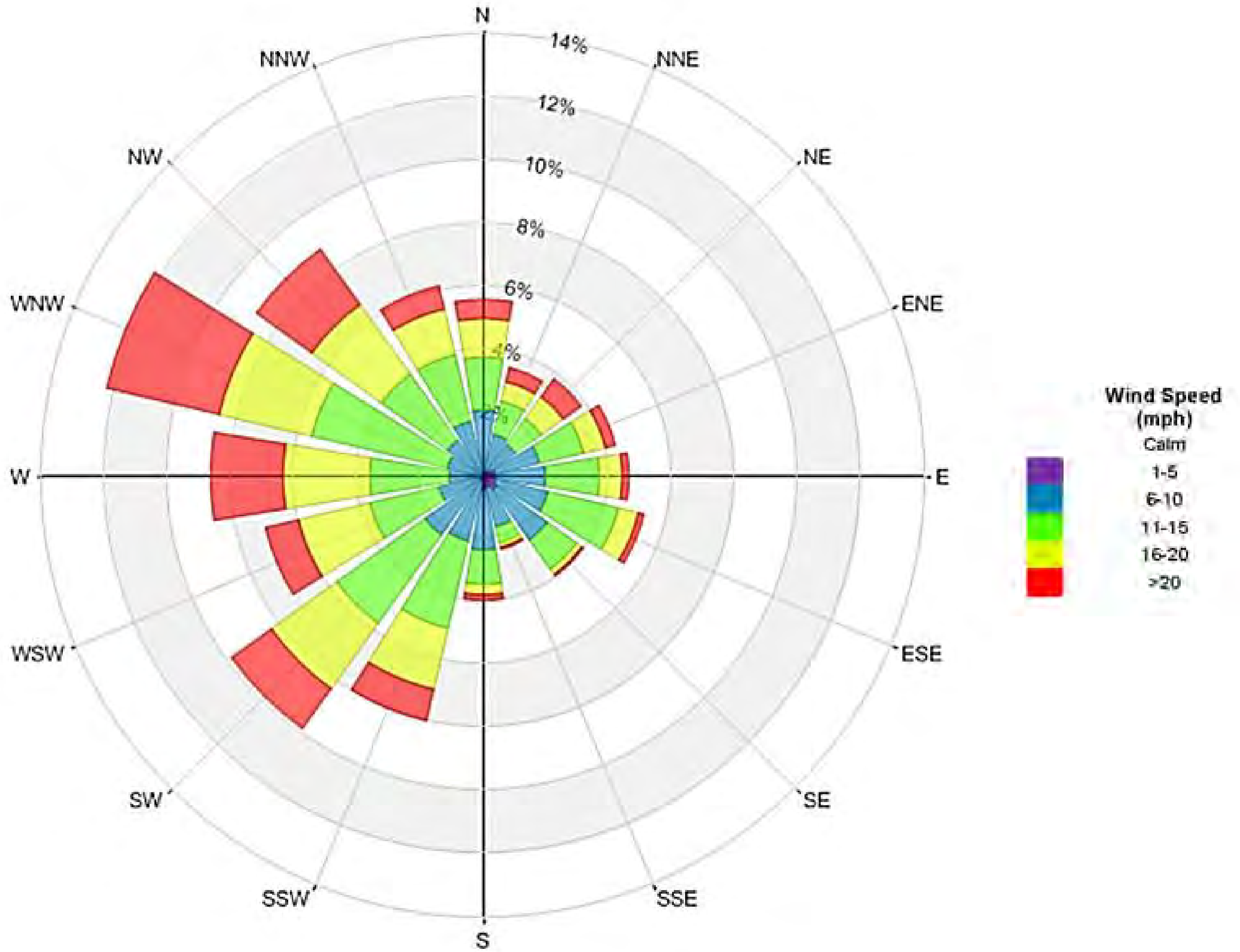
3.1.5.5 Outdoor Amenity

The outdoor playground on the east side of the 1575 Tremont Street building (Location D1 on Figure 3.1-5) is sheltered by the existing building and dense landscaping from all wind directions. The wind conditions are expected to be comfortable for sitting or standing during the summer when this area is typically in use. These conditions will not be negatively affected by the Project.

3.1.6 Summary

The Project is not expected to have significant wind impact on the surrounding areas, due to its limited height. Appropriate wind conditions are expected at the main entrance, walkways, sidewalks, parking spaces and the playground east of the adjacent 1575 Tremont Street building.

Increased wind speeds are expected at exposed building corners and in the gaps between the buildings, but the resultant wind conditions are still expected to be suitable for walking year around.



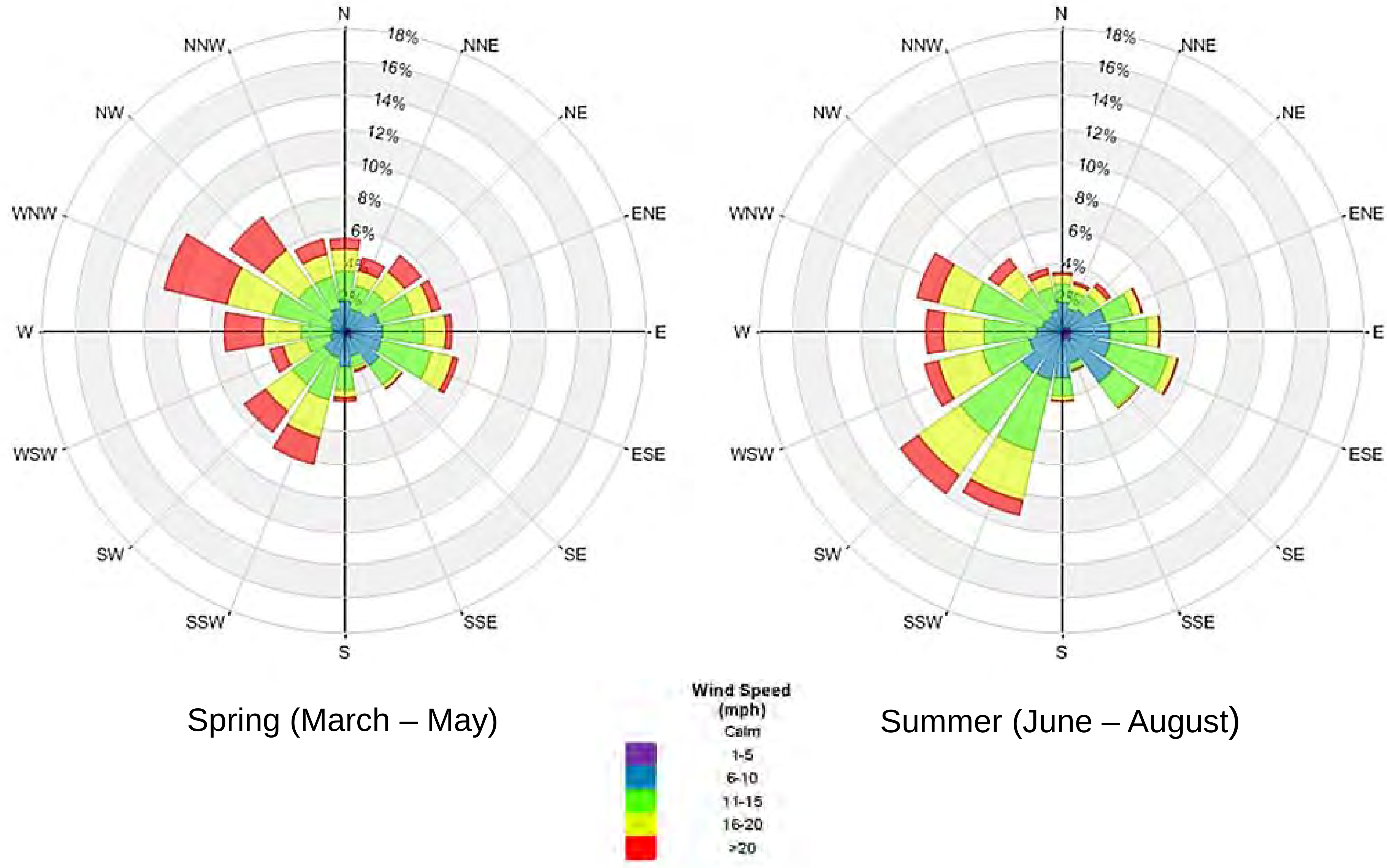
Annual Winds

95 St. Alphonsus Street Boston, Massachusetts

RWDI

Figure 3.1-1

Directional Distribution (%) of Winds (Blowing From) Boston Logan International Airport (1990 – 2015)



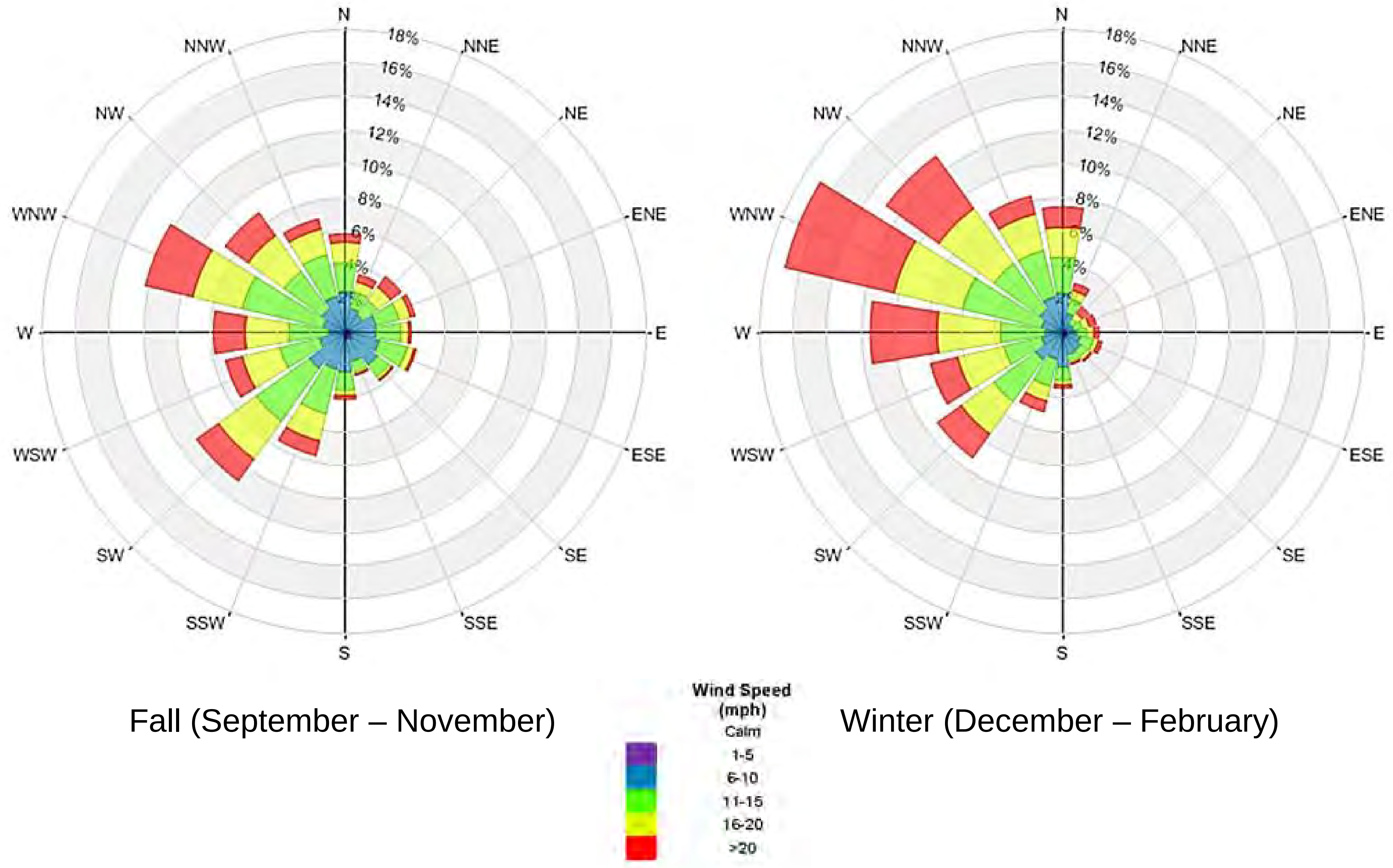
Spring (March – May)

Summer (June – August)

95 St. Alphonsus Street Boston, Massachusetts

Figure 3.1-2

Directional Distribution (%) of Winds (Blowing From) Boston Logan International Airport (1990 – 2015)



95 St. Alphonsus Street Boston, Massachusetts

Figure 3.1-3

Directional Distribution (%) of Winds (Blowing From) Boston Logan International Airport (1990 – 2015)

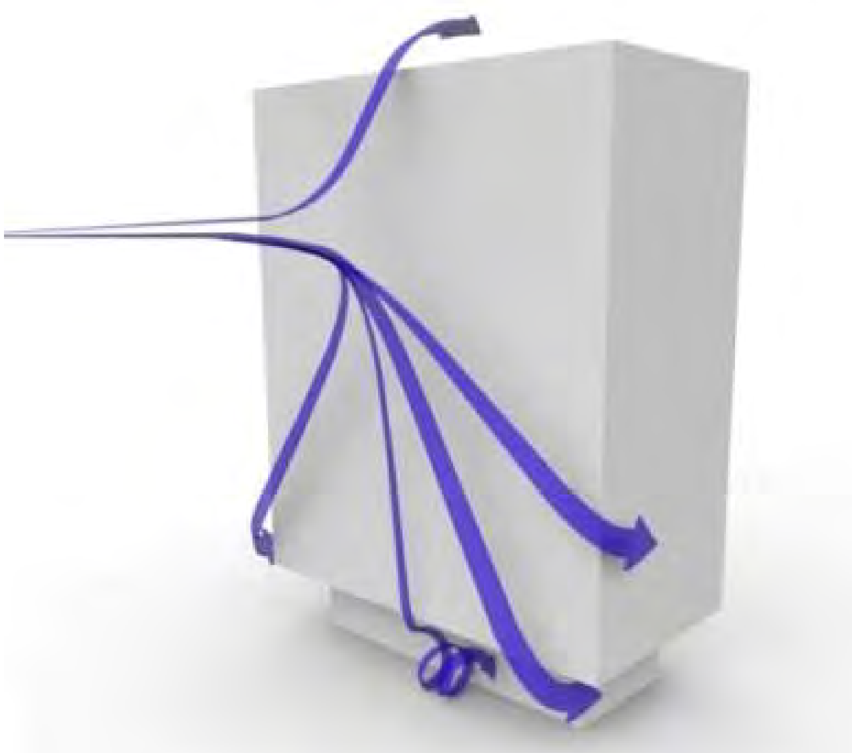


Image 1a: Downwashing Flow

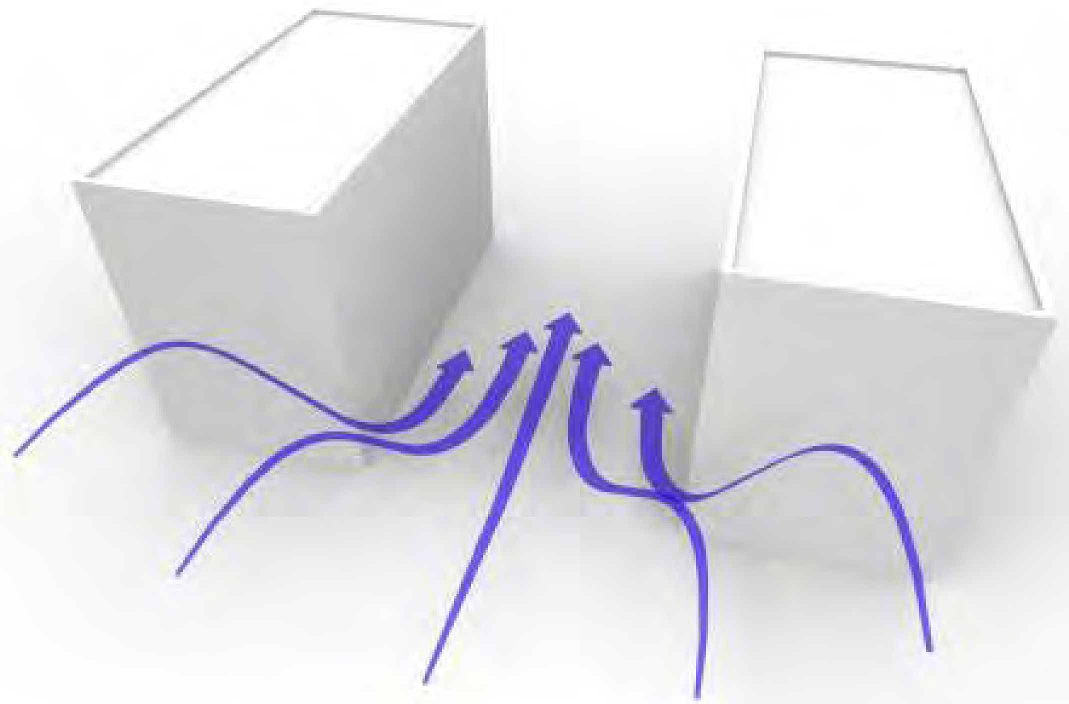


Image 1b: Channeling Flow

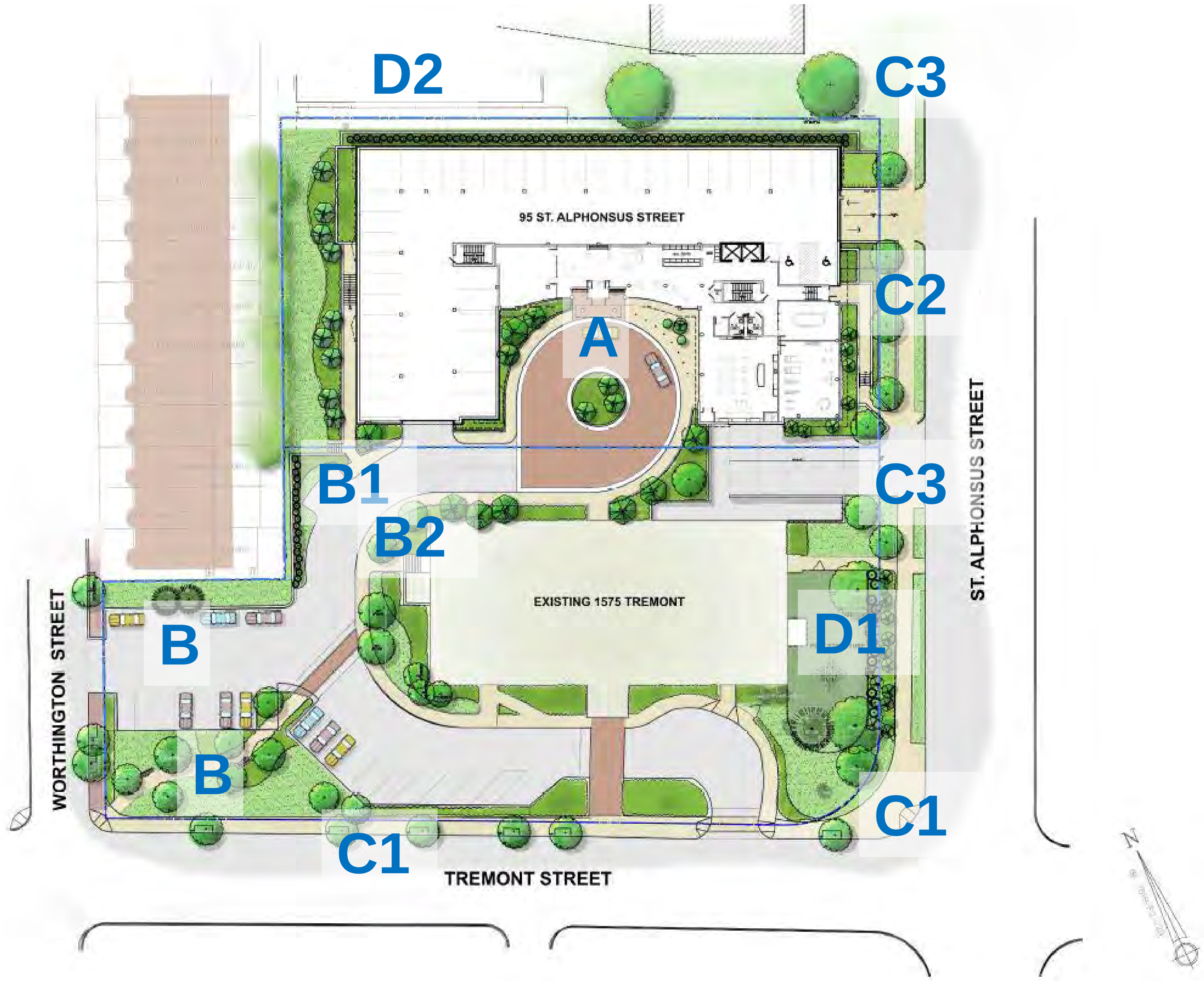


Figure 3.1-5

Reference Plan for Key Pedestrian Areas

3.2 Shadow

3.2.1 Introduction and Methodology

As typically required by the BPDA, 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). In addition, shadow studies were conducted for the 6:00 p.m. time period during the summer solstice and autumnal equinox.

The shadow analysis presents the existing shadow and new shadow that would be created by the proposed Project, illustrating the incremental impact of the Project. The analysis focuses on nearby open spaces, sidewalks and bus stops adjacent to and in the vicinity of the Project. 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.

Due to the limited height of the building, the results of the analysis show that new shadow from the Project will generally be limited to the Project and the immediately surrounding streets and sidewalks. Of the 14 time periods studied, no new shadow will be cast onto nearby bus stops or existing public open spaces in the vicinity of the Project.

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.

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.

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 proposed courtyard.

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 a portion of the Project's proposed courtyard.

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.

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 St. Alphonsus Street and its sidewalks and a portion of the Project's proposed courtyard.

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. New shadow will be cast onto St. Alphonsus Street and its sidewalks and the Project's proposed courtyard. While there is limited shadow on the periphery of the church complex, none is cast on the basilica itself.

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. New shadow will be cast onto the Project's proposed courtyard.

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.

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.

At 6:00 p.m., most of the surrounding area is covered by existing shadow. New shadow from the Project will be cast to the east. No new shadow will be cast onto nearby bus stops or existing public open spaces. New shadow will be cast onto a sliver of St. Alphonsus Street and its eastern sidewalks. While there is limited shadow on the periphery of the church complex, none is cast on the basilica itself.

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 longer and reach further into the surrounding area.

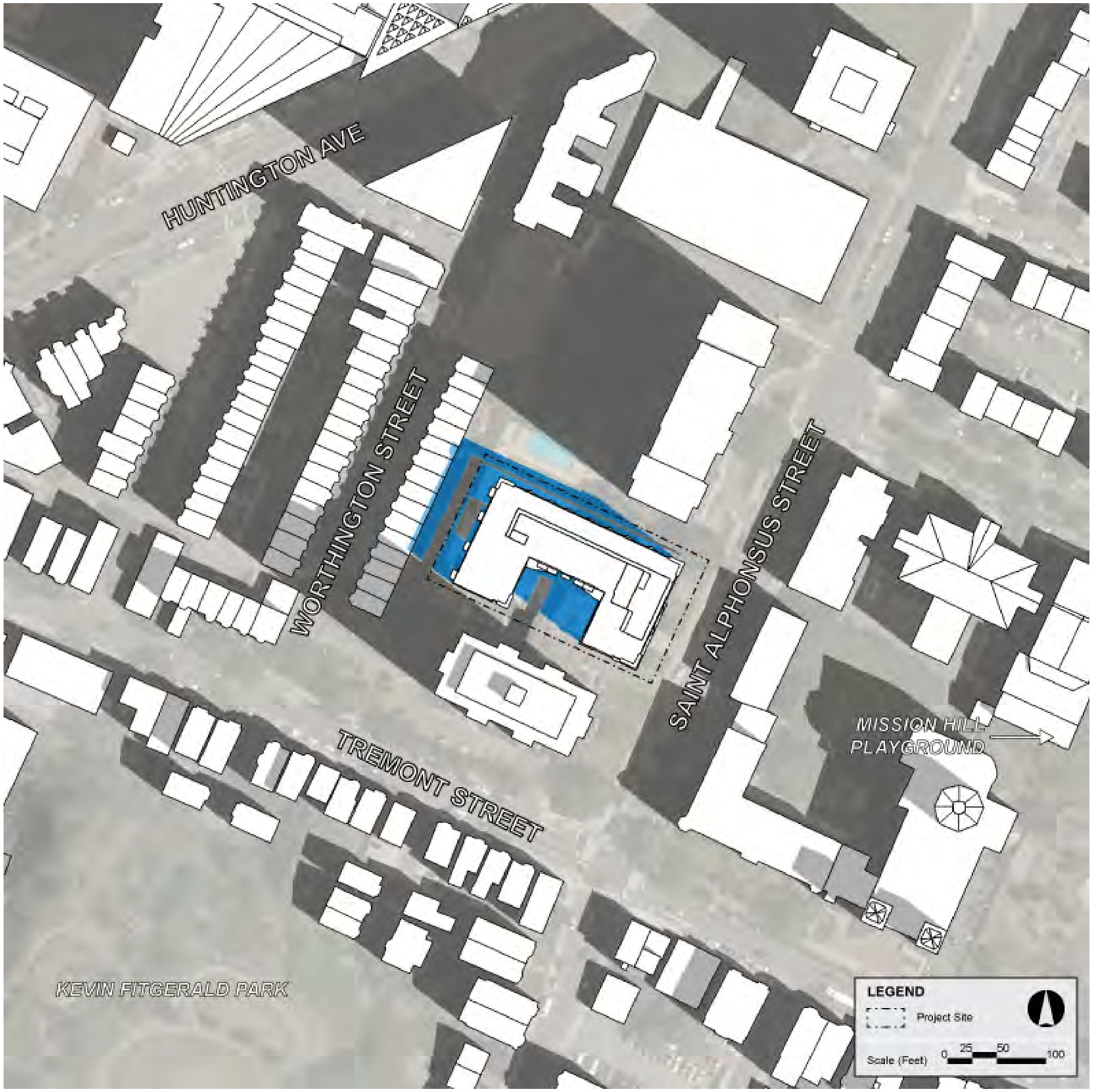
At 9:00 a.m., new shadow from the Project will be cast to the northwest. No new shadow will be cast onto nearby bus stops or existing public open spaces. New shadow will be cast onto the Project's proposed courtyard and a portion of Worthington Street and its sidewalks.

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.

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.

3.2.6 Conclusions

The shadow impact analysis looked at net new shadow created by the Project during 14 time periods. Shadow impacts from the Project are minimal and will generally be limited to the Project and the immediately surrounding streets and sidewalks. No new shadow will be cast onto existing bus stops or existing public open spaces.



95 St. Alphonsus Street   Boston, Massachusetts

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Figure 3.2-1

Shadow Study, March 21 9:00 a.m.

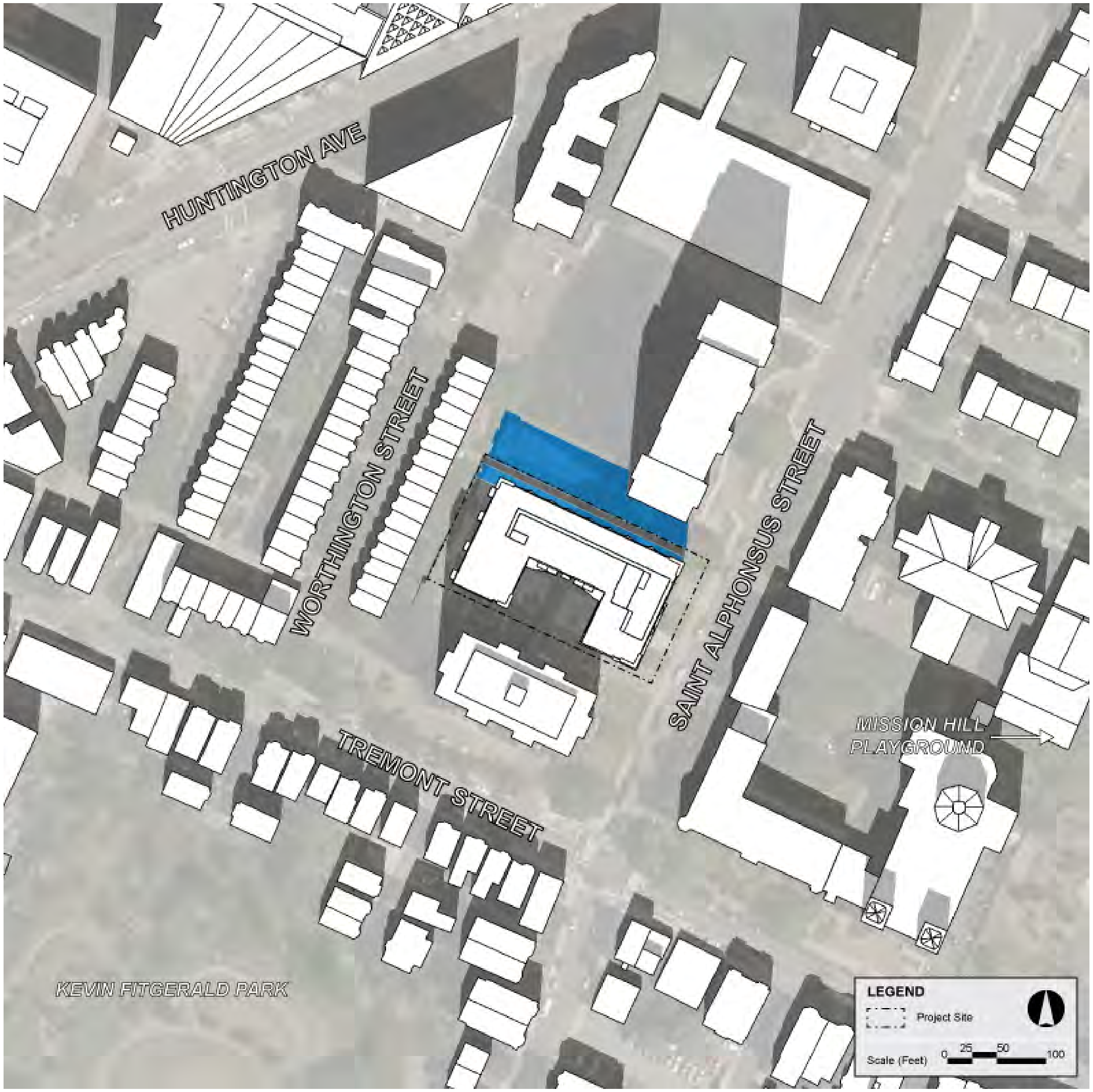
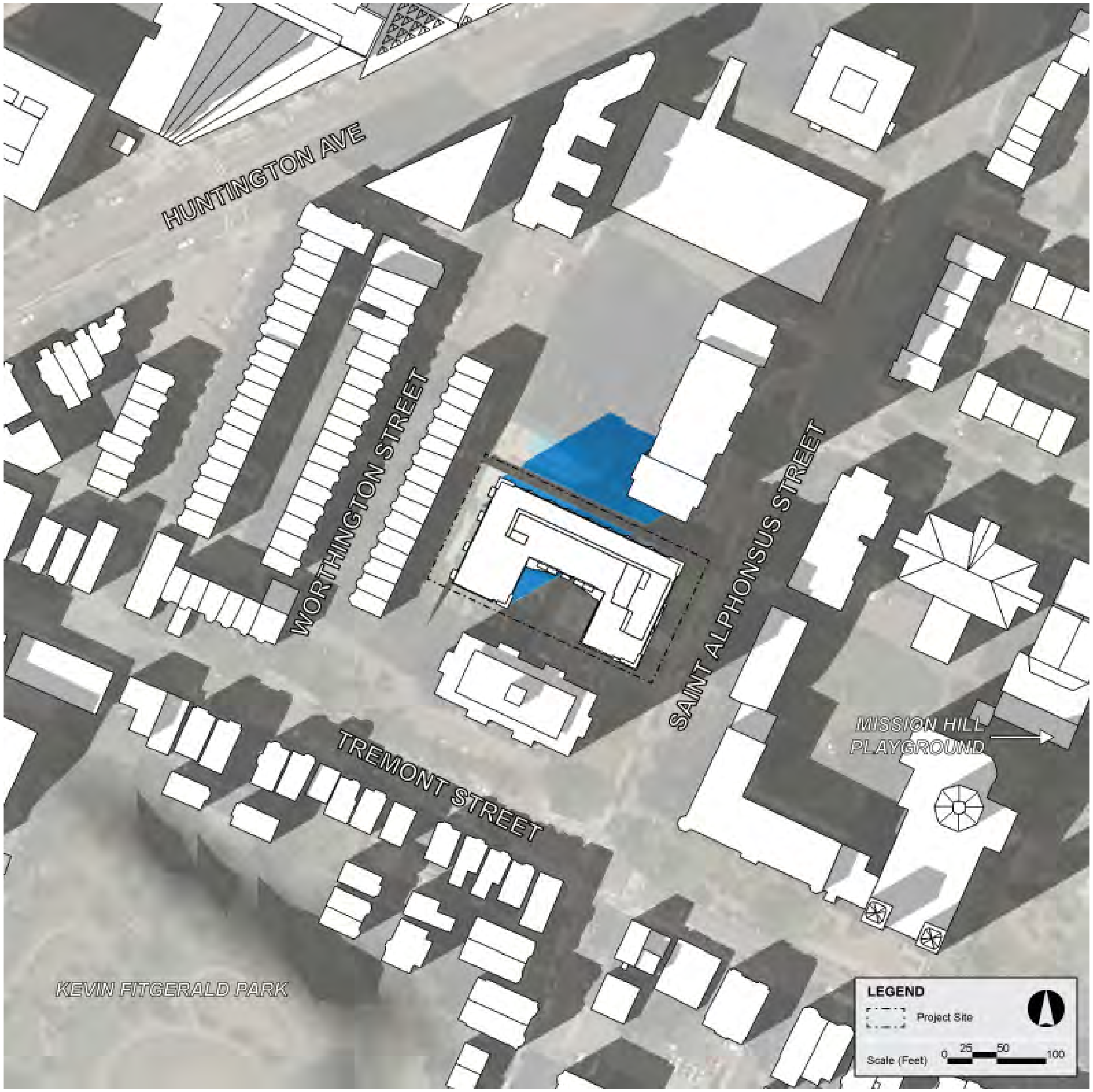


Figure 3.2-2

Shadow Study, March 21 12:00 p.m.



95 St. Alphonsus Street   Boston, Massachusetts

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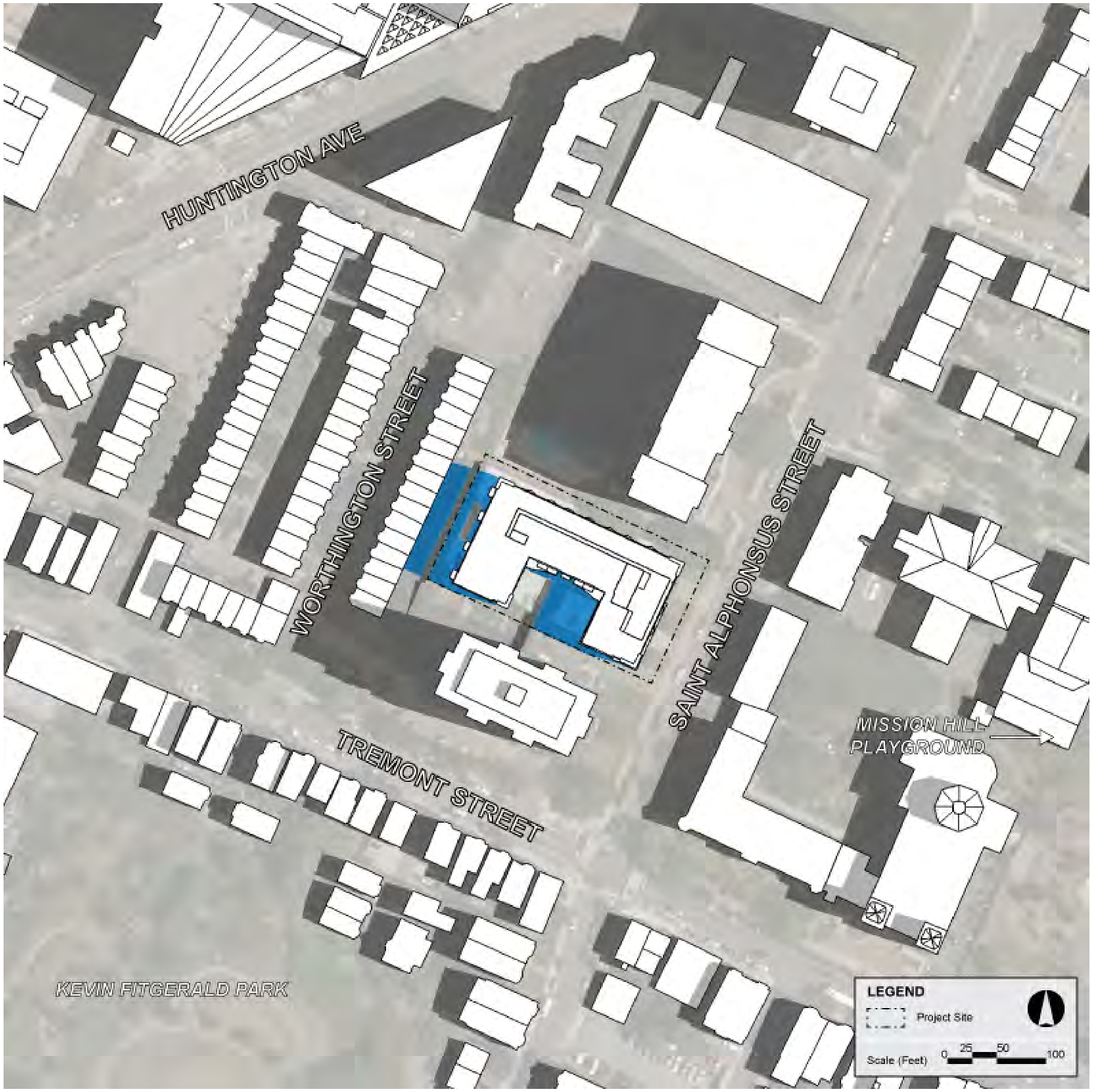
Figure 3.2-3

Shadow Study, March 21 3:00 p.m.



95 St. Alphonsus Street **Boston, Massachusetts**

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Figure 3.2-4

Shadow Study, June 21 9:00 a.m.

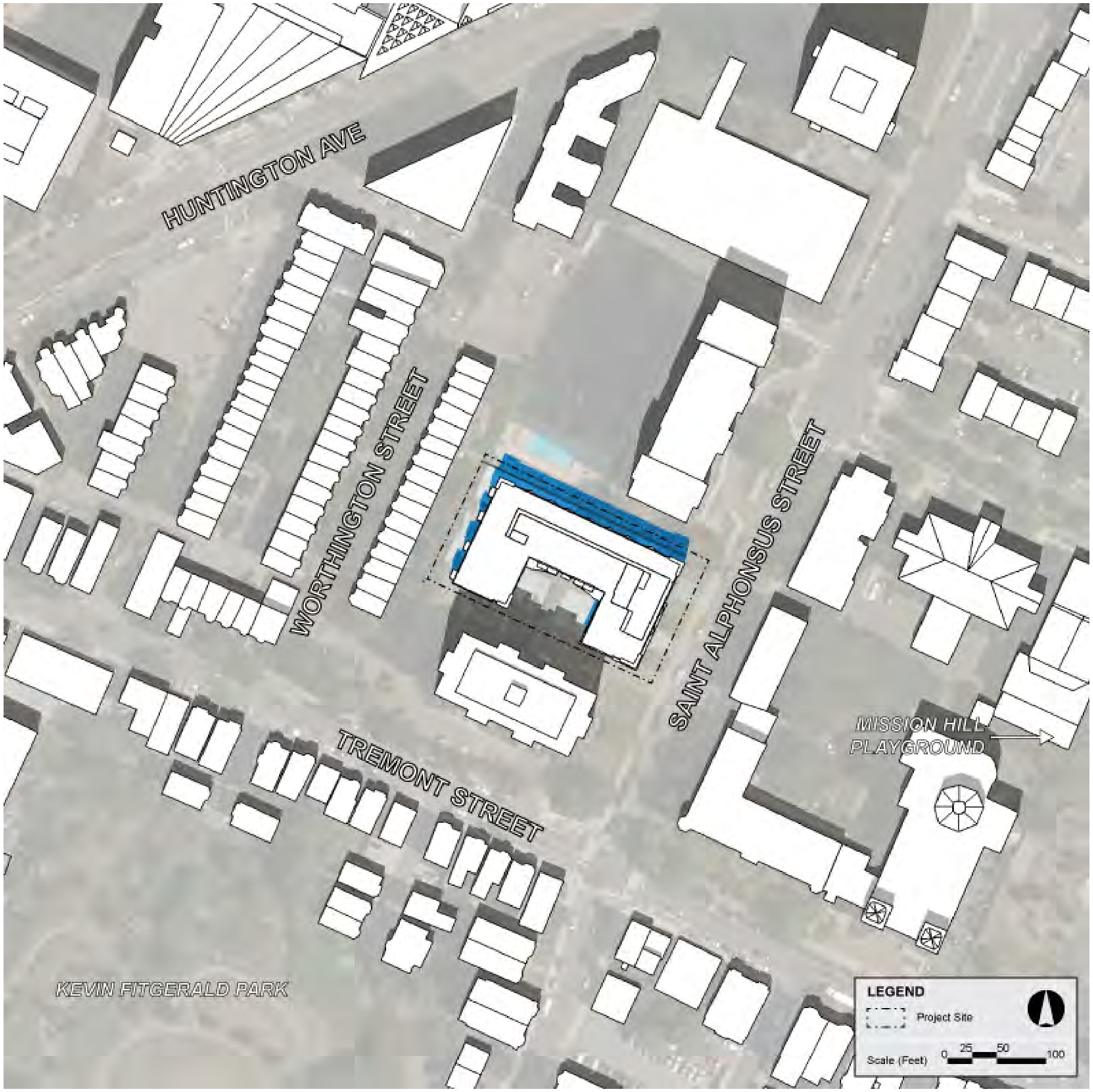

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Figure 3.2-5

Shadow Study, June 21 12:00 p.m.

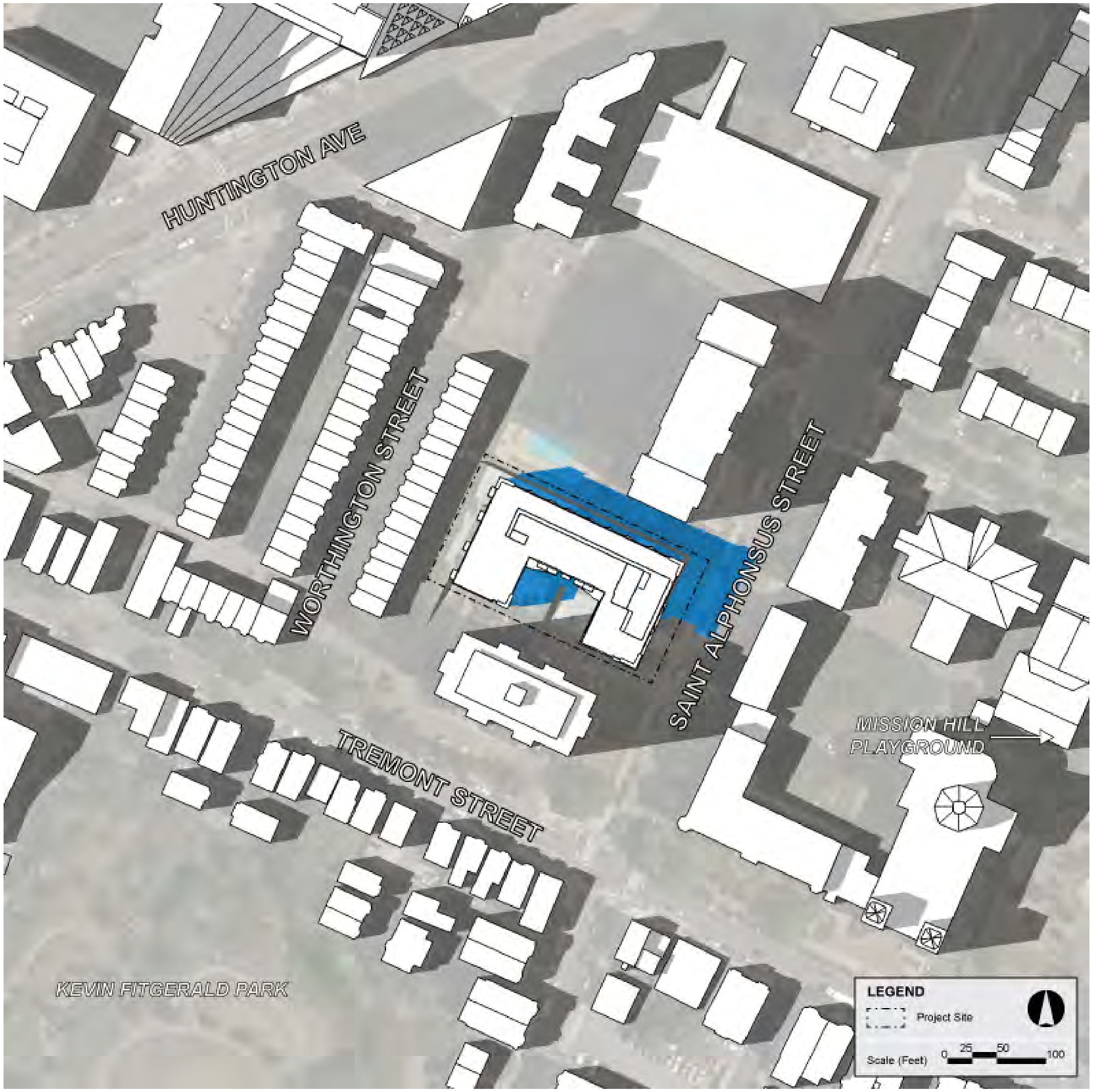
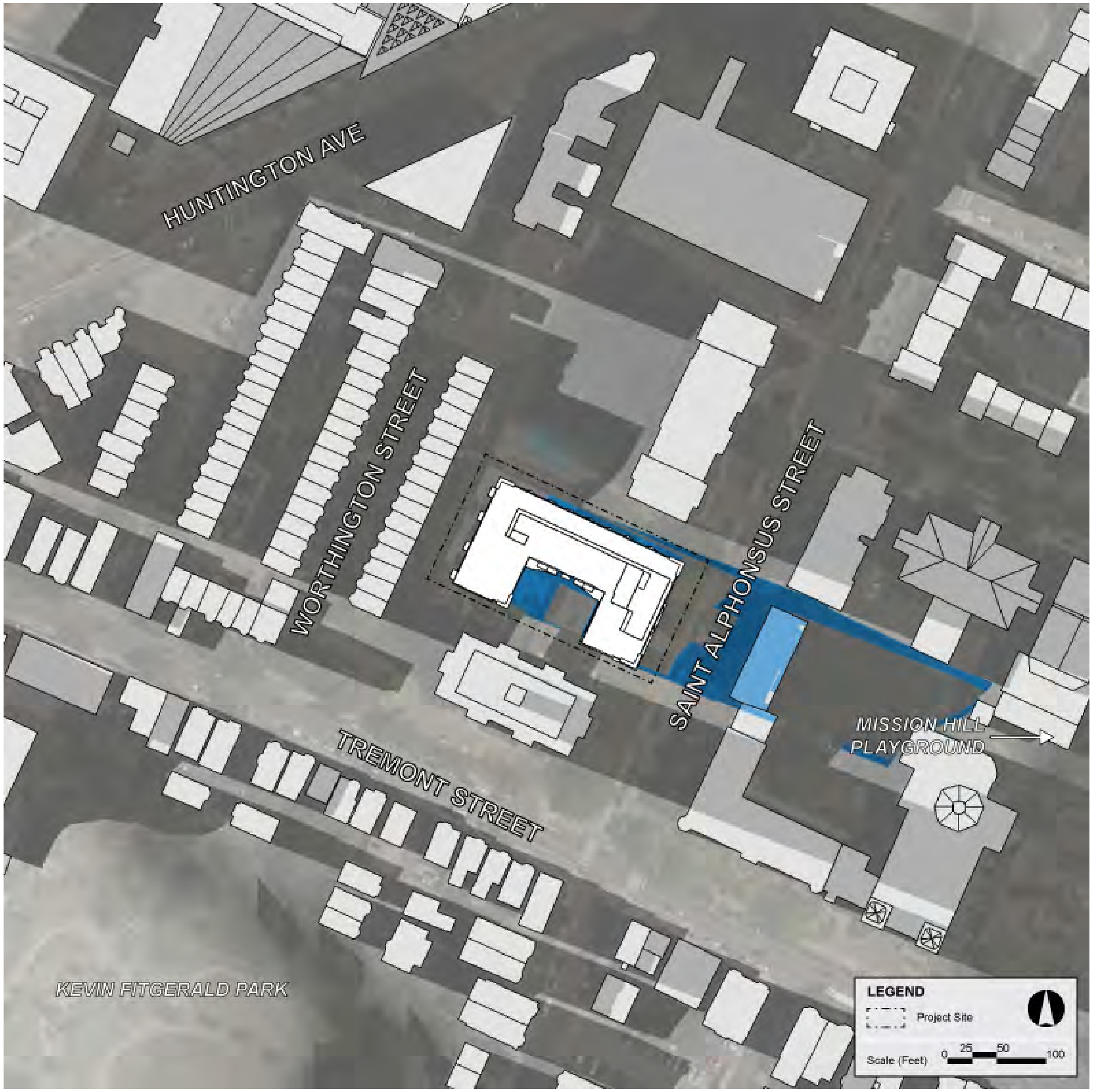


Figure 3.2-6

Shadow Study, June 21 3:00 p.m.



95 St. Alphonsus Street **Boston, Massachusetts**

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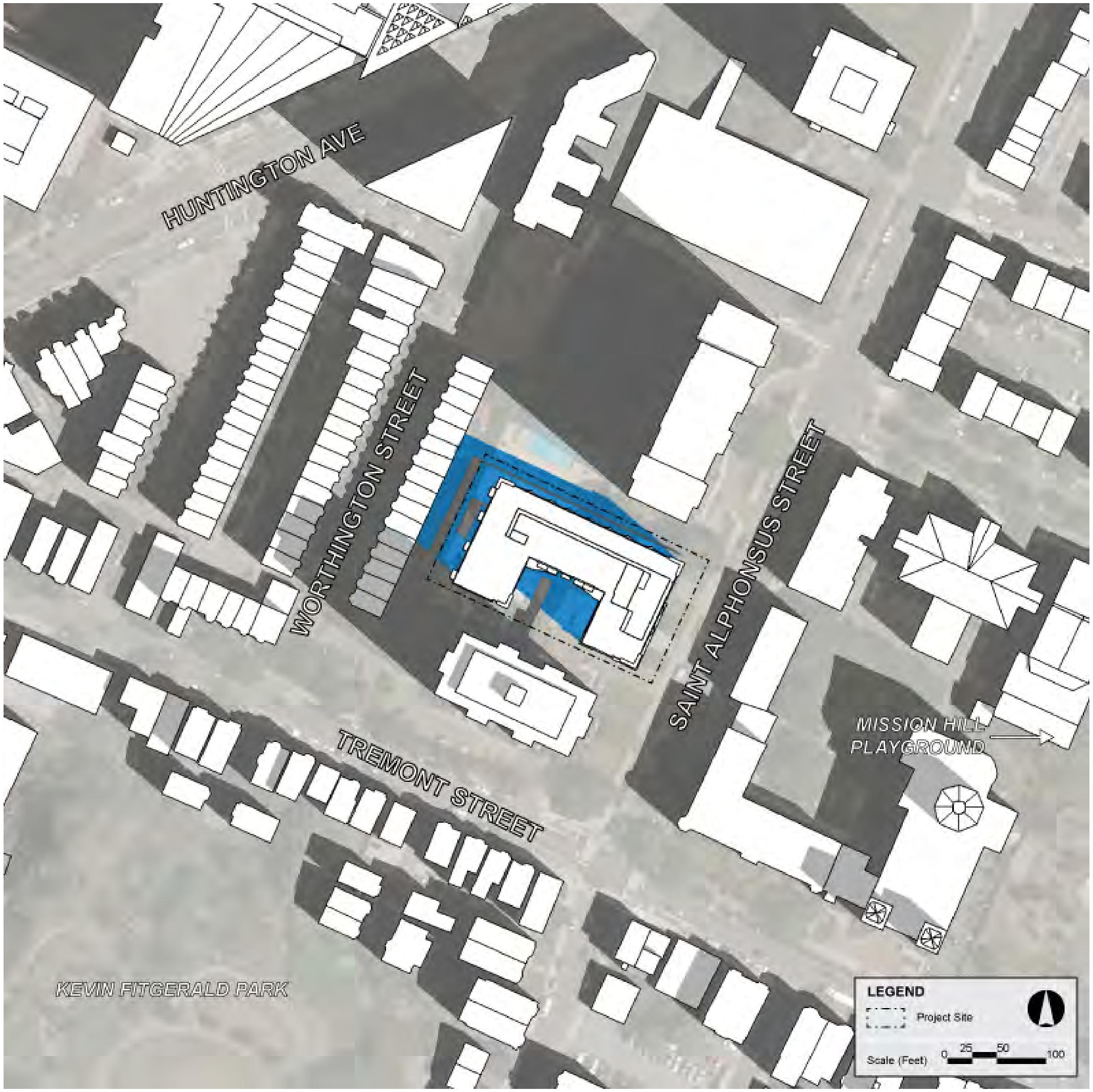
Figure 3.2-7

Shadow Study, June 21 6:00 p.m.



95 St. Alphonsus Street   Boston, Massachusetts

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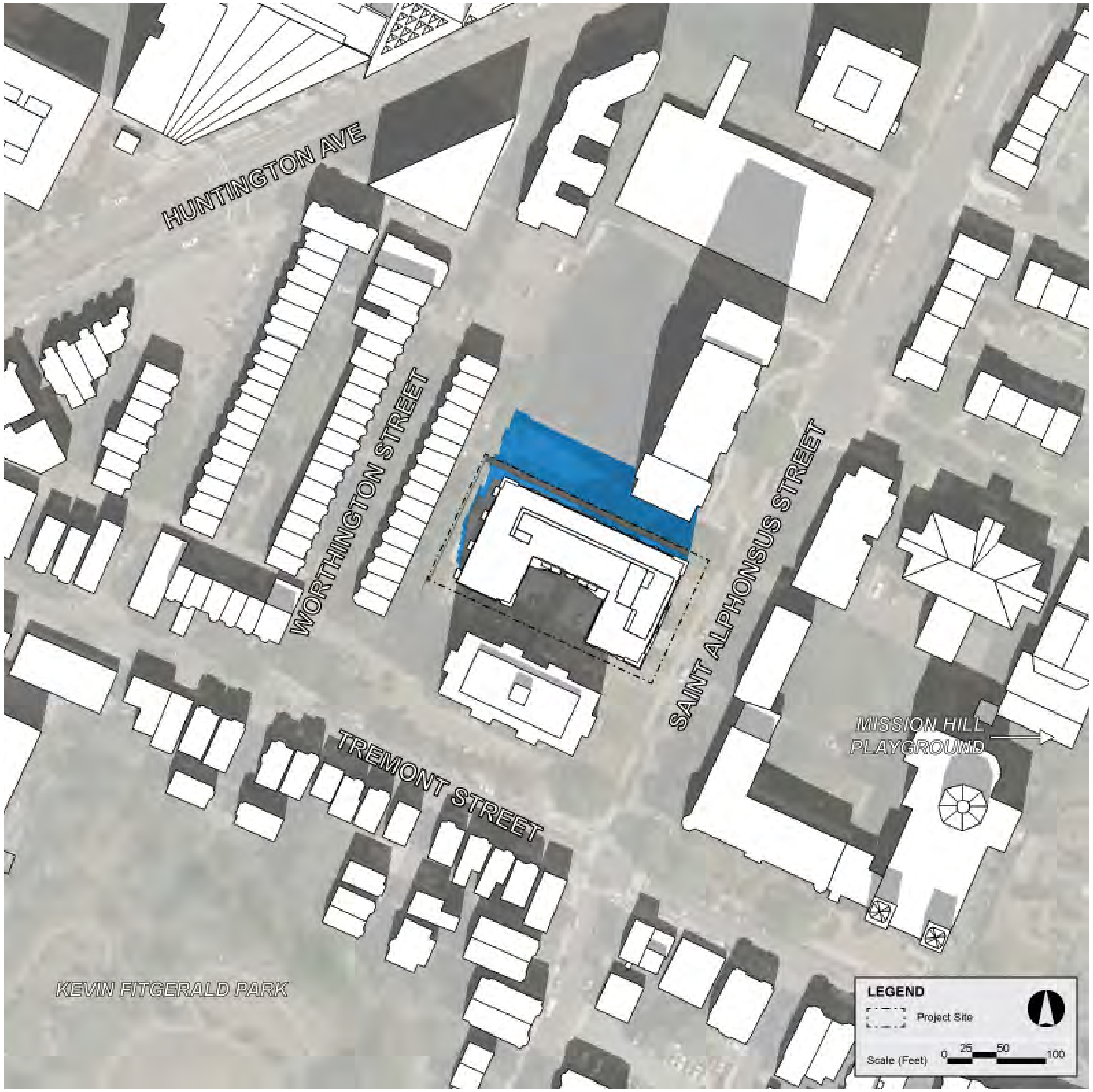
Figure 3.2-8

Shadow Study, September 21 9:00 a.m.



95 St. Alphonsus Street Boston, Massachusetts

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Figure 3.2-9

Shadow Study, September 21 12:00 p.m.

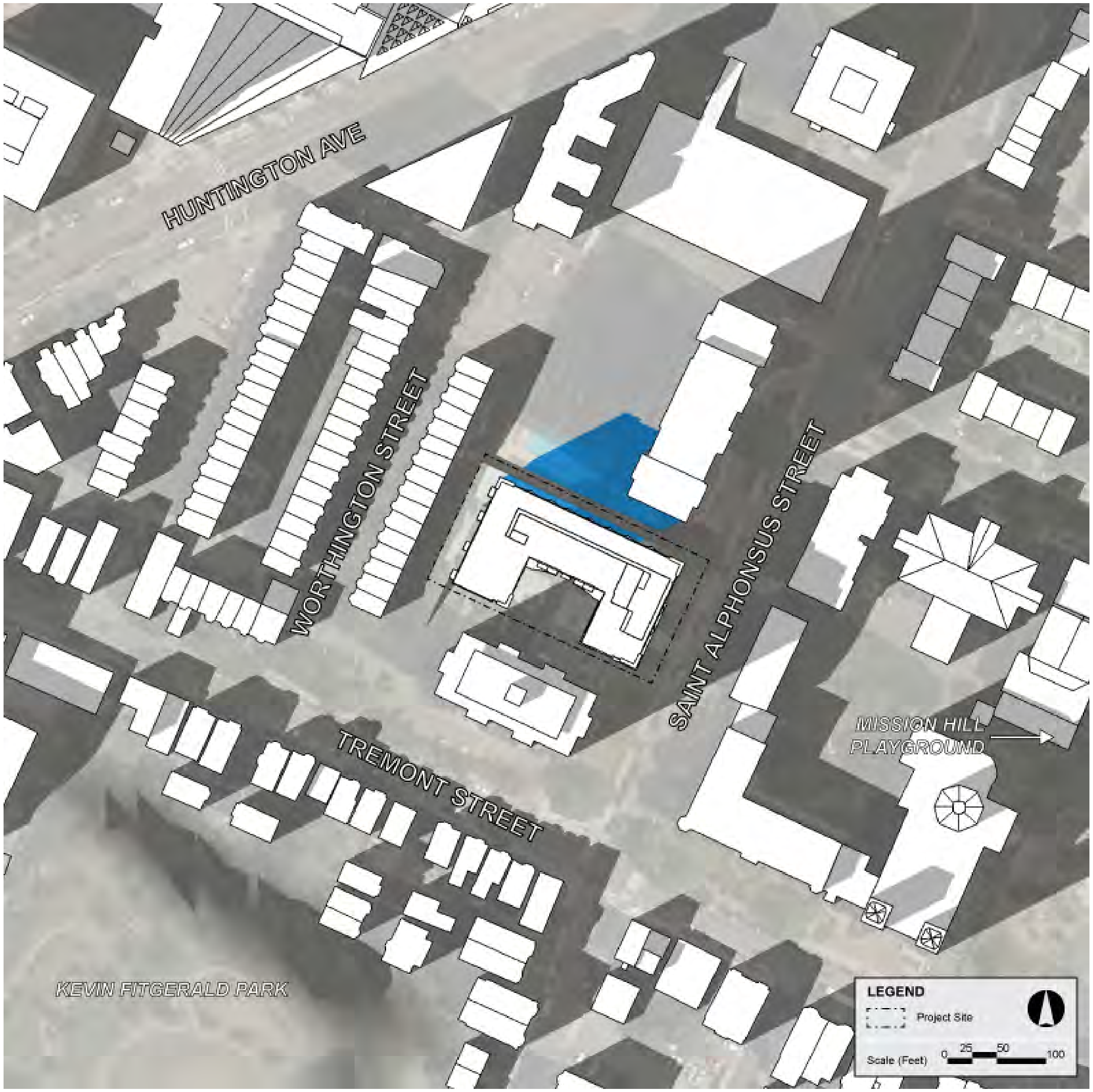

Figure 3.2-10

Shadow Study, September 21 3:00 p.m.

95 St. Alphonsus Street   Boston, Massachusetts

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Figure 3.2-11

Shadow Study, September 21 6:00 p.m.

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Figure 3.2-12

Shadow Study, December 21 9:00 a.m.

Figure 3.2-13

Shadow Study, December 21 12:00 p.m.

Figure 3.2-14

Shadow Study, December 21 3:00 p.m.

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 sidewalks in the immediate vicinity of a project site. The daylight analysis for the Project considers the existing and proposed conditions, as well as typical daylight obstruction values of the surrounding area.

3.3.2 Methodology

The daylight analysis was performed using the Boston Redevelopment Authority Daylight Analysis (BRADA) computer program[5]. 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.

The analysis compares three conditions: Existing Conditions; Proposed Conditions; and the context of the area. Two 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 St. Alphonsus Street facing west toward the Project.
- **Area Context Viewpoint AC1:** View from St. Alphonsus Street facing west toward 75 St. Alphonsus Street.
- **Area Context Viewpoint AC2:** View from St. Alphonsus Street facing west toward 650 Huntington Avenue.

---

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

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

95 St. Alphonsus Street **Boston, Massachusetts**

Figure 3.3-1
Viewpoint and Area Context Locations

3.3.3 Results

The results for each viewpoint are described in Table 3.3-1. Figure 3.3-2 illustrates the BRADA results for each analysis.

Table 3.3-1 Daylight Analysis Results

Viewpoint Locations		Existing Conditions	Proposed Conditions
Viewpoint 1	View from St. Alphonsus Street facing west toward the Project	0%[1]	46.6%
Area Context Points			
AC1	View from Tremont Street facing west toward 75 St. Alphonsus Street	60.4%	N/A
AC2	View from Huntington Avenue facing west toward 650 Huntington Avenue	32.7%	N/A

[1]The 95 St. Alphonsus Street parcel includes a low-rise parking garage structure that has a negligible impact on daylight obstruction; therefore, for simplicity, this analysis assumes a 0% daylight obstruction for the existing conditions.

St. Alphonsus Street – Viewpoint 1

St. Alphonsus Street runs along the eastern edge of the95 St. Alphonsus Street parcel. Viewpoint 1 was taken from the center of St. Alphonsus Street facing west toward the Project. Since the 95 St. Alphonsus Street parcel is currently occupied by a low-rise parking garage structure, the proposed building will increase the daylight obstruction value to 46.6%. While this is an increase over the existing conditions, the Project will have a daylight obstruction similar to buildings in the vicinity of the Project, including the Area Context buildings.

Area Context Views

The surrounding area around the Project includes buildings varying in height and density, and proposed projects in the immediate vicinity of the Project will increase the density of the surrounding area. To provide a larger context for comparison of daylight conditions, obstruction values were calculated for the two Area Context Viewpoints described above and shown in Figure 3.3-2. The daylight obstruction values ranged from 32.7% for AC2 to 60.4% for AC1. Daylight obstruction values for the Project are similar or less than the buildings in the Project vicinity, including the Area Context values.

G:\Projects2\MA\Boston\4734\MXD\Viewpoints.mxd

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

95 St. Alphonsus Street   Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 3.3-1

Viewpoint and Area Context Locations

3.3.4 Conclusion

The daylight analysis conducted for the Project describes existing and proposed daylight obstruction conditions at the 95 St. Alphonsus Street parcel and in the surrounding area. The results of the BRADA analysis indicate that although the Project will result in increased daylight obstruction over existing conditions, it will be similar to or lower than the daylight obstruction values within the surrounding area.

3.4 Solar Glare

It is not anticipated that the Project will include the use of highly reflective glass or other reflective materials on the building facades that would result in adverse impacts from reflected solar glare from the Project.

3.5 Air Quality

3.5.1 Introduction

The BPDA requires that proposed projects evaluate the air quality in the local area, and assess any adverse air quality impacts attributable to a project.

The Project doesn't generate enough traffic to require a mesoscale vehicle emissions quantification analysis. However, the Project creates new trips through local intersections operating at LOS D or worse. Therefore, a microscale analysis of carbon monoxide has been completed to provide information on the Project's impact to air quality from mobile sources.

Any new stationary sources will be reviewed by the Massachusetts Department of Environmental Protection (MassDEP) during permitting under the Environmental Results Program, as required. It is expected that all stationary sources will be small, and any impacts from stationary sources would be minimal.

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 above air quality impact analyses. Federal National Ambient Air Quality Standards (NAAQS) were developed by the U.S. Environmental Protection Agency (EPA) to protect the 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.[6] The following sections outline the NAAQS standards and detail the sources of background air quality data.

---

[6] 40 CFR 51 Appendix W, Guideline on Air Quality Models, 70 FR 68228, Nov. 9, 2005

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) (PM-10 and PM-2.5), 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 (differences are highlighted in **bold** in Table 3.5-1).

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 this 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.

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

Pollutant	Averaging Period	NAAQS ($\mu g/m^3$) Primary	NAAQS ($\mu g/m^3$) Secondary	MAAQS ($\mu g/m^3$) Primary	MAAQS ($\mu g/m^3$) 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 PM-10 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 "nonattainment".

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 to EPA was obtained for 2013 to 2015. Data for the pollutant and averaging time combinations were obtained from the EPA's AirData website.

The Clean Air Act allows for one exceedance per year of the CO and SO_2 short-term NAAQS per year. The highest second-high accounts for the one exceedance. Annual NAAQS are never to be exceeded. The 24-hour PM-10 standard is not to be exceeded more than once per year on average over three years. To attain the 24-hour PM-2.5 standard, the three-year average of the 98th percentile of 24-hour concentrations must not exceed 35 $\mu g/m^3$. For annual PM-2.5 averages, the average of the highest yearly observations was used as the background concentration. To attain the one-hour NO_2 standard, the three-year average of the 98th percentile of the maximum daily one-hour concentrations must not exceed 188 $\mu g/m^3$.

Background concentrations were determined from the closest available monitoring stations to the proposed development. All pollutants are not monitored at every station, so data from multiple locations are necessary. The closest monitor is at Harrison Avenue in Boston, roughly one mile southeast of the Project. 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	2013	2014	2015	Background Concentration ($\mu g/m^3$)	NAAQS	Percent of NAAQS
SO_2 (1)(6)	1-Hour (5)	28.6	32.2	24.6	28.5	196.0	15%
	3-Hour	25.4	56.3	22.8	56.3	1300.0	4%
	24-Hour	13.1	13.4	11.3	13.4	365.0	4%
	Annual	2.8	2.8	2.1	2.8	80.0	4%
PM-10	24-Hour	34.0	61.0	28.0	61.0	150.0	41%
	Annual	15.1	13.9	12.4	15.1	50.0	30%
PM-2.5	24-Hour (5)	15.9	12.7	19.0	15.9	35.0	45%
	Annual (5)	7.3	6.0	8.8	7.4	12.0	61%
NO_2 (3)	1-Hour (5)	94.0	95.9	99.6	96.5	188.0	51%
	Annual	32.8	29.6	28.1	32.8	100.0	33%
CO (2)	1-Hour	2145.3	1963.1	1560.9	2145.3	40000.0	5%
	8-Hour	1375.2	1489.8	1031.4	1489.8	10000.0	15%

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

Pollutant	Averaging Time	2013	2014	2015	Background Concentration ($\mu g/m^3$)	NAAQS	Percent of NAAQS
Ozone [(4)]	8-Hour	115.8	106.0	109.9	115.8	147.0	79%
Lead	Rolling 3-Month	0.006	0.014	0.016	0.016	0.15	10%

Notes:
From 2013-2015 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.

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

3.5.3 Mobile Sources

Mobile sources of air pollution include emissions from gasoline, diesel, and natural gas fueled vehicle traffic. Emissions from mobile sources have continually decreased as engine technology and efficiency have been improved.

3.5.3.1 Methodology

The BPDA 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 "hot spot" (high concentration) locations around congested intersections. The NAAQS standards do not allow ambient CO concentrations to exceed 35 parts per million (ppm) for a one-hour averaging period, and 9 ppm for an eight-hour averaging period, more than once per year at any location. The widespread use of CO catalysts on current vehicles has reduced the occurrences of CO hotspots. Air quality modeling techniques (computer simulation programs) are typically used to predict CO levels for both existing and future conditions to evaluate compliance of the roadways with the standards. The 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 (2017) and future year (2024) 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. The modeling methodology was developed in accordance with the latest MassDEP modeling policies and Federal modeling guidelines.[7]

Existing background values of CO at the nearest monitor location were obtained from MassDEP. CAL3QHC results were then added to background CO values of 1.9 ppm (one-hour) and 1.3 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).

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

Intersection Selection

Three signalized intersections included in the traffic study meet the above conditions described at the beginning of this section (see Chapter 2). The traffic volumes and LOS calculations provided in Chapter 2 form the basis of evaluating the traffic data versus the microscale thresholds. The intersections found to meet the criteria are:

- Calumet Street, Tremont Street, Francis Street, and Huntington Avenue,
- Longwood Avenue and Huntington Avenue, and
- Tremont Street and St. Alphonsus Street.

Microscale modeling was performed for the intersections based on the aforementioned methodology. The 2017 Existing Condition and the 2024 No-Build and Build conditions were each evaluated for both morning (a.m.) and afternoon (p.m.) peak.

[7] 40 CFR 51 Appendix W, Guideline on Air Quality Models, 70 FR 68228, Nov. 9, 2005

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 (2017) and future year (2024) are provided by MassDEP.

All link types for the modeled intersections 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 25 mph is used for all free-flow traffic, consistent with the City of Boston speed limit. 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.[8]

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

Receptors & Meteorology Inputs

Sets of up to 275 receptors were placed in the vicinity of the modeled intersections. Receptors extended approximately 300 feet on the sidewalks along the roadways approaching the intersections. The roadway links and receptor locations of the modeled intersections are presented in Figures 3.5-1 through 3.5-3.

For the CAL3QHC model, limited meteorological inputs are required. Following EPA guidance[9], 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.[10]

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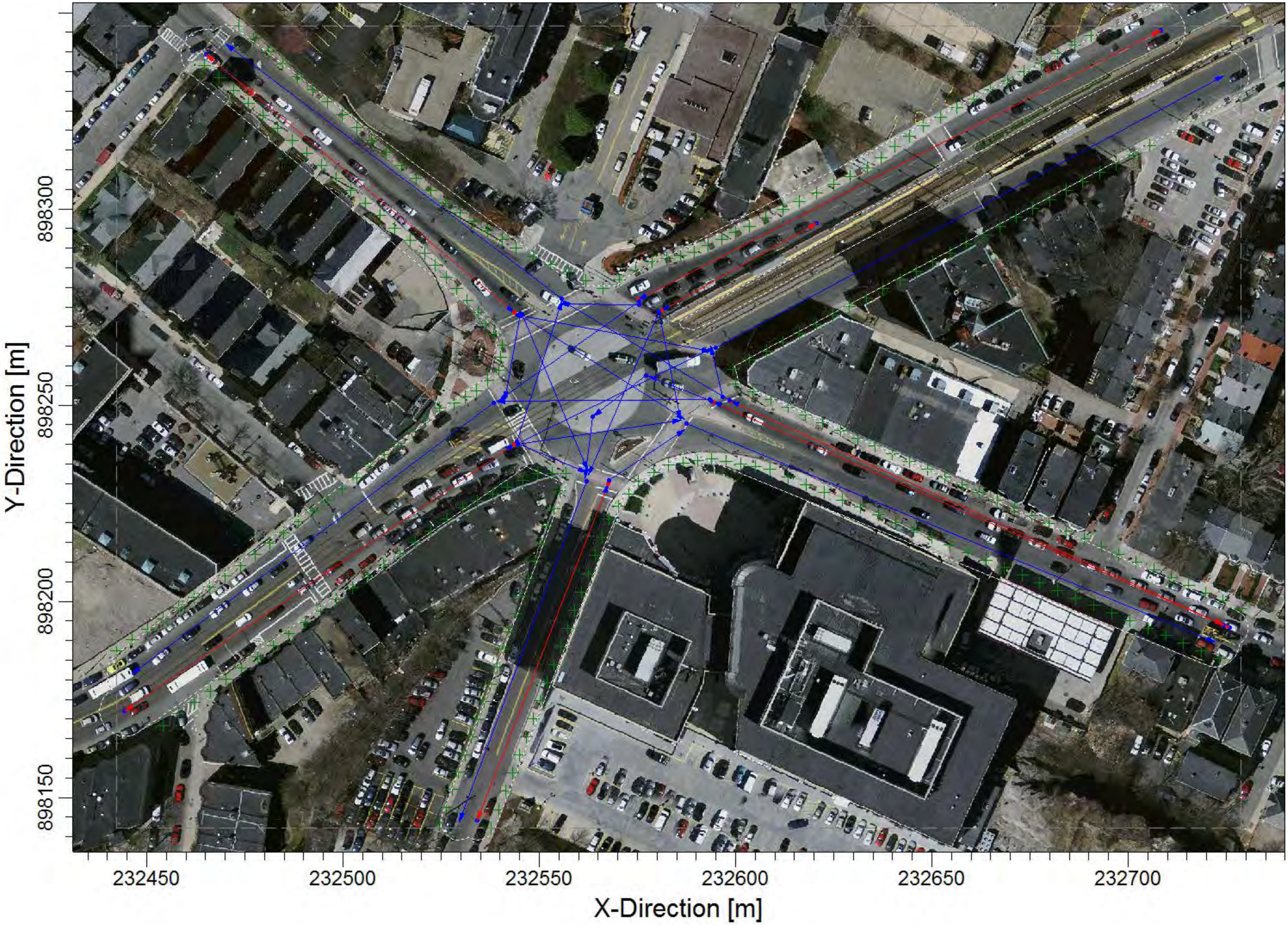
8 U.S. EPA, 2010. Using MOVES in Project-Level Carbon Monoxide Analyses. EPA-420-B-10-041

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

10 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.



95 St. Alphonsus Street, Boston, Massachusetts

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Figure 3.5-1

Link and Receptor Locations for CAL3QHC modeling of Intersection of Calumet Street, Tremont Street, and Huntington Avenue

95 St. Alphonsus Street, Boston, Massachusetts

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Figure 3.5-2

Link and Receptor Locations for CAL3QHC modeling of Intersection of Longwood Avenue and Huntington Avenue

95 St. Alphonsus Street, Boston, Massachusetts

Figure 3.5-3

Link and Receptor Locations for CAL3QHC modeling of Intersection of St. Alphonsus Street and Huntington Avenue

Impact Calculations (CAL3QHC)

The CAL3QHC model predicts one-hour concentrations using queue-links at signalized 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.[11] The CAL3QHC methodology was based on EPA CO modeling guidance. Signal timings were provided directly from the traffic modeling outputs.

For use in the microscale analysis, background concentrations of CO in ppm were required. The corresponding maximum background concentrations in ppm were 1.9 ppm (2,145 $\mu g/m^3$) for one-hour and 1.3 ppm (1,490 $\mu g/m^3$) for eight-hour CO.

3.5.3.2 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 2017 and 2024 scenarios. Eight-hour average concentrations are calculated by multiplying the maximum one-hour concentrations by a factor of 0.9.[12]

The results of the one-hour and eight-hour maximum modeled CO ground-level concentrations from CAL3QHC were added to EPA supplied background levels for comparison to the NAAQS. These values represent the highest potential concentrations at the intersection as they are predicted during the simultaneous occurrence of "defined" worst case meteorology. The highest one-hour traffic-related concentration predicted in the area of the Project for the modeled conditions (0.3 ppm) plus background (1.9 ppm) is 2.2 ppm. The highest eight-hour traffic-related concentration predicted in the area of the Project for the modeled conditions (0.3 ppm) plus background (1.3 ppm) is 1.6 ppm. Both maximum concentrations occur under Existing Conditions.

Under future No-Build and Build cases, the highest one-hour traffic-related concentration predicted in the area of the Project for the modeled conditions (0.2 ppm) plus background (1.9 ppm) is 2.1 ppm. The highest eight-hour traffic-related concentration predicted in the area of the Project for the modeled conditions (0.2 ppm) plus background (1.3 ppm) is 1.5 ppm.

All concentrations are well below the one-hour NAAQS of 35 ppm and the eight-hour NAAQS of 9 ppm. Mitigation offers little to no benefit with respect to air quality impacts due to vehicle traffic at nearby intersections.

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

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

3.5.3.3 Conclusions

Results of the microscale analysis show that all predicted CO concentrations are well below one-hour and eight-hour NAAQS. 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 2017)

Intersection	*Peak*	*CAL3QHC Modeled CO Impacts (ppm)*	*Monitored Background Concentration (ppm)*	*Total CO Impacts (ppm)*	*NAAQS (ppm)*
1-Hour					
Calumet Street, Tremont Street, Francis Street, and Huntington Avenue	AM	0.2	1.9	2.1	35
	PM	0.2	1.9	2.1	35
Longwood Avenue and Huntington Avenue	AM	0.2	1.9	2.1	35
	PM	0.3	1.9	2.2	35
Tremont Street and St. Alphonsus Street	AM	0.2	1.9	2.1	35
	PM	0.1	1.9	2.0	35
8-Hour					
Calumet Street, Tremont Street, Francis Street, and Huntington Avenue	AM	0.2	1.3	1.5	9
	PM	0.2	1.3	1.5	9
Longwood Avenue and Huntington Avenue	AM	0.2	1.3	1.5	9
	PM	0.3	1.3	1.6	9
Tremont Street and St. Alphonsus Street	AM	0.2	1.3	1.5	9
	PM	0.1	1.3	1.4	9

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

Table 3.5-4 Summary of Microscale Modeling Analysis (No-Build 2024)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Calumet Street, Tremont Street, Francis Street, and Huntington Avenue	AM	0.1	1.9	2.0	35
	PM	0.1	1.9	2.0	35
Longwood Avenue and Huntington Avenue	AM	0.1	1.9	2.0	35
	PM	0.2	1.9	2.1	35
Tremont Street and St. Alphonsus Street	AM	0.1	1.9	2.0	35
	PM	< 0.05	1.9	1.9	35
8-Hour					
Calumet Street, Tremont Street, Francis Street, and Huntington Avenue	AM	0.1	1.3	1.4	9
	PM	0.1	1.3	1.4	9
Longwood Avenue and Huntington Avenue	AM	0.1	1.3	1.4	9
	PM	0.2	1.3	1.5	9
Tremont Street and St. Alphonsus Street	AM	0.1	1.3	1.4	9
	PM	< 0.05	1.3	1.3	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 2024)

Intersection	*Peak*	*CAL3QHC Modeled CO Impacts (ppm)*	*Monitored Background Concentration (ppm)*	*Total CO Impacts (ppm)*	*NAAQS (ppm)*
1-Hour					
Calumet Street, Tremont Street, Francis Street, and Huntington Avenue	AM	0.1	1.9	2.0	35
	PM	0.1	1.9	2.0	35
Longwood Avenue and Huntington Avenue	AM	0.1	1.9	2.0	35
	PM	0.2	1.9	2.1	35
Tremont Street and St. Alphonsus Street	AM	0.1	1.9	2.0	35
	PM	<0.05	1.9	1.9	35
8-Hour					
Calumet Street, Tremont Street, Francis Street, and Huntington Avenue	AM	0.1	1.3	1.4	9
	PM	0.1	1.3	1.4	9
Longwood Avenue and Huntington Avenue	AM	0.1	1.3	1.4	9
	PM	0.2	1.3	1.5	9
Tremont Street and St. Alphonsus Street	AM	0.1	1.3	1.4	9
	PM	<0.05	1.3	1.3	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

Section 7.4 includes information on stormwater impacts.

3.7 Flood Hazard Zones/Wetlands

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) for the Project – Community Panel Number 25025C0078G – effective March 16, 2016 indicates the FEMA Flood Zone Designations for this area. The FIRMs show that the Project is outside of the 500-year Flood Zone.

The 95 St. Alphonsus Street parcel is developed and does not contain wetlands.

3.8 Geotechnical Impacts

3.8.1 Sub-soil Conditions

Based on the results of subsurface explorations completed at the 95 St. Alphonsus Street parcel, the surface treatments across the parcel are generally underlain by successive deposits of fill and natural glacial till soils which are underlain by bedrock. The fill deposit was observed to consist of a compact, brown, silt, sand and gravel containing occasional fragments of brick and glass. Below the fill deposit, a natural glacial till deposit is present consisting of a very dense, brown, silt and sand with some gravel. Where encountered in the explorations, bedrock was typically present at depths ranging from about 0.5 to 10 feet below ground surface. Bedrock typically consists of Roxbury Conglomerate.

3.8.2 Groundwater

Groundwater was encountered in one boring upon completion of the explorations at a depth of about 10 below ground surface. However, it is anticipated that groundwater may become temporarily trapped or perched on the surface of the glacial till or bedrock due to factors such as normal seasonal changes, runoff particularly during or following periods of heavy precipitation, and alterations of existing drainage patterns.

Foundation support for the proposed building is anticipated to consist of conventional spread footings. The footings would bear directly on the glacial till or bedrock, and/or on compacted structural fill or lean concrete placed directly over the glacial till or bedrock to the bottom of footing.

Based on the anticipated subsurface conditions and the limits of the proposed structures, limited boulder or bedrock removal is likely to be required during the construction of the proposed building.

Ground vibrations are anticipated to be produced as a result of the rock removal procedures. Based on the experience of the geotechnical engineer, impacts from these vibrations are not anticipated to result in structural damage to existing, adjacent structures. Vibration monitoring with seismographs will be performed during the rock removal activities.

Based on the observed groundwater level on the 95 St. Alphonsus Street parcel and the proposed depth of excavation related to foundation construction, dewatering is expected to be limited to rainwater runoff.

Provisions will be incorporated into the design and contract documents to limit potential impacts to adjacent structures, streets and utilities. Thus, the impact to adjacent structures, streets and utilities is anticipated to be minimal.

3.9 Solid and Hazardous Waste

3.9.1 Hazardous Waste

Asphalt pavement, brick, and concrete (ABC) rubble generated from demolition of site roadways, and building will be handled in accordance with applicable Massachusetts Department of Environmental Protection (DEP) solid waste policies. The Project's disposal contracts will include specific provisions for the segregation, reprocessing, reuse, and/or recycling of building materials and demolition debris. Those materials that cannot be reused on-site will be transported in covered trucks to an approved solid waste facility per applicable DEP solid waste policies.

Abatement and disposal of hazardous materials (or hazardous waste), if encountered, will be performed under the provisions of MGL c21/2C, OSHA, and the Massachusetts Contingency Plan (MCP) by specialty contractors experienced and licensed in handling materials of this nature.

It is currently anticipated that construction of the Project and parcel improvements will require excavation and off-site disposal of an unknown quantity of excess soil. The Proponent will retain a Licensed Site Professional (LSP) to manage the environmental aspects of the Project, including proper management and/or disposal of soil encountered during construction. Disposal of excess excavated soil will be conducted in accordance with the current policies of the DEP. Chemical testing of soil samples will be performed as needed to reuse/dispose of the soils off-site based on the acceptance criteria of specific facilities. The soils transported off site will be legally reused/disposed in accordance with the MCP and other regulatory requirements. Disposal of materials will be tracked via Material Shipping Records, Bills of Lading and/or other methods, as required to ensure their proper and legal disposal.

An Environmental Site Assessment will be undertaken as part of the Project. Specific tasks will include a visual inspection of the subject parcel and surrounding properties for the presence of oil or hazardous materials (OHM), a review of historical information regarding the subject property, a review of federal and state databases and municipal files regarding the use, storage or release of OHM on or near the property.

In the event that compounds are detected in soil during the above referenced testing at concentrations above applicable Massachusetts DEP standards, the release condition will be reported to the DEP. Further, remedial activities, if necessary, will be conducted in accordance with the Massachusetts Contingency Plan and applicable DEP Policies.

3.9.2 Operation Solid Waste and Recycling

The Project will generate solid waste typical of residential 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 106 tons of solid waste per year. With the exception of household hazardous wastes typical of office facilities (e.g., cleaning fluids and paint), the Project will not involve the generation, use, transportation, storage, release, or disposal of potentially hazardous materials. The Project includes shared trash and recycling facilities with 1575 Tremont Street.

3.10 Noise Impacts

3.10.1 Introduction

A sound level assessment was conducted that included a baseline sound monitoring program to measure existing sound levels in the vicinity of the Project, computer modeling to predict operational sound levels from mechanical equipment associated with the Project, and a comparison of sound levels to applicable City of Boston Zoning District Noise Standards and the U.S. Department of Housing and Urban Development Criteria.

The analyses indicate that with appropriate noise attenuation measures, predicted noise levels from mechanical equipment are anticipated to comply with all applicable local and federal noise 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. A change in sound level of less than three dB is generally imperceptible to the human ear.

Another mathematical 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.

A sound level meter (SLM) that is used to measure noise is a standardized instrument.[13] It contains "weighting networks" to adjust the frequency response of the instrument to approximate that of the human ear under various circumstances. The most commonly used weighting network is the A-weighting (there are also C- and Z-weighting networks) because it most closely approximates how the human ear responds to sound at various frequencies. Frequencies, reported in Hertz (Hz), are the detailed components of sound. The A-weighting network is the accepted scale used for community sound level measurements and sounds are frequently reported as detected with a sound level meter with this weighting. A-weighted sound levels emphasize middle frequency sounds (*i.e.,* middle pitched – around 1,000 Hz), and de-emphasize low and high frequency sounds. A-weighted sound levels are reported in decibels designated as "dBA".

Because sounds in the environment vary with time, they are usually described with more than simply a single number. Two methods are used for describing variable sounds, exceedance levels and the equivalent level, both of which are derived from a large number of moment-to-moment, A-weighted sound level measurements. Exceedance levels are values from the cumulative amplitude distribution of all of the sound levels observed during a measurement period. Exceedance levels are designated L_n, where n can have a value between 0 and 100 in terms of percentage. Several sound level metrics that are commonly reported in community noise studies are described below.

- L_{90} is the sound level in dBA exceeded 90 percent of the time during the measurement period. The L_{90} is close to the lowest sound level observed. It is essentially the same as the residual sound level, which is the sound level observed when there are no obvious nearby intermittent noise sources.

- L_{50} is the median sound level, the sound level in dBA exceeded 50 percent of the time during the measurement period.

- L_{10} is the sound level in dBA exceeded only 10 percent of the time. It is close to the maximum level observed during the measurement period. The L_{10} is sometimes called the intrusive sound level because it is caused by occasional louder noises like those from passing motor vehicles.

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

- L_{eq}, the equivalent level, is the level of a hypothetical steady sound that would have the same energy (i.e., the same time-averaged mean square sound pressure) as the actual fluctuating sound observed. The equivalent level represents the time average

[13] *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.

of the fluctuating sound pressure, but because sound is represented on a logarithmic scale and the averaging is done with linear mean square sound pressure values, the L_{eq} is mostly determined by occasional loud, intrusive noises.

- Day-night average sound level, abbreviated as DNL and symbolized as L_{dn}, is the 24-hour average sound level, in decibels, obtained after addition of 10 decibels to sound levels in the night for each hour from 10:00 PM to 7:00 AM. The hourly L_{eq} sound level metric is used to calculate the L_{dn}.

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 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 sound level modeling is used in assessing compliance with the City of Boston noise regulations.

3.10.3 Noise Regulations and Criteria

3.10.3.1 City of Boston

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 (BAPCC) 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, BAPCC Regulation 2 is applicable to the sounds from the 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 BAPCC "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. Per Regulation 2.4, City of Boston industrial noise limits apply to any business lot located within an industrial zoning district.

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)
31.5	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.

3.10.3.2 U.S. Department of Housing and Urban Development

The HUD Environmental Criteria and Standards (24 CFR Part 51), Subpart B – Noise Abatement and Control specifies noise criteria for HUD-funded housing developments. The HUD exterior noise goal for residential construction is a day-night average sound level (L_{dn}) of 65 dBA or less. This is considered “Acceptable”. L_{dn} sound levels above 65 dBA but not exceeding 75 dBA are considered “Normally Unacceptable,” and L_{dn} levels above 75 dBA are considered ”Unacceptable”. Funding for HUD approvals in “Normally Unacceptable” areas require a minimum of 10 dB of additional sound attenuation for buildings having noise-sensitive uses. The HUD interior noise goal is an L_{dn} of 45 dBA. The HUD acceptability criteria are provided in Table 3.10-2.

Table 3.10-2 U.S. Department of Housing and Urban Development Acceptability Criteria

Acceptability	Outdoor L_{dn} (dBA)
Acceptable	Up to 65
Normally Unacceptable	Above 65 and up to 75
Unacceptable	Above 75

3.10.4 Existing Background Concentrations

A background noise level survey was conducted to characterize the existing "baseline" acoustical environment in the vicinity of the Project. Existing noise sources in the vicinity of the Project include: vehicle and truck traffic along local streets, pedestrian foot traffic, mechanical noise including air-conditioning units, birds, wind, construction noise (daytime only), rustling vegetation, occasional overhead planes, idling vehicles, and the general city soundscape.

3.10.4.1 Noise Monitoring Methodology

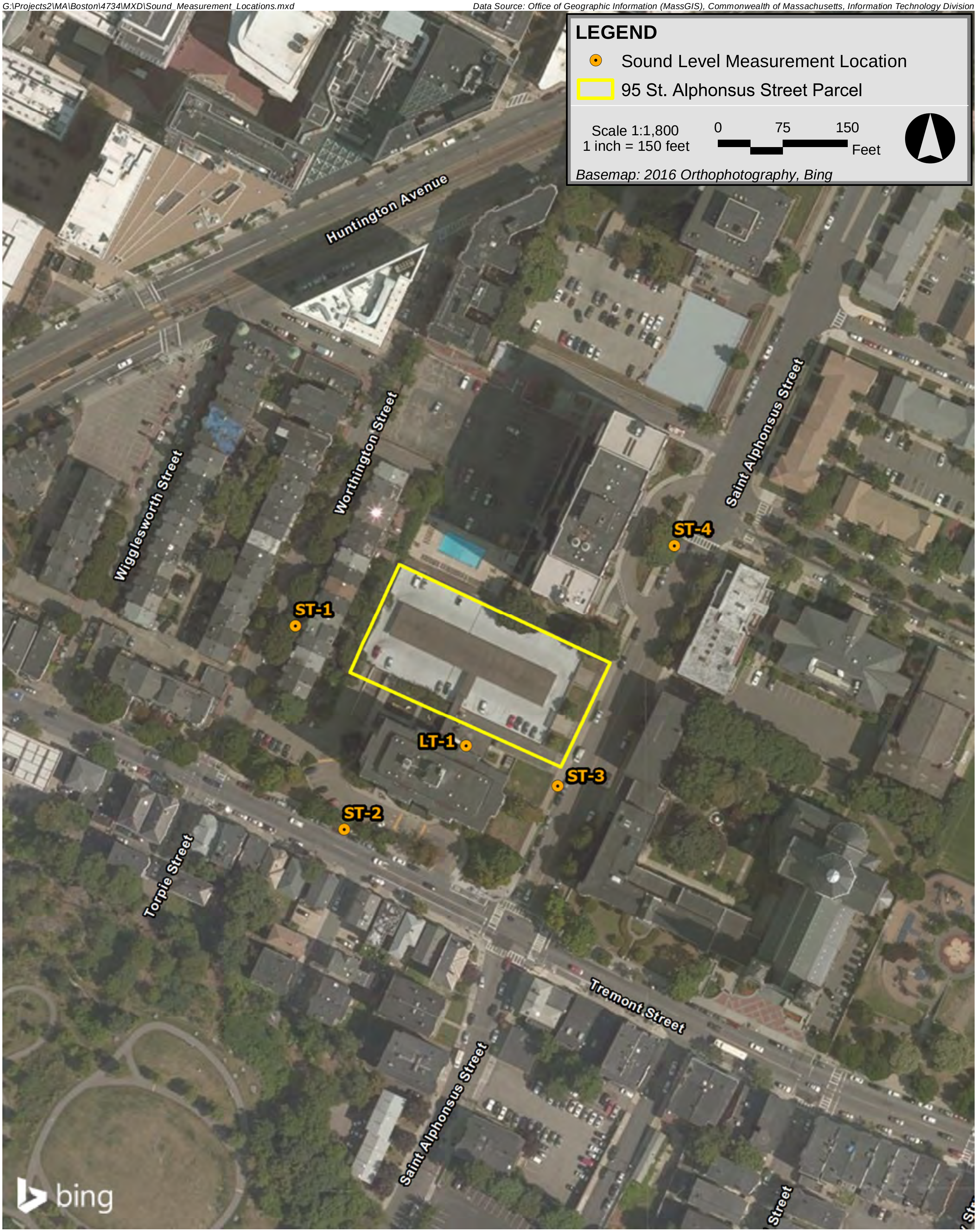
Since noise impacts from the Project on the community will be highest when baseline noise levels are the lowest, the study was designed to measure community noise levels under conditions typical of "quiet periods" for the area. Short-term daytime measurements were scheduled to avoid peak traffic conditions. Sound level measurements were made on Tuesday, May 16, during the daytime (12:30 p.m. to 2:15 p.m.) and on Tuesday, May 16, 2017 and Wednesday, May 17, 2017 during nighttime hours (11:30 p.m. to 1:00 a.m.). All short-term measurements were 20 minutes in duration. One long-term measurement was conducted to measure 24 hours of sound levels near the Project from noon on Tuesday, May 16, 2017 until noon on Wednesday, May 17, 2017.

Short-term 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. Permission was granted to take long-term measurements on a second-level balcony at a neighboring residential building. Unofficial observations about meteorology and 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.

3.10.4.2 Noise Monitoring Locations

The selection of the noise monitoring locations was based upon a review of zoning and land use in the Project area. Four short-term (ST) noise monitoring locations were selected as representative sites to obtain a sampling of the ambient baseline noise environment in the surrounding community. One long-term (LT) measurement location was selected to obtain continuous sound level data for evaluation of the HUD criteria at the site. These measurement locations are depicted on Figure 3.10-1 and are described below.

- **Location ST-1** is located along the eastern sidewalk of Worthington Street, between #7 and #9 Worthington Street. This location is representative of residential receptors to the west of the Project.



95 St. Alphonsus Street **Boston, Massachusetts**

Epsilon ASSOCIATES INC.

Figure 3.10-1

Sound Level Measurement Locations

- **Location ST-2** is located along the northern sidewalk of Tremont Street outside of 1575 Tremont Street and across from 1570 Tremont Street. This location is representative of commercial and residential receptors to the south of the Project.

- **Location ST-3** is located on the western sidewalk of St. Alphonsus Street, immediately east of 1575 Tremont Street and across from the Mission Grammar School. This location is at the southeast corner of the Project boundary and is representative of the residential receptors to the east of the Project.

- **Location ST-4** is located on the western sidewalk of St. Alphonsus Street outside the CitiView at Longwood apartments building and across from Smith Street. This location is representative of residential receptors to the north of the Project.

- **Location LT-1** is located on a north-facing second-floor balcony at 1575 Tremont Street. This location is representative of the 95 St. Alphonsus Street parcel.

3.10.4.3 Noise Monitoring Equipment

Two Larson Davis Model 831 sound level meters equipped with PCB PRM831 preamplifiers, PCB 377B20 half-inch microphones, and manufacturer-provided windscreens were used to collect baseline 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 (e.g., L_{eq}, L_{90}, etc.) were measured for each 20-minute sampling period and long-term hourly periods, with octave-band sound levels corresponding to the same data set processed for the broadband levels.

3.10.4.4 Measured Short-Term Background Noise Levels

Short-term baseline noise monitoring results are presented in Table 3.10-3 and summarized below:

- The daytime residual background (L_{90}) measurements ranged from 52 to 65 dBA;

- The nighttime residual background (L_{90}) measurements ranged from 47 to 52 dBA;

- The daytime equivalent level (L_{eq}) measurements ranged from 60 to 72 dBA;

- The nighttime equivalent level (L_{eq}) measurements ranged from 53 to 67 dBA.

3.10.4.5 Measured Long-Term Data and HUD Evaluation for the Project

The calculated L_{dn} sound level resulting from the measured hourly equivalent sound levels at the long-term Location LT-1 was 66 dBA. As measured, the level is slightly above the HUD exterior noise level criterion of 65 dBA. The measured sound level is in the "normally unacceptable" category (sound levels between 65 and 75 dBA). The exceedance is primarily attributable to a four-fan, ground-level radiator associated with the 1575 Tremont Street building. A detailed review of the sound level data coupled with the field scientist's notes revealed more constant operation during daytime hours (i.e., during warmer temperature conditions) and sporadic during nighttime hours. Since the radiator operation is likely seasonal, the measured sound levels were adjusted to represent anticipated sound levels during days when the radiator is not operating, i.e. cool days. Additionally, sound levels measured at LT-1 near the radiator are only representative of the southern side of the Project and not representative of the entire Project, for which the adjusted level may be more appropriate. The adjusted L_{dn} sound level was 63 dBA, which meets the HUD "acceptable" exterior criterion. For locations in the "normally unacceptable" category, HUD requires five dB of additional attenuation for sites above 65 dB but not exceeding 70 dB. The criterion assumes that the five dB of additional attenuation in the building construction will be sufficient in reducing the exterior levels by 25 dBA to achieve an interior sound level of 45 dBA. The Project will therefore be designed for such a reduction, specifically along the southern façade. As the Project owner also owns the neighboring property, the Project may design mitigation, e.g. a barrier, or seek other noise control options specifically for the radiator at the neighboring property as an alternative to changes in the building design.

Table 3.10-3 Summary of Short-Term Measured Background Noise Levels – May 16, 2017 (Daytime) & May 16 and 17, 2017 (Nighttime)

Location	Period	Start Time	L_{eq}	L_{max}	L_{10}	L_{50}	L_{90}	L_{90} Sound Pressure Level by Octave-Band Center Frequency (Hz)								
								31.5	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
			dBA	dBA	dBA	dBA	dBA	dB	dB	dB	dB	dB	dB	dB	dB	dB
ST-1	Day	12:25 PM	60	79	60	54	52	58	56	52	51	47	44	40	43	31
ST-2	Day	12:54 PM	72	95	69	62	56	65	62	57	55	52	50	46	44	36
ST-3	Day	1:22 PM	67	91	67	62	59	63	68	66	60	55	53	48	44	35
ST-4	Day	1:50 PM	71	83	73	71	65	62	61	58	57	56	59	58	55	52
ST-1	Night	11:21 PM	53	71	54	50	49	56	53	50	50	47	42	39	29	22
ST-2	Night	11:47 PM	67	86	69	60	52	58	57	55	52	49	47	41	32	25
ST-3	Night	12:15 AM	59	71	63	54	51	58	57	54	51	48	46	40	31	23
ST-4	Night	12:43 AM	59	81	61	50	47	55	55	53	49	45	42	36	28	23

Note: Sound pressure levels are rounded to the nearest whole decibel.

Weather Conditions:

	Date	Temp	RH	Sky	Wind
Daytime	Tuesday, May 16, 2017	82 °F	23%	Mostly sunny	NW @ 0-2 mph
Nighttime	Wednesday, May 17, 2017	68 °F	37%	Mostly clear	calm

Monitoring Equipment Used:

	Manufacturer	Model	S/N (Short-term)	S/N (Long-term)
Sound Level Meter	Larson Davis	LD831	1992	3752
Microphone	Larson Davis	377B20	112340	142894
Preamp	Larson Davis	PRM831	15250	029563
Calibrator	Larson Davis	Cal200	2853	2853

3.10.5 Future Conditions

3.10.5.1 Overview of Potential Noise Sources

The primary sources of continuous sound exterior to the Project will consist of electrical, ventilation, heating, and cooling noise sources. Numerous Project-related sound sources will be on the roof and several exhaust fans will discharge along the western façade of the Project. One pad-mounted transformer is proposed for the northeast corner of the 95 St. Alphonsus Street parcel.

Table 3.10-4 provides an anticipated list of the major sources of sound. Sound power levels used in the acoustical modeling of each piece of equipment are presented in Table 3.10-5. No sound power level data were supplied for an electrical transformer that will be at ground level outside the building. Based on the 0.75 megavolt-ampere (MVA) rating for the transformer, Epsilon estimated octave band sound power levels using the techniques in the Electric Power Plant Environmental Noise Guide (Edison Electric Institute), Table 4.5 Sound Power Levels of Transformers. Sound power level data were provided by the manufacturer for all other modeled noise sources.

As the design progresses, specifications for mechanical equipment may change; however, the Project will include some noise-control measures that are necessary to achieve compliance with the applicable noise regulations and guidelines. Ventilation fenestrations associated with the garage fans on two levels will be equipped with acoustical louvers to reduce their impact at nearby receptors. Details of the mitigation measures proposed for the Project are presented in Table 3.10-6.

Table 3.10-4 Modeled Noise Sources

Noise Source	Quant.	Approximate Location	Size/Capacity
Condenser Unit	116	Rooftop	Unknown[1]
Rooftop Unit (RTU)	2	Rooftop	Unknown[1]
Garage Fan (GEF-1)	1	Western building façade at ~7.5 feet above ground	17,750 cfm
Garage Fan (GEF-2)	1	Western building façade at ~7.5 feet above ground	1,200 cfm
Garage Fan (GEF-3)	1	Western building façade at ~17.5 feet above ground	10,250 cfm
Garage Fan (GEF-4)	1	Western building façade at ~17.5 feet above ground	700 cfm
Electrical transformer	1	Ground level near northeast corner of building	750 kVA

Notes:
1. No size specifications provided by the engineer.

Table 3.10-5 Modeled Sound Power Levels per Noise Source

Noise Source	Broad-band (dBA)	Sound Power Level (dB) per Octave-Band Center Frequency (Hz)								
		31.5	63	125	250	500	1k	2k	4k	8k
Condenser Unit[1]	74	52[8]	52[8]	52	63	71	69	65	62	60
Rooftop Unit (RTU)[2]	-	-	-	-	-	-	-	-	-	-
Garage Fan (GEF-1)[3]	92	95[8]	95	94	90	84	86	87	76	68
Garage Fan (GEF-2)[4]	71	77[8]	77	75	71	69	64	63	57	50
Garage Fan (GEF-3)[5]	82	81[8]	81	87	85	79	77	71	63	56
Garage Fan (GEF-4)[6]	65	74[8]	74	71	64	62	60	53	49	43
Electrical transformer[7]	67	64	70	72	67	67	61	56	51	44

Notes: Sound power levels do not include mitigation identified in Table 3.10-6.

1. Unknown manufacturer, 18-30 unit size-voltage, series.
2. Sound level data are undisclosed from United Technologies Corporation Carrier brand.
3. Greenheck Model TCB-1-36-100, 17,750 cfm inline centrifugal fan.
4. Greenheck Model TCB-2-12-7, 1,200 cfm inline centrifugal fan.
5. Greenheck Model TCB-2-30-50, 10,250 cfm inline centrifugal fan.
6. Greenheck Model TCB-2-12-3, 700 cfm inline centrifugal fan.
7. Sound power levels were calculated for a 750 kVA transformer based on the Edison Electric Institute Electric Power Plant Environmental Noise Guide with a NEMA sound rating of 54 dBA.
8. No data provided by manufacturer. Octave-band sound power level is assumed by Epsilon.

Table 3.10-6 Modeled Attenuation and Noise Controls by Noise Source

Noise Source	Form of Attenuation/ Control	Sound Level (dB) per Octave-Band Center Frequency (Hz)								
		31.5[4]	63	125	250	500	1k	2k	4k	8k
Garage Fan (GEF-1)	Acoustical louver[1]	5	11	15	23	30	39	42	34	32
Garage Fan (GEF-2)	Acoustical louver[1]	5	11	15	23	30	39	42	34	32
Garage Fan (GEF-3)	Acoustical louver[2]	0	6	12	15	21	24	27	25	20
Garage Fan (GEF-4)	Acoustical louver[3]	0	5	4	5	6	9	13	14	13

Notes:

1. Assumed Kinetics Noise Control Model VAC low frequency louver. GEF-1 and GEF-2 are expected to exhaust through a joint louver.
2. Assumed IAC Noishield™ Model 2R.
3. Assumed IAC Slimshield™ Model SL-4.
4. No data available. Octave-band attenuation has been estimated.

3.10.5.2 Noise Modeling Methodology

The noise impacts associated with the Project were predicted at the nearest and most representative receptors using the CadnaA noise calculation software developed by DataKustik GmbH. This software uses the ISO 9613-2 international standard for sound propagation (Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation). The benefit of this software is a refined set of computations due to the inclusion of topography, ground attenuation, multiple building reflections, drop-off with distance, and atmospheric absorption. The CadnaA software allows for octave-band calculation of noise from multiple noise sources, as well as computation of diffraction around building edges.

The modeling considered all Project-related significant mechanical equipment running to simulate worst-case operating conditions at nearby receptors.

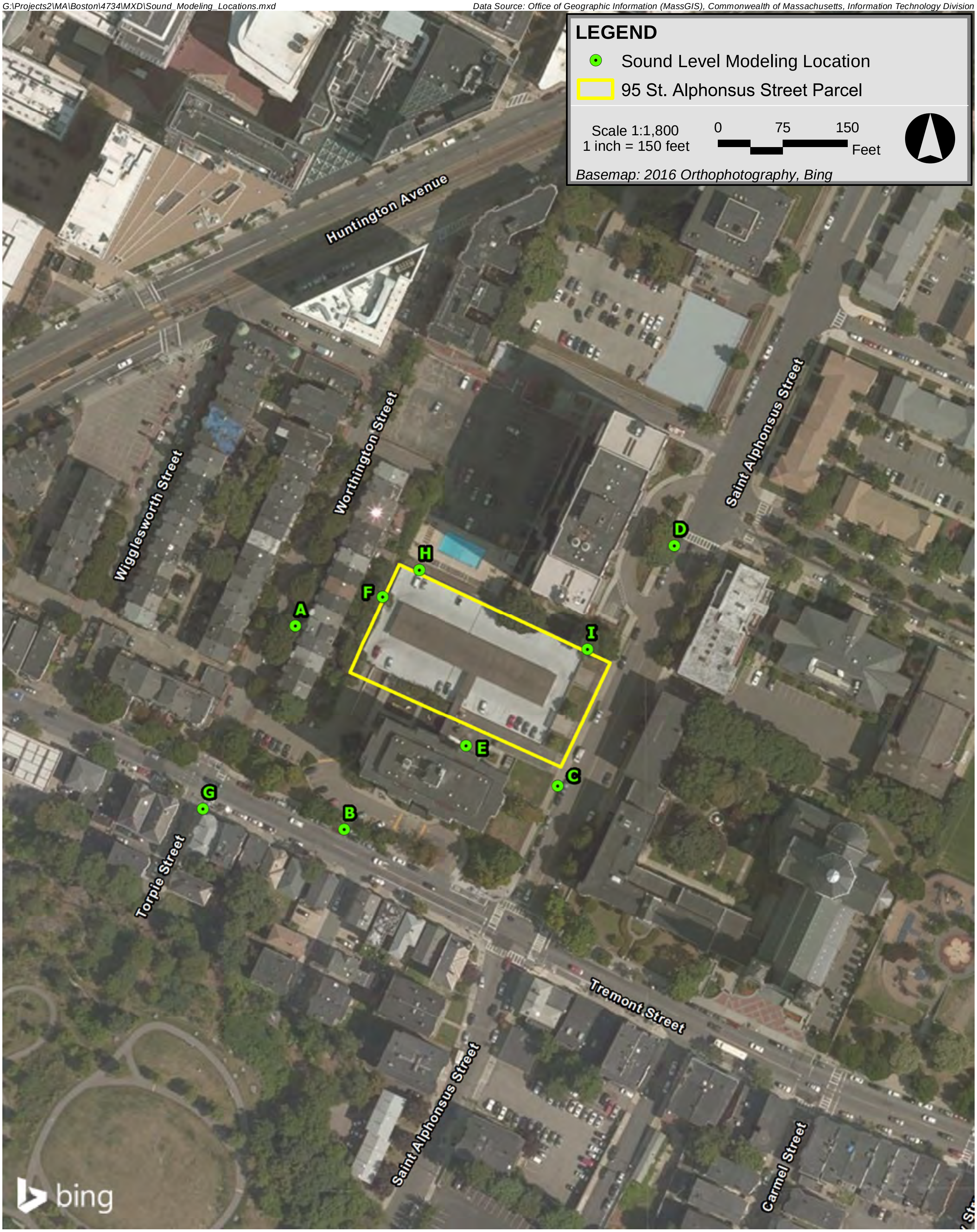
Nine modeling locations at a height of five feet (1.5 meters) above grade were included in the modeling scenario, consisting of the nearest noise-sensitive receptors and property lines in the vicinity of the Project, and were evaluated against the applicable noise limits. Modeling Locations A through E correspond to ambient measurement locations ST-1, ST-2, ST-3, ST-4, and LT-1, respectively. Four additional modeling locations, F through I, were added for property line and noise-sensitive locations near the Project. Figure 3.10-2 shows the locations of each modeling receptor.

3.10.5.3 Noise Modeling Results and City of Boston Evaluation

The City of Boston limit evaluation requires a determination of zoning and land-use for each modeling receptor for applicable limits to be compared. All modeling locations in this analysis represent residential receptors and are therefore evaluated as such.

Modeled sound levels are predicted to be within the broadband and octave-band nighttime residential zoning limits for the City of Boston at all modeling receptors. The nighttime City of Boston evaluation is presented in Table 3.10-7. The City of Boston's daytime noise limits are less stringent than the nighttime noise limits; therefore, the Project will also comply with the daytime limits.

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



95 St. Alphonsus Street **Boston, Massachusetts**

Figure 3.10-2

Sound Level Modeling Locations

Table 3.10-7 Comparison of Future Predicted Project Only Sound Levels to the City of Boston Nighttime Limits

Modeling Location ID	Zoning / Land Use	Broad-band (dBA)	Sound Level (dB) per Octave-Band Center Frequency (Hz)								
			31.5	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**
A	Residential	34	55	39	32	33	34	27	20	13	5
B	Residential	31	54	39	37	30	30	26	20	13	1
C	Residential	38	61	46	39	37	38	31	25	19	11
D	Residential	34	51	38	35	33	35	28	22	15	3
E	Residential	41	63	49	39	39	41	35	28	22	15
F	Residential	44	67	60	56	47	38	33	26	22	16
G	Residential	38	58	45	37	35	38	32	26	19	6
H	Residential	46	65	58	57	51	41	36	27	22	18
I	Residential	43	61	49	47	42	42	36	31	26	19
City of Boston Limits	**Residential**	**50**	**68**	**67**	**61**	**52**	**46**	**40**	**33**	**28**	**26**

3.10.5.4 Noise Modeling Results and HUD Evaluation

Project operations were modeled to represent worst-case operations and used to calculate L_{dn} levels for a comparison to the HUD criteria. BPDA has requested this comparison for the evaluation of impacts to community sound levels. This evaluation was performed at modeling Locations A, B, C, D, E, at which background sound levels were measured. A summary of L_{dn} (dBA) sound levels is presented in Table 3.10-8. The existing L_{dn} sound levels in the Project area were calculated from the long-term background measurement at Location E (Location LT-1 described in Section 3.10.4.5), and from the short-term measurements assuming the nighttime sampling level for all nighttime hours and the daytime sampling level for all daytime hours. As previously described, HUD finds an L_{dn} sound level of 65 dBA acceptable at the exterior of a residential structure and an L_{dn} sound level of 45 dBA acceptable at the interior. The criterion, therefore, assumes that the building construction is sufficient in reducing the exterior levels by 20 dBA to achieve 45 dBA inside. Background-only, i.e., existing, L_{dn} sound levels at Locations B, C, and D exceed the HUD exterior recommendation. Although Location C is at the corner of the Project parcel, it is not representative of current sound levels at the proposed building due to the proximity of the measurement location to vehicular traffic. Sound levels at all locations, from the Project alone, are expected to be well below 65 dBA and an accumulation of the Project and background L_{dn} levels are equivalent to the background levels; therefore, the Project will not result in an exceedance of the HUD criteria in the area surrounding the Project.

Table 3.10-8 HUD Environmental Criteria and Standards Evaluation

Location	L_{dn} Sound Pressure Levels (dBA)[1]		
	Background-Only	Project-Only	Combined
A	61	40	61
B	75[3]	37	75
C	68[3]	44	68
D	71[3]	40	71
E[2]	68[3] 63[4]	47	68 63[4]

Notes:

1. Only whole numbers are shown; calculations performed using values with additional precision.
2. Only location representative of proposed residential building. Background-only Ldn is based on long-term measurement data.
3. Background-only Ldn exceeds HUD exterior goal without Project contribution.
4. Adjusted sound level representative of a period without influence from the radiator at the neighboring property.

3.10.6 Conclusions

Baseline noise levels were measured at multiple locations in the vicinity of the Project during the day and at night and, additionally, during a 24-hour period. An L_{dn} sound level was calculated from the 24-hour measurement to represent the Project for which the HUD exterior noise level criterion is met.

At the monitoring and additional locations, future Project-only sound levels were calculated based on information provided by the manufacturers of the anticipated mechanical equipment or by consulting assumptions. Project-related sound levels were evaluated against applicable limits, and with the appropriate mitigation the Project is expected to comply with the City of Boston noise limits and meet the HUD standards at the evaluation point.

At this time, mechanical equipment and noise controls are conceptual in nature and will be specified during final Project design to meet the applicable City of Boston and HUD exterior noise limits. Additional mitigation may include the selection of quieter units, acoustical louvers, 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. 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.

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. 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

Construction of the Project is estimated to last approximately 16 months, with initial site work expected to begin in the second quarter of 2018.

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. It is noted that some activities such as finishing activities could run beyond 6:00 p.m.

3.11.4 Construction Staging/Access

Access to the 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. 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.

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

To reduce vehicle trips to and from the construction site, minimal construction worker parking will be available at the site and all workers will be encouraged to use public transportation and ridesharing options. The general contractor will work to ensure that construction workers are 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 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 site during morning and afternoon peak hours in a manner than minimizes disruption to traffic flow on adjacent streets. Construction truck routes to and from the site for contractor personnel, supplies, materials, and removal of excavations required for the development will be coordinated with BTD. Traffic logistics and routing will be planned to minimize community impacts. Truck access during construction will be determined by the BTD as part of the 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.

3.11.8 Construction Air Quality

Short-term air quality impacts from fugitive dust may be expected during construction. Plans for controlling fugitive dust during construction include mechanical street sweeping, wetting portions of the construction 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 material are minimized;
- Minimizing storage of debris on the site.

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 impacts 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;
- 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 Vibration

All means and methods for performing work at the site will be evaluated for potential vibration impacts on adjoining property, utilities, and adjacent existing structures. Acceptable vibration criteria will be established prior to construction, and vibration will be monitored, if required, during construction to ensure compliance with the agreed-upon standard.

3.11.11 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. The Construction Manager will provide a construction waste management plan to divert a minimum of 75 percent of the construction and demolition debris, and track at least four different waste streams.

3.11.12 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.

3.12 Rodent Control

A rodent extermination certificate will be filed with the 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.

3.13 Wildlife Habitat

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

Chapter 4

Sustainable Design and Climate Change Resilience

4.0 SUSTAINABLE DESIGN AND CLIMATE CHANGE RESILIENCE

4.1 Green Building

The Project will meet the state's building and energy requirements. In compliance with Article 37 of the Boston Zoning Code, the Project, which is greater than 50,000 sf, will pursue Silver level certifiability under the United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design for Building Design and Construction (LEED for Mid-Rise v4).

4.1.1 Integrative Process (IP)

Feature 1 (described as options in the LEED Rating System): At least three team members have been meeting and will continue to meet on an at least monthly basis. Meeting notes from each meeting will be distributed to the team.

4.1.2 Location and Transportation (LT)

Prerequisite: Floodplain Avoidance. Previously developed sites automatically comply with this prerequisite.

LT Credit: Site Selection. Feature 1: The lot is such that a minimum of 75 percent of the lot is previously developed. It is located atop an existing parking garaged to be removed. The Project achieves the following three additive features.

Feature 2: The lot is such that at least 75 percent of the land within ½ mile of the Project is previously developed.

Feature 3: The Project is within ½ mile of a publicly accessible open space of at least ¾ of an acre in size (Mission Hill Playground & Kevin W Fitzgerald Park).

Feature 4: The Project achieves a "walk score" of 92 at www.walkscore.com exceeding the 90 threshold needed to achieve this point.

LT Credit: Compact Development. The Project achieves additional points for having ≥ 80 units per acre. (115 units / 0.87 acre = 132 units/ acre.)

LT Credit: Community Resources. There are greater than 12 minimum community resources within half a mile of the project. They include: Museum of Fine Arts, Simmons College, Beth Israel Medical Center, Isabella Stewart Gardner Museum, Harvard Business School, Mass Eye and Ear, T.G.I. Friday's, Stop and Shop, Flann O'Brien's, US Post Office, Our Lady of Perpetual Help Church, Maurice J. Tobin School, Reggie Lewis Track and Athletic Center, Tobin Community Center.

LT Credit: Access to Transit. The Project is within a ¼ mile of several bus stops and the Fenwood Road, Brigham Circle and Longwood Medical MBTA stops which accommodate approximately 138 weekday daily trips and approximately 110 weekend trips.

4.1.3 Sustainable Sites (SS)

Prerequisite 1: Construction Activity Pollution Prevention. An Erosion and Sedimentation Control plan has been created by R.E. Cameron and Associates and will be followed during construction.

Prerequisite 2: No Invasive Plants. A Landscape Plan is being prepared by Pressley Associates and it will not include any plants listed as invasive by the Massachusetts Invasive Plants Advisory Group. http://www.massnrc.org/mipag/invasive.htm.

SS Credit: Heat Island Reduction. The team is designing the Project such that greater than 75 percent of the hardscapes are shaded by vegetation or have a Solar Reflectance of at least 0.28.

SS Credit: Rainwater Management. The Project will use Low Impact Development techniques to reduce stormwater leaving the site. Approximately 13 percent of the 95 St. Alphonsus Street parcel is permeable.

SS Credit: Nontoxic Pest Control. Qualifying measures to be used include:

- Seal exterior cracks, joints, etc. and install pest-proof screens; and
- Use solid concrete foundations or pest-proof masonry walls.

4.1.4 Water Efficiency (WE)

Prerequisite 1: Water Metering. A water meter is being installed in each unit although this prerequisite only requires that the entire building be metered for water use.

WE Credit: Total Water Use. Turf Grass is limited to 20 percent while native adapted vegetation covers at least 19 percent of the landscaped area. Additionally, drip irrigation will be used for the irrigation system in lieu of spray heads for the vegetated areas.

The following measures are planned for interior water use:

- 1.28 gallon per flush toilets
- 0.5 gpm sinks
- 1.5 gpm shower heads

Using the LEED Water Use Reduction Calculator demonstrates a 35 percent reduction in Total Water Use Reduction.

4.1.5 Energy and Atmosphere (EA)

Prerequisite 1: Minimum Energy Performance. A Whole Building Energy Simulation was performed by Resilient Buildings Group (RBG) using National Renewable Energy Laboratory's Energy-10 software program and weather data for Boston. This was compared to the energy use for a baseline building built to ASHRAE 90.1-2010. A five percent reduction in energy use is required per LEED (but a 20 percent energy use reduction is required per the Massachusetts Energy Stretch Code.) The modeling demonstrates a 20 percent reduction in energy use.

This prerequisite also requires the Project's central heating, ventilation, air conditioning (HVAC) systems be commissioned. RBG has been contracted to provide the following Option 2 required items:

1. Duct Leakage Testing
2. Central HVAC Commissioning
3. Review of air barrier and compartmentalization details in drawings and specs
4. Inspection of Energy Star Thermal Enclosure Checklist items

Prerequisite 2: Energy Metering. As required, the Project is including an electric meter for each residential unit and a gas meter for the entire building. Tenants will be encouraged to share their energy use data with the USGBC via their Tenant Manual.

Prerequisite 3: Education of Homeowner, Tenant or Building Manager. An Operations and Maintenance Manual will be prepared and will include the following items as required:

- LEED Checklist
- Energy Star Checklists
- Equipment and Appliance Manuals
- General Information about conserving resources
- Guidance on green cleaning, water efficient landscaping, IPM, lighting and appliance selection and green power options.

As required, a minimum one hour walkthrough will be conducted for the building manager.

EA Credit: Annual Energy Use. A Whole Building Energy Simulation was performed for the Minimum Energy performance prerequisite, indicating a 20 percent reduction in energy use.

EA Credit: Efficient Hot Water Distribution. The Project is keeping pipe runs from the water heaters to the fixtures under 43′ for 1/2″ piping and under 21′ for ¾″ piping.

4.1.6 *Materials and Resources (MR)*

Prerequisite 1: Certified Tropical Wood. All wood in the building will either be non-tropical, reused or reclaimed, or certified by the Forest Stewardship Council as required.

Prerequisite 2: Durability Management. The following required moisture control measures have been incorporated into the design.

- Non-paper faced backer board is used behind tubs / showers;
- Water resistant flooring is used in kitchens, bathrooms, laundry rooms and entry ways;
- Tank water heaters, if used, and clothes washers will have a drain pan and automatic water shut off; and
- Clothes dryers will be vented to outdoors.

MR Credit: Durability Management Verification. As the Verification Team / Green Rater, RBG will inspect and verify that all the measures in the Energy Star Water Management System Builder Checklist have been completed.

MR Credit: Environmentally Preferable Products. : The Project is pursuing one point for Local Production of Concrete Aggregate, Framing and Drywall.

The Project is pursuing at least one additional point for products containing recycled content, Forest Stewardship Council certified wood, fly ash concrete and/or products from manufacturers that participate in an Extended Producer Responsibility program.

MR Credit: Construction Waste Management. A Construction Waste Management Plan will be created and construction waste will be reduced by 40 percent minimum from the LEED Baseline. Mandatory waste recycling will be implemented during construction.

4.1.7 *Indoor Environmental Quality (IEQ)*

Prerequisite 1: Ventilation. All applicable spaces are being designed to meet the ASHRAE 62-2010 Ventilation Code. Fresh air is being supplied to all apartments via bathrooms and kitchens are being exhausted as required.

Prerequisite 2: Combustion Venting.

- There are no unvented combustion appliances in the Project.
- Carbon Monoxide detectors will be located in each unit.
- The fireplace located in the lobby will be closed combustion.
- Space and Domestic Hot Water Heating is to be provided via sealed combustion boilers.

Prerequisite 3: Garage Pollutant Protection. Any air handling equipment will be placed outside of the fire rated envelope of the garage. Any penetrations from the garage into conditioned spaces will be tightly sealed.

Prerequisite 4: Radon Resistant Construction. This prerequisite applies to projects in EPA Radon Zone 1 only. Boston is located in Suffolk County which is considered Zone 3 by the EPA Zone Map; therefore, Radon Resistant Construction is not required per LEED. The Project is utilizing Radon Resistant Construction as good practice nonetheless. These include a garage under the majority of the building and sub-slab ventilation with vapor barrier in other locations.

Prerequisite 5: Air Filtering. In-unit Fan Coils will utilize minimum efficiency reporting value (MERV) 8 filters at a minimum. Mechanically supplied outdoor air will have MERV 6 filters at a minimum.

Prerequisite 6: Environmental Tobacco Smoke Control. Smoking inside the building will be prohibited via tenant leases. Any outdoor smoking areas, if included, will be at least 25 feet away from operable windows and doors.

Prerequisite 7: Compartmentalization of Units. The design will include details showing how each unit is compartmentalized from other units and the outdoors. RBG will be conducting mid-construction blower door testing to guide the construction team with air sealing details and will conduct the required final testing at the Project end to confirm the allowable maximum leakage of 0.23 cfm50 / SF of shell area is not exceeded.

IEQ Credit: Enhanced Outdoor Air Ventilation. The Project will use central Heat / Energy Recovery Ventilator(s) to meet this credit. ASHRAE 62.1-2010 ventilation rates will not be exceeded by more than 10 percent.

IEQ Credit: Contaminant Control. Duct work will be protected from debris during construction and a pre-occupancy flush lasting at least 48 hours will be conducted.

IEQ Credit: Balancing of Heating and Cooling Distribution Systems.

Apartments under 1,200 sf in Multifamily buildings meet this by having a single thermostat. All apartments in the Project are under 1,200 sf.

A Testing and Balancing (TAB) Contractor will test all flow rates for heating and cooling distribution and confirm that they are within 20 percent of specified rates.

For each bedroom, a pressure difference of at least three Pascals between the bedroom and the main portion of the apartment will be demonstrated when the bedroom door is closed and with the air handling unit operating on high.

IEQ Credit: Enhanced Compartmentalization. With the mid-construction testing described above, the project is attempting to achieve 0.15cfm50 / SF of shell area as an enhanced air tightness target.

IEQ Credit: Enhanced Combustion Venting. The Lobby gas-fired fireplace will be approved by a safety testing agency and will include a permanent glass front and be direct vented outdoors.

IEQ Credit: Enhanced Garage Pollutant Protection. The garage will include a ventilation system satisfying ASHRAE 62.1-2010.

IEQ Credit: Low-Emitting Products. The team anticipates achieving points for paints and coatings and for adhesives and sealants that meet the requirements of CA Section 01350. Compliant flooring and insulation are also being considered for 0.5 points each as are composite woods containing Ultra Low Emitting Formaldehyde (ULEF) for one point.

IEQ Credit: No Environmental Tobacco Smoke. This point is for prohibition of smoking within apartments. The lease will state the prohibition of smoking and RBG will confirm its inclusion in the lease.

4.1.8 Innovation and Design Process (IDP)

Prerequisite 1: Preliminary Rating. A LEED for Mid-Rise Preliminary Rating facilitated by RBG was conducted on April 12, 2017 at Wingate Companies in Newton, MA. The team reviewed the Rating System requirements and 59 points were identified putting the Project in the Silver category.

ID Credit: Innovation. Additional Innovation or Exemplary Performance points may be earned by LEED for Mid-Rise projects. At this early stage, the team is exploring meeting at least one of the yet-to-be-determined Boston specific LEED points found in Article 37.

4.1.9 Regional Priority

Based on zip code 02120's LEED Regional Priority credits, the Project anticipates one additional point for having achieved each of the following credits:

- Annual Energy Use;
- Balancing of Heating and Cooling Distribution;
- Access to Transit; and
- Non-Toxic Pest Control.

4.2 Climate Change Resilience

4.2.1 Introduction

Climate change conditions considered by the Project team include higher maximum and mean temperatures, more frequent and longer extreme heat events, more frequent and longer droughts, more severe freezing rain and heavy rainfall events, and increased wind gusts.

The expected life of the Project is anticipated to be approximately 50 years. Therefore, the Proponent has planned for climate-related conditions projected 50 years into the future. A copy of the completed Checklist is included in Appendix D. Given the preliminary level of design, the responses are also preliminary and may be updated as the Project design progresses.

4.2.2 Extreme Heat Events

According to "Climate Ready Boston," the City of Boston can expect that the number of days with temperatures greater than 90°F will increase from the current 11 days annually experienced between 1971 and 2000, to between 25 and 90 days annually by 2070, depending on the extent of greenhouse gas emissions over the next several decades.[1] Extreme heat can have serious negative impacts on human health and infrastructure, both of which will affect quality of life. The Project design will incorporate a number of measures to minimize the impact of high temperature events, including:

- Installing operable windows where possible;
- Planting shade trees and shrubs around the Project;
- Installing a high performance building envelope; and

[1] Climate Ready Boston, December 7, 2016.

- Specifying high reflective paving materials, high albedo roof tops to minimize the heat island effect.

Energy modeling for the Project has not yet been completed; however, the Proponent will strive to reduce the Project's overall energy demand and greenhouse gas emissions that contribute to global warming. The Proponent will encourage alternative modes of transportation through the Project's TDM program, as described in Section 2.5.

4.2.3 Rain Events

As a result of climate change, the Northeast is expected to experience more frequent and intense storms. To mitigate this, the Proponent will take measures to minimize stormwater runoff and protect the Project's mechanical equipment. The Project will be designed to reduce the existing peak rates and volumes of stormwater runoff from the 95 St. Alphonsus Street parcel, and promote runoff recharge to the greatest extent practicable. Section 7.4 includes a discussion of stormwater management, including measures to reduce runoff from the 95 St. Alphonsus Street parcel.

4.2.4 Drought Conditions

Although more intense rain storms are predicted, extended periods of drought are also predicted due to climate change. Under the high emissions scenario, the occurrence of droughts lasting one to three months could go up by as much as 75 percent 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. Aeration fixtures and appliances will be chosen for water conservation qualities, conserving potable water supplies.

4.3 Renewable Energy

The Proponent will evaluate the feasibility of installing a roof-mounted solar photovoltaic (PV) system, including financial incentives and considerations of the electrical network as the design develops.

LEED v4 for Building Design and Construction: Multifamily Midrise

Project Checklist

Project Name: 95 St Alphonsus St
Date: 5-31-17

Y	?	N			
1			Credit	Integrative Process	2

14	1	15		**Location and Transportation**	**15**
Y			Prereq	Floodplain Avoidance	Required
				PERFORMANCE PATH	
		15	Credit	LEED for Neighborhood Development Location	15
				PRESCRIPTIVE PATH	
8			Credit	Site Selection	8
3			Credit	Compact Development	3
2			Credit	Community Resources	2
1	0.5		Credit	Access to Transit	2

4	2	0		**Sustainable Sites**	**7**
Y			Prereq	Construction Activity Pollution Prevention	Required
Y			Prereq	No Invasive Plants	Required
2			Credit	Heat Island Reduction	2
1	2		Credit	Rainwater Management	3
1	1		Credit	Non-Toxic Pest Control	2

6	6	2		**Water Efficiency**	**12**
Y			Prereq	Water Metering	Required
				PERFORMANCE PATH	
6	6		Credit	Total Water Use	12
				PRESCRIPTIVE PATH	
		6	Credit	Indoor Water Use	6
		4	Credit	Outdoor Water Use	4

17	18	2		**Energy and Atmosphere**	**37**
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Energy Metering	Required
Y			Prereq	Education of the Homeowner, Tenant or Building Manager	Required
15	15		Credit	Annual Energy Use	30
2	3		Credit	Efficient Hot Water Distribution	5
		2	Credit	Advanced Utility Tracking	2

5	4	0		**Materials and Resources**	**9**
Y			Prereq	Certified Tropical Wood	Required
Y			Prereq	Durability Management	Required
1			Credit	Durability Management Verification	1
2	3		Credit	Environmentally Preferable Products	5
2	1		Credit	Construction Waste Management	3

6.5	10	2		**Indoor Environmental Quality**
Y			Prereq	Ventilation
Y			Prereq	Combustion Venting
Y			Prereq	Garage Pollutant Protection
Y			Prereq	Radon-Resistant Construction
Y			Prereq	Air FIltering
Y			Prereq	Environmental Tobacco Smoke
Y			Prereq	Compartmentalization
	2	1	Credit	Enhanced Ventilation
0.5	0.5	1	Credit	Contaminant Control
3			Credit	Balancing of Heating and Cooling Distribution Systems
	3		Credit	Enhanced Compartmentalization
	2		Credit	Enhanced Combustion Venting
1			Credit	Enhanced Garage Pollutant Protection
1	2		Credit	Low Emitting Products
1			Credit	No Environmental Tobacco Smoke

1	4	1		**Innovation**
Y			Prereq	Preliminary Rating
1	4		Credit	Innovation: See Article 37 for Boston Specific ones
		1	Credit	LEED AP Homes

4	0	1		**Regional Priority**
1			Credit	Annual Energy Use - Threshold=15 02120 is zip code
1			Credit	Balancing of Heating & Cooling Distribution Systems-Threshold=3
1			Credit	Access to transit-Threshold=1
		1	Credit	Heat Island Reduction-Threshold=2
		1	credit	Rainwater Management - Threshold=3
1			credit	Non-Toxic Prest Control - Threshold=2

59	44	23	**TOTALS**	Possible Points:

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

Chapter 5

Urban Design

5.0 URBAN DESIGN

5.1 Evolution of Design

The present design has evolved into one that is not only zoning compliant, staying within the zoning/use envelope, but also a design that residents will enjoy living in and interacting with the vibrant surrounding Mission Hill neighborhood. The massing of the building today shies away from earliest design thinking around a tower approach, and is designed to address the neighborhood and surrounding streets in a friendly and approachable way. However, the evolution of design thinking originally evolved around a tower approach, and chronology goes back over five years.

Below is a description of the schemes considered.

February 2012 Tower - 24 stories – 250′ height; 177 units, 121 parking spaces

This scheme included too much pavement and deck and an unrelieved streetwall on St. Alphonsus Street.

March 2012 Tower - 22 stories – 230′-8″ height; plus a low rise four story building at the corner of Worthington and Tremont Streets; 173 units total, 110 parking spaces

While this version introduced green space and a play area, and reduced the tower to 22 stories, the streetwall effect was still prevalent. The orientation of the four-story building to continue the orientation of the row houses on Worthington Street was also considered.

November 2012 Tower - 23 stories – 230′-4″ height; 229 units, 103 parking spaces.

The four-story building at the corner of Worthington and Tremont streets was replaced with a park with the intent of opening the Project to Tremont Street and giving a feel of community open space. There was still concern the St. Alphonsus streetwall may not be deep enough.

March 2013 Tower - 23 stories – 230′-0″ height; 228 units, 198 parking spaces

Micro-units were introduced into the 228 unit count; and the 23rd floor was an amenity area, containing pool, lounges and management offices.

August 2013 Tower - 22 stories – 230′-0″ height; 240 units, 160 parking spaces

The tower was situated roughly equal distance from 1575 Tremont building and the Equity Residential building.

5.2 Proposed Scale and Set Backs

As described below, the Project results in a substantial improvement over the existing garage with greater setbacks from the property line and improved landscaping and open space. The existing 95 St. Alphonsus Street parcel is fully occupied by a two-story concrete garage with exposed car parking on the second level roof. Along the alley behind the Worthington Street residences the existing garage presents a ten-foot high wall set back six feet from the property line. As a substantial improvement over existing conditions the proposed Project includes the removal of this wall and the new building façade will be set back over 30 feet from the property line with a landscape buffer consisting of lawn, perennials, evergreens, flowering shrubs and deciduous trees.

Similarly, along the northerly property line facing the Equity Tower, the existing garage presents a ten-foot high wall set back five feet from the property line. The Project will remove this wall and the new building façade will be set back 12 feet from the property line with a raised planter base, ground cover and evergreens. Along St. Alphonsus Street the existing garage is set back 20 feet from the property line with two curb cuts leading to the upper and lower parking levels. The façade of the proposed Project will be set back 17 feet from the from the property line with lawn, perennials, ground cover, flowering shrubs and deciduous trees. One of the existing curb cuts will be removed.

5.3 Design and Massing

The Project responds and relates to the Mission Hill neighborhood in its scale, massing and overall design approach. The design includes details and materials that are compatible with the architectural character of the neighboring buildings. A significant portion of the façade is clay brick, as are the Worthington Street townhouses and buildings on St. Alphonsus Street. At the ground level and upper levels, the brick is patterned with accent colors and projecting courses that will provide visual interest and aesthetic appeal. Metal panels and architectural cementitious boards are also incorporated along with metal balconies on the exterior allowing the building to express a contemporary urban style. Significant new landscaping will be planted along the existing sidewalks, building edges and property.

The primary entrance and front door is off the circular drive and courtyard in between the new building and the existing adjacent 1575 Tremont Street building. This entrance provides a safe, accessible and secure entryway for residents and visitors. The courtyard is at the same first floor level as 1575 Tremont. The building façade which faces St. Alphonsus Street (which is sloped) has a secondary entrance and is set back approximately 15 feet from the sidewalk with terraced landscape planting and new trees. The rear façade of the building faces the backyards of the townhouses along Worthington Street and sets back a comfortable distance of approximately 30 feet. The setback area is landscaped with grass, planting beds and trees. The proposed building setbacks are in compliance with Mission Hill Zoning requirements. All parking associated with the Project will be located within the new building, hidden from view.

The parking is conveniently located at the first floor and basement levels of the building. A total of 108 garage spaces and 22 grade spaces will be provided and shared by both the Project at 95 St. Alphonsus and the existing 1575 Tremont Street. Servicing for both buildings will continue to be located at the existing off-street service area and loading dock along St. Alphonsus Street.

The massing of the building is designed to address the neighborhood and surrounding streets in a friendly approachable way. The façade varies as it rises with alternating projecting bays and recessed elements in a familiar residential scale rather than as a single imposing volume. A combination of large fixed lite glass windows with modest-sized operable windows project a neighborly attitude. The building is designed for people to live in and interact with the vibrant surrounding Mission Hill neighborhood. See Figures 5-1 to 5-4 for views of the Project.

5.4 Landscape Architecture

Surrounding the base of the 95 St. Alphonsus Street building along the north, east and west facades there will be a raised planter base that will have evergreen shrubs and cascading ground cover with a vertical, natural appearance of chiseled stone echoing the stonework of the Mission Church buildings across St. Alphonsus Street. The goal is to create a handsome landscaped base for the new building.

Frontage along St. Alphonsus Street

The proposed 95 St. Alphonsus Street landscape will provide an attractive buffer between the new building and the activity found on the adjacent street and sidewalk. The tree planting rhythm will mimic what is found on the east side of St. Alphonsus Street, with four mature deciduous trees planted in a line next to the sidewalk. A low retaining wall will frame a raised lawn area, offering beneficial soil volume for the urban trees. While providing a green edge for vehicles using St. Alphonsus Street, and a canopy for pedestrians using the sidewalk, the high branched deciduous street trees with lawn below will allow pedestrians a clear line of sight down the street at eye level. Figure 5-5 shows the proposed landscape plan.

Grass will be planted adjacent to St. Alphonsus Street, and raised terraces will provide larger lawn areas between the sidewalk and the new building. The lower elevation of the new building will be softened at its base with a mix of deciduous and evergreen shrubs, perennials and groundcover planted in the low retaining walls.

95 St. Alphonsus Street **Boston, Massachusetts**

HDSARCHITECTURE©

Figure 5-1

Perspective Looking North from St. Alphonsus Street

95 St. Alphonsus Street Boston, Massachusetts

Figure 5-2

Perspective Looking South from St. Alphonsus Street

95 St. Alphonsus Street   Boston, Massachusetts

HDSARCHITECTURE©

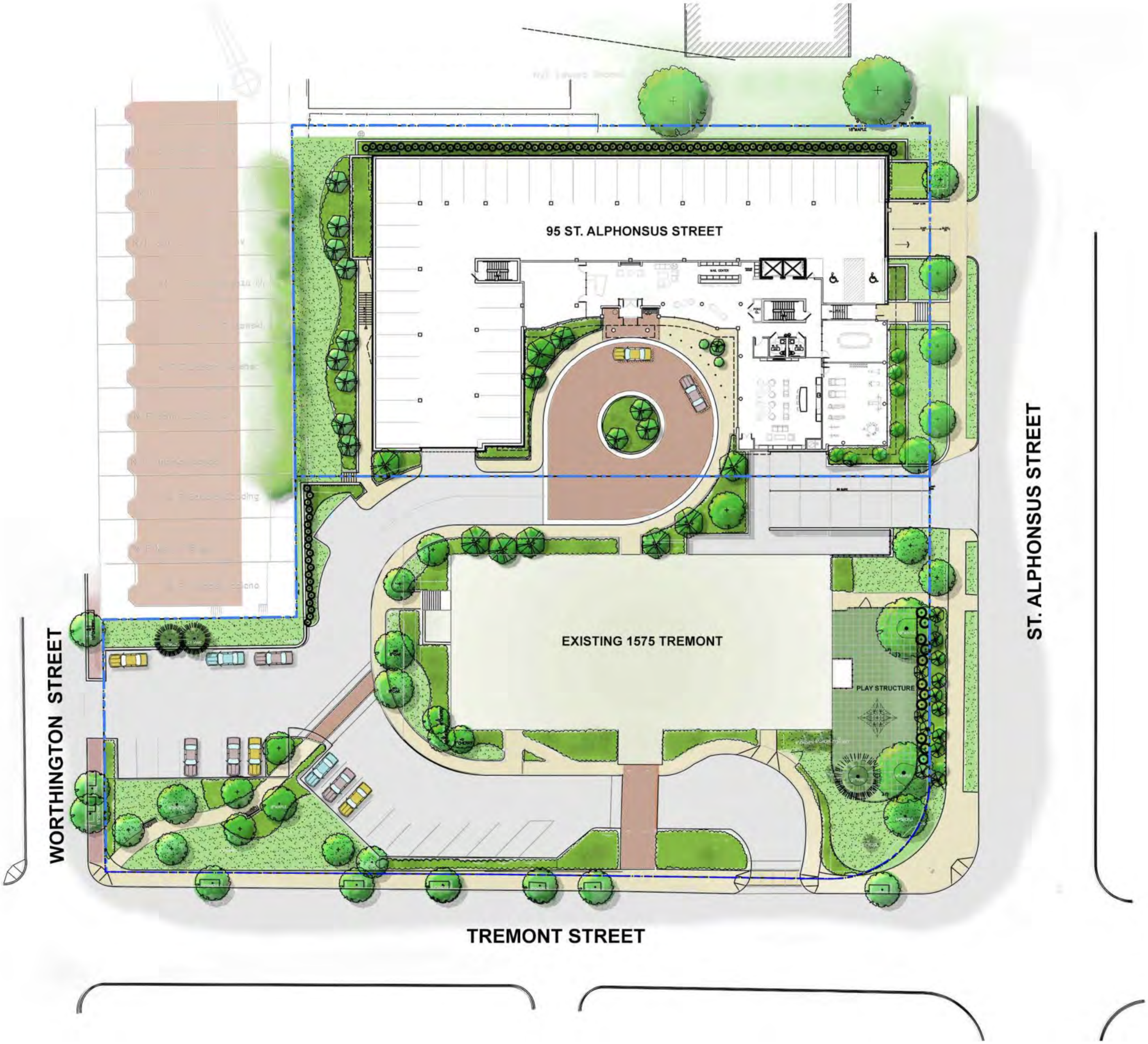
Figure 5-3
Perspective at Main Entry Courtyard

95 St. Alphonsus Street   Boston, Massachusetts

HDSARCHITECTURE©

Figure 5-4

Proposed View Across 1575 Tremont Street Parking Lot



95 St. Alphonsus Street **Boston, Massachusetts**

HDSARCHITECTURE©

Figure 5-5
Proposed Landscape Plan

Rear Setback between the Project and the Worthington Street Residences

As described in Section 5.2, the landscaping on the west side of the new building will provide a buffer to the adjacent Worthington Street neighbors with the installation of a grass and a mixed species shrub bed. A variety of evergreen and deciduous and coniferous shrubs and trees will be placed adjacent to the new building to screen its lower elevations from the neighbors.

Courtyard

The central courtyard landscape is designed to be a welcoming space, with a planted perimeter of deciduous and evergreen vegetation. Selected plant species will be low maintenance and shade tolerant, with limited use of annuals and perennials to will provide seasonal appeal. The driveway surface will be a specialty pavement for additional interest in the turn around, and amenities including bollards, lighting, benches, planters, and bicycle racks will enliven the space. A flush curb at the building entrance will provide unimpeded access for tenants and visitors arriving in the courtyard by vehicle.

Open Space

The design of the Project increases the amount of open space for both the 1575 Tremont Street parcel and the 95 St. Alphonsus Street parcel. The Project will provide the two parcels with an attractive and welcoming space for the buildings' residents that will blend with the character of the neighborhood. The proposed shrubs, trees, planters and deciduous and evergreen vegetation will create a verdant frontage along St. Alphonsus Street.

6.0 HISTORIC AND ARCHAEOLOGICAL RESOURCES

This section describes the historic and archaeological resources within and in the vicinity of the Project and describes the potential Project-related impacts to these resources.

6.1 Introduction

The Project is located on the west side of St. Alphonsus Street, south of Huntington Avenue and north of Tremont Street. Despite the close proximity of institutional buildings related to the Mission Church Complex and to the Longwood Medical and Academic Area farther to the north of the Project, the surrounding area is largely residential in character. Housing stock includes late nineteenth-century multi-family dwellings of both frame and masonry construction as well as apartment towers dating from the third quarter of the twentieth century.

6.2 Historic Resources in the Project Vicinity

6.2.1 Historic Resources in the 95 St. Alphonsus Street Parcel

The 95 St. Alphonsus Street parcel is currently occupied by a 175-space parking garage. This reinforced-concrete structure was erected in 1964, contemporaneously with the adjacent apartment towers, to accommodate the vehicles of those buildings' residents. Comprising two parking decks, the upper of which is only slightly elevated above street grade, the garage is extremely utilitarian in appearance. The structure is expressed as a low slab enclosed by a retaining wall and offers no ornamental detail. Two courses of perforated concrete block below the open upper deck provide ventilation for the enclosed lower level.

6.2.2 Historic Resources in the Vicinity of the Project Area

Table 6-1 State and National Register Resources in the Vicinity of the Project

No.	Historic Resource	Address	Designation
1	Timothy W. Hoxie House	135 Hillside St.	NR
2	Mission Church	1525 Tremont St.	LL, PR
3	Mission Church Complex	1545 Tremont St., 100 St. Alphonsus St., 80, 90 & 100 Smith St.	LL
4	Mission Hill Triangle Architectural Conservation District	Huntington Ave., Smith, Tremont, Wigglesworth & Worthington Sts.	NR

Table 6-1 State and National Register Resources in the Vicinity of the Project (Continued)

No.	Historic Resource	Address	Designation
5	Francis Street-Fenwood Road District	Francis St. & Fenwood Rd.	NRDIS

Designation Legend:	
NR	Individually listed on the National Register of Historic Places
NRDIS	National Register of Historic Places historic district
LL	Local Landmark
LHD	Local Historic District
PR	Preservation Restriction

Completed in 1854, the **Timothy W. Hoxie** house at 135 Hillside Street is an excellent example of the so-called "Italian villa" popular in the mid-nineteenth century. The type was derived from the country houses of Tuscany and popularized by Queen Victoria's similarly inspired summer residence Osborne House on the Isle of Wight. This romantic genre is distinguished by a flat-roofed tower at the angle of its L-shaped form, together with the round-arched window openings and bracketed cornices typical of the Italianate style. Though Hoxie was a successful dealer in cement, brick and tile products, he chose to build his house of wood. It was included in the National Register in 1987.

Also known as the Basilica of Our Lady of Perpetual Help, the **Mission Church** at 1525 Tremont Street is among the largest houses of worship in Boston. Designed for the Roman Catholic Redemptorist order by the New York-based firm of Schickel and Ditmars, it is cruciform in plan. The exterior is of locally quarried Roxbury puddingstone trimmed with Quincy granite; its Romanesque Revival style is evident in its round arches and corbel tables. The basilica was initially constructed between 1876 and 1878 but remained unfinished until 1910, when soaring paired towers were added to the west front, reaching a height of 215 feet. In addition to its significant ancillary buildings (including a rectory, convent, social hall and two schools; see below), the basilica was designated a Boston Landmark in 2004. It is also subject to a preservation restriction established in 1999.

Sharing the Romanesque Revival idiom of the basilica, the other buildings of the **Mission Church Complex** are executed in a variety of materials. Completed in 1903, the Rectory, at 1545 Tremont Street, is a lively composition of red brick and limestone on a granite base. Also of red brick, the Grammar School at 100 St. Alphonsus Street (1901), is decidedly more restrained in detail and box-like in massing. The red-brick convent at 100 Smith Street was completed in 1889; it is notable for the projecting pavilion centered on its façade as well as roof terraces enclosed by loggias, which provided a private open-air recreational space for the nuns. Dating from the same year as the convent, the Mission School at 90

Smith Street is unusual within the ensemble for its segmental-arched window openings and limestone belt courses. St. Alphonsus Hall, at 80 Smith Street, has an exterior of Roxbury puddingstone trimmed with yellow brick. Its façade is centered by a pedimented parapet embellished with corbel tables. Together with the basilica, these buildings were designated Boston Landmarks in 2004.

The **Mission Hill Triangle** was initially developed in the 1870s; at that time modest two-story, single-family Second Empire-style rowhouses began to go up on Wigglesworth and Worthington Streets. Their angled-bay façades are chiefly brick or brownstone, with a short row of marble fronts facing Tremont Street. After Huntington Avenue was laid out in 1882, a row of more elaborate Romanesque Revival houses was built along this thoroughfare; these were soon joined by the "Helvetia," a substantial hotel of the same style. Several brick three-family tenements followed in the 1890s and in 1912 the "Esther," a Georgian Revival-style apartment building with ground-floor commercial space, was completed on Smith Street. As a largely intact ensemble of late nineteenth and early twentieth century residential architecture, the Triangle was designated a local historic district in 1985.

The turn of the twentieth century was a time of rapid population growth for the city of Boston. Following the reclamation of the Fenway from marshland to a major public park, transit systems were introduced and adjacent areas were developed for housing. The **Francis Street-Fenwood Road District** contains fine examples of multi-family frame dwellings from this period, chiefly Colonial Revival or Classical Revival in style. These are distinguished by their modillioned pediments, generous porches and decoratively patterned window sash. While some houses are the work of well-known architects, the majority were designed by less familiar practitioners performing to a high standard. As a concentration of high-quality, streetcar-suburb housing, the area was included in the National Register in 2016. See Figure 6-1 for Historic Resources in the vicinity of the Project.

6.3 Archaeological Resources within the 95 St. Alphonsus Street Parcel

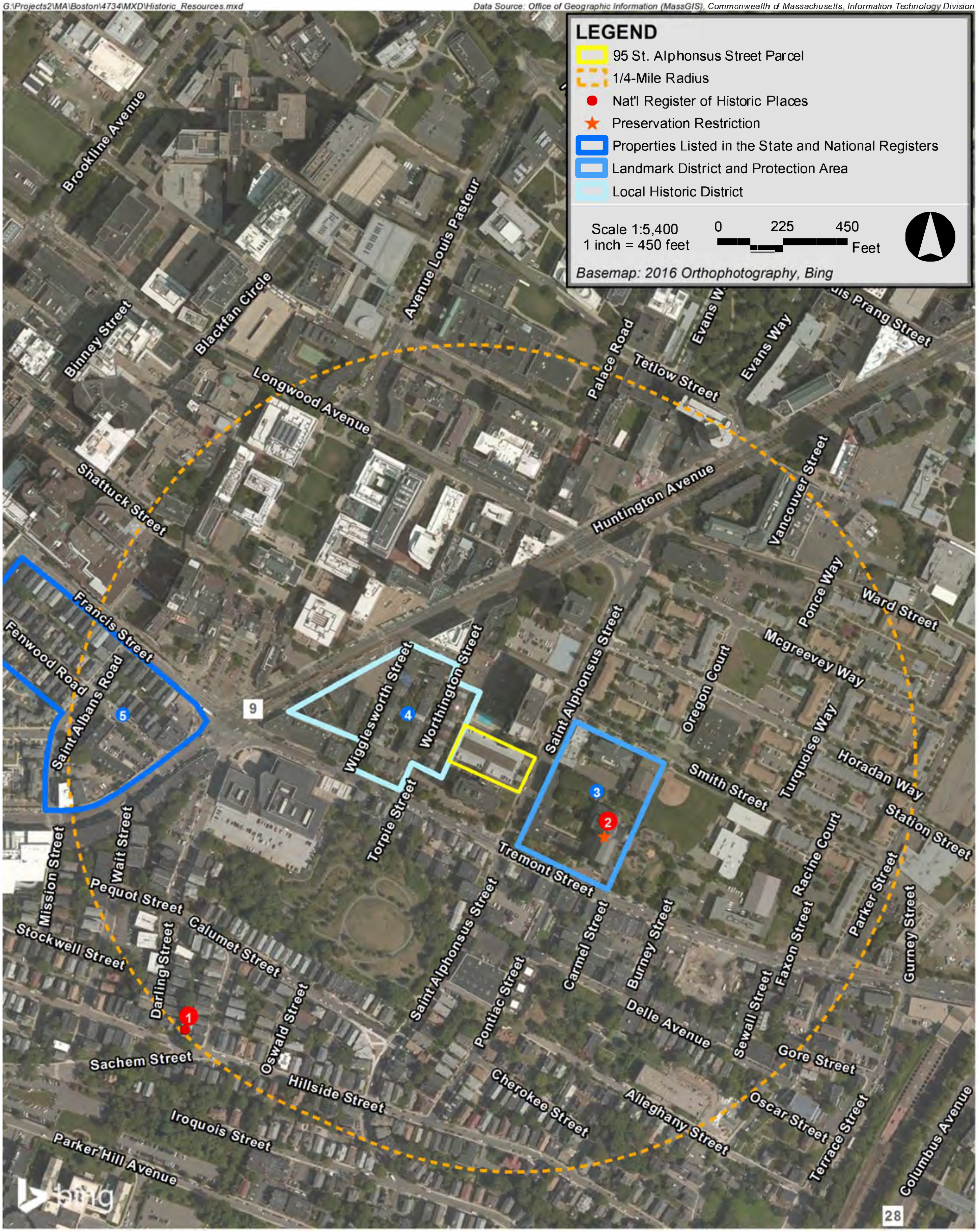
The 95 St. Alphonsus Street parcel is a previously developed urban parcel. No significant archaeological resources are believed to remain within the Project parcel. No impacts to archaeological resources are anticipated as a result of the Project.

6.4 Impacts to Historic Resources

The Project includes the demolition of the parking garage that currently occupies the Project parcel. Erected in 1964, this structure is not included in the Massachusetts Historical Commission's (MHC) Inventory of Historic and Archaeological Assets of the Commonwealth (the Inventory), nor is it included in the State or National Registers of Historic Places. Insofar as the structure that now occupies the parcel lacks intrinsic historic or aesthetic significance and is moreover located between contemporaneous apartment towers rather than amid the historic resources described above, no adverse impacts to the latter are anticipated.

G:\Projects2\MA\Boston\4734\MXD\Historic_Resources.mxd

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



95 St. Alphonsus Street **Boston, Massachusetts**

Epsilon ASSOCIATES INC.

Figure 6-1
Historic Resources

6.4.1 Demolition of Historic Resources

The mid-1960s parking structure that currently occupies the 95 St. Alphonsus Street parcel is not associated with notable historical events and is undistinguished in its aesthetic character. Thus a finding of significance is not anticipated.

6.4.2 Shadow Impacts to Historic Resources

Shadow analyses were undertaken to demonstrate the anticipated impacts from the Project. These consisted of standard shadow studies done for the spring equinox, summer solstice, autumn equinox and winter solstice at 9:00 a.m., 12:00 p.m. (noon), and 3:00 p.m., as well as 6:00 p.m. for the summer solstice and autumn equinox.

These studies demonstrated that net new shadow is limited in both degree and duration, typically extending to the north and largely within the Project area. At 6:00 p.m. on the summer solstice, some shadow is cast to the east of the Project; this has a minor impact at the periphery of the Mission Church Complex but does not extend to the Basilica itself. At 6:00 p.m. on the autumn equinox, shadow again falls to the east of the Project, deepening existing shadow but not affecting the Basilica. On the winter solstice at 9:00 a.m., shadow falls to the northwest, including approximately five houses on the east side of Worthington Street, which is already substantially shadowed at that time.

6.5 Status of Project Reviews with Historical Agencies

6.5.1 Boston Landmarks Commission Article 85 Review

In that the parking structure that currently occupies the Project parcel is more than 50 years old, its removal will be subject to the provisions of Boston Landmarks Commission Article 85 (Demolition Delay) review. At the appropriate time, the Proponent will file an Article 85 application with the BLC.

6.5.2 Massachusetts Historical Commission

Because a federal action is required for the Project, the Proponent will file a Massachusetts Historical Commission Project Notification Form for the Project in compliance with State Register Review (950 CMR 71.00) and Section 106 of the National Historic Preservation Act (36 CFR 800).

Chapter 7

Infrastructure

7.0 INFRASTRUCTURE

7.1 Overview of Utility Services

This section provides a description of the existing utility systems in the vicinity of the Project and evaluates potential impacts to those systems. Appropriate mitigation measures are discussed to address Project related impacts. The Project is in the early design phases and as more definitive design evolves, the Proponent will coordinate with the various utility companies to ensure full service for the new multi-family residential building.

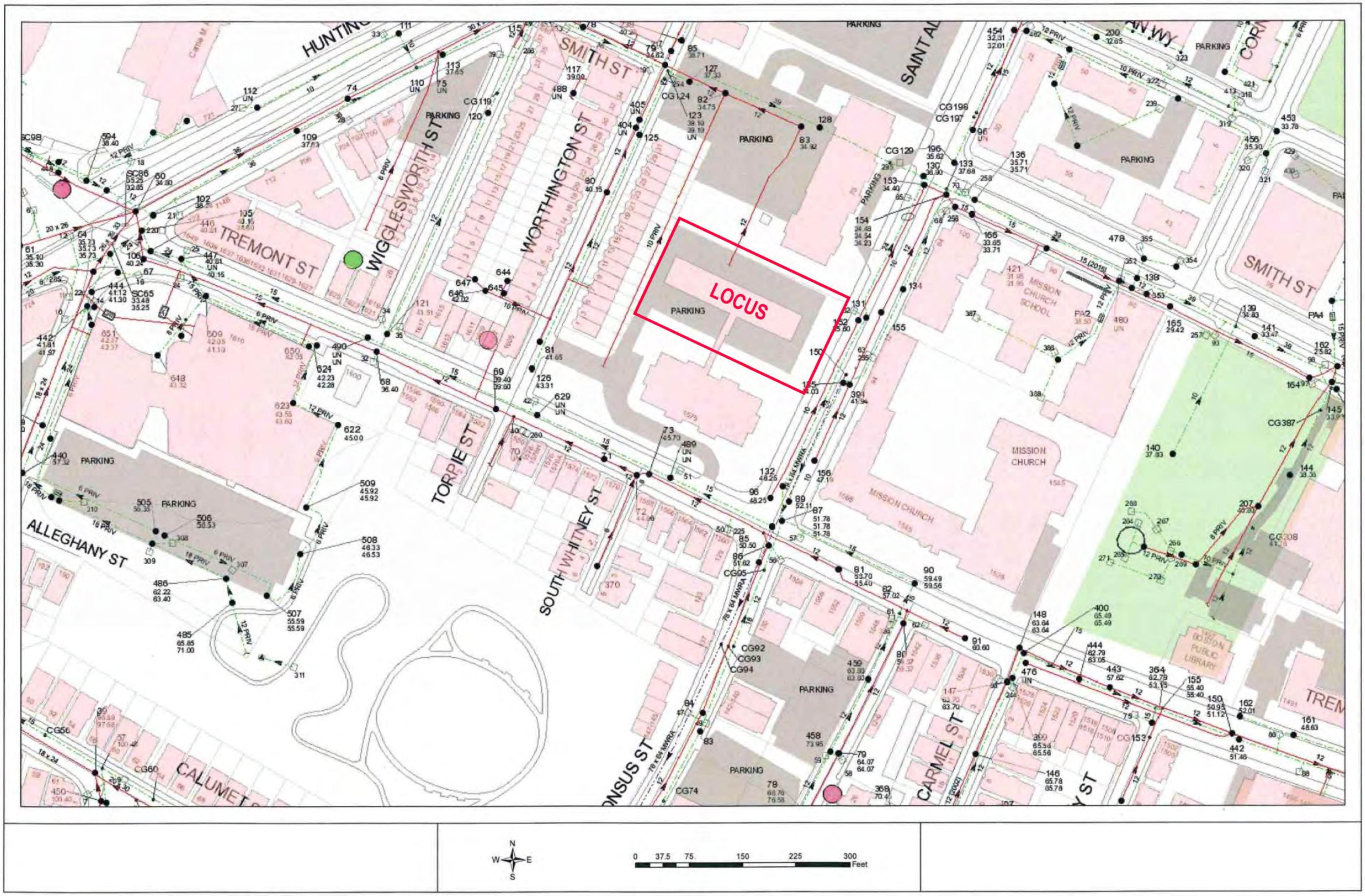
The Project is located at 95 St. Alphonsus Street, adjacent to and just north of 1575 Tremont Street. As shown on Figures 7-1 and 7-2, there are existing utilities located within St. Alphonsus Street in front of the Project. Utilities in the street include two separate water mains, two separate sanitary sewer lines, a dedicated storm drain, a large combined sewer trunk line, two gas mains and underground electric and telecommunications conduits. The water, drain and sanitary sewer lines are all Boston Water and Sewer Commission (BWSC) utilities, the combined sewer is part of the Massachusetts Water Resources Authority (MWRA) sewer system and the other utilities are privately owned by their respective utility companies.

Permits and approvals for the Project may include approvals from the Massachusetts Water Resources Authority (MWRA), the U.S. Environmental Protection Agency (EPA) and Boston Water and Sewer Commission (BWSC). Boston Water and Sewer Commission (BWSC) Site Plans and General Service Application will be required for the proposed new water and sewer connections, and the stormwater management system will be designed in conformance with BWSC's design standards. The gas, electric and telecommunications utilities will be coordinated with their respective companies.

7.2 Sewer System

7.2.1 Existing Sewer System

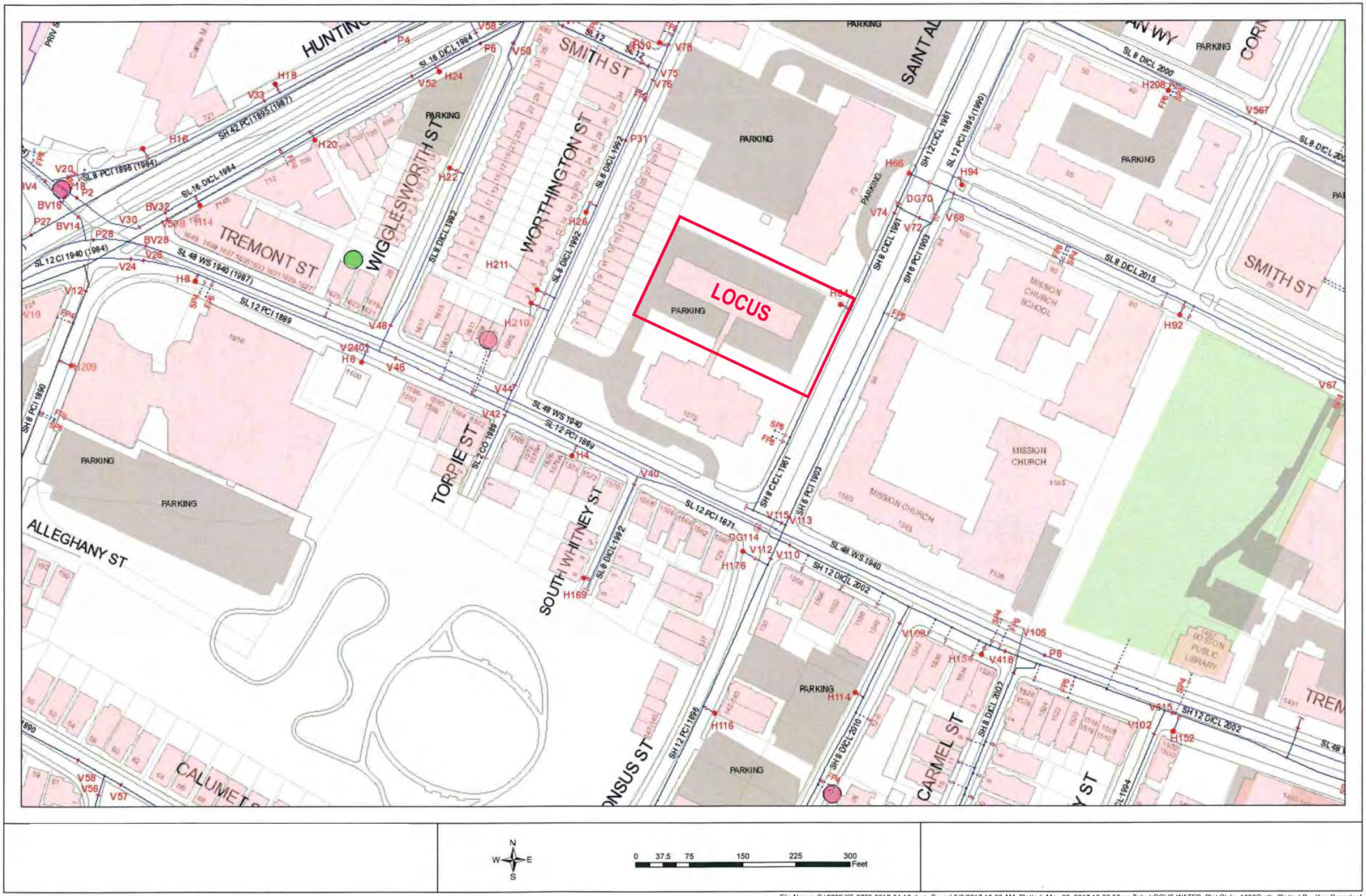
In the vicinity of the Project, the BWSC owns, operates and maintains the local sanitary sewer system. See Figure 7-1 for the existing sewer and drainage plan. In front of the Project in St. Alphonsus Street, there are two separate sanitary sewer lines owned by the BWSC. There is a 12-inch sanitary sewer running down the east side of St. Alphonsus Street and a 10-inch sanitary sewer line running down the west side of St. Alphonsus Street. These two sewer lines join together and connect into a 15-inch sewer in Smith Street, where it then flows east down Smith Street.



95 St. Alphonsus Street Boston, Massachusetts

H.W. Moore
ASSOCIATES, INC.

Figure 7-1
Sewer and Drainage Plan



95 St. Alphonsus Street   Boston, Massachusetts

H.W. Moore
ASSOCIATES, INC.

Figure 7-2
Water Distribution Plan

In addition to the two BWSC sewer lines, there is also a 6'-6" x 7'-0" "High Level Sewer" that is actually a combined sewer owned by the MWRA. This High Level Sewer flows in the opposite southerly direction from that of the two local sewer lines that run down St. Alphonsus Street in a northerly direction. Two 48-inch force mains connect to and feed the High Level Sewer from two sewer pump stations located at the bottom of Mission Hill.

The local BWSC sanitary sewer system ultimately flows to the Massachusetts Resources Authority's (MWRA's) Deer Island Treatment Plant, where it is treated and discharged to Cape Cod Bay.

7.2.2 Project Generated Sanitary Sewer Flow

The Massachusetts Department of Environmental Protection (MassDEP) has specified certain sewerage generation rates for a variety of building establishments and uses in the State Environmental Code, Title 5, under their regulations 310 CMR 15.203.

The Project is anticipated to generate 15,950 gallons per day (gpd) of sanitary sewage. Table 7-1 shows a breakdown of the sewage generation:

Table 7-1 Project Generated Sanitary Sewer Flow

Dwelling Unit	Number of Units	Number of Bedrooms	Sewerage Generation	Flow (gpd)
Studio	40	40	110 gal/bedroom	4,400
1-Bedroom	35	35	110 gal/bedroom	3,850
1-Bedrm w/ den	10	10	110 gal/bedroom	1,100
2- Bedroom	30	60	110 gal/bedroom	6,600
Total	**115**	**145**		**15,950**

Pursuant to MassDEP regulations 314 CMR7.00 Sewer System Extension and Connection Permit Program, the Project does not require the issuance of a MassDEP Sewer Connection or Extension Permit. The sewer connection review and approval process will be through BWSC.

7.2.3 Sanitary Sewer Connection

The Project is in the preliminary design stages and a detailed plan of the proposed Project utilities has not been developed. However, it is anticipated that the Project will connect to the 10-inch sanitary sewer located on the westerly side of St. Alphonsus Street. Floor drains from the enclosed parking garage will be collected and routed through an MWRA approved oil-water separator prior to discharge to the 10-inch sanitary sewer.

7.2.4 *Sewer System Mitigation*

To help conserve water and reduce the amount of wastewater generated by the Project, the Project is anticipated to include water conservation measures such as low flow toilets, restricted flow aerators in faucets and showerheads and water saving appliances.

In addition, since the Project generates more than 15,000 gpd, it is anticipated that Inflow/Infiltration (I/I) reduction will be required by BWSC. Currently BWSC requires I/I reduction at a 4:1 ratio (four gallons of I/I removed for every one gallon of wastewater added). Currently BWSC charges a fee of $2.41 per gallon of I/I removed or $9.64 per gallon of new wastewater added to their system, in order to pay for I/I removal and other improvements to BWSC's sewer system.

7.3 Water System

7.3.1 *Existing Water Service*

BWSC owns, operates and maintains the water distribution system in the vicinity of the Project. See Figure 7-2 for the water distribution plan. According to record plans, there are two water mains located in front of the Project in St. Alphonsus Street. There is six-inch pit cast iron water main located on the eastern side of St. Alphonsus Street that was installed in 1903, and an eight-inch cement lined cast iron water main located on the western side of St. Alphonsus Street that was installed in 1961. Both water mains are on the southern high pressure service system. There is a fire hydrant directly in front of the Project on the west side of St. Alphonsus Street that is fed from the eight-inch southern high water main.

7.3.2 *Anticipated Water Consumption*

The estimated water consumption for the proposed Project is 17,545 gpd. This estimate is based on the Title 5 wastewater generation plus 10% or 110% of the wastewater generation discussed in Section 7.2.2 above.

There are no known water capacity issues in the vicinity of the Project. This will be confirmed later in the design process, when fire flow tests are conducted. Water demand and availability will be coordinated with BWSC during the Site Plan Review process to ensure the Project's needs are met, while maintaining adequate water flows to the surrounding neighborhood.

7.3.3 *Proposed Water Service*

It is anticipated that the Project will be served with a single domestic and a single fire protection water service. Both of these services will be connected to the eight-inch high pressure water main in St. Alphonsus Street. The domestic water service will be metered in accordance with BWSC requirements, including the installation of a meter transmission unit (MTU) to comply with BWSC's automatic meter reading system. The domestic service will be equipped with an appropriate gate valve. The fire protection service will also be equipped with an appropriate gate valve and a backflow prevention device to prevent potential backflow of non-portable water or other contaminants into the public water distribution system. Final design of the fire protection system will be coordinated with the Boston Fire Department.

It is anticipated that that the existing fire hydrant located in front of the Project will be adequate for the Project.

The proposed water system is based on early schematic designs and will be refined as the Project design advances. During the BWSC Site Plan Review process, final sizing of the domestic and fire protection services will be determined, along with water meter sizing, backflow preventer devices and exact locations of the actual connections.

7.3.4 Water Supply Conservation and Mitigation

To help conserve water used by the Project, it is anticipated that the Project will incorporate water conservation measures such as low flow toilets, restricted flow aerators in faucets and showerheads, and water saving appliances.

7.4 Storm Drainage System

7.4.1 Existing Storm Drainage System

The existing 95 St. Alphonsus Street parcel is 37,734 square feet or 0.87 acres in size, of which approximately 95% is covered with an existing parking garage and pavement. From record plans, the storm drains from the existing parking garage and pavement areas connect to an existing 24-inch storm drain in St. Alphonsus Street. This 24-inch storm drain runs down St. Alphonsus Street and connects to an existing 39-inch storm drain in Smith Street, which then flows east down Smith Street (see Figure 7-1).

7.4.2 Proposed Storm Drainage System

The stormwater drainage system will be designed with the intent of maintaining the same general predevelopment drainage patterns as the existing drainage patterns.

The Project will incorporate stormwater Best Management Practices (BMPs) to improve the quantity and quality of the stormwater runoff, to promote infiltration to groundwater, and to reduce the peak rates of runoff to be at or below existing rates. Stormwater runoff from the Project will be collected and treated, as necessary, on-site and routed through an infiltration system to mitigate any impacts to the existing drainage system.

7.4.3 Groundwater Conservation Overlay District

The Project is not located within the City's Groundwater Conservation Overlay District, but is anticipated to meet the same recharge requirements, as typically required by BWSC.

7.4.4 Water Quality and Construction Stormwater Management

The Project will not impact the water quality of nearby water bodies. Erosion and sedimentation control measures will be implemented during construction to preclude the transport of sediment to abutting properties and St. Alphonsus Street. Erosion control barriers will be staked around the perimeter of the 95 St. Alphonsus Street parcel to prevent sediment from washing off site. Existing catch basins will be wrapped in filter fabric and / or equipped with silt sacks to keep sediment out of the storm drains. These controls will be inspected and maintained throughout the course of construction until all surfaces are landscaped and stabilized.

7.4.5 MassDEP Stormwater Management Standards

The Project will comply with MassDEP's Stormwater Management Standards. The standards prescribe specific water quantity and quality improvements. Compliance is achieved through the implementation of Best Management Practices (BMPs) in the stormwater management design.

The following is an outline of the Stormwater Management Standards and how the Project intends to meet these standards.

Standard #1: No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters in the Commonwealth.

Compliance: Stormwater will be treated in conformance with these standards prior to discharging to BWSC's storm drains, so the proposed design will meet this standard.

Standard #2: Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.

Compliance: The Project will comply with this Standard. The proposed design will not result in an increase in peak discharge rates for any of the analyzed storm events.

Standard #3: 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. This 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 will comply with this Standard. The proposed stormwater management system will be designed to comply with BWSC design requirements. One of BWSC's requirements is to recharge at least one inch of rainfall from the impervious cover, which meets this Standard.

Standard #4: For new development, stormwater management systems must be designed to remove 80% of the site's annual post-construction load of Total Suspended Solids (TSS).

Compliance: The Project will meet this standard to the maximum extent possible. The Project's stormwater management system will be designed to treat the 95 St. Alphonsus Street parcel's post development average annual TSS load prior to discharge to BWSC's storm drainage system.

Standard #5: Stormwater discharges from areas with higher potential pollutant loads will require the use of specific stormwater management BMPs. The use of infiltration without pretreatment is prohibited.

Compliance: The Project will comply with this Standard. The Project is not associated with Higher Potential Pollutant Loads as defined by the Stormwater Management Standards.

Standard #6: Stormwater discharges to critical areas must utilize certain approved stormwater management BMPs. Critical areas are defined to include Outstanding Resource Waters (ORW's), shellfish beds, swimming beaches, cold-water fisheries and recharge areas for public water supplies.

Compliance: Standard #6 is not applicable to the Project. The Project does not include the discharge of untreated stormwater to a critical area as defined by the Stormwater Management Standards.

Standard#7: Redevelopment of previously developed sites must meet the Stormwater Management Regulations to the maximum extent practicable. However, if it is not practicable to meet all the Standards, new stormwater management systems must be designed to improve existing conditions.

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

Standard #8: A plan to control construction related impacts, including erosion, sedimentation, and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.

Compliance: The Project will comply with this Standard. Sedimentation and erosion controls will be incorporated as part of the design of the Project and implemented 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. A long term operation and maintenance plan will be prepared as part of the final design and the Project Owner will be responsible for the 95 St. Alphonsus Street parcel to be maintained in accordance with this plan.

Standard#10: All Illicit discharges to the stormwater management systems are prohibited.

Compliance: The Project will comply with this Standard. The Project does not include any illicit discharges to the proposed stormwater management system. An Illicit Discharge Compliance Certification will be filed when the Project stormwater management system design is finalized.

7.5 Electrical Service

Eversource provides electric service in the City of Boston. A new electric service will be required to service the Project. It is anticipated that the new underground electric service for the Project will be provided from the existing electric conduits located in St. Alphonsus Street.

The electrical, space heating, and energy systems for the proposed Project have not yet been fully designed. When the design loads are determined, electrical power supply designs will be coordinated with Eversource. Energy saving measures will be incorporated into the building designs and Project construction. The Proponent will investigate the installation of energy efficient lighting, heating and cooling systems in the design of the building.

7.6 Telecommunications System

Existing telecommunications systems are located in the vicinity of the Project. The Proponent will work with the various providers to determine the appropriate services and connection locations to support the Project. It is anticipated that services will be underground to St. Alphonsus Street.

7.7 Gas Systems

National Grid provides natural gas service to the Project area. There are two existing gas mains located in St. Alphonsus Street. The Proponent will work with National Grid to confirm that the system has adequate capacity and to coordinate final design details.

7.8 Utility Protection During Construction

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

Chapter 8

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.

8.2 Massachusetts Environmental Policy Act

The Proponent does not expect that the Project will require review by the Massachusetts Environmental Policy Act (MEPA) Office of the Massachusetts Executive Office of Energy and Environmental Affairs. The Project does not exceed any of the review thresholds for the filing of an Environmental Notification Form under MEPA.

8.3 Massachusetts Historical Commission

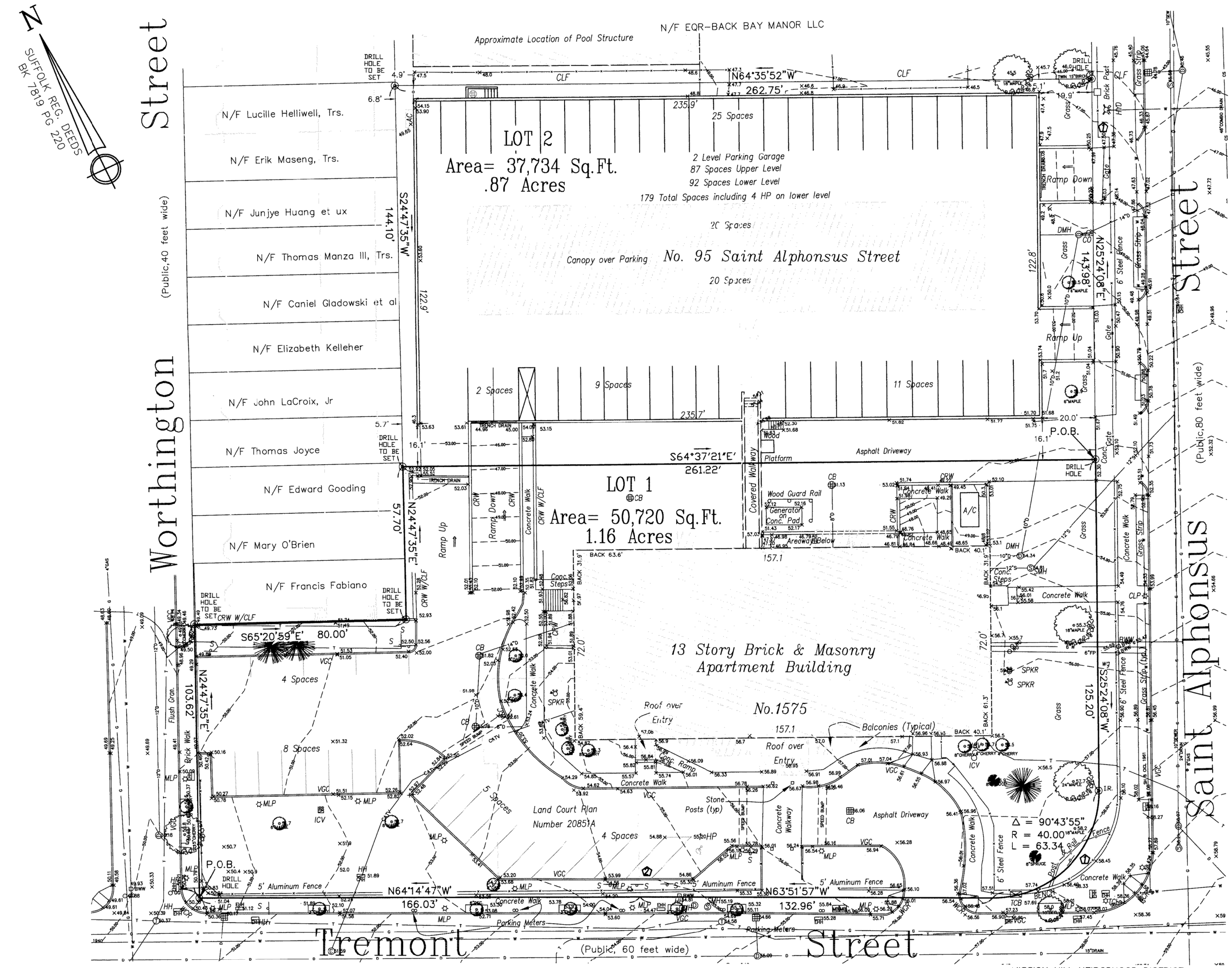
Because a federal action is required for the Project, the Proponent will file a Massachusetts Historical Commission Project Notification Form for the Project in compliance with State Register Review (950 CMR 71.00) and Section 106 of the National Historic Preservation Act (36 CFR 800).

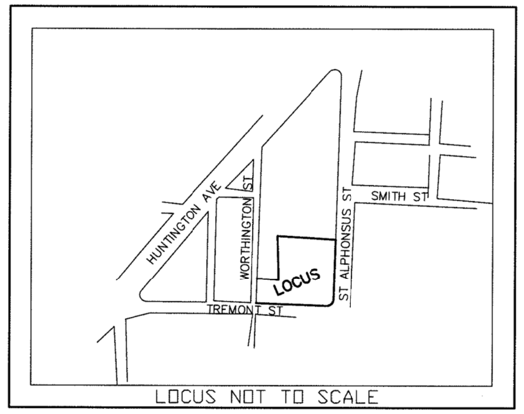
8.4 Boston Civic Design Commission

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 BPDA as part of the Article 80 process.

Appendix A

Site Survey





LEGEND

- DRAIN MANHOLE
- CABLE TV MANHOLE
- ELECTRIC MANHOLE
- SEWER MANHOLE
- TELEPHONE MANHOLE
- CATCH BASIN
- GAS GATE
- WATER GATES
- LIGHT POLE
- WOOD UTILITY POLE
- HYDRANT
- SIGN
- COMMUNICATION HANDHOLE
- ELECTRIC HANDHOLE
- FIRE ALARM
- TRAFFIC LIGHT POLE
- SPOT GRADE LOCATION
- CENTER OF TREE
- MONITORING WELL
- CNO COULD NOT OPEN
- NA NOT ACCESSABLE
- NPV NO PIPES VISIBLE
- BOLLARD LIGHT POLE
- FLOOD LIGHT

UNDERGROUND UTILITIES

- — c — CABLE TV
- — cs — COMBINED SEWER
- — D — DRAIN
- — E — ELECTRIC
- — G — GAS
- — S — SEWER
- — ST — STEAM
- — T — TELEPHONE/COMMUNICATION
- — W — WATER

R= (RIM ELEVATION)
I= (INVERT)

Underground utilities shown are from field observations and record information and are not warranted to be exact nor is it warranted that all underground pipes or structures are shown.

Property Description

A certain parcel of land shown as Parcel No.3 on a Plan entitled "Boston Redevelopment Authority, Whitney Redevelopment Area, Land Disposition Plan" by Henry F. Bryant & Son, Inc., Engineers, dated August 25, 1960, being more particularly bounded and

Beginning at the Northeasterly corner of the intersection of Worthington Street and Tremont Street in the City of Boston; thence N 24°47'35"E 103.62 feet; thence S 65°20'59"E 80.00 feet; thence N 24°47'35"E 201.80 feet; thence S 64°35'24"E 262.75 feet; thence S 25°24'08"W 269.18 feet; thence by a curved line having a radius of 40 feet and an arc distance of 63.34 feet; thence N 63°51'57"W 132.96 feet; thence N 64°14'47"W 166.03 feet to the point and place of beginning, being shown as Parcel 3 on the aforementioned plan containing 88,455 square feet.

Within the parcel of recorded land is a piece of registered land described as a Lot shown on a Land Court Plan No. 20851A, a copy of which is filed with the Suffolk County Registry District of the Land Court with Certificate of Title No. 50406.

EXCEPTIONS

1. Survey entitled "ALTA/ACSM Land Title Survey, 1575 Tremont Street, Boston, Suffolk County, Mass."dated August 15,2007 prepared by R.E. Cameron & Associates, Inc., discloses the following items
   a. Utilities cross premises at various locations; and
   b. 6' Steel Fence encroaches into Tremont Street, and Saint Alphonsus Street. (PLOTTED)
2. Order of taking dated July 14, 1960 recorded with the Suffolk County Registry Of Deeds in book 7490, Page 538 and filed for registration with the Suffolk Registry District of the Land Court as Document No. 244413, and see Certificate of Title NO. 67534 (PLOTTED)

Lot line depicted is a proposed subdivision of Parcel 3 shown on Land Disposition Plan by Henry Bryant & Son Inc., Engineers recorded in Suffolk County Registry Of Deeds, Book 7819 Page 220.

0 10 20 40 60 80
1 INCH = 20 FT.

LOT 1

Beginning at the North Easterly corner of the Intersection of Worthington Street and Tremont Street in the City of Boston;

Thence N 24°47'35" E 103.62 feet;
Thence S 65°20'59" E 80.00 feet;
Thence N 24°47'35" E 57.70 feet;
Thence S 64°37'21" E 261.22 feet;
Thence S 25°24'08" W 125.20 feet;
Thence by a curved line having a radius of 40 feet an arc distance of 63.34 feet;
Thence N 63°51'57" W 132.96 feet;
Thence N64°14'47" W 166.03 feet to the point and place of beginning.

LOT 2

Beginning 125.20 feet from the end of a curve at the North Westerly corner of the Intersection of Saint Alphonsus Street and Tremont Street in the City of Boston;

Thence N 25°24'08" E 143.98 feet;
Thence N 64°35'52" W 262.75 feet;
Thence S 24°47'35" W 144.10 feet;
Thence S 64°37'21" E 261.22 feet to the point of beginning.

F.E.M.A.

The property shown lies within ZONE X (areas determined to be outside the 0.2% annual chance floodplain) as shown on FLOOD INSURANCE RATE MAP for THE CITY OF BOSTON COMMUNITY 250286 PANEL NUMBER 0078 G WITH EFFECTIVE DATE OF SEPTEMBER 25, 2009

MISSION HILL NEIBORHOOD DISTRICT
MFR-3

MAXIMUM LOT AREA = NONE
MINIMUM LOT WIDTH = NONE
MINIMUM OPEN SPACE = 100s.f.
MINIMUM LOT FRONTAGE = NONE
MINIMUM FRONT YARD DEPTH = 15'
MINIMUM SIDE YARD WIDTH = 10'
MINIMUM REAR YARD DEPTH = 30'
MAXIMUM BUILDING HEIGHT = 75'
FLOOR AREA RATIO MAX = 3.0

TABLE A ITEMS

1. Surveyor was not provided a zoning report by the client.
2. No party walls designated by client.
3. There is no delineation of Wetlands by a specialist.

COMMONWEALTH OF MASSACHUSETTS
SCOTT D. CAMERON #35393
PROFESSIONAL LAND SURVEYOR

To The Department of Housing and Urban Development, their successors and/or assigns;

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 1,2,3,4,6(a)(b),7(a),8,9,10,11,12,13,16,17,18,19 of Table A thereof. The fieldwork was completed on February 14, 2017.

Date : 3.21.2017
(Scott D. Cameron/35393)

REVISION – DATE: 2/23/17
JOB NO. 2060

ALTA/NSPS
LAND TITLE SURVEY
1575 TREMONT STREET
BOSTON, MASSACHUSETTS

Scale: 1"=20' | Drawn By: MPM | Job:2060
Date: AUG. 15, 2007 | Checked By: SDC | Dwg:2060MPMALTA

R.E. Cameron & Associates, Inc.
Land Surveyors Civil Engineers
681 Washington Street, Norwood Massachusetts 02062
Tel.(781) 769-1777 Fax (781) 769-8644

Appendix B

Transportation

Available Upon Request

Appendix C

Air Quality

APPENDIX C - AIR QUALITY

Introduction

This Air Quality Appendix provides modeling assumptions and backup for results presented in Section 4.5 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 2017 and 2024 for speed limits of idle, 10, 15, and 25 mph for use in the microscale analyses.

MOVES CO Emission Factor Summary

Carbon Monoxide Only

		2017	2024
Free Flow	25 mph	2.611	1.758
Right Turns	10 mph	4.058	2.693
Left Turns	15 mph	3.508	2.369
Queues	Idle	8.013	3.216

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 25 mph were used for right turn, left turn, and free flow links, respectively.

95 St. Adolphus Street, Boston MA
Background Concentrations

POLLUTANT	AVERAGING TIME	Form	2013	2014	2015	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 %	10.9	12.3	9.4	ppb	2.62	28.5	Harrison Ave., Boston
	3-Hour	H2H	9.7	21.5	8.7	ppb	2.62	56.3	Harrison Ave., Boston
	24-Hour	H2H	5	5.1	4.3	ppb	2.62	13.4	Harrison Ave., Boston
	Annual	H	1.1	1.1	0.8	ppb	2.62	2.8	Harrison Ave., Boston
PM-10	24-Hour	H2H	34	61	28	$\mu g/m^3$	1	61	Harrison Ave., Boston
	Annual	H	15.1	13.9	12.4	$\mu g/m^3$	1	15.1	Harrison Ave., Boston
PM-2.5	24-Hour (5)	98th %	15.9	12.7	19	$\mu g/m^3$	1	15.9	Harrison Ave., Boston
	Annual (5)	H	7.3	6.0	8.8	$\mu g/m^3$	1	7.4	Harrison Ave., Boston
NO_2 (3)	1-Hour (5)	98th %	50	51	53	ppb	1.88	96.5	Harrison Ave., Boston
	Annual	H	17.4	15.8	15.0	ppb	1.88	32.8	Harrison Ave., Boston
CO (2)	1-Hour	H2H	1.9	1.7	1.4	ppm	1146	2145.3	Harrison Ave., Boston
	8-Hour	H2H	1.2	1.3	0.9	ppm	1146	1489.8	Harrison Ave., Boston
Ozone (4)	8-Hour	H4H	0.059	0.054	0.056	ppm	1963	115.8	Harrison Ave., Boston
Lead	Rolling 3-Month	H	0.006	0.014	0.016	$\mu g/m^3$	1	0.016	Harrison Ave., Boston

Notes:
From 2013-2015 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.

Model Input/Output Files

Due to excessive size CAL3QHC, and MOVES input and output files are available on digital media upon request.

Appendix D

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:	95 St. Alphonsus Street
Project Address Primary:	95 St. Alphonsus Street, Boston MA 02120
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	**Michael Siciliano** – VP 617-558-4018 / msiciliano@wingatecompanies.com **Ralph Cole** – Project Manager 617-275-6965/ colejralph@gmail.com

A.2 - Team Description

Owner / Developer:	Wingate Companies
Architect:	HDS Architecture
Engineer (building systems):	Allied Consulting Engineering
Sustainability / LEED:	Resilient Buildings Group, Inc.
Permitting:	Epsilon Associates, Inc.
Construction Management:	TBD
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*
List the First Floor Uses:	*Lobby, Tenant Amenities*

What is the principal Construction Type – select most appropriate type?

☑ Wood Frame	☐ Masonry	☐ Steel Frame	☐ Concrete

Describe the building?

Site Area:	*37,734 SF*	Building Area:	*111,665 SF*
Building Height:	*74' 10" Ft.*	Number of Stories:	*5 Flrs.*
First Floor Elevation	*57' Elev.*	Are there below grade	*1*

(reference Boston City Base):		spaces/levels, if yes how many:	

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/Silver*

A.6 - Building Energy-

What are the base and peak operating energy loads for the building?

Electric:	*991.1 (kW)*	Heating:	*15 (MMBtu/hr)*
What is the planned building Energy Use Intensity:	*15.25 (kWh/SF)*	Cooling:	*116 (Tons/hr)*

What are the peak energy demands of your critical systems in the event of a service interruption?

Electric:	*N/A (kW)*	Heating:	*N/A (MMBtu/hr)*
		Cooling:	*N/A (Tons/hr)*

What is nature and source of your back-up / emergency generators?

Electrical Generation:	*(kW)*		Fuel Source:	
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?

8/91 Deg.	Based on ASHRAE Fundamentals 2013 99.6% heating; 0.4% cooling

What Extreme Heat Event characteristics will be used for project planning – Peak High, Duration, and Frequency?

95 Deg.	*5 Days*	*6 Events / yr.*

What Drought characteristics will be used for project planning – Duration and Frequency?

30-90 Days	*0.2 Events / yr.*

What Extreme Rain Event characteristics will be used for project planning – Seasonal Rain Fall, Peak Rain Fall, and Frequency of Events per year?

45 Inches / yr.	*4 Inches*	*0.5 Events / yr.*

What Extreme Wind Storm Event characteristics will be used for project planning – Peak Wind Speed, Duration of Storm Event, and Frequency of Events per year?

130 Peak Wind	*10 Hours*	*0.25 Events / yr.*

B.2 - Mitigation Strategies

What will be the overall energy performance, based on use, of the project and how will performance be determined?

Building energy use below code:	
How is performance determined:	

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 =40*	Walls / Curtain Wall Assembly:	*R = 21*
Foundation:	*R = 10*	Basement / Slab:	*R = 15/10*
Windows:	*R = / U = 0.25*	Doors:	*R = / U = 0.25*

What specific measures will the project employ to reduce building energy demands on the utilities and infrastructure?

☐ On-site clean energy / CHP system(s)	☐ Building-wide power dimming	☐ Thermal energy storage systems	☐ Ground source heat pump
☐ On-site Solar PV	☐ On-site Solar Thermal	☐ Wind power	☐ None

Describe any added measures:	

Will the project employ Distributed Energy / Smart Grid Infrastructure and /or Systems?

Select all appropriate:				
	☐ Connected to local distributed electrical	☐ Building will be Smart Grid ready	☐ Connected to distributed steam, hot, chilled water	☐ Distributed thermal energy ready

Will the building remain operable without utility power for an extended period?

	*Yes / **No***	If yes, for how long:	*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?

	No

Describe site conditions?

Site Elevation – Low/High Points:	*Boston City Base Elev.(Ft.)*
Building Proximity to Water:	*Ft.*

Is the site or building located in any of the following?

Coastal Zone:	*Yes / No*	Velocity Zone:	*Yes / No*
Flood Zone:	*Yes / No*	Area Prone to Flooding:	*Yes / No*

Will the 2013 Preliminary FEMA Flood Insurance Rate Maps or future floodplain delineation updates due to Climate Change result in a change of the classification of the site or building location?

2013 FEMA Prelim. FIRMs:	*Yes / No*	Future floodplain delineation updates:	*Yes / No*

What is the project or building proximity to nearest Coastal, Velocity or Flood Zone or Area Prone to Flooding?

	Ft.

If you answered YES to any of the above Location Description and Classification questions, please complete the following questions. Otherwise you have completed the questionnaire; thank you!

C - Sea-Level Rise and Storms

This section explores how a project responds to Sea-Level Rise and / or increase in storm frequency or severity.

C.2 - Analysis

How were impacts from higher sea levels and more frequent and extreme storm events analyzed:

Sea Level Rise:	*Ft.*	Frequency of storms:	*per year*

C.3 - Building Flood Proofing

Describe any strategies to limit storm and flood damage and to maintain functionality during an extended periods of disruption.

What will be the Building Flood Proof Elevation and First Floor Elevation:

Flood Proof Elevation:	*Boston City Base Elev.(Ft.)*	First Floor Elevation:	*Boston City Base Elev. (Ft.)*

Will the project employ temporary measures to prevent building flooding (e.g. barricades, flood gates):

	Yes / No	If Yes, to what elevation	*Boston City Base Elev. (Ft.)*
If Yes, describe:			

What measures will be taken to ensure the integrity of critical building systems during a flood or severe storm event:

☐ Systems located above 1st Floor.	☐ Water tight utility conduits	☐ Waste water back flow prevention	☐ Storm water back flow prevention

Were the differing effects of fresh water and salt water flooding considered:

Yes / No

Will the project site / building(s) be accessible during periods of inundation or limited access to transportation:

Yes / No	If yes, to what height above 100 Year Floodplain:	*Boston City Base Elev. (Ft.)*

Will the project employ hard and / or soft landscape elements as velocity barriers to reduce wind or wave impacts?

	Yes / No
If Yes, describe:	

Will the building remain occupiable without utility power during an extended period of inundation:

Yes / No	If Yes, for how long:	*days*

Describe any additional strategies to addressing sea level rise and or sever storm impacts:

C.4 - Building Resilience and Adaptability

Describe any strategies that would support rapid recovery after a weather event and accommodate future building changes that respond to climate change:

Will the building be able to withstand severe storm impacts and endure temporary inundation?

Select appropriate:	*Yes / No*	☐ Hardened / Resilient Ground Floor 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 / No*	☐ Surrounding site elevation can be raised	☐ Building ground floor can be raised	☐ Construction been engineered
Describe additional strategies:				

Has the building been planned and designed to accommodate future resiliency enhancements?

Select appropriate:	*Yes / No*	☐ Solar PV	☐ Solar Thermal	☐ Clean Energy / CHP System(s)
		☐ Potable water storage	☐ Wastewater storage	☐ Back up energy systems & fuel
Describe any specific or additional strategies:				

Thank you for completing the Boston Climate Change Resilience and Preparedness Checklist!

For questions or comments about this checklist or Climate Change Resiliency and Preparedness best practices, please contact: John.Dalzell.BRA@cityofboston.gov

Appendix E

Accessibility Checklist

Article 80 – Accessibility Checklist

A requirement of the Boston Planning & Development Agency (BPDA) Article 80 Development Review Process

The Mayor's Commission for Persons with Disabilities strives to reduce architectural, procedural, attitudinal, and communication barriers that affect persons with disabilities in the City of Boston. In 2009, a Disability Advisory Board was appointed by the Mayor to work alongside the Commission in creating universal access throughout the city's built environment. The Disability Advisory Board is made up of 13 volunteer Boston residents with disabilities who have been tasked with representing the accessibility needs of their neighborhoods and increasing inclusion of people with disabilities.

In conformance with this directive, the BDPA has instituted this Accessibility Checklist as a tool to encourage developers to begin thinking about access and inclusion at the beginning of development projects, and strive to go beyond meeting only minimum MAAB / ADAAG compliance requirements. Instead, our goal is for developers to create ideal design for accessibility which will ensure that the built environment provides equitable experiences for all people, regardless of their abilities. As such, any project subject to Boston Zoning Article 80 Small or Large Project Review, including Institutional Master Plan modifications and updates, must complete this Accessibility Checklist thoroughly to provide specific detail about accessibility and inclusion, including descriptions, diagrams, and data.

For more information on compliance requirements, advancing best practices, and learning about progressive approaches to expand accessibility throughout Boston's built environment. Proponents are highly encouraged to meet with Commission staff, prior to filing.

Accessibility Analysis Information Sources:

1. Americans with Disabilities Act – 2010 ADA Standards for Accessible Design
   http://www.ada.gov/2010ADAstandards_index.htm
2. Massachusetts Architectural Access Board 521 CMR
   http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/aab/aab-rules-and-regulations-pdf.html
3. Massachusetts State Building Code 780 CMR
   http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/csl/building-codebbrs.html
4. Massachusetts Office of Disability – Disabled Parking Regulations
   http://www.mass.gov/anf/docs/mod/hp-parking-regulations-summary-mod.pdf
5. MBTA Fixed Route Accessible Transit Stations
   http://www.mbta.com/riding_the_t/accessible_services/
6. City of Boston – Complete Street Guidelines
   http://bostoncompletestreets.org/
7. City of Boston – Mayor's Commission for Persons with Disabilities Advisory Board
   www.boston.gov/disability
8. City of Boston – Public Works Sidewalk Reconstruction Policy
   http://www.cityofboston.gov/images_documents/sidewalk%20policy%200114_tcm3-41668.pdf
9. City of Boston – Public Improvement Commission Sidewalk Café Policy
   http://www.cityofboston.gov/images_documents/Sidewalk_cafes_tcm3-1845.pdf

Glossary of Terms:

1. ***Accessible Route*** – A continuous and unobstructed path of travel that meets or exceeds the dimensional and inclusionary requirements set forth by MAAB 521 CMR: Section 20
2. ***Accessible Group 2 Units*** – Residential units with additional floor space that meet or exceed the dimensional and inclusionary requirements set forth by MAAB 521 CMR: Section 9.4
3. ***Accessible Guestrooms*** – Guestrooms with additional floor space, that meet or exceed the dimensional and inclusionary requirements set forth by MAAB 521 CMR: Section 8.4
4. ***Inclusionary Development Policy (IDP)*** – Program run by the BPDA that preserves access to affordable housing opportunities, in the City. For more information visit: http://www.bostonplans.org/housing/overview
5. ***Public Improvement Commission (PIC)*** – The regulatory body in charge of managing the public right of way. For more information visit: https://www.boston.gov/pic
6. ***Visitability*** – A place's ability to be accessed and visited by persons with disabilities that cause functional limitations; where architectural barriers do not inhibit access to entrances/doors and bathrooms.

1. Project Information: *If this is a multi-phased or multi-building project, fill out a separate Checklist for each phase/building.*			
Project Name:	**95 St. Alphonsus Street**		
Primary Project Address:	**95 St. Alphonsus Street**		
Total Number of Phases/Buildings:	**One**		
Primary Contact (Name / Title / Company / Email / Phone):	**Michael Siciliano** – VP 617-558-4018 / msiciliano@wingatecompanies.com **Ralph Cole** – Project Manager 617-275-6965 / colejralph@gmail.com		
Owner / Developer:	**Wingate Companies**		
Architect:	**HDS Architecture, Inc.**		
Civil Engineer:	**H.W. Moore**		
Landscape Architect:	**Pressley Associates**		
Permitting:	**Epsilon Associates, Inc.**		
Construction Management:	**TBD**		
At what stage is the project at time of this questionnaire? Select below:			
	PNF / Expanded PNF Submitted	Draft / Final Project Impact Report Submitted	BPDA Board Approved
	BPDA Design Approved	Under Construction	Construction Completed:
Do you anticipate filing for any variances with the Massachusetts Architectural Access Board (MAAB)? ***If yes,*** identify and explain.			
2. Building Classification and Description: *This section identifies preliminary construction information about the project including size and uses.*			
What are the dimensions of the project?			
Site Area:	*37,734 SF*	Building Area:	*111,665 GSF*
Building Height:	*74'-10" FT.*	Number of Stories:	*5 Flrs.*

First Floor Elevation:	57’ Elev.	Is there below grade space:		***Yes*** */ No*
What is the Construction Type? (Select most appropriate type)				
	Wood Frame	Masonry	**Steel Frame**	**Concrete**
What are the principal building uses? (IBC definitions are below – select all appropriate that apply)				
	Residential – One - Three Unit	**Residential - Multi-unit, Four +**	Institutional	Educational
	Business	Mercantile	Factory	Hospitality
	Laboratory / Medical	Storage, Utility and Other		
List street-level uses of the building:	*Residential, Tenant Amenities*			

3. Assessment of Existing Infrastructure for Accessibility:

This section explores the proximity to accessible transit lines and institutions, such as (but not limited to) hospitals, elderly & disabled housing, and general neighborhood resources. Identify how the area surrounding the development is accessible for people with mobility impairments and analyze the existing condition of the accessible routes through sidewalk and pedestrian ramp reports.

Provide a description of the neighborhood where this development is located and its identifying topographical characteristics:	The Mission Hill neighborhood is recognized by traditional brick row houses and triple decker homes situated on winding roads. The majority of the surrounding area consists of residential homes accented with local restaurants and shops. Tremont Street is flat, while St. Alphonsus Street slopes.
List the surrounding accessible MBTA transit lines and their proximity to development site: commuter rail / subway stations, bus stops:	The Green Line Brigham Circle stop, as well as the bus stops at the corner of Tremont and St. Alphonsus Street.
List the surrounding institutions: hospitals, public housing, elderly and disabled housing developments, educational facilities, others:	Boston Children’s Hospital, Massachusetts College of Pharmacy and Health Science, Massachusetts College of Art and Design, Harvard School of Dental Medicine, Harvard Medical School, Harvard TH Chan School of Public Health, Wentworth Institute of Technology, Simmons College, Our Lady of Perpetual Help Mission Grammar School, Mission Hill Neighborhood Housing, Boston Latin School, Fenway High School, Isabella Stewart Gardner Museum
List the surrounding government buildings: libraries, community centers, recreational facilities, and other related facilities:	Tobin Community Center, Kevin W. Fitzgerald Park, Countway Library of Medicine, Parker Hill Branch of the Boston Public Library, Toby Community Center, Mission Hill Playground, Our Lady of Perpetual Help Church

4. Surrounding Site Conditions – Existing:

This section identifies current condition of the sidewalks and pedestrian ramps at the development site.

Is the development site within a historic district? ***If yes,*** identify which district:	No, the Project is not within a historic district.
Are there sidewalks and pedestrian ramps existing at the development site? ***If yes***, list the existing sidewalk and pedestrian ramp dimensions, slopes, materials, and physical condition at the development site:	There are existing City of Boston sidewalks at the perimeter of the site. At the corner of St. Alphonsus and Tremont streets are ADA/MAAB compliant concrete pedestrian ramps with detectable warning panels. Existing pedestrian ramps at the vehicular entrance to the site are non-conforming concrete ramps. Existing City sidewalks at the west edge of the site are brick with a non-conforming pedestrian ramp at the corner of Tremont and Worthington streets. Walkways within the site vary in width but are greater than 4 feet wide, concrete and are within allowable slopes (less than 4.9%).
Are the sidewalks and pedestrian ramps existing-to-remain? ***If yes,*** have they been verified as ADA / MAAB compliant (with yellow composite detectable warning surfaces, cast in concrete)? ***If yes,*** provide description and photos:	The existing sidewalks will remain. The pedestrian ramp/crossing at the main vehicular and pedestrian entrance to the site will be improved with an at-grade crossing to be ADA/MAAB compliant. The compliant sidewalk along Tremont and St. Alphonsus streets will be replaced to meet ADA/MAAB standards with a detectable warning surface cast in concrete.
5. Surrounding Site Conditions – Proposed *This section identifies the proposed condition of the walkways and pedestrian ramps around the development site. Sidewalk width contributes to the degree of comfort 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. Wider sidewalks allow people to walk side by side and pass each other comfortably walking alone, walking in pairs, or using a wheelchair.*	
Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? ***If yes***, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, or Boulevard.	The existing sidewalks with remain.
What are the total dimensions and slopes of the proposed sidewalks? List the widths of the proposed zones: Frontage, Pedestrian and	The existing sidewalks will remain; no new sidewalks are proposed. Existing City sidewalks are to remain. Frontage: 4'-6", Pedestrian: 7'-1", Furnishing: 8'-1" to proposed wall at property line. Existing sidewalk slopes are 4.6%, avg.

Furnishing 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?	Frontage: Lawn, Pedestrian: Concrete, Furnishing: Lawn. All zones will be on the CoB right of way.
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way? ***If yes,*** what are the proposed dimensions of the sidewalk café or furnishings and what will the remaining right-of-way clearance be?	No
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the Public Improvement Commission (PIC)?	N/A
Will any portion of the Project be going through the PIC? ***If yes,*** identify PIC actions and provide details.	N/A
6. 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 – Disabled Parking Regulations*.	
What is the total number of parking spaces provided at the development site? Will these be in a parking lot or garage?	108 garage spaces, 22 surface parking spaces
What is the total number of accessible spaces provided at the development site? How many of these are “Van Accessible” spaces with an 8 foot access aisle?	5 spaces, including 1 van space
Will any on-street accessible parking spaces be required? ***If yes,*** has the proponent contacted the Commission for Persons with Disabilities	No

regarding this need?	
Where is the accessible visitor parking located?	There will be no visitor parking
Has a drop-off area been identified? ***If yes,*** will it be accessible?	Yes, it will be accessible. Refer to Attachment 1 which includes the accessible routes at the drop-off area.
7. Circulation and Accessible Routes: *The primary objective in designing smooth and continuous paths of travel is to create universal access to entryways and common spaces, which accommodates persons of all abilities and allows for visitability-with neighbors.*	
Describe accessibility at each entryway: Example: Flush Condition, Stairs, Ramp, Lift or Elevator:	The main entrance will have a vehicular turn around/circle with a flush condition between the driveway pavement and the pedestrian area. This flush condition will be located adjacent to the main entrance door, with 6-inch reveal granite curb protecting the sidewalks in the remainder of the circle.
Are the accessible entrances and standard entrance integrated? ***If yes,*** *describe.* ***If no,*** what is the reason?	Yes, the entrances will be accessible and standard.
If project is subject to Large Project Review/Institutional Master Plan, describe the accessible routes way-finding / signage package.	All signage will be compliant with 521 CMR
8. Accessible Units (Group 2) and Guestrooms: (If applicable) *In order to facilitate access to housing and hospitality, this section addresses the number of accessible units that are proposed for the development site that remove barriers to housing and hotel rooms.*	
What is the total number of proposed housing units or hotel rooms for the development?	115 residential units
If a residential development, how many units are for sale? How many are for rent? What is the breakdown of market value units vs. IDP (Inclusionary Development Policy) units?	All of the units are for rent. 15 of the units will be affordable; 70% Area Median Income on-site.

If a residential development, how many accessible Group 2 units are being proposed?	Six
If a residential development, how many accessible Group 2 units will also be IDP units? *If none*, describe reason.	One
If a hospitality development, how many accessible units will feature a wheel-in shower? Will accessible equipment be provided as well? *If yes,* provide amount and location of equipment.	N/A
Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility impairments? Example: stairs / thresholds at entry, step to balcony, others. *If yes*, provide reason.	All Type 1 units will have accessible thresholds. All of the balconies in the Type 1 units will be accessible.
Are there interior elevators, ramps or lifts located in the development for access around architectural barriers and/or to separate floors? *If yes*, describe:	Yes, there are two elevators.
9. Community Impact: *Accessibility and inclusion extend past required compliance with building codes. Providing an overall scheme that allows full and equal participation of persons with disabilities makes the development an asset to the surrounding community.*	
Is this project providing any funding or improvements to the surrounding neighborhood? Examples: adding extra street trees, building or refurbishing a local park, or supporting other community-based initiatives?	No
What inclusion elements does this development provide for persons with disabilities in common social and open spaces? Example: Indoor seating and TVs	Yes, inclusion elements will be provided in the common spaces, which includes indoor seating in the common room, a kitchenette, fitness room and mail room.

in common rooms; outdoor seating and barbeque grills in yard. Will all of these spaces and features provide accessibility?	
Are any restrooms planned in common public spaces? ***If yes,*** will any be single-stall, ADA compliant and designated as "Family"/ "Companion" restrooms? ***If no***, explain why not.	Yes, there will be restrooms on the first floor.
Has the proponent reviewed the proposed plan with the City of Boston Disability Commissioner or with their Architectural Access staff? ***If yes,*** did they approve? ***If no,*** what were their comments?	Yes, the Proponent attended a briefing and orientation session with the Architectural Access staff on April 25, 2017.
Has the proponent presented the proposed plan to the Disability Advisory Board at one of their monthly meetings? Did the Advisory Board vote to support this project? ***If no,*** what recommendations did the Advisory Board give to make this project more accessible?	N/A – Pending PNF Submission

10. Attachments

Include a list of all documents you are submitting with this Checklist. This may include drawings, diagrams, photos, or any other material that describes the accessible and inclusive elements of this project.

Provide a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations, including route distances. **See Attachment 1**
Provide a diagram of the accessible route connections through the site, including distances. **See Attachment 1**
Provide a diagram the accessible route to any roof decks or outdoor courtyard space? (if applicable) **See Attachment 1**
Provide a plan and diagram of the accessible Group 2 units, including locations and route from accessible entry. **See Attachment 2**
Provide any additional drawings, diagrams, photos, or any other material that describes the inclusive and accessible elements of this project. •

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This completes the Article 80 Accessibility Checklist required for your project. Prior to and during the review process, Commission staff are able to provide technical assistance and design review, in order to help achieve ideal accessibility and to ensure that all buildings, sidewalks, parks, and open spaces are usable and welcoming to Boston's diverse residents and visitors, including those with physical, sensory, and other disabilities.

For questions or comments about this checklist, or for more information on best practices for improving accessibility and inclusion, visit www.boston.gov/disability, or our office:

The Mayor's Commission for Persons with Disabilities
1 City Hall Square, Room 967,
Boston MA 02201.

Architectural Access staff can be reached at:

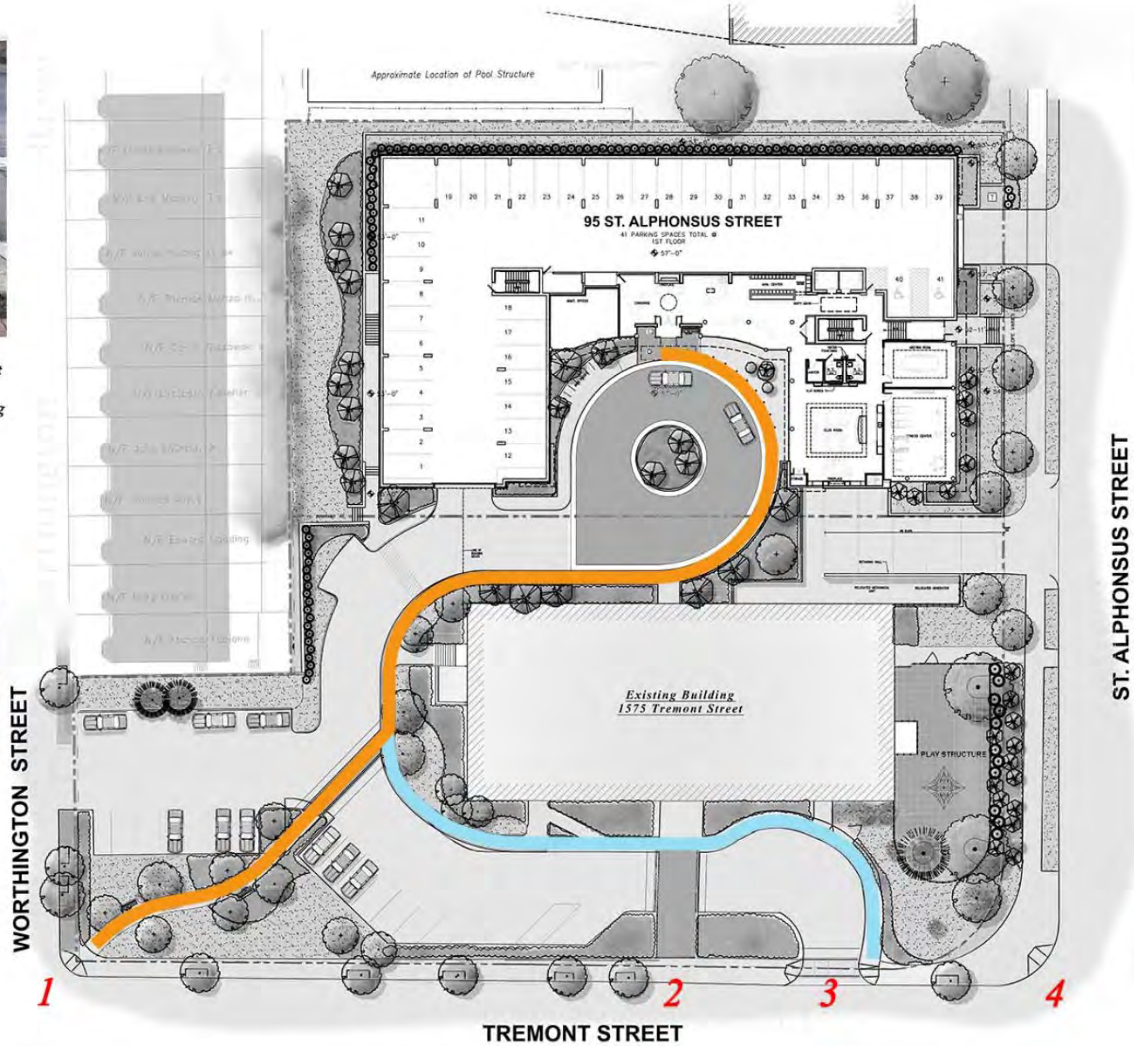
accessibility@boston.gov | patricia.mendez@boston.gov | sarah.leung@boston.gov | 617-635-3682

1. The existing pedestrian ramp at the corner of Tremont Street and Worthington Street does not meet ADA/MAAB code and will be replaced with a compliant ramp including truncated domes insert.

2. The existing City of Boston concrete sidewalk to remain along Tremont Street is in good condition, with ADA compliant slopes and clearances at the tree pits.

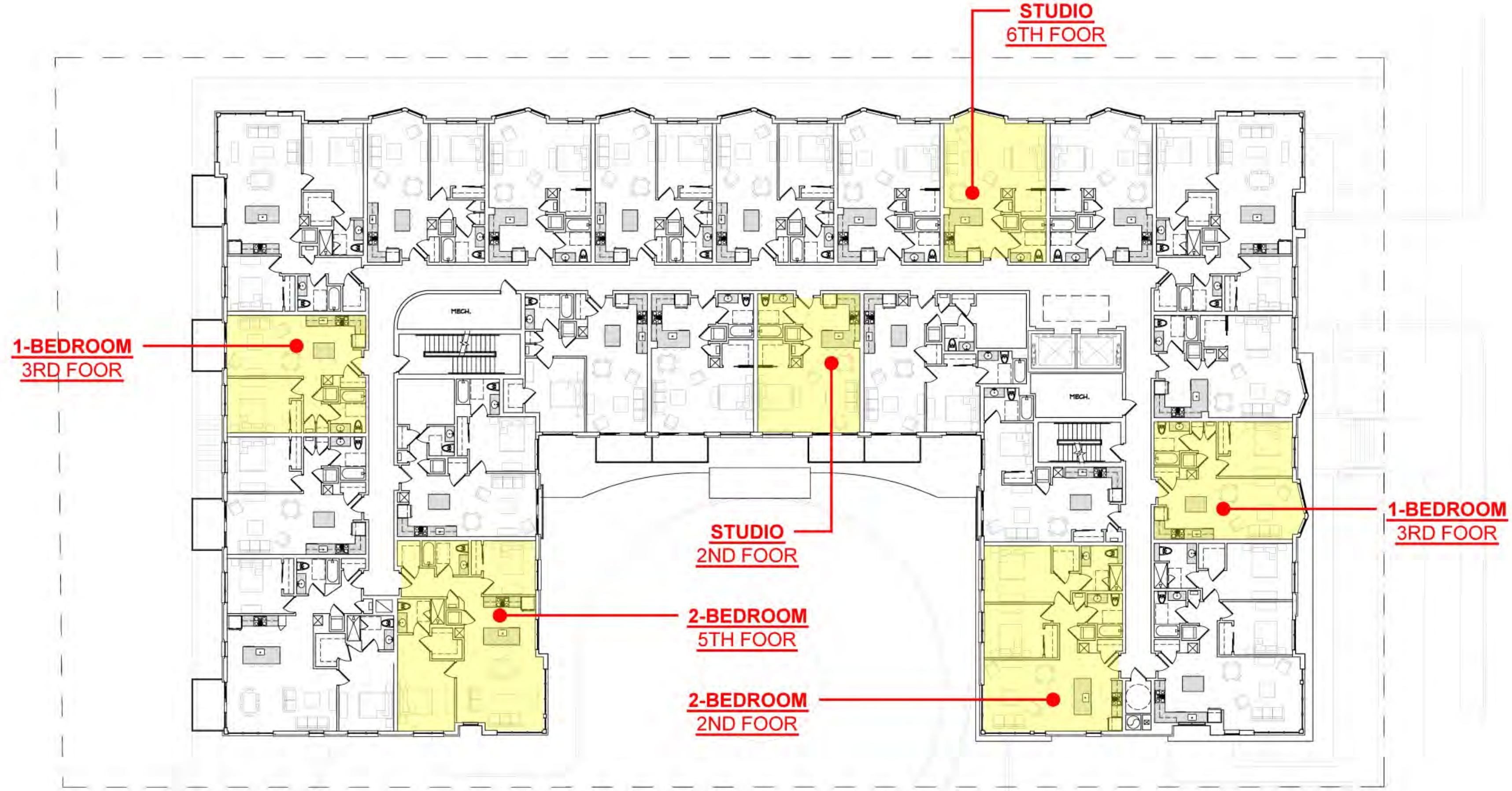
Existing Pedestrian Site Access

Proposed Pedestrian Access to 95 St. Alphonsus Street Entrance



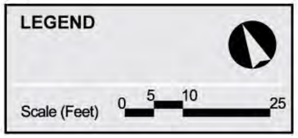
3. Pedestrian ramps at the existing site entrance are not ADA/MAAB compliant. This location will be improved with an at-grade concrete sidewalk crossing with truncated domes to indicate the driveway condition.

4. Corner of Tremont St. and St. Alphonus St.- ADA/MAAB compliant pedestrian ramp with truncated dome insert.



ACCESSIBLE UNITS

(2)	STUDIOS
(2)	1-BEDROOM
(2)	2-BEDROOM
(6)	**TOTAL**



95 St. Alphonsus Street   Boston, Massachusetts

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Attachment 2

Accessible Units Diagram