PUBLIC NOTICE

The Boston Redevelopment Authority ("BRA"), pursuant to Article 80 of the Boston Zoning Code ("Code"), hereby gives notice that a Project Notification Form for Large Project Review ("PNF") was filed by CCF-BVSHSSF Washington 1 LLC, an affiliate of Cabot, Cabot & Forbes (the "Proponent") on July 18, 2016 for the 159-201 Washington Street project (the "Proposed Project"), to be constructed on the approximately 11.6-acre site in the Brighton neighborhood of Boston (the "Site").

The Site currently consists of St. Gabriel's Church, Monastery, and an attached dormitory, all of which have been abandoned for years and are in disrepair. The Site also includes a private residence, known as the Pierce House, a wooded buffer along Washington Street, and a cemetery, all of which will be preserved. The Shrine to Our Lady of Fatima will be relocated, with a new building that can better perform all of its current functions. The Proposed Project includes the construction of approximately 679 units of housing in three new buildings, and within the renovated St. Gabriel's Monastery and the Pierce House. The Proposed Project will also include approximately 395 parking spaces.

The Proponent is seeking the issuance of a Scoping Determination by the BRA pursuant to Section 80B-5.3 of the Code. The BRA in the Scoping Determination for such PNF may waive further review pursuant to Section 80B-5.3(d) of the Code, if, after reviewing public comments, the BRA finds that such PNF adequately describes the Proposed Project's impacts.

The PNF may be reviewed in the office of the Secretary of the BRA, Room 910, Boston City Hall, 9th Floor, Boston MA 02201 between 9:00 AM and 5:00 PM, Monday through Friday, except legal holidays. Public comments on the PNF, including the comments of public agencies, should be submitted in writing to Michael Rooney, BRA Project Assistant, at the address stated above or by email at Michael.Rooney@boston.gov on or before Friday, August 19, 2016.

BOSTON REDEVELOPMENT AUTHORITY
Teresa Polhemus
Executive Director/Secretary

EXPANDED PROJECT NOTIFICATION FORM

159-201 Washington Street

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

Submitted by:
CCF-BVSHSSF Washington 1 LLC
c/o Cabot, Cabot & Forbes
185 Dartmouth Street, Suite 402
Boston, MA 02143

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

In Association with:
Peak Campus
CUBE 3 Studio LLC
Bargmann Hendrie + Archetype
Howard Stein Hudson
Shadley Associates
K&L Gates
Dain, Torpy, Le Ray, Wiest & Garner PC
Haley & Aldrich
John Moriarty & Associates

July 18, 2016

Epsilon
ASSOCIATES INC.

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July 18, 2016

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Chapter 1.0

Project Description

1.0 INTRODUCTION/ PROJECT DESCRIPTION

1.1 Introduction

CCF-BVSHSSF Washington 1 LLC, an affiliate of Cabot, Cabot & Forbes (the Proponent), proposes to develop an approximately 11.6-acre site (the Project site) in the Brighton neighborhood of Boston (the Project). The Project site abuts Washington Street to the south, St. Elizabeth's Hospital and associated parking garage to the west, Brighton High School to the north, and St. John's Seminary and multi-family residential buildings to the east. The site currently consists of St. Gabriel's Church, Monastery, and an attached dormitory, all of which have been abandoned for years and are in disrepair. The site also includes a wooded buffer along Washington Street, a cemetery, a Shrine, a private residence, and a large surface parking lot. The Project includes the construction of approximately 679 units of housing. The proposed Project serves as a unique opportunity to deliver much needed housing in the City. The development will be designed, built and marketed to serve a number of growing demographics, including but not limited to graduate students, young professionals, and other university affiliates such as residents, faculty and staff. The center of the development will focus on the renovation and adaptive reuse of the existing St. Gabriel's Monastery.

The Project will provide a new development in Boston to house this demographic, at a scale that will free up local housing for permanent neighborhood residents. In addition to reducing housing pressures in the neighborhood, the Project will restore historic buildings on the site, and respectfully transform an underutilized parcel into an active and engaging development. The Project will preserve and enhance the existing landscaped spaces along the length of Washington Street and within the entire south and east sides of the Monastery, with the handsome stone wall at the edge and the many existing mature trees remaining amidst the open rolling lawn in the center. In addition to maintaining this existing landscaping, which has been neglected for decades, the Project will create a new, raised, publically accessible courtyard space that will provide vistas of Boston and Cambridge. In total, the Project will include approximately 7.3 acres of open space, representing 62% of the site. In addition to the housing and public realm benefits, the Project will create new construction and permanent jobs, and improved tax revenues for the City.

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

1.2 Project Identification

Address/Location:	159 Washington Street Brighton, MA

Developer:	CCF-BVSHSSF Washington 1 LLC c/o Cabot, Cabot & Forbes 185 Dartmouth Street, Suite 402 Boston, MA 02143 (617) 603-4000 Jay Doherty John Sullivan Wajeha Qureshi
Developer/Property Manager:	Peak Campus 2970 Clairmont Road NE, Suite 310 Atlanta, GA 30329 (404) 920-5300 Jeff Githens Andrew Vendal
Architect:	CUBE 3 Studio LLC 360 Merrimack Street, Building 5, Floor 3 Lawrence, MA 01843 (978) 989-9900 Brian O'Connor John Harding Eric Samuelson Michele Quinn
Historic Architect:	Bargmann Hendrie + Archetype 300 A Street Boston, MA 02210 (617) 350-0450 Joel Bargmann Deborah Robinson
Landscape Architect:	Shadley Associates 1730 Massachusetts Avenue Lexington, MA 02420 (781) 652-8809 James P. Shadley Jeffrey Thoma

Legal Counsel:	K&L Gates State Street Financial Center One Lincoln Street Boston, MA 02111 (617) 261-3100 Gregg Cosimi Katie Thomason
	Dain, Torpy, Le Ray, Wiest & Garner PC 745 Atlantic Avenue, 5th Floor Boston, MA 02111 (617) 542-4800 Don Wiest
Permitting Consultant:	Epsilon Associates, Inc. 3 Clock Tower Place, Suite 250 Maynard, MA 01754 (978) 897-7100 Peggy Briggs Doug Kelleher Talya Moked
Transportation and Parking Consultant:	Howard Stein Hudson 11 Beacon Street, Suite 1010 Boston, MA 02108 (617) 482-7080 Guy Busa Joe SanClemente Brian Beisel
Civil Engineer:	Bohler Engineering 75 Federal Street, Suite 620 Boston, MA 02110 (617) 849-8040 Steve Martorano
LEED Consultant:	Landworks LLC 60 Adams Street, 3rd Floor Milton, MA 02186 (617) 308-4889 Rob Gatnik Mark Price

Geotechnical Consultant:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Boston, MA 02129 (617) 886-7400 Steve Kraemer Mike Weaver
Construction Manager:	John Moriarty & Associates 3 Church Street, Suite 2 Winchester, MA 01890 (781) 729-3900 John Moriarty

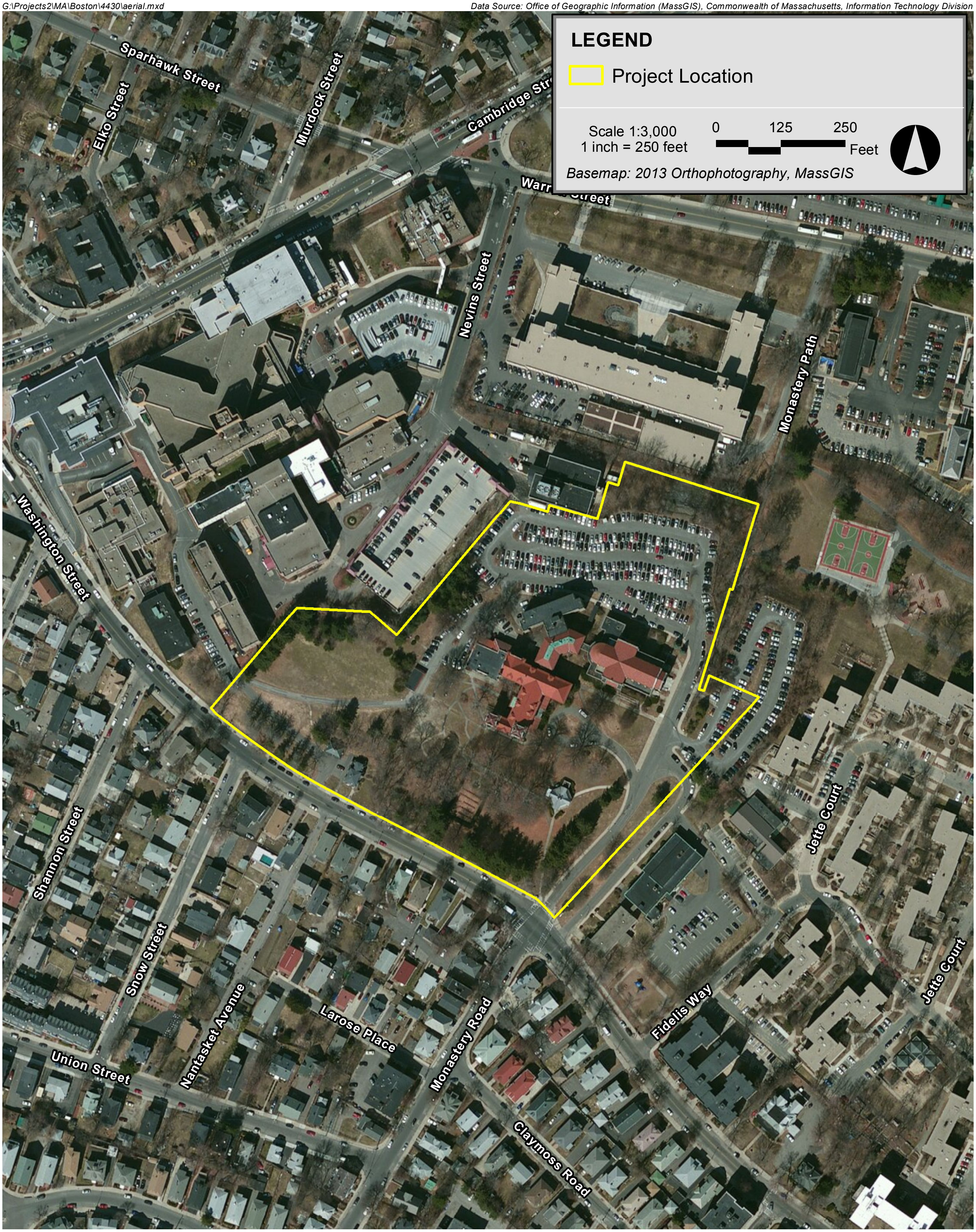
1.3 Project Description

1.3.1 Project Site

The Project site is an approximately 11.6-acre lot located in the Brighton neighborhood of Boston. Directly adjacent to the St. Elizabeth's Medical Center on Washington Street, this hilltop site currently includes St. Gabriel's Church, a Monastery, and an attached dormitory, all of which have been abandoned and are in significant disrepair. The site also includes a wooded buffer along Washington Street, a cemetery, shrine, a private residence historically known as the Pierce House, and a large surface parking lot. See Figure 1-1 for an aerial locus map and Figures 1-2 through 1-6 for existing conditions of the Project site and buildings.

1.3.2 Area Context

The immediate neighborhood surrounding the site contains a mixture of institutional, retail and residential uses (see Figure 1-7). St. Elizabeth's Medical Center is adjacent to the western edges of the site, and Brighton High School is located to the north of the site. Beyond the Medical Center along Washington Street and Market Street is the Brighton Center neighborhood, which contains a variety of small retail shops and restaurants on the ground floor with offices above. To the south and east of the site there is a mixture of single family homes, duplexes, and three to five-story multi-family residential buildings.



159-201 Washington Street Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 1-1
Aerial Locus Map

159-201 Washington Street   Boston, Massachusetts

CUBE3 STUDIO

Figure 1-2

Existing Conditions – View Facing Northeast from the Existing Driveway

159-201 Washington Street   Boston, Massachusetts

CUBE3 STUDIO

Figure 1-3

Existing Conditions – View of the Church and Monastery

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Figure 1-4

Existing Conditions – Inside the St. Gabriel's Church

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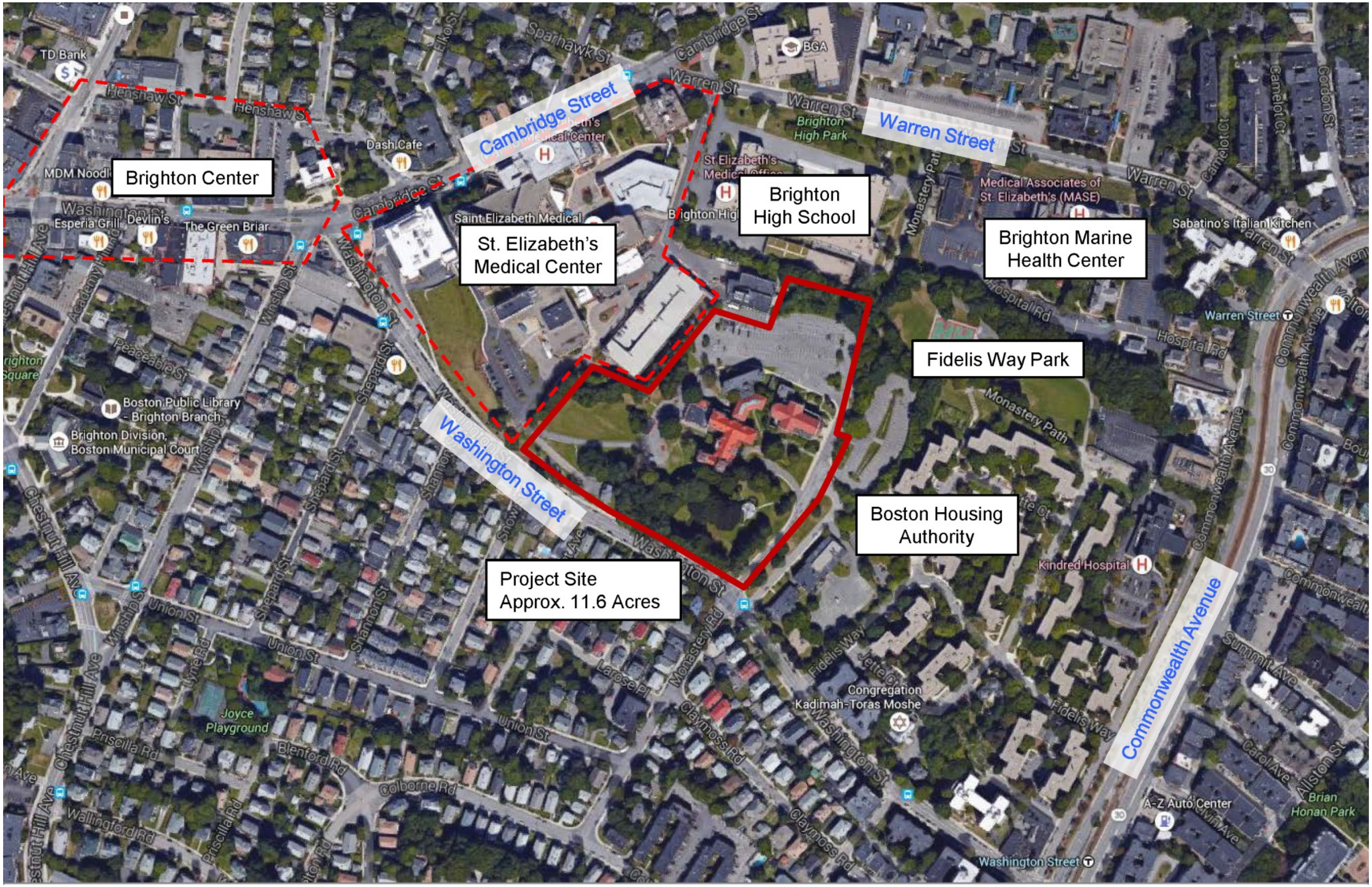
Figure 1-5

Existing Conditions – Inside the Dormitory

Figure 1-6

Existing Conditions – Inside the Monastery



159-201 Washington Street Boston, Massachusetts

CUBE3 STUDIO

Figure 1-7

Area Context

The site is an ideal location for housing geared to graduate students, young professionals and others engaged in research or training, due to its proximity to both Boston College and Boston University, along with other nearby institutions including Harvard, St. Elizabeth's Hospital, the Longwood Medical and Academic area (LMA), etc. From this location, residents are within a half-mile walk of the MBTA Washington Street subway stop and have access to multiple MBTA bus connections near the site. Important lines include the 65 bus on Washington Street which connects the site to Brighton Center and Kenmore Square, and the 501 bus at the corner of Washington Street and Cambridge Street that provides access to downtown Boston. In addition to these public transit options, the Project will explore including shuttle bus connections to nearby universities and research areas and will be a member of the recently formed Allston-Brighton Transport Management Association, which helps facilitate a number of alternative modes of transportation, including van pool subsidies, guaranteed ride home and transportation coordination with other members in the community. The Project site is also located along major bike routes, which has become an increasingly popular mode of transportation among students and young professionals in recent years.

1.3.3 Proposed Project

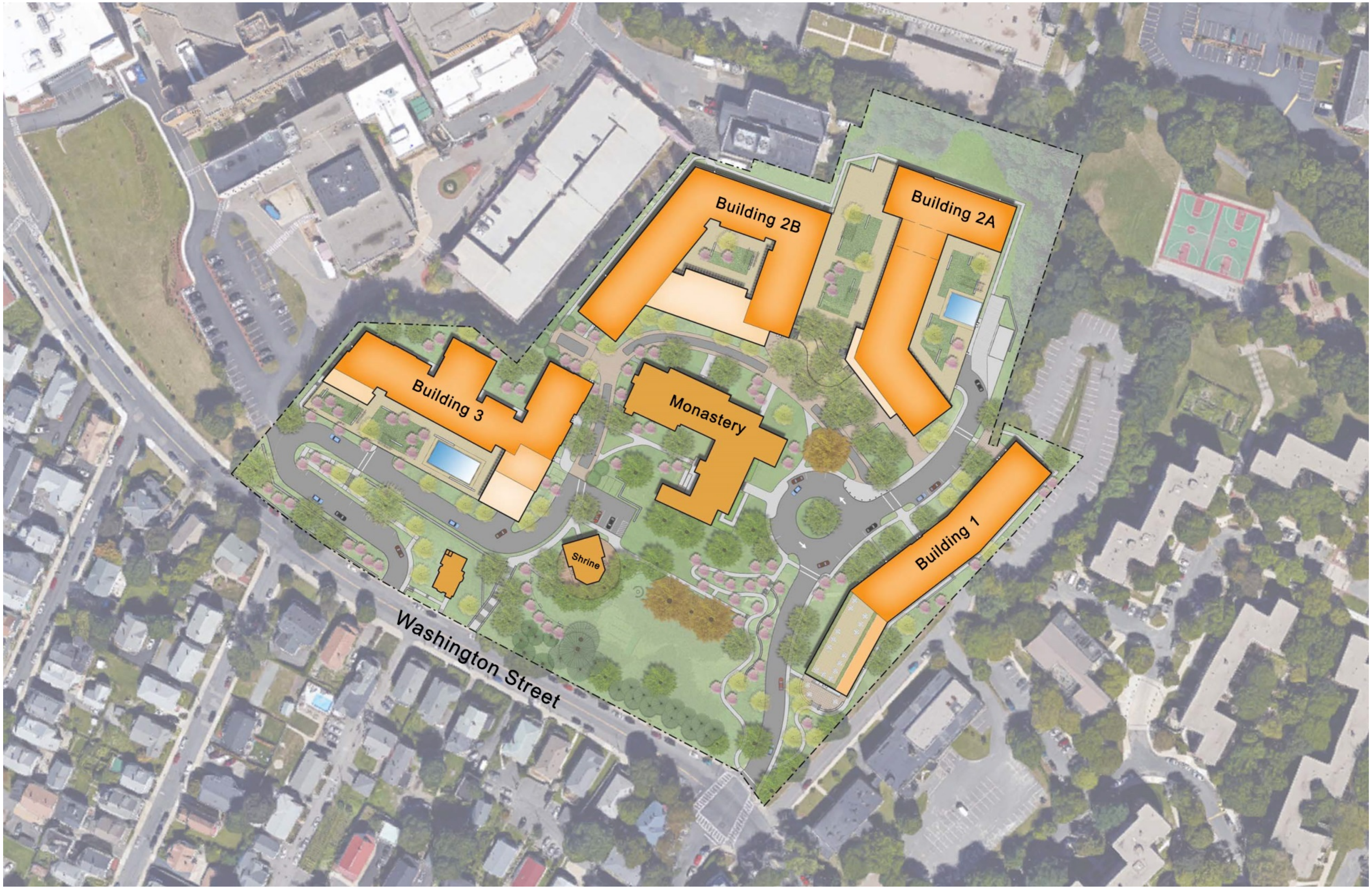
The Project site will be extensively-landscaped, consisting of a mix of new and renovated structures. The Project will restore the St. Gabriel's Monastery, a Boston Landmark Building, which is currently in disrepair. Other important existing features on the site will be retained and restored, including the Pierce House, and the verdant landscaping along Washington Street which will buffer the Project from nearby residential areas. The Fatima Shrine will be relocated, with a new building that can better perform all of its current functions, as coordinated with the Crusaders of Fatima, a non-profit organization, that currently uses the Shrine. Public pedestrian connections to Monastery Path and areas throughout the site will be enhanced with new sidewalks, benches, and street lights. A new approximately 16,700 sf raised courtyard space will provide the public with views of Boston and Cambridge.

The Project includes the construction of approximately 679 units of housing in three new buildings, and within the renovated St. Gabriel's Monastery. The St. Gabriel's Church and attached dormitory structures will be demolished. The Project, as shown in Table 1-1, will provide a variety of unit types including studios, 1-bedroom, 2-bedroom, and 3-bedroom units. Unit sizes range from approximately 450 – 600 sf for a studio, 500 – 1,000 sf for a 1-bedroom, 800 – 1,300 sf for a 2-bedroom, and 1,200 – 1,600 sf for a 3-bedroom unit. The Project will include a variety of supporting amenity spaces, which may include a fitness center, indoor basketball court, common lounges, kitchens, games room, café, outdoor pool, outdoor grills, and a generous amount of hard and soft landscaped areas.

Table 1-1 Project Program

Project Element	Approximate Dimension
Residential Units	
Building 1	127 units
Building 2A	165 units
Building 2B	220 units
Building 3	152 units
Monastery	14 units
Pierce House	1 unit
Total Units	**679 units**
Parking	395 spaces
Total Gross Square Footage (GSF)	**663,000 sf**
Height	1 to 7 stories
Parcel Area	11.6 acres
Floor Area Ratio	1.31

The new construction will be set back from Washington Street, and concentrated at the back and sides of the site, on land that is today primarily used for surface parking. Building 1 will be located on the eastern edge of the Project site, with a portion of the building containing three to four stories and a portion of the building containing five stories. Building 2 will be located on the northern portion of the Project site and will have two distinct building forms, labeled buildings 2A and 2B, each containing six stories of residential units above one story of podium parking. Building 3, on the southwestern portion of the Project site, will consist of one to five stories of residential units over two split levels of parking. In total the Project will include approximately 395 parking spaces. See Figure 1-8 for a site plan, and Figures 1-9 through 1-14 for floor plans and elevations.



159-201 Washington Street   Boston, Massachusetts

Figure 1-8

Site Plan

159-201 Washington Street Boston, Massachusetts

Figure 1-9

Ground Floor Plan

159-201 Washington Street   Boston, Massachusetts

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Figure 1-10

Typical Floor Plan

159-201 Washington Street Boston, Massachusetts

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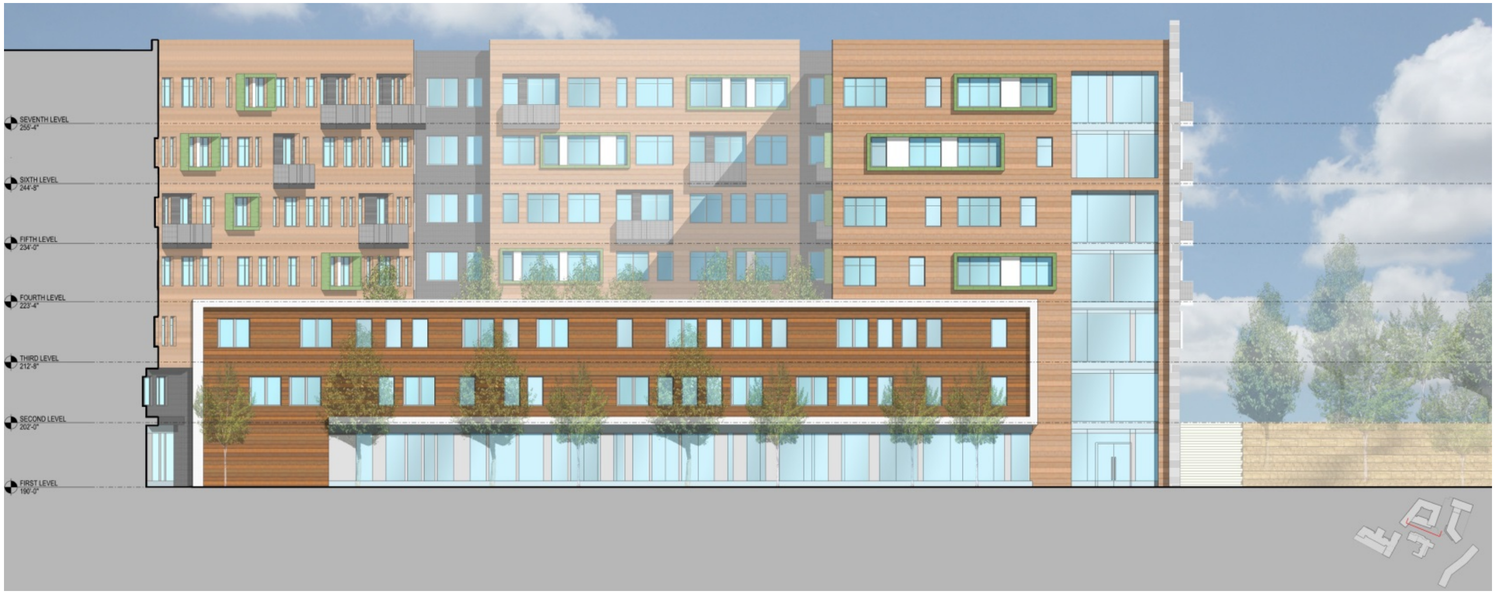
Figure 1-11

Elevations – Buildings 1 and 2A



159-201 Washington Street   Boston, Massachusetts

CUBE3 STUDIO

Figure 1-12

Elevations – Buildings 2B and 3

159-201 Washington Street   Boston, Massachusetts

bh+a

Figure 1-13

Monastery East Elevation – Existing and Proposed

159-201 Washington Street   Boston, Massachusetts

bh+a

Figure 1-14

Monastery North Elevation – Existing and Proposed

1.4 Public Benefits

The development of the proposed Project will generate a myriad of public benefits for the surrounding neighborhood and the City of Boston as a whole, both during construction and on an ongoing basis upon its completion. These public benefits fall into multiple categories, outlined below.

Urban Design Benefits

- Include approximately 7.3 acres of open space, representing 62% of the site.
- Remediation and complete restoration of the St. Gabriel's Monastery, a Boston Landmark Building, which is currently vacant and in disrepair.
- The Proponent will explore including a dedicated area in the restored Monastery for community based art exhibits.
- Restore and make publically accessible, the landscaped buffer along Washington Street of approximately three acres.
- Implement a tree repair program to restore many of the historic trees on site.
- Enhance pedestrian connections to Monastery Path.
- Transform what is currently a surface parking lot into an active and engaging development.
- Create a new, publically accessible, approximately 16,700 sf raised courtyard space at the northern portion of the site to provide the public with views of Boston and Cambridge.
- Enhance the existing wooded buffer along Washington Street, with the buildings set back from the street by at least 130 feet. The heights of the new structures will vary, starting with three stories closest to Washington, ranging up to seven stories at the back of the site.
- Comply with Article 37 of the Boston Zoning Code by being Leadership in Energy and Environmental Design (LEED) certifiable anticipated at the Silver level.

Economic and Community Benefits

- Create approximately 679 new residential units, which will reduce housing impacts on Boston Neighborhoods.
- Create new affordable housing units consistent with the Mayor's Executive Order Relative to Affordable Housing.

- Create approximately 300 construction jobs and 20 permanent and part-time jobs
- Create new property tax revenues to the City of Boston through significantly increased property values.

1.5 City of Boston Zoning

Map 7A/7B/7C/7D of the Boston Zoning Maps indicates that the Project site is located within two zoning subdistricts established by the Allston Brighton Neighborhood District, Article 51 of the Boston Zoning Code (the "Code"): (1) a Conservation Preservation Subdistrict ("CPS"), and (2) the St. Elizabeth's Hospital Medical Center Institutional Subdistrict ("IS'). In addition, the site is currently located within the St. Elizabeth's Medical Center Institutional Master Plan overlay area. The Proponent understands that, through a forthcoming map amendment, this overlay district designation will be deleted from Map 7A/7B/7C/7D as it relates to the Project site. The Project site is not located within any other overlay district.

It is anticipated that the Project will require zoning relief. It will likely require use relief for one or more of aspects of its proposed mixed-use program. The Project is also expected to require dimensional relief, principally for the building height of certain Project structures, and from certain setbacks.

1.6 Legal Information

1.6.1 Legal Judgments Adverse to the Proposed Project

The Project Proponent is aware of no legal judgments relating to the project.

1.6.2 History of Tax Arrears on Property

The Project Proponent owns no real estate in Boston on which real estate tax payments are in arrears.

1.6.3 Site Control/ Public Easements

The site is subject to the following:

1. The original monastery building has been designated a landmark by the Boston Landmarks Commission, as evidenced by a Vote of Designation by the Boston Landmarks Commission as to St. Gabriel's Monastery, dated January 10, 1989, recorded at Book 19834, Page 22; re-recorded at Book 19906, Page 218.

2. The red tile roof of the Monastery is required to be preserved pursuant to the Preservation Restriction Agreement between the Commonwealth of Massachusetts by and through the Massachusetts Historical Commission, and the St. Elizabeth's Hospital Foundation, Inc., for St. Gabriel's Monastery Building, dated October 3, 2002, recorded at Book 31813, Page 52.

3. There is an easement in favor of the Metropolitan District Commission recorded in Book 6952, Page 303 and shown on Plan recorded in Book 16789, End, with allows for "the perpetual sub-surface right and easement to construct, inspect, repair, renew, replace, operate and forever maintain a tunnel for the conveyance of water." This easement affects 40,278 square feet of the site.

The site is not subject to any additional easements for public use.

See Appendix A for the site survey.

1.7 Anticipated Permits

Table 1-2 presents a preliminary list of permits and approvals from governmental agencies that are expected to be required for the Project, based on currently available information. It is possible that only some of these permits or actions will be required, or that additional permits or actions will be required.

Table 1-2 Anticipated Permits and Approvals

Agency	Approval
Local	
Boston Civic Design Commission	Design Review
Boston Committee on Licenses	Parking Garage Permit and Fuel Storage License
Boston Employment Commission	Construction Employment Plan
Boston Fire Department	Approval of Fire Safety Equipment; Fuel Oil Storage Permit (if required)
Boston Fire Department – Place of Assembly Permit(s)	Amenity space egress drawing review; Place of Assembly compliance walk-through
Boston Inspectional Services Department	Building Permit; Other construction-related permits; Certificates of Occupancy
Boston Landmarks Commission	Article 85 Demolition Delay Review Design Review
Boston Parks and Recreation	Approval of Construction Within 100 feet of a Park
Boston Public Works Department	Curb Cut Permit(s); Sidewalk Occupancy Permit (as required)
Boston Redevelopment Authority	Article 80B Large Project Review; Cooperation Agreement; Affordable Housing Agreement;
Boston Transportation Department	Transportation Access Plan Agreement; Construction Management Agreement

Table 1-2 Anticipated Permits and Approvals (Continued)

Agency	Approval
Boston Water and Sewer Commission	Site Plan Review; Water and Sewer connection permits;
Office of Jobs and Community Services	Permanent Employment Agreement (as required)
Public Improvement Commission	Widening and Relocation of an Existing Private Way; Specific Repair Plan
State	
Department of Environmental Protection	Notification of Demolition and Construction
Massachusetts Historical Commission	Preservation Restriction Agreement Review
Massachusetts Water Resources Authority	8(m) Permit (if required)
Federal	
Environmental Protection Agency	NPDES General Construction Permit

1.8 Public Participation

As part of its planning efforts, the Proponent met with nearby residents and representatives of numerous neighborhood groups, elected officials, and public agencies. Elected officials include Representatives Honan and Moran, and City Councilor Ciommo. Neighborhood groups include the Allston Brighton Community Development Corporation, Brighton Allston Historic Society, Boston Preservation Alliance, Brighton Main Streets and the Brighton Allston Improvement Association. The Proponent has also met with the BRA, the Mayor's Office of Neighborhood Services, and other City agencies on multiple occasions. The formal community outreach begins with the filing of this Expanded PNF.

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 BRA and city agencies, local officials, neighbors, and others as the design and review processes move forward.

1.9 Schedule

It is anticipated that construction will begin in mid-2017 and will last approximately 24 months.

Chapter 2.0

Transportation

2.0 TRANSPORTATION

The Proponent engaged Howard Stein Hudson (HSH) to conduct an evaluation of the transportation impacts of the Project in the Brighton neighborhood of Boston, Massachusetts. This transportation study adheres to the Boston Transportation Department (BTD) *Transportation Access Plan Guidelines* and Boston Redevelopment Authority Article 80 Large Project Review process. This study includes an evaluation of the existing condition, future conditions with and without the Project, projected parking demand, loading operations, transit services, pedestrian and bicycle activity, and construction-period impacts.

2.1 Project Description

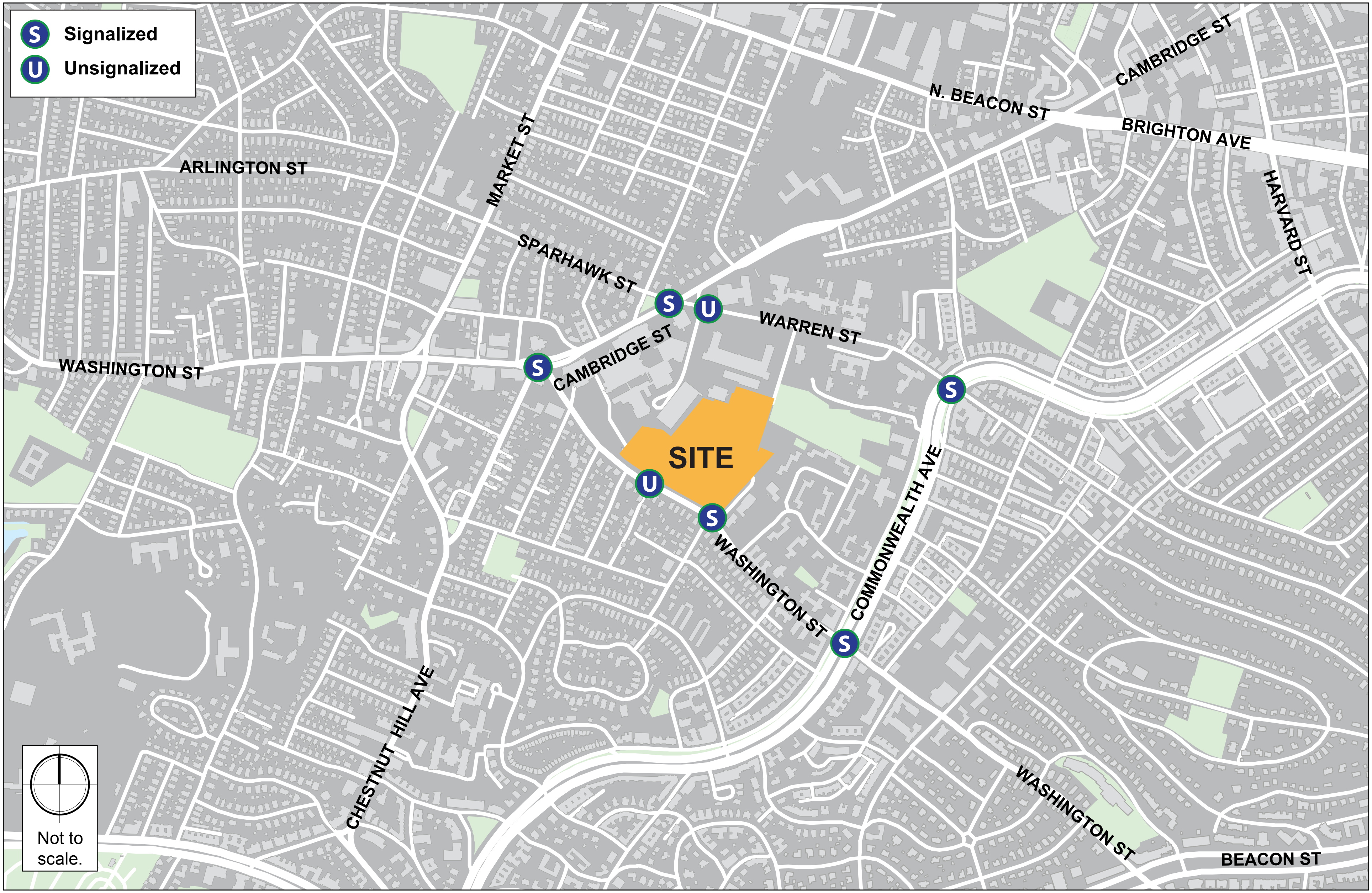
The Project site is an approximately 11.6-acre property located on the northeast side of Washington Street, southeast of St. Elizabeth's Medical Center (St. Elizabeth's), with primary access via a driveway at the intersection of Washington Street/Monastery Road. The existing buildings on the site are currently vacant. The Project site also contains 314 existing surface parking spaces that are currently being used by St. Elizabeth's.

The Project includes removal of the existing surface parking spaces and demolition of the existing buildings on site, except for the St. Gabriel's Monastery and the Pierce House, which will be renovated. Approximately 679 residential units will be constructed. The Project will include approximately 395 parking spaces.

2.1.1 Study Area

The transportation study area is bounded by Washington Street to the southwest, Cambridge Street to the northwest, Warren Street to the northeast, and Commonwealth Avenue to the southeast. The study area consists of the following seven intersections in the vicinity of the Project site, also shown on Figure 2-1:

- Cambridge Street/Washington Street/Winship Street (signalized);
- Washington Street/Monastery Road/Site Driveway (signalized);
- Commonwealth Avenue/Washington Street (signalized);
- Commonwealth Avenue/Warren Street/Kelton Street (signalized);
- Cambridge Street/Warren Street/Sparhawk Street (signalized);
- Warren Street/Nevins Street/Channelized Right Turn (unsignalized); and
- Washington Street/Nantasket Avenue (unsignalized).



159-201 Washington Street　**Boston, Massachusetts**

HOWARD STEIN HUDSON
Engineers + Planners

Figure 2-1
Study Area Intersections

2.1.2 Study Methodology

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

The Existing (2016) Condition analysis includes an inventory of the existing transportation conditions such as traffic characteristics, parking, curb usage, transit, pedestrian circulation, bicycle facilities, loading, and site conditions. Existing counts for vehicles, bicycles, and pedestrians were collected at the study area intersections. A traffic data collection effort forms the basis for the transportation analysis conducted as part of this evaluation.

The future transportation conditions analyses evaluate potential transportation impacts associated with the Project. The long-term transportation impacts are evaluated for the year 2023, based on a seven-year horizon from the year of the filing of this traffic study.

The No-Build (2023) Condition analysis includes general background traffic growth, traffic growth associated with specific developments (not including this Project), and transportation improvements that are planned in the vicinity of the Project site.

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

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

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

2.2 Existing Condition

This section includes a description of existing study area roadway geometry, intersection geometry, intersection traffic control, curb usage (parking), public transportation services, peak-hour traffic volumes for vehicles, bicycles, and pedestrians, and intersection traffic operations.

2.2.1 Existing Roadway Conditions

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

Washington Street is a two-way two-lane roadway located adjacent to the southwest side of the Project site. It runs in a generally southeast-northwest direction between Route 9 in Brookline to the southeast and Cambridge Street to the northwest where it turns to the west and becomes the continuation of the Cambridge Street alignment and continues west and northwest through Brighton Center to Newton Corner. The segment of Washington Street adjacent to the Project site and continuing southeast is classified as an urban minor arterial roadway under BTD jurisdiction. Where it continues west and northwest on the Cambridge Street alignment, it is classified as an urban principal arterial, and it includes a dedicated bicycle lane in both directions. Sidewalks and parallel parking are provided along Washington Street within the study area.

Commonwealth Avenue is a two-way four-lane roadway located southeast of the Project site. It is classified as an urban principal arterial roadway under BTD jurisdiction and runs in a predominately east-west direction between I-95 (Route 128) in Weston to the west and Arlington Street in Boston's Back Bay neighborhood to the east. In the vicinity of the site, the roadway has a northeast-southwest orientation. The B Branch of the MBTA Green line travels within a wide median that separates the directions of travel along Commonwealth Avenue in the Project vicinity. Carriage roads are provided along both sides of Commonwealth Avenue, providing access to local destinations, parking, and minor streets. The carriage roads are separated from the main roadway by raised medians ranging in width from a few feet to a couple tens of feet, with occasional breaks for access. The carriage road along Commonwealth Avenue eastbound will be herein referred to as the "south carriage road" and the carriage road along Commonwealth Avenue westbound will be herein referred to as the "north carriage road." The north carriage road is bi-directional from the intersection with Warren Street and Kelton Street to the intersection with Washington Street; otherwise the carriage roads are one-way in the same direction as the adjacent lanes of the main line. Sidewalks are provided along the carriage roads, as is intermittent parking.

Cambridge Street is a two-way, two lane roadway located to the northwest of the Project site that runs in a predominately east-west direction, from Memorial Drive on the Cambridge side of the Charles River to the east, to Washington Street just northwest of the Project site. The Cambridge Street alignment continues in both directions as River Street to the east in Cambridge and the continuation of Washington Street to the west. Cambridge Street is classified as an urban principal arterial roadway under BTD jurisdiction. It has a dedicated bicycle lane in both directions in the vicinity of the Project site. On-street parking and sidewalks are provided on both sides of Cambridge Street.

Warren Street is a two-way, two lane roadway located to the northeast of the Project site that runs in a northwest-southeast direction between Cambridge Street to the northwest, where the alignment continues as Sparhawk Street, and Commonwealth Avenue to the southeast, where the alignment continues as Kelton Street. Warren Street and its continuation roadways are classified as urban collectors under BTD jurisdiction. On-street parking and sidewalks are provided on both sides of Warren Street.

2.2.2 Existing Intersection Conditions

Existing conditions at the study area intersections are described below.

Cambridge Street/Washington Street/Winship Street is a signalized intersection with four approaches: the opposing approaches of eastbound Washington Street and westbound Cambridge Street, northbound Washington Street, and northeast-bound Winship Street.

The Washington Street eastbound approach consists of two lanes, one through lane and one shared right-turn/hard right-turn lane. The Cambridge Street westbound approach consists of three lanes, a left-turn only lane, a bear-left turn only lane, and a through lane. The Washington Street northbound approach consists of two lanes, a shared hard left-turn/left-turn lane and one right-turn only lane. The Winship Street northeast-bound approach consists of two lanes, one left-turn lane, and one shared right-turn/hard right-turn lane. Parallel parking is provided for police vehicles along the westbound approach to the intersection.

Opposing directions of travel are separated by a short, raised median island right at the intersection on both legs of Washington Street and on the Cambridge Street leg. Sidewalks are provided on both sides of the roadway along all approaches. Crosswalks, wheelchair ramps, and pedestrian signal equipment are provided across all approaches. Additional pedestrian signal heads and push buttons are provided in the median on the east and west legs.

Washington Street/Monastery Road/Site Driveway is a signalized, four-leg intersection. The northbound and southbound approaches of Washington Street each have a single approach lane serving left-turn, through, and right-turn movements. Both approaches also have an MBTA bus stop located just before the intersection. Monastery Road forms the westbound approach. It is classified as a local road with a single shared left-turn/through/right-turn lane. Parking is permitted on both sides of the roadway. The east approach of the intersection is the existing Site driveway, which is a two-lane, two-way roadway leading to the Monastery. Immediately to the south of the site driveway is a two-way private driveway that serves St. Gabriel's Rectory and Allston & Brighton Head Start. The private driveway's westbound approach is not signalized, but it is located beyond the Washington Street northbound stop bar within the intersection.

Sidewalks are provided along both sides of all legs, with the exception of the Site driveway which provides a sidewalk only on the north side of the driveway. Crosswalks are provided across all legs (not including the private driveway). Tactile warning strips are not provided. Pedestrian signal heads and push buttons are provided on all corners but for only the two crossings of Washington Street.

Commonwealth Avenue/Washington Street is a signalized intersection with six approaches: Commonwealth Avenue eastbound and westbound, the eastbound approach of the south carriage road, the westbound approach of the north carriage road, and Washington Street northbound and southbound. Additionally, the eastbound (inbound) and westbound (outbound) tracks of the MBTA Green Line B Branch trolley travel along the center median of Commonwealth Avenue across Washington Street. Washington Street Station, serving both directions, is located in the Commonwealth Avenue center median to the northeast of the intersection.

Due to the complexity of the intersection, there are many turning restrictions. The Commonwealth Avenue eastbound approach consists of one through lane and one shared through/right-turn lane. Left turns are restricted along this approach. The Commonwealth Avenue westbound approach consists of a left-turn lane and two through lanes. Right-turns are restricted along this approach. Parking is not permitted along the main Commonwealth Avenue approaches. The south carriage road eastbound approach consists of one through lane and one wide shared right-turn/parking lane. Left-turns are restricted along this approach. The north carriage road westbound approach consists of a parking lane and one shared through/right-turn lane. Left-turns are restricted along this approach. The Washington Street northbound and southbound approaches each consist of a single shared left-turn/through/right-turn lane. An MBTA bus stop is located along each of these two approaches at the intersection. Parking is not allowed along the Washington Street approaches due to the location of the MBTA bus stops.

Sidewalks are provided along both sides of Washington Street and along the outer edge of the carriage roads. Crosswalks are marked across all approaches, with pedestrian signal heads and push buttons provided for all crossings except the crossings of the north carriage road. Wheelchair ramps or depressions in the raised medians are provided at every point a crosswalk meets a curb except on the southwest corner of the intersection of Commonwealth Avenue westbound and Washington Street where the median between the north carriage road and the main roadway runs a couple of feet into the striped crosswalk. Tactile warning strips are present at some but not all ramp and depressed median-crossing locations. Traffic signal equipment is provided for vehicular movements, pedestrians, and the westbound approach of the Green Line trolley.

Commonwealth Avenue/Warren Street/Kelton Street is a signalized intersection with seven approaches: Commonwealth Avenue eastbound and westbound, the eastbound approach of the south carriage road, the eastbound and westbound approaches of the north carriage road, Kelton Street northbound, and Warren Street southbound. Additionally, the MBTA Green Line B Branch trolley travels along Commonwealth Avenue through the intersection. The trolley tracks transition through the intersection from running in the median between the north carriage road and the westbound lanes of the main roadway northeast of the intersection to running in the center median southwest of the intersection, crossing over the main roadway's westbound lanes of travel within the intersection. Warren Street Station is located in the Commonwealth Avenue center median to the southwest of the intersection, serving both directions.

The Commonwealth Avenue eastbound and westbound approaches each consist of a shared left-turn/through lane and a shared through/right-turn lane. Parking is not permitted along the main Commonwealth Avenue approaches. The directions of travel along Commonwealth Avenue are separated by a raised median, with the trolley line running in the median to the west of the intersection as described above. The south carriage road is one-way in the eastbound direction at the intersection and consists of a single travel lane that accommodates through movements and right-turns. Left turns are prohibited on this approach. Parking lanes are provided on both sides of the approach. The north carriage road westbound approach to the intersection is one-way and consists of a single travel lane that accommodates through movements and right-turns. Left turns are prohibited on this approach. Diagonal parking is provided on the right side of this approach. The west leg of the north carriage road is two-way, and the eastbound approach consists of a single travel lane that accommodates left-turn-only movements. No parking is allowed on either side of the approach. Both carriage roads are separated from the main line of Commonwealth Avenue by raised medians, with the trolley line running in the westbound median east of the intersection as described above. The Warren Street southbound and Kelton Street northbound approaches each consist of a shared left-turn/through/right-turn lane. There is an adjacent parking lane on both sides of the roadway on both legs of the intersection.

Sidewalks are provided along both sides of Warren and Kelton Streets and along the outer edge of the carriage roads. Crosswalks are provided across all legs of the intersection, and pedestrian signal heads and push buttons are provided for only the main line crossings of Commonwealth Avenue. Wheelchair ramps or depressions in the raised medians are provided at every point a crosswalk meets a curb. Tactile warning strips are present at only the northeast and northwest corners of the intersection.

Cambridge Street/Warren Street/Sparhawk Street is a four-leg, signalized intersection. The west leg of Cambridge Street has two eastbound approach lanes: a shared left-turn/through lane and a shared through/right-turn lane. There is a bus stop on this leg of the intersection adjacent to the departure lane. The westbound approach has a left-turn only lane, a shared through/right-turn lane, and a parking lane. The Warren Street northbound approach has a left-turn only lane and a through lane; it also has a channelized right-turn lane to eastbound Cambridge Street that is located about 80 feet in advance of the stop bar on the approach. The Sparhawk Street southbound approach has a shared left-turn/through/right-turn lane.

Sidewalks are provided on both sides of all legs of the intersection. Crosswalks are provided across all legs and the output end of the channelized right-turn, except for the east leg of Cambridge Street. Pedestrian signal heads and push buttons are provided for the three crossings of the main intersection.

Warren Street/Nevins Street is an unsignalized intersection located less than 150 feet south of Cambridge Street along Warren Street. It is essentially a four-leg intersection with three approaches, as the fourth leg is the channelized right-turn lane from northbound Warren Street to eastbound Cambridge Street at the adjacent signalized intersection. The Warren Street northbound and southbound approaches consist of a shared left-turn/through/right-turn lane and a shared through/right-turn lane, respectively. The Warren Street approaches both operate as free movements. South of this intersection, opposing traffic on Warren Street is separated by a striped median. The eastbound approach of Nevins Street is stop-controlled and has two lanes, a left-turn only lane and a shared through/right-turn lane.

Sidewalks are provided along all legs of the intersection with the exception of Nevins Street which provides a sidewalk on the north side only of the roadway. Crosswalks are provided across the west leg of the intersection.

Washington Street/Nantasket Avenue is currently an unsignalized T-intersection. Northbound and southbound Washington Street both have single travel lanes operating as free movements. They have adjacent parking lanes. Nantasket Avenue is a narrow local roadway with no lane striping. Its eastbound approach to Washington Street has no explicit traffic control but acts as a stop-controlled approach. There is a driveway leading to a detached garage across the intersection from Nantasket Avenue but shifted slightly to the north of that roadway's alignment. The driveway currently connects to the St. Elizabeth's internal roadway system via another driveway that leads to the medical center's southwestern parking lot. Sidewalks are provided along both sides of Washington Street. There are currently no crosswalks at this intersection.

2.2.3 Parking

An inventory of the existing on-street parking, as well as car sharing services in the vicinity of the Project was collected. A description of each follows.

2.2.3.1 On-Street Parking and Curb Usage

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

2.2.3.2 Car Sharing Services

Car sharing services enable easy access to short-term vehicular transportation. Vehicles are rented on an hourly or daily basis, and all vehicle costs (gas, maintenance, insurance, and parking) are included in the rental fee. Vehicles are checked out for a specific time period and returned to their designated location. Pick-up/drop-off locations are typically in existing parking lots or other parking areas throughout neighborhoods as a convenience to users of the services. Nearby car sharing services provide an important transportation option and reduce the need for private vehicle ownership.

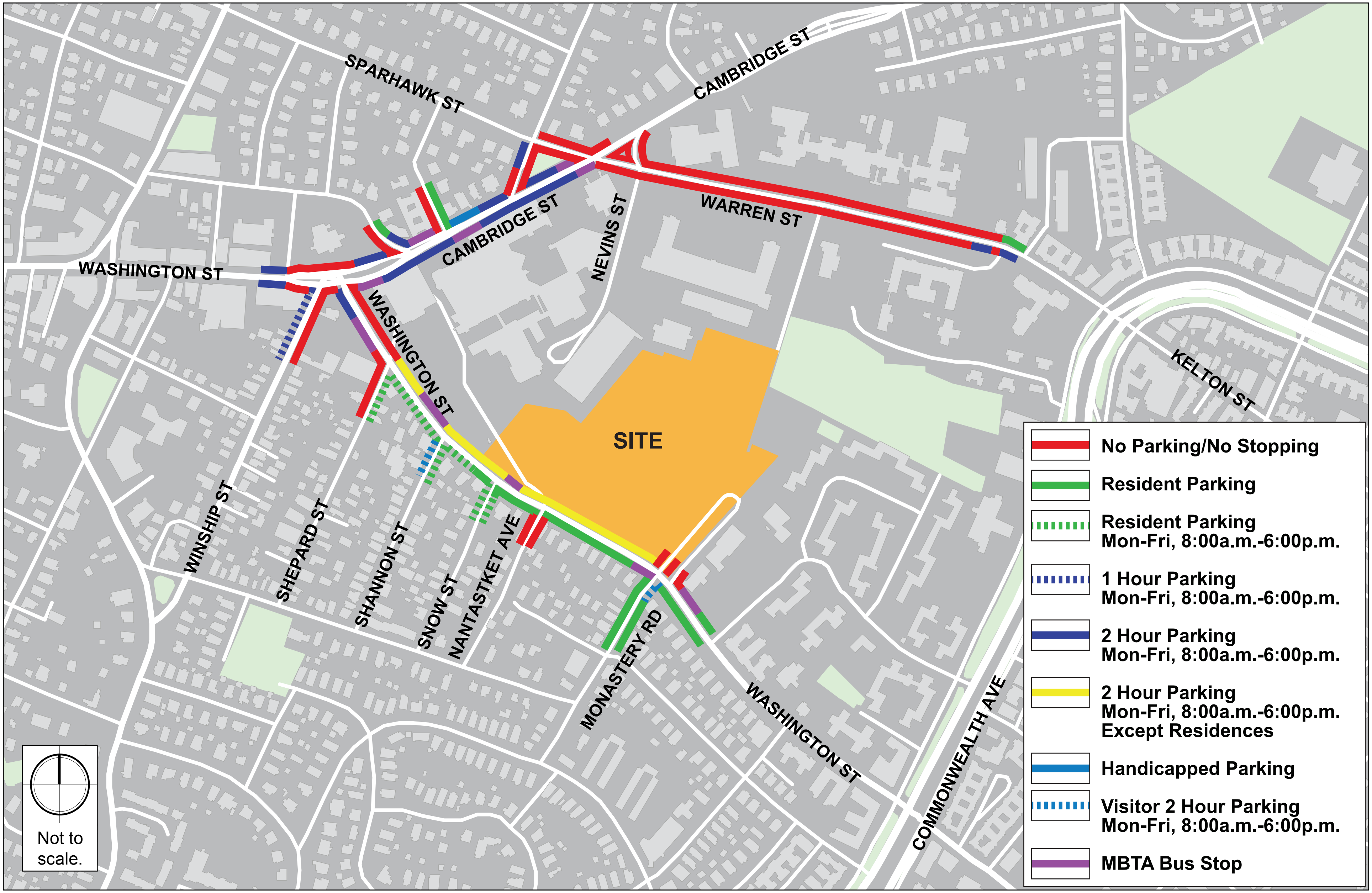


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Figure 2-2

On-Street Parking

Two major car sharing services with vehicle locations near the Project site are Zipcar and Enterprise CarShare. There are currently five Zipcar locations and one Enterprise CarShare location within a half-mile walk of the Project site. The nearby car sharing locations are shown in Figure 2-3.

2.2.4 Existing Public Transportation Services

The Project site area is well-served by public transportation. The MBTA's Green Line trolley and several bus lines operate within the study area. The closest Green Line station, Washington Street Station, is approximately one-quarter mile from the Project site and serves the Green Line's B Branch between Boston College and Park Street. Stations serving the C and D Branches of the Green Line are within one mile of the Project site. The route 65 bus travels along Washington Street adjacent to the Project site. Bus stops are provided for buses traveling in both directions on Washington Street at Monastery Road and at Snow Street, just off the southeast and southwest corners of the Project site, respectively. The MBTA operates four additional regular bus routes and two express bus routes in close proximity to the Project site. Figure 2-4 maps all of the public transportation services located in the vicinity of the Project site, and Table 2-1 provides a brief summary of all train lines and bus routes.

Table 2-1 Existing Public Transportation Service Summary

Transit Service	*Description*	*Peak-Hour Headway (minutes)*[1]
Subway/Trolley Lines		
Green Line – B Branch	Boston College - Park Street	6
Green Line – C Branch	Cleveland Circle - North Station	6
Green Line – D Branch	Riverside - Government Center	6
Bus Routes		
57	Watertown Yard - Kenmore Sta. via Newton Corner & Brighton Ctr.	6-8
64	Oak Sq. - University Park, Cambridge or Kendall/MIT via North Beacon St.	17-29
65	Brighton Center - Kenmore Sta. via Washington St., Brookline Village & Brookline Ave.	11-24
66	Harvard Square - Dudley Station via Allston & Brookline Village	5-10
86	Sullivan Sq. Sta. - Reservoir (Cleveland Circle) via Harvard	12-17
501 Express	Brighton Center - Downtown via Oak Sq., & Mass. Turnpike	7-13
503 Express	Brighton Center - Copley Sq. via Oak Sq. & Mass. Turnpike	18-33

1 Headway is the scheduled time between trains or buses. Headways are approximate. Source: www.mbta.com, March 2016.

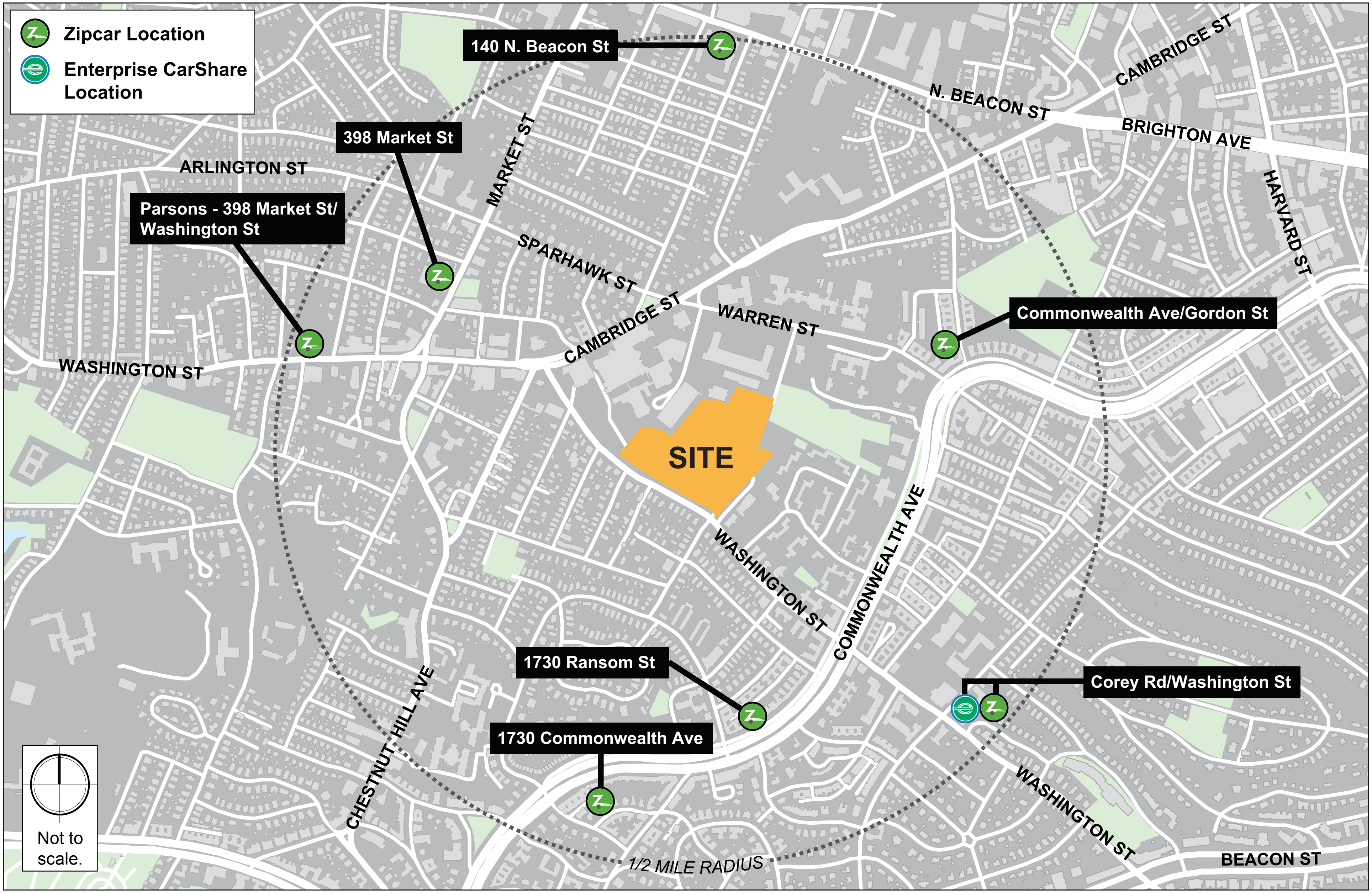

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Figure 2-3

Car Sharing Locations

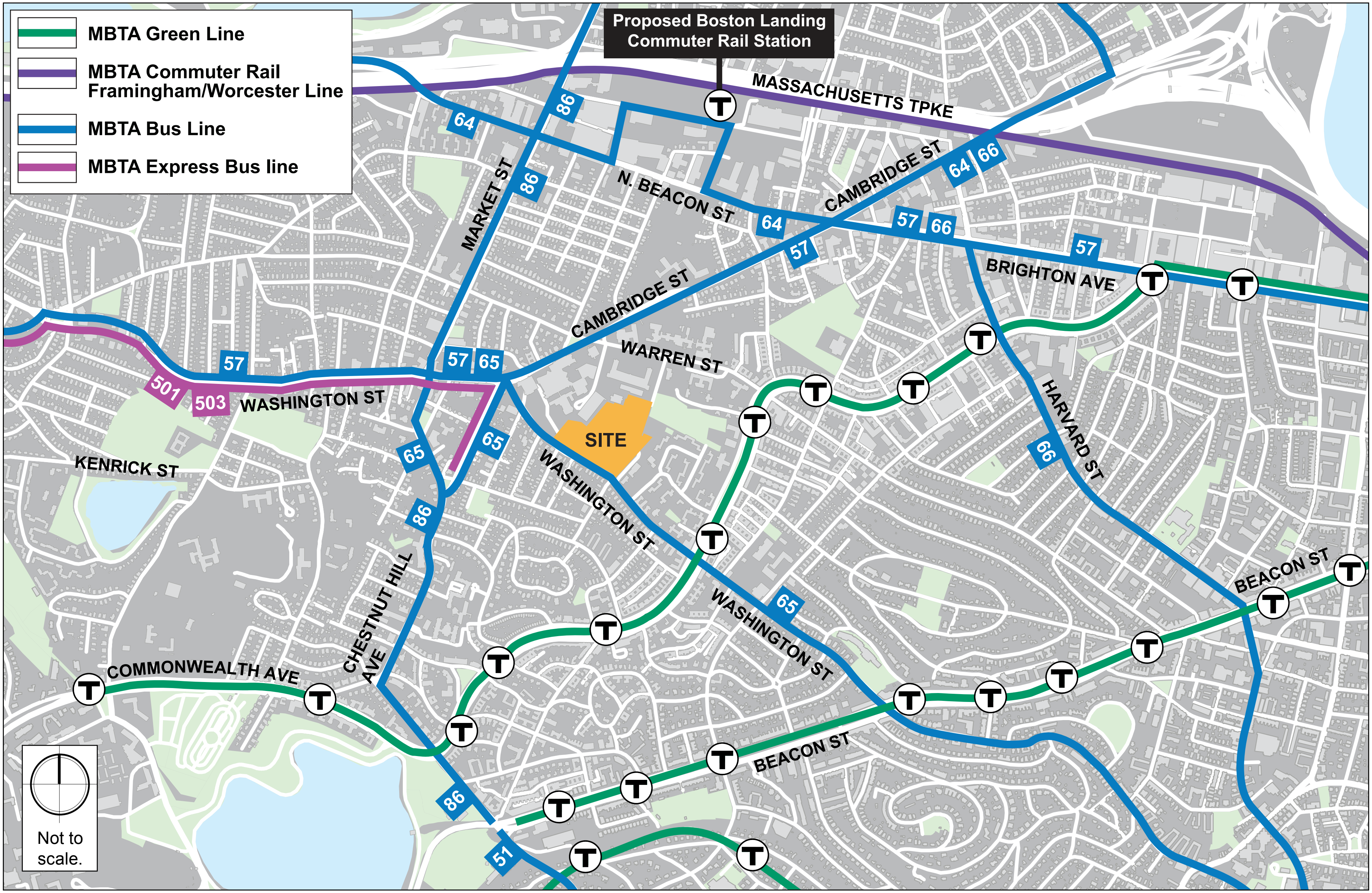

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Figure 2-4
Public Transportation

The commuter rail's Framingham/Worcester Line runs parallel to I-90 (the Massachusetts Turnpike), north of the Project site. A new commuter rail station, Boston Landing, is under construction and is expected to open in the fall of 2016.

2.2.5 Existing Traffic Data

Traffic volume data was collected at six of the seven study area intersections on April 6, 2016. Turning Movement Counts (TMCs) and vehicle classification counts were conducted during the weekday a.m. and weekday p.m. peak periods (7:00 – 9:00 a.m. and 4:00 – 6:00 p.m., respectively). The traffic classification counts included car, heavy vehicle, pedestrian, and bicycle movements.

Traffic counts were previously conducted for the intersection of Washington Street/Commonwealth Avenue on June 24, 2014. The TMCs from that earlier date were grown at a rate of one-half of a percent per year for two years and balanced with the traffic counts collected in 2016 at the other study area intersections. The detailed traffic counts for the study area intersections are provided in Appendix B.

2.2.5.1 Seasonal Adjustment

To account for seasonal variation in traffic volumes throughout the year, data provided by MassDOT was reviewed. The most recent (2011) MassDOT Weekday Seasonal Factors were used to determine the need for seasonal adjustments to the April 2016 TMCs. The seasonal adjustment factor for roadways similar to the study area (Group 6) in the month of April is 0.92. This indicates that average month traffic volumes are approximately eight percent less than the traffic volumes that were collected. Similarly, the seasonal adjustment factor in the month of June is 0.90 for the traffic counts taken at the intersection of Washington Street/Commonwealth Avenue. Therefore, the traffic counts were not adjusted downward to reflect average month conditions and provide a conservatively high analysis consistent with the peak season traffic volumes. The MassDOT 2011 Weekday Seasonal Factors table is provided in Appendix B.

2.2.6 Existing Vehicular Traffic Volumes

The existing traffic volumes that were collected in June 2014 and April 2016 were used to develop the Existing (2016) Condition traffic volumes. The volumes were balanced where necessary across the roadway network within the study area.

The resulting Existing (2016) weekday a.m. Peak Hour and weekday p.m. Peak Hour traffic volumes are shown in Figure 2-5 and Figure 2-6, respectively.

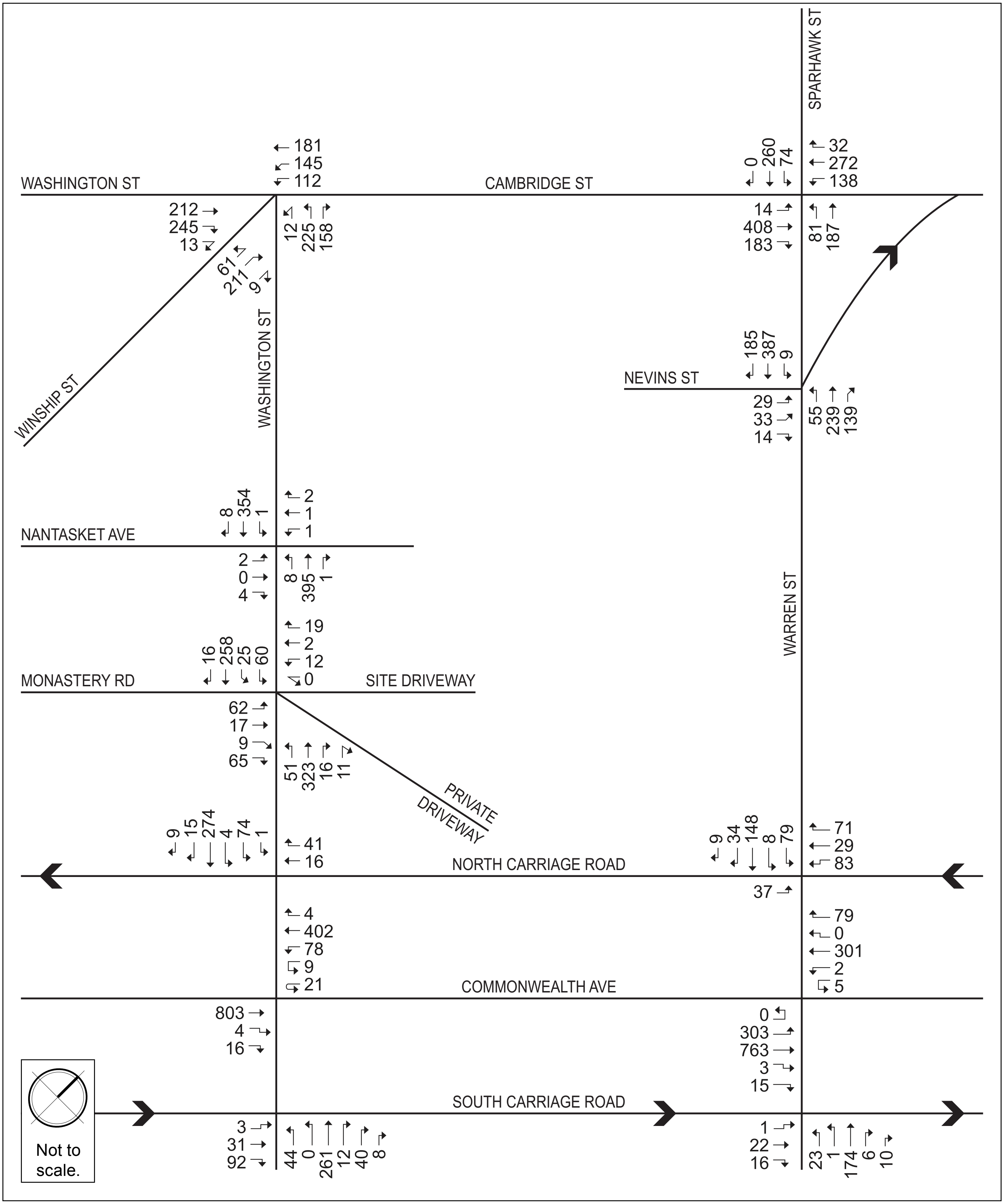

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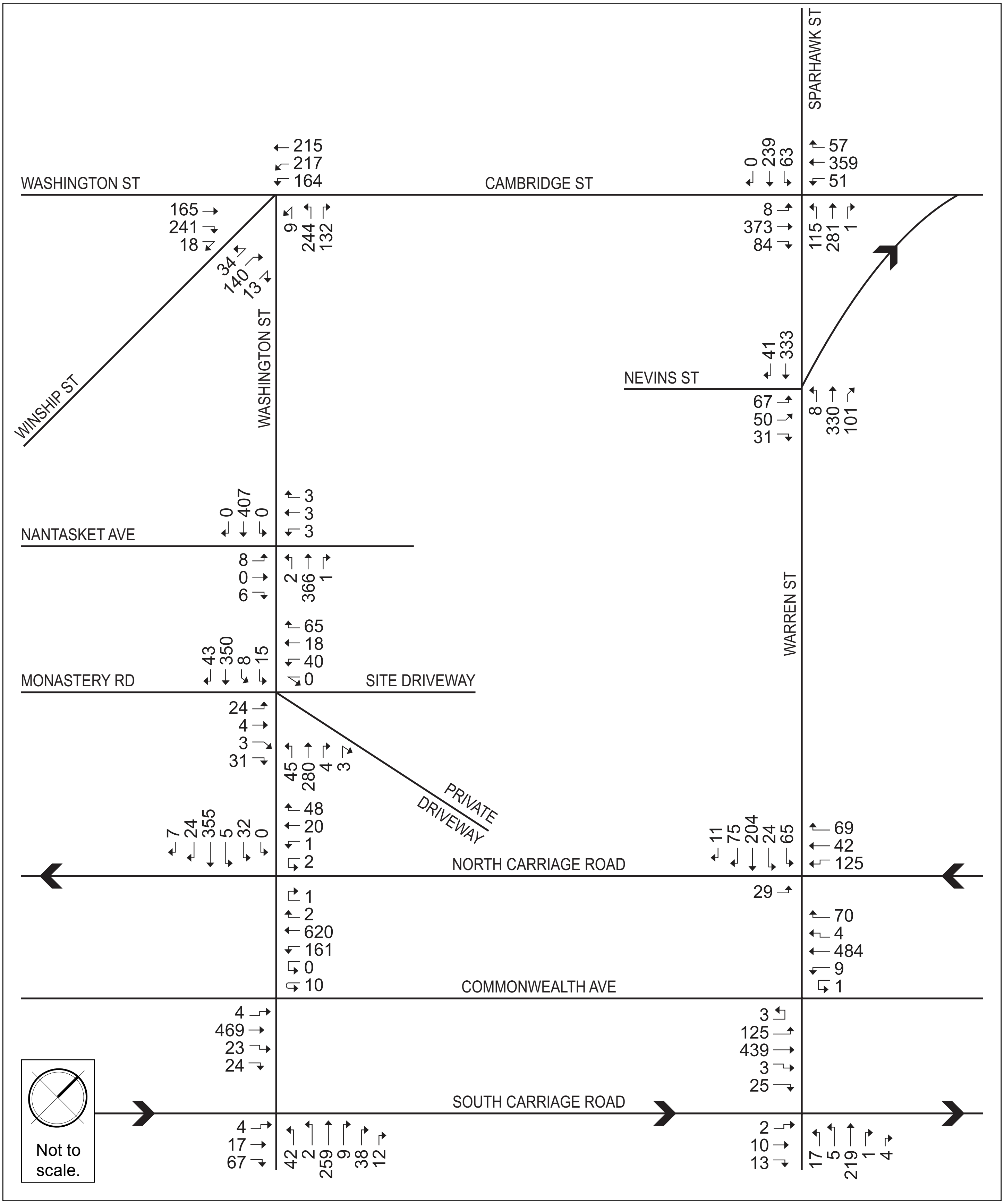
Figure 2-5

Existing (2016) Condition Traffic Volumes, Weekday a.m. Peak Hour



159-201 Washington Street   Boston, Massachusetts

Figure 2-6

Existing (2016) Condition Traffic Volumes, Weekday p.m. Peak Hour

2.2.7 Existing Bicycle Volumes and Accommodations

In recent years, bicycle use has increased dramatically throughout the City of Boston. The Project site is conveniently located in close proximity to several bicycle facilities. The City of Boston's 2013 "Bike Routes of Boston" map designates the Cambridge Street/Washington Street corridor north and west of the Project site as an intermediate route, suitable for riders with some on-road experience, and the roadway is marked with a bike lane. Advanced routes are suitable for experienced and traffic-confident cyclists. The portion of Washington Street adjacent to the southern edge of the project site is designated an advanced bicycle route without any bicycle markings on the roadway, as are Commonwealth Avenue and the Sparhawk Street/Warren Street/Kelton Street corridor. Bicycle counts were conducted concurrent with the vehicular TMCs and are presented in Figure 2-7.

2.2.7.1 Bicycle Sharing Services

The Project site is also located in proximity to a bicycle sharing station provided by Hubway. Hubway is the Boston area's bicycle sharing service, which was launched in 2011 and currently consists of more than 1,600 shared bicycles at more than 160 stations throughout Boston, Brookline, Cambridge, and Somerville. The nearest Hubway station to the Project site is located at the intersection of Washington Street/Cambridge Street/Winship Street. This station has 16 bicycle docks and is approximately a 0.3-mile walk to the northeast from the Project site. Figure 2-8 shows the nearby Hubway stations.

2.2.8 Existing Pedestrian Volumes and Accommodations

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

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

2.2.9 Existing (2016) Condition Traffic Operations Analysis

The criterion for evaluating traffic operations is level of service (LOS), which is determined by assessing average delay experienced by vehicles at intersections and along intersection approaches. Trafficware's Synchro (version 9) software package was used to calculate average delay and associated LOS at the study area intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board's *2000 Highway Capacity Manual* (HCM). Field observations were performed by HSH to collect intersection geometry such as number of turning lanes, lane length, and lane width that were then incorporated into the operations analysis.

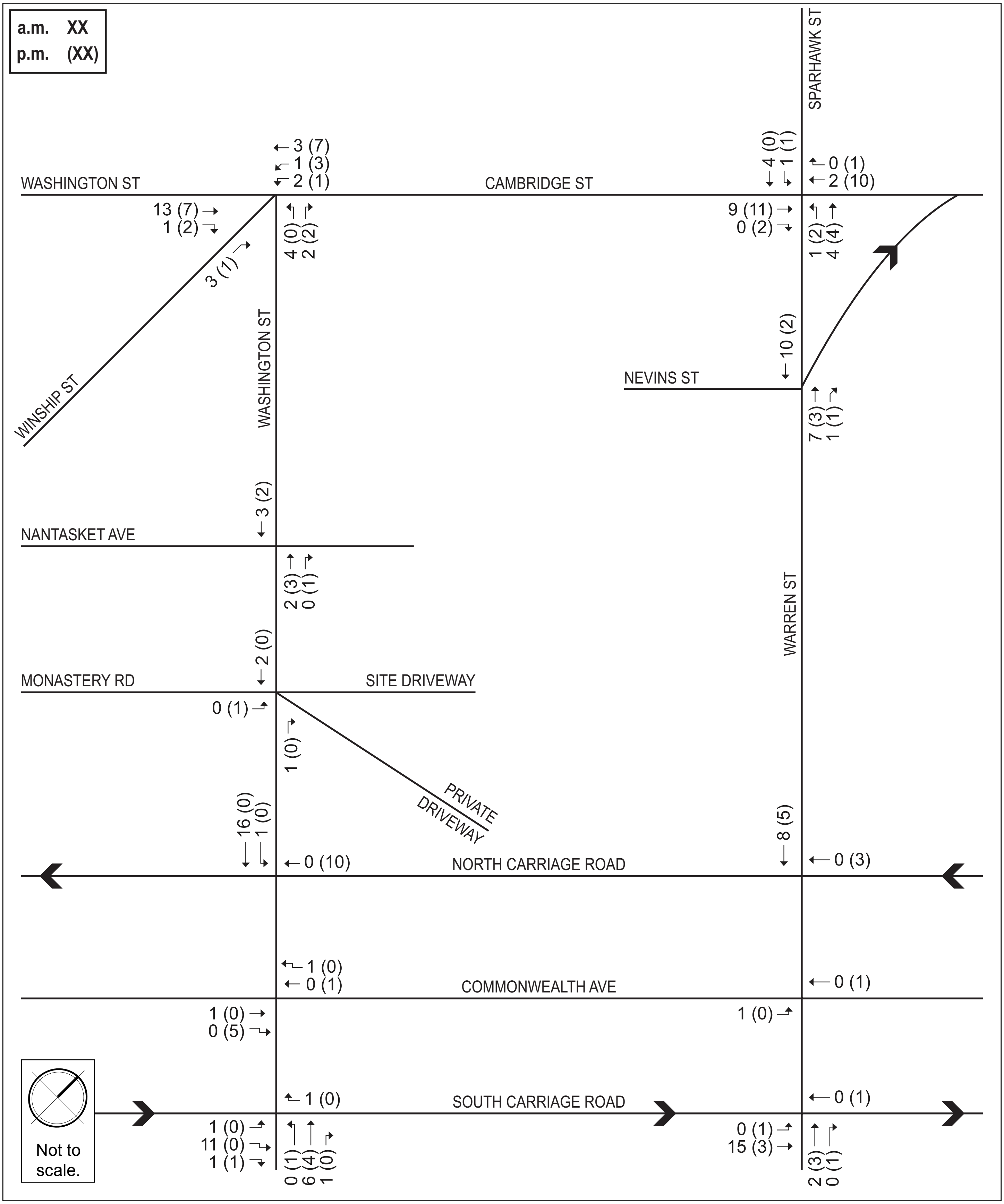


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Figure 2-7
Existing (2016) Condition Bicycle Volumes, a.m. and p.m. Peak Hours

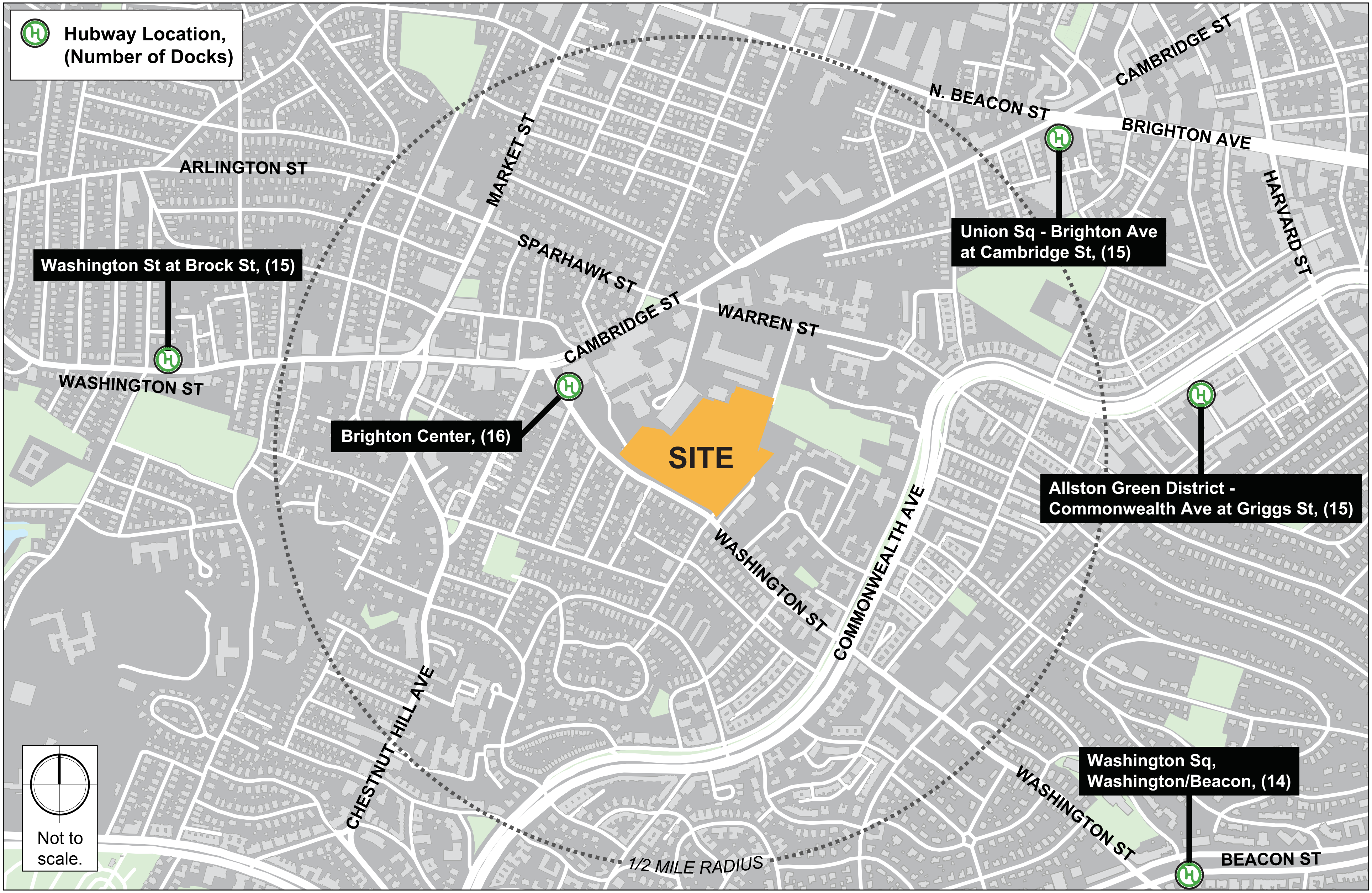

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Figure 2-8

Bicycle Sharing Locations

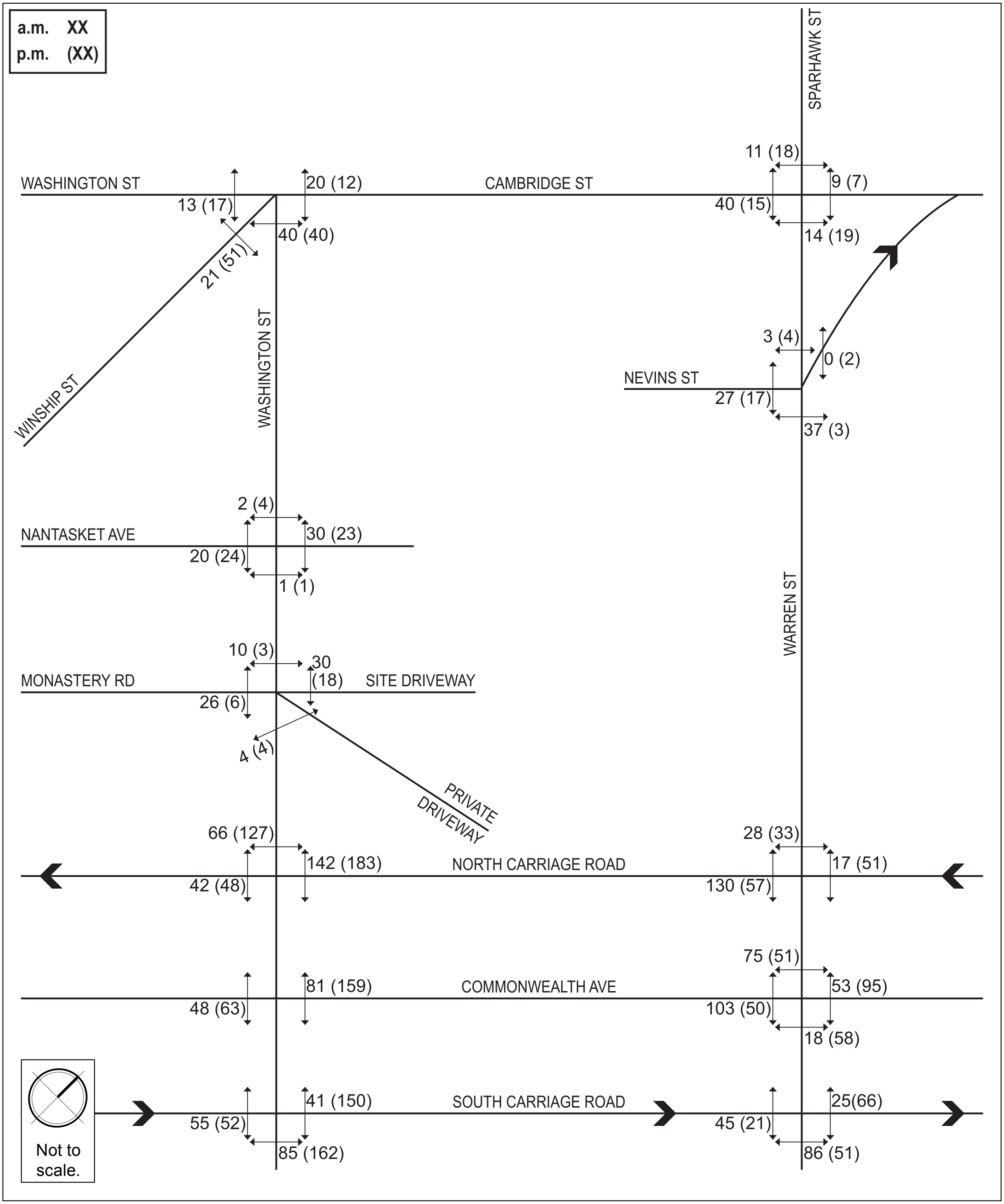


Figure 2-9

Existing (2016) Condition Pedestrian Volumes, a.m. and p.m. Peak Hours

LOS designations are based on average delay per vehicle for all vehicles entering an intersection. Table 2-2 displays the intersection LOS criteria. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst condition, with significant traffic delay. LOS D or better is typically considered desirable during the peak hours of traffic in urban and suburban settings. However, LOS E or F is often typical for a stop controlled minor street that intersects a major roadway and does not necessarily indicate that the operations at the intersection are poor or failing.

Table 2-2 Vehicle Level of Service Criteria

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

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

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

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

The 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, denotes the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line. This maximum queue occurs five percent, or less, of the time during the peak hour, and typically does not develop during off-peak hours. Since volumes fluctuate throughout the hour, the 95th percentile queue represents what can be considered a “worst case” condition. Queues at an intersection are generally below the 95th percentile length throughout most of the peak hour. It is also unlikely that 95th percentile queues for each approach to an intersection occur simultaneously.

Table 2-3 and Table 2-4 summarize the Existing (2016) Condition capacity analysis for the study area intersection during the a.m. and p.m. peak hours, respectively. The detailed analysis sheets are provided in Appendix B.

Table 2-3 Existing (2016) Condition, Capacity Analysis Summary, a.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Cambridge St/Washington St/Winship St	**D**	**37.9**	-	-	-
Washington Street EB thru	B	18.1	0.52	76	m126
Washington Street EB right/hard right	A	3.8	0.46	23	m26
Cambridge Street WB left	D	49.1	0.70	85	#153
Cambridge Street WB bear left	F	83.0	0.94	114	#222
Cambridge Street WB thru	A	9.8	0.35	43	63
Washington Street NB hard left/left	E	66.5	0.87	167	#293
Washington Street NB right	A	9.4	0.47	0	50
Winship Street NEB hard left	D	40.2	0.37	35	78
Winship Street NEB bear right/hard right	E	76.5	0.91	145	#286
Washington St/Monastery Rd/Site Driveway	**B**	**13.9**	-	-	-
Monastery Road EB left/thru/right	B	18.0	0.42	52	83
Site Driveway WB left/thru/right	B	13.9	0.12	13	21
Washington Street NB left/thru/right	B	13.1	0.52	97	161
Washington Street SB left/ thru/right	B	12.8	0.52	87	149
Commonwealth Ave/Washington St	**D**	**54.5**	-	-	-
Commonwealth Ave EB left[1]/thru | thru/right	D	49.4	0.90	346	#453
South Carriage Road EB left[1]/thru	C	30.0	0.07	21	47
South Carriage Road EB right	A	7.5	0.30	0	36
Commonwealth Avenue WB U-turn/left	E	61.0	0.59	78	147
Commonwealth Avenue WB thru | thru/right[2]	D	40.7	0.43	152	191
North Carriage Road WB left[1]/thru/right	D	38.2	0.27	55	m67
Washington Street NB thru/right	D	41.0	0.75	278	382
Washington Street SB left/thru/right	F	107.8	1.09	~388	#544
Commonwealth Ave/Warren St/Kelton St	**D**	**50.2**	-	-	-
Commonwealth Avenue EB left/thru | thru/right	D	49.9	0.89	469	#614
South Carriage Road EB left[1]/thru/right	A	9.7	0.06	9	30
North Carriage Road EB left	E	62.1	0.42	41	m63
Commonwealth Ave WB left/thru | thru/right	C	30.5	0.41	132	189
North Carriage Road WB thru/right	C	34.1	0.42	118	205
Kelton Street NB thru/right	E	61.5	0.78	179	260
Warren Street SB thru/right	F	83.8	0.93	222	#385

Table 2-3 Existing (2016) Condition, Capacity Analysis Summary, a.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Cambridge St/Warren St/Sparhawk St	**E**	**65.4**	**-**	**-**	**-**
Cambridge Street EB left/thru | thru/right	E	67.4	0.98	~279	m#359
Cambridge Street WB left	D	45.0	0.75	71	#155
Cambridge Street WB thru/right	C	27.3	0.60	184	160
Warren Street NB left	C	27.8	0.38	38	74
Warren Street NB thru/right	C	25.5	0.31	92	150
Sparhawk Street SB left/thru/right	F	138.7	1.16	~267	#441
Unsignalized Intersections					
Warren St/Nevins St	**-**	**-**	**-**	**-**	**-**
Nevins Street EB left	D	28.9	0.21	-	20
Nevins Street EB thru/right	D	28.5	0.31	-	31
Warren Street NB left/thru/right	A	1.9	0.07	-	5
Warren Street SB left[5]/thru/right	A	0.2	0.01	-	1
Washington St/Nantasket Ave	-	-	-	-	-
Nantasket Avenue EB left/thru/right	B	13.8	0.03	-	2
Driveway WB left/thru/right	C	15.3	0.03	-	3
Washington Street NB left/thru/right	A	0.3	0.01	-	1
Washington Street SB left/thru/right	A	0.0	0.00	-	0

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

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

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Cambridge St/Washington St/Winship St	**D**	**41.0**	-	-	-
Washington Street EB thru	C	28.0	0.40	73	m121
Washington Street EB right/hard right	A	9.3	0.47	35	m72
Cambridge Street WB left	E	58.4	0.76	117	m#194
Cambridge Street WB bear left	E	79.7	0.93	155	m#285
Cambridge Street WB thru	B	14.3	0.36	67	m127
Washington Street NB hard left/left	E	71.1	0.91	190	#301
Washington Street NB right	A	6.4	0.39	0	26
Winship Street NEB hard left	D	35.3	0.20	20	48
Winship Street NEB bear right/hard right	D	51.0	0.67	97	167
Washington St/Monastery Rd/Site Driveway	**B**	**12.6**	-	-	-
Monastery Road EB left/thru/right	B	15.4	0.24	27	34
Site Driveway WB left/thru/right	B	16.4	0.34	39	68
Washington Street NB left/thru/right	B	11.2	0.52	72	130
Washington Street SB left/ thru/right	B	11.8	0.53	92	163
Commonwealth Avenue/Washington Street	**C**	**34.2**	-	-	-
Commonwealth Ave EB left[2]/thru | thru/right	C	30.4	0.55	150	205
South Carriage Road EB left/thru	C	27.1	0.07	19	27
South Carriage Road EB right	A	7.7	0.32	0	3
Commonwealth Avenue WB U-turn/left	E	65.6	0.83	101	#253
Commonwealth Avenue WB thru | thru/right	C	26.0	0.57	273	160
North Carriage Road WB left/thru/right	C	22.8	0.29	65	m66
Washington Street NB thru/right	D	38.1	0.71	252	358
Washington Street SB left/thru/right	D	41.4	0.77	288	418
Commonwealth Ave/Warren St/Kelton St	**D**	**40.5**	-	-	-
Commonwealth Avenue EB left/thru | thru/right	B	13.3	0.60	67	93
South Carriage Road EB left/thru/right	A	8.7	0.06	7	14
North Carriage Road EB left	E	70.5	0.37	38	48
Commonwealth Ave WB left/thru | thru/right	D	35.9	0.61	213	294
North Carriage Road WB thru/right	D	41.2	0.65	268	321
Kelton Street NB thru/right	D	46.5	0.66	190	279
Warren Street SB thru/right	F	81.0	0.91	287	#472

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

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Cambridge St/Warren St/Sparhawk St	**D**	**43.9**	-	-	-
Cambridge Street EB left/thru | thru/right	D	42.8	0.77	174	#269
Cambridge Street WB left	C	27.1	0.24	24	53
Cambridge Street WB thru/right	D	36.4	0.71	248	#408
Warren Street NB left	C	33.5	0.56	60	102
Warren Street NB thru/right	C	29.3	0.51	164	235
Sparhawk Street SB left/thru/right	E	78.1	0.95	201	#370
Unsignalized Intersections					
Warren St/Nevins St	-	-	-	-	-
Nevins Street EB left	C	23.1	0.27	-	27
Nevins Street EB thru/right	C	19.3	0.26	-	26
Warren Street NB left/thru/right	A	0.2	0.01	-	1
Warren Street SB left[4]/thru/right	-	0.0	0.00	-	0
Washington St/Nantasket Ave	-	-	-	-	-
Nantasket Avenue EB left/thru/right	C	15.7	0.06	-	4
Driveway WB left/thru/right	C	16.0	0.04	-	3
Washington Street NB left/thru/right	A	0.1	0.00	-	0
Washington Street SB left/thru/right	-	0.0	0.00	-	0

As shown in Table 2-3 and Table 2-4, the majority of intersections and approach lane groups have acceptable operations under the Existing (2016) Condition with the following exceptions:

- The signalized intersection of **Cambridge Street/Washington Street/Winship Street**, operates at LOS D during both peak hours. The Cambridge Street westbound bear-left (onto Winship Street) lane operates at LOS F during the a.m. peak hour and at LOS E during the p.m. peak hour. The Cambridge Street westbound left-turn lane operates at LOS E during the p.m. peak hour. The Washington Street northbound hard left/left lane operates at LOS E during both peak periods. The Winship Street northeast-bound bear right/hard right lane also operates at LOS E during the a.m. peak.

- The signalized intersection of **Commonwealth Avenue/Washington Street** operates at LOS D during the a.m. peak hour and LOS C during the p.m. peak hour. However, the Commonwealth Avenue westbound U-turn/left lane operates at LOS E during both peak hours, and the Washington Street southbound approach lane operates at LOS F during the a.m. peak hour.

- The signalized intersection of **Commonwealth Avenue/Warren Street/Kelton Street** operates at LOS D during both peak hours. The eastbound approach of the north carriage road operates at LOS E during both peak hours. The v/c ratio and the traffic volumes on this approach are both low, which indicates that the long delay is due to a small number of vehicles having to wait through a long cycle before proceeding. The Warren Street southbound approach operates at LOS F during both peak periods. Additionally, the Kelton Street northbound approach operates at LOS E during the a.m. peak hour.

- The signalized intersection of **Cambridge Street/Warren Street/Sparhawk Street** operates at LOS E during the a.m. peak hour and LOS D during the p.m. peak hour. The Sparhawk Street southbound approach operates at LOS F during the a.m. peak hour and operates at LOS E during the p.m. peak hour. During the a.m. peak hour, the Cambridge Street eastbound approach lanes operate at LOS E.

2.3 No-Build (2023) Condition

The No-Build (2023) Condition reflects a future scenario that incorporates anticipated traffic volume changes associated with background traffic growth independent of any specific project, traffic associated with other planned specific developments, and planned infrastructure improvements that will affect travel patterns throughout the study area. These infrastructure improvements include roadway, public transportation, pedestrian facility, and bicycle facility improvements.

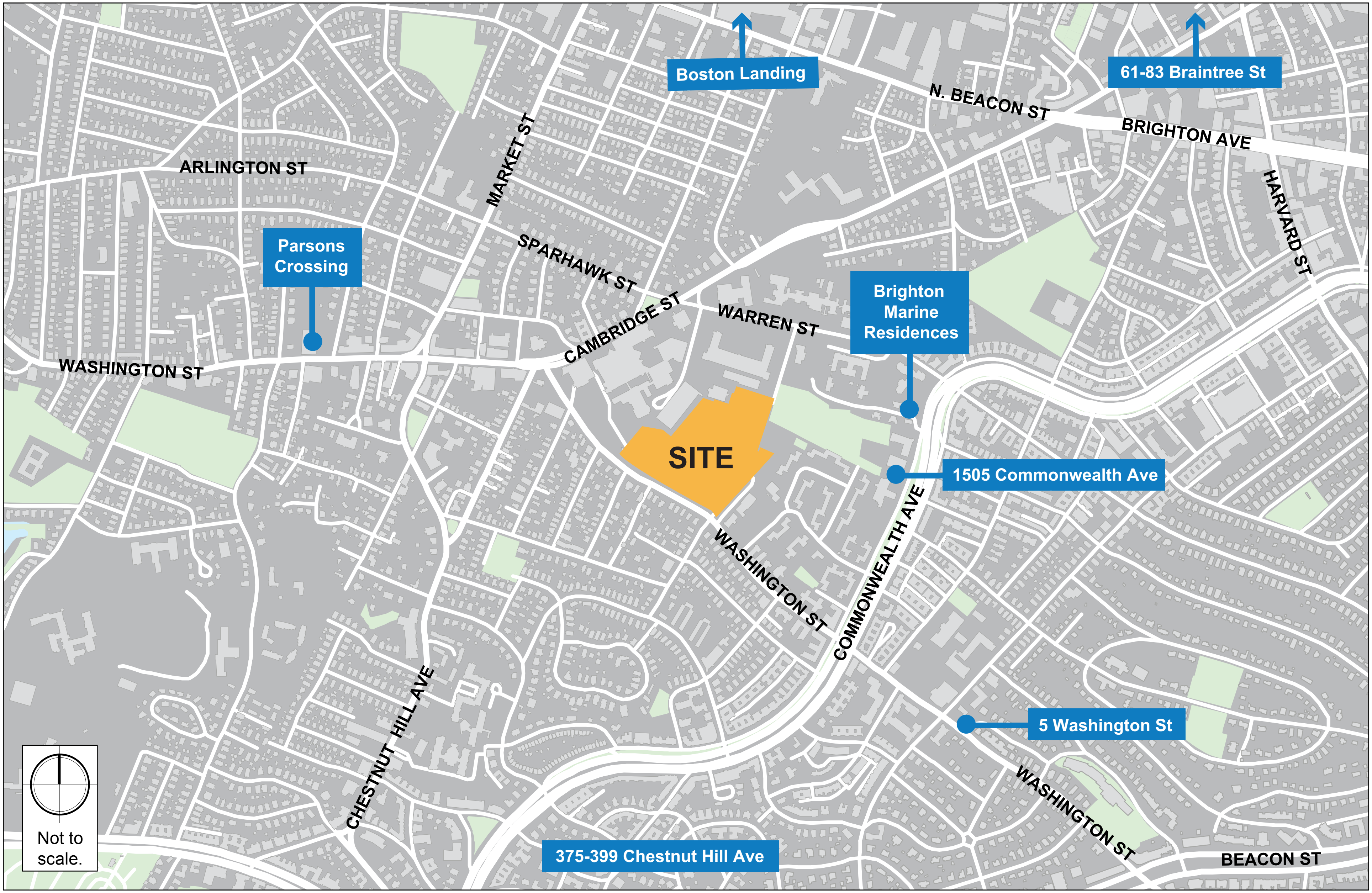
2.3.1 Background Traffic Growth

The methodology to account for generic future background traffic growth is to evaluate how traffic volumes may be affected by changes in demographics, smaller scale development projects, or projects unforeseen at this time. Based on a review of recent and historic traffic data collected recently and to account for any additional unforeseen traffic growth, a traffic growth rate of one-half percent per year, compounded annually through the horizon year seven years in the future, was used.

2.3.2 Specific Development Traffic Growth

Traffic volumes associated with known, larger or adjacent development projects can affect traffic patterns throughout the study area within the future analysis time horizon. The following six projects, which are depicted in Figure 2-10, are located in the vicinity of the study area and, where appropriate, traffic volumes associated with these projects were also incorporated into the future conditions traffic volumes. Traffic volumes for all other development projects are included in the general background traffic growth.

- **5 Washington Street** – This project, located to the southeast of the Project site, calls for the construction of approximately 118 residential units, 12,000 sf of retail space, and 105 garage parking spaces. This project is currently under review by the BRA.



159-201 Washington Street Boston, Massachusetts

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Figure 2-10

Site Speci.c Background Development Projects

- **61-83 Braintree Street** – This development includes the construction of 80 residential units and approximately 2,550 sf of ground floor retail space with approximately 67 parking spaces. This project is located northeast of the Project site in the Allston neighborhood of Boston. This project is currently under construction.

- **375-399 Chestnut Hill Avenue - Cleveland Circle Cinema** – This project is located to the southwest of the Project site and will consist of a 162 room hotel, 92 residential units, 14,000 sf of retail space, and 188 parking spaces. This project has been approved by the BRA.

- **1505 Commonwealth Avenue** – This project, located east of the Project site, calls for the renovation of the existing 59,000 sf commercial building at the site and the construction of an approximately 8,000 sf addition to accommodate an approximately 80-unit residential community. This project has been approved by the BRA.

- **Brighton Marine Health Center Residential Development** – This project, located to the northeast of the Project site at 77 Warren Street, will consist of replacing five medical-use buildings with approximately 101 mixed-income residential units and 101 parking spaces. This project has been approved by the BRA.

- **Parsons Crossing** – This project, located northwest of the Project site at 425 Washington Street, calls for the construction of two 4-story mixed-use buildings containing approximately 60 residential units and 14,200 sf of ground floor retail space including a bank and an urban grocery store, plus 125 parking spaces. This project has been approved by the BRA.

2.3.3 Proposed Infrastructure Improvements

A review of planned improvements to roadway, transit, bicycle, and pedestrian facilities was conducted to determine if there are any nearby improvement projects in the vicinity of the study area. Based on this review, it was determined that there are not any planned infrastructure improvements in the immediate vicinity of the Project site.

2.3.4 No-Build Traffic Volumes

The one-half percent per year annual growth rate, compounded annually, was applied to the Existing (2016) Condition traffic volumes, then the traffic volumes associated with the background development projects listed above were added to develop the No-Build (2023) Condition traffic volumes. The No-Build (2023) weekday morning and evening peak hour traffic volumes are shown on Figure 2-11 and Figure 2-12, respectively.

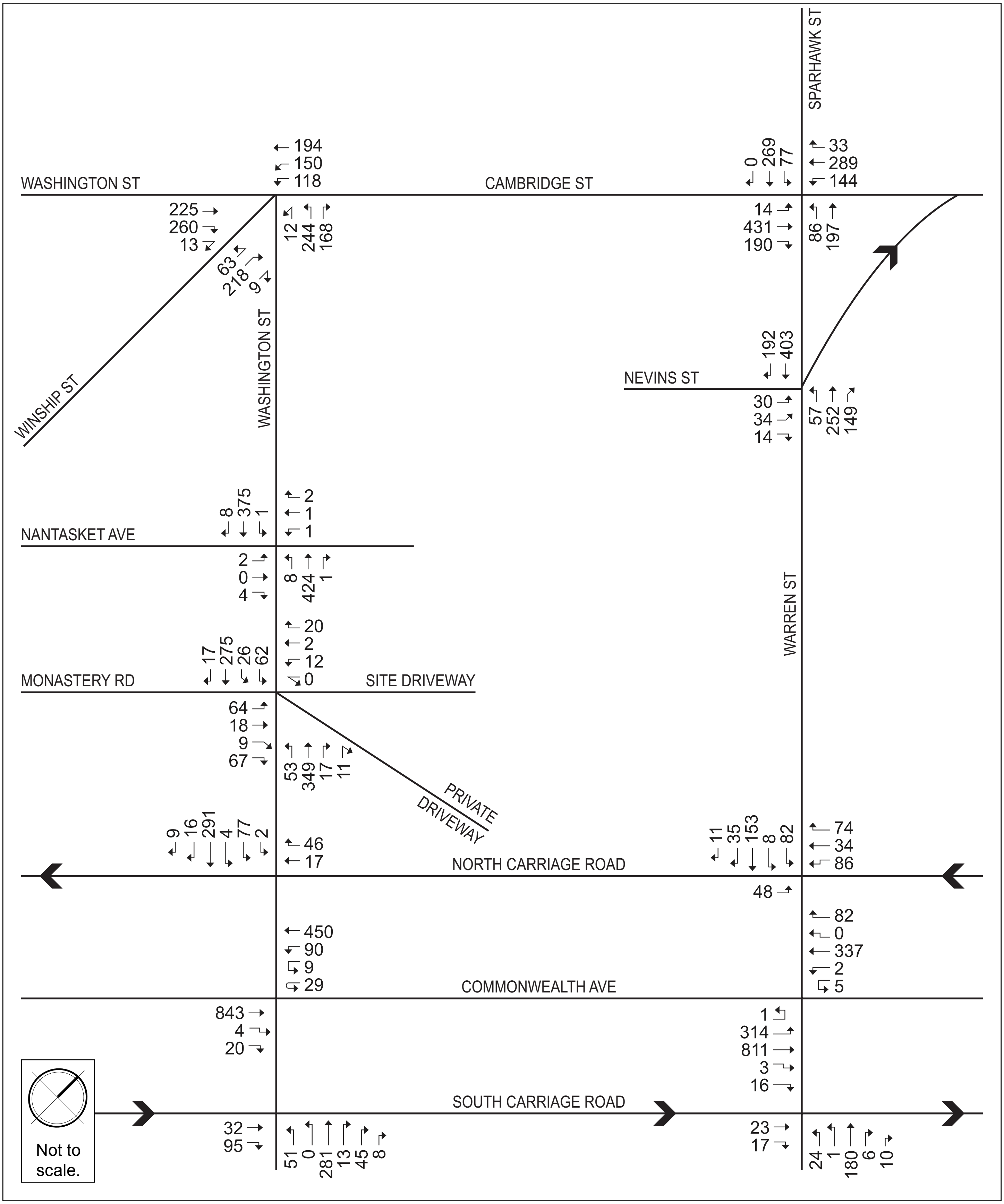

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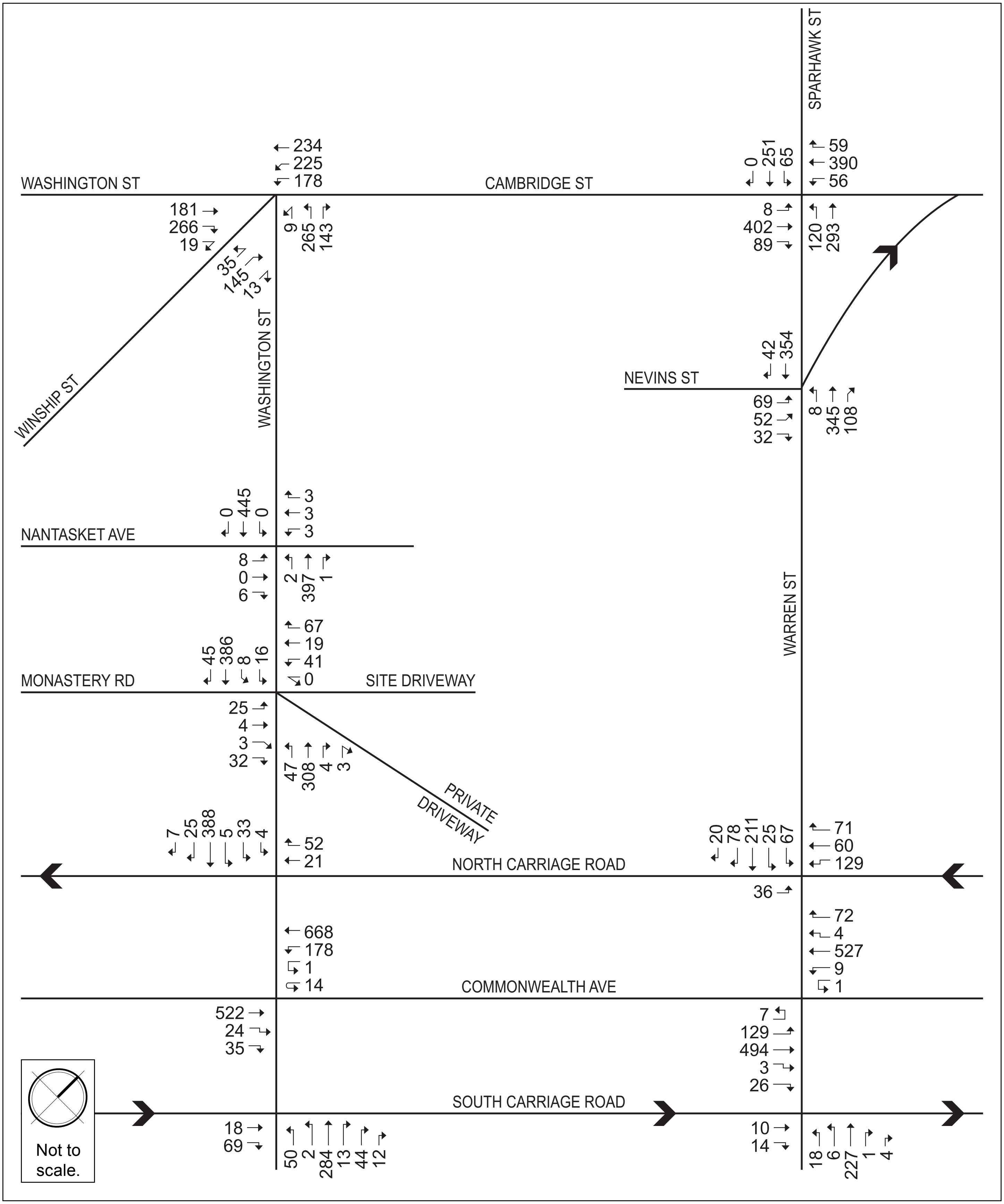
Figure 2-11

No-Build (2023) Condition Traffic Volumes, Weekday a.m. Peak Hour



159-201 Washington Street Boston, Massachusetts

Figure 2-12

No-Build (2023) Condition Traffic Volumes, Weekday p.m. Peak Hour

2.3.5 No-Build (2023) Condition Traffic Operations Analysis

The No-Build (2023) Condition analysis uses the same methodology as the Existing (2016) Condition capacity analysis. Tables 2-5 and Table 2-6 present the No-Build (2023) Condition operations analysis for the a.m. and p.m. peak hours, respectively. The shaded cells in the tables indicate a decrease in LOS between the Existing (2016) Condition and the No-Build (2023) Condition to an LOS below LOS D. The detailed analysis sheets are provided in Appendix B.

Table 2-5 No-Build (2023) Condition, Capacity Analysis Summary, a.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Cambridge St/Washington St/Winship St	**D**	**40.6**	-	-	-
Washington Street EB thru	C	20.5	0.56	87	m145
Washington Street EB right/hard right	A	4.4	0.49	25	m29
Cambridge Street WB left	D	51.8	0.74	90	#163
Cambridge Street WB bear left	F	89.8	0.97	119	#225
Cambridge Street WB thru	B	10.2	0.38	47	66
Washington Street NB hard left/left	E	73.3	0.92	183	#325
Washington Street NB right	B	10.7	0.50	3	60
Winship Street NEB hard left	D	40.6	0.38	37	79
Winship Street NEB bear right/hard right	E	79.5	0.93	152	#298
Washington St/Monastery Rd/Site Driveway	**B**	**18.9**	-	-	-
Monastery Road EB left/thru/right	C	22.1	0.46	54	123
Site Driveway WB left/thru/right	B	17.6	0.13	13	31
Washington Street NB left/thru/right	B	18.9	0.65	109	#328
Washington Street SB left/ thru/right	B	17.7	0.61	95	#270
Commonwealth Avenue/Washington Street	**E**	**66.8**	-	-	-
Commonwealth Ave EB left/thru | thru/right	E	55.8	0.95	373	#495
South Carriage Road EB left/thru	C	29.9	0.07	20	45
South Carriage Road EB right	A	8.1	0.31	0	39
Commonwealth Avenue WB U-turn/left	E	68.4	0.70	97	#193
Commonwealth Avenue WB thru | thru/right	D	40.7	0.48	168	215
North Carriage Road WB left/thru/right	D	38.8	0.30	61	m72
Washington Street NB thru/right	D	45.6	0.81	315	429
Washington Street SB left/thru/right	F	162.1	1.24	~453	#609

Table 2-5 No-Build (2023) Condition, Capacity Analysis Summary, a.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Commonwealth Ave/Warren St/Kelton St	**E**	**57.1**	-	-	-
Commonwealth Avenue EB left/thru | thru/right	E	62.3	0.98	496	#708
South Carriage Road EB left/thru/right	B	10.1	0.06	9	30
North Carriage Road EB left	E	64.5	0.50	53	m76
Commonwealth Ave WB left/thru | thru/right	C	33.0	0.49	151	215
North Carriage Road WB thru/right	D	36.3	0.46	130	223
Kelton Street NB thru/right	E	61.2	0.78	186	#275
Warren Street SB thru/right	F	87.0	0.95	233	#406
Cambridge St/Warren St/Sparhawk St	**E**	**75.8**	-	-	-
Cambridge Street EB left/thru | thru/right	F	85.8	1.05	~312	m#387
Cambridge Street WB left	D	48.8	0.78	75	#167
Cambridge Street WB thru/right	C	28.6	0.63	198	169
Warren Street NB left	C	28.6	0.41	40	78
Warren Street NB thru/right	C	25.8	0.33	97	158
Sparhawk Street SB left/thru/right	F	154.1	1.20	~283	#461
Unsignalized Intersections					
Warren St/Nevins St	-	-	-	-	-
Nevins Street EB left	D	30.8	0.24	-	22
Nevins Street EB thru/right	D	31.0	0.34	-	35
Warren Street NB left/thru/right	A	2.0	0.07	-	6
Warren Street SB left[4]/thru/right	-	0.0	0.00	-	0
Washington St/Nantasket Ave	-	-	-	-	-
Nantasket Avenue EB left/thru/right	B	14.4	0.03	-	2
Driveway WB left/thru/right	C	16.1	0.04	-	3
Washington Street NB left/thru/right	A	0.2	0.01	-	1
Washington Street SB left/thru/right	A	0.0	0.00	-	0

Grey Shading indicates a degradation to LOS E or F.

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

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Cambridge St/Washington St/Winship St	**D**	**44.4**	**-**	**-**	**-**
Washington Street EB thru	C	28.9	0.44	81	m132
Washington Street EB right/hard right	B	10.4	0.51	39	m91
Cambridge Street WB left	E	63.3	0.82	127	m#205
Cambridge Street WB bear left	F	85.0	0.96	160	m#278
Cambridge Street WB thru	B	14.5	0.39	73	m134
Washington Street NB hard left/left	F	82.7	0.97	210	#336
Washington Street NB right	A	7.7	0.42	0	35
Winship Street NEB hard left	D	35.4	0.21	20	49
Winship Street NEB bear right/hard right	D	52.4	0.70	101	173
Washington St/Monastery Rd/Site Driveway	**B**	**17.1**	**-**	**-**	**-**
Monastery Road EB left/thru/right	B	19.0	0.26	28	49
Site Driveway WB left/thru/right	C	20.1	0.35	41	100
Washington Street NB left/thru/right	B	15.3	0.53	81	239
Washington Street SB left/ thru/right	B	17.0	0.61	108	#325
Commonwealth Avenue/Washington Street	**F**	**80.6**	**-**	**-**	**-**
Commonwealth Ave EB left[2]/thru | thru/right	C	32.6	0.59	167	226
South Carriage Road EB left/thru	C	28.6	0.07	17	25
South Carriage Road EB right	A	8.8	0.36	0	2
Commonwealth Avenue WB U-turn/left	F	83.3	0.93	117	#297
Commonwealth Avenue WB thru | thru/right	C	28.8	0.66	297	172
North Carriage Road WB left/thru/right	C	24.1	0.35	66	m62
Washington Street NB thru/right	D	47.8	0.82	319	#477
Washington Street SB left/thru/right	F	265.1	1.49	~536	#751
Commonwealth Ave/Warren St/Kelton St	**D**	**51.7**	**-**	**-**	**-**
Commonwealth Avenue EB left/thru | thru/right	B	16.7	0.68	85	135
South Carriage Road EB left/thru/right	A	8.9	0.06	6	13
North Carriage Road EB left	E	70.9	0.44	46	m54
Commonwealth Ave WB left/thru | thru/right	D	39.3	0.69	237	326
North Carriage Road WB thru/right	D	51.7	0.78	323	340
Kelton Street NB thru/right	E	55.7	0.76	209	#323
Warren Street SB thru/right	F	120.7	1.08	~353	#554

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

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Cambridge St/Warren St/Sparhawk St	**D**	**54.9**	**-**	**-**	**-**
Cambridge Street EB left/thru | thru/right	D	50.6	0.87	~204	#304
Cambridge Street WB left	C	25.2	0.23	25	54
Cambridge Street WB thru/right	D	39.3	0.76	276	#460
Warren Street NB left	C	34.1	0.57	63	106
Warren Street NB thru/right	C	29.8	0.53	172	245
Sparhawk Street SB left/thru/right	F	123.4	1.11	~243	#415
Unsignalized Intersections					
Warren St/Nevins St	**-**	**-**	**-**	**-**	**-**
Nevins Street EB left	D	25.6	0.31	-	31
Nevins Street EB thru/right	C	20.9	0.29	-	30
Warren Street NB left/thru/right	A	0.2	0.01	-	1
Warren Street SB left[4]/thru/right	-	0.0	0.00	-	0
Washington St/Nantasket Ave	-	-	-	-	-
Nantasket Avenue EB left/thru/right	C	17.0	0.06	-	5
Driveway WB left/thru/right	C	17.3	0.05	-	4
Washington Street NB left/thru/right	A	0.1	0.00	-	0
Washington Street SB left/thru/right	-	0.0	0.00	-	0

As shown in Table 2-5 and Table 2-6, the following additional operational deficiencies are expected under the No-Build (2023) Condition compared to the Existing (2016) Condition:

- The signalized intersection of **Cambridge Street/Washington Street/Winship Street** continues to operate at LOS D during both peak hours. The Cambridge Street westbound bear left approach and the Washington Street northbound hard left/left-turn approach both degrade from LOS E to LOS F during the weekday p.m. peak hour.

- The signalized intersection of **Commonwealth Avenue/Washington Street** degrades from LOS D to LOS E during the weekday a.m. peak hour and from LOS C to LOS F during the weekday p.m. peak hour. The Commonwealth Avenue eastbound approach degrades from LOS D to LOS E during the weekday a.m. peak hour. The Commonwealth Avenue westbound U-turn/left lane degrades from LOS E to LOS F during the weekday p.m. peak hour. The Washington Street southbound approach degrades from LOS D to LOS F during the weekday p.m. peak hour.

- The signalized intersection of **Commonwealth Avenue/Warren Street/Kelton Street** declines during the weekday a.m. peak hour from LOS D to LOS E. Both the Commonwealth Avenue eastbound approach during the weekday a.m. peak hour and the Kelton Street northbound approach during the weekday p.m. peak hour decline from LOS D to LOS E

- The signalized intersection of **Cambridge Street/Warren Street/Sparhawk Street** continues to operate at LOS E during the weekday a.m. peak hour and LOS D during the weekday p.m. peak hour. During the weekday a.m. peak hour, the Cambridge Street eastbound approach declines from LOS E to LOS F. During the p.m. peak hour, the Sparhawk Street southbound approach degrades from LOS E to LOS F.

2.4 Build (2023) Condition

The Project includes removal of the existing surface parking spaces and demolition of the existing buildings on site, except for the monastery building, which will be renovated. Approximately 679 residential apartment units will be constructed. The Project will include approximately 395 parking spaces.

2.4.1 Site Access and Vehicle Circulation

Vehicular access to the site will be provided via two driveways: the existing driveway to St. Gabriel's Monastery at the Washington Street/Monastery Road intersection that will be realigned, and a new driveway that will form the fourth leg of the Washington Street/Nantasket Avenue intersection. The site plan is shown in Figure 2-13.

2.4.2 Project Parking

The parking associated with St. Elizabeth's that is currently on the Project site will be relocated to the garage on the St. Elizabeth's site and to other nearby parking lots.

The maximum parking goals developed by the BTD for the Allston/Brighton neighborhood are a maximum of 0.75 to 1.25 parking spaces per residential unit. The Project is will have approximately 395 parking spaces, which results in a parking ratio of 0.58 spaces per residential unit.

2.4.3 Loading and Service Accommodations

Residential units primarily generate delivery trips related to small packages and prepared food. It is anticipated that the majority of these deliveries will occur between 7:00 a.m. and 1:00 p.m. The low number of anticipated deliveries will have minimal impact on the vehicular operations in the study area.

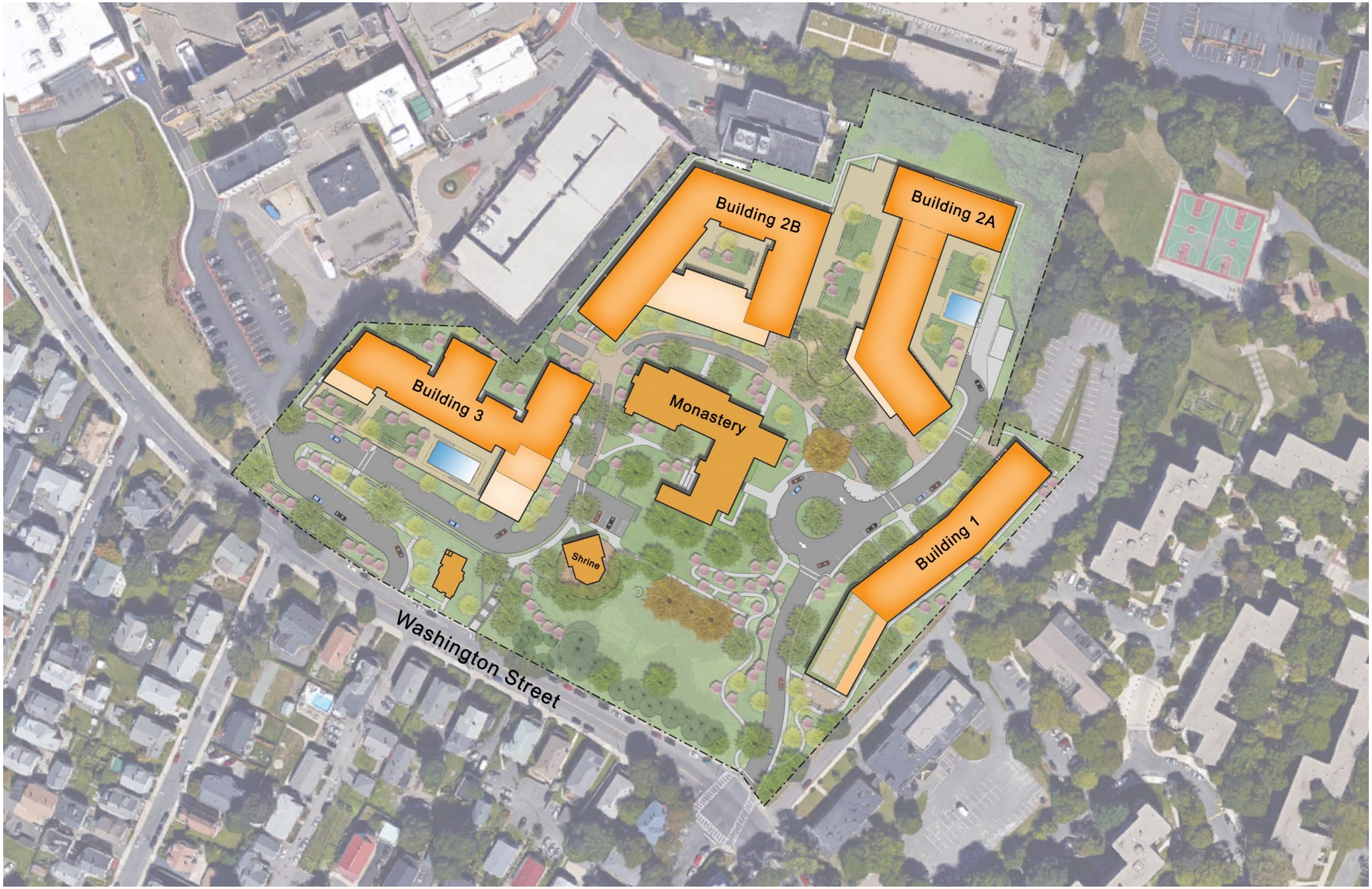


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Figure 2-13

Site Plan

As a large site, loading will be accommodated on the Project site away from any public roadways or sidewalks. Loading for move in/move out processes can be accommodated adjacent to the three proposed buildings and the Monastery. Figure 2-13 presents the loading area for each of the buildings.

2.4.4 Trip Generation Methodology

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

To estimate the number of trips expected to be generated by the Project, data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual*[1] were used. ITE provides data to estimate the total number of unadjusted vehicular trips associated with the Project. In an urban setting well-served by transit, adjustments are necessary to account for other travel mode shares such as walking, bicycling, and transit.

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

Land Use Code 220 – Apartment. The apartment land use includes rental dwelling units located within the same building with at least three other dwelling units. Calculations of the number of trips use ITE's average rate per residential unit.

LUC 220 was utilized as it is the most closely relevant land use to the proposed Project. However, due to the specific nature of these units being marketed to graduate students, young professionals, and other university affiliates such as residents, faculty and staff, it is likely the trip generation will be less than estimated by LUC 220. This is especially true during the peak hours due to the variable nature of this demographics' schedules. Therefore, trip generation estimates based on LUC 220 should be considered conservatively high.

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

2.4.5 Mode Share

BTD provides vehicle, transit, and walking mode split rates for different areas of Boston. The Project is located in the eastern portion of designated Area 10 – Brighton. The daily residential mode shares were based on US Census Journey to Work data. The unadjusted vehicular trips were converted to person-trips by using vehicle occupancy rates published by the Federal Highway Administration (FHWA)[2]. The person-trips were then distributed to different modes according to the mode shares shown in Table 2-7.

Table 2-7 Travel Mode Share

Land Use	*Walk/Bicycle Share*	*Transit Share*	*Auto Share*	*Vehicle Occupancy Rate*
Daily				
In	22%	19%	59%	1.13
Out	22%	19%	59%	1.13
Weekday a.m. Peak Hour				
In	30%	18%	52%	1.13
Out	19%	30%	51%	1.13
Weekday p.m. Peak Hour				
In	19%	30%	51%	1.13
Out	30%	18%	52%	1.13

2.4.6 Existing Trip Generation

The existing site is generating trips associated with the parking that is being used by St. Elizabeth's. These spaces will be removed as part of the proposed Project. St. Elizabeth's has arranged for parking at other nearby parking facilities to accommodate the relocation of the parked vehicles. For the Build (2023) Condition, those trips have been rerouted in the study area's roadway network to the replacement parking facilities.

2.4.7 Project Trip Generation

The mode share percentages shown in Table 2-7 were applied to the number of person-trips to develop walk/bicycle, transit, and vehicle trip generation estimates for the Project. The trip generation for the Project by mode is shown in Table 2-8. The detailed trip generation information is provided in Appendix B.

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

Table 2-8 Project Trip Generation

Land Use		*Walk/Bicycle Trips*	*Transit Trips*	*Vehicle Trips*
Daily				
Residential[1]	In	568	490	1,348
	Out	568	490	1,348
Total Net New Project Generated		1,136	980	2,696
Weekday a.m. Peak Hour				
Residential	In	24	14	36
	Out	60	95	142
Total Net New Project Generated		84	109	178
Weekday p.m. Peak Hour				
Residential	In	59	94	142
	Out	50	30	78
Total Net New Project Generated		109	124	220

1. ITE Trip Generation Rate, 9th Edition, LUC 220 (Apartment), based 687 units. The 687 units was a larger, previous building program that has been reduced to 679 units.

2.4.8 Trip Distribution

The trip distribution identifies the various travel paths for vehicles associated with the Project. Trip distribution patterns for the Project were based on BTD's origin-destination data for Area 10 and trip distribution patterns presented in traffic studies for nearby projects. The trip distribution patterns for the Project are illustrated in Figure 2-14.

The distribution of vehicles between the two site driveways was developed using the proportion of parking spaces most easily accessible by each of the driveways. Sixty-two percent of Project-generated trips were assigned to the main site driveway at Monastery Road, and 38% were assigned to the other site driveway at Nantasket Avenue.

2.4.9 Build Traffic Volumes

The net trip generation associated with the rerouted St. Elizabeth's parking and the Project-generated vehicle trips were distributed throughout the study area according to the trip distribution patterns. The resulting net trip assignments at study area intersections are shown for the weekday a.m. peak hour and the weekday p.m. peak hour in Figure 2-15 and Figure 2-16, respectively. The trip assignments were added to the No-Build (2023) Condition vehicular traffic volumes to produce the Build (2023) Condition vehicular traffic volumes. The Build (2023) Condition a.m. and p.m. peak hour traffic volumes are shown in Figure 2-17 and Figure 2-18, respectively.

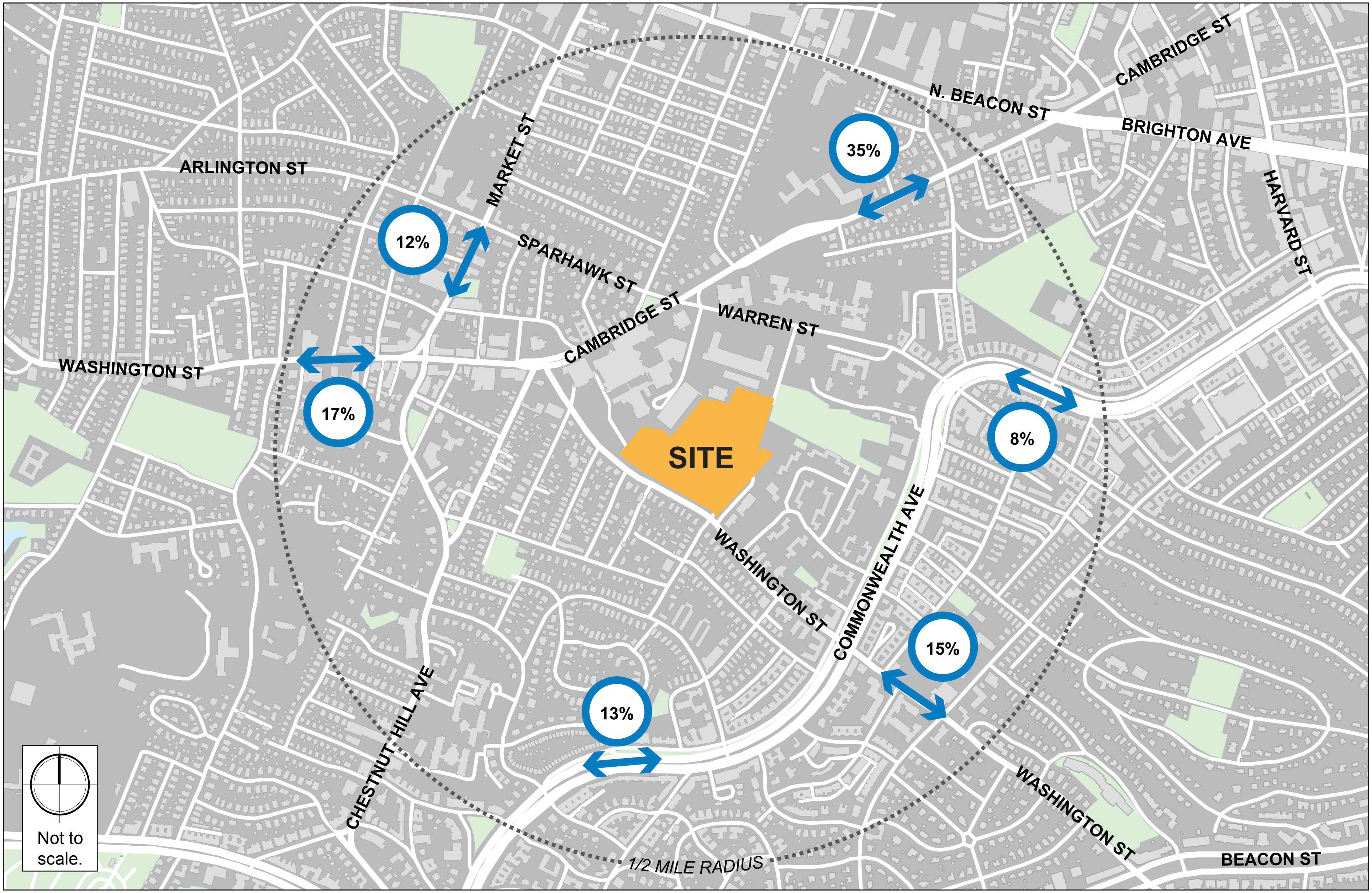

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Figure 2-14
Vehicle Distribution

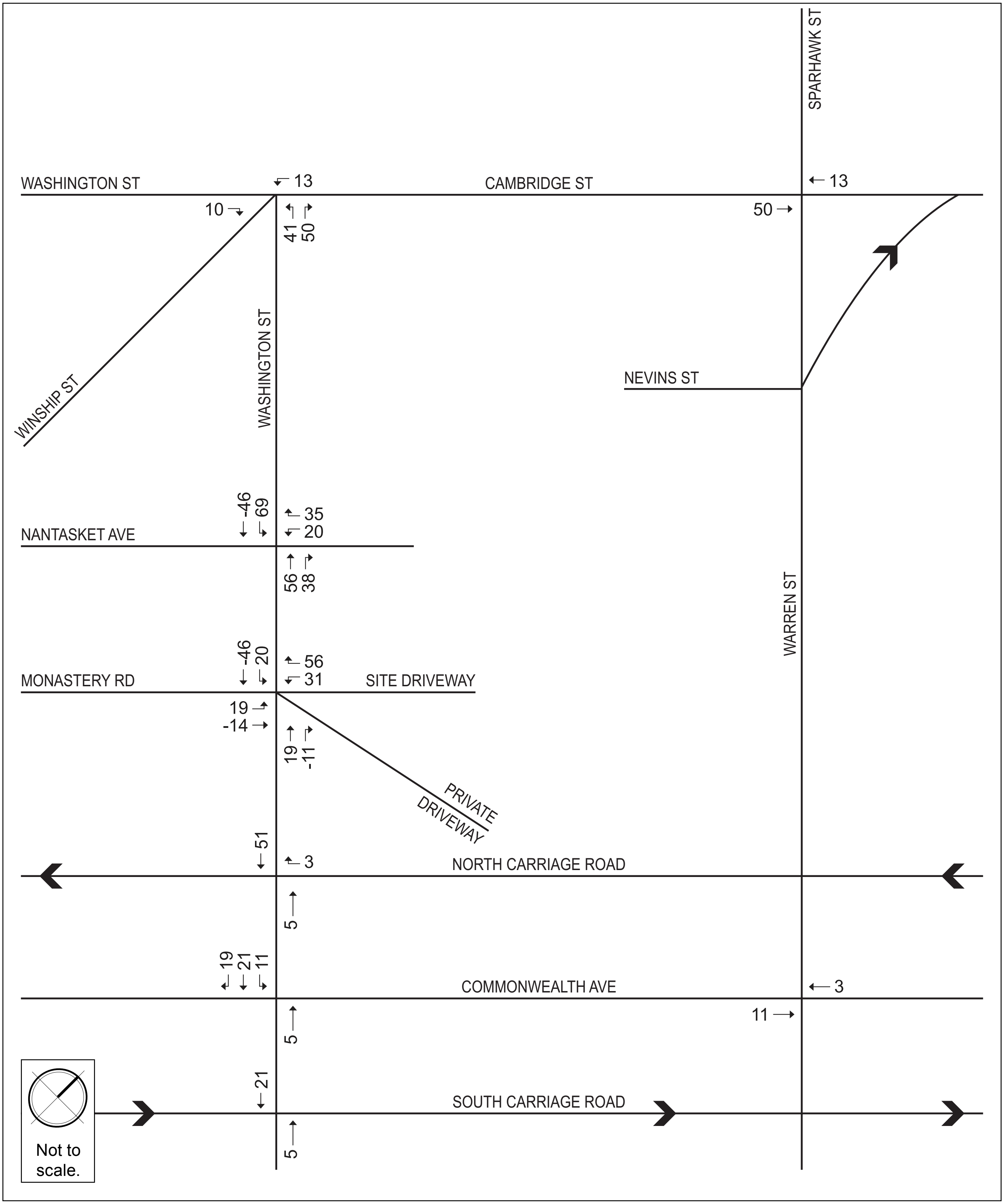

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Figure 2-15

Vehicle Trip Assignment, a.m. Peak Hour

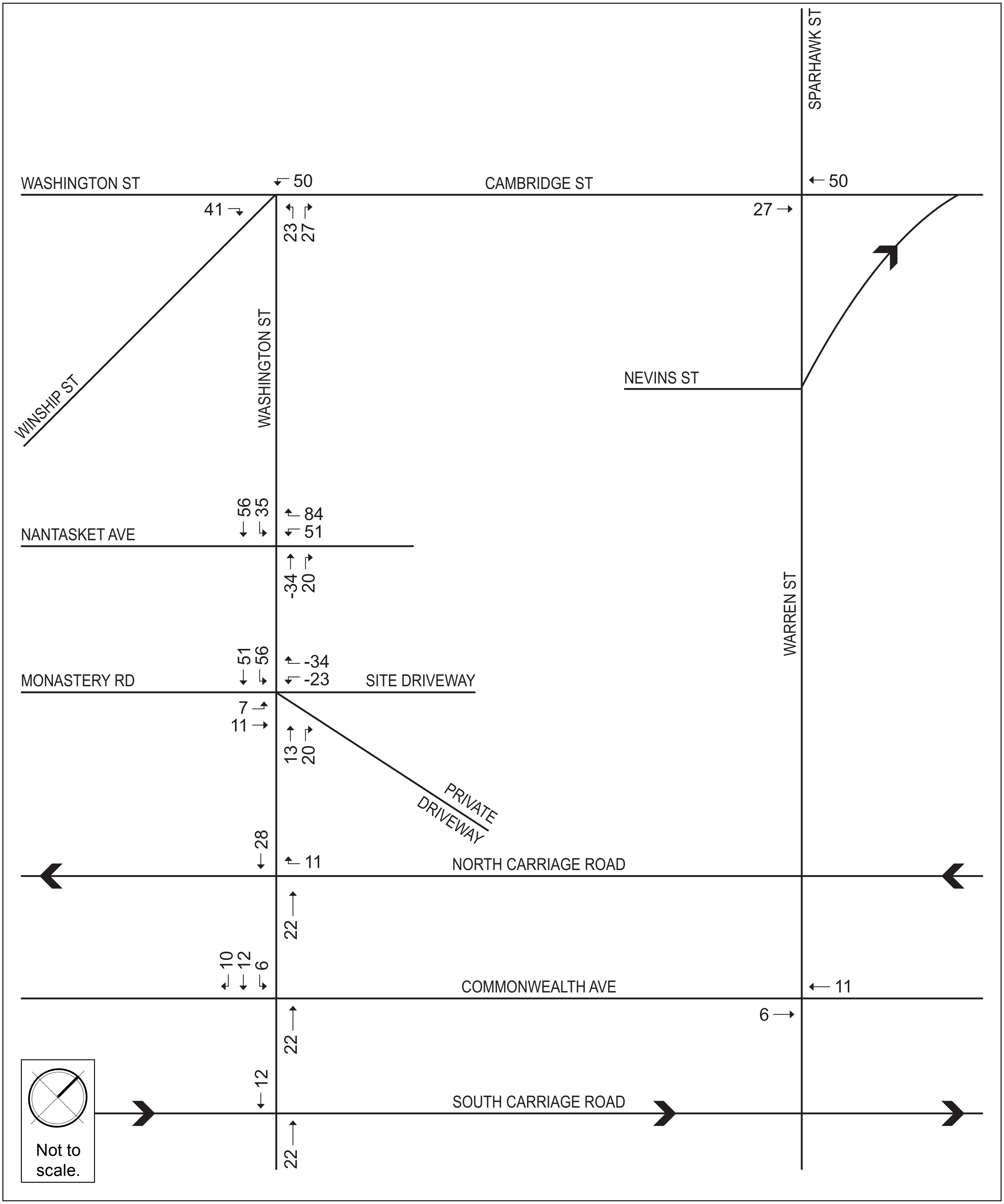

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Figure 2-16
Vehicle Trip Assignment, p.m. Peak Hour

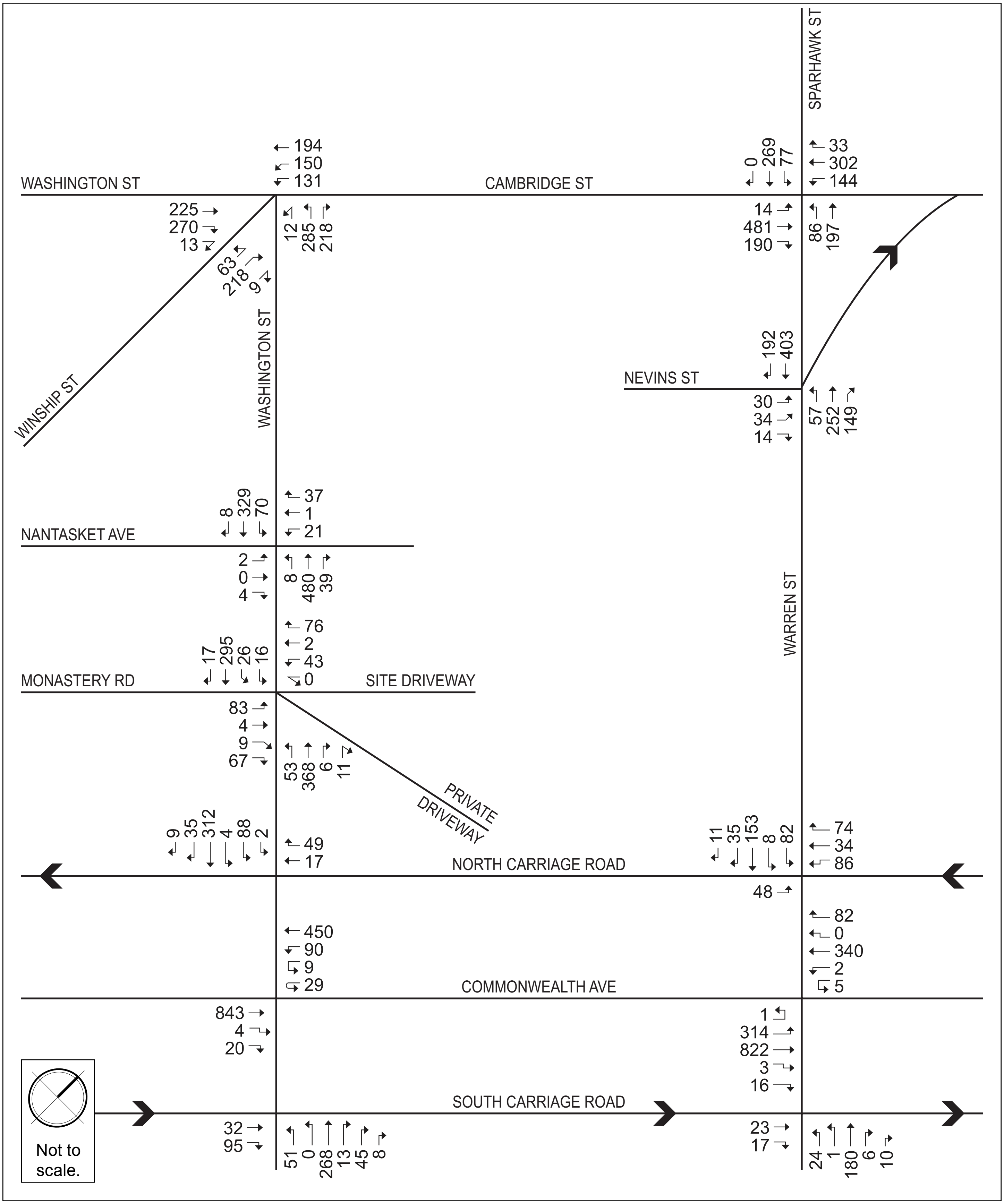

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Figure 2-17
Build (2023) Condition Traffic Volumes, Weekday a.m. Peak Hour

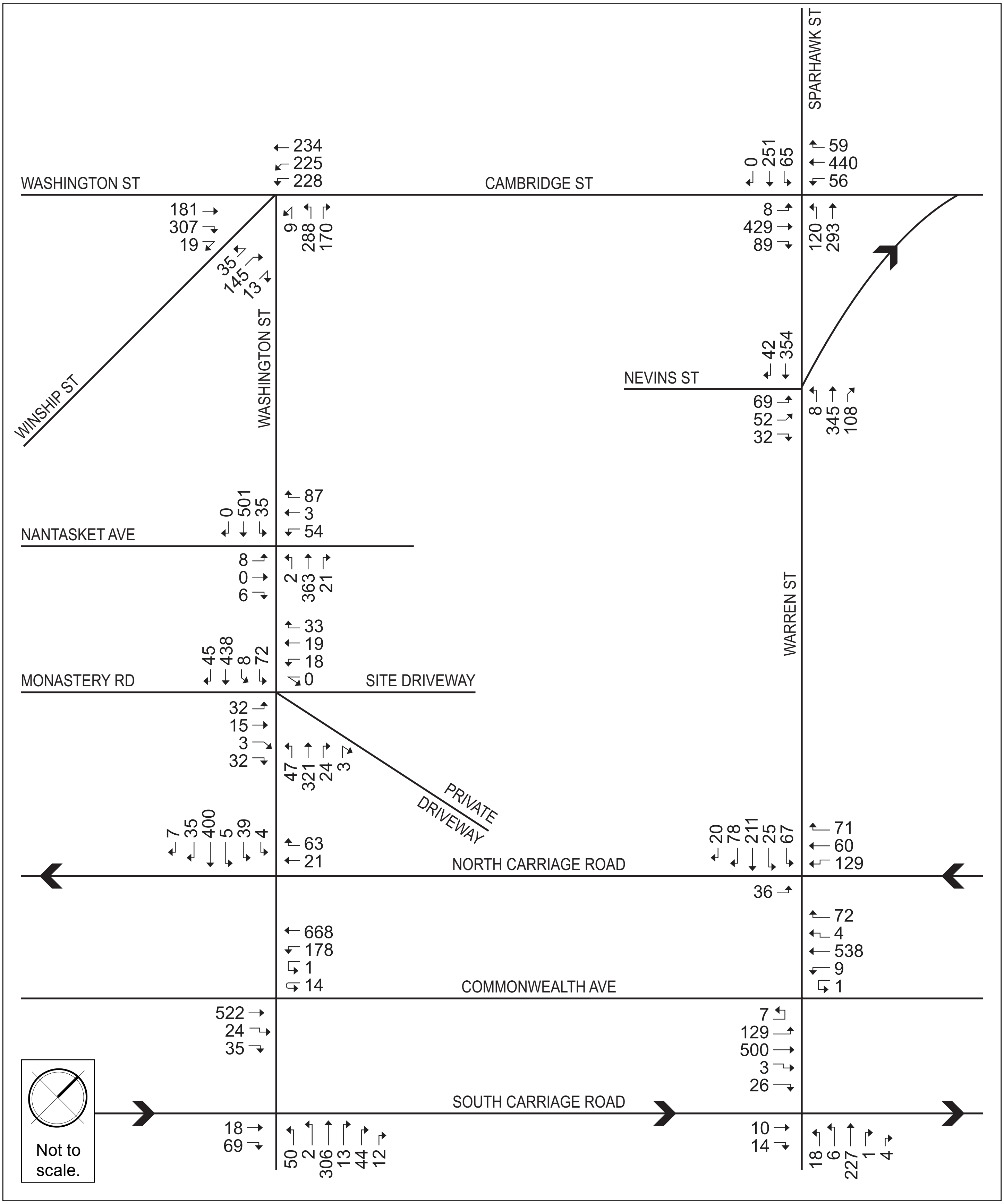

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Figure 2-18

Build (2023) Condition Traffic Volumes, Weekday p.m. Peak Hour

2.4.10 Bicycle Accommodations

BTD has established guidelines requiring projects subject to Transportation Access Plan Agreements to provide secure bicycle parking for residents and short-term bicycle racks for visitors. Based on BTD guidelines, the Project will supply a minimum of 679 secure bicycle parking/storage spaces within the Project site for the residents.

2.4.11 Build Condition Traffic Operations Analysis

The Build (2023) Condition analysis uses the same methodology as the Existing (2016) Condition and No-Build (2023) Condition analyses. Table 2-9 and Table 2-10 present the Build (2023) Condition capacity analysis for the a.m. and p.m. peak hours, respectively. The shaded cells in the tables indicate a worsening in LOS to LOS E or F between the No-Build (2023) Condition and the Build (2023) Condition. The detailed analysis sheets are provided in Appendix B.

Table 2-9 Build (2023) Condition, Capacity Analysis Summary, a.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Cambridge St/Washington St/Winship St	**D**	**47.2**	**-**	**-**	**-**
Washington Street EB thru	C	20.9	0.57	88	m147
Washington Street EB right/hard right	A	4.7	0.50	27	m31
Cambridge Street WB left	E	61.2	0.83	101	#187
Cambridge Street WB bear left	F	89.0	0.97	119	#227
Cambridge Street WB thru	B	10.0	0.39	46	65
Washington Street NB hard left/left	F	104.1	1.05	~236	#395
Washington Street NB right	B	19.1	0.64	34	113
Winship Street NEB hard left	D	40.6	0.38	37	79
Winship Street NEB bear right/hard right	E	79.5	0.93	152	#298
Washington St/Monastery Rd/Site Driveway	**B**	**19.4**	**-**	**-**	**-**
Monastery Road EB left/thru/right	C	25.0	0.54	57	131
Site Driveway WB left/thru/right	C	23.2	0.50	54	89
Washington Street NB left/thru/right	B	19.1	0.66	113	#336
Washington Street SB left/ thru/right	B	14.8	0.52	83	228
Commonwealth Avenue/Washington Street	F	80.2	-	-	-
Commonwealth Ave EB left2/thru | thru/right	E	55.8	0.95	373	#495
South Carriage Road EB left/thru	C	29.9	0.07	20	45
South Carriage Road EB right	A	8.1	0.31	0	39
Commonwealth Avenue WB U-turn/left	E	68.3	0.70	98	#193

Table 2-9 Build (2023) Condition, Capacity Analysis Summary, a.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Commonwealth Avenue WB thru | thru/right	D	40.7	0.48	168	216
North Carriage Road WB left/thru/right	D	39.0	0.31	63	m76
Washington Street NB thru/right	D	45.6	0.82	321	#439
Washington Street SB left/thru/right	F	225.9	1.40	~551	#710
Commonwealth Ave/Warren St/Kelton St	**E**	**57.8**	**-**	**-**	**-**
Commonwealth Avenue EB left/thru | thru/right	E	63.8	0.99	500	#721
South Carriage Road EB left/thru/right	B	10.1	0.06	9	30
North Carriage Road EB left	E	64.5	0.50	53	m75
Commonwealth Ave WB left/thru | thru/right	C	33.1	0.49	153	217
North Carriage Road WB thru/right	D	36.3	0.46	130	223
Kelton Street NB thru/right	E	61.2	0.78	186	#275
Warren Street SB thru/right	F	87.0	0.95	233	#406
Cambridge St/Warren St/Sparhawk St	**F**	**90.8**	**-**	**-**	**-**
Cambridge Street EB left/thru | thru/right	F	122.7	1.16	~363	m#440
Cambridge Street WB left	D	48.8	0.78	75	#167
Cambridge Street WB thru/right	C	29.7	0.66	209	186
Warren Street NB left	C	28.6	0.41	40	78
Warren Street NB thru/right	C	25.8	0.33	97	158
Sparhawk Street SB left/thru/right	F	154.1	1.20	~283	#461
Unsignalized Intersections					
Warren St/Nevins St	**-**	**-**	**-**	**-**	**-**
Nevins Street EB left	D	30.8	0.24	-	22
Nevins Street EB thru/right	D	31.0	0.34	-	35
Warren Street NB left/thru/right	A	2.0	0.07	-	6
Warren Street SB left[4]/thru/right	-	0.0	0.00	-	0
Washington St/Nantasket Ave	-	-	-	-	-
Nantasket Avenue EB left/thru/right	C	21.5	0.05	-	4
Driveway WB left/thru/right	E	39.6	0.65	-	104
Washington Street NB left/thru/right	A	0.2	0.01	-	1
Washington Street SB left/thru/right	A	2.4	0.08	-	7

Table 2-10 Build (2023) Condition, Capacity Analysis Summary, p.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Cambridge St/Washington St/Winship St	**D**	**53.1**	-	-	-
Washington Street EB thru	C	29.5	0.44	83	m135
Washington Street EB right/hard right	B	12.5	0.59	46	m127
Cambridge Street WB left	F	107.6	1.06	~173	m#271
Cambridge Street WB bear left	F	82.0	0.96	161	m#250
Cambridge Street WB thru	B	13.4	0.39	64	m111
Washington Street NB hard left/left	F	102.2	1.05	~250	#375
Washington Street NB right	B	11.6	0.50	10	57
Winship Street NEB hard left	D	35.4	0.21	20	49
Winship Street NEB bear right/hard right	D	52.4	0.70	101	173
Washington St/Monastery Rd/Site Driveway	**C**	**21.7**	-	-	-
Monastery Road EB left/thru/right	B	19.7	0.33	37	61
Site Driveway WB left/thru/right	B	18.0	0.19	21	60
Washington Street NB left/thru/right	B	16.4	0.58	91	269
Washington Street SB left/ thru/right	C	26.5	0.82	157	#501
Commonwealth Avenue/Washington Street	**F**	**90.2**	-	-	-
Commonwealth Ave EB left[2]/thru | thru/right	C	32.6	0.59	167	226
South Carriage Road EB left/thru	C	28.6	0.07	17	25
South Carriage Road EB right	A	8.8	0.36	0	2
Commonwealth Avenue WB U-turn/left	F	83.2	0.93	116	#297
Commonwealth Avenue WB thru | thru/right	C	28.4	0.66	298	165
North Carriage Road WB left/thru/right	C	26.6	0.42	85	m82
Washington Street NB thru/right	D	52.4	0.87	345	#522
Washington Street SB left/thru/right	F	302.9	1.58	~585	#805
Commonwealth Ave/Warren St/Kelton St	**D**	**51.8**	-	-	-
Commonwealth Avenue EB left/thru | thru/right	B	17.0	0.69	88	140
South Carriage Road EB left/thru/right	A	8.9	0.06	6	13
North Carriage Road EB left	E	71.1	0.44	46	m54
Commonwealth Ave WB left/thru | thru/right	D	39.7	0.70	243	333
North Carriage Road WB thru/right	D	51.8	0.78	323	340
Kelton Street NB thru/right	E	55.7	0.76	209	#323
Warren Street SB thru/right	F	120.7	1.08	~353	#554

Table 2-10 Build (2023) Condition, Capacity Analysis Summary, p.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Cambridge St/Warren St/Sparhawk St	**E**	**62.9**	**-**	**-**	**-**
Cambridge Street EB left/thru | thru/right	E	74.0	1.00	~242	#343
Cambridge Street WB left	C	25.5	0.24	25	54
Cambridge Street WB thru/right	D	45.7	0.85	321	#539
Warren Street NB left	C	34.1	0.57	63	106
Warren Street NB thru/right	C	29.8	0.53	172	245
Sparhawk Street SB left/thru/right	F	123.4	1.11	~243	#415
Unsignalized Intersections					
Warren St/Nevins St	**-**	**-**	**-**	**-**	**-**
Nevins Street EB left	D	25.6	0.31	-	31
Nevins Street EB thru/right	C	20.9	0.29	-	30
Warren Street NB left/thru/right	A	0.2	0.01	-	1
Warren Street SB left[4]/thru/right	-	0.0	0.00	-	0
Washington St/Nantasket Ave	-	-	-	-	-
Nantasket Avenue EB left/thru/right	D	28.3	0.11	-	10
Driveway WB left/thru/right	E	42.3	0.76	-	148
Washington Street NB left/thru/right	A	0.1	0.00	-	0
Washington Street SB left/thru/right	A	0.9	0.03	-	3

As shown in Table 2-9 and Table 2-10, the following operational deficiencies are expected to occur under the Build (2023) Condition:

- The signalized intersection of **Cambridge Street/Washington Street/Winship Street** continues to operate at LOS D during both peak hours. However, the Cambridge Street westbound left-turn lane decreases from LOS D to LOS E during the weekday a.m. peak hour, and it degrades from LOS E to LOS F during the weekday p.m. peak hour. The Washington Street northbound hard left/left-turn approach lane degrades from LOS E to LOS F during the weekday a.m. peak hour.

- The signalized intersection of **Commonwealth Avenue/Washington Street** decreases from LOS E to LOS F during the weekday a.m. peak hour.

- The signalized intersection of **Cambridge Street/Warren Street/Sparhawk Street** declines from LOS E to LOS F during the weekday a.m. peak hour and from LOS D to LOS E during the weekday p.m. peak hour. During the weekday p.m. peak hour, the Cambridge Street eastbound approach declines from LOS D to LOS E.

- The westbound Site Driveway approach to the unsignalized intersection of **Washington Street/Nantasket Avenue/Site Driveway** declines from LOS C to LOS E during both peak hours. This delay will only be incurred by residents of the proposed Project.

2.5 Transportation Demand Management

The Proponent is committed to implementing Transportation Demand Management (TDM) measures to minimize automobile usage and Project-traffic impacts. The TDM program may include an on-site transportation coordinator, shuttle service for residents, secure bicycle parking areas, and distributions of transit maps and schedules to residents, guests, and employees.

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

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

- The Proponent will designate a transportation coordinator to oversee transportation issues, including parking, service and loading, and deliveries;
- On-site management will work with residents as they move in to help facilitate transportation for new arrivals;
- The Proponent will provide orientation packets to new residents containing information on available transportation choices, including public transportation routes/schedules, nearby vehicle sharing and bicycle sharing locations, and walking opportunities;
- Provide an annual (or more frequent) newsletter or bulletin summarizing transit, ride-sharing, bicycling, alternative work schedules, and other travel options;
- Provide information on travel alternatives for employees, residents, and visitors via the Internet and in the building lobby;
- Join and participate in a local Transportation Management Association on behalf of residents;
- Provide bike and pedestrian access information on the Project website;
- Provide covered, secure bicycle storage for residents;
- Posting information in the lobby about public transportation;

- Provide transit access information on the Project website including information on bus and subway routes and schedules

- Provide electric vehicle charging stations to accommodate 5 percent of the total parking and sufficient infrastructure capacity for future accommodation of at least 15% of the total parking spaces;

- Designate up to 5 percent of the parking spaces as preferred parking for low emission vehicles; and

- Exploring the feasibility of providing spaces in the garage for a car sharing service (such as Zipcar or Enterprise).

2.6 Transportation Mitigation Measures

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

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

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

2.7 Evaluation of Short-term Construction Impacts

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

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

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

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

Chapter 3.0

Environmental Review Component

3.0 ENVIRONMENTAL REVIEW COMPONENT

3.1 Shadow

3.1.1 Introduction and Methodology

As typically required by the BRA, 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 site. Shadows have been determined using the applicable Altitude and Azimuth data for Boston. Figures showing the net new shadow from the Project are provided in Figures 3.1-1 to 3.1-14 at the end of this section.

3.1.2 Vernal Equinox (March 21)

At 9:00 a.m. during the vernal equinox, new shadow from the Project will be cast to the northwest and will be mostly within the boundaries of the Project site. New shadow will be cast onto a portion of the St. Elizabeth's Medical Center parking lot. No new shadow will be cast onto nearby streets, sidewalks, bus stops or parks.

At 12:00 p.m., new shadow from the Project will be cast to the north and will be mostly within the boundaries of the Project site. No new shadow will be cast onto nearby streets, sidewalks, bus stops or parks.

At 3:00 p.m., new shadow from the Project will be cast to the northeast onto a small portion of the Fidelis Way Park, limited to the northwestern corner of the Park. However, the shadow study does not include landscaping, and it is likely that this area is already under shadow due to the numerous large trees surrounding the Park. No new shadow will be cast onto nearby streets, sidewalks, or bus stops.

3.1.3 Summer Solstice (June 21)

At 9:00 a.m. during the summer solstice, new shadow from the Project will be cast to the west, and will be almost entirely within the boundaries of the Project site. No new shadow will be cast onto nearby streets, sidewalks, bus stops or parks.

At 12:00 p.m., new shadow from the Project will be cast to the north, and will be almost entirely within the boundaries of the Project site. No new shadow will be cast onto nearby streets, sidewalks, bus stops or parks.

At 3:00 p.m., new shadow from the Project will be cast to the northeast, and will be almost entirely within the boundaries of the Project site. New shadow will be cast onto a sliver of Fidelis Way Park, however, the shadow study does not include landscaping, and it is likely that this area is already under shadow due to the numerous large trees surrounding the Park. No new shadow will be cast onto nearby streets, sidewalks, or bus stops.

At 6:00 p.m., new shadow from the Project will be cast to the east. New shadow will be cast onto a portion of Fidelis Way Park and onto a small portion of Jette Court and its sidewalks. No new shadow will be cast onto nearby bus stops.

3.1.4 Autumnal Equinox (September 21)

At 9:00 a.m., new shadow from the Project will be cast to the northwest and will be mostly within the boundaries of the Project site. New shadow will be cast onto a portion of the St. Elizabeth's Medical Center parking lot. No new shadow will be cast onto nearby streets, sidewalks, bus stops or parks.

At 12:00 p.m., new shadow from the Project will be cast to the north and will be mostly within the boundaries of the Project site. No new shadow will be cast onto nearby streets, sidewalks, bus stops or parks.

At 3:00 p.m., new shadow from the Project will be cast to the northeast onto a small portion of the Fidelis Way Park, limited to the northwestern corner of the Park. However, the shadow study does not include landscaping, and it is likely that this area is already under shadow due to the numerous large trees surrounding the Park. No new shadow will be cast onto nearby streets, sidewalks, or bus stops.

At 6:00 p.m., new shadow from the Project will be cast to the northeast onto Fidelis Way Park, onto Jette Court and its sidewalks, and onto a small portion of Commonwealth Avenue and its western sidewalk. No new shadow will be cast onto nearby bus stops.

3.1.5 Winter Solstice (December 21)

The winter solstice creates the least favorable conditions for sunlight in New England. The sun angle during the winter is lower than in any other season, causing the shadows in urban areas to elongate and be cast onto large portions of the surrounding area.

At 9:00 a.m., new shadow from the Project will be cast to the northwest onto driveways and parking spaces adjacent to St. Elizabeth's Hospital and Brighton High School. No new shadow will be cast onto nearby streets, sidewalks, bus stops or parks.

159-201 Washington Street   Boston, Massachusetts

Figure 3.1-1

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

159-201 Washington Street Boston, Massachusetts

CUBE3 STUDIO

Figure 3.1-2

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

159-201 Washington Street Boston, Massachusetts

Figure 3.1-3

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

CUBE3 STUDIO

159-201 Washington Street   Boston, Massachusetts

Figure 3.1-4

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

159-201 Washington Street Boston, Massachusetts

CUBE3 STUDIO

Figure 3.1-5

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

159-201 Washington Street Boston, Massachusetts

CUBE3 STUDIO

Figure 3.1-6

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

159-201 Washington Street Boston, Massachusetts

CUBE3 STUDIO

Figure 3.1-7

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

159-201 Washington Street Boston, Massachusetts

Figure 3.1-8

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

159-201 Washington Street Boston, Massachusetts

Figure 3.1-9

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

159-201 Washington Street Boston, Massachusetts

CUBE3 STUDIO

Figure 3.1-10

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

159-201 Washington Street Boston, Massachusetts

Figure 3.1-11

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

CUBE3 STUDIO

159-201 Washington Street Boston, Massachusetts

CUBE3 STUDIO

Figure 3.1-12

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

159-201 Washington Street Boston, Massachusetts

CUBE3 STUDIO

Figure 3.1-13

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

159-201 Washington Street Boston, Massachusetts

CUBE3 STUDIO

Figure 3.1-14

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

At 12:00 p.m., new shadow from the Project will be cast to the north. No new shadow will be cast onto nearby streets, sidewalks, bus stops or parks.

At 3:00 p.m., new shadow from the Project will be cast to the northeast onto Warren Street and its sidewalks, and onto portions of Monastery Path and Fidelis Way Park. No new shadow will be cast onto nearby bus stops.

3.1.6 Conclusions

The shadow impact analysis looked at net new shadow created by the Project during fourteen time periods. The Project will not cast new shadow on bus stops during any of the time periods studied. The Project will cast new shadow onto portions of Fidelis Way Park during the 3 p.m. and 6 p.m. time periods. However, during March, June, and September 3 p.m. time periods, shadow is limited to a small portion of the western edge of the Park. However, the shadow study does not include landscaping, and it is likely that this area is already under shadow due to the numerous large trees surrounding the Park.

3.2 Daylight Analysis

The only public street abutting the Project site is Washington Street, which runs along the southern edge of the Project site. The proposed buildings will be constructed at least 100 feet away from Washington Street, and the existing wooded buffer along the street will be preserved. Given the significant landscaping along the street, the large setback, and the topography of the site, the daylight obstruction resulting from the new construction will be minimal and significantly less than daylight obstruction from buildings within the surrounding area.

3.3 Solar Glare

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

3.4 Air Quality Analysis

3.4.1 Introduction

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

3.4.2 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 US 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 Massachusetts Department of Environmental Protection (MassDEP) modeling policies and Federal modeling guidelines[1]. The following sections outline the NAAQS standards and detail the sources of background air quality data.

3.4.2.1 National Ambient Air Quality Standards

The 1970 Clean Air Act was enacted by the US Congress to protect the health and welfare of the public from the adverse effects of air pollution. As required by the Clean Air Act, EPA promulgated National Ambient Air Quality Standards (NAAQS) for the following criteria pollutants: nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM) (PM10 and PM2.5), carbon monoxide (CO), ozone (O_3), and lead (Pb). The NAAQS are listed in Table 3.4-1. Massachusetts Ambient Air Quality Standards (MAAQS) are typically identical to NAAQS.

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

A one-hour NO_2 standard was promulgated on January 22, 2010 to protect public health, including the health of sensitive populations (e.g., people with asthma, children, and the elderly). The final rule for the hourly NO_2 NAAQS was published in the Federal Register on February 9, 2010 and became effective on April 12, 2010. The form of this standard is the three-year average of the 98th percentile of the daily maximum one-hour concentrations.

Similarly, a one-hour SO_2 standard was promulgated on June 2, 2010 to protect public health, including the health of sensitive populations (e.g., people with asthma, children, and the elderly). The final rule for the hourly SO_2 NAAQS was published in the Federal Register on June 22, 2010 and became effective on August 23, 2010. The form of this standard is the three-year average of the 99th percentile of the daily maximum one-hour concentrations.

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1 40 CFR 51 Appendix W, Guideline on Air Quality Models, 70 FR 68228, Nov. 9, 2005

The inhalable particulate (PM10) NAAQS were promulgated on July 1, 1987 at the federal level with the intent of replacing the existing standards limiting ambient levels of Total Suspended Particulate (TSP). In 2006, the annual PM10 standard was revoked. However it remains codified in 310 CMR 6.00. EPA also promulgated a Fine Particulate (PM2.5) NAAQS, effective December 2006, with an annual standard of 15 $\mu g/m^3$ and the 24-hour standard of 35 micrograms per cubic meter ($\mu g/m^3$). The annual standard has since been strengthened to 12 $\mu g/m^3$ (in 2012).

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 3.4-1 National (NAAQS) and Massachusetts (MAAQS) Ambient Air Quality Standards

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

(1) Not to be exceeded
(2) 98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
(3) Not to be exceeded more than once per year.
(4) 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
(5) 98th percentile, averaged over 3 years
(6) EPA revoked the annual PM_{10} NAAQS in 2006.
(7) Not to be exceeded more than once per year on average over 3 years
(8) Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 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 "nontattinmentl".

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

The NAAQS consist of primary and secondary standards. Primary standards are intended to protect human health. Secondary standards are intended to protect public welfare from known or anticipated adverse effects associated with the presence of air pollutants, such as damage to property or vegetation. NAAQS have been developed for various durations of exposure. Massachusetts Ambient Air Quality Standards (MAAQS) are codified in 310 CMR 6.04, and generally follow the NAAQS but are not identical (highlighted in **bold** in Table 3.4-1.

3.4.2.2 Background Concentrations

To estimate background pollutant levels representative of the area, the most recent air quality monitor data reported by the MassDEP in their Annual Air Quality Reports was obtained for 2012 to 2014. The 3-hour and 24-hour SO_2 values are no longer reported in the annual reports. Data for these pollutant and averaging time combinations were obtained from the U.S. 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. A new 1-hr NO_2 standard was recently promulgated. To attain this standard, the 3-year average of the 98th percentile of the maximum daily 1-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 Kenmore Square in Boston, roughly 2.5 miles east of the Project site. However this site does not sample for Ozone or Lead. The next closest monitor is at Harrison Avenue, roughly 3.5 miles east southeast of the Project. This site samples for the remaining pollutants. A summary of the background air quality concentrations are presented in Table 3.4-2.

Table 3.4-2 Observed Ambient Air Quality Concentrations and Selected Background Levels

Pollutant	Averaging Time	2012	2013	2014	Background Concentration ($\mu g/m^3$)	NAAQS	Percent of NAAQS
SO_2 (1)(6)	1-Hour (5)	34.6	32.0	25.4	30.7	196.0	16%
	3-Hour	27.8	36.4	24.6	36.4	1300.0	3%
	24-Hour	14.1	15.7	13.1	15.7	365.0	4%
	Annual	4.9	2.7	2.5	4.9	80.0	6%
PM-10	24-Hour	28	50	53	53.0	150.0	35%
	Annual	15.7	18.9	15.0	18.9	50.0	38%
PM-2.5	24-Hour (5)	22.1	17.5	14.6	18.1	35.0	52%
	Annual (5)	9.03	7.95	6.05	7.7	12.0	64%
NO_2 (3)	1-Hour (5)	92.1	90.2	92.1	91.5	188.0	49%
	Annual	35.9	33.4	32.3	35.9	100.0	36%
CO (2)	1-Hour	1489.8	1489.8	1489.8	1489.8	40000.0	4%
	8-Hour	1260.6	1146.0	1260.6	1260.6	10000.0	13%
Ozone (4)	8-Hour	121.7	115.8	106.0	121.7	147.0	83%
Lead	Rolling 3-Month	0.014	0.007	0.014	0.014	0.15	9%

Notes:
From 2012-2014 EPA's AirData Website
(1) SO_2 reported ppb. Converted to $\mu g/m3$ using factor of 1 ppm = 2.62 $\mu g/m3$.
(2) CO reported in ppm. Converted to $\mu g/m3$ using factor of 1 ppm = 1146 $\mu g/m3$.
(3) NO_2 reported in ppb. Converted to $\mu g/m3$ using factor of 1 ppm = 1.88 $\mu g/m3$.
(4) O_3 reported in ppm. Converted to $\mu g/m3$ using factor of 1 ppm = 1963 $\mu g/m3$.
(5) Background level is the average concentration of the three years.
(6) The 24-hour and Annual standards were revoked by EPA on June 22, 2010, Federal Register 75-119, p. 35520.

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

For use in the microscale analysis, background concentrations of CO in ppm were required. The corresponding maximum background concentrations in ppm were 1.3 ppm (1,489 $\mu g/m^3$) for one-hour and 1.1 ppm (1,260 $\mu g/m^3$) for eight-hour CO.

3.4.3 Methodology

3.4.3.1 Microscale Analysis

The BRA typically requests an analysis of the effect on air quality of the increase in traffic generated by projects subject to Large Project Review. This "microscale" analysis is typically required for any intersection (including garage entrances/exits) 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 carbon monoxide (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 analysis for the Project followed the procedure outlined in U.S. EPA's intersection modeling guidance[2].

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

Baseline (2015) and future year (2020) emission factor data calculated from the MOVES model, along with traffic data, were input into the CAL3QHC program to determine CO concentrations due to traffic flowing through the selected intersections.

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

The modeling methodology was developed in accordance with the latest MassDEP modeling policies and Federal modeling guidelines.[3]

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

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

3 40 CFR 51 Appendix W, Guideline on Air Quality Models, 70 FR 68228, Nov. 9, 2005

Intersection Selection

Four signalized intersections included in the traffic study meet the above conditions (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:

- the intersection of Washington Street & Commonwealth Avenue;
- the intersection of Kelton Street, Warren Street, and Commonwealth Avenue;
- the intersection of Warren Street, Sparhawk Street, and Cambridge Street; and,
- the intersection Winship Street, Washington Street, and Cambridge Street.

Microscale modeling was performed for the intersections based on the aforementioned methodology. The 2016 Existing conditions, and the 2023 No Build and Build conditions were each evaluated for both morning (a.m.) and afternoon (p.m.) peak.

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 (2016) and build year (2023) are provided by MassDEP.

All link types for the modeled intersection were input into MOVES. Idle emission factors are obtained from factors for a link average speed of 0 miles per hour (mph). Moving emissions are calculated based on speeds at which free-flowing vehicles travel through the intersection as stated in traffic modeling (SYNCHRO) reports. A speed of 30 mph is used for all free-flow traffic. Speeds of 10 and 15 mph were used for right (and U-turns, if necessary) and left turns, respectively. Roadway emissions factors were obtained from MOVES using EPA guidance.[4]

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

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

Receptors & Meteorology Inputs

Sets of up to roughly 220 receptors were placed in the vicinity of the modeled intersection. Receptors extended approximately 300 feet on the sidewalks along the roadways approaching the intersection. The roadway links and receptor locations of the modeled intersection are presented in Figure 3.4-1 through Figure 3.4-4.

For the CAL3QHC model, limited meteorological inputs are required. Following EPA guidance[5], 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 370 centimeters was selected.[6]

Impact Calculations (CAL3QHC)

The CAL3QHC model predicts one-hour concentrations using queue-links at intersections, worst-case meteorological conditions, and traffic input data. The one-hour concentrations were scaled by a factor of 0.9 to estimate eight-hour concentrations.[7] The CAL3QHC methodology was based on EPA CO modeling guidance. Signal timings were provided directly from the traffic modeling outputs.

3.4.4 Air Quality Results

3.4.4.1 Microscale Analysis

The results of the maximum one-hour predicted CO concentrations from CAL3QHC are provided in Tables 3.4-3 through 3.4-5 for the 2016 and 2023 scenarios. Eight-hour average concentrations are calculated by multiplying the maximum one-hour concentrations by a factor of 0.9.[8]

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 (0.5 ppm) plus background (1.3 ppm) is 1.8 ppm for the existing PM peak cases at the intersection of Winship Street, Warren Street, and

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

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

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

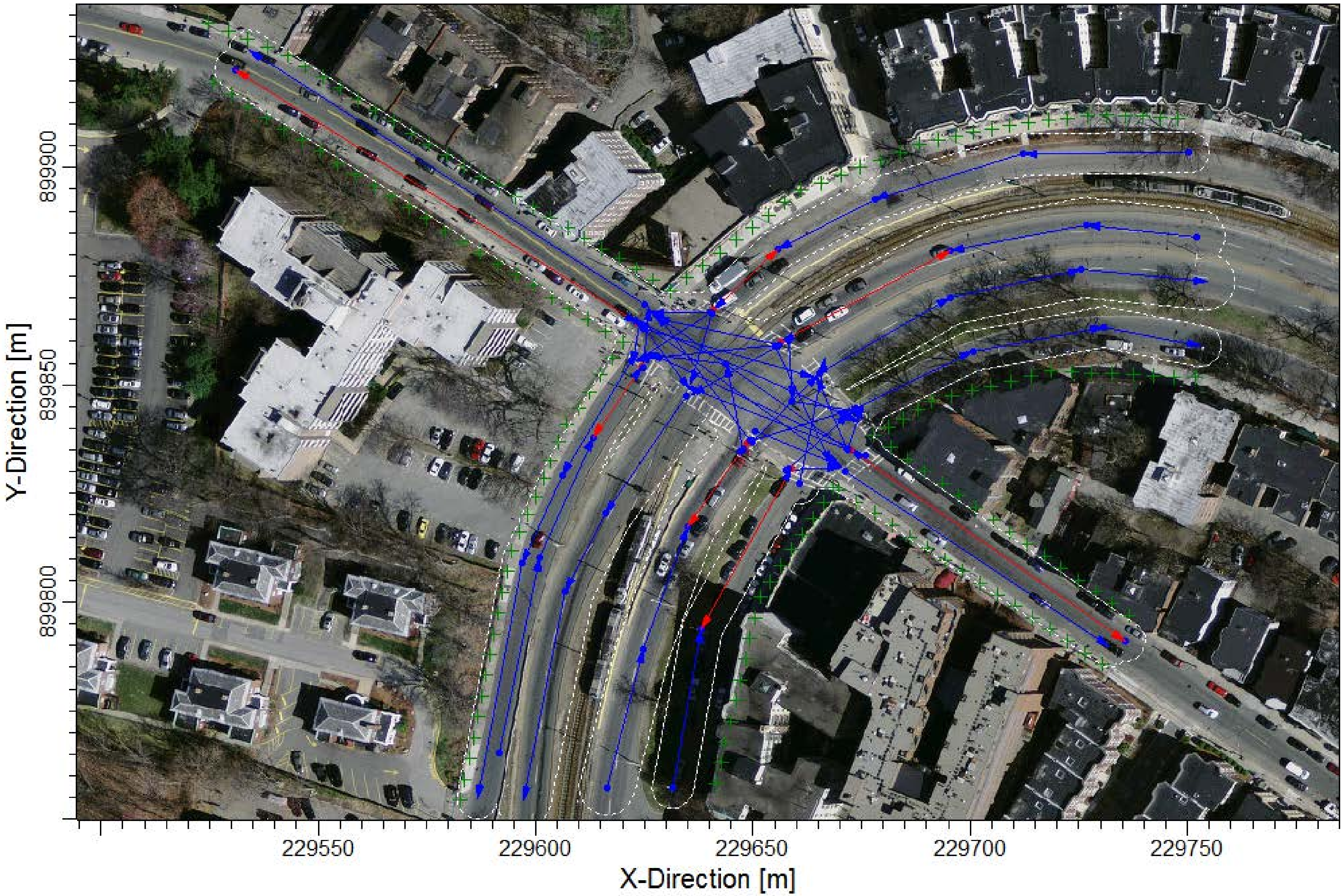
8 U.S. EPA, AERSCREEN User's Guide; EPA-454/B-11-001, March 2011.

159-201 Washington Street **Boston, Massachusetts**

Epsilon ASSOCIATES INC.

Figure 3.4-1

Link and Receptor Locations for CAL3QHC modeling of Intersection of Washington St. and Commonwealth Ave.

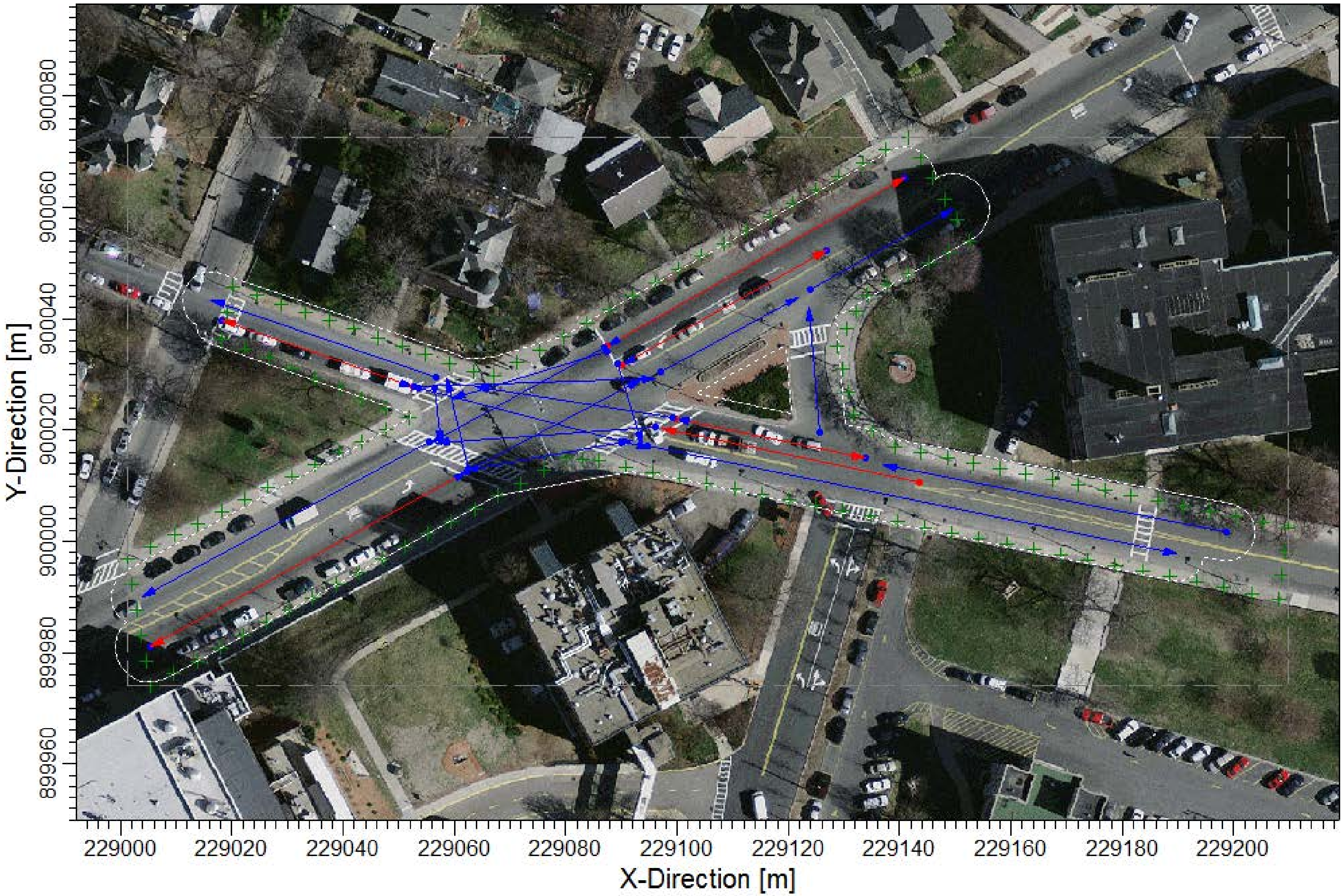


159-201 Washington Street **Boston, Massachusetts**

Epsilon ASSOCIATES INC.

Figure 3.4-2

Link and Receptor Locations for CAL3QHC modeling of Intersection of Kelton St., Warren St., and Commonwealth Ave.



159-201 Washington Street **Boston, Massachusetts**

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Figure 3.4-3

Link and Receptor Locations for CAL3QHC modeling of Intersection of Warren St., Sparhawk St. and Cambridge St.

159-201 Washington Street **Boston, Massachusetts**

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Figure 3.4-4

Link and Receptor Locations for CAL3QHC modeling of Intersection of Winship St., Washington St. and Cambridge St.

Cambridge Street. The highest eight-hour traffic-related concentration predicted in the area of the Project for the modeled conditions (0.5 ppm) plus background (1.1 ppm) is 1.6 ppm for the same location and scenario. All concentrations are well below the one-hour NAAQS of 35 ppm and the eight-hour NAAQS of 9 ppm.

3.4.5 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 3.4-3 Summary of Microscale Modeling Analysis (Existing 2016)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Washington Street and Commonwealth Avenue	AM	0.2	1.3	1.5	35
	PM	0.2	1.3	1.5	35
Kelton Street, Warren Street and Commonwealth Avenue	AM	0.2	1.3	1.5	35
	PM	0.2	1.3	1.5	35
Warren Street, Sparhawk Street and Cambridge Street	AM	0.3	1.3	1.6	35
	PM	0.4	1.3	1.7	35
Winship Street, Washington Street and Cambridge Street	AM	0.2	1.3	1.5	35
	PM	0.5	1.3	1.8	35
8-Hour					
Washington Street and Commonwealth Avenue	AM	0.2	1.1	1.3	9
	PM	0.2	1.1	1.3	9
Kelton Street, Warren Street and Commonwealth Avenue	AM	0.2	1.1	1.3	9
	PM	0.2	1.1	1.3	9
Warren Street, Sparhawk Street and Cambridge Street	AM	0.3	1.1	1.4	9
	PM	0.4	1.1	1.5	9
Winship Street, Washington Street and Cambridge Street	AM	0.2	1.1	1.3	9
	PM	0.5	1.1	1.6	9
Notes: CAL3QHC eight-hour impacts were conservatively obtained by multiplying one-hour impacts by a screening factor of 0.9.					

Table 3.4-4 Summary of Microscale Modeling Analysis (No-Build 2023)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Washington Street and Commonwealth Avenue	AM	0.1	1.3	1.4	35
	PM	0.2	1.3	1.5	35
Kelton Street, Warren Street and Commonwealth Avenue	AM	0.1	1.3	1.4	35
	PM	0.1	1.3	1.4	35
Warren Street, Sparhawk Street and Cambridge Street	AM	0.2	1.3	1.5	35
	PM	0.2	1.3	1.5	35
Winship Street, Washington Street and Cambridge Street	AM	0.1	1.3	1.4	35
	PM	0.2	1.3	1.5	35
8-Hour					
Washington Street and Commonwealth Avenue	AM	0.1	1.1	1.2	9
	PM	0.2	1.1	1.3	9
Kelton Street, Warren Street and Commonwealth Avenue	AM	0.1	1.1	1.2	9
	PM	0.1	1.1	1.2	9
Warren Street, Sparhawk Street and Cambridge Street	AM	0.2	1.1	1.3	9
	PM	0.2	1.1	1.3	9
Winship Street, Washington Street and Cambridge Street	AM	0.1	1.1	1.2	9
	PM	0.2	1.1	1.3	9

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

Table 3.4-5 Summary of Microscale Modeling Analysis (Build 2023)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Washington Street and Commonwealth Avenue	AM	0.1	1.3	1.4	35
	PM	0.2	1.3	1.5	35
Kelton Street, Warren Street and Commonwealth Avenue	AM	0.1	1.3	1.4	35
	PM	0.1	1.3	1.4	35
Warren Street, Sparhawk Street and Cambridge Street	AM	0.2	1.3	1.5	35
	PM	0.1	1.3	1.4	35
Winship Street, Washington Street and Cambridge Street	AM	0.1	1.3	1.4	35
	PM	0.2	1.3	1.5	35
8-Hour					
Washington Street and Commonwealth Avenue	AM	0.1	1.1	1.2	9
	PM	0.2	1.1	1.3	9
Kelton Street, Warren Street and Commonwealth Avenue	AM	0.1	1.1	1.2	9
	PM	0.1	1.1	1.2	9
Warren Street, Sparhawk Street and Cambridge Street	AM	0.2	1.1	1.3	9
	PM	0.1	1.1	1.2	9
Winship Street, Washington Street and Cambridge Street	AM	0.1	1.1	1.2	9
	PM	0.2	1.1	1.3	9

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

3.5 Stormwater/Water Quality

Please see Section 7.4 for information on stormwater and water quality impacts.

3.6 Flood Hazard Zones/ Wetlands

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for the site located in the City of Boston - Community Panel Number 25025C0057G indicates the FEMA Flood Zone Designations for the site area. The map shows that the Project is located in a Zone X "Areas determined to be outside the 0.2% annual chance floodplain."

The site does not contain wetlands.

3.7 Geotechnical Impacts

This section summarizes existing site conditions, subsurface soil, rock, and groundwater conditions, and planned below-grade construction for the proposed development. Excavation, foundation, and below-grade construction methods, and the potential impacts on adjacent buildings and utilities are also discussed. Subsurface explorations were performed as part of this study.

3.7.1 Existing Site Conditions

The site is currently occupied by five main buildings (St. Gabriel's Monastery, Foundation Building, School of Nursing, St. Gabriel's Church, and 201 Washington Street House). Additionally, there is a one story shrine building and a cemetery located on the property. The four main buildings were constructed between 1898 and 1929. The Foundation Building, School of Nursing, and St. Gabriel's Church are all two to four story masonry structures that are believed to have one story basements. The 201 Washington Street property is a two story residence. The shrine is a single story masonry building believed to have been constructed in the 1960's. There is a deep MDC subsurface utility easement running through the property. The site is located on a hill, and existing site grades at the top of the hill where the three main existing structures and associated parking area is located are generally flat between El. 180 and El. 190 and slope down on all sides. Elevations are in feet and referenced to Boston City Base (BCB).

There is a heating and cooling plant for the adjacent hospital located immediately adjacent to the northern portion of the site. The structure is believed to be founded on shallow foundations bearing in the natural glacial soils.

3.7.2 Subsurface Soil and Bedrock Conditions

Site subsurface conditions consist of surficial miscellaneous fill and underlain glacial soils, with bedrock at depth. The following subsurface conditions, listed below in order of increasing depth below ground surface, exist at the Project site:

- **Miscellaneous Fill** – The composition of this stratum is varied, but typically consists of loose to very dense sand and gravel intermixed with silt, bricks, cobbles, old foundations, wood, cinders, concrete, and other miscellaneous materials. The thickness of this stratum is variable and may range up to 29 ft at the site.

- **Glacial Till** – The glacial till is an unsorted mixture of soil types, typically consisting of dense to very dense silty sand with varying amounts of gravel to a very dense gravel with silt and sand. The thickness of the glacial till is variable and anticipated to be approximately 8 to 40 ft.

- **Bedrock** – The bedrock below the site is Conglomerate. The bedrock is typically weathered at the top, and increasing in quality with depth. Bedrock is expected to exist at a depths ranging between approximately 10 and 60 ft below existing ground surface.

3.7.3 Groundwater

Although indications of the presence of water were detected in some of the recent test borings, stabilized water levels were not observed during the subsurface exploration program. Groundwater levels can be affected by precipitation, snow melt, season and other factors and may differ at other times from those observed during the preliminary evaluation.

3.7.4 Proposed Foundation Construction

Development of the Project site will require demolition of some of the existing buildings and construction of four new residential buildings. The new buildings are planned to be constructed with the lowest level slabs at approximately the existing site grades. The foundation system for the new buildings is anticipated to consist of shallow footing foundations bearing on the natural Glacial Soils. In areas where deeper fill is present, ground improvement may be required to facilitate construction of the shallow foundations. The type and final design of the permanent foundation system will provide for adequate support of the structures and utilities, and be compatible with the subsurface conditions. Foundations will be located as to avoid surcharging the adjacent power plant structure or the earth slopes located at the perimeter of the site area.

3.7.5 Excavation

3.7.5.1 Methodology

Excavation for all foundations will be completed in-the-dry using conventional earth moving equipment. Excavations for new foundations and utilities are anticipated to be conducted as open-cut excavations and will not require the use of temporary earth support systems (with the exception of some local deeper excavations for utility tie-ins that may require the use of trench boxes).

Construction may require some limited dewatering within the limits of the excavation to facilitate excavation in the dry. Primarily, the dewatering will remove storm water from precipitation.

3.7.5.2 Excavation Disposal and Soil Management

Based on the final site grading, some excavated materials may not be able to be reused onsite, and will be disposed of off-site. Materials generated at the site from the excavations for new foundation construction and utility installations will consist primarily of urban fill (i.e.; containing some concentrations of chemical constituents) and may require regulatory interaction, management, and a premium cost for disposal of natural glacial soils. It is expected that the excavated soils will be transported off-site to appropriate receiving facilities. If, during the course of construction, visual or olfactory evidence of contamination is observed that is inconsistent with previous assessments of the property, these materials will be stockpiled and characterized for the presence of contamination prior to their off-site management.

3.7.6 Mitigation Measures and Monitoring

The following provisions will be incorporated into the design and construction procedures to limit potential adverse impacts to the existing structures.

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

- All contractor designs and procedures will be reviewed and accepted by the Project design team prior to implementation.

- Geotechnical instrumentation will be installed and monitored (as required) to observe the performance of existing adjacent structures.

- The Project will provide on-site monitoring of the contractor's excavation and foundation construction activities and monitoring of geotechnical instrumentation during the foundation portion of the work. This will enable observation of the contractor's compliance with the construction specifications and to facilitate adjustments to procedures if appropriate based on observed performance.

The proposed construction is not anticipated to adversely impact nearby structures or utilities.

3.8 Solid and Hazardous Waste

3.8.1 Hazardous Waste

A Phase I Environmental Site Assessment (Phase I ESA) using methods consistent with ASTM E1527-13 was previously conducted at the site to identify and recognize environmental conditions associated with site history, existing observable conditions, current site uses, and current and former uses of adjoining properties. At the time of the assessment, no recognized environmental conditions were encountered.

Excavation for the new structures may generate surplus soil and material requiring off-site disposal. Excavated soil is anticipated to consist of miscellaneous fill and naturally deposited glacial till.

Characterization of the environmental soil and groundwater quality at the Project site has not been conducted to date. Chemical testing of soil and groundwater to be generated as a result of construction activity will be conducted at the appropriate stage of the design process to further evaluate site environmental conditions. Management of soil and groundwater will be in accordance with applicable local, state, and federal laws and regulations.

An Asbestos and Universal Waste survey of the existing buildings on-site was also conducted in accordance with Federal, State, and local asbestos-industry standards for building renovation or demolition. Results indicated that there are Asbestos-Containing Building Materials (ACBMs). Prior to demolition activities or other disturbance of these ACBMs, these materials will be abated by a Commonwealth of Massachusetts licensed asbestos abatement contractor.

3.8.2 Operation Solid and Hazardous Waste Generation

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 876 tons of solid waste per year.

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

3.8.3 Recycling

A dedicated recyclables storage and collection program will facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills. A dedicated chute for recyclables will be provided in the trash/recycling rooms on each floor of each building. Recyclable materials will be collected from comingled recycle containers by a third party service. The recycling program will be fully developed in accordance with LEED standards as described in Chapter 4.

3.9 Noise Impacts

3.9.1 Introduction

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

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

3.9.2 Noise Terminology

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

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

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

The sound level meter used to measure noise is a standardized instrument.[9] It contains "weighting networks" to adjust the frequency response of the instrument to approximate that of the human ear under various conditions. One network is the A-weighting network (there are also B- and C-weighting networks), which most closely approximates how the

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[9] *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.

human ear responds to sound as a function of frequency, and is the accepted scale used for community sound level measurements. Sounds are frequently reported as detected with the A-weighting network of the sound level meter in dBA. A-weighted sound levels emphasize the middle frequencies (i.e., middle pitched—around 1,000 Hertz sounds), and de-emphasize lower and higher frequencies.

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

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

- L_{90} is the sound level, in dBA, exceeded 90 percent of the time in a given measurement period. The L_{90}, or residual sound level, is close to the lowest sound level observed when there are no obvious nearby intermittent noise sources.

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

- L_{10} is the sound level, in dBA, exceeded only 10 percent of the time in a given measurement period. The L_{10}, or intrusive sound level, is close to the maximum sound level observed due to occasional louder intermittent noises, like those from passing motor vehicles.

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

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

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

3.9.3 *Noise Regulations and Criteria*

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

Table 3.9-1 below presents the "Zoning District Noise Standards" contained in Regulation 2.5 of the APCC "Regulations for the Control of Noise in the City of Boston," adopted December 17, 1976. These maximum allowable sound pressure levels apply at the property line of the receiving property. The "Residential Zoning District" limits apply to any lot located within a residential zoning district or to any residential use located in another zone except an Industrial Zoning District, according to Regulation 2.2. Similarly, per Regulation 2.3, business limits apply to any lot located within a business zoning district not in residential or institutional use.

Table 3.9-1 City Noise Standards, Maximum Allowable Sound Pressure Levels

Octave-band Center	Residential Zoning District		Residential Industrial Zoning District		Business Zoning District	Industrial Zoning District
Frequency (Hz)	Daytime (dB)	All Other Times (dB)	Daytime (dB)	All Other Times (dB)	Anytime (dB)	Anytime (dB)
32	76	68	79	72	79	83
63	75	67	78	71	78	82
125	69	61	73	65	73	77
250	62	52	68	57	68	73
500	56	46	62	51	62	67
1000	50	40	56	45	56	61
2000	45	33	51	39	51	57
4000	40	28	47	34	47	53
8000	38	26	44	32	44	50
A-Weighted (dBA)	**60**	**50**	**65**	**55**	**65**	**70**

Notes:
1. Noise standards from Regulation 2.5 "Zoning District Noise Standards", City of Boston Air Pollution Control Commission, "Regulations for the Control of Noise in the City of Boston", adopted December 17, 1976.
2. All standards apply at the property line of the receiving property.
3. dB and dBA based on a reference pressure of 20 micropascals.
4. Daytime refers to the period between 7:00 a.m. and 6:00 p.m. daily, except Sunday.

3.9.4 Existing Conditions

A background noise level survey was conducted to characterize the existing "baseline" acoustical environment in the vicinity of the Project, located in the Brighton neighborhood of Boston. Existing noise sources in the vicinity of the Project site currently include: vehicle traffic along local roadways including: Washington Street, Cambridge Street, Warren Avenue, and I-90, rooftop mechanical equipment, aircraft flyovers, birds, and pedestrian foot traffic.

3.9.4.1 Noise Monitoring Methodology

Sound level measurements were made on Wednesday, April 20, 2016 during the daytime (1:00 p.m. to 3:00 p.m.) and on Friday, April 22, 2016 during nighttime hours (12:00 a.m. to 2:30 a.m.). Since noise impacts from the Project on the community will be highest when background noise levels are the lowest, the study was designed to measure community noise levels under conditions typical of a "quiet period" for the area. Daytime measurements were scheduled to avoid peak traffic conditions. All measurements were 20 minutes in duration.

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

3.9.4.2 Noise Monitoring Locations

Four representative noise monitoring locations were selected based upon a review of zoning and land use in the Project area. These measurement locations are depicted on Figure 3.9-1 and described below.

- **Location ST-1** is located at the eastern corner of the intersection between Washington Street and Fidelis Way, representative of the residential receptors set back to the south of the Project along Washington Street.

- **Location ST-2** is located at the western corner of the Project property line along Washington Street between Snow Street and Shannon Street, representative of the closest residential receptors west and south of the Project along Washington Street and institutional (hospital) receptors immediately west of the Project.

- **Location ST-3** is located at the E.M. Cunningham Park along Cambridge Street, representative of the closest residential receptors northwest of the Project along Cambridge Street.

- **Location ST-4** is located at Fidelis Way Park along Monastery Path, representative of the closest residential, recreational (park), and institutional (school and hospital) receptors to the north, northeast, and east of the Project.

3.9.4.3 Noise Monitoring Equipment

A Larson Davis Model 831 sound level meter equipped with a PRM831 Type I Preamplifier, a 377B20 half-inch microphone, and manufacturer-provided windscreen was used to collect background sound pressure level data. This instrumentation meets the "Type 1 - Precision" requirements set forth in ANSI S1.4 for acoustical measuring devices. The measurement equipment was calibrated in the field before and after the surveys with a Larson Davis CAL200 acoustical calibrator which meets the standards of IEC 942 Class 1L and ANSI S1.40-1984. Statistical descriptors (L_{eq}, L_{90}, etc.) were calculated for each sampling period, with octave-band sound levels corresponding to the same data set processed for the broadband levels.

3.9.4.4 Measured Background Noise Levels

Baseline noise monitoring results are presented in Table 3.9-2, and summarized below:

- The daytime residual background (L_{90} dBA) measurements ranged from 47 to 58 dBA;
- The nighttime residual background (L_{90} dBA) measurements ranged from 40 to 52 dBA;
- The daytime equivalent level (L_{eq} dBA) measurements ranged from 50 to 70 dBA;
- The nighttime equivalent level (L_{eq} dBA) measurements ranged from 43 to 64 dBA;

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

Washington Street Graduate Student Housing Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 3.9-1

Noise Monitoring & Modeling Locations

Table 3.9-2 Summary of Measured Background Noise Levels – April 20, 2016 (Daytime) & April 22, 2016 (Nighttime)

Location	Period	Start Time	L_{eq}	L_{max}	L_{10}	L_{50}	L_{90}	L_{90} Sound Pressure Levels by Octave-Band								
								31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
			dBA	dBA	dBA	dBA	dBA	dB	dB	dB	dB	dB	dB	dB	dB	dB
ST-1	Day	12:48 PM	69	91	73	64	53	58	58	56	51	47	47	43	42	26
ST-2	Day	1:16 PM	70	90	72	63	50	60	59	54	48	47	46	40	34	23
ST-3	Day	2:00 PM	68	90	69	63	58	66	63	59	57	54	53	48	41	31
ST-4	Day	2:28 PM	50	62	52	49	47	59	57	55	47	41	41	35	25	17
ST-1	Night	12:49 AM	56	73	59	44	42	48	48	45	41	40	38	30	24	18
ST-2	Night	1:15 AM	60	79	62	44	42	51	50	47	41	40	38	31	21	17
ST-3	Night	1:43 AM	64	85	67	57	52	61	59	55	53	50	46	42	37	31
ST-4	Night	12:14 AM	43	61	43	41	40	54	52	48	38	36	36	28	19	17

Weather Conditions:

	Date	Temp	RH	Sky	Wind
Daytime	Wednesday, April 20, 2016	68 °F	11%	Mostly sunny	NNE @ 1-4 mph
Nighttime	Friday, April 22, 2016	62 °F	34%	Mostly cloudy	calm

Monitoring Equipment Used:

	Manufacturer	Model	S/N
Sound Level Meter	Larson Davis	LD831	3044
Microphone	Larson Davis	377B20	LW130593
Preamp	Larson Davis	PRM831	023824
Calibrator	Larson Davis	Cal200	2853

3.9.5 Future Conditions

3.9.5.1 Overview of Potential Project Noise Sources

The primary sources of continuous sound exterior to the Project are expected to consist of condensers, electrical transformers, and an emergency power system. This equipment is anticipated to include a total of up to 770 HVAC condensers located on the roofs of the proposed Buildings 1-3 and at ground level next the Monastery, as well as five transformers and two emergency generators located at ground level. Other secondary noise sources are anticipated to either be enclosed within the building interiors, located below-grade, or are assumed to have sound levels 10 dBA lower than the primary sources of noise, and were not considered in this analysis to contribute significantly to the overall sound level.

Mitigation will be applied to sources as needed to ensure compliance with the applicable noise regulations. The noise control features assumed in this analysis consist of an emergency generator sound attenuating enclosure and exhaust silencer (SA Canopy), as well as additional noise reduction applied to the condenser units above 250 Hz, reasonably achieved through the selection of quieter equipment or the installation of local noise barriers.

A tabular summary of the modeled mechanical equipment anticipated for the Project is presented below in Table 3.9-3. Sound power level data for each unit, as provided by the manufacturer or calculated from provided sound pressure level data, is presented in Table 3.9-4. Sound power levels of those units for which data was not provided were assumed based on data for similar or representative equipment. Noise reduction levels assumed in the model are provided in Table 3.9-5. The approximate locations of the mechanical equipment were provided by the Project team through a preliminary roof plan.

Table 3.9-3 Modeled Noise Sources

Noise Source	Quantity	Equipment Location	Assumed Size/Capacity per Unit
Transformer	5	Ground Level	5 MVA
Condenser	770	Roof/Ground Level	1.5 Ton
Emergency Generator	2	Ground Level	300 ekW

Table 3.9-4 Modeled Sound Power Levels per Unit

Noise Source	Broad-band	32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
	dBA	dB	dB	dB	dB	dB	dB	dB	dB	dB
Transformer[1]	80	76	82	84	79	79	73	68	63	56
Condenser[2]	83	77	80	81	81	80	78	74	70	64
Emergency Generator[3]	97	109[4]	109	104	101	95	88	84	83	79

Notes:

1. Assumed 5 MVA per transformer. Sound power level estimated based on MVA rating per unit.
2. Goodman GSX13 1.5-Ton Split System Air Conditioner, or similar. Sound power level estimated based on capacity per unit.
3. Assumed CAT PGS300 300 ekW Standby Generator w/SA Canopy (enclosure + silencer), or similar. Sound power level calculated based on reference sound pressure level data; includes mechanical and exhaust noise.
4. No data available in 32 Hz band. Assumed equal to 63 Hz band.

Table 3.9-5 Modeled Noise Reduction Levels

Noise Source	32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
	dB	dB	dB	dB	dB	dB	dB	dB	dB
Condenser Noise Reduction[1]	0	0	0	0	2	5	7	7	7

Notes:

1. Assumed noise reduction per condenser unit, achieved through the selection of quieter equipment or the installation of local noise barriers.

3.9.5.2 Noise Modeling Methodology

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

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

3.9.5.3 Noise Modeling Results

Ten modeling locations with a height of 1.5 meters above-grade were included in the analysis representing the nearest noise-sensitive residential and institutional receptors (including hospitals and schools). Figure 3.9-1 shows the locations of each modeled receptor as well as the monitoring locations selected for background measurements.

The predicted sound levels, presented in Table 3.9-6, from all mechanical equipment operating simultaneously (except the emergency generators) at rated load are expected to range from 29 to 47 dBA at nearby receptors, including the closest residences. Table 3.9-7 presents predicted sound levels from all mechanical equipment including the emergency generators during routine daytime testing periods, which are expected to range from 31 to 47 dBA at nearby receptors including the closest residences.

Results of this evaluation demonstrate that with appropriate mitigation as described above, sound levels from Project operation are anticipated to fully comply with the most stringent City of Boston nighttime broadband and octave-band noise limits described in Table 3.9-1. As such, this analysis indicates that the proposed Project can operate without significant impact on the existing acoustical environment.

Table 3.9-6 Modeled Project-Only Sound Levels – Typical Nighttime Operation (No Emergency Generators)

Modeling Location ID	Zoning / Land Use	Evaluation Period	Broadband (dBA)	Sound Pressure Level (dB) per Octave-band Center Frequency								
				32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
R1	Residential	Night	29	35	36	35	33	28	22	13	3	0
R2[1]	Residential	Night	39	42	43	43	43	38	31	23	13	0
R3	Residential	Night	45	47	49	50	49	45	38	30	22	4
R4	Residential	Night	46	46	48	49	49	46	40	32	23	0
R5	Residential	Night	47	48	50	51	50	46	40	32	23	6
R6	Recreational[1]	Night	42	46	47	47	46	41	35	27	18	0
R7	Hospital[2]	Night	39	43	45	44	43	38	31	22	11	0
R8	School[1]	Night	40	45	47	46	44	39	31	22	13	0
R9	Hospital[2]	Night	45	49	51	51	49	44	37	29	21	8
R10	Hospital[2]	Night	45	49	50	50	47	44	38	31	25	14
City of Boston Limits	**Residential**	**Night**	**50**	**68**	**67**	**61**	**52**	**46**	**40**	**33**	**28**	**26**
	Business	**Night**	**65**	**79**	**78**	**73**	**68**	**62**	**56**	**51**	**47**	**44**
	Industrial	**Night**	**70**	**83**	**82**	**77**	**73**	**67**	**61**	**57**	**53**	**50**

1. Daytime use only
2. Compare to nighttime 'residential' limits

Table 3.9-7 Modeled Project-Only Sound Levels – Typical Daytime Operation + Routine Emergency Generator Testing

Modeling Location ID	Zoning / Land Use	Evaluation Period	Broadband (dBA)	Sound Pressure Level (dB) per Octave-band Center Frequency								
				32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
R1	Residential	Day	31	45	43	38	34	29	22	13	4	0
R2[1]	Residential	Day	39	43	44	43	43	38	31	23	13	0
R3	Residential	Day	45	48	50	50	49	45	38	30	22	4
R4	Residential	Day	46	46	48	49	49	46	40	32	23	0
R5	Residential	Day	47	50	51	51	50	46	40	32	23	6
R6	Recreational[1]	Day	43	52	51	48	46	42	35	27	18	0
R7	Hospital[1]	Day	40	50	50	47	44	39	32	24	14	0
R8	School[1]	Day	41	56	53	48	45	39	32	23	15	0
R9	Hospital[1]	Day	45	50	51	51	49	44	37	29	22	8
R10	Hospital[1]	Day	45	56	55	51	48	44	38	32	25	14
City of Boston Limits	**Residential**	**Day**	**60**	**76**	**75**	**69**	**62**	**56**	**50**	**45**	**40**	**38**
	Business	**Day**	**65**	**79**	**78**	**73**	**68**	**62**	**56**	**51**	**47**	**44**
	Industrial	**Day**	**70**	**83**	**82**	**77**	**73**	**67**	**61**	**57**	**53**	**50**

1. Compare to daytime 'residential' limits

3.9.6 Conclusions

Baseline noise levels were measured in the vicinity of the Project site and were compared to predicted noise levels based on information provided by the manufacturers of representative mechanical equipment or estimated from the equipment's capacity. With appropriate mitigation (as described in Section 3.9.5.1), the Project is not expected to introduce significant outdoor mechanical equipment noise into the surrounding community.

Results of the analysis indicate that typical nighttime noise levels from the Project as well as noise levels from routine daytime testing of the emergency generators are expected to comply with the City of Boston Noise Zoning requirements and are not anticipated to significantly impact the existing acoustical environment.

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

3.10 Construction Impacts

3.10.1 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.

3.10.2 Construction Methodology/Public Safety

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

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

3.10.3 Construction Schedule

The Proponent anticipates that the Project will commence construction in mid-2017 and last for approximately 24 months.

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

3.10.4 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 site. Construction procedures will be designed to meet all Occupational Safety and Health Administration (OSHA) safety standards for specific site construction activities.

3.10.5 Construction Mitigation

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

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

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

3.10.6 Construction Employment and Worker Transportation

The number of workers required during the construction period will vary. It is anticipated that approximately 300 construction jobs will be created over the length of construction. The Proponent will make reasonable good-faith efforts to have at least 50% of the total employee work hours be for Boston residents, at least 25% of total employee work hours be for minorities and at least 10% of the total employee work hours be for women. The Proponent will enter into jobs agreements with the City of Boston.

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

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

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

3.10.8 Construction Air Quality

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

- Using wetting agents on areas of exposed soil on a scheduled basis;
- Using covered trucks;

- Minimizing spoils on the construction site;
- Monitoring of actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized;
- Minimizing storage of debris on the site; and
- Periodic street and sidewalk cleaning with water to minimize dust accumulations.

3.10.9 Construction Noise

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

Mitigation measures are expected to include:

- Instituting a proactive program to ensure compliance with the City of Boston noise limitation policy;
- Using appropriate mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;
- Muffling enclosures on continuously running equipment, such as air compressors and welding generators;
- Replacing specific construction operations and techniques by less noisy ones where feasible;
- Selecting the quietest of alternative items of equipment where feasible;
- Scheduling equipment operations to keep average noise levels low, to synchronize the noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels;
- Turning off idling equipment; and
- Locating noisy equipment at locations that protect sensitive locations by shielding or distance.

3.10.10 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.

3.10.11 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.

3.10.12 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.

3.10.13 Rodent Control

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

3.10.14 Wildlife Habitat

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

Chapter 4.0

Sustainable Design and Climate Change Preparedness

4.0 SUSTAINABLE DESIGN AND CLIMATE CHANGE PREPAREDNESS

4.1 Sustainable Design

The Project will be designed and built using construction industry best-practices for sustainability described within, and measured by, the LEED for Homes Mid-Rise rating system. An Integrated Project Team and process have been established to leverage all professional expertise and seek every opportunity to employ Green Building techniques and practices. The Projects' Preliminary Rating shows performance well in excess of the target of LEED Silver Certification with several additional credit opportunities in discussion ensuring no ground is lost toward that goal, and a final performance rating beyond the goal is easily possible.

The Project consists of three new buildings, and the rehabilitation of the existing St. Gabriel's Monastery and Pierce House. Separate LEED checklists have been prepared for each of the new buildings. Both the Monastery and the Pierce House are less than 50,000 square feet, therefore a LEED checklist is not required and has not been included. The following is a detailed credit-by-credit analysis of the Project team's approach for achieving LEED certifiability at the Silver level. The preliminary LEED checklists are included at the end of this section. Please note that this is an initial credit checklist and applicable credits may change as the building design advances.

Innovation and Design Process (ID)

<u>ID 1.1 Preliminary Rating (Prerequisite)</u>: The Project team has discussed the Preliminary Rating with the Green Rater and completed the Preliminary Checklist, Silver certification is the target goal.

<u>ID 1.2 Energy Expertise for Mid-Rise (Prerequisite)</u>: The team has both expertise for Mid-rise systems and experience modeling ASHRAE 90.1 energy simulation for LEED-NC & LEED for Homes Mid-Rise and meets this requirement.

<u>ID 2.1 Durability Planning (Prerequisite):</u> The durability evaluation form has been completed and the durability inspection checklist will be developed as the design advances, meeting all of the LEED requirements.

<u>ID 2.2 Durability Management (Prerequisite):</u> The builder will use the durability inspection checklist throughout construction as both an inspection tool and a project management tool for weekly review, to ensure each measure is completed.

Location and Linkages (LL)

<u>LL 2 Site Selection (2 credits):</u> The Project site does not trigger any of the listed environmental sensitivity criteria.

LL 3.2 Preferred Locations - Infill (2 credits): 75% or more of the perimeter borders previously developed land.

LL 4 Existing Infrastructure (1 credit): The lot is within ½ mile of existing water and sewer service lines.

LL 5.1 – 5.3 Community Resources/Public Transit (3 credits): The site has outstanding transit options, maximizing credit in this category.

LL 6 Access to Open Space (1 credit): The site will meet the criteria of being proximate to space greater than ¾ acre within ¼ mile.

Sustainable Sites (SS)

SS 1.1 Erosion Controls during Construction (Prerequisite): The Project team will develop and implement an erosion control plan prior to start of construction which will meet each of the required LEED provisions (a – e).

SS 1.2 Minimize Disturbed Area of Site for Mid-Rise (1 credit): The Project density is approximately 59 units/acre and will be in excess of the 40 units/acre threshold.

SS 2.1 No invasive plants (Prerequisite): No invasive species will be included in the landscape plan.

SS 2.2 Basic Landscape Design (1 credit): Any installed turf will be drought-tolerant, will not be used in densely shaded areas, and will not be placed in areas with a greater than 25% slope. Mulch, or soils amendments will be used as appropriate, and compacted soil will be tilled to at least six inches.

SS 3.2 Reduce Roof Heat Island Effects (1 credit): The roof will be installed with high-albedo material on 75% or more of the roof area.

SS 4.3 Storm Water Quality Control for Mid-Rise (2 credits): The Project will use a storm water management plan designed in accordance with state and local standards.

SS 5 Nontoxic Pest Control (2 credits): The construction style of this Project will meet all of the pest-control alternatives for LEED.

SS 6.1 – 6.3 Compact Development, Very-high Density (4 credits): The Project will have approximately 93 units per acre, meeting the Very High Density threshold.

SS 7.1 Public Transit Mid-Rise (2 credits): The number of transit rides available within ½ mile of the Project is in excess of 60.

SS 7.2 Bicycle Storage for Mid-Rise (1 credit): At least one covered bicycle storage space for each unit will be provided, exceeding the LEED requirement.

Water Efficiency (WE)

WE 3.1 and 3.2 Indoor water use (5 credits): The Project will select shower heads with 1.75 or less gallons per minute (GPM), lavatory faucets with 0.5 or less GPM, and toilets with under 1.3 gallons per flush.

WE 3.3 Water Efficient Appliances for Mid-Rise (2 credits): The Project will use high-efficiency clothes washers and dishwashers.

Energy and Atmosphere (EA)

EA 1.1 Minimum Energy Performance for Mid-Rise (Prerequisite): The Project will exceed the 18% minimum reduction in energy use according to the ASHRAE 90.1 simulation: Appendix G, well in excess of the LEED minimum threshold.

EA 1.2 Testing and Verification for Mid-Rise (Prerequisite): The Project intends to comply with Option 1, EPA MFHR Testing & Verification protocol.

EA 1.3 Optimize Energy Performance for Mid-Rise (7 credits): The Project intends to reach at least a 20% better than reference in the ASHRAE with EPA simulation modeling.

EA 7.2 Pipe Insulation (1 credit): All domestic hot water piping will have R4 pipe insulation installed.

EA 11.1 Refrigerant Charge Test (Prerequisite): All refrigerant lines for air conditioning will be charge tested per manufacturer's standards.

EA 11.2 Appropriate HVAC Refrigerants (1 credit): R410A refrigerant will be used on space cooling systems.

Materials and Resources (MR)

MR 1.1 Framing Order Waste Factor (Prerequisite): A calculation of the wood necessary to frame the building and orders of the amount of wood purchased will be made. Orders will not exceed this calculation by more than 10%.

MR 1.4 Framing Efficiencies (1 credit): Efficient framing practices will be used to minimize excess wood.

MR 2.1 FSC Certified Tropical Woods (Prerequisite): Suppliers will be notified of preference for FSC products and a request for the country of manufacture for each wood product. Any tropical woods used will be FSC Certified.

MR 2.2 Environmentally Preferable Products (min. 3 credits): The Project will select environmentally preferable products in accordance with the EPP table to earn a minimum of 3 credits.

MR 3.1 Construction Waste Management Planning (Prerequisite): The Project will investigate any recycling opportunities in the area and document the waste diverted from the landfill.

MR 3.2 Construction Waste Reduction (2 credits): The Project will limit the total amount of waste that will go to the land fill by targeting a 63% reduction.

Indoor Environmental Quality (EQ)

EQ 2.1 Basic Combustion Venting Measures (Prerequisite): These requirements are included in the design and are requirements for basic code compliance in Boston. There will be no fireplaces in any of the units.

EQ 4.1 Basic Outdoor Air Ventilation (Prerequisite): Continuous ventilation will be provided to each unit to meet the ASHRAE 62.2 – 2007 ventilation requirement.

EQ 5.1 Basic Local Exhaust (Prerequisite): Bath fans and kitchen area exhaust fans will be ASHRAE 62.2 – 2007 compliant. All of the LEED and ENERGY STAR criteria will be met.

EQ 5.2 Enhanced Local Exhaust (1 Credit): Continuously operating exhaust fans will be used to meet the ventilation requirement.

EQ 6.1 Room by Room Load Calculations (Prerequisite): Room by room load calculations will be provided by the HVAC engineer or responsible party stating the calculations were performed according to ACCA Manual J and D.

EQ 7.2 Air Filtering (prerequisite): MERV 8 filters will be installed on ducted distribution systems.

EQ 8.1 Indoor Contaminant Control During Construction (1 credit): All ductwork will be sealed throughout construction so that debris doesn't contaminate the distribution systems.

EQ 8.2 Indoor Contaminant Control for Mid-Rise (2 credits): The Project will install a central entryway system and in-unit shoe removal and storage near entryways.

EQ 8.3 Preoccupancy Flush (1 credit): The building will be flushed of airborne contaminants per LEED guidance prior to building turnover.

EQ 10.1 No HVAC in Garage (Prerequisite): There will be no unit HVAC equipment in the garage.

EQ 10.2 Minimize Pollutants from Garage (2 Credits): Garages will be tightly sealed from occupied spaces, and the ventilation requirements of ASHRAE 62.2 will be met.

EQ 11 Environmental Tobacco Smoke Control, a) Reduce smoke exposure and transfer (0.5 credit): Restrictions on public smoking will be implemented to reduce smoke exposure and transfer.

EQ 12.1 Compartmentalization of Units (Prerequisite): A thorough air-sealing protocol will be implemented to ensure leakage below .30 CFM50 per sf of enclosure

Awareness and Education (AE)

AE 1.1 Education of the Homeowner (Prerequisite): An electronic Home Owner's Manual will be created and provided to all occupants and a one hour walk through will be conducted with the occupants in group trainings.

AE 1.3 Public Awareness (1 credit): The Proponent will create a website about the Project, highlighting the benefits of LEED for Homes. The Proponent will work with regional publications on a newspaper article about this Project. The contractor's project sign will include LEED for Homes signage at the exterior of the building site.

AE 2 Education of the Building Manager (1 credit): An operations and training manual will be created and provided to the building manager and a one-hour walk-through will be conducted with the building manager.

4.2 Climate Change Preparedness

4.2.1 Introduction

The Project team examined two areas of concern related to climate change: drought conditions and increased number of high-heat days. Due to the Project's location, elevation and topography, the Project site is not considered susceptible to the impacts of a reasonably-assumed sea level rise. It is also unlikely to experience extreme flooding in the case of large storms.

A copy of the preliminary Climate Change Checklist is included in Appendix D.

4.2.2 Drought Conditions

Under a global high emissions scenario that would increase the potential climate change impacts, the occurrence of droughts lasting one to three months could go up by as much as 75% over existing conditions by the end of the century. To minimize the Project's susceptibility to drought conditions the landscape design is anticipated to incorporate native and adaptive plant materials which require low or no irrigation and are known for their ability to withstand adverse conditions. Plumbing fixtures will be specified to achieve a reduction in water use through low-flow water-closets, low-flow showers, and low-flow sinks.

4.2.3 High Heat Days

The Intergovernmental Panel on Climate Change (IPCC) has predicted that in Massachusetts the number of days with temperatures greater than 90°F will increase from the current five-to-twenty days annually, to thirty-to-sixty days annually[1]. Energy conservation and other energy management building systems will be integral components of the Project.

The Project design will incorporate a number of measures to minimize the impact of high temperature events. The buildings will feature a high efficiency building envelope, high performance lighting and controls, and operable windows. The new buildings will specify a high albedo roof and significant landscaping to minimize the heat island effect. Energy modeling for the Project has not yet been completed; however, as indicated on the LEED Checklist, the Proponent will strive to reduce the Project's overall energy demand and GHG emissions that contribute to global warming. The Project's proposed TDM program will also help to lessen fossil fuel consumption.

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

LEED for Homes Mid-rise Simplified Project Checklist

for Homes

Builder Name:	*Cabot, Cabot & Forbes*
Project Team Leader (if different):	*Michele Quinn, CUBE3*
Home Address (Street/City/State):	*Washington Street, Boston (Brighton), MA*

Project Description:

Building type: ***Mid-rise multi-family*** # of stories: ***6***

# of units: ***127*** Avg. Home Size Adjustment: ***-10***

Adjusted Certification Thresholds

Certified: ***35.0*** Gold: ***65.0***

Silver: ***50.0*** Platinum: ***80.0***

Project Point Total

Prelim: ***54.5 + 28 maybe pts*** **Final:** ***13***

Certification Level

Prelim: ***Silver*** **Final:** ***Not Certified***

Final Credit Category Total Points

ID: 0 *SS: 4* *EA: 7* *EQ: 0*

LL: 0 *WE: 0* *MR: 2* *AE: 0*

Minimum Point Thresholds Not Met for Final Rating

date last updated :

last updated by :

				Max Pts	Project Points Preliminary			Final
Innovation and Design Process (ID)		(No Minimum Points Required)		Max	Y/Pts	Maybe	No	Y/Pts
1. Integrated Project Planning	1.1	Preliminary Rating		Prereq	Y			Y
	1.2	Energy Expertise for MID-RISE		Prereq	Y			Y
	1.3	Professional Credentialed with Respect to LEED for Homes		1	0	0	N	0
	1.4	Design Charrette		1	0	1		0
	1.5	Building Orientation for Solar Design		1	0	0	N	0
	1.6	Trades Training for MID-RISE		1	0	1		0
2. Durability Management Process	2.1	Durability Planning		Prereq	Y			Y
	2.2	Durability Management		Prereq	Y			Y
	2.3	Third-Party Durability Management Verification		3	0	3		0
3.Innovative or Regional Design	3.1	Innovation #1		1	0	0.5		0
	3.2	Innovation #2		1	0	0.5		0
	3.3	Innovation #3		1	0	0	N	0
	3.4	Innovation #4		1	0	0	N	0
		Sub-Total for ID Category:		**11**	0	6		**0**
Location and Linkages (LL)		(No Minimum Points Required)	OR	Max	Y/Pts	Maybe	No	Y/Pts
1. LEED ND	1	LEED for Neighborhood Development	**LL2-6**	10	0	0	N	0
2. Site Selection	2	Site Selection		2	2	0		0
3. Preferred Locations	3.1	Edge Development		1	0	0	N	0
	3.2	Infill	**LL 3.1**	2	2	0		0
	3.3	Brownfield Redevelopment for MID-RISE		1	0	0	N	0
4. Infrastructure	4	Existing Infrastructure		1	1	0		0
5. Community Resources/ Transit	5.1	Basic Community Resources for MID-RISE		1	0	0	N	0
	5.2	Extensive Community Resources for MID-RISE	**LL 5.1, 5.3**	2	0	0	N	0
	5.3	Outstanding Community Resources for MID-RISE	**LL 5.1, 5.2**	3	3	0		0
6. Access to Open Space	6	Access to Open Space		1	1	0		0
		Sub-Total for LL Category:		**10**	9	0		**0**
Sustainable Sites (SS)		(Minimum of 5 SS Points Required)	OR	Max	Y/Pts	Maybe	No	Y/Pts
1. Site Stewardship	1.1	Erosion Controls During Construction		Prerequisite	Y			Y
	1.2	Minimize Disturbed Area of Site for MID-RISE		1	1	0		0
2. Landscaping	2.1	No Invasive Plants		Prerequisite	Y			Y
	2.2	Basic Landscape Design	**SS 2.5**	1	1	0		0
	2.3	Limit Conventional Turf for MID-RISE	**SS 2.5**	2	0	1		0
	2.4	Drought Tolerant Plants for MID-RISE	**SS 2.5**	1	0	1		0
	2.5	Reduce Overall Irrigation Demand by at Least 20% for MID-RISE		3	0	0	N	0
3. Local Heat Island Effects	3.1	Reduce Site Heat Island Effects for MID-RISE		1	0	1		0
	3.2	Reduce Roof Heat Island Effects for MID-RISE		1	1	0		0
4. Surface Water Management	4.1	Permeable Lot for MID-RISE		2	0	2		0
	4.2	Permanent Erosion Controls		1	0	0	N	0
	4.3	Stormwater Quality Control for MID-RISE		2	2	0		0
5. Nontoxic Pest Control	5	Pest Control Alternatives		2	2	0		0
6. Compact Development	6.1	Moderate Density for MID-RISE		2	0	0	N	0
	6.2	High Density for MID-RISE	**SS 6.1, 6.3**	3	0	0	N	0
	6.3	Very High Density for MID-RISE	**SS 6.1, 6.2**	4	4	0		4
7. Alternative Transportation	7.1	Public Transit for MID-RISE		2	2	0		0
	7.2	Bicycle Storage for MID-RISE		1	1	0		0
	7.3	Parking Capacity/Low-Emitting Vehicles for MID-RISE		1	0	1		0
		Sub-Total for SS Category:		**22**	14	6		**4**

LEED for Homes Mid-rise Pilot Simplified Project Checklist (continued)

				Max Pts	Project Points Preliminary			Final
Water Efficiency (WE)		(Minimum of 3 WE Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Water Reuse	1	Water Reuse for MID-RISE		5	*0*	*0*	*N*	***0***
2. Irrigation System	2.1	High Efficiency Irrigation System for MID-RISE	**WE 2.2**	2	*0*	*0*	*N*	***0***
	2.2	Reduce Overall Irrigation Demand by at Least 45% for MID-RISE		2	*0*	*0*	*N*	***0***
3. Indoor Water Use	3.1	High-Efficiency Fixtures and Fittings		3	*1*	*0*		***0***
	3.2	Very High Efficiency Fixtures and Fittings		6	*4*	*0*		***0***
	3.3	Water Efficient Appliances for MID-RISE		2	*2*	*0*		***0***
			Sub-Total for WE Category:	***15***	*7*	*0*		***0***
Energy and Atmosphere (EA)		(Minimum of 0 EA Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Optimize Energy Performance	1.1	Minimum Energy Performance for MID-RISE		Prereq	*Y*			***Y***
	1.2	Testing and Verification for MID-RISE		Prereq	*Y*			***Y***
	1.3	Optimize Energy Performance for MID-RISE		34	*7*	*0*		***7***
7. Water Heating	7.1	Efficient Hot Water Distribution		2	*0*	*0*	*N*	***0***
	7.2	Pipe Insulation		1	*1*	*0*		***0***
11. Residential Refrigerant Management	11.1	Refrigerant Charge Test		Prereq	*Y*			***Y***
	11.2	Appropriate HVAC Refrigerants		1	*1*	*0*		***0***
			Sub-Total for EA Category:	***38***	*9*	*0*		***7***
Materials and Resources (MR)		(Minimum of 2 MR Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Material-Efficient Framing	1.1	Framing Order Waste Factor Limit		Prereq	*Y*			***Y***
	1.2	Detailed Framing Documents	**MR 1.5**	1	*0*	*0*	*N*	***0***
	1.3	Detailed Cut List and Lumber Order	**MR 1.5**	1	*0*	*0*	*N*	***0***
	1.4	Framing Efficiencies	**MR 1.5**	3	*1*	*1*		***0***
	1.5	Off-site Fabrication		4	*0*	*0*	*N*	***0***
2. Environmentally Preferable Products	2.1	FSC Certified Tropical Wood		Prereq	*Y*			***Y***
	2.2	Environmentally Preferable Products		8	*3*	*2*		***0***
3. Waste Management	3.1	Construction Waste Management Planning		Prereq	*Y*			***Y***
	3.2	Construction Waste Reduction		3	*2*	*1*		***2***
			Sub-Total for MR Category:	***16***	*6*	*4*		***2***
Indoor Environmental Quality (EQ)		(Minimum of 6 EQ Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
2. Combustion Venting	2	Basic Combustion Venting Measures		Prereq	*Y*			***Y***
3. Moisture Control	3	Moisture Load Control		1	*0*	*1*		***0***
4. Outdoor Air Ventilation	4.1	Basic Outdoor Air Ventilation for MID-RISE		Prereq	*Y*			***Y***
	4.2	Enhanced Outdoor Air Ventilation for MID-RISE		2	*0*	*2*		***0***
	4.3	Third-Party Performance Testing for MID-RISE		1	*0*	*1*		***0***
5. Local Exhaust	5.1	Basic Local Exhaust		Prerequisite	*Y*			
	5.2	Enhanced Local Exhaust		1	*1*	*0*		***0***
	5.3	Third-Party Performance Testing		1	*0*	*1*		***0***
6. Distribution of Space Heating and Cooling	6.1	Room-by-Room Load Calculations		Prereq	*Y*			***Y***
	6.2	Return Air Flow / Room by Room Controls		1	*0*	*1*		***0***
	6.3	Third-Party Performance Test / Multiple Zones		2	*0*	*2*		***0***
7. Air Filtering	7.1	Good Filters		Prereq	*Y*			***Y***
	7.2	Better Filters	**EQ 7.3**	1	*0*	*1*		***0***
	7.3	Best Filters		2	*0*	*0*	*N*	***0***
8. Contaminant Control	8.1	Indoor Contaminant Control during Construction		1	*1*	*0*		***0***
	8.2	Indoor Contaminant Control for MID-RISE		2	*2*	*0*		***0***
	8.3	Preoccupancy Flush		1	*1*	*0*		***0***
9. Radon Protection	9.1	Radon-Resistant Construction in High-Risk Areas		Prereq	*N/A*			***N/A***
	9.2	Radon-Resistant Construction in Moderate-Risk Areas		1	*0*	*1*		***0***
10. Garage Pollutant Protection	10.1	No HVAC in Garage for MID-RISE		Prereq	*Y*			***Y***
	10.2	Minimize Pollutants from Garage for MID-RISE	**EQ 10.3**	2	*2*	*0*		***0***
	10.3	Detached Garage or No Garage for MID-RISE		3	*0*	*0*		***0***
11. ETS Control	11	Environnmental Tobacco Smoke Reduction for MID-RISE		1	*0.5*	*0*		***0***
12. Compartmentalization of Units	12.1	Compartmentalization of Units		Prereq	*Y*			***Y***
	12.2	Enhanced Compartmentalization of Units		1	*0*	*1*		***0***
			Sub-Total for EQ Category:	***21***	*7.5*	*11*		***0***
Awareness and Education (AE)		(Minimum of 0 AE Points Required)		Max	Y/Pts	Maybe	No	Y/Pts
1. Education of the Homeowner or Tenant	1.1	Basic Operations Training		Prereq	*Y*			***Y***
	1.2	Enhanced Training		1	*0*	*1*		***0***
	1.3	Public Awareness		1	*1*	*0*		***0***
2. Education of Building Manager	2	Education of Building Manager		1	*1*	*0*		***0***
			Sub-Total for AE Category:	***3***	*2*	*1*		***0***

LEED for Homes Mid-rise Simplified Project Checklist

for Homes

Builder Name:	*Cabot, Cabot & Forbes*
Project Team Leader (if different):	*Michele Quinn, CUBE3*
Home Address (Street/City/State):	*Washington Street, Boston (Brighton), MA*

Project Description:

Building type: ***Mid-rise multi-family*** # of stories: ***7***

# of units: ***385*** Avg. Home Size Adjustment: ***-10***

Adjusted Certification Thresholds

Certified: ***35.0*** Gold: ***65.0***

Silver: ***50.0*** Platinum: ***80.0***

Project Point Total

Prelim: ***54.5 + 28 maybe pts*** **Final:** ***13***

Final Credit Category Total Points

ID: 0 ***SS: 4*** ***EA: 7*** ***EQ: 0***

LL: 0 ***WE: 0*** ***MR: 2*** ***AE: 0***

Certification Level

Prelim: ***Silver*** **Final:** ***Not Certified***

Minimum Point Thresholds Not Met for Final Rating

date last updated :

last updated by :

				Max Pts	Project Points Preliminary			Final
Innovation and Design Process (ID)		(No Minimum Points Required)		Max	Y/Pts	Maybe	No	Y/Pts
1. Integrated Project Planning	1.1	Preliminary Rating		Prereq	Y			Y
	1.2	Energy Expertise for MID-RISE		Prereq	Y			Y
	1.3	Professional Credentialed with Respect to LEED for Homes		1	0	0	N	0
	1.4	Design Charrette		1	0	1		0
	1.5	Building Orientation for Solar Design		1	0	0	N	0
	1.6	Trades Training for MID-RISE		1	0	1		0
2. Durability Management Process	2.1	Durability Planning		Prereq	Y			Y
	2.2	Durability Management		Prereq	Y			Y
	2.3	Third-Party Durability Management Verification		3	0	3		0
3.Innovative or Regional Design	3.1	Innovation #1 ____________		1	0	0.5		0
	3.2	Innovation #2 ____________		1	0	0.5		0
	3.3	Innovation #3 ____________		1	0	0	N	0
	3.4	Innovation #4		1	0	0	N	0
			Sub-Total for ID Category:	**11**	0	6		**0**
Location and Linkages (LL)		(No Minimum Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. LEED ND	1	LEED for Neighborhood Development	**LL2-6**	10	0	0	N	0
2. Site Selection	2	Site Selection		2	2	0		0
3. Preferred Locations	3.1	Edge Development		1	0	0	N	0
	3.2	Infill	**LL 3.1**	2	2	0		0
	3.3	Brownfield Redevelopment for MID-RISE		1	0	0	N	0
4. Infrastructure	4	Existing Infrastructure		1	1	0		0
5. Community Resources/ Transit	5.1	Basic Community Resources for MID-RISE		1	0	0	N	0
	5.2	Extensive Community Resources for MID-RISE	**LL 5.1, 5.3**	2	0	0	N	0
	5.3	Outstanding Community Resources for MID-RISE	**LL 5.1, 5.2**	3	3	0		0
6. Access to Open Space	6	Access to Open Space		1	1	0		0
			Sub-Total for LL Category:	**10**	9	0		**0**
Sustainable Sites (SS)		(Minimum of 5 SS Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Site Stewardship	1.1	Erosion Controls During Construction		Prerequisite	Y			Y
	1.2	Minimize Disturbed Area of Site for MID-RISE		1	1	0		0
2. Landscaping	2.1	No Invasive Plants		Prerequisite	Y			Y
	2.2	Basic Landscape Design	**SS 2.5**	1	1	0		0
	2.3	Limit Conventional Turf for MID-RISE	**SS 2.5**	2	0	1		0
	2.4	Drought Tolerant Plants for MID-RISE	**SS 2.5**	1	0	1		0
	2.5	Reduce Overall Irrigation Demand by at Least 20% for MID-RISE		3	0	0	N	0
3. Local Heat Island Effects	3.1	Reduce Site Heat Island Effects for MID-RISE		1	0	1		0
	3.2	Reduce Roof Heat Island Effects for MID-RISE		1	1	0		0
4. Surface Water Management	4.1	Permeable Lot for MID-RISE		2	0	2		0
	4.2	Permanent Erosion Controls		1	0	0	N	0
	4.3	Stormwater Quality Control for MID-RISE		2	2	0		0
5. Nontoxic Pest Control	5	Pest Control Alternatives		2	2	0		0
6. Compact Development	6.1	Moderate Density for MID-RISE		2	0	0	N	0
	6.2	High Density for MID-RISE	**SS 6.1, 6.3**	3	0	0	N	0
	6.3	Very High Density for MID-RISE	**SS 6.1, 6.2**	4	4	0		4
7. Alternative Transportation	7.1	Public Transit for MID-RISE		2	2	0		0
	7.2	Bicycle Storage for MID-RISE		1	1	0		0
	7.3	Parking Capacity/Low-Emitting Vehicles for MID-RISE		1	0	1		0
			Sub-Total for SS Category:	**22**	14	6		**4**

LEED for Homes Mid-rise Pilot Simplified Project Checklist (continued)

				Max Pts	Project Points Preliminary			Final
Water Efficiency (WE)		(Minimum of 3 WE Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Water Reuse	1	Water Reuse for MID-RISE		5	*0*	*0*	*N*	***0***
2. Irrigation System	2.1	High Efficiency Irrigation System for MID-RISE	**WE 2.2**	2	*0*	*0*	*N*	***0***
	2.2	Reduce Overall Irrigation Demand by at Least 45% for MID-RISE		2	*0*	*0*	*N*	***0***
3. Indoor Water Use	3.1	High-Efficiency Fixtures and Fittings		3	*1*	*0*		***0***
	3.2	Very High Efficiency Fixtures and Fittings		6	*4*	*0*		***0***
	3.3	Water Efficient Appliances for MID-RISE		2	*2*	*0*		***0***
		Sub-Total for WE Category:		***15***	*7*	*0*		***0***
Energy and Atmosphere (EA)		(Minimum of 0 EA Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Optimize Energy Performance	1.1	Minimum Energy Performance for MID-RISE		Prereq	*Y*			***Y***
	1.2	Testing and Verification for MID-RISE		Prereq	*Y*			***Y***
	1.3	Optimize Energy Performance for MID-RISE		34	*7*	*0*		***7***
7. Water Heating	7.1	Efficient Hot Water Distribution		2	*0*	*0*	*N*	***0***
	7.2	Pipe Insulation		1	*1*	*0*		***0***
11. Residential Refrigerant Management	11.1	Refrigerant Charge Test		Prereq	*Y*			***Y***
	11.2	Appropriate HVAC Refrigerants		1	*1*	*0*		***0***
		Sub-Total for EA Category:		***38***	*9*	*0*		***7***
Materials and Resources (MR)		(Minimum of 2 MR Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Material-Efficient Framing	1.1	Framing Order Waste Factor Limit		Prereq	*Y*			***Y***
	1.2	Detailed Framing Documents	**MR 1.5**	1	*0*	*0*	*N*	***0***
	1.3	Detailed Cut List and Lumber Order	**MR 1.5**	1	*0*	*0*	*N*	***0***
	1.4	Framing Efficiencies	**MR 1.5**	3	*1*	*1*		***0***
	1.5	Off-site Fabrication		4	*0*	*0*	*N*	***0***
2. Environmentally Preferable Products	2.1	FSC Certified Tropical Wood		Prereq	*Y*			***Y***
	2.2	Environmentally Preferable Products		8	*3*	*2*		***0***
3. Waste Management	3.1	Construction Waste Management Planning		Prereq	*Y*			***Y***
	3.2	Construction Waste Reduction		3	*2*	*1*		***2***
		Sub-Total for MR Category:		***16***	*6*	*4*		***2***
Indoor Environmental Quality (EQ)		(Minimum of 6 EQ Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
2. Combustion Venting	2	Basic Combustion Venting Measures		Prereq	*Y*			***Y***
3. Moisture Control	3	Moisture Load Control		1	*0*	*1*		***0***
4. Outdoor Air Ventilation	4.1	Basic Outdoor Air Ventilation for MID-RISE		Prereq	*Y*			***Y***
	4.2	Enhanced Outdoor Air Ventilation for MID-RISE		2	*0*	*2*		***0***
	4.3	Third-Party Performance Testing for MID-RISE		1	*0*	*1*		***0***
5. Local Exhaust	5.1	Basic Local Exhaust		Prerequisite	*Y*			
	5.2	Enhanced Local Exhaust		1	*1*	*0*		***0***
	5.3	Third-Party Performance Testing		1	*0*	*1*		***0***
6. Distribution of Space Heating and Cooling	6.1	Room-by-Room Load Calculations		Prereq	*Y*			***Y***
	6.2	Return Air Flow / Room by Room Controls		1	*0*	*1*		***0***
	6.3	Third-Party Performance Test / Multiple Zones		2	*0*	*2*		***0***
7. Air Filtering	7.1	Good Filters		Prereq	*Y*			***Y***
	7.2	Better Filters	**EQ 7.3**	1	*0*	*1*		***0***
	7.3	Best Filters		2	*0*	*0*	*N*	***0***
8. Contaminant Control	8.1	Indoor Contaminant Control during Construction		1	*1*	*0*		***0***
	8.2	Indoor Contaminant Control for MID-RISE		2	*2*	*0*		***0***
	8.3	Preoccupancy Flush		1	*1*	*0*		***0***
9. Radon Protection	9.1	Radon-Resistant Construction in High-Risk Areas		Prereq	*N/A*			***N/A***
	9.2	Radon-Resistant Construction in Moderate-Risk Areas		1	*0*	*1*		***0***
10. Garage Pollutant Protection	10.1	No HVAC in Garage for MID-RISE		Prereq	*Y*			***Y***
	10.2	Minimize Pollutants from Garage for MID-RISE	**EQ 10.3**	2	*2*	*0*		***0***
	10.3	Detached Garage or No Garage for MID-RISE		3	*0*	*0*		***0***
11. ETS Control	11	Environnmental Tobacco Smoke Reduction for MID-RISE		1	*0.5*	*0*		***0***
12. Compartmentalization of Units	12.1	Compartmentalization of Units		Prereq	*Y*			***Y***
	12.2	Enhanced Compartmentalization of Units		1	*0*	*1*		***0***
		Sub-Total for EQ Category:		***21***	*7.5*	*11*		***0***
Awareness and Education (AE)		(Minimum of 0 AE Points Required)		Max	Y/Pts	Maybe	No	Y/Pts
1. Education of the Homeowner or Tenant	1.1	Basic Operations Training		Prereq	*Y*			***Y***
	1.2	Enhanced Training		1	*0*	*1*		***0***
	1.3	Public Awareness		1	*1*	*0*		***0***
2. Education of Building Manager	2	Education of Building Manager		1	*1*	*0*		***0***
		Sub-Total for AE Category:		***3***	*2*	*1*		***0***

LEED for Homes Mid-rise Simplified Project Checklist

for Homes

Builder Name:	*Cabot, Cabot & Forbes*
Project Team Leader (if different):	*Michele Quinn, CUBE3*
Home Address (Street/City/State):	*Washington Street, Boston (Brighton), MA*

Project Description:

Building type: ***Mid-rise multi-family*** # of stories: ***6***

# of units: ***152*** Avg. Home Size Adjustment: ***-10***

Adjusted Certification Thresholds

Certified: ***35.0*** Gold: ***65.0***

Silver: ***50.0*** Platinum: ***80.0***

Project Point Total

Prelim: *54.5 + 28 maybe pts* Final: *13*

Certification Level

Prelim: *Silver* Final: *Not Certified*

Final Credit Category Total Points

ID: 0 SS: 4 EA: 7 EQ: 0

LL: 0 WE: 0 MR: 2 AE: 0

Minimum Point Thresholds Not Met for Final Rating

date last updated :

last updated by :

				Max Pts	Project Points Preliminary			Final
Innovation and Design Process (ID)		(No Minimum Points Required)		Max	Y/Pts	Maybe	No	Y/Pts
1. Integrated Project Planning	1.1	Preliminary Rating		Prereq	Y			Y
	1.2	Energy Expertise for MID-RISE		Prereq	Y			Y
	1.3	Professional Credentialed with Respect to LEED for Homes		1	0	0	N	0
	1.4	Design Charrette		1	0	1		0
	1.5	Building Orientation for Solar Design		1	0	0	N	0
	1.6	Trades Training for MID-RISE		1	0	1		0
2. Durability Management Process	2.1	Durability Planning		Prereq	Y			Y
	2.2	Durability Management		Prereq	Y			Y
	2.3	Third-Party Durability Management Verification		3	0	3		0
3.Innovative or Regional Design	3.1	Innovation #1		1	0	0.5		0
	3.2	Innovation #2		1	0	0.5		0
	3.3	Innovation #3		1	0	0	N	0
	3.4	Innovation #4		1	0	0	N	0
		Sub-Total for ID Category:		**11**	0	6		**0**
Location and Linkages (LL)		(No Minimum Points Required)	OR	Max	Y/Pts	Maybe	No	Y/Pts
1. LEED ND	1	LEED for Neighborhood Development	**LL2-6**	10	0	0	N	0
2. Site Selection	2	Site Selection		2	2	0		0
3. Preferred Locations	3.1	Edge Development		1	0	0	N	0
	3.2	Infill	**LL 3.1**	2	2	0		0
	3.3	Brownfield Redevelopment for MID-RISE		1	0	0	N	0
4. Infrastructure	4	Existing Infrastructure		1	1	0		0
5. Community Resources/ Transit	5.1	Basic Community Resources for MID-RISE		1	0	0	N	0
	5.2	Extensive Community Resources for MID-RISE	**LL 5.1, 5.3**	2	0	0	N	0
	5.3	Outstanding Community Resources for MID-RISE	**LL 5.1, 5.2**	3	3	0		0
6. Access to Open Space	6	Access to Open Space		1	1	0		0
		Sub-Total for LL Category:		**10**	9	0		**0**
Sustainable Sites (SS)		(Minimum of 5 SS Points Required)	OR	Max	Y/Pts	Maybe	No	Y/Pts
1. Site Stewardship	1.1	Erosion Controls During Construction		Prerequisite	Y			Y
	1.2	Minimize Disturbed Area of Site for MID-RISE		1	1	0		0
2. Landscaping	2.1	No Invasive Plants		Prerequisite	Y			Y
	2.2	Basic Landscape Design	**SS 2.5**	1	1	0		0
	2.3	Limit Conventional Turf for MID-RISE	**SS 2.5**	2	0	1		0
	2.4	Drought Tolerant Plants for MID-RISE	**SS 2.5**	1	0	1		0
	2.5	Reduce Overall Irrigation Demand by at Least 20% for MID-RISE		3	0	0	N	0
3. Local Heat Island Effects	3.1	Reduce Site Heat Island Effects for MID-RISE		1	0	1		0
	3.2	Reduce Roof Heat Island Effects for MID-RISE		1	1	0		0
4. Surface Water Management	4.1	Permeable Lot for MID-RISE		2	0	2		0
	4.2	Permanent Erosion Controls		1	0	0	N	0
	4.3	Stormwater Quality Control for MID-RISE		2	2	0		0
5. Nontoxic Pest Control	5	Pest Control Alternatives		2	2	0		0
6. Compact Development	6.1	Moderate Density for MID-RISE		2	0	0	N	0
	6.2	High Density for MID-RISE	**SS 6.1, 6.3**	3	0	0	N	0
	6.3	Very High Density for MID-RISE	**SS 6.1, 6.2**	4	4	0		4
7. Alternative Transportation	7.1	Public Transit for MID-RISE		2	2	0		0
	7.2	Bicycle Storage for MID-RISE		1	1	0		0
	7.3	Parking Capacity/Low-Emitting Vehicles for MID-RISE		1	0	1		0
		Sub-Total for SS Category:		**22**	14	6		**4**

LEED for Homes Mid-rise Pilot Simplified Project Checklist (continued)

				Max Pts	Project Points Preliminary			Final
Water Efficiency (WE)		(Minimum of 3 WE Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Water Reuse	1	Water Reuse for MID-RISE		5	*0*	*0*	*N*	***0***
2. Irrigation System	2.1	High Efficiency Irrigation System for MID-RISE	**WE 2.2**	2	*0*	*0*	*N*	***0***
	2.2	Reduce Overall Irrigation Demand by at Least 45% for MID-RISE		2	*0*	*0*	*N*	***0***
3. Indoor Water Use	3.1	High-Efficiency Fixtures and Fittings		3	*1*	*0*		***0***
	3.2	Very High Efficiency Fixtures and Fittings		6	*4*	*0*		***0***
	3.3	Water Efficient Appliances for MID-RISE		2	*2*	*0*		***0***
			Sub-Total for WE Category:	***15***	*7*	*0*		***0***
Energy and Atmosphere (EA)		(Minimum of 0 EA Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Optimize Energy Performance	1.1	Minimum Energy Performance for MID-RISE		Prereq	*Y*			***Y***
	1.2	Testing and Verification for MID-RISE		Prereq	*Y*			***Y***
	1.3	Optimize Energy Performance for MID-RISE		34	*7*	*0*		***7***
7. Water Heating	7.1	Efficient Hot Water Distribution		2	*0*	*0*	*N*	***0***
	7.2	Pipe Insulation		1	*1*	*0*		***0***
11. Residential Refrigerant	11.1	Refrigerant Charge Test		Prereq	*Y*			***Y***
Management	11.2	Appropriate HVAC Refrigerants		1	*1*	*0*		***0***
			Sub-Total for EA Category:	***38***	*9*	*0*		***7***
Materials and Resources (MR)		(Minimum of 2 MR Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Material-Efficient Framing	1.1	Framing Order Waste Factor Limit		Prereq	*Y*			***Y***
	1.2	Detailed Framing Documents	**MR 1.5**	1	*0*	*0*	*N*	***0***
	1.3	Detailed Cut List and Lumber Order	**MR 1.5**	1	*0*	*0*	*N*	***0***
	1.4	Framing Efficiencies	**MR 1.5**	3	*1*	*1*		***0***
	1.5	Off-site Fabrication		4	*0*	*0*	*N*	***0***
2. Environmentally Preferable	2.1	FSC Certified Tropical Wood		Prereq	*Y*			***Y***
Products	2.2	Environmentally Preferable Products		8	*3*	*2*		***0***
3. Waste Management	3.1	Construction Waste Management Planning		Prereq	*Y*			***Y***
	3.2	Construction Waste Reduction		3	*2*	*1*		***2***
			Sub-Total for MR Category:	***16***	*6*	*4*		***2***
Indoor Environmental Quality (EQ)		(Minimum of 6 EQ Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
2. Combustion Venting	2	Basic Combustion Venting Measures		Prereq	*Y*			***Y***
3. Moisture Control	3	Moisture Load Control		1	*0*	*1*		***0***
4. Outdoor Air Ventilation	4.1	Basic Outdoor Air Ventilation for MID-RISE		Prereq	*Y*			***Y***
	4.2	Enhanced Outdoor Air Ventilation for MID-RISE		2	*0*	*2*		***0***
	4.3	Third-Party Performance Testing for MID-RISE		1	*0*	*1*		***0***
5. Local Exhaust	5.1	Basic Local Exhaust		Prerequisite	*Y*			
	5.2	Enhanced Local Exhaust		1	*1*	*0*		***0***
	5.3	Third-Party Performance Testing		1	*0*	*1*		***0***
6. Distribution of Space	6.1	Room-by-Room Load Calculations		Prereq	*Y*			***Y***
Heating and Cooling	6.2	Return Air Flow / Room by Room Controls		1	*0*	*1*		***0***
	6.3	Third-Party Performance Test / Multiple Zones		2	*0*	*2*		***0***
7. Air Filtering	7.1	Good Filters		Prereq	*Y*			***Y***
	7.2	Better Filters	**EQ 7.3**	1	*0*	*1*		***0***
	7.3	Best Filters		2	*0*	*0*	*N*	***0***
8. Contaminant Control	8.1	Indoor Contaminant Control during Construction		1	*1*	*0*		***0***
	8.2	Indoor Contaminant Control for MID-RISE		2	*2*	*0*		***0***
	8.3	Preoccupancy Flush		1	*1*	*0*		***0***
9. Radon Protection	9.1	Radon-Resistant Construction in High-Risk Areas		Prereq	*N/A*			***N/A***
	9.2	Radon-Resistant Construction in Moderate-Risk Areas		1	*0*	*1*		***0***
10. Garage Pollutant Protection	10.1	No HVAC in Garage for MID-RISE		Prereq	*Y*			***Y***
	10.2	Minimize Pollutants from Garage for MID-RISE	**EQ 10.3**	2	*2*	*0*		***0***
	10.3	Detached Garage or No Garage for MID-RISE		3	*0*	*0*		***0***
11. ETS Control	11	Environnmental Tobacco Smoke Reduction for MID-RISE		1	*0.5*	*0*		***0***
12. Compartmentalization	12.1	Compartmentalization of Units		Prereq	*Y*			***Y***
of Units	12.2	Enhanced Compartmentalization of Units		1	*0*	*1*		***0***
			Sub-Total for EQ Category:	***21***	*7.5*	*11*		***0***
Awareness and Education (AE)		(Minimum of 0 AE Points Required)		Max	Y/Pts	Maybe	No	Y/Pts
1. Education of the	1.1	Basic Operations Training		Prereq	*Y*			***Y***
Homeowner or Tenant	1.2	Enhanced Training		1	*0*	*1*		***0***
	1.3	Public Awareness		1	*1*	*0*		***0***
2. Education of Building Manager	2	Education of Building Manager		1	*1*	*0*		***0***
			Sub-Total for AE Category:	***3***	*2*	*1*		***0***

Chapter 5.0

Urban Design

5.0 URBAN DESIGN

5.1 Project Context

The Project site is an approximately 11.6-acre lot located in the Brighton neighborhood of Boston. The immediate neighborhood surrounding the site contains a mixture of institutional, retail and residential uses. St. Elizabeth's Medical Center is adjacent to the western edges of the site, and Brighton High School is located to the north of the site. Beyond the Medical Center along Washington Street and Market Street is the Brighton Center neighborhood, which contains a variety of small retail shops and restaurants on the ground floor with offices above. To the south and east of the site there is a mixture of single family homes, duplexes, and three to five-story multi-family residential buildings. The neighborhood is truly a blend of uses, styles and architecture.

5.2 Urban Design Strategy

In analyzing the site and its role in the neighborhood context, the planning and design approach utilizes the following strategies:

Scale and position the buildings to respond to the existing context

The existing buildings along Washington Street across from the site are primarily two-story residential buildings. The Project will maintain the wooded buffer along Washington Street, and the proposed new buildings will be setback a minimum of 130 feet from the street (see Figures 5-1 and 5-2). This buffer will also provide a large area of public open space for passive recreation (see Figure 5-3). The buildings sited closest to Washington Street will respond to the existing residential scale with smaller massing and lowered building heights compared to the rest of the Project (see Figure 5-4). The tallest buildings will be located deep within the site to develop a gradient of scale away from Washington Street.

Building 2 will be the tallest building in the Project at seven-stories, and will be located on the northern portion of the Project site furthest from the street frontage. This building is scaled consistently with the neighboring properties; St. Elizabeth's Medical Center to the west, with heights exceeding seven stories and a large multi-family residential complex at Fidelis Way to the east.

Reinforce the St. Gabriel's Monastery as a focal point of the site

The Project will restore the Monastery to be used for both residential and amenity spaces. The three new buildings will frame the Monastery to create an active pedestrian zone (see Figures 5-5 and 5-6). Included in this zone, the Project will enhance the pedestrian experience connecting to the existing Monastery Path by providing lighting, security, and active edges where the buildings meet the ground plane.

15-201 Washington Street   Boston, Massachusetts

CUBE3 STUDIO

Figure 5-1

Aerial Perspective

Figure 5-2

View from the Site Driveway

CUBE3 STUDIO

Figure 5-3

View of Fatima Shrine

15-201 Washington Street Boston, Massachusetts

Figure 5-4

View of Building 1

15-201 Washington Street   Boston, Massachusetts

CUBE3 STUDIO

Figure 5-5

View of Building 2 and Public Plaza

15-201 Washington Street   Boston, Massachusetts

CUBE3 STUDIO

Figure 5-6

View from Building 2A Towards the Monastery

Building Materials and Design

The Project will complement the existing Monastery by creating a significant landscaped pedestrian zone between the Monastery and new buildings. The proposed buildings will use a material palette and massing to create a welcoming pedestrian scale to reinforce the importance of the pedestrian experience (see Figure 5-7). This will create an inviting atmosphere for both the residents and the community to engage in the many publicly accessible spaces of the site. The buildings closest to Washington Street have a smaller scale to respond to the neighborhood and create an inviting entry way to the Project. The buildings grow in scale away from Washington Street towards the top of the site and begin to create a meaningful contrast with the Monastery. This contrast will highlight the historic importance of the Monastery by respecting the architecture and not attempting to duplicate or mimic the language that makes this Monastery a landmark. The goal for the design of the new buildings is to create a responsive, active site that respects and rejuvenates this abandoned building. All of the buildings on site will make up a collective campus of architecture that is unique yet responsive to one another.

5.3 Landscape Design

The Project will continue to benefit from the generous amount of green space on the property and the landscape design will respond to several major site influences:

First, along the length of Washington Street and within the entire south and east sides of the Monastery, the landscape will be retained essentially as is, publically accessible, with the handsome stone wall at the edge and the many existing mature trees remaining amidst the open rolling lawn in the center.

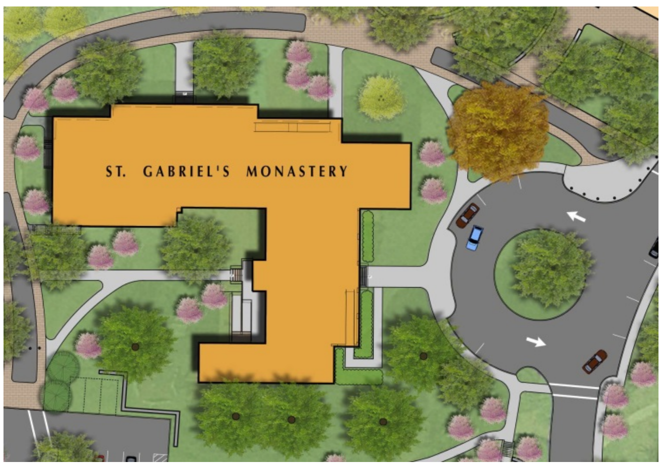
15-201 Washington Street   Boston, Massachusetts

Figure 5-7

Internal Landscaped Space

The Shrine to Our Lady of Fatima will be relocated and reconstructed to better perform all of its current functions, as coordinated with the practitioners within the community who currently use the Shrine.

This entire landscape along Washington Street is an important community resource which will be enjoyed by the new residents of the development but which will also remain completely accessible to the public. It will have maintenance that has been neglected for decades, such as the plants being pruned and fertilized and the deteriorated paths being refurbished. New trees and drifts of naturalized shrub plantings at the edges will infill the existing voids, particularly at the west end of the site near the Hospital. All new introductions to the landscape will be informed by the site's Olmstedian history, and have an informal and naturalistic character.



At the more internal spaces of the Project, the landscaping will serve to highlight the Monastery as the centerpiece of the site. The historic turnaround will remain, with several walking paths leading towards the entrance. There will be a garden courtyard in back that will serve as an informal and welcoming passive green "garden space", but may not be as directly referential to the Olmstedian legacy of the property. Instead it may, have some contemporary elements, such as green screens rather than clipped hedges. Overall it may have a more timeless ambience.

The pathway around the garden courtyard in back will serve as a transition towards the public plaza space and new buildings. Along the eastern edge of Building 2A will be an improved connection to Monastery Path. There will be opportunities in this space and throughout the site for neighborhood community members to utilize landscape amenities, such as providing access to the existing Monastery Path, and an outdoor space for community gathering and events, such as an outdoor market.

Large amphitheater like steps will provide both a seating area and an inviting entrance to the elevated courtyards between the buildings. The courtyard space between Buildings 2A and 2B will be open to the public, providing a cityscape vista viewing opportunity from the highest portion of the property on the terrace.

Sustainable design practices will be employed throughout the landscape, such as adding native planting for pollinators and increasing wildlife habitat, and utilizing sustainable storm water management practices. The new landscape will also provide ADA accessibility throughout the site, to all buildings and all landscape areas.

Chapter 6.0

Historic and Archaeological Resources

6.0 HISTORIC AND ARCHAEOLOGICAL RESOURCES

This section describes the historic and archaeological resources located on the Project site and within the Project's vicinity and discusses potential Project-related impacts.

6.1 Historic Resources on the Project Site

6.1.1 St. Gabriel's Monastery

Built in 1909 based on the designs of Boston architect T. Edward Sheehan, St. Gabriel's Monastery has many of the identifying characteristics of the Mission style, which is drawn from Spanish Colonial examples in California and the southwest. Such features include its red clay tile roof, arcaded entry porch, overhanging eaves, curvilinear gable parapets, corner towers and flush stucco wall surfaces. These design elements, together with its prominent hilltop site, allow the Monastery to be seen from a considerable distance consistent with its prototypes. The asymmetrical three-story building follows an irregular, L-shaped plan; dimensionally it is 59 ft. high and 133 ft. along the front elevation, while its depth varies from 77 to 162 ft.

The main elevation of St. Gabriel's features a 5-bay arcaded entry porch; the central entrance bay is emphasized by a curvilinear, Mission-style parapet enclosing a low-relief cartouche and supporting a gilded cross. The central block of the main facade is three stories high and seven bays wide with a symmetrical fenestration pattern. The center bay has rectangular, tripartite windows, while the three flanking windows on either side are two-over-two lights in configuration. Centered on the entry below, a pair of squat, hip-roofed dormers interrupt the red tile roof, whose deep overhangs are supported by copper-clad brackets. A narrow string course at the level of the third-floor windowsills provides the only wall surface ornamentation. This band is broken at the projecting wing to the right, where double-height stained-glass windows corresponding to the second and third stories indicate the volume of the former monastic chapel.

From the southern corner of the main façade rises a four-story tower; although its second- and third-floor fenestration is similar to that of the main block, its fourth floor level features paired, segmental-arched, multi-light windows. Parapets on all four sides of the tower echo the parapet on the entry porch. Broad overhanging eaves with over-sized, copper console brackets accentuate the corners of the tower. A similar four-story tower stands at the southwest corner. At the northwest side, an arcaded porch wraps around the corner of the tower whose curvilinear parapet encloses a quatrefoil window. While simpler in its expression, the rear of the Monastery also has Mission-style elements. The plain stucco wall surface, red tile roof and symmetrical fenestration are the characteristic features of this elevation. Originally the ell on the northwest corner also featured a Mission-style parapet. This was removed at an unknown date. In addition, a portion of the arcaded porch along the north elevation was removed at an unknown date, possibly to accommodate the construction of the Retreat House in the late 1920s.

The Monastery building was designated an individual City of Boston landmark in 1988; thereby affording the Boston Landmarks Commission (BLC) design review authority over exterior alterations to the building. In addition, the roof of the Monastery is the subject of a preservation restriction held by the Massachusetts Historical Commission (MHC). As a result of the preservation restriction, any repairs or alterations to the roof are subject to review by the MHC (note, the preservation restriction is limited to the roof and no other parts of the building). As a result of the landmark designation and preservation restriction, the Monastery building is individually listed in the State Register of Historic Places.

6.1.2 Retreat House

Dating from 1927, the Retreat House is modest in design, with several Mission-style elements. The building materials, buff colored brick and red tile roof, are similar to those of the adjacent Monastery and church. Originally, the footprint of the Retreat House was L-shaped with a clipped corner. Its function, to connect the Monastery with the church, is evident in the plan. The main elevation features a modest central entrance whose hooded roof is covered in red Spanish tile. The facade is eight bays across; the window pattern is two-over-two. The first floor windows are round-headed. A substantial four story, flat roof addition was added to the rear of the Retreat House in the 1950s. The 1950s addition is utilitarian in nature, lacking any significant architectural detailing.

6.1.3 St. Gabriel's Church

Completed in 1929 at a cost of $175,000, the Church of St. Gabriel was designed in a Neo-Renaissance style. The church was designed by the Boston architecture firm of Maginnis and Walsh, who specialized in the design of Roman Catholic churches, convents and schools. The two-story church, Basilican in plan, measures 71 ft. in front, expanding to 113 ft. at the transepts, and is 126 ft. deep. Its exterior elevations are of buff- colored brick and limestone below a red clay tile roof.

The gabled, east-facing front elevation is expressed as a projecting entry pavilion whose flight of granite steps leads to a deep apsidal alcove in which a pair of double-leaf doors is centered between a pair of Doric columns. These support an entablature of the same order, on which rests an ornamental window with decorative iron balcony surmounted by a broken scroll pediment and flanked by obelisk-like finials. Opening to the side aisles of the interior is a pair of secondary entries, each with its independent entry stoop, flanking the central entrance. These have simple classical surrounds below oculus windows with keystones. The north and south flank elevations feature three large round-headed stained glass windows which light the side aisles; their surrounds are accentuated with decorative brickwork. Adjacent to the stained glass windows on both sides is a small niche which originally sheltered a statue of St. Gabriel; these sculptures have since been removed. The clerestory level is punctuated by segmental arched windows and articulated with brick buttresses capped by limestone ornamentation. The walls are topped by a simple, corbelled brick cornice. Although the architectural qualities of the church have not been compromised to any significant degree by inappropriate alterations, decades of neglect have exacted a heavy toll on the building's physical integrity. This is immediately evident from the buckled brick coursing at the entry stoop where a vertical crack has caused the delamination of the face brickwork from the structural backup. In addition, water infiltration has resulted in roof failure, particularly at the transept crossing, where large portions of the sanctuary ceiling are open to the elements. As a result, adjacent surfaces are extremely deteriorated exposing structural members that appear to be failing. The exposure to the elements has not only rusted the steel but poses a structural threat to the truss bearing ends into the masonry. The rusting has also caused internal pressures within masonry piers and localized structural instability.

6.1.4 Our Lady of Fatima Shrine

Commissioned by the Crusaders of Fatima, a Portuguese-American organization, the Shrine to Our Lady of Fatima is the most recent addition to the Monastery campus. It is a small, one-story, hexagonal building that commemorates the apparition of the Virgin Mary to a group of Portuguese peasant children in the early 20th century. Completed in 1966 at a cost of $100,000, the tan brick shrine is contemporary in design with large plate-glass windows on five sides.

At the time of its construction, the area immediately surrounding the shrine was re-landscaped. The concrete-paved Rosary Walk, lined with Stations of the Cross, was laid out directly in front of the shrine. Another paved walkway connects the main Monastery entrance with the Shrine and Rosary Walk.

6.1.6 Garage

Located at the rear of the Monastery is a ca. 1960, two bay garage. The north and east elevations of the garage are covered in stucco and feature tile shed roofs, similar to the roof tiles found on the Monastery and Retreat House. The south and west elevations feature wood shingle siding.

6.1.7 Cemetery

A Passionist Cemetery is adjacent to the Rosary Walk, at the front of the property. The Cemetery is rectangular in plan, with symmetrical rows of gravestones lining the site. The granite grave markers are identical in style, each incised with the name of a Passionist Brother who died while in residence at St. Gabriel's.

6.1.8 Landscape

The monastery grounds have suffered from the removal of the original, Mission-style entry gates and the introduction of extensive surface parking in the northern portion of the property. Competed in 1914 by of the Olmsted Brothers, Frederick Law Olmsted's successor firm, the surviving landscape that remains in front of the Monastery remains an important component of the St. Gabriel's complex.

The paved entrance drive, which starts at the southeast corner of the site, is lined with mature lindens and evergreens. The drive follows a slight grade, curving to the front of the Monastery where it terminates in a circular drive. To the west of the entrance drive, at the front of site, are the Rosary Walk and Passionist Cemetery. To the rear of the Monastery, the property abuts the St. Elizabeth's Hospital campus, from which it is separated by a chain-link fence.

The site drops off sharply as it approaches the hospital campus, with the exception of the southwest corner, which was infilled and landscaped several years ago. Formerly a meadow, the rear (northern) side of the property, which abuts Brighton High School, is now entirely paved for use as surface parking. Monastery Path, a concrete-paved walkway from Warren Street, forms part of the eastern boundary of the property. The eastern edge abuts the Fidelis Way Public Housing Development and a school which was originally run by the Passionists. Parts of this section are planted with grass, while other areas have been paved for parking.

6.1.9 Pierce House and Carriage House

Historically known as the Pierce House, the dwelling at 201 Washington Street is a Second Empire style cottage with a slate-clad mansard roof; the associated freestanding carriage house is similar in design. Dating from the third quarter of the 19th century the two structures feature a late 20th century exterior stucco wall treatment.

6.2 Historic Resources within the Project's vicinity

6.2.1 Washington-Warren Institutions Area

The Project site is located within the Washington-Warren Institutions Area, an area included in the MHC's *Inventory of Historic and Archaeological Assets of the Commonwealth* ("the Inventory"). The Washington-Warren Institutions Area is believed to be among the largest, most densely developed collections of late 19th and early 20th century institutional buildings in the city. The area includes the 1890s William Howard Taft School, the St. Gabriel's Monastery and Church complex, the 1930s Brighton High School complex, the former 1940s Kennedy Memorial Hospital and the 1940s Brighton Marine Hospital complex. While the Washington-Warren Institutions Area is included the Inventory, the area is not listed in the State or National Registers of Historic Places.

6.2.2 Brighton Center Historic District

Located northwest of the Project site, the National Register-listed Brighton Center Historic District represents the linear commercial development of mid-19th to mid-20th century buildings lining Washington Street between Foster and Winship Streets. These buildings reflect 200 years of commercial and residential architectural development, and include examples of frame and masonry construction in the Federal, Greek Revival, Italianate, Queen Anne, Georgian Revival and Craftsman styles.

Figure 6-1 identifies the State and National Register listed properties and historic district located within a quarter mile radius of the Project site.

6.3 Archaeological Resources

There are no known recorded archaeological sites located on the Project site or within the immediate vicinity. Previous ground disturbance activities associated with the construction of the existing buildings, driveways, walkways, parking areas and other site improvements have likely impacted the potential for the site to yield significant archaeological resources.

6.4 Impacts to Historic Resources

6.4.1 Urban Design

The Project will include the substantial interior and exterior rehabilitation of the Monastery building for residential and amenity uses. All exterior rehabilitation activities will be subject to review and approval by the BLC per the landmark designation. In addition, proposed repairs to the clay tile roof will be subject to review and approval by MHC per the preservation restriction.

The underutilized and derelict church and the Retreat House will be demolished to accommodate the new construction and open space. The Shrine will be replaced with a new replacement structure southwest of the Monastery and the two-bay garage will also be demolished. The new buildings sited closest to Washington Street will respond to the existing adjacent residential scale with smaller massing and lowered building heights compared to the rest of the Project. The tallest buildings on the site will be located deep within the site to develop a gradient of scale away from Washington Street. Building 2, at seven-stories, will be located on the northern portion of the Project site and will be scaled consistently with the neighboring St. Elizabeth's Medical Center to the west.

Alternatives for retaining and incorporating the church and Retreat House into the Project have been studied and considered, but ultimately were determined infeasible. As stated above, the Retreat House is of modest architectural significance. This arises chiefly from the materials vocabulary it shares with the adjacent Monastery and church buildings rather than any intrinsic aesthetic merit. In addition, due to the physical constraints it imposes on reuse of the Monastery and the site it is deemed a poor candidate for retention and reuse.

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

159-201 Washington Street Boston, Massachusetts

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Figure 6-1

Historic Resources Map

6.4.2 Alternatives to Demolition of the Church

Numerous alternatives to the proposed demolition of the church have been considered. As originally constructed the Church was not designed for seismic loads. Therefore any reprogramming effort would require a structural retrofit such as an entirely new lateral steel framing system, altering the existing structure and reducing the quality of the interior space. Hence, due to the deteriorated nature of the structure, current building code requirements, programmatic challenges and the anticipated significant rehabilitation costs, all alternatives to demolition have been deemed infeasible. The alternatives considered are summarized below.

6.4.2.1 Retain and Reuse Alternative

Having suffered serious structural compromise from decades of neglect, the church presents significant and likely insuperable, challenges to any scheme that might propose its retention or reuse. The repairs required to render the building safe for occupancy would be both ambitious and expensive. Even if these interventions were to be conducted, they would do little to enhance the residual value of the building. This is severely limited owing to a number of factors which constrain any redevelopment potential, whether for resumed ecclesiastical use by another denomination or for possible non-religious uses.

Whereas church activities once depended upon the religious community housed within the adjacent Monastery, the present context is residential and quasi-suburban in character. This evolved setting lacks the inherent support system that would favor the successful reuse of the building for religious purposes. Any adaptive non-ecclesiastic reuse would inevitably require some the subdivision of the interior, thereby eroding any remaining aesthetic integrity of the original historic space. These contextual and spatial constraints effectively limit any uses such as restaurant or office uses that have been successfully pursued for other religious properties. Thus the retention and reuse of the church is not a viable alternative to demolition.

6.4.2.2 Retain and Mothball Alternative

While it may be possible to retain the abandoned church and secure its outer envelope against further deterioration, such a "mothball" approach would not address the fundamental question of the building's viability for alternative or adaptive uses. This course of action would more likely prolong the inevitable demolition rather than prevent it altogether. In the meantime, the appearance of the mothballed building would present an aesthetic liability to the neighborhood; therefore, the mothball approach offers little benefit.

6.4.2.3 Facadectomy Alternative

While retaining a portion of the church building, such as its entry façade, may be able to be incorporated into new construction, a fragment of this kind would lack architectural integrity and be of questionable relevance within the redeveloped context of the Project site. While a "facadectomy" approach is often seen as well-intentioned they inevitably embody an unsatisfying aesthetic compromise, which results neither in the preservation of historic architecture nor in the promotion of good contemporary design. For these reasons, a facadectomy is not a preferable alternative to demolition.

6.4.2.4 Relocation Alternative

In rare instances when a historic building is of sufficient architectural or associational significance as to warrant its retention but its original site is to be redeveloped, its relocation to another site may be a preferred alternative to demolition. This option is most successful when a similar parcel nearby is available such that the historic context can also be maintained; however, the church lacks the significance to justify the expense of relocation. In addition, there is no available location on the Project site or in the immediate vicinity that could readily accommodate the church. These circumstances argue against the viability of relocation as an alternative to demolition; in addition, due to its size and masonry construction, relocation of the Church intact is not a possibility.

6.5 Status of Project Review with Historical Agencies

6.5.1 Massachusetts Historical Commission

With the exception of MHC's review of any repairs to the clay tile roof on the Monastery roof, per the preservation restriction, the Proponent does not anticipate that the Project will require any additional review by MHC as the Project does not require any state or federal licenses, permits or approvals and is not anticipated to utilize any state or federal funding.

6.5.2 Boston Landmarks Commission

As noted above, the Monastery building is a designated City of Boston landmark subject to review by the BLC. On May 24, 2016, the BLC conducted an Advisory Review hearing on the proposed work to the Monastery. The Proponent will file a formal Design Review application for the Monastery with the BLC as further developed plans and specifications become available.

The proposed demolition activities are subject to BLC's review in accordance with Article 85 of the Boston Zoning Code (Demolition Delay). As noted above, alternatives for retaining and incorporating the church into the Project have been considered, but ultimately were determined infeasible. At the appropriate time, the Proponent will file the required Article 85 application with the BLC. Alternatives to the proposed demolition that have been considered will be further addressed as part of the Article 85 process. The Proponent will work closely with the BLC staff to fulfill the Article 85 review process.

Chapter 7.0

Infrastructure

7.0 INFRASTRUCTURE

7.1 Introduction

The Project site consists of approximately 11.6 acres of land within the City of Boston located in the Brighton neighborhood. The Project abuts Washington Street to the south, St. Elizabeth's Hospital and associated parking garage to the west, Brighton High School to the north, and residences to the east. As shown on Figures 7-1, 7-3 and 7-5 there are existing utilities in the adjacent street. In Washington Street, there are existing sanitary sewer, storm drainage, water, gas, electric, and telecommunications lines. It is notable that an MWRA deep rock water tunnel crosses the site under a 50-foot wide easement as further described below in Section 7.9.

Approval of Site Plans and a General Service Application are required from Boston Water and Sewer Commission (BWSC) for construction and activation of sewer, water, and storm drainage service connections. The sewer and water connections, as well as the Project's stormwater management systems, will be designed in conformance with BWSC's design standards, Requirements for Site Plans, Regulations Governing the Use of Sanitary and Combined Sewers and Storm Drains, and Regulations Governing the Use of the Water Distribution Facilities of the Boston Water and Sewer Commission. The gas, electric and telecommunication utilities will be coordinated with the individual providers.

7.2 Wastewater

7.2.1 Existing Sewer System

BWSC owns, operates, and maintains the sanitary sewer mains in the vicinity of the Project site. Per available record information from BWSC there are separated sewer mains in Washington Street, adjacent to the Project site. The sewer in Washington Street is a 15-inch main that flows to the northwest along the frontage of the site to Cambridge Street. There are several existing sewer manholes that service the Project site. The existing sanitary sewer system in Washington Street is shown on Figure 7-1. The sanitary sewer ultimately flows to the Massachusetts Water Resources Authority's (MWRA's) Deer Island Wastewater Treatment Plant, where it is treated and discharged to Massachusetts Bay.

Table 7-1 Existing Sewer Flow Capacity (Washington Street – 15 inch main)

MH (BWSC)	Distance (ft)	Invert El. (up)	Invert El. (down)	Slope (%)	Diameter (in.)	Manning's Number	Flow Capacity (cfs)	Flow Capacity (MGD)
4 to 5	220	148.7	142.5	2.8	15	0.013	10.8	6.98
5 to 78	214	142.5	136.6	2.8	15	0.013	10.8	6.98
78 to 98	198	136.6	127.1	4.8	15	0.013	14.1	9.11

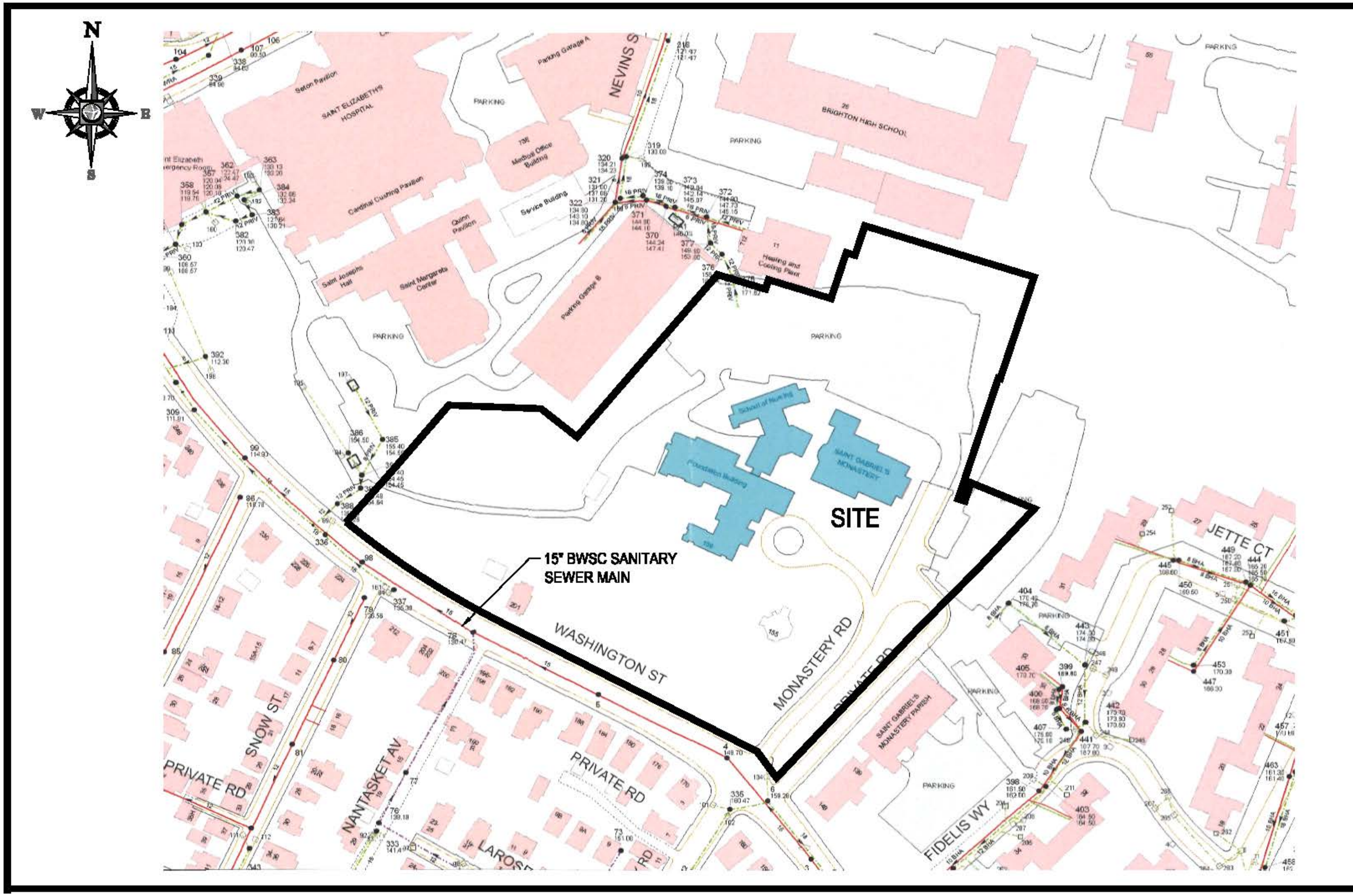

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Figure 7-1

Existing Sanitary Sewer System

7.2.2 Project Generated Sanitary Sewer Flow

The Massachusetts Department of Environmental Protection (MassDEP) establishes sewer generation rates for various types of establishments in a section of the State Environmental Code Title V (Title V), 310 CMR 15.203. Based on an estimate of the Project's building program, Table 7-2 gives the estimated proposed sanitary sewer flows expected to be generated by the Project. Based on these Title V sewer generation rates, the Project is expected to produce approximately 113,080-gallons/day of sewer flow.

Table 7-2 Sewer Generation

Unit Type	Program	Sewer Generation Rate	Sewer Flow (gpd)
Residential	1,028 bedrooms	110 gallons/day/bedroom	113,080
Total Sewer Generation (gpd)			**110,000**
Total Sewer Generation (MGD)			**0.11 MGD**

In accordance with revisions to 314 CMR 7.00 Sewer Extension and Connection Permitting regulations, promulgated June 20, 2014, the Project is no longer required to obtain a DEP Sewer Connection Permit for a sanitary sewer discharge greater than 50,000 gpd, therefore the sanitary sewer service connection approval and notification of completion will be through BWSC.

Based on preliminary calculations and discussions with BWSC, there are no expected sewer capacity problems in the vicinity of the Project site. The Project's engineer will coordinate final, proposed sewer flows and available capacity with BWSC during the Site Plan Review.

7.2.3 Sanitary Sewer Connection

Given the size of the Project, it is initially estimated that one 8-inch and one 10-inch sewer service connections to the existing 15-inch BWSC sanitary sewer main in Washington Street will be constructed to service the proposed development. The proposed sanitary sewer system is shown on Figure 7-2. The proposed connections are expected to be made at the existing sewer manholes along the Project frontage. Floor drains from the structured parking will be collected and routed through an approved oil/grease separator prior to discharge into the sanitary sewer system.

The sewer connection will be constructed so as to minimize effects on adjacent streets, sidewalks, and other areas within the public right-of-way and will be kept separate from storm drain connections in accordance with BWSC requirements.

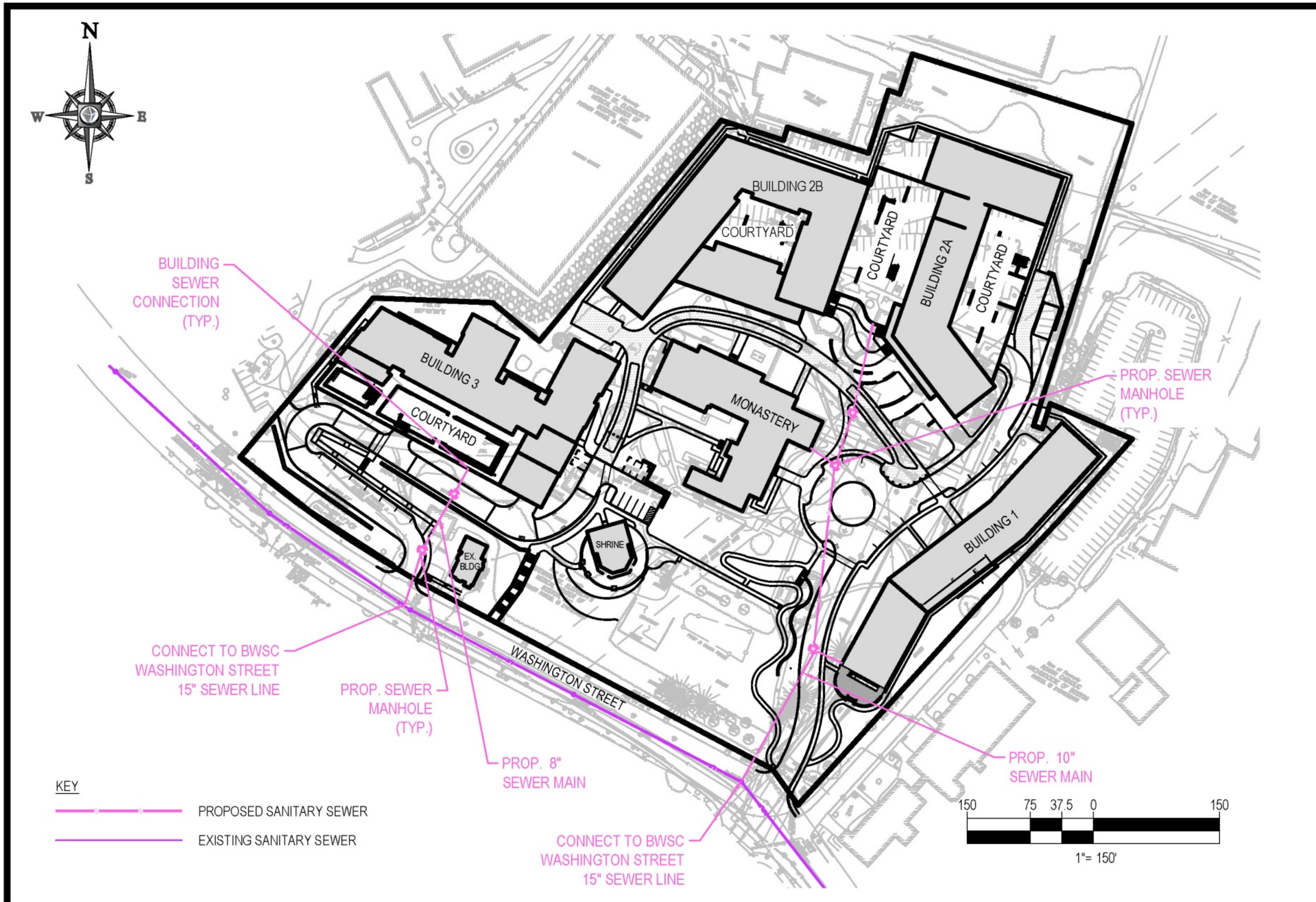

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Figure 7-2

Proposed Sanitary Sewer System

7.2.3.1 Sewer System Mitigation

The Project will be LEED certifiable in accordance with the BRA's Article 37 Green Building program. As such, various measures for water conservation and wastewater reduction such as low-flow toilets and urinals, restricted flow faucets, and sensor operated sinks, toilets, and urinals may be incorporated in order to meet the LEED requirements. Specific water conservation and wastewater reduction measures to be included in the Project will be more fully defined as the building designs develop.

Since the Project proposed sewer generation exceeds 15,000 gpd, it is anticipated that the Project will be subject to BWSC inflow and infiltration (I/I) requirements, at a rate of 4-gallons for every 1-gallon of new sewer flow, initially calculated at 484,000-gallons/day. Currently, the BWSC calculates the monetary amount required to fulfill the 4:1 Inflow Reduction requirement by multiplying the estimated wastewater flow by 4 and then by $2.41. The Proponent will continue to work with BWSC to determine the final payment which will be utilized to fund inflow and infiltration reduction projects within the City.

7.3 Water System

7.3.1 Existing Water Service

BWSC owns, operates, and maintains the water distribution systems in the vicinity of the Project site. According to available record plans from BWSC, there is an existing 12-inch ductile iron (DI) cement lined high pressure water main in Washington Street fronting the Project site on the southwest side of the street that was built in 1989. There are three existing fire hydrants adjacent to the Project site on the southwest side of Washington Street, all of which are connected to the 12-inch water main. The existing water distribution in the vicinity of the Project site is shown on Figure 7-3.

7.3.2 Anticipated Water Consumption

The estimated proposed water demand for the Project is based on the estimated sanitary sewer flow (see Table 7-2), with a factor of 1.1 applied to account for consumption and other losses. Based on this formula, the Project's estimated peak water demand for domestic use is 124,388 gallons per day. Domestic water will be supplied by the BWSC water system.

Based on initial discussions with BWSC, there are no expected water capacity problems in the vicinity of the Project site. Prior to full design, this will be confirmed via flow testing by BWSC. The Project's engineer will coordinate water demand and availability with BWSC during the Site Plan Approval process to ensure the Project needs are met while maintaining adequate water flows to the surrounding neighborhood.

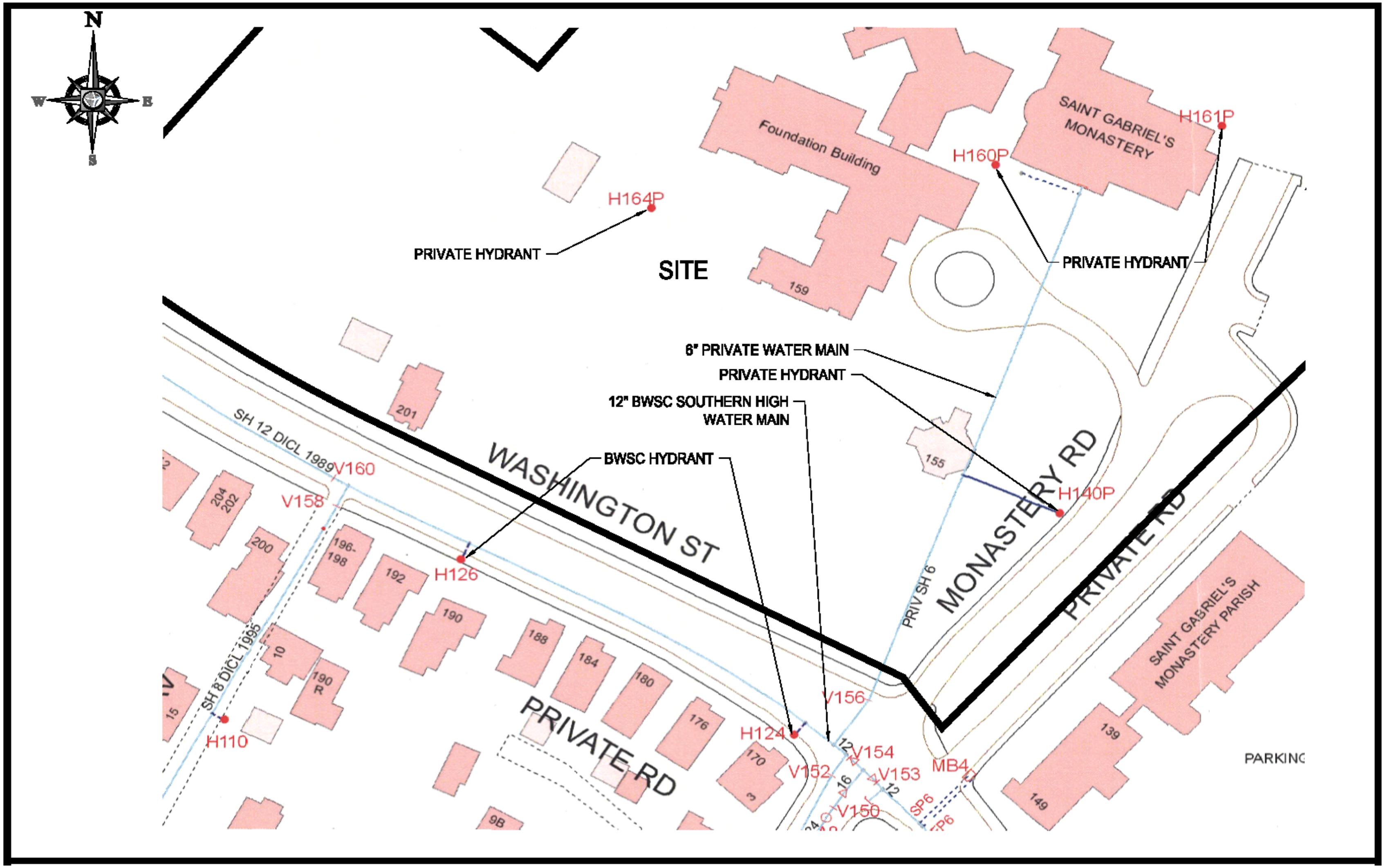

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Figure 7-3

Existing Water System

7.3.3 Proposed Water Service

It is initially anticipated that the Project will be served by a single 10-inch water main connection from the 12-inch main in Washington Street. This 10-inch connection will tie into a master meter located within Building 3 nearest the street. The water main will be metered in accordance with BWSC requirements including the installation of meter transmission units (MTU's) to comply with BWSC's automatic meter reading system. Appropriate gate valves and backflow prevention devices will also be installed to prevent potential backflow of non-potable water or other contaminants into the public water supply. The proposed water system is shown in Figure 7-4.

The Project anticipates a 10-inch looped water main which will provide service connections to each building and ties into the master meter. If required, the Project will include internal booster pumps to ensure adequate water pressure to all standpipes and sprinkler systems. Fire hydrants are proposed across the site, in addition to the three existing hydrants located along Washington Street. The proposed hydrants will be connected to the 10-inch looped main via 6-inch water connections. Final locations will be coordinated with the Boston Fire Department Fire Prevention Division.

The above described water system is based on early schematic designs and will be refined as the Project advances. During the BWSC Site Plan Review process, final sizing of domestic and fire protection service connections will be identified, along with water meter sizing, backflow prevention devices, and locations of fire protection connections.

7.3.3.1 Water Supply Conservation and Mitigation

As previously stated, the Project will be LEED certifiable in accordance with the BRA's Article 37 Green Building program. As such, various water conservation measures such as low-flow toilets and urinals, restricted flow faucets, and sensor operated sinks, toilets, and urinals may be incorporated in order to meet the LEED water conservation requirements. Specific water conservation measures to be included in the Project will be more fully described as the building designs develop.

7.4 Storm Drainage System

7.4.1 Existing Storm Drainage System

BWSC owns, operates, and maintains the storm sewer mains in the vicinity of the Project site. Available records show an existing 12-inch main flowing northeast in Monastery Road to BWSC MH #335, increasing to a 15-inch main in the Monastery Road and Washington Street intersection and connecting to BWSC MH #6. From BWSC MH #6 the main increases to an 18-inch main and flows southeast before connection to BWSC MH #7. On Washington Street, along the western end of the Project site frontage, a 15-inch main begins at BWSC MH #337 flowing northwest and connects to BWSC MH #336. Ultimately, the storm drainage system discharges to the Charles River.

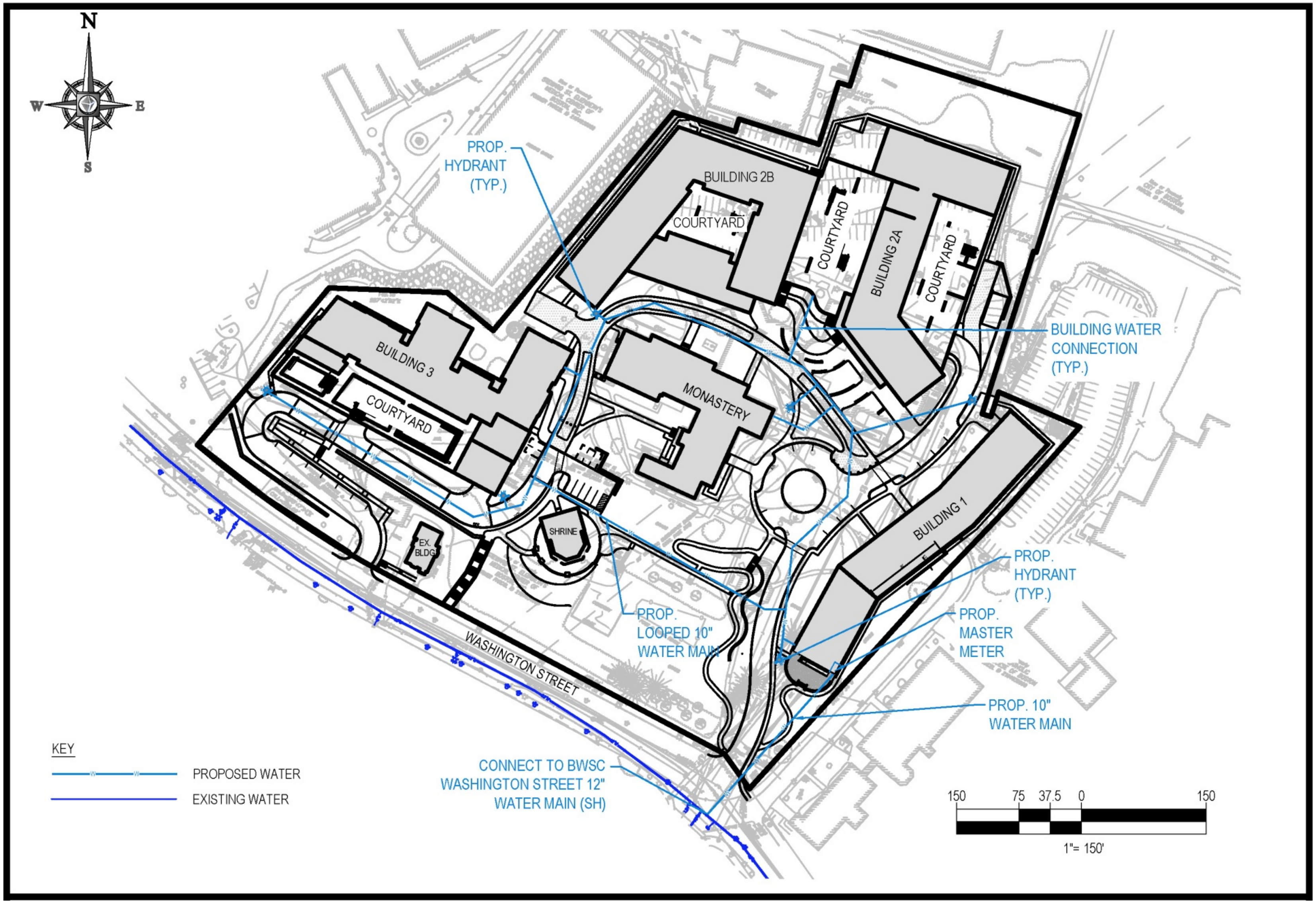

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Figure 7-4

Proposed Water System

The existing Project site is covered by a combination of private paved roads and parking lots, buildings, and grassed and wooded areas. The three large buildings in the center of the site represent the high point, with steep slopes directing the majority of the runoff to the north and south. Runoff from the buildings appear to outlet at grade via downspouts. No records of the roof drain connections were available at BWSC and will need to be confirmed during the Site Plan approval process. Approximately 2/3 of the site flows overland into Washington Street, while the remainder of the site flows northerly to the rear parking lot. The rear parking lot located on the northern portion of the site directs stormwater to one of two catch basins. Runoff is then directed through a utility and drain easement via a series of drain manholes (BWSC MH #375, #376, #377, #372, #373, #374, #321), with drain pipe size increasing from 12-inch to 18-inch, before connecting to BWSC MH #319 where an 18-inch main then flows north along Nevins Street. The existing drainage system in the vicinity of the Project site is shown on Figure 7-5.

7.4.2 Proposed Storm Drainage System

Typically, BWSC requires a new project to provide an infiltration system with a volume equal to 1-inch of rainfall over the project area. Stormwater runoff will be collected and treated, as necessary, on-site, and will be routed to infiltration systems to the maximum extent practicable in an effort to reduce the impact on the surrounding drainage system. Appropriate stormwater best management practices (BMP's) will be included in the Project to improve the quality of stormwater runoff discharged from the Project site, to promote infiltration to groundwater, and to reduce the peak flows to be at or below existing levels. Overflow from the underground infiltration areas due to larger, less frequent storm events will be routed to the BWSC drain system. Specific BMP's proposed for the Project will be described in more detail in the Site Plan application to BWSC. It is anticipated that phosphorous removal BMP's will be incorporated into the design in response to the TMDL requirements set on discharges to the Charles River.

The drainage system will be designed with the intent of maintaining general pre-development drainage patterns at the Project site. It is currently anticipated that the site will incorporate three drain pipe connections. One overflow connection will be made to BWSC CB #104 near the intersection of Monastery Road and Washington Street which directs stormwater to BWSC MH #6 via a 12-inch drain pipe. A second connection will be made to BWSC MH #337 in Washington Street near the southwest corner of the property. Finally, a connection will be made to the existing drain manhole (BWSC MH #375) located on the edge of the utility and drainage easement on the northwest corner of the site. The proposed drainage system is shown in Figure 7-6.

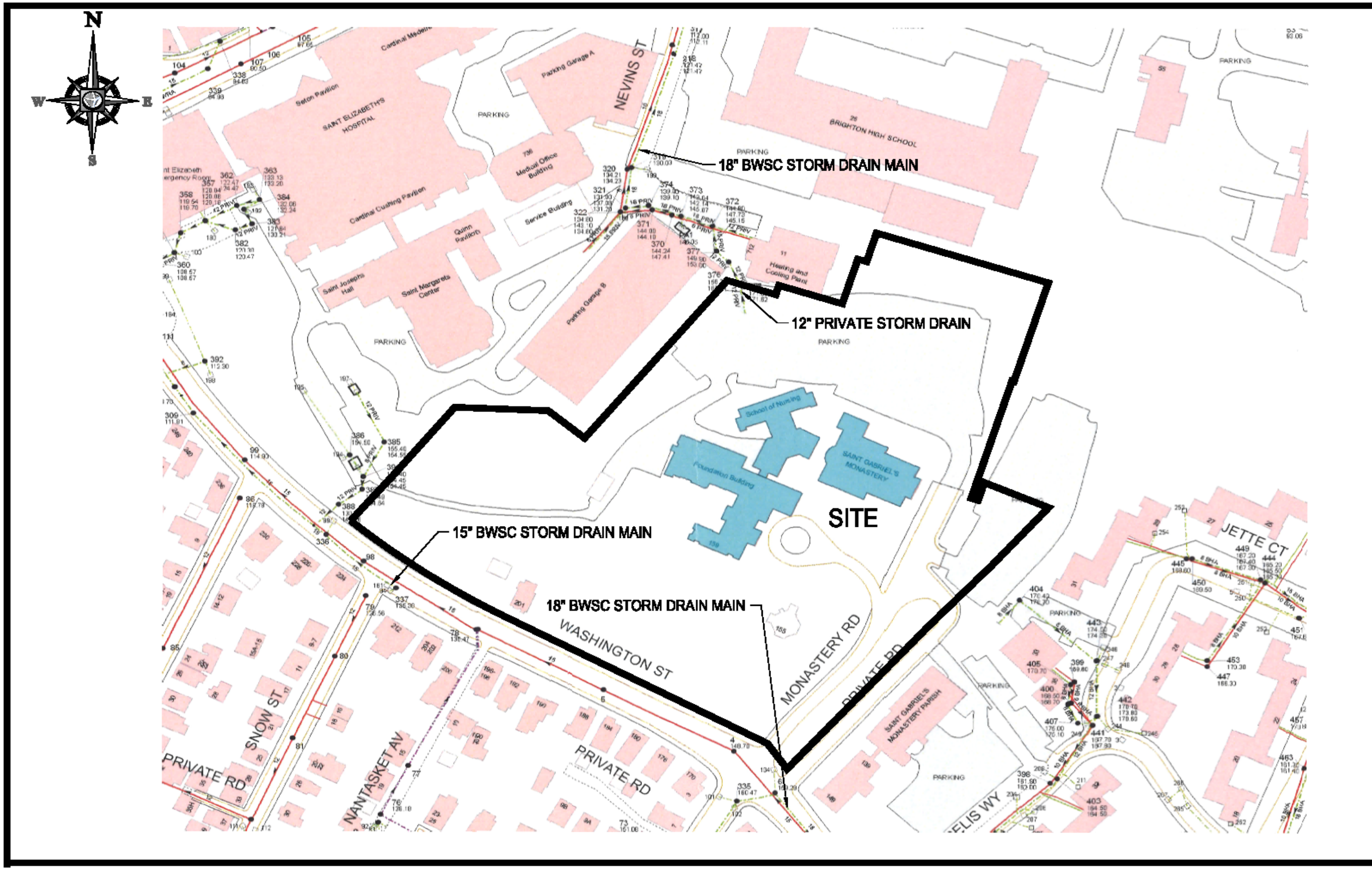
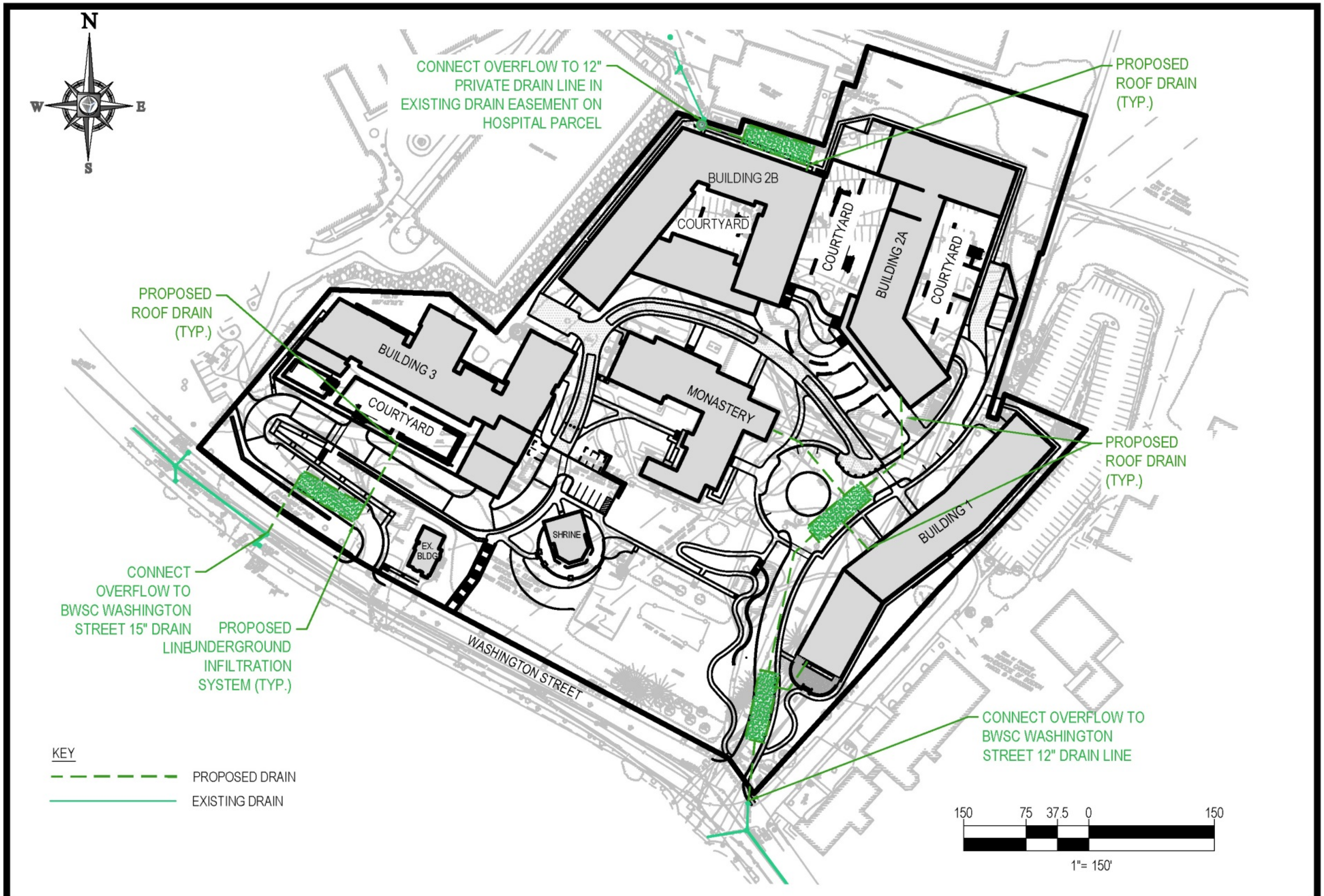


Figure 7-5

Existing Drainage System



159-201 Washington Street Boston, Massachusetts

Figure 7-6

Proposed Drainage System

7.4.3 State Stormwater Standards

Specific details of the proposed storm water management for the Project and its compliance with the DEP's Stormwater Management Standards (the Standards) are as follows:

Standard 1 - New Stormwater Conveyances

The Project will comply with this Standard. Per Massachusetts Stormwater Management Standard #1, no new outfalls may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth. No new outfalls are proposed.

Standard 2 – Stormwater Runoff Rates

The Project will comply with this Standard. Post development peak discharge rates from the Project site will be at or below existing peak discharge rates for each of the analyzed storm events.

Standard 3 – Groundwater Recharge

The Project will comply with this Standard to the maximum extent practicable. The site does not fall within the City's defined Groundwater Conservation Overlay District; therefore the proposed stormwater management system will be designed to comply with BWSC design requirements.

Standard 4 – Water Quality

The Project will comply with this Standard to the maximum extent practicable. The proposed development is covered predominantly by building roof with some private paved roads, parking and pedestrian areas. Efforts will be made to preserve existing trees and vegetation to the maximum extent practicable, particularly along Washington Street and in front of the Monastery. As necessary, runoff will be appropriately treated, most likely by underground water quality structures, prior to discharge to the BWSC storm drainage system.

Standard 5 – Land Uses With Higher Potential Pollutant Loads (LUHPPL)

It is not anticipated that the Project will be subject to Standard 5.

Standard 6 – Stormwater Discharges to a Critical Area

The Project is not subject to Standard 6. There are no discharges to any Critical Areas as defined by DEP's Massachusetts Stormwater Handbook.

Standard 7 – Redevelopment Project

The Project is not subject to Standard 7.

Standard 8 – Sedimentation and Erosion Control Plan

The Project will comply with this Standard. Site appropriate sedimentation and erosion controls will be included in the final design documents and implemented during construction.

Standard 9 – Long Term Operation and Maintenance Plan

The Project will comply with this Standard. A long-term operation and maintenance plan will be prepared as part of the final design documents.

Standard 10 –Illicit Discharges to the Stormwater Management System are prohibited

The Project will comply with this Standard. There are no known illicit discharges to the proposed Stormwater Management System and none are proposed.

7.5 Electrical Service

Eversource record plans show underground electric distribution lines adjacent to the Project site in Washington Street. It appears that 3-phase service is proximate to the site, due to its location near St. Elizabeth's hospital and evidence of approximately 8 existing manholes on the site. Based on the size of the proposed development, Eversource estimates a 12 month project planning and design timeframe. The proponent will work with Eversource to confirm the system has adequate capacity to support the proposed building demands as the design advances.

7.6 Telecommunication Systems

Telecommunication systems are located in the vicinity of the Project site. The Proponent will work with each provider to determine the appropriate services and connection locations to support the proposed development.

7.7 Gas Systems

National Grid owns and maintains the gas distribution system in the vicinity of the Project site. The Proponent will work with National Grid to confirm the system has adequate capacity as the design advances.

7.8 Utility Protection During Construction

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

7.9 MWRA Deep Rock Tunnel

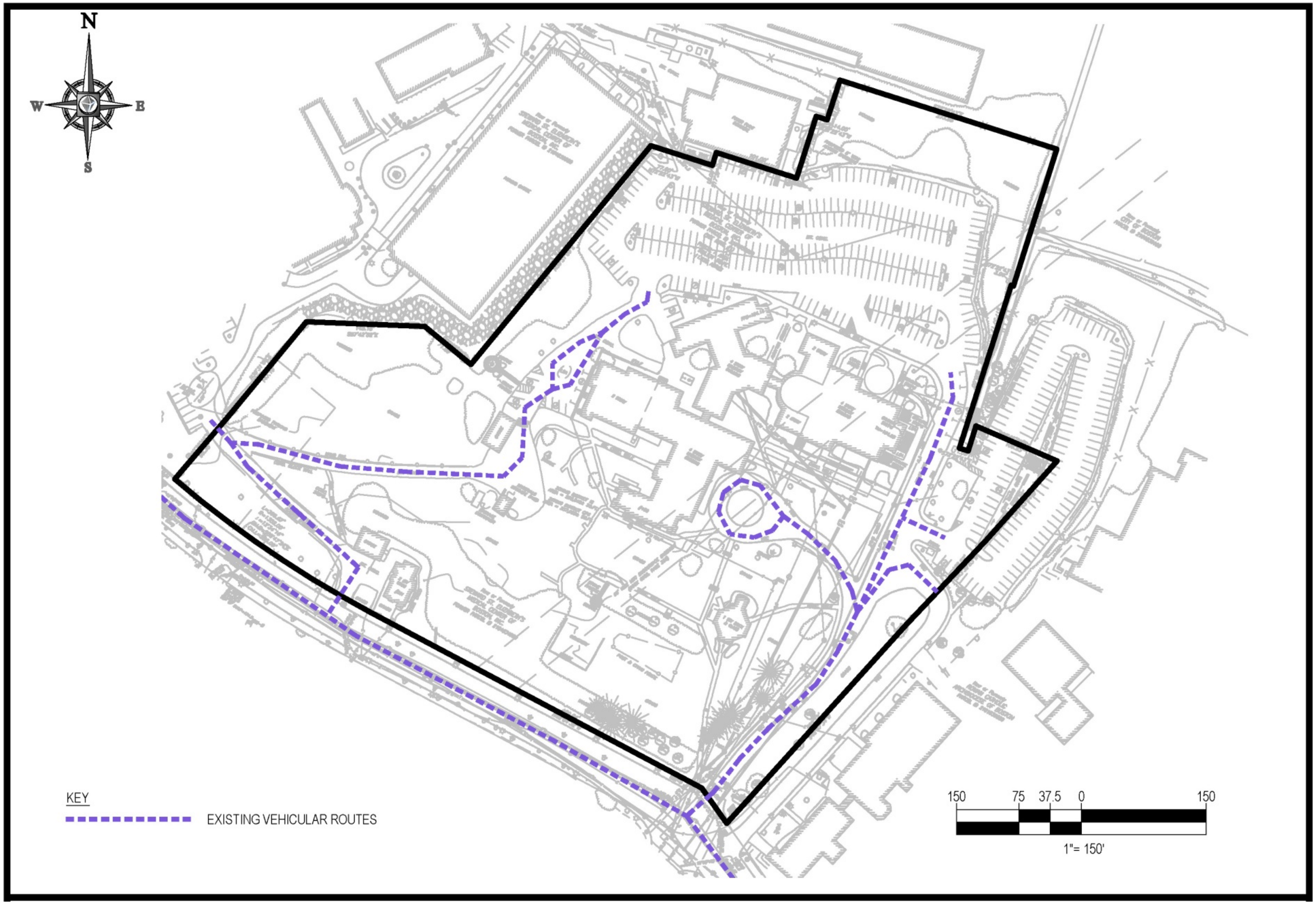
Per initial conversations with the MWRA, an MWRA deep rock water tunnel crosses the middle of the site under a 50-foot wide easement. The MWRA maintains subsurface rights only therefore the issuance of an MWRA 8m permit is not required for regular surface construction. The MWRA does require review and approval for the use of deep rock drilling and blasting over this tunnel. The Proponent will work with MWRA to obtain any required permits if it is determined that deep rock drilling, blasting or similar construction is required.

7.10 Roadway/Driveway Network

The Project site is bound on the southwest by Washington Street, a major public roadway of variable width running generally in a southeast to northwest direction from Boylston Street (Route 9) to the Massachusetts Turnpike (Interstate 90) through Brookline and Boston, Massachusetts. Monastery Road, a public road which becomes a private driveway north of Washington Street, intersects with Washington Street at the southern corner of the site and provides the Projects' southeast boundary. An existing signalized intersection manages traffic at the Washington Street and Monastery Road intersection. Access to the Project site is also provided on Washington Street via a private driveway located between Nantasket Avenue and Snow Street. The existing vehicular routes at the Project site are depicted on Figure 7-7.

To provide access to and circulation around the Project site, two new internal site driveways are proposed. The existing curb cut for the driveway at the Monastery Road intersection will be maintained. A cul-de-sac will be provided at the end of the drive, near the center of the Project site. The other driveway will replace the existing drive between Nantasket Avenue and Snow Street. The general orientation, and secondary rear access to St. Elizabeth's Hospital via an easement through the Project site, will be maintained, but the drive will be widened and will provide larger radii turns to accommodate passenger and emergency vehicles.

The existing and proposed roadway/driveway networks as described above are shown on Figures 7-7 and 7-8. A turning template showing fire truck circulation throughout the proposed development is provided on Figure 7-9.

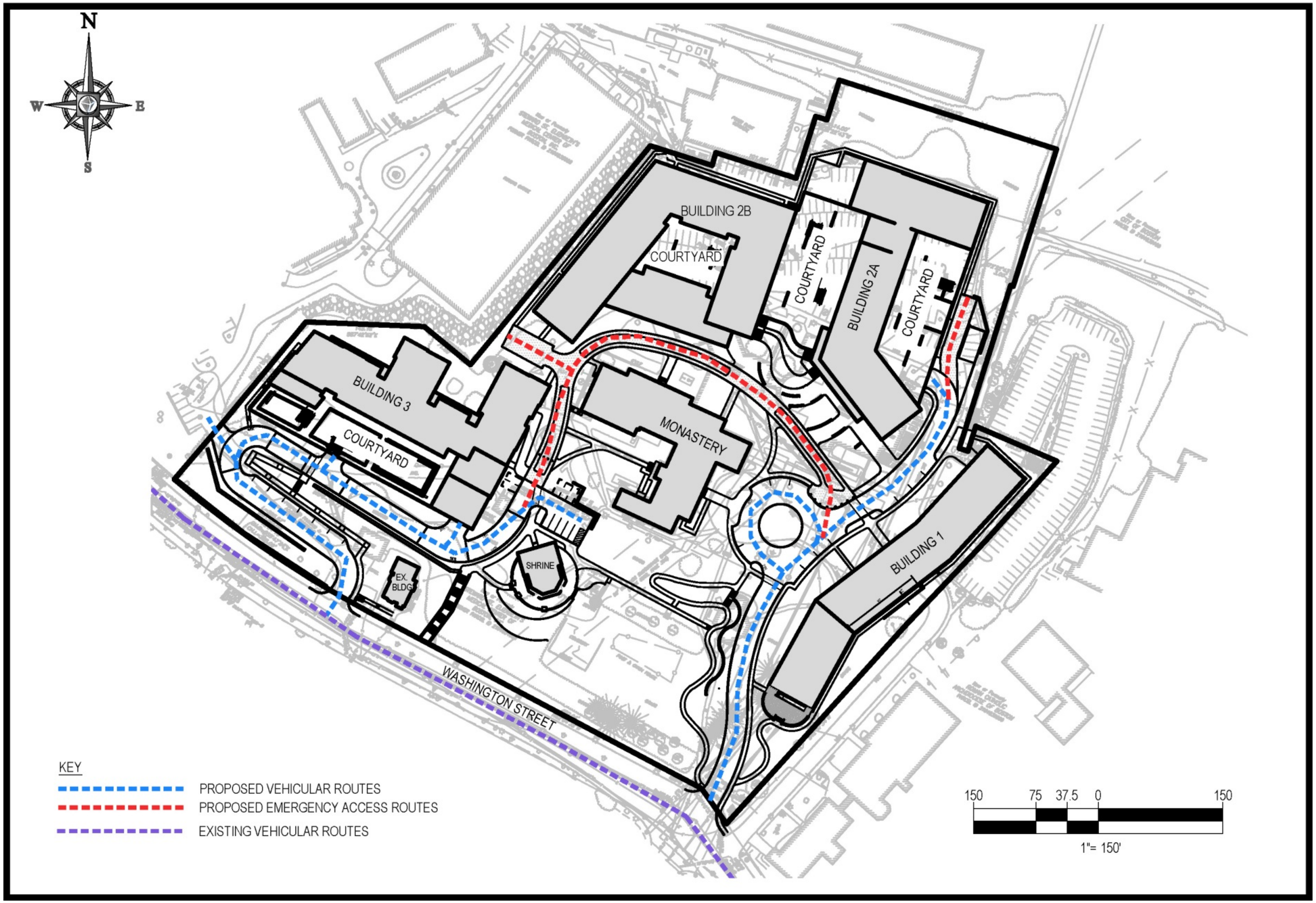


159-201 Washington Street   Boston, Massachusetts

BOHLER ENGINEERING

Figure 7-7

Existing Roadway Network

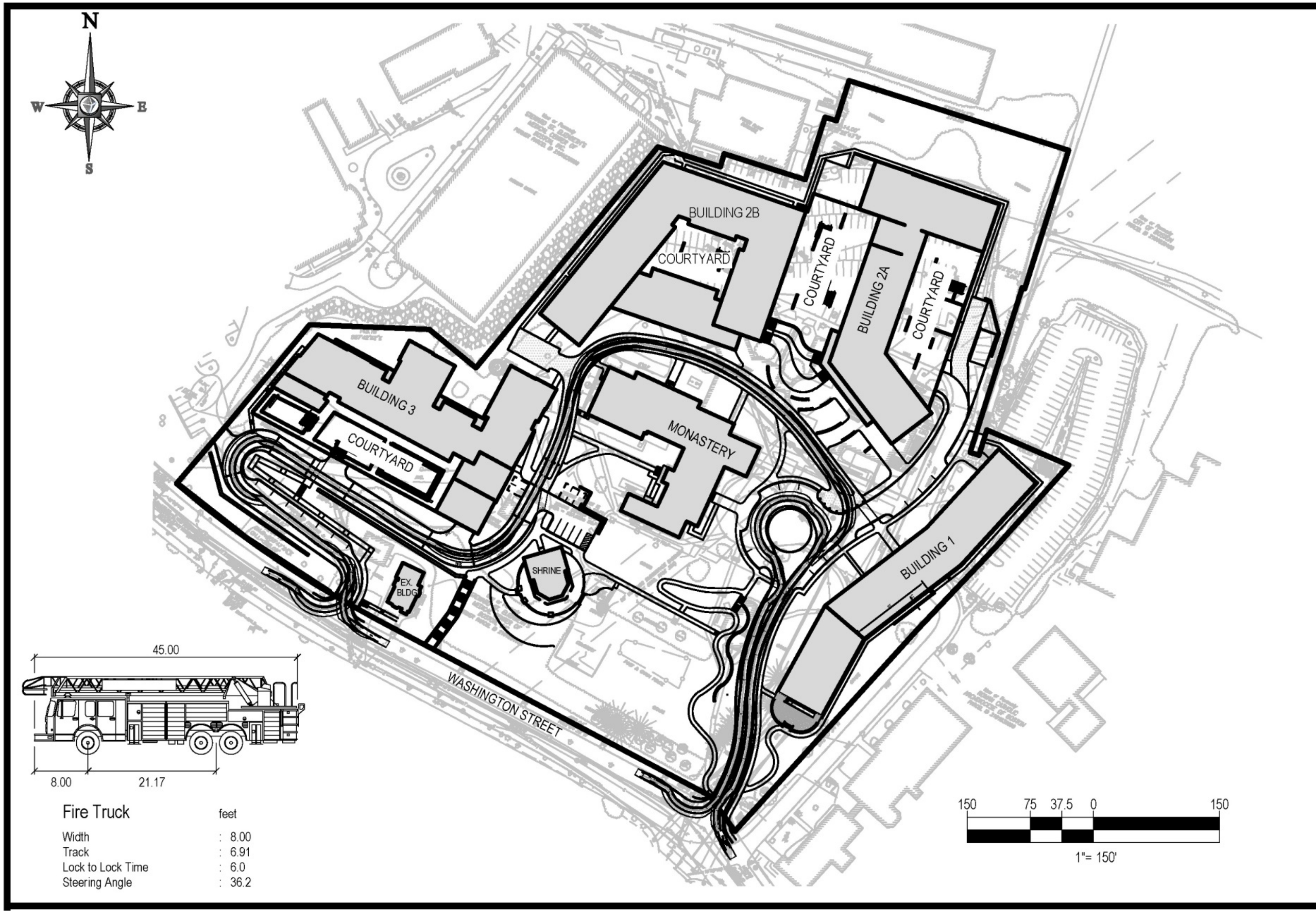


159-201 Washington Street Boston, Massachusetts

BOHLER ENGINEERING

Figure 7-8

Proposed Roadway Network



159-201 Washington Street Boston, Massachusetts

BOHLER ENGINEERING

Figure 7-9

Proposed Fire Truck Circulation

Chapter 8.0

Coordination with other Governmental Agencies

8.0 COORDINATION WITH OTHER GOVERNMENTAL AGENCIES

8.1 Architectural Access Board Requirements

The Project will, to the extent practicable, comply with the requirements of the Massachusetts Architectural Access Board and will be designed to comply with the standards of the Americans with Disabilities Act. The Accessibility Checklist is included as Appendix E.

8.2 Massachusetts Environmental Policy Act (MEPA)

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. Current plans do not call for the Project to receive any state permits, state funding or involve any state land transfers.

8.3 Massachusetts Historical Commission

With the exception of the Massachusetts Historical Commission's review of the proposed work to the Monastery roof per the preservation restriction, the Proponent does not anticipate that any additional review by MHC will be required as the Project is not subject to any state or federal licenses, permits or approvals and will not utilize any state or federal funding.

8.4 Boston Landmarks Commission

As noted previously, the Monastery building is a designated City of Boston landmark subject to review by the BLC. On May 24, 2016, the BLC conducted an Advisory Review hearing on the proposed work to the Monastery. The Proponent will file a formal Design Review application for the Monastery with the BLC as further developed plans and specifications become available.

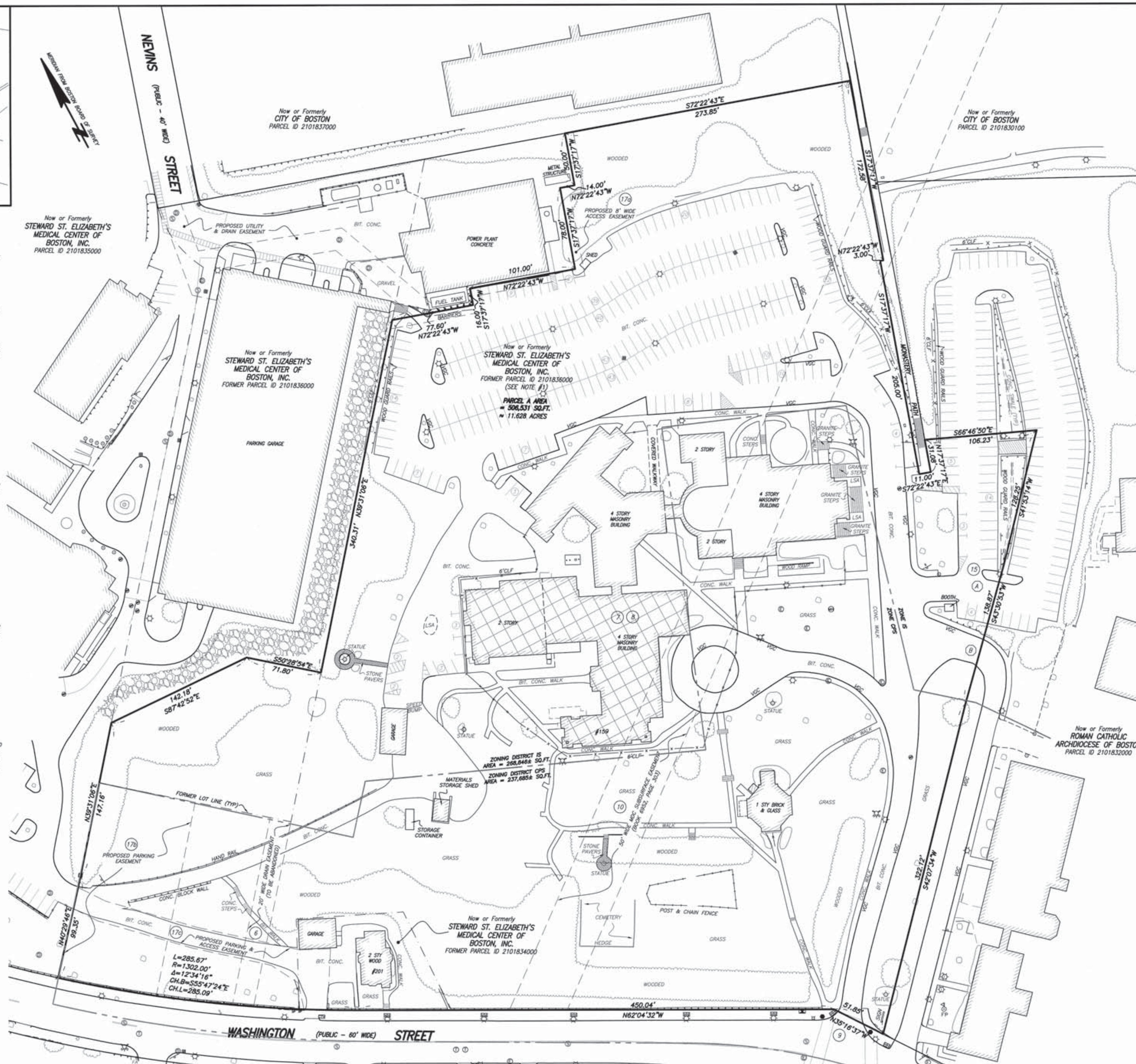
The proposed demolition activities are subject to BLC's review in accordance with Article 85 of the Boston Zoning Code (Demolition Delay). As noted above, alternatives for retaining and incorporating the church into the Project have been considered, but ultimately were determined infeasible. At the appropriate time, the Proponent will file an Article 85 application with BLC as required. Alternatives to the proposed demolition that have been considered will be further addressed as part of the Article 85 process. The Proponent will work closely with the BLC staff to fulfill the Article 85 review process.

8.5 Boston Civic Design Commission

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

Appendix A

Site Survey



BOUNDARY DESCRIPTIONS PER COMMITMENT NO. 15-0453TN-FN ISSUED BY FIDELITY NATIONAL TITLE INSURANCE COMPANY HAVING AN EFFECTIVE DATE OF NOVEMBER 22, 2015.

PARCEL I (159 WASHINGTON STREET)
(ST. GABRIEL'S MONASTERY)

A CERTAIN PARCEL OF LAND AND BUILDINGS THEREON KNOWN AS ST. GABRIEL'S MONASTERY AND SITUATED ON WASHINGTON STREET IN THAT PART OF BOSTON FORMERLY CALLED BRIGHTON, BEING SHOWN AS PARCEL 1 ON THE PLAN ENTITLED "COMPILED SUBDIVISION PLAN OF LAND BOSTON (BRIGHTON DISTRICT) SUFFOLK COUNTY MASSACHUSETTS PREPARED FOR: ST. ELIZABETH'S HOSPITAL BY THE BSC GROUP SURVEYING AND MAPPING, INC. DATED OCTOBER 22, 1990 AND RECORDED WITH SUFFOLK COUNTY REGISTRY OF DEEDS IN PLAN BOOK 16789, END.

PARCEL II (201 WASHINGTON STREET)

THE LAND IN THE BRIGHTON DISTRICT OF BOSTON, SITUATED ON THE NORTHERLY SIDE OF WASHINGTON STREET IN SAID DISTRICT, FORMERLY OCCUPIED BY THE BULL-HEAD TAVERN, SO-CALLED, AND BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEASTERLY CORNER OF SAID LOT TO THE POINT OF INTERSECTION OF LAND NOW OR FORMERLY OF DAVID NEVINS, THENCE RUNNING NORTHWESTERLY BOUNDING SOUTHERLY ON WASHINGTON STREET, ONE HUNDRED FORTY-TWO (142) FEET, MORE OR LESS, TO A STONE MONUMENT AT THE DIVIDING POINT BETWEEN THE PREMISES HEREBY CONVEYED AND OTHER LAND NOW OR FORMERLY OF DAVID NEVINS ON THE WESTERLY SIDE THEREOF, THENCE TURNING AND RUNNING NORTHERLY AS THE FENCE NOW STANDS BOUNDING WESTERLY ON LAND NOW OR FORMERLY OF SAID DAVID NEVINS TO THE BACK WALL ON SAID PREMISES, MEASURING ON SAID LINE NINETY-TWO AND A QUARTER (92-1/4) FEET, MORE OR LESS; THENCE TURNING AND RUNNING BY TWO LINES AS THE FENCES AND WALLS NOW STAND, SAID LINES RUNNING ABOUT EASTERLY AND SOUTHEASTERLY, BOUNDING ON LAND NOW OR LATE OF SAID
NEVINS TO THE POINT OF BEGINNING, MEASURING ON LAST TWO MENTIONED LINES TWO HUNDRED AND ELEVEN (211) FEET, MORE OR LESS.

EXCEPTING THEREFROM THE FOLLOWING PARCEL OF LAND:

A CERTAIN PARCEL OF LAND, SITUATED IN THAT PART OF SAID BOSTON, WHICH WAS FORMERLY THE TOWN OF BRIGHTON, BOUNDED AND DESCRIBED AS FOLLOWS:

NORTHEASTWARDLY BY THE LINE OF WIDENING OF WASHINGTON STREET BY THE TOWN OF BRIGHTON, UPON THE REPORT OF THE BOARD OF SELECTMEN OF SAID TOWN OF BRIGHTON, OF SEPTEMBER 15TH, 1873, THERE MEASURING ON TWO LINES, NINETY TWO & 50/100 FEET, AND FORTY-NINE FEET. NORTHWESTWARDLY BY LAND TAKEN BY SAID TOWN OF BRIGHTON, FOR SAID WIDENING OF WASHINGTON STREET, FROM DAVID NEVINS, SEVEN FEET AND SOUTHWESTWARDLY BY THE LINE OF SAID WASHINGTON STREET AS IT EXISTED BEFORE SAID WIDENING, ONE HUNDRED FORTY-ONE AND 38/100 FEET.

CONTAINING FOUR HUNDRED FORTY-SEVEN SQUARE FEET MORE OR LESS. BEING SHOWN ON A PLAN MADE BY THE M. NICHTMANN AND WM. JACKSON, CIVIL ENGINEERS, DATED BRIGHTON, SEPTEMBER 15, A.D. 1873 AND DEPOSITED IN THE OFFICE OF THE CITY SURVEYOR OF SAID CITY OF BOSTON.

PARCEL III

BEGINNING AT THE SOUTHWESTERLY CORNER OF LAND NOW OR FORMERLY OF THE CITY OF BOSTON AT THE EASTERLY SIDELINE OF NEVINS STREET, A FORTY FOOT WIDE PUBLIC STREET; THENCE

S 72° 23' 05" E ALONG THE SOUTHERLY LINE OF SAID LAND OF THE CITY OF BOSTON, A DISTANCE OF TWO HUNDRED FIFTEEN AND 85/100 (215.85) FEET; THENCE RUNNING

S 39° 30' 44" W ALONG OTHER LAND NOW OR FORMERLY OF ST. ELIZABETH'S HOSPITAL FOUNDATION, INC., A DISTANCE OF SIX HUNDRED THIRTY NINE AND 35/100 (639.35) FEET; THENCE RUNNING

N 50° 29' 16" W ALONG SAID LAND A DISTANCE OF ONE HUNDRED EIGHTY FIVE AND 00/100 (185.00) FEET TO THE SOUTHWESTERLY LINE PARCEL 1 SHOWN ON "SUBDIVISION PLAN OF LAND IN BOSTON, MASS., BRIGHTON DISTRICT, SUFFOLK COUNTY, SCALE 1 IN. = 40 FEET, AUGUST 20, 1982", PREPARED BY MILLER AND NYLANDER CO., AND RECORDED AT BOOK 10075, END, PUBLIC RECORDS OF THE SUFFOLK REGISTRY OF DEEDS, SUFFOLK COUNTY, MASSACHUSETTS; THENCE RUNNING

N 39° 30' 44" E ALONG SAID PARCEL 1 AND ALONG PARCEL 2 ALSO SHOWN ON SAID PLAN RECORDED AT BOOK 10075, END, A DISTANCE OF FOUR HUNDRED NINETY SEVEN AND 51/100 (497.51) FEET TO A POINT ON THE ARC OF A CIRCULAR CURVE CONCAVE NORTHEASTERLY, FROM WHICH SAID POINT A RADIAL LINE BEARS N60° 12' 16" E; THENCE RUNNING

NORTHERLY ALONG THE NORTHEASTERLY LINE OF SAID PARCEL 2 AND AS SHOWN ON THE PLAN RECORDED AT BOOK 10075, END, AND ALONG THE ARC OF SAID CURVE A DISTANCE OF SEVENTY ONE AND 72/100 (71.72) FEET TO THE SOUTHEASTERLY TERMINUS OF THE WESTERLY SIDELINE OF AID NEVINS STREET; THENCE RUNNING

S72° 23' 05" E ALONG THE SOUTHERLY TERMINUS OF SAID NEVINS STREET A DISTANCE OF FORTY AND 42/100 (40.42) FEET TO THE POINT OF BEGINNING.

CONTAINING 113,483 SQUARE FEET, OR 2.605 ACRES, MORE OR LESS, AND BEING "PARCEL 2" AS SHOWN ON PLAN AT BOOK 16789 END.

UPON RECORDING OF A SUBDIVISION PLAN, ALL SATISFACTORY TO THE COMPANY, WITH SUFFOLK COUNTY REGISTRY OF DEEDS, THE FOLLOWING WILL CONSTITUTE THE INSURED PREMISES:

A CERTAIN PARCEL OF LAND WITH THE BUILDINGS THEREON SITUATED IN THAT PART OF BOSTON FORMERLY CALLED BRIGHTON, SUFFOLK COUNTY, MASSACHUSETTS, SITUATED ON WASHINGTON STREET, BEING SHOWN AS PARCEL A (INCLUDES 201 WASHINGTON STREET) ON A PLAN ENTITLED "PLAN OF LAND IN BOSTON (SUFFOLK COUNTY)" SCALE 1" = 50' DATED: JANUARY 24, 2014 AND LAST REVISED DECEMBER 23, 2015 BY PRECISION LAND SURVEYING, INC. AND RECORDED WITH THE SUFFOLK COUNTY REGISTRY OF DEEDS ON DECEMBER =, 2015 IN BOOK =, PAGE =, MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTHEASTERLY SIDELINE OF WASHINGTON STREET, SAID POINT BEING THE MOST SOUTHERLY CORNER OF THE PARCEL; THENCE RUNNING

N 35°16'37" W	51.85' TO A POINT; THENCE TURNING AND RUNNING
N 62°04'32" W	450.04' TO A POINT OF CURVATURE; THENCE RUNNING
NORTHWESTERLY	285.67' BY A CURVE TO THE RIGHT HAVING A RADIUS OF 1,302.00' TO A POINT, SAID LAST THREE COURSES BEING BY THE NORTHWESTERLY SIDELINE OF WASHINGTON STREET; THENCE TURNING AND RUNNING;
N 40°29'46" E	99.35' TO A POINT; THENCE TURNING AND RUNNING
N 39°31'06" E	147.16' TO A POINT; THENCE TURNING AND RUNNING
S 87°42'52" E	142.18' TO A POINT; THENCE TURNING AND RUNNING
S 50°28'54" E	71.80' TO A POINT; THENCE TURNING AND RUNNING
N 39°31'06" E	340.31' TO A POINT; THENCE TURNING AND RUNNING
S 72°22'43" E	77.60' TO A POINT; THENCE TURNING AND RUNNING
N 17°37'17" E	16.00' TO A POINT; THENCE TURNING AND RUNNING
S 72°22'43" E	101.00' TO A POINT; THENCE TURNING AND RUNNING
N 17°37'17" E	78.00' TO A POINT; THENCE TURNING AND RUNNING
S 72°22'43" E	14.00' TO A POINT; THENCE TURNING AND RUNNING
N 17°37'17" E	50.00' TO A POINT; THENCE TURNING AND RUNNING
S 72°22'43" E	273.85' TO A POINT; THENCE TURNING AND RUNNING
S 17°37'17" W	172.58' TO A POINT; THENCE TURNING AND RUNNING
N 72°22'43" W	3.00' TO A POINT; THENCE TURNING AND RUNNING
S 17°37'17" W	205.00' TO A POINT; THENCE TURNING AND RUNNING
S 72°22'43" E	11.00' TO A POINT; THENCE TURNING AND RUNNING
N 17°37'17" E	31.08' TO A POINT; THENCE TURNING AND RUNNING
S 66°46'50" E	106.23' TO A POINT; THENCE TURNING AND RUNNING
S 41°53'14" W	128.25' TO A POINT; THENCE TURNING AND RUNNING
S 43°30'53" W	138.87' TO A POINT; THENCE TURNING AND RUNNING
S 42°07'34" W	322.12' TO THE POINT OF BEGINNING.

CONTAINING 506,531 SQUARE FEET OR 11.628 ACRES, MORE OR LESS.

NOTES:

1) PARCEL A, EASEMENTS LABELED AS 17a THROUGH 17c AND EASEMENT LABELED PROPOSED UTILITY & DRAIN EASEMENT WERE TAKEN FROM A PLAN ENTITLED "PLAN OF LAND IN BOSTON (SUFFOLK COUNTY)", DATED JANUARY 24, 2014, PREPARED BY PRECISION LAND SURVEYING, INC. TO BE RECORDED PRIOR TO CLOSING AND IS THE SAME AS THE PARCEL SHOWN HEREON.

2) ZONING DISTRICTS SHOWN HEREON WERE TAKEN FROM BOSTON REDEVELOPMENT AUTHORITY MAP 7, ALLISTIN/BRIGHTON NEIGHBORHOOD DISTRICT.

3) BY GRAPHIC PLOTTING ONLY, THE PARCEL SHOWN HEREON LIES WITHIN A ZONE "X" (UNSHADED), AN AREA OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD, AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (F.E.M.A) FLOOD INSURANCE RATE MAP (F.I.R.M.) FOR SUFFOLK COUNTY, MASSACHUSETTS, MAP NUMBER 25025C0057G, CITY OF BOSTON COMMUNITY NUMBER 250286, PANEL NUMBER 0057G, HAVING AN EFFECTIVE DATE OF SEPTEMBER 25, 2009.

4) ZONING INFORMATION WAS NOT PROVIDED BY THE TITLE INSURER AS REQUIRED BY ITEM 6 (A OR B) OF TABLE "A" IN THE 2011 ALTA SURVEY REQUIREMENTS.

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

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

LEGEND

- SEWER MANHOLE
- DRAIN MANHOLE
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- CABLE TV MANHOLE
- MANHOLE
- HYDRANT
- WATER SHUT OFF
- GAS SHUT OFF
- BOSTON WATER VALVE
- CATCH BASIN
- TRAFFIC CONTROL BOX
- TRAFFIC SIGNAL
- LIGHT POLE
- ELECTRIC HANDHOLE
- BOLLARD
- SIGN
- VGC ········ VERTICAL GRANITE CURB
- BIT ········ BITUMINOUS
- CONC ········ CONCRETE
- SQ. FT. ········ SQUARE FEET
- CLF ········ CHAIN LINK FENCE
- TYP ········ TYPICAL

LIST OF VISIBLE ENCROACHMENTS

(A) PARKING CROSSES PROPERTY LINES.

(B) ACCESS AND EGRESS TO LOCUS CROSSES THROUGH ABUTTING PROPERTY.

EXCEPTIONS FROM COVERAGE SCHEDULE B, SECTION 2, LISTED IN TITLE COMMITMENT NO. 15-0453TN-FN ISSUED BY FIDELITY NATIONAL TITLE INSURANCE COMPANY HAVING AN EFFECTIVE DATE OF NOVEMBER 22, 2015.

(6) MATTERS SET FORTH, INCLUDING DRAINAGE EASEMENTS, IN DEED BY ST. ELIZABETH'S HOSPITAL FOUNDATION, INC. TO SAINT ELIZABETH'S HOSPITAL OF BOSTON DATED APRIL 26, 1991 AND RECORDED AT BOOK 16819, PAGE 168. (SHOWN ON SURVEY)

(7) VOTE OF DESIGNATION BY THE BOSTON LANDMARKS COMMISSION AS TO ST. GABRIEL'S MONASTERY, DATED JANUARY 10, 1989, RECORDED AT BOOK 19834, PAGE 22; RE-RECORDED AT BOOK 19906, PAGE 218, TO INDEX UNDER OWNER'S NAME. (SHOWN HATCHED ON SURVEY)

(8) PRESERVATION RESTRICTION AGREEMENT BETWEEN THE COMMONWEALTH OF MASSACHUSETTS BY AND THROUGH THE MASSACHUSETTS HISTORICAL COMMISSION, AND THE ST. ELIZABETH'S HOSPITAL FOUNDATION, INC., FOR ST. GABRIEL'S MONASTERY BUILDING, DATED OCTOBER 3, 2002, RECORDED AT BOOK 31813, PAGE 52. (SHOWN HATCHED ON SURVEY)

(9) LICENSE MAINTENANCE AND INDEMNIFICATION AGREEMENT WITH THE CITY OF BOSTON, ACTING BY AND THROUGH ITS PUBLIC IMPROVEMENT COMMISSION, DATED JUNE 11, 2007, RECORDED AT BOOK 42761, PAGE 178, AS SHOWN ON PLAN NO. 828 OF 2007 AND PLAN NO. 829 OF 2007. (SHOWN ON SURVEY)

(10) MDC SUBSURFACE EASEMENT RECORDED IN BOOK 6952, PAGE 303 AND SHOWN ON PLAN RECORDED IN BOOK 16789, END. (SHOWN ON SURVEY)

(11) LICENSE FOR PASSAGEWAY SET FORTH IN AN INSTRUMENT DATED JANUARY 15, 1953 AND RECORDED IN BOOK 6844, PAGE 593. (NOT LOCUS)

(12) EASEMENT CONTAINED IN A DEED FROM ST. ELIZABETH'S HOSPITAL OF BOSTON, INC. TO ST. ELIZABETH'S HOSPITAL FOUNDATION, INC. DATED OCTOBER 14, 1982 AND RECORDED IN BOOK 10091, PAGE 239, AS AFFECTED BY A CONFIRMATORY DEED FROM ST. ELIZABETH'S HOSPITAL OF BOSTON TO ST. ELIZABETH'S HOSPITAL FOUNDATION, INC. DATED SEPTEMBER 26, 1988 AND RECORDED IN BOOK 15050, PAGE 314. (NOT LOCUS)

(13) EASEMENT AGREEMENT FROM ST. ELIZABETH'S HOSPITAL FOUNDATION, INC. TO ST. ELIZABETH'S HOSPITAL FOUNDATION, INC. AS TRUSTEE U/D/T DATED DECEMBER 30, 1982, WHICH AGREEMENT IS DATED NOVEMBER 8, 1988 AND RECORDED IN BOOK 15663, PAGE 199. (NOT LOCUS)

(14) RECIPROCAL EASEMENT AGREEMENT BETWEEN STEWARD ST. ELIZABETH'S MEDICAL CENTER OF BOSTON AND STEWARD ST. ELIZABETH'S REALTY CORP. AND HTA ST. ELIZABETH'S MOB 1, LLC DATED MARCH 29, 2012 AND RECORDED AT BOOK 49309 PAGE 82. (NOT LOCUS)

(15) PARKING AND IMPROVEMENTS FROM ABUTTER N/F ROMAN CATHOLIC ARCHBISHOP OF BOSTON ENCROACH ONTO LAND. (SHOWN ON SURVEY)

(16) RECIPROCAL EASEMENT AGREEMENT BETWEEN STEWARD ST. ELIZABETH'S MEDICAL CENTER OF BOSTON AND STEWARD ST. ELIZABETH'S REALTY CORP. AND HTA ST. ELIZABETH'S MOB 1, LLC DATED MARCH 29, 2012 AND RECORDED AT BOOK 49309 PAGE 82. (NOT LOCUS)

(17) PLAN OF LAND IN BOSTON (SUFFOLK COUNTY) SCALE 1" = 50' DATE JANUARY 24, 2014 BY PRECISION LAND SURVEYING INC. SHOWS: (SHOWN ON SURVEY)

a. 8' ACCESS EASEMENT;
b. PARKING EASEMENT;
c. PARKING ACCESS EASEMENT
d. 20' UTILITY AND DRAIN EASEMENT (REMOVED)

(18) NOTICE OF RIGHT OF FIRST REFUSAL AGREEMENT AFFECTING 11 NEVINS STREET BY HTA-ST. ELIZABETH'S MOB 1, LLC, DATED MAY 15, 2013, RECORDED WITH SAID DEEDS, BOOK 51465, PAGE 112. (NOT PLOTTABLE)

(19) AMENDED AND RESTATED RECIPROCAL EASEMENT AGREEMENT, DATED MAY 15, 2013, RECORDED WITH SAID DEEDS, BOOK 51465, PAGE 117. (NOT LOCUS)

(20) AMENDED AND RESTATED NOTICE OF LEASE, DATED MAY 15, 2013, BY HTA-ST. ELIZABETH'S MOB 1, LLC AS LANDLORD AND STEWARD ST. ELIZABETH'S MEDICAL CENTER OF BOSTON, INC., AS TENANT, RECORDED WITH SAID DEEDS, BOOK 51465, PAGE 138. (NOT PLOTTABLE)

(21) NOTICE OF RIGHT OF FIRST REFUSAL AGREEMENT, AFFECTING 280 WASHINGTON STREET, BY AND BETWEEN HTA ST. ELIZABETH'S MOB 2, LLC AS GRANTOR AND STEWARD ST. ELIZABETH'S MEDICAL CENTER OF BOSTON, INC. AS GRANTEE, DATED MAY 15, 2013, RECORDED WITH SAID DEEDS, BOOK 51466, PAGE 36. (NOT PLOTTABLE)

(22) AMENDED AND RESTATED NOTICE OF LEASE BY AND BETWEEN HTA-ST. ELIZABETH'S MOB 2, LLC, AS LANDLORD AND STEWART ST. ELIZABETH'S MEDICAL CENTER OF BOSTON, INC., AS TENANT, DATED MAY 15, 2013, RECORDED WITH SAID DEEDS, BOOK 51466, PAGE 41. (NOT PLOTTABLE)

(23) LICENSE ISSUED BY THE CITY OF BOSTON PUBLIC IMPROVEMENT COMMISSION, DATED AUGUST 29, 2013, RECORDED WITH SAID DEEDS, BOOK 52409, PAGE 85. (NOT LOCUS)

(24) RESERVATION OF THE RIGHT TO SLOPE OR BANK THE FILLING WHERE REQUIRED FOR GRADING NEVINS STREET AS SET FORTH IN DEED TO ST. ELIZABETH'S HOSPITAL OF BOSTON DATED MARCH 26, 1917, RECORDED AT BOOK 4022, PAGE 521. (NOT LOCUS)

(25) RESERVATION OF THE RIGHT TO SLOPE OR BANK THE FILLING WHERE REQUIRED FOR GRADING, FILLING AND CONSTRUCTING NEVINS STREET AS SET FORTH IN DEED TO THE PASSIONIST MISSIONARY SOCIETY OF BOSTON DATED MARCH 26, 1917, RECORDED AT BOOK 4045, PAGE 341. (NOT LOCUS)

(26) EASEMENT AGREEMENT FROM ST. ELIZABETH'S HOSPITAL FOUNDATION, INC. TO ST. ELIZABETH'S HOSPITAL FOUNDATION, INC. AS TRUSTEE U/D/T DATED DECEMBER 30, 1982, WHICH AGREEMENT IS DATED NOVEMBER 8, 1988 AND RECORDED IN BOOK 15663, PAGE 199. (NOT LOCUS)

(27) EASEMENTS GRANTED TO JP MORGAN CHASE BANK AS ADMINISTRATIVE AGENT AS SET FORTH IN ARTICLE 9 OF THE MORTGAGE, SECURITY AGREEMENT, ASSIGNMENT OF RENTS AND LEASES AND FIXTURE FILING BY STEWARD ST. ELIZABETH'S MEDICAL CENTER OF BOSTON, INC. TO JP MORGAN CHASE BANK, N.A., AS ADMINISTRATIVE AGENT, DATED APRIL 12, 2013, RECORDED WITH SAID DEEDS, BOOK 51295, PAGE 230, AS AFFECTED BY A SUBORDINATION AGREEMENT, RECORDED WITH SAID DEEDS, BOOK 51295, PAGE 306. (NOT PLOTTABLE)

TO: FIDELITY NATIONAL TITLE INSURANCE COMPANY, STEWARD ST. ELIZABETH'S MEDICAL CENTER OF BOSTON, INC. CUSTOMERS BANK, AND ITS SUCCESSORS AND ASSIGNS;

THIS IS TO CERTIFY THAT THIS PLAN AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 3, 4, 8, 9, 11(a), 13, 16, 17, 18, AND 21 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON DECEMBER 2, 2015.

FELDMAN LAND SURVEYORS

Karl A. McCarthy 12-24-2015

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

12-24-2015	PARCEL A & REVISED TITLE COMMITMENT ADDED

ALTA/ACSM LAND TITLE SURVEY
159 & 201 WASHINGTON STREET
BOSTON (BRIGHTON DISTRICT), MASS.

FELDMAN LAND SURVEYORS
112 SHAWMUT AVENUE
BOSTON, MASS. 02118

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

FELDMAN
LAND SURVEYORS

40 0 20 40 80 160

SCALE: 1"=40'

RESEARCH	FIELD CHIEF AB	PROJ MGR MDS	APPROVED KAM	SHEET NO. 1 OF 1
CALC MDS	CADD MDS	FIELD CHECKED	CRD FILE 14944	JOB NO. 14944

FILENAME: S:\PROJECTS\14900s\14944\DWG\14944-ALTA.dwg

Appendix B

Transportation

Available Upon Request

Appendix C

Air Quality

AIR QUALITY APPENDIX

Introduction

This Air Quality Appendix provides modeling assumptions and backup for results presented in Section 3.4 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 2016 and 2023 for speed limits of idle, 10, 15, and 30 mph for use in the microscale analyses.

MOVES CO Emission Factor Summary

Carbon Monoxide Only

		2016	2023
Free Flow	30 mph	2.697	1.844
Right Turns	10 mph	4.447	2.956
Left Turns	15 mph	3.823	2.586
Queues	Idle	9.997	4.102

Notes: Winter CO emission factors are higher than Summer and are conservatively used
Urban Unrestricted Roadway type used

CAL3QHC

For the intersections 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 370 cm was used for the intersections. Idle emission rates for queue links were based on 0 mph emission rates derived in MOVES. Emission rates for speeds of 10, 15, and 30 mph were used for right turn, left turn, and free flow links, respectively.

159-201 Washington Street
Background Concentrations

POLLUTANT	AVERAGING TIME	Form	2012	2013	2014	Units	ppm/ppb to µg/m³ Conversion Factor	2012-2014 Background Concentration (µg/m³)	Location
SO_2 [(1)(5)]	1-Hour [(4)]	99th %	13.2	12.2	9.7	ppb	2.62	30.7	Kenmore Sq., Boston
	3-Hour [(6)]	H2H	10.6	13.9	9.4	ppb	2.62	36.4	Kenmore Sq., Boston
	24-Hour	H2H	5.4	6.0	5.0	ppb	2.62	15.7	Kenmore Sq., Boston
	Annual	H	1.87	1.03	0.94	ppb	2.62	4.9	Kenmore Sq., Boston
PM-10	24-Hour	H2H	28.0	50	53	µg/m³	1	53	Kenmore Sq., Boston
	Annual	H	15.7	18.9	15	µg/m³	1	18.9	Kenmore Sq., Boston
PM-2.5	24-Hour [(4)]	98th %	22.1	17.5	14.6	µg/m³	1	18.1	Kenmore Sq., Boston
	Annual [(4)]	H	9.03	7.95	6.05	µg/m³	1	7.7	Kenmore Sq., Boston
NO_2 [(3)]	1-Hour [(4)]	98th %	49	48	49	ppb	1.88	91.5	Kenmore Sq., Boston
	Annual	H	19.1	17.78	17.17	ppb	1.88	35.9	Kenmore Sq., Boston
CO [(2)]	1-Hour	H2H	1.3	1.3	1.3	ppm	1146	1489.8	Kenmore Sq., Boston
	8-Hour	H2H	1.1	1.0	1.1	ppm	1146	1260.6	Kenmore Sq., Boston
Ozone	8-Hour	H4H	0.062	0.059	0.054	ppm	1963	121.7	Harrison Ave., Boston
Lead	Rolling 3-Month	H	0.014	0.007	0.014	µg/m³	1	0.014	Harrison Ave., Boston

Notes:
From 2012-2014 EPA's AirData Website
[1] SO_2 reported ppb. Converted to µg/m³ using factor of 1 ppm = 2.62 µg/m³.
[2] CO reported in ppm. Converted to µg/m³ using factor of 1 ppm = 1146 µg/m³.
[3] NO_2 reported in ppb. Converted to µg/m³ using factor of 1 ppm = 1.88 µg/m³.
[4] Background level is the average concentration of the three years.
[5] 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 Preparedness 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:	159-201 Washington Street
Project Address Primary:	159 and 201 Washington Street, Brighton
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	John Sullivan/Cabot, Cabot & Forbes/JSullivan@ccfne.com

A.2 - Team Description

Owner / Developer:	Cabot, Cabot & Forbes / Peak Campus
Architect:	CUBE 3 Studio LLC; Bargmann Hendrie + Archetype
Engineer (building systems):	
Sustainability / LEED:	LandWorks LLC
Permitting:	Epsilon Associates
Construction Management:	John Moriarty & Associates
Climate Change Expert:	

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:	*Residential, bicycle and car parking, fitness center, study and lounge space*

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

☑ Wood Frame	☐ Masonry	☐ Steel Frame TBD	☐ Concrete TBD

Describe the building?

Site Area:	11.6 acres	Building Area:	*663,000 SF*
Building Height:	*Up to 80 Ft.*	Number of Stories:	*1 to 7 Stories.*
First Floor Elevation (reference Boston City	154-190	Are there below grade spaces/levels, if yes how many:	*No*

Base):		

A.5 - Green Building

Which LEED Rating System(s) and version has or will your project use (by area for multiple rating systems)?

Select by Primary Use:	☐ New Construction	☐ Core & Shell	☐ Healthcare	☐ Schools
	☐ Retail	☑ Homes Midrise	☐ Homes	☐ Other
Select LEED Outcome:	☐ Certified	☑ Silver	☐ Gold	☐ Platinum

Will the project be USGBC Registered and / or USGBC Certified?

Registered:	*Yes / No*	Certified:	*Yes / No*

A.6 - Building Energy-

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

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

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

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

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

Electrical Generation:	*TBD (kW)*		Fuel Source:	*Diesel*
System Type and Number of Units:	☑ Combustion Engine	☐ Gas Turbine	☐ Combine Heat and Power	*2 (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:	***20%***
How is performance determined:	Energy model

What specific measures will the project employ to reduce building energy consumption?

Select all appropriate:				
	☑ High performance building envelop	☑ High performance lighting & controls	☐ Building day lighting	☑ EnergyStar equip. / appliances
	☐ High performance HVAC equipment	☐ Energy recovery ventilation	☐ No active cooling	☐ No active heating
Describe any added measures:				

What are the insulation (R) values for building envelop elements?

Roof:	*R = 25*	Walls / Curtain Wall Assembly:	*R = 21*
Foundation:	*R = 10*	Basement / Slab:	*R =10*
Windows:	*R = / U =0.4*	Doors:	*R = / U =0.7*

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:	Common area lighting will be dimmed when unoccupied

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

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

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

	No	If yes, for how long:	*Days*
If Yes, is building "Islandable?			
If Yes, describe strategies:			

Describe any non-mechanical strategies that will support building functionality and use during an extended interruption(s) of utility services and infrastructure:

Select all appropriate:				
	☐ Solar oriented – longer south walls	☐ Prevailing winds oriented	☐ External shading devices	☐ Tuned glazing,
	☐ Building cool zones	☑ Operable windows	☐ Natural ventilation	☐ Building shading
	☐ Potable water for drinking / food preparation	☐ Potable water for sinks / sanitary systems	☐ Waste water storage capacity	☑ High Performance Building Envelop
Describe any added measures:				

What measures will the project employ to reduce urban heat-island effect?

Select all appropriate:				
	☐ High reflective paving materials	☑ Shade trees & shrubs	☑ High reflective roof materials	☐ Vegetated roofs
Describe other strategies:				

What measures will the project employ to accommodate rain events and more rain fall?

Select all appropriate:				
	☐ On-site retention systems & ponds	☑ Infiltration galleries & areas	☐ Vegetated water capture systems	☐ Vegetated roofs
Describe other strategies:				

What measures will the project employ to accommodate extreme storm events and high winds?

Select all appropriate:				
	☐ Hardened building structure & elements	☑ Buried utilities & hardened infrastructure	☐ Hazard removal & protective landscapes	☑ Soft & permeable surfaces (water infiltration)
Describe other strategies:				

C - Sea-Level Rise and Storms

Rising Sea-Levels and more frequent Extreme Storms increase the probability of coastal and river flooding and enlarging the extent of the 100 Year Flood Plain. This section explores if a project is or might be subject to Sea-Level Rise and Storm impacts.

C.1 - Location Description and Classification:

Do you believe the building to susceptible to flooding now or during the full expected life of the building?

	No

Describe site conditions?

Site Elevation – Low/High Points:	*150/191.6 ft*
Building Proximity to Water:	*4,500 Ft.*

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

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

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

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

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

	4,450 Ft.

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

C - Sea-Level Rise and Storms

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

C.2 - Analysis

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

Sea Level Rise:	*3 Ft.*	Frequency of storms:	*0.25 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

Accessibility Checklist
(to be added to the BRA Development Review Guidelines)

In 2009, a nine-member Advisory Board was appointed to the Commission for Persons with Disabilities in an effort to reduce architectural, procedural, attitudinal, and communication barriers affecting persons with disabilities in the City of Boston. These efforts were instituted to work toward creating universal access in the built environment.

In line with these priorities, the Accessibility Checklist aims to support the inclusion of people with disabilities. In order to complete the Checklist, you must provide specific detail, including descriptions, diagrams and data, of the universal access elements that will ensure all individuals have an equal experience that includes full participation in the built environment throughout the proposed buildings and open space.

In conformance with this directive, all development projects subject to Boston Zoning Article 80 Small and Large Project Review, including all Institutional Master Plan modifications and updates, are to complete the following checklist and provide any necessary responses regarding the following:

- improvements for pedestrian and vehicular circulation and access;
- encourage new buildings and public spaces to be designed to enhance and preserve Boston's system of parks, squares, walkways, and active shopping streets;
- ensure that persons with disabilities have full access to buildings open to the public;
- afford such persons the educational, employment, and recreational opportunities available to all citizens; and
- preserve and increase the supply of living space accessible to persons with disabilities.

We would like to thank you in advance for your time and effort in advancing best practices and progressive approaches to expand accessibility throughout Boston's built environment.

Accessibility Analysis Information Sources:

1. Americans with Disabilities Act – 2010 ADA Standards for Accessible Design
   a. http://www.ada.gov/2010ADAstandards_index.htm
2. Massachusetts Architectural Access Board 521 CMR
   a. http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/aab/aab-rules-and-regulations-pdf.html
3. Boston Complete Street Guidelines
   a. http://bostoncompletestreets.org/
4. City of Boston Mayors Commission for Persons with Disabilities Advisory Board
   a. http://www.cityofboston.gov/Disability
5. City of Boston – Public Works Sidewalk Reconstruction Policy
   a. http://www.cityofboston.gov/images_documents/sidewalk%20policy%200114_tcm3-41668.pdf
6. Massachusetts Office On Disability Accessible Parking Requirements
   a. www.mass.gov/anf/docs/mod/hp-parking-regulations-mod.doc
7. MBTA Fixed Route Accessible Transit Stations
   a. http://www.mbta.com/about_the_mbta/accessibility/

Project Information

Project Name:	159-201 Washington Street
Project Address Primary:	159 and 201 Washington Street, Brighton
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	John Sullivan/Cabot, Cabot & Forbes/JSullivan@ccfne.com

Team Description

Owner / Developer:	Cabot, Cabot & Forbes / Peak Campus
Architect:	CUBE 3 Studio LLC; Bargmann Hendrie + Archetype
Engineer (building systems):	
Sustainability / LEED:	LandWorks LLC
Permitting:	Epsilon Associates
Construction Management:	John Moriarty & Associates

Project Permitting and Phase

At what phase is the project – at time of this questionnaire?

☑PNF / Expanded PNF Submitted	Draft / Final Project Impact Report Submitted	BRA Board Approved
BRA Design Approved	Under Construction	Construction just completed:

Building Classification and Description

What are the principal Building Uses - select all appropriate uses?

Residential – One to Three Unit	☑Residential - Multi-unit, Four +	Institutional	Education
Commercial	Office	Retail	Assembly
Laboratory / Medical	Manufacturing / Industrial	Mercantile	Storage, Utility and Other

First Floor Uses (List)	*Units, Residential, bicycle and car parking, fitness center, study and lounge space, café, leasing office*

What is the Construction Type – select most appropriate type?

☑Wood Frame	Masonry	**Steel Frame TBD**	**Concrete TBD**

Describe the building?

Site Area:	*11.6 acres*	Building Area:	*663,000 SF*
Building Height:	*Up to 80 Ft.*	Number of Stories:	*1 to 7 Stories.*
First Floor Elevation:	*154-190 BCB*	Are there below grade spaces:	*No*

Assessment of Existing Infrastructure for Accessibility:

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

Provide a description of the development neighborhood and identifying characteristics.	The immediate neighborhood surrounding the site contains a mixture of institutional, retail and residential uses. St. Elizabeth's Medical Center is adjacent to western edges of the site, and Brighton High School is located to the north of the site. Beyond the Medical Center along Washington Street and Market Street is the Brighton Center neighborhood, which contains a variety of small retail shops and restaurants on the ground floor with offices above. To the south and east of the site there is a mixture of single family homes, duplexes, and three to five-story multi-family residential buildings.
List the surrounding ADA compliant MBTA transit lines and the proximity	65 bus on Washington Street adjacent to the site

to the development site: Commuter rail, subway, bus, etc.	51, 57, 66, 501 and 503 buses located one block from the Project site.
List the surrounding institutions: hospitals, public housing and elderly and disabled housing developments, educational facilities, etc.	St. Elizabeth's Medical Center, Brighton High School, Kindred Hospital, Commonwealth Development, and the Boston Public Library – Brighton Branch.
Is the proposed development on a priority accessible route to a key public use facility? List the surrounding: government buildings, libraries, community centers and recreational facilities and other related facilities.	The Project Site is proximate to the following: Boston Police District D-14, St. Elizabeth's Medical Center, Brighton High School, Kindred Hospital, Commonwealth Development, Boston Public Library – Brighton Branch, and Brighton Division – Boston Municipal Court

Surrounding Site Conditions – Existing:

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

Are there sidewalks and pedestrian ramps existing at the development site?	Yes.
If yes above, list the existing sidewalk and pedestrian ramp materials and physical condition at the development site.	The existing sidewalks and pedestrian ramps within the site are in fair to poor condition.
Are the sidewalks and pedestrian ramps existing-to-remain? **If yes,** have the sidewalks and pedestrian ramps been verified as compliant? **If yes,** please provide surveyors report.	No, the Proponent will replace all sidewalks and pedestrian ramps within the Project site.
Is the development site within a historic district? **If yes,** please identify.	No.

Surrounding Site Conditions – Proposed

This section identifies the proposed condition of the walkways and pedestrian ramps in and around the development site. The width of the sidewalk contributes to the degree of comfort and enjoyment of walking along a street. Narrow sidewalks do not support lively pedestrian activity, and may create dangerous conditions that force people to walk in the street. Typically, a five foot wide Pedestrian Zone supports two people walking side by side or two wheelchairs passing each other. An eight foot wide Pedestrian Zone allows two pairs of people to comfortable pass each other, and a ten foot or wider Pedestrian Zone can support high volumes of pedestrians.

Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? See: www.bostoncompletestreets.org	No, proposed sidewalks along driveways will provide pedestrian and curb zones and be minimum 5 feet in width, but due to existing steep slopes on site it is not feasible in many locations. Where driveway slopes exceed accessibility guidelines, accessible sidewalks will be set back from the driveway. In order to minimize disturbance to existing historic features and preserve existing vegetation, a greenscape/furnishing zone is not proposed.
If yes above, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, Boulevard.	N/A
What is the total width of the proposed sidewalk? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone.	The proposed sidewalks along driveways on the Project Site will be a minimum width of 5 feet. Pedestrian Zone will be minimum 5 feet wide. As previously mentioned, no greenscape/furnishing zone is proposed.
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?	Proposed materials will be determined as the design advances.
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the City of Boston Public Improvement Commission?	The Proponent does not presently anticipate seeking pedestrian easements within the Project site, but the Proponent anticipates that all private driveways on the project site will comply with applicable requirements to accessibility where slopes permit.
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way?	No.
If yes above, what are the proposed dimensions of the sidewalk café or furnishings and what will the right-of-way clearance be?	

Proposed Accessible Parking:

See Massachusetts Architectural Access Board Rules and Regulations 521 CMR Section 23.00 regarding accessible parking requirement counts and the Massachusetts Office of Disability Handicap Parking Regulations.

What is the total number of parking spaces provided at the development site parking lot or garage?	There are approximately 395 parking spaces on site within structured parking areas and surface parking.
What is the total number of accessible spaces provided at the development site?	Approximately 13 accessible spaces.
Will any on street accessible parking spaces be required? If yes, has the proponent contacted the Commission for Persons with Disabilities and City of Boston Transportation Department regarding this need?	Yes, several on-street accessible parking spaces will be provided along the Project's private driveways. The Proponent has met with the Commission for Persons with Disabilities to discuss the proposed locations. Final locations and counts will be coordinated with the Commission for Persons with Disabilities and City of Boston Transportation.
Where is accessible visitor parking located?	See attached diagram.
Has a drop-off area been identified? If yes, will it be accessible?	Yes. An accessible drop-off area will be provided along the main entry drive.
Include a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations. Please include route distances.	See attached diagram.

Circulation and Accessible Routes:

The primary objective in designing smooth and continuous paths of travel is to accommodate persons of all abilities that allow for universal access to entryways, common spaces and the visit-ability* of neighbors.

**Visit-ability – Neighbors ability to access and visit with neighbors without architectural barrier limitations*

Provide a diagram of the accessible route connections through the site.	See attached diagram.
Describe accessibility at each entryway: Flush Condition, Stairs, Ramp Elevator.	All entryways and thresholds are accessible – flush or within acceptable change restrictions (1/2" or less).
Are the accessible entrance and the standard entrance integrated?	Yes.
If no above, what is the reason?	
Will there be a roof deck or outdoor courtyard space? If yes, include diagram of the accessible route.	Yes, see attached diagram.
Has an accessible routes way-finding and signage package been developed? If yes, please describe.	No signage package has been developed yet.

Accessible Units: (If applicable)

In order to facilitate access to housing opportunities this section addresses the number of accessible units that are proposed for the development site that remove barriers to housing choice.

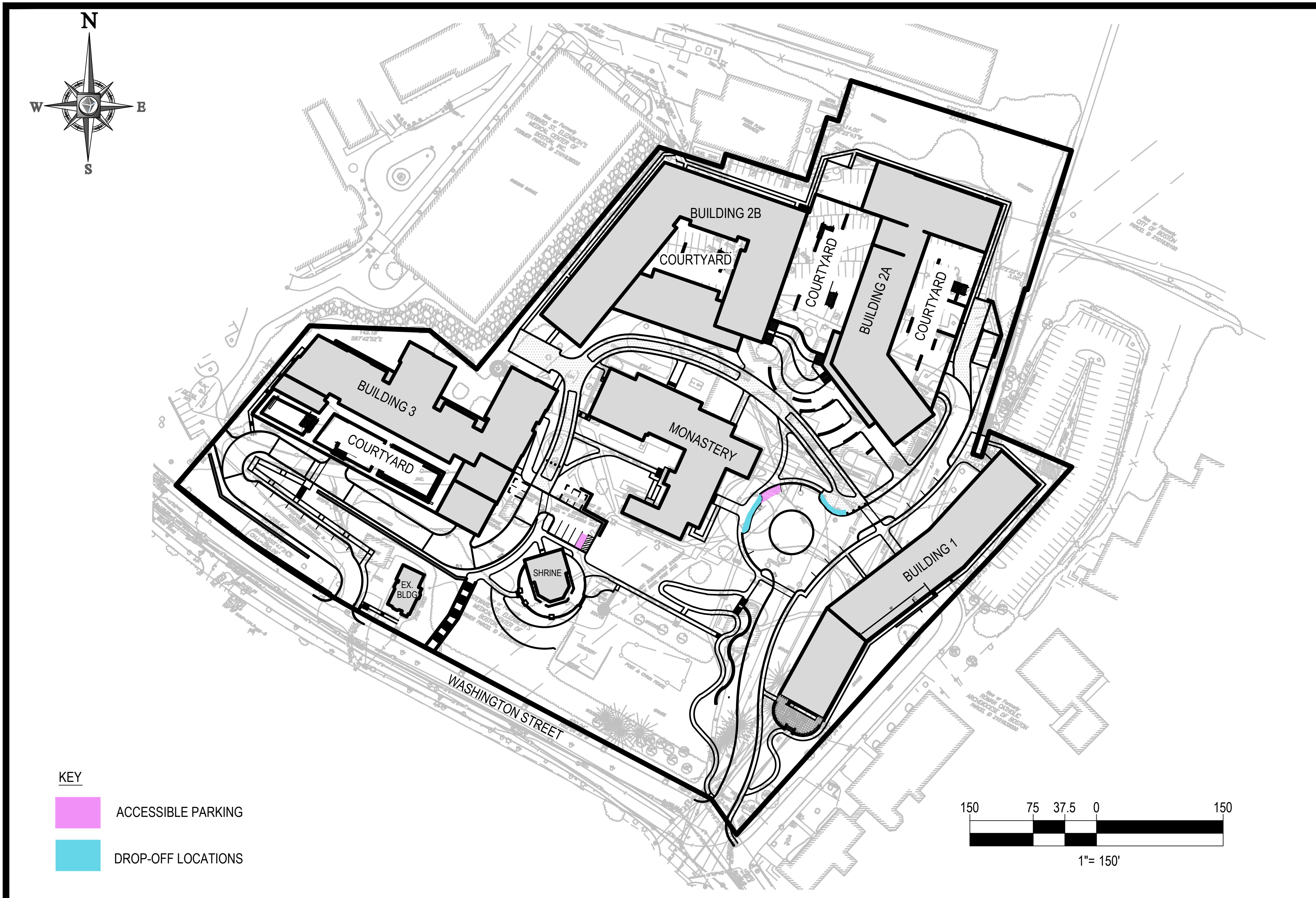
What is the total number of proposed units for the development?	Approximately 679 units.
How many units are for sale; how many are for rent? What is the market value vs. affordable breakdown?	All units are for rent. The market value versus affordable breakdown has not yet been determined.

How many accessible units are being proposed?	Not yet determined.
Please provide plan and diagram of the accessible units.	
How many accessible units will also be affordable? If none, please describe reason.	Not determined at this time.
Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility impairments? Example: stairs at entry or step to balcony. If yes, please provide reason.	No.
Has the proponent reviewed or presented the proposed plan to the City of Boston Mayor's Commission for Persons with Disabilities Advisory Board?	No.
Did the Advisory Board vote to support this project? If no, what recommendations did the Advisory Board give to make this project more accessible?	

Thank you for completing the Accessibility Checklist!

For questions or comments about this checklist or accessibility practices, please contact:

kathryn.quigley@boston.gov | Mayors Commission for Persons with Disabilities

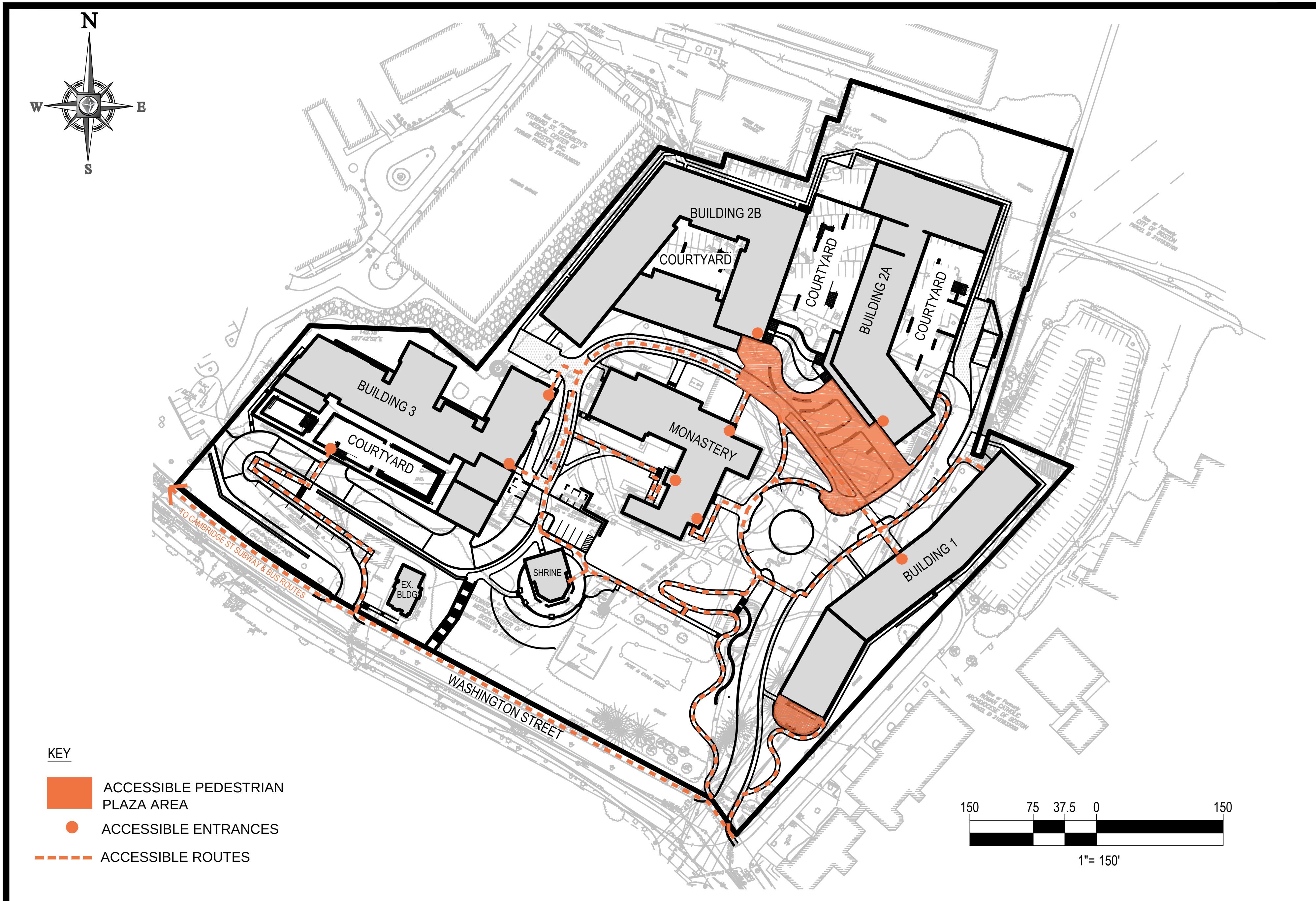


REDUCED SCALE IMAGE
(N.T.S.)

ACCESSIBLE PARKING & DROP-OFF LOCATIONS

159-201 WASHINGTON STREET
BOSTON, MASSACHUSETTS

BOHLER ENGINEERING



REDUCED SCALE IMAGE
(N.T.S.)

SITE ACCESSIBLE ROUTES

159-201 WASHINGTON STREET
BOSTON, MASSACHUSETTS

BOHLER
ENGINEERING