EXPANDED PROJECT NOTIFICATION FORM

1505 Commonwealth Avenue

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

Submitted by:
Partners Properties, LLC
20 Linden Street
Allston, MA 02134

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

In Association with:
O'Sullivan Architects
Rackemann, Sawyer & Brewster
Vanasse & Associates, Inc
Bohler Engineering
Ulrich Bachand Landscape Architecture, LLC

January 5, 2015

Epsilon
ASSOCIATES INC.

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Chapter 1.0

Introduction/ Project Description

1.0 INTRODUCTION/ PROJECT DESCRIPTION

1.1 Introduction

Partners Properties LLC (the Proponent), proposes to renovate the existing five-story building located at 1505 Commonwealth Avenue in the Brighton neighborhood of Boston (the Project). The Project site is located on the Commonwealth Avenue Carriage Road, bordered by The Lancaster residential development to the north which is under construction, Kindred Hospital Boston to the south, Commonwealth Housing Development to the southwest, and Fidelis Way Park to the west. The Project consists of the renovation of the existing office building into residential units, and the construction of approximately 8,000 square feet (sf) of space on top of the existing parking deck on the north side of the existing building that is currently used for structured parking. The Project will include approximately 84 residential units and 74 parking spaces. Following the renovation, all Project parking will be located on the existing surface parking lot on the west side of the site.

The Project will transform the existing building constructed in 1965 with a new façade that will reflect modern design and complement The Lancaster being built to the north of the site and the existing residential buildings to the east of the site. The site is proximate to the Massachusetts Bay Transportation Authority (MBTA) Green Line providing access to Boston College, Boston University, Back Bay and Downtown Boston, as well as within walking distance of a number of employers, such as St. Elizabeth's Hospital and Franciscan Hospital for Children. The Proponent's market research has indicated that many tenants will choose to live in this location because they can conveniently walk to work or nearby public transportation.

Partners Properties LLC was founded over 12 years ago focusing mainly on commercial properties, and has been located in the Allston/Brighton area, where all of its brokerage, property management, construction management, and development and advisory services are located, since its inception. In 2010, Partners Properties LLC began diversifying its portfolio to include residential properties, and now has a strong presence throughout Massachusetts, owning and managing over 500,000 sf of commercial space and over 100,000 sf of residential space. The majority of its real estate portfolio is located in the Allston/Brighton area where it is committed to working with its neighbors to enhance the neighborhoods where its properties are located.

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

1.2 Project Identification

Address/Location:	1505 Commonwealth Avenue, Brighton, MA
Owner Entity:	1505 Commonwealth Ave Realty Trust
Developer:	Partners Properties LLC 20 Linden Street Allston, MA 02134 (516) 592-1620 Serge Bologov Andrian Shapiro Alex Matov Margarita Kvacheva
Architect:	O'Sullivan Architects 580 Main Street, Suite 204 Reading, MA 01867 (791) 439-6166 David O'Sullivan
Legal Counsel:	Rackemann, Sawyer & Brewster 160 Federal Street Boston, MA 02110 (617) 542-2300 Johanna Schneider
Permitting Consultant:	Epsilon Associates, Inc. 3 Clock Tower Place, Suite 250 Maynard, MA 01754 (978) 897-7100 Geoff Starsiak
Transportation and Parking Consultant:	Vanasse & Associates, Inc. 35 New England Business Center Drive, Suite 140 Andover, MA 01810 (978) 474-8800 Jeffrey Dirk

Civil Engineer:	Bohler Engineering 75 Federal Street, Suite 620 Boston, MA 02110 (617) 849-8040 Matthew Smith Stephen Martorano
Landscape Architect:	Ulrich Bachand Landscape Architecture, LLC 156 Cabot Street Beverly, MA 01915 (978) 922-2661 Rebecca Bachand

1.3 Project Description

1.3.1 Area Context

The Project site is located in the Brighton neighborhood of Boston, and is surrounded by a variety of uses including hospitals, residential apartment buildings, and commercial uses (see Figure 1-1). Brighton High School and Fidelis Way Park are also located to the northwest of the site. The nearby sites are designed with low- to mid-rise buildings surrounded by surface parking lots and landscaped area. To the east of the site is a residential neighborhood with four- to five-story multi-family residential buildings. The Project site is ideally situated to take advantage of several public transportation opportunities, as it is located less than a quarter-mile from the Warren Street Station that serves the MBTA Green Line B Branch, and less than a half-mile from several MBTA bus routes.

1.3.2 Project Site

The approximately 49,140 sf Project site is located on the Commonwealth Avenue Carriage Road and is adjacent to the new residences being constructed at The Lancaster (formerly the Provident Nursing Home) to the north of the site and Kindred Hospital Boston to the south. The existing building on the site is an underused five-story office building with a ground level parking garage and surface parking on the western portion of the site. The building covers less than half of the site. See Figure 1-2 for photographs of the existing conditions on the site. A site plan survey is included in Appendix A.

1.3.3 Proposed Project

The Project includes the renovation of the currently underutilized five-story office building and partially covered parking located on the site into an approximately 85-unit residential apartment building. The building contains approximately 59,000 sf that will be renovated, and a new 8,000 sf addition will be built within the current footprint of the existing building

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

1505 Commonwealth Avenue Boston, Massachusetts

Epsilon Associates Inc.

Figure 1-1
Aerial Locus Map

1505 Commonwealth Avenue Boston, Massachusetts

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Figure 1-2
Existing Conditions Photographs

and existing structured parking. The units are currently anticipated to be a mix of studio (51) and two bedroom (19) units. The main pedestrian and bicycle entrance will be from Commonwealth Avenue, through a new outdoor space, adjacent to the residents' lounge. This new front plaza will be reconfigured to create a pleasant landscaped exterior entry court and amenity for the residents. See Figures 1-3 through 1-5 for a site plan, first floor plan, and entry plaza landscape plan. Floor plans are included in Appendix B.

Approximately 74 parking spaces will be located on the rear portion of the site, where existing parking is located, and will be accessed through the existing entry from the Commonwealth Avenue Carriage Road. The curb cuts for the building will remain and the driveway and loading dock will continue to provide access for vehicles and services. The rear parking area will be improved with additional planting and landscaped areas, as well as improvements to its drainage infrastructure. An additional entry into the building for those entering from the parking area will be from a new lobby at the rear of the building.

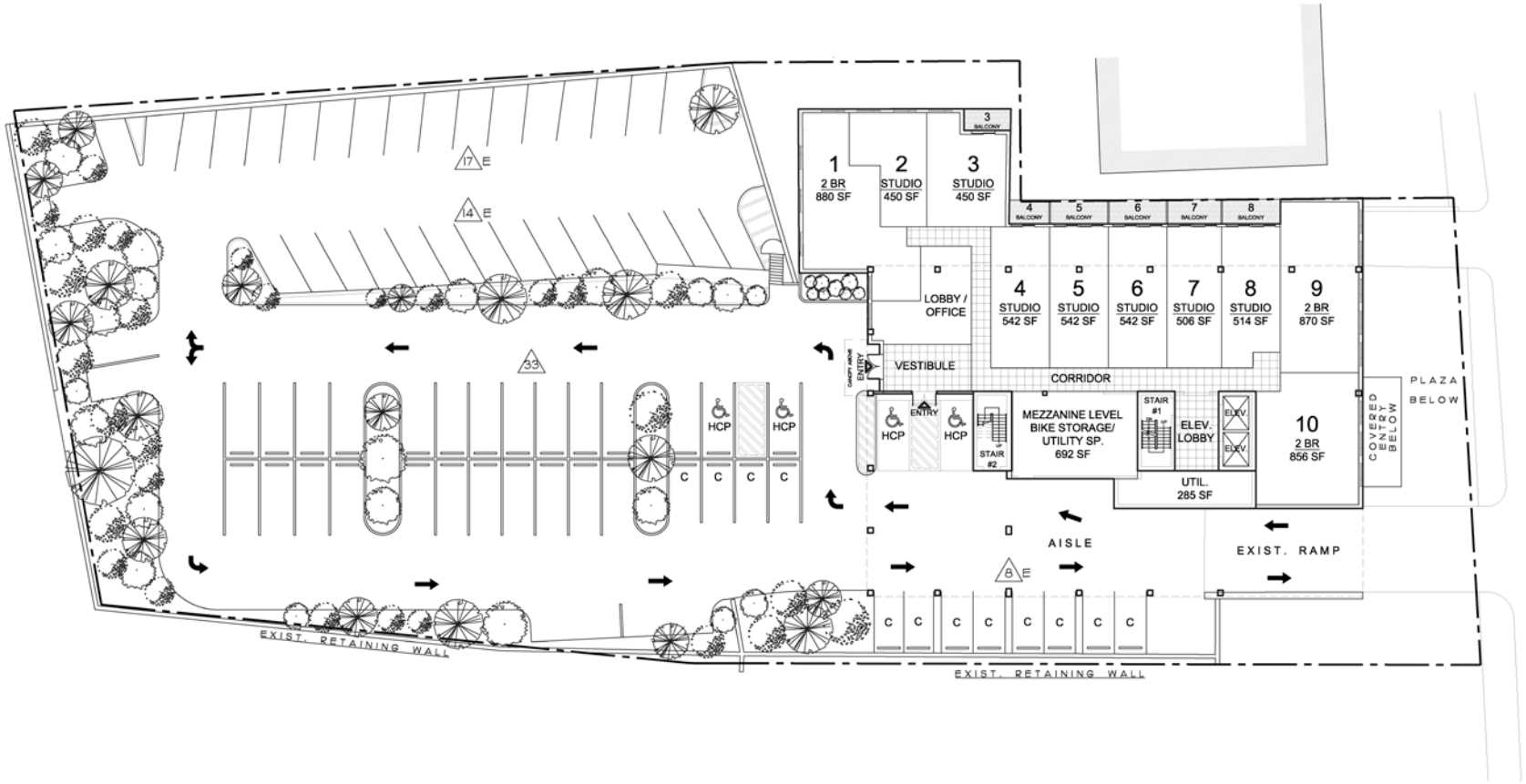
The exterior of the existing building will be completely renovated with new exterior masonry and cladding, new windows and building signage. There will also be constructed outdoor private areas for 17 of the units located on the decking above the loading area and entrance driveway parking. See Figures 1-6 through 1-9 for perspectives and an elevation.

1.3.4 Evolution of Design

The design of the renovation to the building at 1505 Commonwealth Avenue responds to the age of the building and the changing needs of the neighborhood. The present building was constructed in 1965 to serve as a medical office building for the nearby institutions, but it does not have sufficient facilities for accessibility or to meet the needs of modern medical offices. Presently the building is used as office space; recent past uses include a sleep clinic and a vocational school.

The prior owner of the site evaluated the potential of upgrading the building to a first class medical office building. It determined that to do so, a gut rehabilitation and upgrades to the exterior façade would be necessary. It also determined that such a project would be infeasible, as the market for medical office in the area has diminished due to the consolidation of medical offices closer to St. Elizabeth's Medical Center.

A change in use to residential was then considered for the building by the site's previous owner. In 2013, the prior owner presented to the neighborhood a proposal to double the size of the building, upgrade the exterior façade and convert it into approximately 85 one- and two-bedroom apartments. This scheme would have added approximately 45,000 sf of new construction within an addition to the rear of the building over the existing parking.



1505 Commonwealth Avenue Boston, Massachusetts

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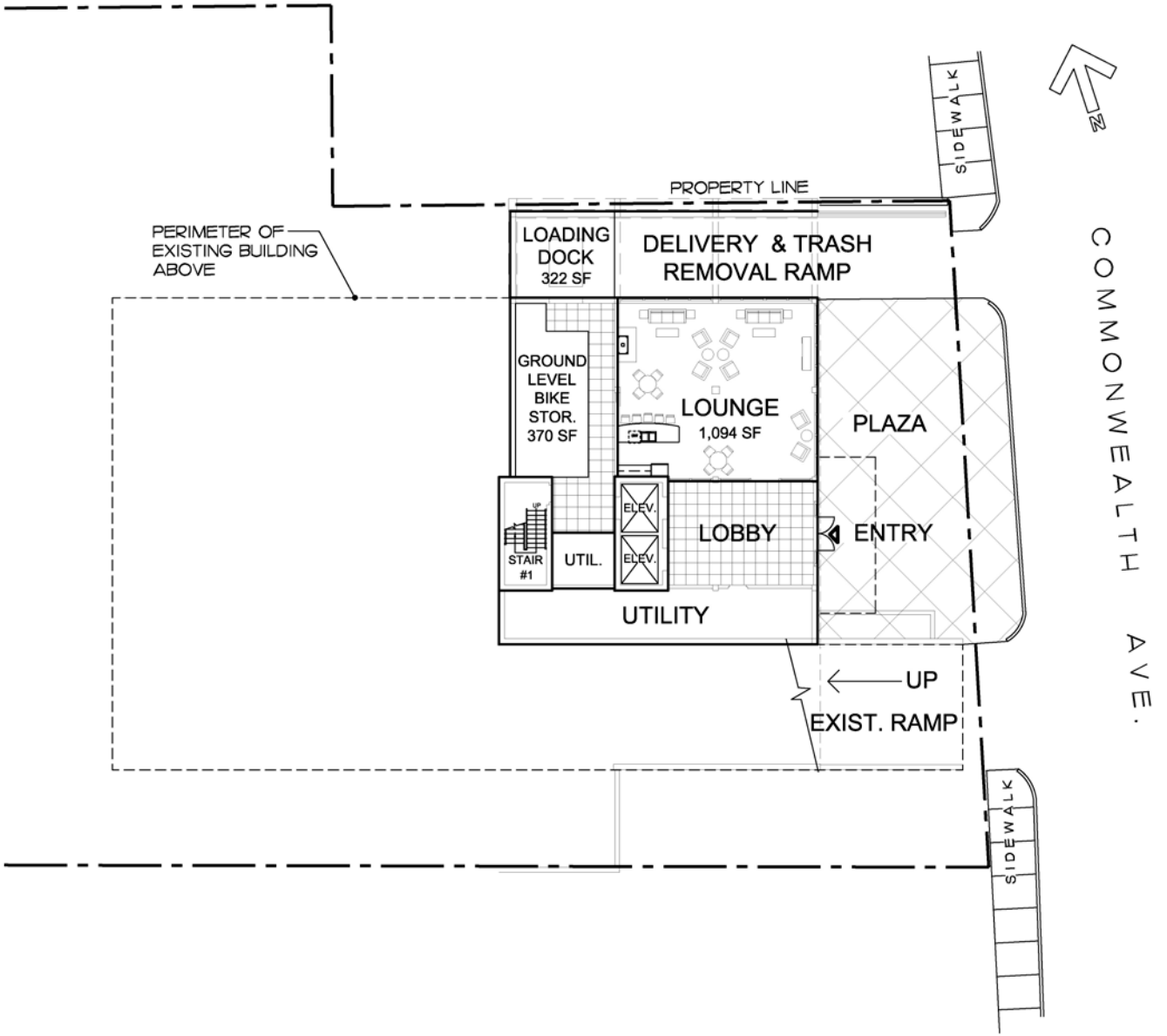
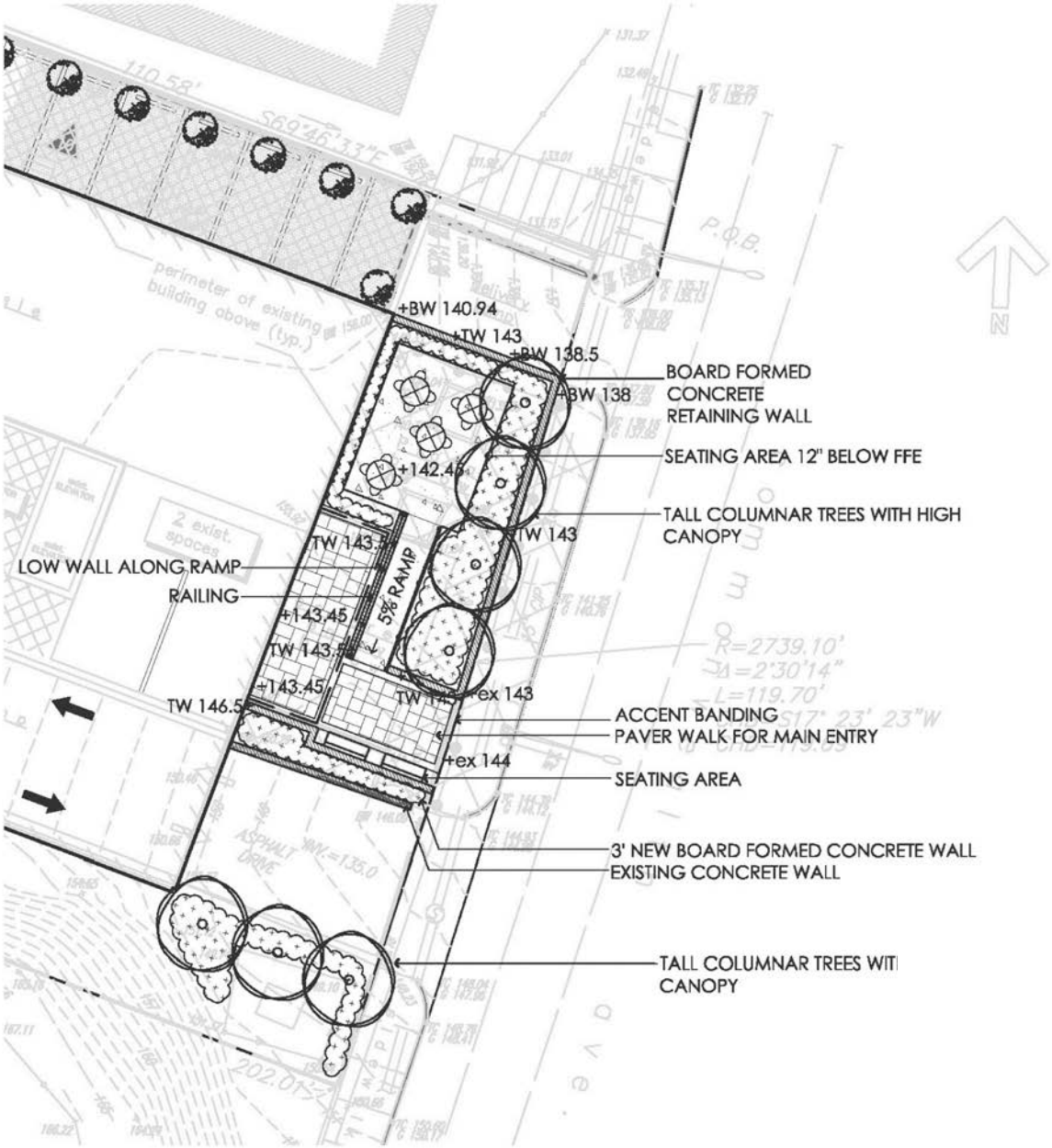
Figure 1-3
Site Plan



1505 Commonwealth Avenue Boston, Massachusetts

Figure 1-4
First Floor Plan



1505 Commonwealth Avenue Boston, Massachusetts

Figure 1-5

Entry Plaza Landscape Plan

1505 Commonwealth Avenue Boston, Massachusetts

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Figure 1-6
Perspective Looking West

1505 Commonwealth Avenue Boston, Massachusetts

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Figure 1-7
Perspective Looking Northwest

1505 Commonwealth Avenue Boston, Massachusetts

Figure 1-8
Perspective Looking East

1505 Commonwealth Avenue Boston, Massachusetts

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Figure 1-9
Elevation

The site was purchased in the summer of 2014 by the Proponent who has taken a fresh look at the potential uses for the building, including office, assisted living, and residential uses. A complete renovation of the building was determined necessary, and residential was determined to be the best use. New residential units will provide more activity on the west side of Commonwealth Avenue and complement the other residential projects under construction or proposed in the area. The size of the units and overall program were then determined through the Proponent's market study and outreach to members of the community, including St. Elizabeth's Medical Center, which indicated that many tenants will choose to live in this location because they can conveniently walk to work or nearby public transportation.

1.4 Public Benefits

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

- Providing approximately 85 housing units, consistent with the Mayor's initiative to create more housing in Boston;
- Providing affordable units consistent with the Inclusionary Development Policy, dated February 29, 2000, as has been amended;
- Reducing vehicle impacts from the Project site by changing from a higher intensity office use to a lower intensity residential use;
- Replacing outdated exterior of building with new attractive façade that complements the design aesthetic of the neighborhood;
- Strengthening the City's real estate tax base through increased property values resulting from the Project;
- Contributing to the economic stability of the neighborhood by increasing the number of residents available to patronize nearby local businesses on Commonwealth Avenue;
- Improving stormwater runoff from the Project site by installing appropriate grading and modern drainage and stormwater management features;
- Contributing to the re-greening of Commonwealth Avenue by installing new landscaping; and
- Creating approximately three new permanent jobs and an estimated 40 construction jobs.

1.5 City of Boston Zoning

The Project is located within the MFR-1 subdistrict of the Allston Brighton Neighborhood District, governed by Article 51 of the Boston Zoning Code (the "Code"). The Project site is also within a Greenbelt Protection Overlay District (GPOD), and therefore subject to the requirements of Article 29 of the Code. In addition, Article 37 of the Code applies to the Project; as such, the Project will be designed and constructed to be LEED certifiable.

1.5.1 Permitted Uses

The Project will entail the creation of approximately 85 units of housing with accessory parking. These uses are permitted as of right under Article 51.

1.5.2 Dimensional Requirements

The dimensional requirements applicable to the Project are set forth in Table 1-1. Zoning relief regarding certain of these requirements, as noted below, will be sought from the Boston Zoning Board of Appeal.

Table 1-1 Dimensional Requirements in MFR-1 Subdistrict (required variances shown in italics)

Dimension	Existing	Proposed	Required
Maximum Floor Area Ratio	*1.14*	*1.37*	*1.0*
Minimum Lot Area for Dwelling Units Specified (sf)	*49,140*	*49,140*	*4,000 sf/unit for first 3 units; 1,000 sf/unit for all additional units = 86,000 sf*
Minimum Lot Width (ft)	118	118	40
Minimum Lot Frontage (ft)	118	118	40
Minimum Useable Open Space (sf)	*4,008*	*12,331*	*200 sf/unit = 16,800 sf*
Maximum Building Height (ft)	64	64	55
Maximum Building Height (stories)	5/6	5/6	3
Minimum Front Yard (ft)	28	28	20
Minimum Rear Yard (ft)	195	195	20
Minimum Side Yard (ft)	*Left: 15* *Right: 0*	*Left: 15* *Right: 0*	*10*

Certain of the dimensional conformities shown above (e.g., building height) are "grandfathered" because the building is a preexisting nonconforming structure and the existing nonconformities are not being increased by the proposed Project. See Code, Article 13.

The required number of parking spaces and the number and location of loading docks will be determined as part of the Large Project Review process under Article 80.

1.6 Legal Information

1.6.1 Legal Judgments Adverse to the Proposed Project

There are no legal judgments or actions pending against the 1505 Commonwealth Ave Realty Trust (an affiliate of Partners Properties, LLC, the Proponent) or Partners Properties, LLC that would impair the Proponent from carrying out the Project.

1.6.2 History of Tax Arrears on Property

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

1.6.3 Site Control/ Public Easements

1505 Commonwealth Ave Realty Trust, an affiliate of Partners Properties, LLC, currently holds title to the Project site. There is no property necessary to construct the Project that is not owned or otherwise controlled by the Proponent. The Project site is not encumbered by any public easements.

1.7 Anticipated Permits and Approvals

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 Redevelopment Authority	Article 80 Large Project Review
Boston Civic Design Commission	Design Review and Approval in accordance with Article 28, if required
Boston Committee on Licenses	Parking Garage License (if required); Flammable Storage License (if required)

Table 1-2 Anticipated Permits and Approvals (Continued)

AGENCY	APPROVAL
Boston Water and Sewer Commission	Water and Sewer Connection Permits; General Service Application; Site Plan Review
Boston Transportation Department	Construction Management Plan; Transportation Access Plan Agreement
Boston Public Improvement Commission/Boston Department of Public Works	Street/Sidewalk Specific Repair Plan; Permits for street occupancy and opening permit
Boston Fire Department	Approval of Fire Safety Equipment; Fuel Oil Storage Permit (if required)
Boston Inspectional Services Department	Building Permit; Flammable Storage Permit (if required); Certificate of Occupancy
Boston Board of Appeal	Zoning Relief
Boston Landmarks Commission	Article 85 Demolition Delay Review
Boston Parks Department	Construction within 100 feet of a public park or parkway
State	
Department of Environmental Protection	Notification of Demolition and Construction
Architectural Access Board	Variance from height required for van space

1.8 Public Participation

A Letter of Intent was filed with the BRA on October 2, 2014 beginning the Project's formal public review process. The Proponent has met with the Brighton Allston Improvement Association and elected officials to date, and looks forward to working with the City and community through the course of the Article 80 review process.

1.9 Schedule

Construction is anticipated to commence in the third quarter of 2015, with completion estimated in approximately 12 to 14 months.

Chapter 2.0

Transportation Component

2.0 TRANSPORTATION

2.1 Introduction

Vanasse & Associates, Inc. (VAI) has conducted a Transportation Impact Assessment (TIA) in order to determine the potential impacts on the transportation infrastructure associated with the proposed construction of an approximately 85-unit residential apartment community to be located at 1505 Commonwealth Avenue in the Brighton neighborhood of Boston, Massachusetts (hereafter referred to as the "Project"). This study presents a comprehensive assessment of the transportation infrastructure serving the Project site with respect to: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; and identifies and analyzes existing and future traffic conditions both with and without the Project along Commonwealth Avenue, Washington Street, Warren Street and Kelton Street, and at the intersections of Commonwealth Avenue at Warren Street and Kelton Street; Commonwealth Avenue at Washington Street; the Commonwealth Avenue West Frontage Road at Fidelis Way; and at the Project site driveway intersections with the Commonwealth Avenue West Frontage Road.

Based on a review of the results of this assessment, we have concluded the following with respect to the Project:

1. The Project is expected to generate approximately 380 automobile trips (two-way, 24-hour volume), 138 transit trips and 158 pedestrian/bicycle trips on an average weekday; approximately 23 automobile vehicle trips, 15 transit trips and 10 pedestrian/bicycle trips during the weekday morning peak-hour; and 33 automobile trips, 14 transit trips and 21 pedestrian/ bicycle trips during the weekday evening peak-hour;

2. In comparison to the existing office/medical office building that occupies the Project site, the Project is expected to result in comparable or less traffic on a daily and peak-hour basis and, therefore, will have a less pronounced overall impact on the roadway network serving the area;

3. The addition of Project-related traffic to the study area roadways and intersections was not shown to result in a significant impact on motorist delays or vehicle queuing over No-Build conditions, with all of the study intersections shown to continue to operate at an overall level-of-service of "D" or better during the peak periods;

4. Sufficient capacity is afforded by the pedestrian and public transportation infrastructure that serves the study area to accommodate the relatively modest increase in pedestrian and transit trips that may be associated with the Project;

5. The Project will provide a parking supply of 74 spaces, or a parking ratio of approximately 0.87 spaces per residential unit, which is: i) consistent with the recommended BTD parking ratio for the Brighton neighborhood; ii) sufficient to accommodate the parking demands of the Project while also encouraging the use of alternative modes of transportation that are available to the Project site within the study area; and iii) reflective of the proximity of the Project site to employment centers whereby residents can walk or bicycle to work;

6. No discernible safety deficiencies were noted with respect to the study area intersections based on a review of the MassDOT motor vehicle crash data; and

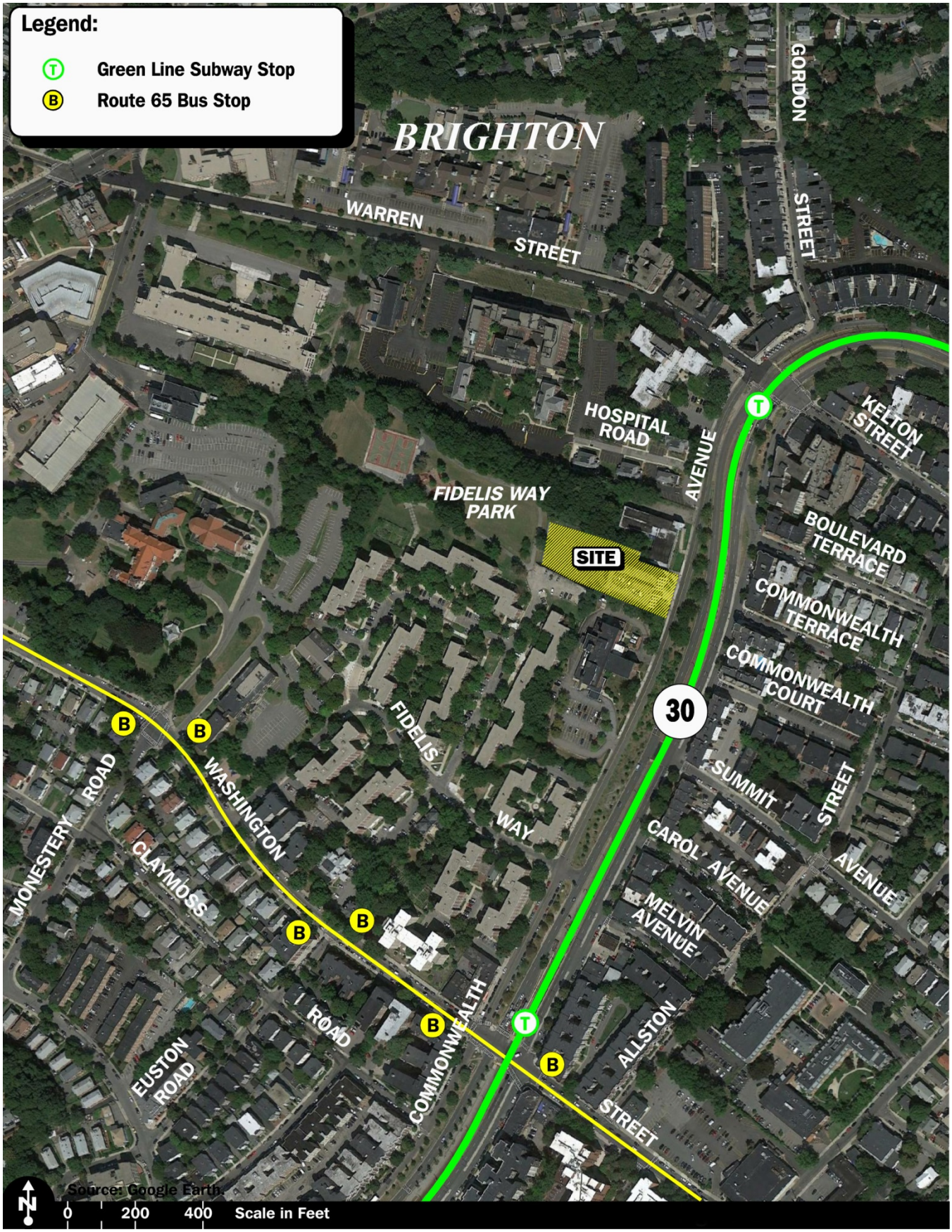
7. The Project site driveways are appropriately designed and located so as to provide the required line of sight to function in a safe manner.

Based on a review of these findings, we have concluded that the existing transportation infrastructure affords sufficient capacity to accommodate the Project in a safe and efficient manner.

2.1.1 Project Description

As proposed, the Project will entail the renovation of the existing approximately 59,000 square foot (sf) commercial building that occupies a portion of 1505 Commonwealth Avenue and the construction of an approximately 8,000 sf addition to the existing building to accommodate an approximately 85-unit residential community. The Project site is situated on an approximately 1.13-acre parcel of land generally bounded by a residential development to the north, Kindred Hospital Boston to the south; Commonwealth Avenue to the east; and Fidelis Way Park to the west. Figure 2-1 depicts the Project site location in relation to the existing roadway network.

Access to the Project site will continue to be provided by the two existing driveways that intersect the west side of the Commonwealth Avenue West Frontage Road; the northern driveway will serve loading and delivery activities associated with the Project, with the southern driveway providing access to parking. On-site parking will be provided for 74 vehicles beneath the building and on surface parking, or a parking ratio of 0.87 spaces per residential unit, consistent with Boston Transportation Department (BTD) residential parking guidelines for the Brighton neighborhood. This parking supply is sufficient to accommodate the anticipated parking demands of the Project given the availability of public transportation services in the area and the extensive sidewalk network and bicycle accommodations. Market studies conducted by the Proponent to support the development of the Project indicate that prospective residents will chose to reside at the Project due to its proximity to employment centers and the ability to walk to work, thereby reducing dependency on automobiles and the associated parking demands. A Transportation Access Plan Agreement (TAPA) will be entered into with BTD for the Project.



1505 Commonwealth Avenue Boston, Massachusetts

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Figure 2-1
Site Location Map

2.1.2 Study Methodology

This study was prepared in consultation with the Boston Redevelopment Authority (BRA) and the Boston Transportation Department (BTD); was performed in general accordance with the BTD *Transportation Access Plan Guidelines*, the Massachusetts Department of Transportation (MassDOT) *Transportation Impact Assessment (TIA) Guidelines*, and the standards of the Traffic Engineering and Transportation Planning professions for the preparation of such reports; and was conducted in three distinct stages.

The first stage involved an assessment of existing conditions in the study area and included an inventory of roadway geometrics, pedestrian and bicycle facilities, and public transportation services; observations of vehicle, pedestrian and bicycle activity; and a review and analysis of motor vehicle crash data.

In the second stage of the study, future conditions were projected and analyzed. Specific travel demand forecasts for the Project were assessed along with future traffic demands due to expected traffic growth independent of the Project. A seven-year time horizon was selected for analyses consistent with state guidelines for the preparation of TIAs. The traffic analysis conducted in stage two identifies existing or projected future roadway capacity, traffic safety, and site access issues.

The third stage of the study presents and evaluates measures that are designed to address existing and projected impacts on the transportation infrastructure, if any, and provides specific recommendations for improvements where necessary to accommodate the Project.

2.2 Existing Conditions

A comprehensive field inventory of existing conditions within the study area was conducted in April and November 2014. The field investigation consisted of an inventory of existing roadway geometrics; pedestrian and bicycle facilities; public transportation services; traffic volumes; and operating characteristics; as well as posted speed limits and land use information within the study area. The study area for the Project was selected to contain the major roadways providing access to the Project site, including Commonwealth Avenue, Washington Street, Warren Street and Kelton Street, as well as the intersections of Commonwealth Avenue at Warren Street and Kelton Street; Commonwealth Avenue at Washington Street; the Commonwealth Avenue West Frontage Road at Fidelis Way; and at the Project site driveway intersections with the Commonwealth Avenue West Frontage Road.

The following describes existing conditions within the study area.

Roadways

Commonwealth Avenue (Route 30)

Commonwealth Avenue (Route 30) is a four-lane (two lanes per direction) urban principal arterial roadway under City jurisdiction with frontage roads provided along both sides for local access to the commercial and residential properties between Brighton Avenue and Chestnut Hill Avenue. Commonwealth Avenue provides access to Downtown Boston to the east of the Project site and to Interstate 95 (I-95)/Route 128 to the west, and traverses the study area in a general north-south alignment. Within the study area, Commonwealth Avenue provides two 11 to 12-foot wide travel lanes per direction separated by a raised center median, with a one-foot wide shoulder provided. The center median accommodates the B Branch of the Massachusetts Bay Transportation Authority (MBTA) Green Line transit service, which provides service from the Brighton neighborhood of Boston to Downtown Boston. The frontage road located along the east side of Commonwealth Avenue is a one-way northbound roadway and consists of an 18 to 29-foot wide paved roadway with regulated parking allowed on the east side. The frontage road located along the west side of Commonwealth Avenue is a two-way roadway in the vicinity of the Project site that consists of two 11 to 18-foot wide travel lanes separated by a double-yellow centerline with no marked shoulder provided and parking prohibited on both sides of the street. North of Warren Street and south of Washington Street, the west frontage road is a one-way southbound roadway with regulated parking allowed on the west side. Sidewalks are provided continuously along the east side of the Commonwealth Avenue East Frontage Road and along the west side of the Commonwealth Avenue West Frontage Road, with marked crosswalks provided at major intersections. Illumination is provided by way of street lights mounted on steel or concrete poles. Land use along Commonwealth Avenue within the study area consists of the Project site and residential, commercial and institutional properties.

Washington Street

Washington Street is a two-lane, urban minor arterial roadway that is under City jurisdiction and traverses the study area in a general northwest-southeast direction between the City of Newton and the Town of Brookline. Within the study area, Washington Street provides two 19.5 to 20-foot wide travel lanes separated by a double-yellow centerline with no marked shoulders provided, and regulated parking generally allowed on one or both sides of the street. Sidewalks are provided along both sides of Washington Street with illumination provided by way of street lights mounted on concrete poles. Land use along Washington Street within the study area consists of residential and commercial properties.

Warren Street

Warren Street is a two-lane, urban collector roadway that is under City jurisdiction and traverses the study area in a general east-west direction between Commonwealth Avenue and Cambridge Street. Within the study area, Warren Street provides two 20-foot wide travel lanes separated by a double-yellow centerline with no marked shoulders provided, and regulated parking generally allowed on one or both sides of the street. Sidewalks are provided along both sides of Warren Street with illumination provided by way of street lights mounted on steel poles. Land use along Warren Street within the study area consists of residential and commercial properties.

Kelton Street

Kelton Street is a two-lane, urban collector roadway that is under City jurisdiction and traverses the study area in a general northwest-southeast direction between Commonwealth Avenue and Brainerd Road. Within the study area, Kelton Street provides a 33.5-foot wide paved roadway with no pavement markings provided, and regulated parking generally allowed on one or both sides of the street. Sidewalks are provided along both sides of Kelton Street with illumination provided by way of street lights mounted on concrete poles. Land use along Kelton Street within the study area consists of residential and commercial properties.

Intersections

Commonwealth Avenue at Warren Street and Kelton Street

- Eight-legged intersection under traffic signal control
- Commonwealth Avenue north and southbound approaches provide two 11 to 12-foot wide general-purpose travel lanes with a one-foot wide marked shoulder
- Directions of travel along Commonwealth Avenue are separated by a raised center median
- Commonwealth Avenue East Frontage Road is a one-way northbound roadway consisting of a 29.5-foot wide travelled-way with vehicles prohibited from turning left onto Warren Street and parking allowed on the east side of the street
- Commonwealth Avenue West Frontage Road northbound approach consists of a 13-foot wide right-turn lane with no marked shoulder provided
- Commonwealth Avenue West Frontage Road southbound approach is a one-way southbound roadway consisting of a 34-foot wide travelled-way with vehicles prohibited from turning left onto Kelton Street and parking allowed on the west side of the street

- "Sharrow" pavement markings are provided on the Commonwealth Avenue frontage roads (east and west)

- Warren Street eastbound approach provides a 17-foot wide general-purpose travel lane with no marked shoulder provided

- Directions of travel along Warren Street are separated by a double-yellow centerline

- Kelton Street westbound approach consists of a 33.5-foot wide paved roadway that accommodates two-way travel, with no marked centerline or edgelines provided

- The B Branch of the MBTA Green Line travels along the center median of Commonwealth Avenue with a stop provided at the intersection

- Sidewalks are provided along the east side of the Commonwealth Avenue East Frontage Road, along the west side of the Commonwealth Avenue West Frontage Road and along both sides of Warren Street and Kelton Street

- Crosswalks are provided across all legs of the intersection

- The traffic signal operates in a four-phase, fully-actuated mode with the MBTA Green Line incorporated into the traffic signal system and a concurrent pedestrian phase is provided upon pushbutton actuation

- Land use in the vicinity of the intersection consists of residential and commercial properties

Commonwealth Avenue at Washington Street

- Eight-legged intersection under traffic signal control

- Commonwealth Avenue northbound approach consists of two 11 to 11.5-foot wide general-purpose travel lanes with a one-foot wide marked shoulder

- Commonwealth Avenue southbound approach consists of a 10.5-foot wide left-turn lane and two 11 to 11.5-foot wide general-purpose travel lanes with a one-foot wide marked shoulder

- Directions of travel along Commonwealth Avenue are separated by a raised center median

- Commonwealth Avenue East Frontage Road is a one-way northbound roadway consisting of a 9.5-foot wide through travel lane and a 17-foot wide right-turn lane with no marked shoulder provided

- Commonwealth Avenue West Frontage Road southbound approach consists of a 16.5-foot wide travel lane with no marked shoulder provided and vehicles prohibited from turning left onto Washington Street eastbound

- Directions of travel along the Commonwealth Avenue West Frontage Road are separated by a double-yellow centerline

- "Sharrow" pavement markings are provided on the Commonwealth Avenue frontage roads (east and west)

- Washington Street east and westbound approaches consist of a 20-foot wide general-purpose travel lane with no marked shoulder provided

- Directions of travel along Washington Street are separated by a double-yellow centerline

- The B Branch of the MBTA Green Line travels along the center median of Commonwealth Avenue with a stop provided at the intersection

- Bus stops for MBTA Bus Route 65 are located on the northeast and southwest corners of the intersection

- Sidewalks are provided along the east side of the Commonwealth Avenue East Frontage Road, along the west side of the Commonwealth Avenue West Frontage Road, and along both sides of Washington Street

- Crosswalks are provided across all legs of the intersection

- The traffic signal operates in a four-phase, fully-actuated mode with the MBTA Green Line subway incorporated into the traffic signal system and a concurrent pedestrian phase is provided upon pushbutton actuation

- Land use in the vicinity of the intersection consists of residential and commercial properties

Commonwealth Avenue West Frontage Road at Fidelis Way

- Four-legged intersection under STOP-sign control

- Commonwealth Avenue West Frontage Road north and southbound approaches provide an 11.5 to 18.5-foot wide general-purpose travel lane with no marked shoulder provided and vehicles approaching the intersection under STOP-sign control

- Directions of travel along the Commonwealth Avenue West Frontage Road are separated by a double-yellow centerline with "sharrow" pavement markings provided in both directions of travel

- Fidelis Way consists of a 25.5-foot wide paved roadway that accommodates two-way travel with no marked centerline or edgelines provided, and vehicles approaching the Commonwealth Avenue West Frontage Road under STOP-sign control

- Commonwealth Avenue southbound is the fourth leg to the intersection and provides access from the Commonwealth Avenue West Frontage Road and Fidelis Way to Commonwealth Avenue southbound

- Sidewalks are provided along the west side of the Commonwealth Avenue West Frontage Road and along both sides of Fidelis Way

- Land use in the vicinity of the intersection consists of residential and commercial properties

Commonwealth Avenue West Frontage Road at the Project Service Driveway

- Three-legged intersection under stop control

- Commonwealth Avenue West Frontage Road north and southbound approaches provide an 11.5 to 12-foot wide general-purpose travel lane with no marked shoulder provided

- Directions of travel along the Commonwealth Avenue West Frontage Road are separated by a double-yellow centerline with "sharrow" pavement markings provided in both directions of travel

- The Project site driveway consists of an approximate 14-foot wide paved drive that accommodates loading and delivery activities associated with the existing building that occupies the Project site. Vehicles exiting the drive are under stop control, although a STOP-sign is not currently provided

- Sidewalks are provided along the west (Project) side of the Commonwealth Avenue West Frontage Road

- Land use in the vicinity of the intersection consists of the Project site and residential and commercial properties

Commonwealth Avenue West Frontage Road at the Project Site Driveway

- Three-legged intersection under stop control
- Commonwealth Avenue West Frontage Road north and southbound approaches provide an 11.5 to 12-foot wide general-purpose travel lane with no marked shoulder provided
- Directions of travel along the Commonwealth Avenue West Frontage Road are separated by a double-yellow centerline with "sharrow" pavement markings provided in both directions of travel
- The Project site driveway consists of an approximate 20-foot wide paved drive that accommodates two-way travel with no marked centerline or edgelines provided, and vehicles approaching the Commonwealth Avenue West Frontage Road under stop control although a STOP-sign is currently not provided
- Sidewalks are provided along the west (Project) side of the Commonwealth Avenue West Frontage Road
- Land use in the vicinity of the intersection consists of the Project site and residential and commercial properties

2.2.1 Existing Traffic Volumes

In order to determine existing traffic-volume demands and flow patterns within the study area, manual turning movement counts (TMCs) and vehicle classification counts were completed at the study intersections in April 2014 during the weekday morning (7:00 to 9:00 a.m.) and evening (4:00 to 6:00 p.m.) peak periods while public schools were in regular session. These time periods were selected for analysis purposes as they are representative of the peak traffic volume hours for both the Project and the adjacent roadway network.

Traffic Volume Adjustments

In order to evaluate the potential for seasonal fluctuation of traffic volumes within the study area, MassDOT weekday seasonal traffic volume factors for Group 6 roadways (urban arterials, collectors & rural arterials, the MassDOT functional classification for Commonwealth Avenue, Washington Street, Warren Street and Kelton Street) were reviewed.[1] Based on a review of this data, it was determined that traffic volumes for the month of April are approximately 8 percent above average-month conditions. In order to

[1] *MassDOT Traffic Volumes for the Commonwealth of Massachusetts;* 2007 Weekday Seasonal Factors; Group 6 – Urban Arterials, Collectors & Rural Arterials.

provide a conservative (above average) analysis condition, the April traffic volumes were not adjusted downward to average-month conditions. The 2014 Existing traffic volumes are graphically depicted on Figures 2-2 and 2-3 for the weekday morning and evening peak hours, respectively.

A review of the peak-period traffic counts indicates that the weekday morning peak hour generally occurs between 7:45 and 8:45 a.m., with the weekday evening peak-hour generally occurring between 5:00 and 6:00 p.m.

2.2.2 Pedestrian and Bicycle Facilities

A comprehensive field inventory of pedestrian and bicycle facilities within the study area was undertaken in April and November 2014. The field inventory consisted of a review of the location of sidewalks and pedestrian crossing locations along the study roadways and at the study intersections, as well as the location of existing and planned future bicycle facilities.

Pedestrian Facilities

Within the study area, sidewalks are provided along the east side of the Commonwealth Avenue East Frontage Road, along the west side of the Commonwealth Avenue West Frontage Road, and along both sides of Washington Street, Warren Street and Kelton Street, with marked crosswalks provided for crossing major intersections. Pedestrian traffic signal equipment and concurrent pedestrian phasing are provided as a part of the traffic signal systems at the Commonwealth Avenue/Warren Street/Kelton Street and Commonwealth Avenue/Washington Street intersections. Figures 2-4 and 2-5 depict the 2014 Existing weekday morning and evening peak-hour pedestrian volumes at the study area intersections, respectively, and were collected in conjunction with the April 2014 TMCs.

A review of the pedestrian volume data at the study intersections indicates that the north leg of the Commonwealth Avenue/Washington Street intersection experienced the largest number of crossings during both the weekday morning and evening peak hours (between 250 and 340 crossings observed). This crossing provides access to both the Green Line station and the Route 65 bus stop at the Commonwealth Avenue/Washington Street intersection.

Bicycle Facilities

Within the study area, formal bicycle accommodations are provided along the Commonwealth Avenue East and West Frontage roads, and are demarked by "sharrow" pavement markings. Washington Street, Warren Street and Kelton Street appear to provide sufficient width (combined travel lane and shoulder, where present) to support bicycle travel in a shared travelled-way configuration. Hubway, the bicycle sharing system for the City of Boston, currently has a bicycle station located approximately 1/3 mile northwest of

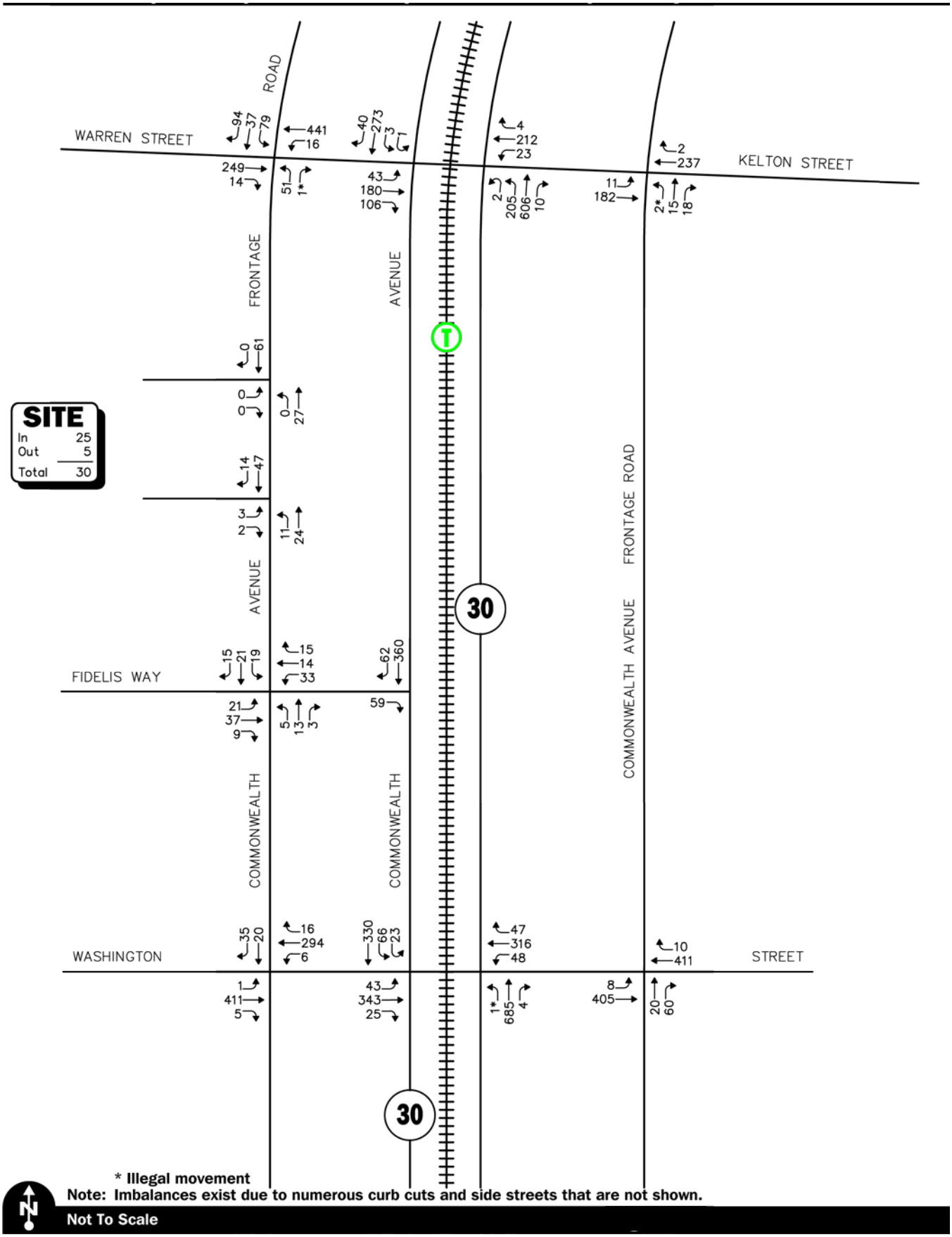


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Figure 2-2
2014 Existing Weekday Morning Peak Hour Traffic Volumes

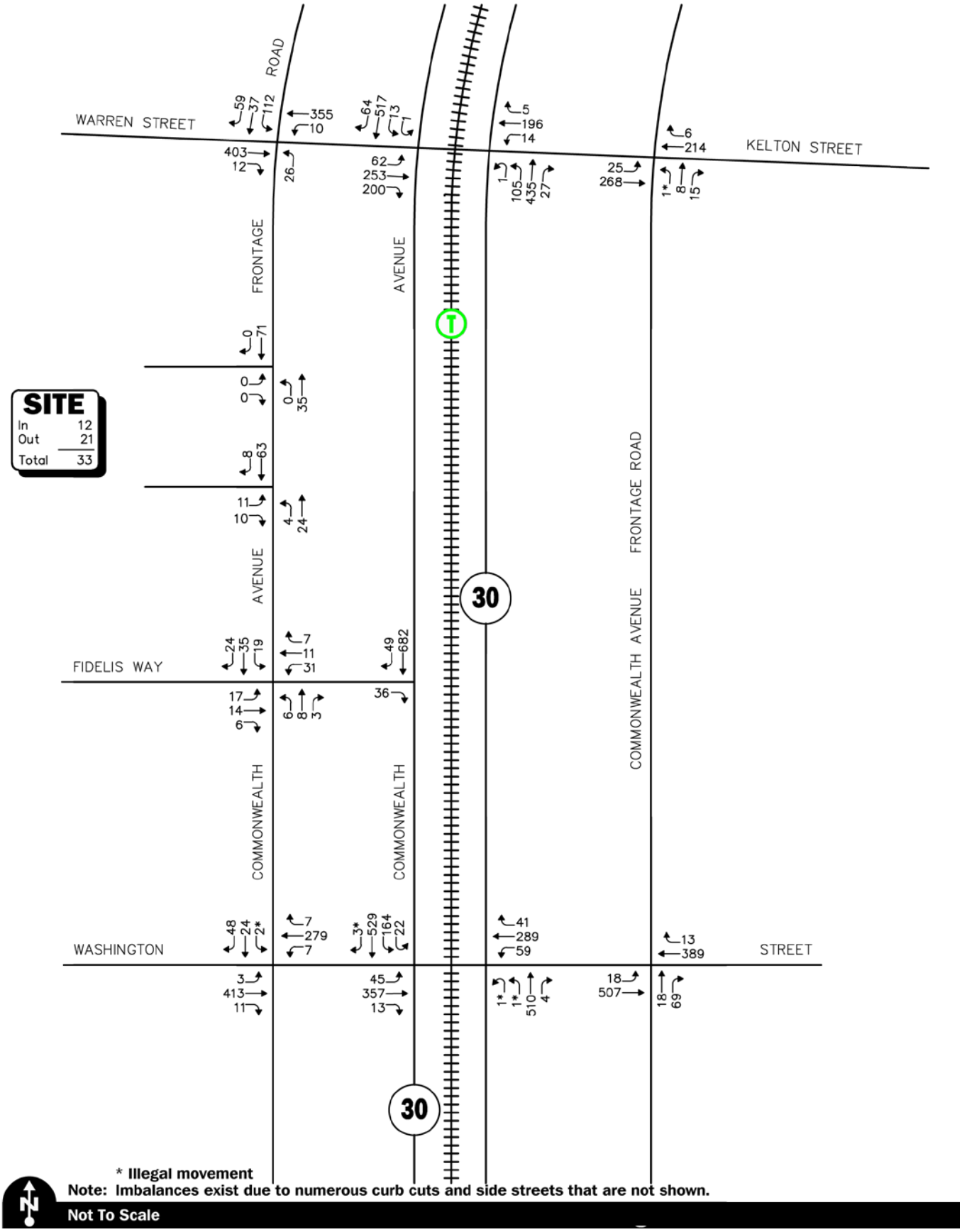

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Figure 2-3
2014 Existing Weekday Evening Peak Hour Traffic Volumes

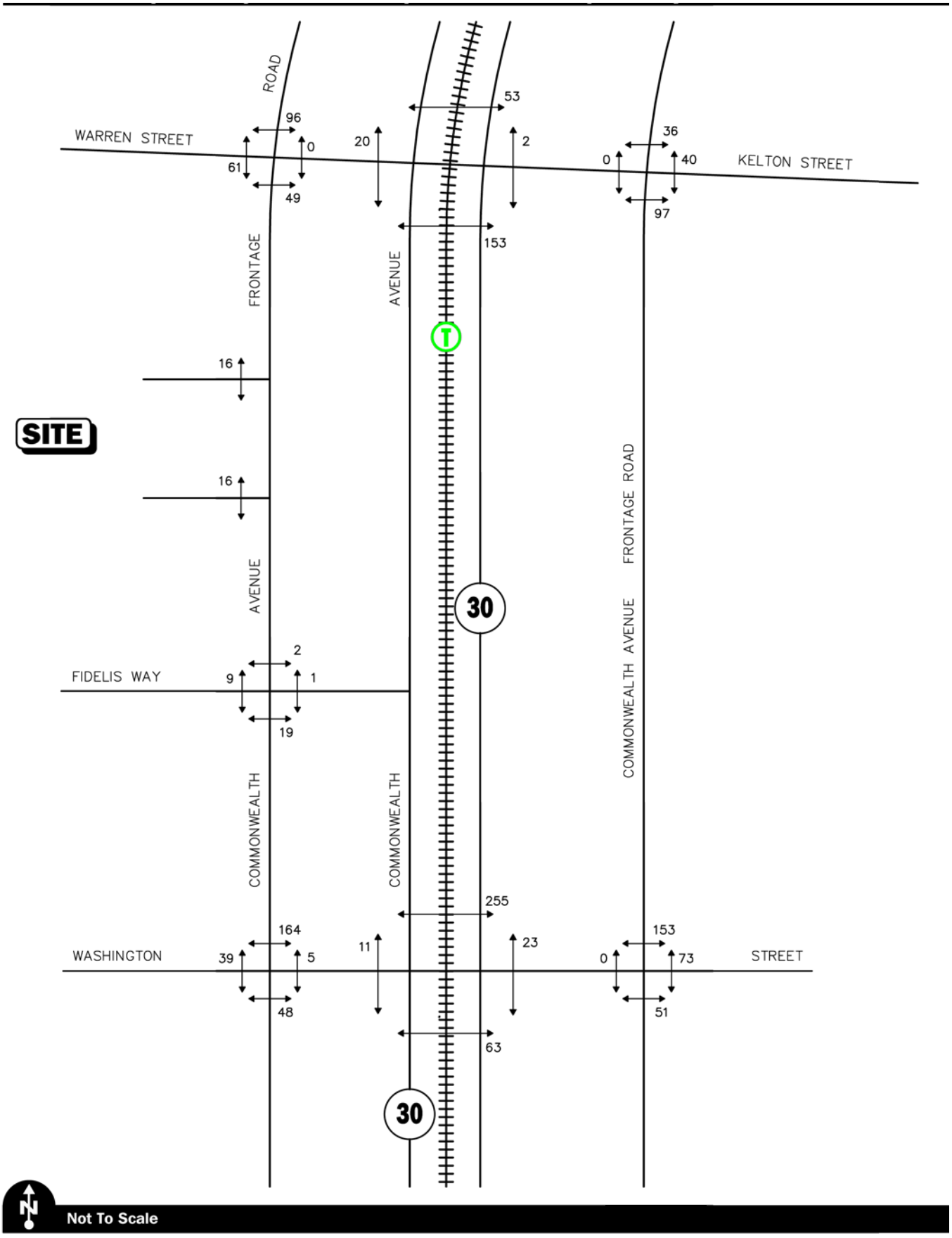

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Figure 2-4
2014 Existing Weekday Morning Peak Hour Pedestrian Volumes

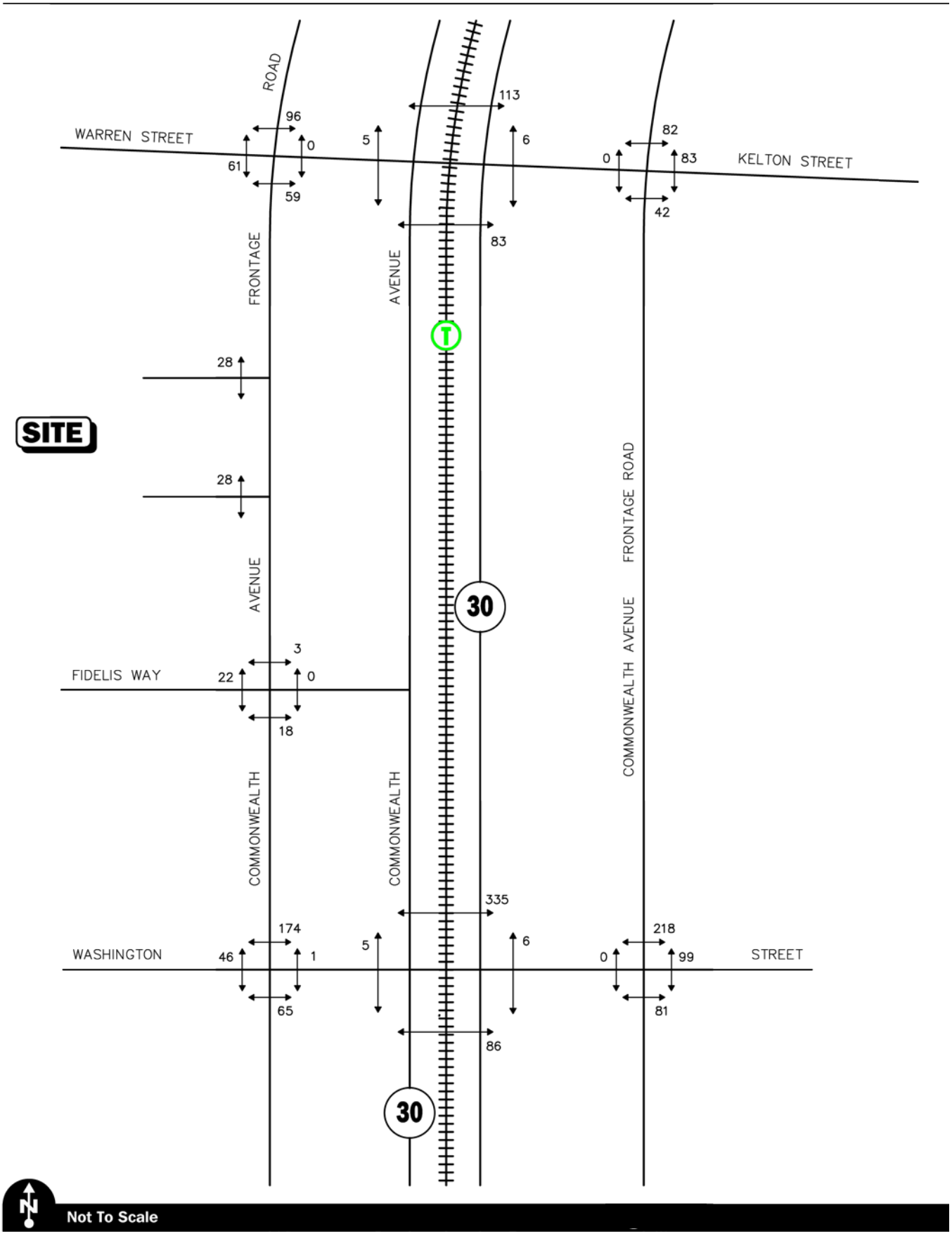

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Figure 2-5
2014 Existing Weekday Evening Peak Hour Pedestrian Volumes

the Project site at the Commonwealth Avenue/Griggs Street intersection. Figures 2-6 and 2-7 depict the 2014 Existing weekday morning and evening peak-hour bicycle volumes at the study area intersections, respectively, which were collected in conjunction with the April 2014 TMCs. Bicycle activity within the study area was found to be relatively modest, with bi-directional bicycle volumes found to range from approximately 2 to 20 bicyclists during the peak hours.

2.2.3 Public Transportation Services

The study area and the Project site are served by public transportation services provided by the MBTA. The MBTA operates the Green Line B Branch and Bus Route 65, *Brighton Center-Kenmore Square,* within the study area. The Green Line B Branch travels within the center median along Commonwealth Avenue and provides access to Boston College, Boston University, Kenmore Station and Park Street Station, where connections can be made to the Red Line (at Park Street Station) and MBTA bus routes. The closest stop on the Green Line B Branch to the Project is located at Warren Street, approximately 650 feet north of the Project site, with the Washington Street stop located approximately 1,250 feet south of the Project site. Service on the Green Line B Branch is provided on Monday through Thursday between 5:10 a.m. and 12:52 a.m., on Friday and Saturday between 5:10 a.m. and 2:28 a.m., and on Sunday between 5:20 a.m. and 12:48 a.m.

The MBTA Route 65 bus travels along Washington Street just south of the Project site, with a scheduled stop located in the vicinity of Commonwealth Avenue, approximately 1,250 feet south of the Project site. The Route 65 bus provides service to Brighton Center and Kenmore Station on the MBTA Green Line. Bus Route 65 operates between 6:17 a.m. and 8:57 p.m. on weekdays, and between 6:45 a.m. and 6:39 p.m. on Saturday; no service is provided on Sunday.

2.2.4 Motor Vehicle Crash Data

Motor vehicle crash information for the study area was provided by the MassDOT Highway Division Safety Management/Traffic Operations Unit for the most recent five-year period available (2008 through 2012, inclusive) in order to examine motor vehicle crash trends occurring within the study area. The data is summarized by intersection, type, severity, and day of occurrence, and presented in Table 2-1.

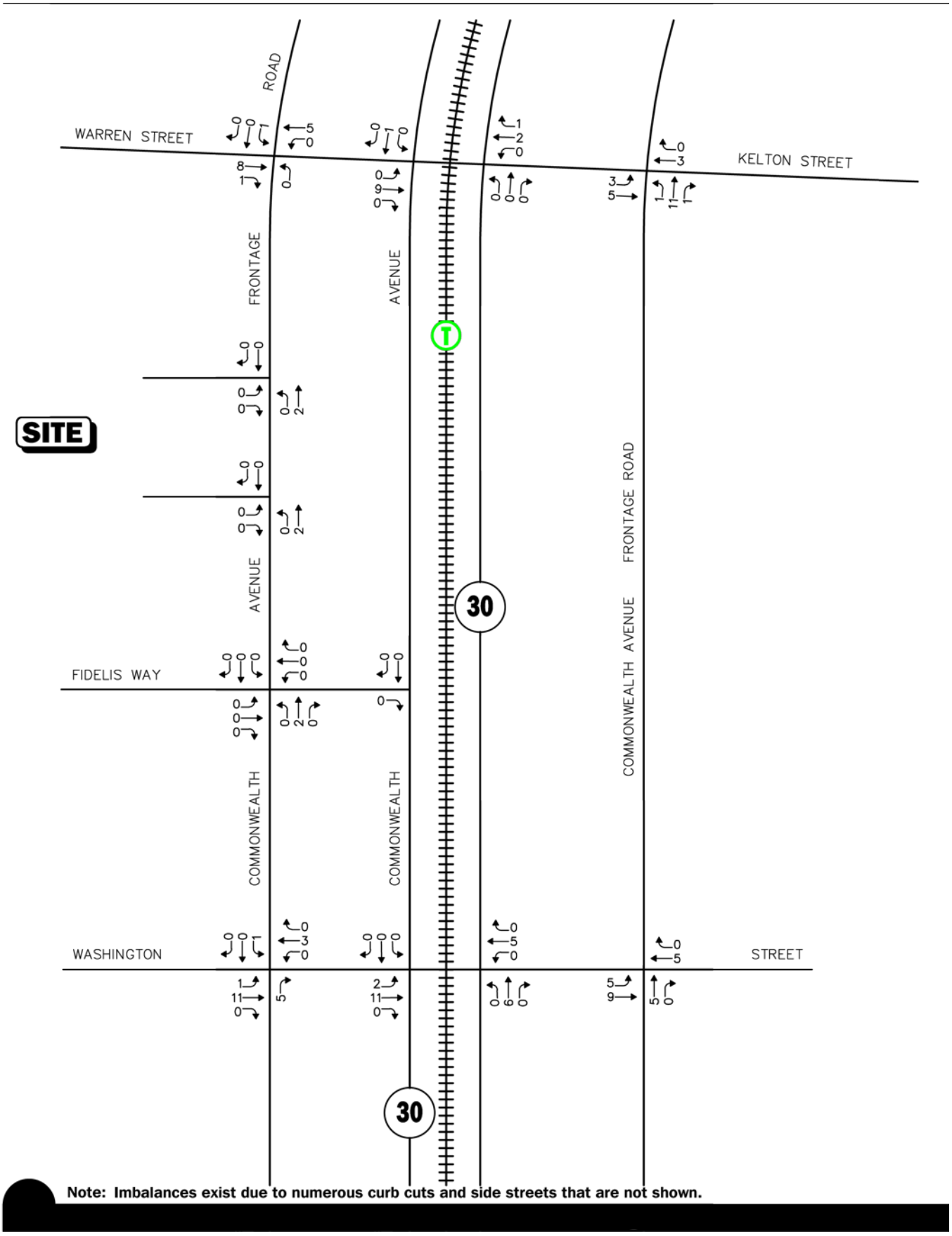

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Figure 2-6
2014 Existing Weekday Morning Peak Hour Bicycle Volumes

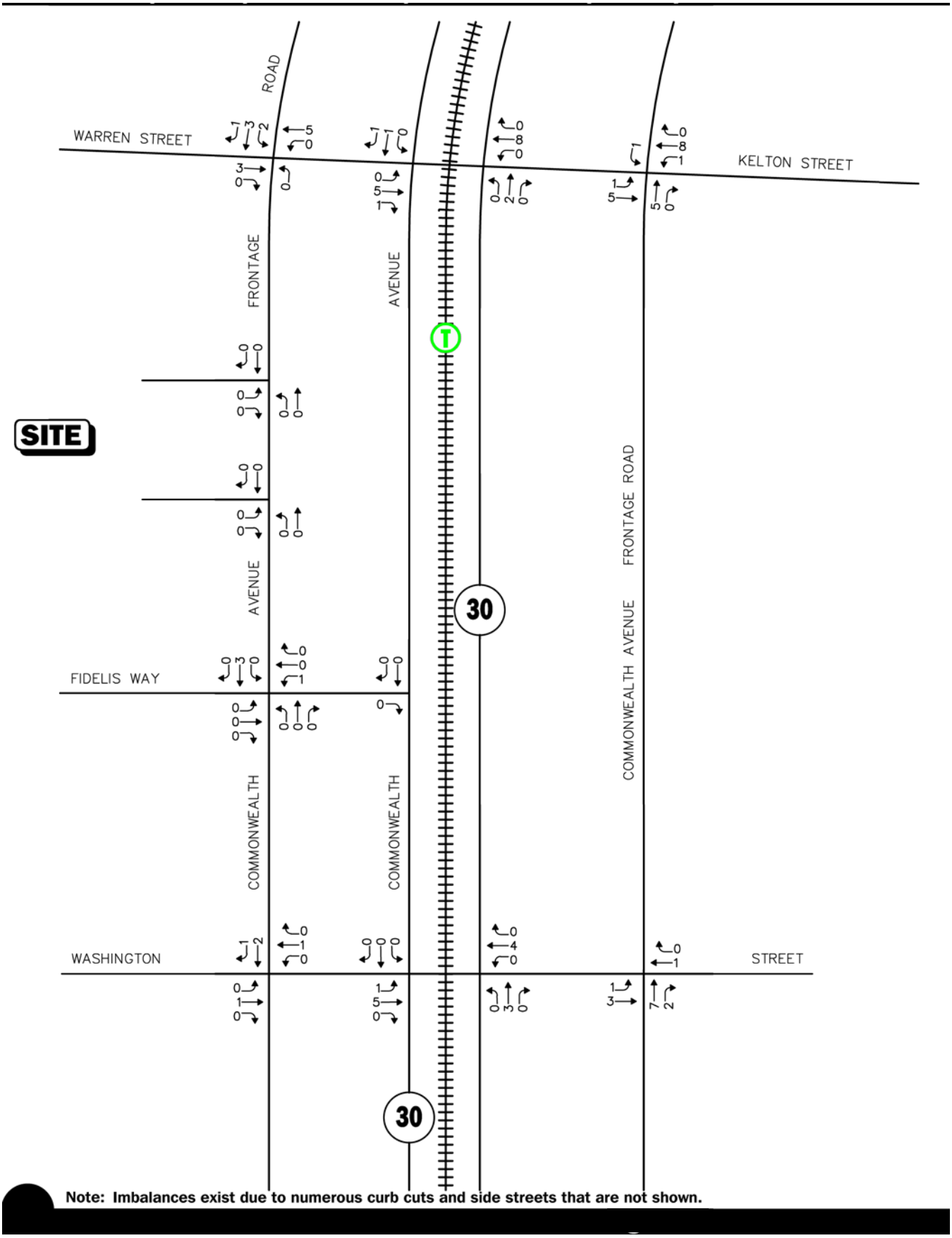

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Figure 2-7
2014 Existing Weekday Evening Peak Hour Bicycle Volumes

Table 2-1 Motor Vehicle Crash Data Summary[a]

	Commonwealth Avenue/ Warren Street/ Kelton Street	Commonwealth Avenue/ Washington Street	Commonwealth Avenue West Frontage Road/Fidelis Way	Commonwealth Avenue West Frontage Road/Project Service Driveway	Commonwealth Avenue West Frontage Road/Project Site Driveway
Traffic Control Type[b]:	TS	TS	U	U	U
Year:					
2008	4	8	0	0	0
2009	1	2	0	0	0
2010	3	4	0	0	0
2011	3	4	1	0	0
2012	0	1	0	0	0
Total	11	19	1	0	0
Average	2.20	3.80	0.02	0.00	0.00
RATE[C]	0.26	0.42	0.28	0.00	0.00
MassDOT Crash Rate[d]	0.80/0.76	0.80/0.76	0.60/0.58	0.60/0.58	0.60/0.58
Significant?[e]	No	No	No	No	No
Severity:					
Property Damage Only	6	14	1	0	0
Personal Injury	4	5	0	0	0
Fatal	1	0	0	0	0
Total	11	19	1	0	0
Type:					
Angle	3	7	0	0	0
Rear-End	1	4	1	0	0
Head-On	1	4	0	0	0
Fixed Object	0	0	0	0	0
Sideswipe Same Direction	2	2	0	0	0
Bicyclists	1	0	0	0	0
Unknown/Other	3	2	0	0	0
Total	11	19	1	0	0

See notes at end of table

Table 2-1 Motor Vehicle Crash Data Summary[a] (Continued)

	Commonwealth Avenue/ Warren Street/ Kelton Street	Commonwealth Avenue/ Washington Street	Commonwealth Avenue West Frontage Road/Fidelis Way	Commonwealth Avenue West Frontage Road/Project Service Driveway	Commonwealth Avenue West Frontage Road/Project Site Driveway
Weather Conditions:					
Clear	8	9	0	0	0
Cloudy	1	3	1	0	0
Rain	1	7	0	0	0
Snow/Ice	0	0	0	0	0
Unknown	1	0	0	0	0
Total	11	19	1	0	0
Lighting:					
Daylight	6	13	0	0	0
Dawn/Dusk	0	0	0	0	0
Dark (Road Lit)	5	6	0	0	0
Dark (Road Unlit)	0	0	1	0	0
Other/Unknown	0	0	0	0	0
Total	11	19	1	0	0
Day of Week:					
Monday through Friday	9	11	1	0	0
Saturday	1	3	0	0	0
Sunday	1	5	0	0	0
Total	11	19	1	0	0

[a] Source: MassDOT Safety Management/Traffic Operations Unit records, 2008 through 2012.

[b] Traffic Control Type: TS = traffic signal; U = unsignalized; R = roundabout.

[c] Crash rate per million vehicles entering the intersection.

[d] Statewide/District crash rate.

[e] The intersection crash rate is significant if it is found to exceed the MassDOT statewide or District crash rate for the MassDOT Highway Division District in which the intersections are located (District 6).

As can be seen in Table 2-1, the study area intersections were found to have experienced an average of four or fewer reported motor vehicle crashes per year over the five-year review period, with no crashes reported to have occurred at the Project site driveway intersections with the Commonwealth Avenue West Frontage Road. The Commonwealth Avenue/Washington Street intersection was found to have experienced the largest number of reported crashes over the five-year review period, with a total of 19 crashes reported, the majority of which resulted in property damage only; occurred on a weekday during daylight; and were reported as angle-type collisions. A motor vehicle crash that resulted in a fatality was reported at the Commonwealth Avenue/Warren Street/Kelton Street intersection in 2010 and involved a motor vehicle collision with a bicyclist. The incident report indicated that the bicyclist did not stop for a "red" signal indication. All of the study intersections were found to have a motor vehicle crash rate below the MassDOT statewide and District 6 (the MassDOT Highway Division District in which the intersections are located) average crash rate for a signalized or unsignalized intersection, as appropriate. The detailed MassDOT Crash Rate Worksheets are included in Appendix C.

2.3 Future Conditions

Traffic volumes in the study area were projected to the year 2021, which reflects a seven-year planning horizon consistent with State traffic study guidelines. Independent of the Project, traffic volumes on the roadway network in the year 2021 under No-Build conditions include all existing traffic and new traffic resulting from background traffic growth. Anticipated Project-generated traffic volumes superimposed upon the 2021 No-Build traffic volumes reflect 2021 Build traffic volume conditions with the Project.

2.3.1 Future Traffic Growth

Future traffic growth is a function of the expected land development in the immediate area and the surrounding region. Several methods can be used to estimate this growth. A procedure frequently employed estimates an annual percentage increase in traffic growth and applies that percentage to all traffic volumes under study. The drawback to such a procedure is that some turning volumes may actually grow at either a higher or a lower rate at particular intersections.

An alternative procedure identifies the location and type of planned development, estimates the traffic to be generated, and assigns it to the area roadway network. This procedure produces a more realistic estimate of growth for local traffic; however, potential population growth and development external to the study area would not be accounted for in the resulting traffic projections.

To provide a conservative analysis framework, both procedures were used, the salient components of which are described below.

Specific Development by Others

A list of approved and proposed projects within the study area was obtained from the BRA and reviewed with respect to potential impacts on traffic volumes and operating conditions within the study area. Based on this review, the following projects were identified for inclusion in this assessment:

- *Residential Development, 1501 Commonwealth Avenue, Brighton, Massachusetts* – This project consists of the development of a 55-unit residential community with 55 parking spaces to be located at 1501 Commonwealth Avenue in Brighton, Massachusetts.

- *Mixed-Use Development, 375-399 Chestnut Hill Avenue, Brighton, Massachusetts* – This project consists of the redevelopment of the vacant Cleveland Circle Cinema located at 375-399 Chestnut Hill Avenue in Brighton, Massachusetts, into a mixed-use development consisting of a 162-room hotel, 14,000 sf of retail space and 92 residential units, with parking for 188 vehicles.

- *Boston College Residence Hall, 2150 Commonwealth Avenue, Brighton, Massachusetts* – This project consists of the development of a 484-bed residence hall for Boston College to be located at 2150 Commonwealth Avenue in Brighton, Massachusetts.

- *Proposed Brighton Marine Health Center Veterans Mixed Income Housing Project, 77 Warren Street, Brighton, Massachusetts* – This project consists of the development of a 101-unit residential apartment community with 101 parking spaces to be located at 77 Warrant Street in Brighton, Massachusetts.

- *Proposed Residential Development, 1650 Commonwealth Avenue, Brighton, Massachusetts* - This project consists of the development of a 39-unit residential community with 35 parking spaces to be located at 1650 Commonwealth Avenue in Brighton, Massachusetts.

- *Proposed Boston College McMullen Museum and University Conference Center, 2101 Commonwealth Avenue, Brighton, Massachusetts* – This project consists of the renovation and expansion of an existing building located at 2101 Commonwealth Avenue in Brighton, Massachusetts, to house the relocated McMullen Museum and a conference facility for Boston College.

- *Proposed Mixed-Use Development, 37-43 North Beacon Street, Allston, Massachusetts* - This project consists of the development of an 87-unit residential apartment community and 5,000 sf of retail space to be located at 37-43 North Beacon Street in Allston, Massachusetts.

Traffic volumes associated with the aforementioned development projects by others were estimated using trip-generation statistics published by Institute of Transportation Engineers (ITE)[2] for the appropriate land use, were obtained from their respective traffic studies, or assumed to be accounted for in the background growth rate, and were assigned onto the study area roadway network based on existing traffic patterns where no other information was available. No other developments were identified at this time that are expected to result in an increase in traffic within the study area beyond the background traffic growth rate. The relevant background development traffic volume networks are provided in Appendix C.

General Background Traffic Growth

A review of recently completed studies[3] performed within the study area was undertaken in order to determine general traffic growth trends. Based on this review, a 0.5 percent per year compounded annual background traffic growth rate was determined to be appropriate to account for future traffic growth and presently unforeseen development within the study area.

Planned Roadway Improvements

The City of Boston was contacted in order to determine if there were any planned roadway or intersection improvement projects expected to be completed within the study area. Based on this discussion, the following intersection improvement project was identified for review in conjunction with this assessment.

Commonwealth Avenue at Warren Street and Kelton Street

This intersection improvement project consists of replacing the existing pedestrian equipment at the intersection with accessible pedestrian signals (APS) and pushbuttons in order to improve accessibility and pedestrian safety. This improvement project is expected to be completed by early 2015.

No other roadway or intersection improvement projects outside of routine maintenance activities were identified to be planned within the study area at this time.

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2 *Trip Generation*, 9th Edition; Institute of Transportation Engineers; Washington, DC; 2012.

3 *Brighton Marine Health Center Veterans Mixed Income Housing Project, Expanded Project Notification Form*; Brighton, Massachusetts, Epsilon Associates, Inc. et al; July 2014; and *375-399 Chestnut Hill Avenue, Draft Project Impact Report*, Brighton, Massachusetts, Epsilon Associates, Inc. et al; March 2013.

No-Build Traffic Volumes

The 2021 No-Build condition peak-hour traffic-volumes were developed by applying the 0.5 percent per year compounded annual background traffic growth rate to the 2014 Existing peak-hour traffic volumes, and then superimposing the peak-hour traffic volumes associated with the identified specific developments by others. The resulting 2021 No-Build weekday morning and evening peak-hour traffic volumes are depicted on Figures 2-8 and 2-9, respectively.

With specific regard to the Project site, it should be noted that current (April 2014) occupancy levels and the associated traffic volumes were retained in order to provide a conservative evaluation of Project-related impacts on the transportation infrastructure. If full occupancy of the building by the current permitted use (office/medical office) were assumed, the Project site would generate more traffic than reflected herein under Existing and No-Build conditions.

2.3.2 Project-Generated Trips

Design year (2021 Build) traffic volumes for the study area roadways were determined by estimating Project-generated traffic volumes, and assigning those volumes on the study roadways. The following sections describe the methodology used to develop the anticipated trip characteristics for the Project.

As proposed, the Project will entail the renovation of the existing approximately 59,000 sf commercial building that occupies a portion of 1505 Commonwealth Avenue and a small approximately 8,000 sf addition to accommodate an approximately 85-unit residential community. In order to develop the base trip characteristics of the Project, trip-generation statistics published by the ITE[4] for a similar land use as that proposed was used. ITE Land Use Code (LUC) 220, *Apartment*, was used to develop the trip characteristics of the Project.

Given the availability of public transportation services to the Project site and the extensive sidewalk and bicycle network that links the Project site to the many shopping and recreational opportunities in the area, it is expected that a portion of the trips generated by the Project will be made by public transportation or will include pedestrian/bicycle trips. In order to disseminate the ITE trip characteristics of the Project, which are expressed in vehicle-trips, to the modes of travel that will be available to the Project (automobile, public transportation and pedestrian/bicycle), vehicle occupancy ratios (VORs) obtained from recent development projects in the study area[5] and travel mode data obtained from BTD were reviewed. Table 2-2 summarizes the travel mode data and vehicle occupancy ratio used for the Project.

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4 Ibid 2.

5 Ibid 3.

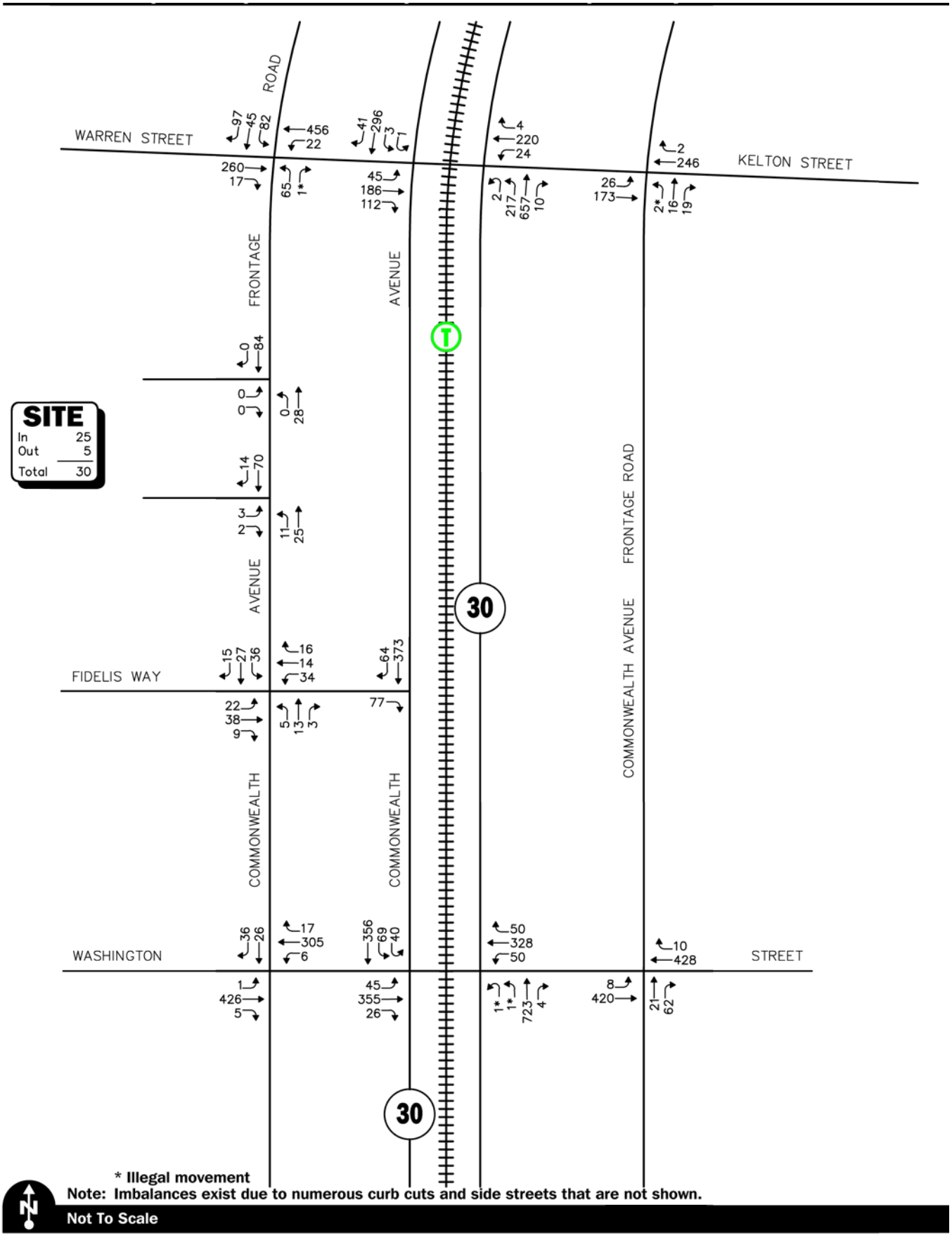

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Figure 2-8
2021 No-Build Weekday Morning Peak Hour Traffic Volumes

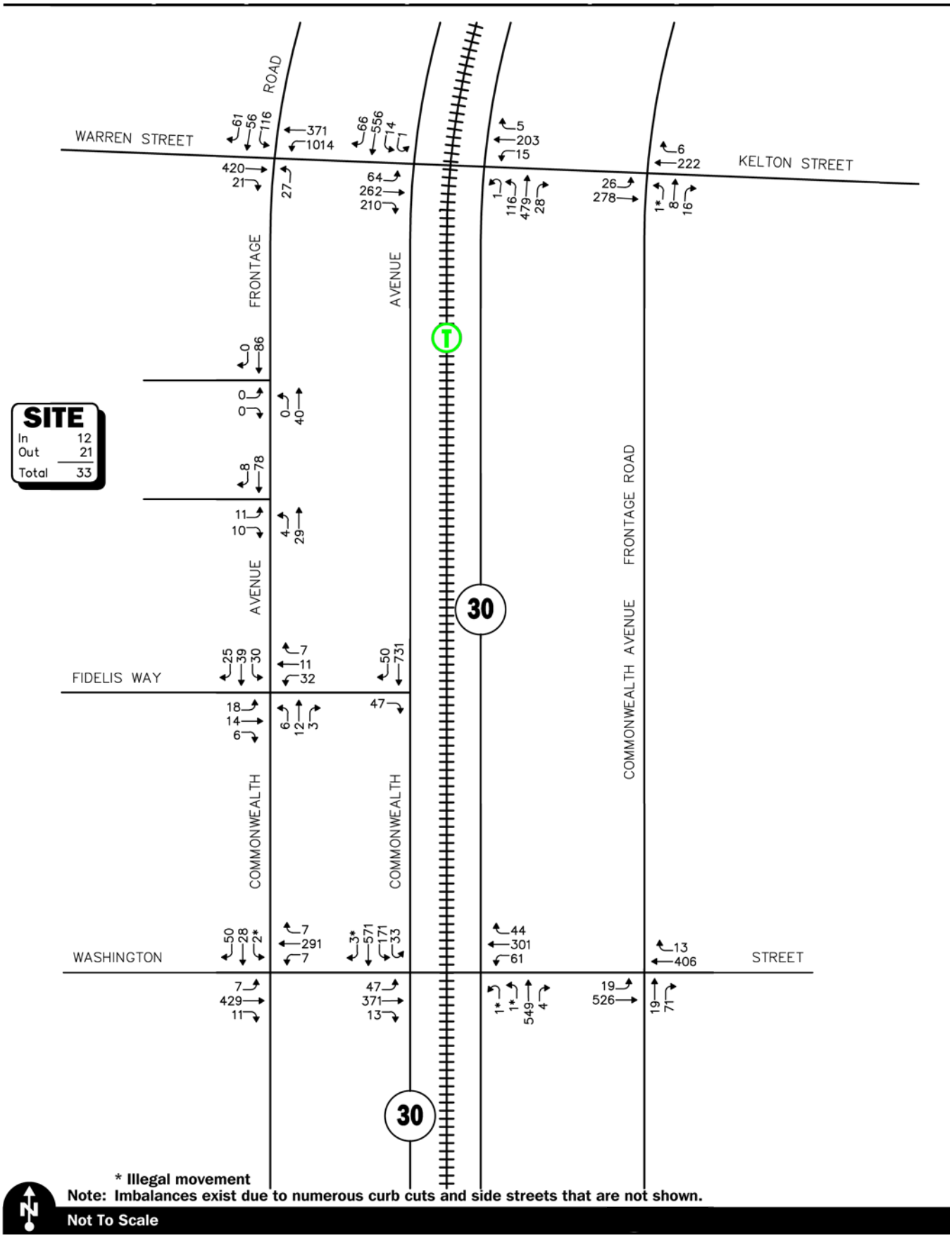

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Figure 2-9
2021 No-Build Weekday Evening Peak Hour Traffic Volumes

Table 2-2 Travel Mode Data And Vehicle Occupancy Ratio

Time Period	Travel Mode/Assignment in Percent[a]			Vehicle Occupancy Ratio
	Automobile	Transit	Pedestrian/ Bicycle	
Weekday Daily	59	19	22	1.13
Weekday Morning Peak	51	30	19	1.13
Weekday Evening Peak	51	19	30	1.13

[a]BTD Mode Share for Area 10.

Table 2-3 summarizes the anticipated trip characteristics of the Project using the methodology described above.

Table 2-3 Trip-Generation Summary

Time Period/Direction	ITE Vehicle Trips[a]	Person Trips				Automobile Trips[f]
		Total Person Trips[b]	Automobile Person Trips[c]	Transit Trips[d]	Pedestrian/ Bicycle Trips[e]	
Average Weekday Daily:						
Entering	320	362	214	69	79	190
Exiting	320	362	214	69	79	190
Total	640	724	428	138	158	380
Weekday Morning Peak Hour:						
Entering	9	10	5	3	2	4
Exiting	36	41	21	12	8	19
Total	45	51	26	15	10	23
Weekday Evening Peak Hour:						
Entering	42	47	24	9	14	21
Exiting	22	25	13	5	7	12
Total	64	72	37	14	21	33

[a] Based on ITE LUC 220, *Apartment*, and 85 units.
[b] ITE vehicle trips x 1.13 persons per vehicle.
[c] Total person trips x 0.59 for average weekday daily trips and total person trips x 0.51 for both weekday morning and evening peak hour trips.
[d] Total person trips x 0.19 for average weekday daily trips; total person trips x 0.30 for weekday morning peak hour trips; and total person trips x 0.19 for weekday evening peak hour trips.
[e] Total person trips x 0.22 for average weekday daily trips; total person trips x 0.19 for weekday morning peak hour trips; and total person trips x 0.30 for weekday evening peak hour trips.
[f] Automobile person trips divided by 1.13.

Project Generated Trip Summary

As can be seen in Table 2-3, applying the ITE trip-generation data to the Project and prior to the travel mode adjustment, the Project is expected to result in 640 vehicle trips (320 vehicles entering and 320 exiting) on an average weekday, with 45 vehicle trips (9 vehicles entering and 36 exiting) expected during the weekday morning peak-hour and 64 vehicle trips (42 vehicles entering and 22 exiting) expected during the weekday evening peak-hour. After converting the ITE trip-generation values to person trips and then applying the BTD mode share adjustments for the Brighton neighborhood, the Project is expected to generate approximately 380 automobile trips (190 vehicles entering and 190 exiting) on an average weekday, with 138 transit trips (69 entering and 69 exiting) and 158 pedestrian/bicycle trips (79 entering and 79 exiting). During the weekday morning peak-hour, the Project is expected to generate 23 automobile trips (4 vehicles entering and 19 exiting), with 15 transit trips (3 entering and 12 exiting) and 10 pedestrian/bicycle trips (2 entering and 8 exiting). During the weekday evening peak-hour, the Project is expected to generate 33 automobile trips (21 vehicles entering and 12 exiting), with 14 transit trips (9 entering and 5 exiting) and 21 pedestrian/bicycle trips (14 entering and 7 exiting).

Table 2-4 summarizes and compares the traffic characteristics of the existing office/medical office building assuming full occupancy to those of the proposed residential community. For comparison purposes, the unadjusted ITE trip-generation data was used for both the existing and proposed uses, which results in a conservative comparative evaluation with respect to the Project as it is likely that the residential use will be less automobile focused than the existing office/medical office building.

Table 2-4 Traffic Volume Comparison Proposed Residential Community vs. Existing Use with Full Occupancy

Time Period/Direction	(A) Proposed Residential Community (85 Units)[a]	(B) Existing Office/Medical Office Building (59,000 sf)[b]	(C = A - B) Difference
Average Weekday Daily	640	1,318	-678
Weekday Morning Peak Hour:			
Entering	9	96	
Exiting	36	21	
Total	45	117	-72
Weekday Evening Peak Hour:			
Entering	42	34	
Exiting	22	107	
Total	64	141	-77

[a] ITE LUC 220, *Apartment,* without adjustment for travel mode.

[b] ITE LUC 710, *General Office Building* (29,500 sf), and ITE LUC 720, *Medical-Dental Office Building* (29,500 sf), without adjustment for travel mode.

As can be seen in Table 2-4, assuming full occupancy of the existing office/medical office building that occupies the Project site, the proposed residential community is expected to generate approximately 678 fewer vehicle trips on an average weekday, with 72 fewer vehicle trips expected during the weekday morning peak-hour and 77 fewer vehicle trips expected during the weekday evening peak-hour.

Table 2-5 summarizes and compares the peak-hour traffic characteristics of the Project to those of the existing office/medical office building that occupies the Project site as occupied in April 2014 (less than full occupancy). It should be noted that even as of April 2014, the building owner was not renewing leases or seeking new tenants for vacant space in the building in order to facilitate construction of the Project.

Table 2-5 Peak-Hour Traffic Volume Comparison Proposed Residential Community vs. Existing Use as Occupied in April 2014

Time Period/Direction	(A) Proposed Residential Community (85 Units)[a]	(B) Existing Office/Medical Office Building[b]	(C = A - B) Difference
Weekday Morning Peak Hour:			
Entering	4	25	
Exiting	19	5	
Total	23	30	-7
Weekday Evening Peak Hour:			
Entering	21	12	
Exiting	12	21	
Total	33	33	0

[a] Obtained from Table 2-3.
[b] As observed in April 2014 at the Project site driveways.

As can be seen in Table 2-5, in comparison to the existing office/medical office building that occupies the Project site as occupied in April 2014 (less than full occupancy), the proposed residential community is expected to generate approximately 7 fewer vehicle trips during the weekday morning peak-hour and approximately the same number of vehicle trips during the weekday evening peak-hour.

In either case (occupancy as of April 2014 or full occupancy), the proposed residential community is predicted to generate comparable or less traffic on a daily and peak-hour basis than the existing office/medical office building that occupies the Project site and, as such, will have a less pronounced impact on the roadway network serving the study area.

Vehicle Trip Distribution and Assignment

The directional distribution of generated trips to and from the Project site was developed based on a review of: i) existing traffic patterns within the study area; and ii) the trip distribution patterns reflected in recently completed studies within the study area. The general trip distribution pattern for the Project is summarized in Table 2-6 and is graphically depicted on Figure 2-10, with Figures 2-11 and 2-12 depicting the assignment of Project-related traffic to the study area roadway network for the weekday morning and evening peak hours, respectively.

Table 2-6 Trip-Distribution Summary

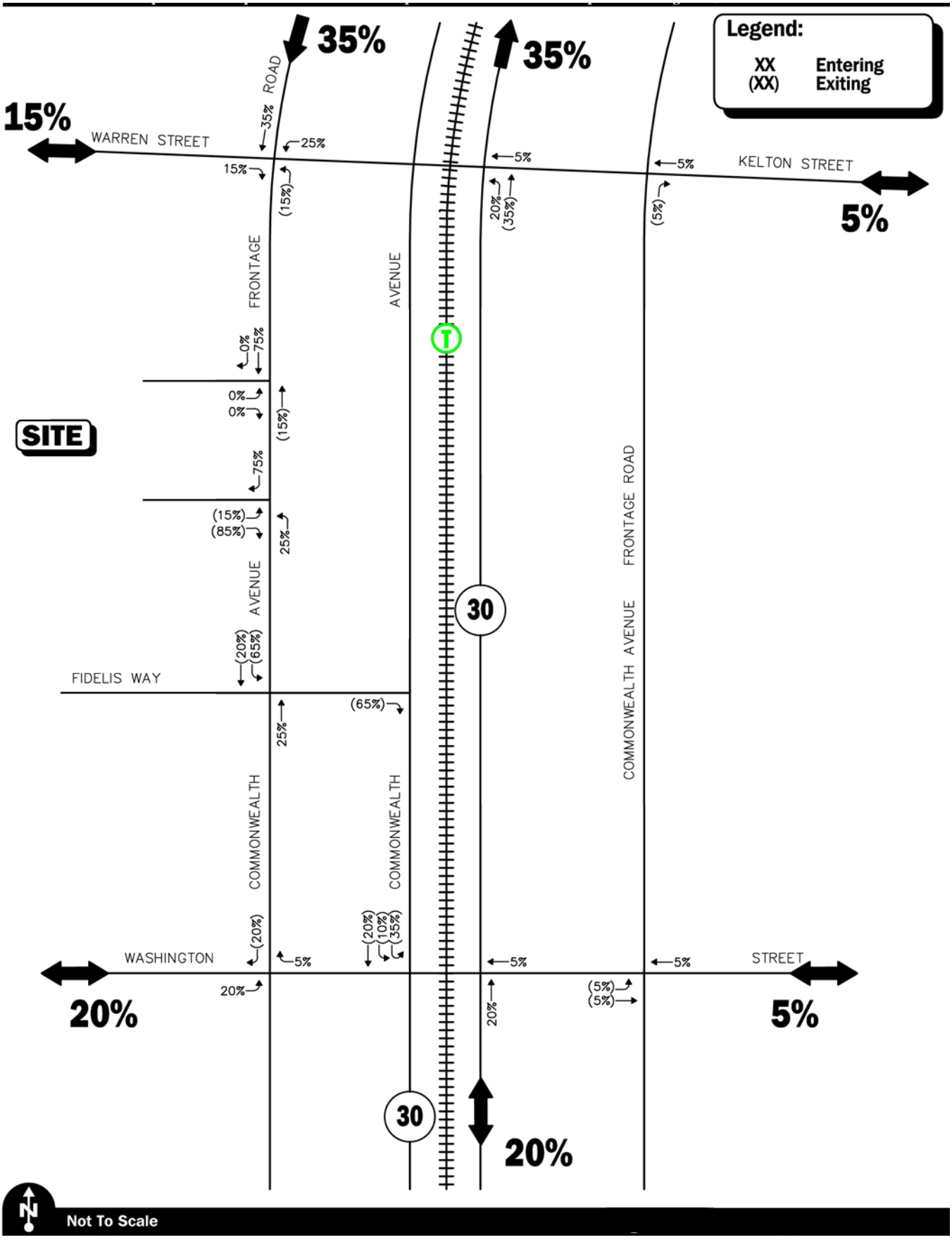
Roadway	Direction (To/From)	*Percent (To/From)*
Commonwealth Avenue	North	*35*
Commonwealth Avenue	South	*20*
Washington Street	East	*5*
Washington Street	West	*20*
Kelton Street	East	*5*
Warren Street	West	*15*
Total		100

2.3.3 Future Build Traffic Volumes

The 2021 Build condition traffic-volumes were developed by removing the traffic volumes associated with the existing uses that occupy the Project site from the 2021 No-Build condition traffic volumes, and then adding the traffic associated with the Project. The resulting 2021 Build condition weekday morning and evening peak-hour traffic volumes are graphically depicted on Figures 2-13 and 2-14, respectively.

2.3.4 Project Parking Supply

The Project will provide 74 parking spaces beneath the building and on a surface parking lot to support the parking demands of residents and guests, or a parking ratio of 0.87 spaces per residential unit, consistent with the recommended BTD parking ratio for the Brighton neighborhood (0.75 to 1.25 spaces per residential unit is recommended). This parking supply is sufficient to accommodate the parking demands of the Project while encouraging the use of alternative modes of transportation that are available to the Project site (public transportation by way of MBTA Bus Route 65 and service via the Green Line B Branch, and the extensive and interconnected network of sidewalks and bicycle accommodations afforded on the roadway network). Market studies conducted by the Proponent to support the development of the Project indicate that prospective residents will chose to reside at the



1505 Commonwealth Avenue Boston, Massachusetts

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Figure 2-10
Trip Distribution Map

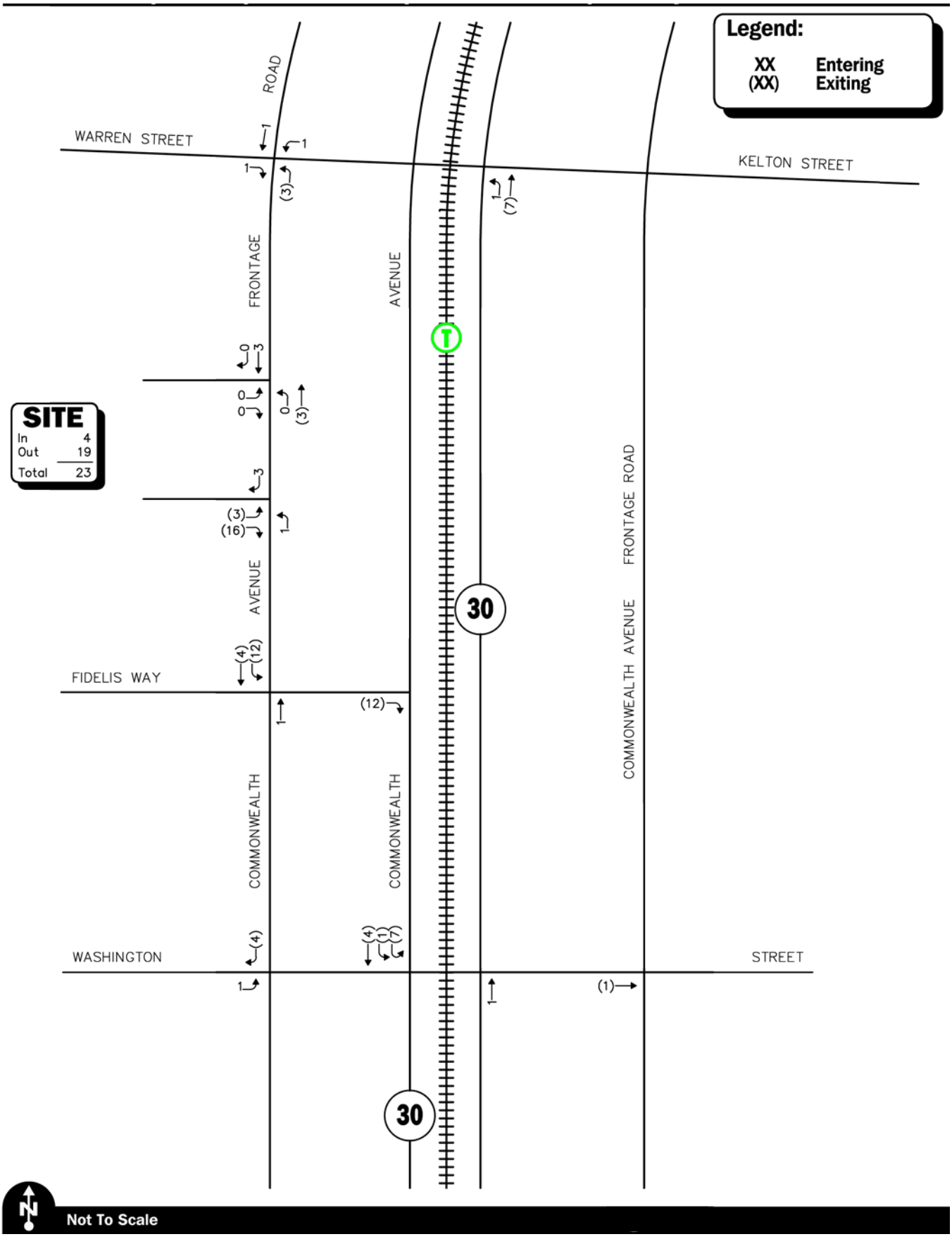

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Figure 2-11
Project-Generated Weekday Morning Peak Hour Traffic Volumes

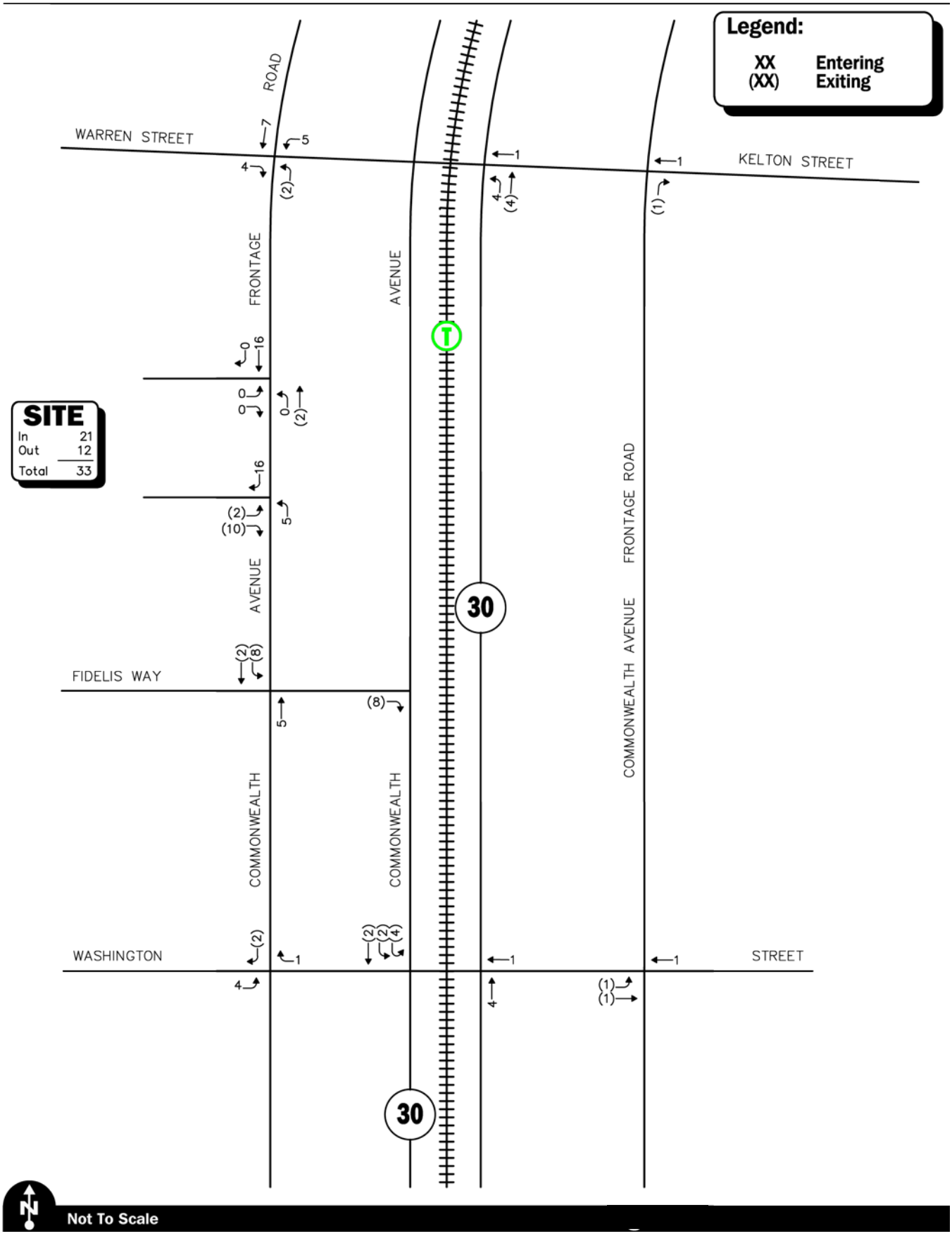

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Figure 2-12
Project-Generated Weekday Evening Peak Hour Traffic Volumes

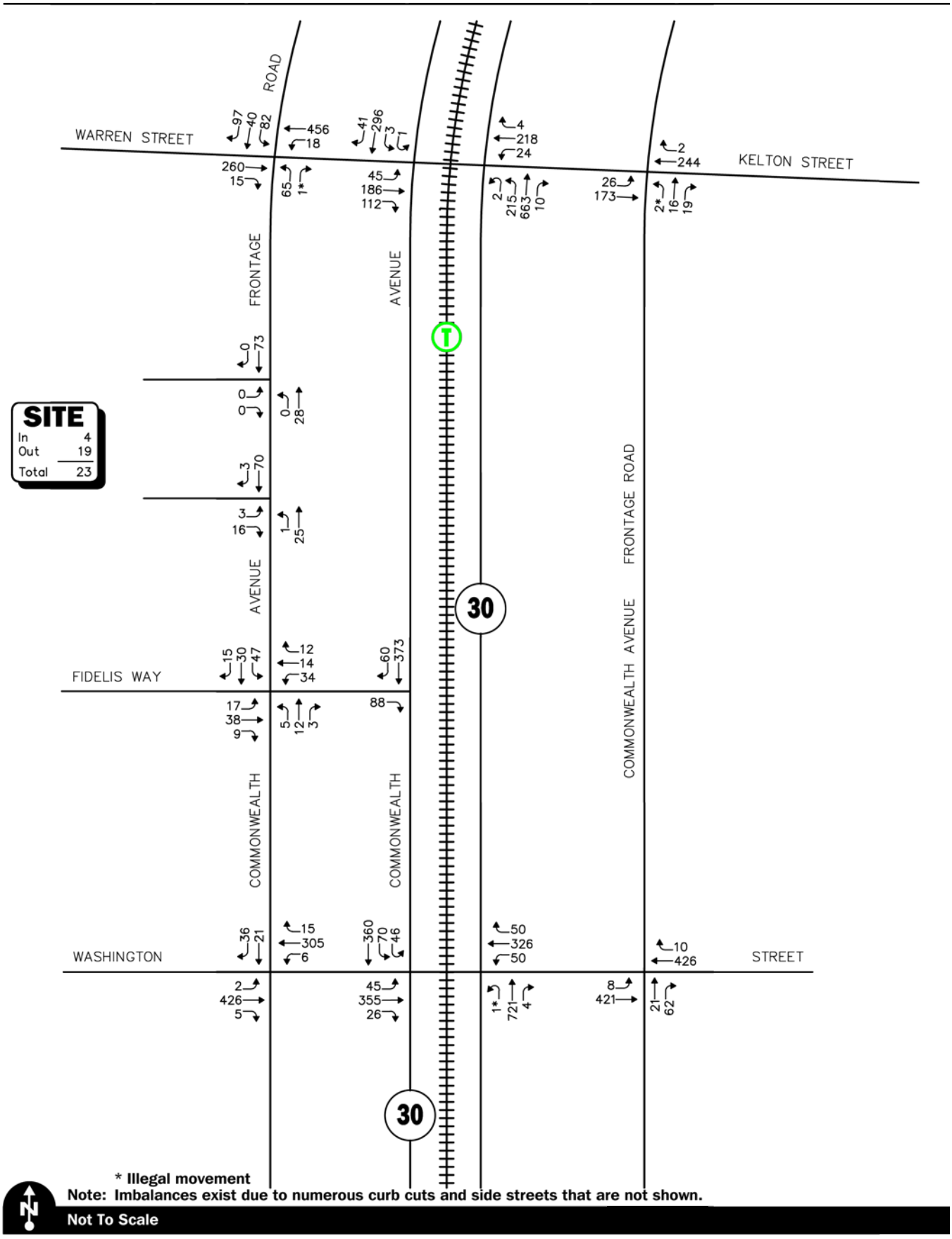

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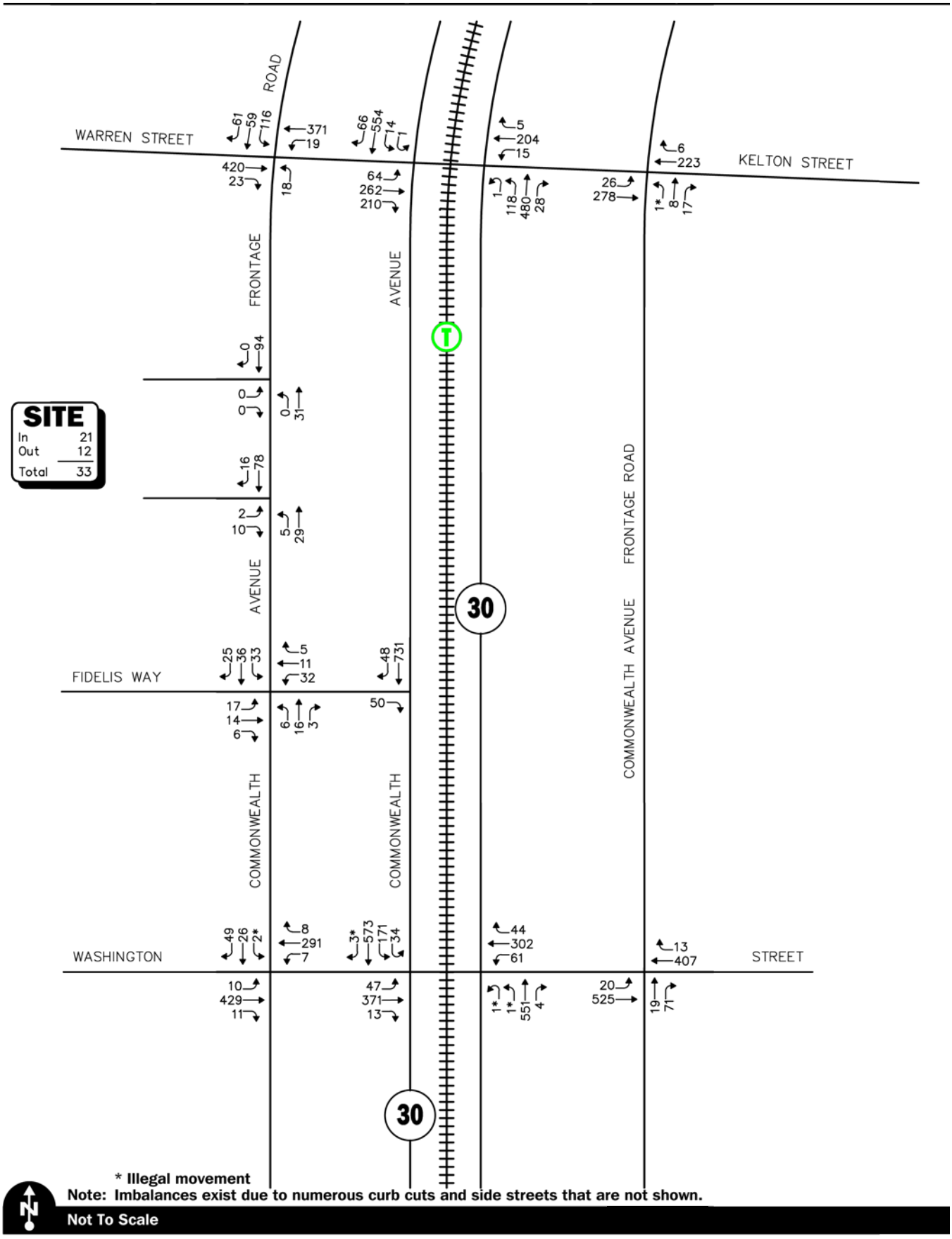
Figure 2-13
2021 Build Weekday Morning Peak Hour Traffic Volumes



1505 Commonwealth Avenue Boston, Massachusetts

Figure 2-14
2021 Build Weekday Morning Evening Hour Traffic Volumes

Project due to its proximity to employment centers and the ability to walk work, thereby reducing dependency on automobiles and the associated parking demands.

The Project will also provide approximately 85 covered and secure bicycle spaces within the building, and short-term, exterior, bicycle parking accommodations proximate to the building entrances.

2.4 Traffic Operations Analysis

Measuring existing and future traffic volumes quantifies traffic flow within the study area. To assess quality of flow, roadway capacity and vehicle queue analyses were conducted under Existing, No-Build and Build traffic-volume conditions. Capacity analyses provide an indication of how well the roadway facilities serve the traffic demands placed upon them, with vehicle queue analyses providing a secondary measure of the operational characteristics of an intersection or section of roadway under study.

2.4.1 Methodology

Levels of Service

A primary result of capacity analyses is the assignment of level of service to traffic facilities under various traffic-flow conditions.[6] The concept of level of service is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A level-of-service definition provides an index to quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

Six levels of service are defined for each type of facility. They are given letter designations from A to F, with level-of-service (LOS) A representing the best operating conditions and LOS F representing congested or constrained operating conditions.

Since the level of service of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of levels of service depending on the time of day, day of week, or period of year.

Unsignalized Intersections

The six levels of service for unsignalized intersections may be described as follows:

- *LOS A* represents a condition with little or no control delay to minor street traffic.

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6 The capacity analysis methodology is based on the concepts and procedures presented in the *Highway Capacity Manual;* Transportation Research Board; Washington, DC; 2000.

- *LOS B* represents a condition with short control delays to minor street traffic.
- *LOS C* represents a condition with average control delays to minor street traffic.
- *LOS D* represents a condition with long control delays to minor street traffic.
- *LOS E* represents operating conditions at or near capacity level, with very long control delays to minor street traffic.
- *LOS F* represents a condition where minor street demand volume exceeds capacity of an approach lane, with extreme control delays resulting.

The levels of service of unsignalized intersections are determined by application of a procedure described in the 2000 *Highway Capacity Manual*.[7] Level of service is measured in terms of average control delay. Mathematically, control delay is a function of the capacity and degree of saturation of the lane group and/or approach under study and is a quantification of motorist delay associated with traffic control devices such as traffic signals and STOP signs. Control delay includes the effects of initial deceleration delay approaching a STOP sign, stopped delay, queue move-up time, and final acceleration delay from a stopped condition. Definitions for level of service at unsignalized intersections are also given in the 2000 *Highway Capacity Manual*. Table 2-7 summarizes the relationship between level of service and average control delay.

Table 2-7 Level of Service Criteria for Unsignalized Intersections[a]

Level of Service	Average Control Delay (Seconds Per Vehicle)
A	$\leq$ 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	> 50.0

[a]Source: *Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2000; page 17-2.

Signalized Intersections

The six levels of service for signalized intersections may be described as follows:

- *LOS A* describes operations with very low control delay; most vehicles do not stop at all.

[7] *Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2000.

- *LOS B* describes operations with relatively low control delay. However, more vehicles stop than LOS A.

- *LOS C* describes operations with higher control delays. Individual cycle failures may begin to appear. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

- *LOS D* describes operations with control delay in the range where the influence of congestion becomes more noticeable. Many vehicles stop and individual cycle failures are noticeable.

- *LOS E* describes operations with high control delay values. Individual cycle failures are frequent occurrences.

- *LOS F* describes operations with high control delay values that often occur with over-saturation. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Levels of service for signalized intersections are calculated using the operational analysis methodology of the 2000 *Highway Capacity Manual*. This method assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on delay. Level-of-service designations are based on the criterion of control or signal delay per vehicle. Control or signal delay is a measure of driver discomfort, frustration, and fuel consumption, and includes initial deceleration delay approaching the traffic signal, queue move-up time, stopped delay and final acceleration delay. Table 2-8 summarizes the relationship between level of service and control delay. The tabulated control delay criterion may be applied in assigning level-of-service designations to individual lane groups, to individual intersection approaches, or to entire intersections.

Table 2-8 Level of Service Criteria for Signalized Intersections[a]

Level of Service	Control (Signal) Delay Per Vehicle (Seconds)
A	$\leq$10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	>80.0

[a]Source: *Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2000; page 16-2.

Vehicle Queue Analysis

Vehicle queue analyses are a direct measurement of an intersection's ability to process vehicles under various traffic control and volume scenarios and lane use arrangements. The vehicle queue analysis was performed using the Synchro™ intersection capacity analysis software which is based upon the methodology and procedures presented in the 2000 *Highway Capacity Manual*. The Synchro™ vehicle queue analysis methodology is a simulation based model which reports the number of vehicles that experience a delay of six seconds or more at an intersection. For signalized intersections, Synchro™ reports both the average (50th percentile) and the 95th percentile vehicle queue. For unsignalized intersections, Synchro™ reports the 95th percentile vehicle queue. Vehicle queue lengths are a function of the capacity of the movement under study and the volume of traffic being processed by the intersection during the analysis period. The 95th percentile vehicle queue is the vehicle queue length that will be exceeded only 5 percent of the time, or approximately three minutes out of sixty minutes during the peak one hour of the day (during the remaining fifty-seven minutes, the vehicle queue length will be less than the 95th percentile queue length).

2.4.2 Analysis Results

Level o -service and vehicle queue analyses were conducted for 2014 Existing, 2021 No-Build and 2021 Build conditions for the intersections within the study area. The results of the intersection capacity and vehicle queue analyses are summarized in Tables 2-9 and 2-10, with the detailed analysis results presented in Appendix C. ***This analysis has demonstrated that the Project will not adversely affect operating conditions at the study area intersections.***

The following is a summary of the level of service and vehicle queue analyses for the intersections within the study area.

<u>Signalized Intersections</u>

Commonwealth Avenue at Warren Street and Kelton Street

Under 2014 Existing, 2021 No-Build and 2021 Build conditions, the signalized intersection of Commonwealth Avenue at Warren Street and Kelton Street was shown to operate at an overall LOS C during the weekday morning peak-hour and at LOS D during the weekday evening peak-hour. Vehicle queues at the intersection were shown to range from 0 to 465 feet (approximately 19 vehicles) during the peak periods, with no significant increases shown to result from the addition of Project-related traffic (approximately 2 vehicles).

Commonwealth Avenue at Washington Street

Under 2014 Existing, 2021 No-Build and 2021 Build conditions, the signalized intersection of Commonwealth Avenue at Washington Street was shown to operate at an overall LOS C during both the weekday morning and evening peak hours. Vehicle queues at the intersection were shown to range from 0 to 510 feet (approximately 21 vehicles) during the peak periods, with no significant increases shown to result from the addition of Project-related traffic (approximately 1 vehicle).

Unsignalized Intersections

Commonwealth Avenue West Frontage Road at Fidelis Way

Under 2014 Existing, 2021 No-Build and 2021 Build conditions, all movements at this unsignalized intersection were shown to operate at LOS A during both the weekday morning and evening peak hours. Vehicle queues at the intersection were shown to range from 0 to 10 feet (approximately 1 vehicle) during the peak periods, with negligible increases in vehicle queuing shown to result from the addition of Project-related traffic.

Commonwealth Avenue West Frontage Road at the Project Service Driveway

Under 2014 Existing, 2021 No-Build and 2021 Build conditions, all movements at this unsignalized intersection were shown to operate at LOS A during both weekday morning and evening peak hours with negligible vehicle queuing predicted.

Commonwealth Avenue at the Project Site Driveway

Under 2014 Existing, 2021 No-Build and 2021 Build conditions, all movements at this unsignalized intersection were shown to operate at LOS A during both weekday morning and evening peak hours with negligible vehicle queuing predicted.

Table 2-9 Signalized Intersection Level of Service And Vehicle Queue Summary

Signalized Intersection/Peak Hour/Movement	2014 Existing				2021 No-Build				2021 Build			
	V/C[a]	Delay[b]	LOS[c]	Queue[d] Avg/95th	V/C	Delay	LOS	Queue Avg./95th	V/C	Delay	LOS	Queue Avg./95th
Commonwealth Avenue at Warren Street and Kelton Street												
Weekday Morning:												
Commonwealth Avenue NB LT/TH/RT	0.73	32.1	C	257/324	0.79	34.1	C	285/337	0.79	34.4	C	287/360
Commonwealth Avenue SB LT/TH/RT	0.52	40.1	D	125/170	0.58	40.8	D	137/184	0.58	40.8	D	137/184
Warren Street EB TH/RT	0.44	28.9	C	183/269	0.47	29.8	C	193/289	0.47	29.6	C	192/287
Commonwealth Avenue West Frontage Road NB RT	0.41	53.2	D	46/80	0.50	53.9	D	59/86	0.50	53.9	D	59/96
Commonwealth Avenue West Frontage Road SB TH/RT	0.68	46.3	D	171/245	0.71	47.5	D	184/262	0.70	46.7	D	180/257
Kelton Street WB TH/RT	0.43	28.8	C	178/241	0.46	29.6	C	186/255	0.45	29.4	C	186/255
Commonwealth Avenue East Frontage Road NB TH/RT	0.10	50.9	D	16/32	0.11	51.0	D	18/33	0.11	50.7	D	18/33
Overall	**–**	**25.1**	**C**	**–**	**–**	**26.8**	**C**	**–**	**–**	**26.9**	**C**	**–**
Weekday Evening:												
Commonwealth Avenue NB LT/TH/RT	0.51	25.7	C	163/212	0.56	26.6	C	183/236	0.57	27.5	C	184/237
Commonwealth Avenue SB LT/TH/RT	0.84	50.7	D	251/342	0.91	57.5	E	274/385	0.91	57.8	E	273/385
Warren Street EB TH/RT	0.67	35.0	D	300/426	0.72	36.8	D	323/465	0.67	32.5	C	326/460
Commonwealth Avenue West Frontage Road NB RT	0.33	52.4	D	36/43	0.35	52.8	D	38/44	0.30	54.7	D	25/33
Commonwealth Avenue West Frontage Road SB TH/RT	0.62	42.1	D	172/238	0.68	44.8	D	196/267	0.69	45.3	D	200/270
Kelton Street WB TH/RT	0.37	28.6	C	146/222	0.39	28.9	C	152/231	0.36	26.3	C	152/230
Commonwealth Avenue East Frontage Road NB TH/RT	0.05	47.6	D	4/16	0.05	49.3	D	4/16	0.05	50.6	D	4/10
Overall	**–**	**36.7**	**D**	**–**	**–**	**37.7**	**D**	**–**	**–**	**37.8**	**D**	**–**

See notes at end of table.

Table 2-9 Signalized Intersection Level of Service And Vehicle Queue Summary (Continued)

Signalized Intersection/Peak Hour/Movement	2014 Existing				2021 No-Build				2021 Build			
	V/C[a]	Delay[b]	LOS[c]	Queue[d] Avg/95th	V/C	Delay	LOS	Queue Avg./95th	V/C	Delay	LOS	Queue Avg./95th
Commonwealth Avenue at Washington Street												
Weekday Morning:												
Commonwealth Avenue NB TH/RT	0.55	24.8	C	228/301	0.58	25.6	C	249/311	0.58	25.9	C	250/312
Commonwealth Avenue SB LT	0.43	59.8	E	64/88	0.52	59.9	E	78/107	0.54	59.3	E	81/1013
Commonwealth Avenue SB TH/RT	0.21	12.5	B	52/71	0.23	23.5	C	56/77	0.23	12.6	B	57/79
Washington Street EB LT/TH/RT	0.74	39.7	D	304/431	0.77	41.1	D	318/453	0.77	41.1	D	319/451
Commonwealth Avenue West Frontage Road SB TH/RT	0.11	16.2	B	36/49	0.12	16.5	B	41/55	0.11	16.4	B	37/51
Washington Street WB LT/TH/RT	0.83	45.5	D	346/456	0.86	49.0	D	366/510	0.86	48.3	D	363/507
Commonwealth Avenue East Frontage Road NB TH	0.03	28.7	C	10/26	0.04	18.9	B	11/26	0.04	19.1	B	11/26
Commonwealth Avenue East Frontage Road NB RT	0.04	27.2	C	0/30	0.05	27.7	C	0/30	0.05	27.9	C	0/31
Overall	–	**20.9**	**C**	–	–	**23.6**	**C**	–	–	**23.7**	**C**	–
Weekday Evening:												
Commonwealth Avenue NB TH/RT	0.45	29.2	C	222/468	0.50	30.9	C	186/236	0.50	31.0	C	187/237
Commonwealth Avenue SB LT	0.63	55.5	E	118/145	0.65	52.5	D	132/150	0.65	53.3	D	133/154
Commonwealth Avenue SB TH/RT	0.35	10.4	B	78/91	0.38	10.5	B	85/92	0.38	10.6	B	85/94
Washington Street EB LT/TH/RT	0.74	39.1	D	313/443	0.77	40.6	D	329/465	0.79	41.9	D	338/477
Commonwealth Avenue West Frontage Road SB TH/RT	0.09	15.2	B	32/62	0.10	15.8	B	34/65	0.09	15.4	B	32/63
Washington Street WB LT/TH/RT	0.73	38.4	D	309/417	0.76	40.1	D	328/440	0.77	40.2	D	329/440
Commonwealth Avenue East Frontage Road NB TH	0.04	24.5	C	11/28	0.04	25.5	C	11/29	0.04	25.5	C	11/29
Commonwealth Avenue East Frontage Road NB RT	0.05	32.2	C	0/36	0.05	33.7	C	0/37	0.05	33.7	C	0/37
Overall	–	**21.9**	**C**	–	–	**24.7**	**C**	–	–	**24.8**	**C**	–

[a] Volume-to-capacity ratio.
[b] Control (signal) delay per vehicle in seconds.
[c] Level-of-Service.
[d] Queue length in feet.

EB = eastbound; WB = westbound; NB = northbound; SB = southbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.

Table 2-10 Unsignalized Intersection Level of Service And Vehicle Queue Summary

Unsignalized Intersection/Peak Hour/Movement	2014 Existing				2021 No-Build				2021 Build			
	Demand[a]	Delay[b]	LOS[c]	Queue[d] 95th	Demand	Delay	LOS	Queue 95th	Demand	Delay	LOS	Queue 95th
Commonwealth Avenue West Frontage Road at Fidelis Way												
Weekday Morning:												
Fidelis Way EB LT/TH/RT	62	7.7	A	2	69	7.8	A	3	64	7.8	A	3
Fidelis Way WB LT/TH/RT	62	0.0	A	0	64	0.0	A	0	60	0.0	A	0
Commonwealth Avenue West Frontage Road NB LT/TH/RT	21	7.5	A	10	21	7.6	A	10	20	7.6	A	10
Commonwealth Avenue West Frontage Road d SB LT/TH/RT	55	7.7	A	5	78	8.0	A	8	92	8.1	A	10
Weekday Evening:												
Fidelis Way EB LT/TH/RT	37	7.4	A	2	38	7.5	A	3	37	7.5	A	3
Fidelis Way WB LT/TH/RT	49	0.0	A	0	50	0.0	A	0	48	0.0	A	0
Commonwealth Avenue West Frontage Road NB LT/TH/RT	17	7.3	A	8	21	7.4	A	8	25	7.4	A	8
Commonwealth Avenue West Frontage Road SB LT/TH/RT	78	7.6	A	8	84	7.8	A	10	94	7.8	A	10
Commonwealth Avenue West Frontage Road at the Project Service Driveway												
Weekday Morning:												
Project Service Driveway EB LT/RT	0	0.0	A	0	0	0.0	A	0	0	0.0	A	0
Commonwealth Avenue West Frontage Road NB LT/TH	27	0.0	A	0	28	0.0	A	0	28	0.0	A	0
Commonwealth Avenue West Frontage Road SB TH/RT	61	0.0	A	0	84	0.0	A	0	73	0.0	A	0
Weekday Evening:												
Project Service Driveway EB LT/RT	0	0.0	A	0	0	0.0	A	0	0	0.0	A	0
Commonwealth Avenue West Frontage Road NB LT/TH	35	0.0	A	0	40	0.0	A	0	31	0.0	A	0
Commonwealth Avenue West Frontage Road SB TH/RT	71	0.0	A	0	86	0.0	A	0	84	0.0	A	0

See notes at end of table.

Table 2-10 Unsignalized Intersection Level-Of-Service And Vehicle Queue Summary (Continued)

Unsignalized Intersection/Peak Hour/Movement	2014 Existing				2021 No-Build				2021 Build			
	Demand[a]	Delay[b]	LOS[c]	Queue[d] 95th	Demand	Delay	LOS	Queue 95th	Demand	Delay	LOS	Queue 95th
Commonwealth Avenue West Frontage Road at the Project Site Driveway												
Weekday Morning:												
Project Site Driveway EB LT/RT	5	9.0	A	1	5	9.1	A	1	19	8.9	A	4
Commonwealth Avenue West e Frontage Road NB LT/TH	35	2.4	A	1	36	2.3	A	1	26	0.3	A	0
Commonwealth Avenue West Frontage Road SB TH/RT	61	0.0	A	0	84	0.0	A	0	73	0.0	A	0
Weekday Evening:												
Project Site Driveway EB LT/RT	21	9.0	A	2	21	9.2	A	2	12	9.0	A	1
Commonwealth Avenue West Frontage Road NB LT/TH	28	1.2	A	0	33	1.2	A	0	34	1.2	A	0
Commonwealth Avenue West Frontage Road SB TH/RT	71	0.0	A	0	86	0.0	A	0	94	0.0	A	0

[a] Demand in vehicles per hour..
[b] Average control delay per vehicle (in seconds).
[c] Level-of-Service.
[d] Queue length in feet.
EB = eastbound; WB = westbound; NB = northbound; SB = southbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.

2.4.3 Pedestrian IMPACT Analysis

The Project is expected to generate approximately 10 new pedestrian/bicycle trips (2 entering and 8 exiting) during the weekday morning peak-hour and 21 new pedestrian/bicycle trips (14 entering and 7 exiting) during the weekday evening peak-hour. In addition, the Project will result in 15 new transit trips (3 entering and 12 exiting) during the weekday morning peak-hour and 14 new transit trips (9 entering and 5 exiting) during the weekday evening peak-hour which will also contribute to the pedestrian trips associated with the Project. This level of pedestrian/bicycle activity normalized over the peak-hour of occurrence is equivalent to approximately one additional pedestrian/bicycle trip every two to three minutes during the weekday peak hours. With the extensive pedestrian infrastructure and bicycle accommodations that are available within the study area and to the Project site (i.e., sidewalks, crosswalks, signalized crossings and marked ("sharrow") bicycle accommodations), sufficient capacity should be afforded to accommodate the relatively minor increase in pedestrian and bicycle activity that will result from the Project.

2.4.4 Public Transportation Impact Analysis

The Project is expected to generate approximately 15 new transit trips (12 boarding and 3 alighting) during the weekday morning peak-hour and 14 new transit trips (5 boarding and 9 alighting) during the weekday evening peak-hour. This relatively small increase in transit trips during the peak commuter periods is not expected to have a significant impact on transit service in the study area.

2.5 Sight Distance Evaluation

Sight distance measurements were performed at the Project site driveway intersections with the Commonwealth Avenue West Frontage Road in accordance with American Association of State Highway and Transportation Officials (AASHTO)[8] standards. Both stopping sight distance (SSD) and intersection sight distance (ISD) measurements were performed. In brief, SSD is the distance required by a vehicle traveling at the design speed of a roadway, on wet pavement, to stop prior to striking an object in its travel path. ISD or corner sight distance (CSD) is the sight distance required by a driver entering or crossing an intersecting roadway to perceive an on-coming vehicle and safely complete a turning or crossing maneuver with on-coming traffic. In accordance with AASHTO standards, if the measured ISD is at least equal to the required SSD value for the appropriate design speed, the intersection can operate in a safe manner. Table 2-11 presents the measured SSD and ISD at the subject intersection.

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8 *A Policy on Geometric Design of Highway and Streets,* 6th Edition; American Association of State Highway and Transportation Officials (AASHTO); 2011.

Table 2-11 Sight Distance Measurements[a]

Intersection/Sight Distance Measurement	Feet		
	Required Minimum	ISD[b]	Measured
Commonwealth Avenue West Frontage Road at the Project Service Driveway			
Stopping Sight Distance:			
Commonwealth Avenue West Frontage Road approaching from the north	200	--	500
Commonwealth Avenue West Frontage Road approaching from the south	200	--	315
Intersection Sight Distance:			
Looking to the north from the Project service driveway	200	290/355	500
Looking to the south from the Project service driveway	200	290/355	325
Commonwealth Avenue West Frontage Road at the Project Site Driveway			
Stopping Sight Distance:			
Commonwealth Avenue West Frontage Road approaching from the north	200	--	500
Commonwealth Avenue West Frontage Road approaching from the south	200	--	250
Intersection Sight Distance:			
Looking to the north from the Project site driveway	200	290/355	500
Looking to the south from the Project site driveway	200	290/355	250

[a] Recommended minimum values obtained from *A Policy on Geometric Design of Highways and Streets,* 6th Edition; American Association of State Highway and Transportation Officials (AASHTO); 2011; and based on a 30 mph approach speed on the Commonwealth Avenue West Frontage Road.

[b] Values shown are the intersection sight distance for a vehicle turning right/left exiting a roadway under STOP control such that motorists approaching the intersection on the major street should not need to adjust their travel speed to less than 70 percent of their initial approach speed.

As can be seen in Table 2-11, the available lines of sight at the Project site driveway intersections with the Commonwealth Avenue West Frontage Road were found to exceed the recommended minimum sight distance to function in a safe manner (SSD) based on a 30 mph approach speed along the Commonwealth Avenue West Frontage Road, consistent with the "prima facie" speed limit in the absence of a posted speed limit.[9]

9 The "prima facie" speed limit is defined in Chapter 90, Sections 17 and 18, of the Massachusetts General Laws as that rate of speed greater than which is considered reasonable or proper to operate motor vehicle under a defined roadway type and abutting land use.

2.6 Conclusions and proposed mitigation

2.6.1 Conclusions

Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the ITE[10] for similar land uses as those proposed and accounting for the use of alternative modes of transportation to single-occupant vehicles, the Project is expected to generate approximately 380 automobile trips (two-way, 24-hour volume), 138 transit trips and 158 pedestrian/bicycle trips on an average weekday; approximately 23 automobile vehicle trips, 15 transit trips and 10 pedestrian/bicycle trips during the weekday morning peak-hour; and 33 automobile trips, 14 transit trips and 21 pedestrian/ bicycle trips during the weekday evening peak-hour;

2. In comparison to the existing office/medical office building that occupies the Project site, the Project is expected to result in comparable or less traffic on a daily and peak-hour basis and, therefore, will have a less pronounced impact on the roadway network serving the area;

3. The addition of Project-related traffic to the study area roadways and intersections was not shown to result in a significant impact on motorist delays or vehicle queuing over No-Build conditions, with all of the study intersections shown to continue to operate at an overall LOS of "D" or better during the peak periods;

4. Sufficient capacity is afforded by the pedestrian and public transportation infrastructure that serves the study area to accommodate the relatively modest increase in pedestrian and transit trips that may be associated with the Project;

5. The Project will provide a parking supply of 74 spaces, or a parking ratio of approximately 0.87 spaces per residential unit, which is: i) consistent with the recommended BTD parking ratio for the Brighton neighborhood; ii) sufficient to accommodate the parking demands of the Project while also encouraging the use of alternative modes of transportation that are available to the Project site within the study area; and iii) reflective of the proximity of the Project site to employment centers whereby residents can walk or bicycle to work;

6. No discernible safety deficiencies were noted with respect to the study area intersections based on a review of the MassDOT motor vehicle crash data; and

7. The Project site driveways are appropriately designed and located so as to provide the required line of sight to function in a safe manner.

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10 Ibid 2.

Based on a review of these findings, we have concluded that the existing transportation infrastructure affords sufficient capacity to accommodate the Project in a safe and efficient manner.

2.6.2 Proposed Mitigation

A detailed transportation improvement program has been developed for the Project that is designed to provide safe and efficient access to the Project site while minimizing impacts to motorists traveling along adjacent roadways. The following measures will be formalized in the Transportation Access Plan Agreement (TAPA) to be executed between the Project proponent and BTD.

Transportation Demand Management (TDM) Program

The Project site is served by public transportation resources provided by the MBTA and is bounded by an interconnected sidewalk and bicycle infrastructure, all of which serve to provide an opportunity to reduce automobile trips associated with the Project. In an effort to facilitate trip-reduction measures for the Project, a comprehensive Transportation Demand Management (TDM) program will be implemented in conjunction with the Project and will include the following major elements:

- A Transportation Coordinator will be assigned;
- Information regarding public transportation services, maps, schedules and fare information will be made available to residents and posted in a central location;
- Short-term, exterior, bicycle parking will be provided proximate to the Project building entrances and long-term bicycle parking for 85 bicycles will be provided in a covered, secure area within the parking garage;
- Dedicated parking for alternatively fueled vehicles will be provided within the parking area; and
- A minimum of two electric vehicle charging stations will be provided within the parking area.

Loading and Deliveries

The Project has been designed to accommodate all loading and delivery functions on-site in a safe and efficient manner. The designated loading area provided within the Project site will accommodate delivery activities and tenant moves in a safe and efficient manner, and is removed from the sidewalk and travelled-way along the Commonwealth Avenue West Frontage Road. Truck routes, hours of deliveries and tenant moves will be defined so as to minimize truck activity during the weekday commuter peak hours. This will also provide access for trash and recycling services.

With implementation of the above recommendations, safe and efficient access will be provided to the Project site and the Project can be constructed with minimal impact on the roadway system.

Construction Management Plan (CMP)

An important component of the transportation plan for the Project is an effective series of measures that are designed to minimize traffic flow and safety impacts during the Project's construction phase. Summarized below are several measures which will be undertaken during the construction phase of the Project.

- The Proponent and the general contractor will coordinate with BTD regarding all transportation-related construction impacts of the Project.

- Designated truck routes will be established to govern how trucks access the Project site. The goal of this commitment is to have construction trucks use only the regional highway system and to avoid travelling through residential areas and pedestrian oriented corridors to the extent practical.

- Secure fencing will be provided in areas affected by construction to protect nearby pedestrian and vehicular traffic. Gate entrances into the construction area will be determined jointly with BTD.

- During construction activities, as required by BTD, a police detail will be employed to manage pedestrian and vehicle traffic at the construction access to the Project site.

- Secure on-site storage will be provided for tools and equipment in an effort to minimize construction-related vehicle trips to the site.

- Full or partial street closures will be avoided to the extent possible. Should a partial street closure be necessary in order to off-load construction materials and/or complete construction-related activities, the closure will be limited to off-peak periods. Police details will be used as required by the BTD. Prior to the implementation of any planned construction activities within the public right-of-way, the contractor will submit to BTD for review and approval a traffic and pedestrian management plan.

- Construction worker parking will be provided within the Project site or remote location and expressly prohibited within the residential neighborhoods.

- The general contractor will implement appropriate measures to encourage ridesharing and the use of public transportation services by employees and subcontractors working on the Project.

With implementation of the above elements of the CMP, construction-related impacts associated with the Project will be appropriately managed and safe and efficient access for vehicles, pedestrians and bicyclists will be maintained.

Chapter 3.0

Environmental Review Component

3.0 ENVIRONMENTAL REVIEW COMPONENT

3.1 Wind, Shadow, Daylight and Solar Glare

The Project proposes interior renovation, replacement of the building's façade, and enclosure and conversion of an existing parking structure to residential units. Because no changes are proposed to the building's height, and minimal changes to the building's massing (construction of new space on an existing parking deck), no significant wind, shadow, daylight obstruction or solar glare impacts are anticipated in association with the Project.

3.2 Air Quality Analysis

3.2.1 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 or replaced stationary sources will be reviewed by the Massachusetts Department of Environmental Protection (MassDEP) during permitting under the Environmental Results Program (ERP).

3.2.1.1 National Ambient Air Quality Standards

The 1970 Clean Air Act was enacted by the U.S. Congress to protect the health and welfare of the public from the adverse effects of air pollution. As required by the Clean Air Act, U.S. Environmental Protection Agency (EPA) promulgated National Ambient Air Quality Standards (NAAQS) for these criteria pollutants: nitrogen dioxide (NO2), sulfur dioxide (SO2), particulate matter (PM) (PM-10 and PM-2.5), carbon monoxide (CO), ozone (O3), and lead (Pb). The NAAQS are listed in Table 3.2-1. 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 are applied when comparing to the modeling results for a Project.

The NAAQS also reflect various durations of exposure. The 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.

The standards were developed by EPA to protect the human health against adverse health effects with a margin of safety.

Table 3.2-1 National Ambient Air Quality Standards

Pollutant	Averaging Period	National Ambient Air Quality Standards and Massachusetts Ambient Air Quality Standards (micrograms per cubic meter)	
		Primary	Secondary
NO_2	Annual [1]	100	Same
	1-hour [7]	188	None
SO_2	Annual [1,8]	80	None
	24-hour [2,8]	365	None
	3-hour [2]	None	1,300
	1-hour [7]	195	None
PM-10 [6]	Annual	50	Same
	24-hour [3]	150	Same
PM-2.5	Annual [4]	12	15
	24-hour [5]	35	Same
CO	8-hour [2]	10,000	Same
	1-hour [2]	40,000	Same
Ozone	8-hour [3]	147	Same
Pb	3-month [1]	1.5	Same

Notes:
[1] Not to be exceeded.
[2] Not to be exceeded more than once per year.
[3] Not to be exceeded more than an average of one day per year over three years.
[4] Not to be exceeded by the arithmetic average of the annual arithmetic averages from three successive years.
[5] Not to be exceeded based on the 98th percentile of data collection.
[6] Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, EPA revoked the annual PM-10 standard in 2006 (effective December 17, 2006). However, the annual standard remains codified in 310 CMR 6.00.
[7] Not to be exceeded. Based on the three-year average of the 98th (NO_2) or 99th (SO_2) percentile of the daily maximum one-hour concentrations.
[8]The Annual and 24-hour SO_2 standards were revoked on June 2, 2010. However, these standards remain in effect until one year after an area is designated for the one-hour standard, unless currently in nonattainment.
Source: 40 CFR 50 and 310 CMR 6.00

3.2.2.3 Background Concentrations

MassDEP guidance directs project proponents to use the three most recent years of available background air quality monitoring data from within 10 km of a project site. Background concentrations were determined from the closest available monitoring stations to the proposed development from the most recent air quality monitor data reported by the MassDEP as available in its Annual Air Quality Reports for 2011 to 2013. The closest monitors are located at Kenmore Square and on Harrison Avenue, and consistent with MassDEP guidance, are within 10 km of the Project site.

The Clean Air Act allows for one exceedance per year of the CO and SO2 short-term NAAQS per year. The second highest concentration 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 μg/m3. For annual PM-2.5 averages, the average of the highest yearly observations was used as the background concentration. For the NO2 standard, the three-year average of the 98th percentile of the maximum daily one-hour concentrations must not exceed 188 μg/m3.

A summary of the background air quality concentrations are presented in Table 3.2-2.

Table 3.2-2 Observed Ambient Air Quality Concentrations and Selected Background Levels

Pollutant	Averaging Time	Form	2011	2012	2013	Background Concentration ($\mu g/m^3$)	Location
SO_2 [1][5]	1-Hour [4]	99th %	50.6	34.6	31.4	50.6	Kenmore Sq., Boston
	3-Hour [6]	H2H	64.5	36.2	41.9	64.5	Kenmore Sq., Boston
	24-Hour	H2H	24.6	14.1	15.7	24.6	Kenmore Sq., Boston
	Annual	H	6.2	4.9	2.6	6.2	Kenmore Sq., Boston
PM-10	24-Hour	H2H	38.0	28.0	50.0	50.0	Kenmore Sq., Boston
	Annual	H	16.8	15.7	19.0	19.0	Kenmore Sq., Boston
PM-2.5	24-Hour [4]	98th %	21.2	22.1	18.0	20.4	Kenmore Sq., Boston
	Annual [4]	H	9.4	9.0	8.0	8.8	Kenmore Sq., Boston
NO_2 [3]	1-Hour [4]	98th %	99.5	92.1	90.2	93.9	Kenmore Sq., Boston
	Annual	H	38.3	35.9	33.4	38.3	Kenmore Sq., Boston
CO [2]	1-Hour	H2H	1710.0	1482.0	1482.0	1710.0	Kenmore Sq., Boston
	8-Hour	H2H	1368.0	1026.0	1026.0	1368.0	Kenmore Sq., Boston
O_3	8-Hr [9]	H4H	117.8	153.1	115.8	128.904	Harrison Ave, Boston
Pb	3-Mo	H	0.017	0.014	0.007	0.017	Harrison Ave, Boston

Notes:
From 2010-2013 MassDEP Annual Data Summaries
[1] SO_2 reported in ppb. Converted to $\mu g/m^3$ using factor of 1 ppb = 2.62 $\mu g/m^3$.
[2] CO reported in ppm or ppb. Converted to $\mu g/m^3$ using factor of 1 ppm = 1140 $\mu g/m^3$.
[3] NO_2 reported in ppb. Converted to $\mu g/m^3$ using factor of 1 ppb = 1.88 $\mu g/m^3$.
[4] Background level for 24-hour PM-2.5 is the average concentration of the 98th percentile for three years.
[5] Background level for annual PM-2.5 is the average for three years.
[6] Background level for one-hour NO_2 is the average of the 98th percentile of the daily maximum one-hour values over three years.
[7] The 24-hour and Annual standards were revoked by EPA on June 22, 2010, Federal Register 75-119, p. 35520.
[8] The 2011 - 2013 SO_2 three-hour value is no longer reported by MassDEP. One-hour H2H used instead. 2013 24-hour value also no longer reported. Obtained from EPA AirData website.
[9] Annual fourth-highest daily maximum eight-hour concentration, averaged over three years

Air quality is generally good in the area, with all of the ambient concentrations well below their respective NAAQS. For use in the microscale analysis, background concentrations of CO in ppm were required. The corresponding maximum background concentrations in ppm were 1.5 ppm (1,710 μg/m3) for one-hour and 1.2 ppm (1,368 μg/m3) for eight-hour CO.

3.2.2 Methodology

3.2.2.1 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.[1]

The microscale analysis has been conducted using the latest versions of EPA's MOVES2014 and CAL3QHC programs to estimate CO concentrations at sidewalk receptor locations.

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

Baseline (2014) and future year (2021) 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 locations at Kenmore Square were obtained from MassDEP. CAL3QHC results were then added to background CO values of 1.5 ppm (one-hour) and 1.2 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.[2]

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

Intersection Selection

As stated previously, a "microscale" analysis is typically required for the Project at intersections where 1) Project traffic would impact intersections or roadway links currently operating at LOS D, E, or F or would cause LOS to decline to D, E, or F; 2) Project traffic would increase traffic volumes on nearby roadways by 10% or more (unless the increase in traffic volume is less than 100 vehicles per hour); or, 3) the Project will generate 3,000 or more new average daily trips on roadways providing access to a single location.

One signalized intersection included in the traffic study meets 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 intersection found to meet the criteria for inclusion in the microscale analysis is:

- The intersection of Warren Street, Kelton Street, and Commonwealth Avenue.

Microscale modeling was performed for the intersection based on the aforementioned methodology. The 2014 Existing conditions and the 2021 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

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

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 (2014) and build year (2021) are provided by MassDEP.

All links 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 9 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.[3]

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

Receptors & Meteorology Inputs

Sets of up to 200 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 3-1.

For the CAL3QHC model, limited meteorological inputs are required. Following EPA guidance[4], a wind speed of one meter per second, stability class D (4), and a mixing height of 1,000 meters was 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 for all four intersections.[5]

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 are scaled by a factor of 0.7 to estimate the eight-hour concentrations.[6] The CAL3QHC methodology was based on EPA CO modeling guidance. Signal timings were provided directly from the traffic modeling outputs.

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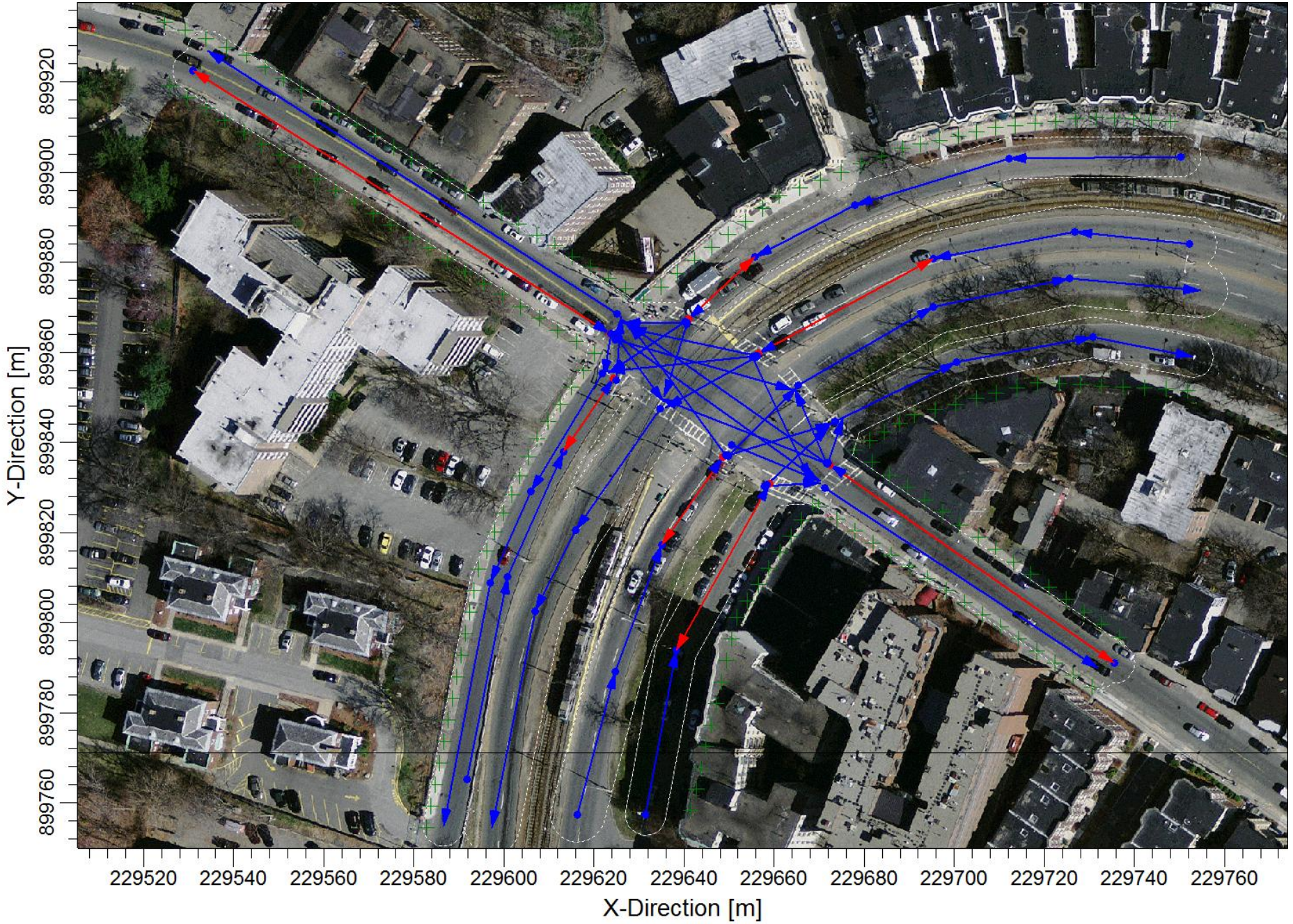
3 U.S. EPA, 2010. Using MOVES in Project-Level Carbon Monoxide Analyses. EPA-420-B-10-041

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

5 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.

6 U.S. EPA, Screening Procedures for Estimating the Air Quality Impact of Stationary Sources; EPA-454/R-92-019, October 1992.



1505 Commonwealth Avenue Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 3-1

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

3.2.3 Air Quality Results

3.2.3.1 Microscale Analysis

The results of the maximum one-hour predicted CO concentrations from CAL3QHC are provided in Tables 3.2-3 through 3.2-5 for the 2014 and 2021 scenarios.

The results of the one-hour and eight-hour maximum modeled CO ground-level concentrations from CAL3QHC were added to EPA supplied background levels for comparison to the NAAQS. These values represent the highest potential concentrations at the intersection as they are predicted during the simultaneous occurrence of "defined" worst case meteorology. The highest one-hour traffic-related concentration predicted in the area of the Project for the modeled conditions (0.3 ppm) plus background (1.5 ppm) is 1.8 ppm for the existing morning peak hour case. The highest eight-hour traffic-related concentration predicted in the area of the Project for the modeled conditions (0.2 ppm) plus background (1.2 ppm) is 1.4 ppm for at the same location and scenarios. All concentrations are well below the one-hour NAAQS of 35 ppm and the eight-hour NAAQS of 9 ppm.

3.2.4 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 3.2-3 Summary of Microscale Modeling Analysis (Existing 2014)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Warren Street, Kelton Street, & Commonwealth Avenue	AM	0.3	1.5	1.8	35
	PM	0.2	1.5	1.7	35
8-Hour					
Warren Street, Kelton Street, & Commonwealth Avenue	AM	0.2	1.2	1.4	9
	PM	0.1	1.2	1.3	9
Notes: CAL3QHC eight-hour impacts were conservatively obtained by multiplying one-hour impacts by a screening factor of 0.7.					

Table 3.2-4 Summary of Microscale Modeling Analysis (No-Build 2021)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Warren Street, Kelton Street, & Commonwealth Avenue	AM	0.1	1.5	1.6	35
	PM	0.1	1.5	1.6	35
8-Hour					
Warren Street, Kelton Street, & Commonwealth Avenue	AM	0.1	1.2	1.3	9
	PM	0.1	1.2	1.3	9
Notes: CAL3QHC eight-hour impacts were conservatively obtained by multiplying one-hour impacts by a screening factor of 0.7.					

Table 3.2-5 Summary of Microscale Modeling Analysis (Build 2021)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Warren Street, Kelton Street, & Commonwealth Avenue	AM	0.1	1.5	1.6	35
	PM	0.1	1.5	1.6	35
8-Hour					
Warren Street, Kelton Street, & Commonwealth Avenue	AM	0.1	1.2	1.3	9
	PM	0.1	1.2	1.3	9
Notes: CAL3QHC eight-hour impacts were conservatively obtained by multiplying one-hour impacts by a screening factor of 0.7.					

3.3 Stormwater/Water Quality

Chapter 7 includes a discussion of stormwater and water quality.

3.4 Flood Hazard Zones/ Wetlands

The most current version of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for this area (25025C0057G) shows that the Project site is located outside of the 500-year flood zone area. The Project site remains outside of the 500-year flood zone area in the Preliminary FEMA Flood Hazard Map.

The Project site does not contain wetlands.

3.5 Geotechnical Impacts

The Project does not include excavation or changes below-grade, and therefore geotechnical impacts and impacts to groundwater and not anticipated.

3.6 Solid and Hazardous Waste

3.6.1 Hazardous Waste

A Preliminary Environmental Site Screening was completed by EBI Consulting for the Project site in April 2014, and no evidence of Potential Environmental Concerns[7] were discovered at the site.

In the early 1990s, Number 4 fuel oil was detected within the elevator shaft within the building and was found to be attributed to the Hahnemann Hospital property located adjacent to the Subject Property to the south. MassDEP release tracking number (RTN) 3-4465 was assigned to the site; similarly RTN 3-11159 was assigned to the Hahnemann Hospital Property related to the release matters originating on the hospital property but also included the site within the disposal site defined for the matter. MassDEP records indicate that the RTNs reached regulatory closure in July 1997 with submittal of Class A-2 Response Action Outcome (RAO) Statements. No evidence of additional release matters have been identified at the site in connection with the hospital property or other incident since that time. Based on the regulatory status, the conditions associated with these releases do not appear to pose a current environmental or regulatory concern to the site.

[7] The term potential environmental concerns means the possible presence of any hazardous substances or petroleum products on a property under conditions that indicate the possibility of an existing release, a past release, or a threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property.

3.6.2 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 65 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.

3.6.3 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. The recycling program will be fully developed in accordance with LEED standards as described in Chapter 4.

3.7 Noise Impacts

New noise associated with development projects are most commonly due to mechanical equipment required for the operation of the building. Minimal noise impacts are anticipated as the extent and general location of mechanical equipment will be similar to the mechanical equipment for the existing building. Noise impacts may actually experience a reduction over current levels as any new equipment is likely to have a more efficient design resulting in lower noise levels.

Construction period noise impacts and mitigation are discussed below in Section 3.8.9.

3.8 Construction Impacts

3.8.1 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.

3.8.2 Construction Methodology/Public Safety

Construction methodologies that ensure public safety and protect nearby tenants will be employed. Secure fencing, signage, and covered walkways may be employed to ensure the safety and efficiency of all pedestrian and vehicular traffic flows. In addition, sidewalk areas and walkways near construction activities will be well marked and lighted to protect pedestrians and ensure their safety. Public safety for pedestrians on abutting sidewalks will also include covered pedestrian walkways when appropriate. Construction management and scheduling will minimize impacts on the surrounding environment and will include plans for construction worker commuting and parking, routing plans for trucking and deliveries, and the control of noise and dust.

As the design of the Project progresses, the Proponent will meet with BTD to discuss the specific location of barricades, the need for lane closures, pedestrian walkways, and truck queuing areas. If required by BTD and the Boston Police Department, police details will be provided to facilitate traffic flow. These measures will be incorporated into the CMP which will be submitted to BTD for approval prior to the commencement of construction work.

3.8.3 Construction Schedule

The Proponent anticipates that the Project will commence construction in the third quarter of 2015 and last for approximately 12 to 14 months.

Typical construction hours will be from 7:00 a.m. to 6:00 p.m., Monday through Friday, with most shifts ordinarily ending at 3:30 p.m. No substantial sound-generating activity will occur before 7:00 a.m. If longer hours, additional shifts, or Saturday work is required, the construction manager will place a work permit request to the Boston Air Pollution Control Commission and BTD in advance. It is noted that some activities such as finishing activities could run beyond 6:00 p.m.

3.8.4 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.

3.8.5 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.

3.8.6 Construction Worker Transportation

To reduce vehicle trips to and from the construction site, minimal construction worker parking will be available at the site and all workers will be 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.

3.8.7 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.

3.8.8 Construction Air Quality

Short-term air quality impacts from fugitive dust may be expected during demolition and construction. Plans for controlling fugitive dust during demolition 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.

3.8.9 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.

3.8.10 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.

3.8.11 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.

3.9 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 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

To comply with Article 37, the Proponent intends to measure the results of its sustainability initiatives using the framework of the Leadership in Energy and Environmental Design (LEED) rating system. The Project will use the LEED-NC v2009 as the rating system to show compliance with Article 37. The LEED rating system tracks the sustainable features of a project by achieving points in the following categories: Sustainable Sites; Water Efficiency; Energy and Atmosphere; Materials and Resources; Indoor Environmental Quality; and Innovation in Design.

A LEED checklist is included at the end of this section, and shows the credits the Project anticipates achieving. The checklist will be updated regularly as the design develops and engineering assumptions are substantiated. Presently, 53 points have been targeted with 14 additional points needing further study, not including any of the potential Boston Zoning Code Article 37 points.

Sustainable Sites

Prerequisite 1: Construction Activity Pollution Prevention. The construction manager will submit and implement an Erosion and Sedimentation Control (ESC) Plan for construction activities related to the demolition of existing conditions and the construction of the new development specific to this Project. The ESC Plan will conform to the erosion and sedimentation requirements of the 2012 EPA Construction General Permit and specific municipal requirements for the City of Boston.

Credit 1: Site Selection. The Project consists of the renovation of an existing building in a dense area of Brighton, and does not meet the criteria outlined in the credit regarding areas not to be developed.

Credit 2: Development Density and Community Connectivity. The Project site is a previously developed site within a ½ mile of at least ten basic services.

Credit 4.1: Alternative Transportation, Public Transportation Access. The Project site is within a quarter-mile of the MBTA Green Line B Branch, and less than a half-mile from several MBTA bus routes. See Figure 2-1.

Credit 4.2: Alternative Transportation, Bicycle Storage & Changing Rooms. The Project will include accommodations for one secure bicycle per unit as required by BTD. Exterior bike storage locations for visitors and employees are anticipated to be incorporated into the site design.

Credit 4.3: Alternative Transportation Low-Emitting and Fuel Efficient Vehicles. The Project will provide five preferred parking spaces for fuel efficient/electric vehicles.

Credit 4.4: Alternative Transportation Parking Capacity. The Project will not create new parking.

Credit 6.1: Stormwater Design – Quantity Control. The Project will implement a stormwater management plan that results in a 25% decrease in the volume of stormwater runoff from the two-year 24-hour design storm.

Credit 6.2: Stormwater Design – Quality Control. Stormwater runoff will be collected and treated, as necessary, on-site, and will be routed to infiltration systems to the maximum extent practicable. The BMPs used to treat the runoff will remove 80% of the total suspended solids (TSS).

Credit 7.2: Heat Island Effect, Roof. The roofs will be a high albedo membrane roof product with a minimum SRI value of 78, which will cover a minimum of 75% of the Project's total roof area.

Water Efficiency

Prerequisite 1: Water Use Reduction, 20% Reduction. Through the specification of low-flow and high efficiency plumbing fixtures, the Project will implement water use reduction strategies that use, at a minimum, 20% less potable water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements.

Credit 1: Water Efficient Landscaping. The Project include native and drought tolerant plants, and will not use potable water for irrigation, or will not irrigate the landscaping.

Credit 3: Water Use Reduction. Through the specification of low-flow and high efficiency plumbing fixtures, the Project will implement water use reduction strategies that will target an overall potable water use savings of 35% from the calculated baseline use.

Energy and Atmosphere

Prerequisite 1: Fundamental Commissioning of the Building Energy Systems. The Project will engage a commission agent for the commissioning process and to verify that the building's related systems are installed and perform as intended.

Prerequisite 2: Minimum Energy Performance. Architectural and engineering systems will be designed to meet the mandatory requirements of ASHRAE 90.1-2004 and to achieve approximately 20-22% energy performance improvement beyond that defined by ASHRAE 90.1-2004 Appendix G. Energy use will be demonstrated using a DoE 2 whole building energy simulation software package. Energy performance is highly dependent on ultimate system selection and operational parameters.

Prerequisite 3: Fundamental Refrigerant Management. The Project will use refrigerants that are chlorofluorocarbon (CFC) free in the HVAC&R system.

Credit 1: Optimize Energy Performance. The Project has a goal to demonstrate a minimum of a 22% improvement in energy cost when compared to a baseline building performance as calculated using the rating method in Appendix G of ANSI/ASHREA/IESNA Standard 90.1-2007.

Credit 4: Enhanced Refrigerant Management. Refrigerants will be selected to minimize the combined contributions to ozone depletion and global warming potential. Fire suppression systems will not include CFCs, HCFCs, or Halons.

Materials and Resources

Prerequisite 1: Storage and Collection of Recyclables. The Project will reduce the amount of building waste that is taken to landfills by supporting occupant recycling efforts. A central area for the collection of recyclables will be included in the building.

Credit 1.1: Building Reuse – Maintain Existing Walls, Floors, and Roof. The Project will maintain 95% of the existing structural elements and envelope, not including windows.

Credit 2: Construction Waste Management. The construction management team will develop and implement a Construction Waste Management plan for waste generation on site. The construction manager will endeavor to divert as much demolition debris and construction waste from area landfills as possible, with a goal to achieve 75% diversion.

Indoor Environmental Quality

Prerequisite 1: Minimum IAQ Performance. The building mechanical systems will be designed to meet or exceed the requirements of ASHRAE Standard 62.1-2007 sections 4 through 7 and/or applicable building codes. Any naturally ventilated spaces will comply with the applicable portions of ASHRAE 62.1 as well.

Prerequisite 2: Environmental Tobacco Smoke (ETS) Control. No smoking will be allowed within the building. Designated smoking areas outside of the building will be located at least 25 feet from doorways, operable windows and outdoor air intakes.

Credits 4.1, 4.2 and 4.3, Low Emitting Materials. The Project will specify the use of adhesives and sealants, paints and coatings and flooring systems with low VOC content to reduce the quantity of indoor air contaminants.

Credit 6.1: Controllability of Systems, Lighting. The Project will provide access to lighting systems controls for 90% of building occupants. Multi-occupant spaces will include lighting system controls to enable adjustments that meet group needs and preferences.

Credit 6.2: Controllability of Systems, Thermal Comfort. The Project will provide access to thermal systems controls for at least 50% of building occupants in individually occupied spaces. Multi-occupant spaces will include comfort system controls to enable adjustments that meet group needs and preferences.

Credit 7.1: Thermal Comfort, Design. The Project's HVAC design meets the requirements of ASHRAE Standard 55-2004, Thermal Environmental Conditions for Human Occupancy.

Credit 8.1: Daylight and Views – Daylight. The Project will provide top or side lighting to 75% of regularly occupied spaces.

Credit 8.2: Daylight and Views – Views. The Project will provide a direct line of sight to the outdoors for 90% of regularly occupied spaces.

Innovation & Design Processes

The team has identified the ID credit listed below, (limited to five ID credits total):

Exemplary Performance for SSc4.1. The Project site is located on the MBTA Green Line with a frequency of service that includes over 200 transit rides per day.

Credit 2 LEED Accredited Professional. A LEED AP is part of the Project team.

Regional Priority Credits

Regional Priority Credits, (RPC) are established LEED credits designated by the USGBC to have priority for a particular area of the country. When a Project team achieves one of the designated RPCs, an additional credit is awarded to the Project. RPCs applicable to the site include: SSc3, SSc6.1, SSc7.1, SSc7.2, EAc2(1%) and MRc1.1(75%). This Project anticipates three RPCs for SSc6.1 Stormwater Design – Quantity Control, SSc7.2 Heat Island Effect – Roof, and MRc1.1 Building Reuse – Maintain Existing Walls, Floors and Roof.

4.2 Climate Change Preparedness

4.2.1 Introduction

The Proponent understands that the City of Boston is especially interested in the adaptability of the city to long-term climate change. In general, 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, sea level rise will not impact the Project site, and impacts from heavy rain events are anticipated to be minimal. A copy of the preliminary Climate Change Checklist is included in Appendix E.

LEED 2009 for New Construction and Major Renovations

Project Checklist

1505 Commonwealth Ave Brighton, MA

Preliminary Checklist November 26, 2014

Sustainable Sites — Possible Points: 26

Y	?	N			
Y			Prereq 1	Construction Activity Pollution Prevention	
1			Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
		1	Credit 3	Brownfield Redevelopment	1
6			Credit 4.1	Alternative Transportation—Public Transportation Access	6
1			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
	3		Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
		1	Credit 5.1	Site Development—Protect or Restore Habitat	1
		1	Credit 5.2	Site Development—Maximize Open Space	1
1			Credit 6.1	Stormwater Design—Quantity Control	1
1			Credit 6.2	Stormwater Design—Quality Control	1
		1	Credit 7.1	Heat Island Effect—Non-roof	1
1			Credit 7.2	Heat Island Effect—Roof	1
		1	Credit 8	Light Pollution Reduction	1

Water Efficiency — Possible Points: 10

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

Energy and Atmosphere — Possible Points: 35

Y	?	N			
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
8		11	Credit 1	Optimize Energy Performance	1 to 19
	2	5	Credit 2	On-Site Renewable Energy	1 to 7
	2		Credit 3	Enhanced Commissioning	2
2			Credit 4	Enhanced Refrigerant Management	2
		3	Credit 5	Measurement and Verification	3
		2	Credit 6	Green Power	2

Materials and Resources — Possible Points: 14

Y	?	N			
Y			Prereq 1	Storage and Collection of Recyclables	
3			Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
2			Credit 2	Construction Waste Management	1 to 2
		2	Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	?	N			
	1	1	Credit 4	Recycled Content	1 to 2
	1	1	Credit 5	Regional Materials	1 to 2
	1		Credit 6	Rapidly Renewable Materials	1
		1	Credit 7	Certified Wood	1

Indoor Environmental Quality — Possible Points: 15

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

Innovation and Design Process — Possible Points: 6

Y	?	N			
	1		Credit 1.1	Innovation in Design: Exemplary Performance for SSc2	1
1			Credit 1.2	Innovation in Design: Exemplary Performance for SSc4.1	1
	1		Credit 1.3	Innovation in Design: Energy Star Appliances	1
		1	Credit 1.4	Innovation in Design: Specific Title	1
		1	Credit 1.5	Innovation in Design: Specific Title	1
1			Credit 2	LEED Accredited Professional	1

Regional Priority Credits — Possible Points: 4

Y	?	N			
1			Credit 1.1	Regional Priority: MRc1.1 Building Re-use 55%	1
1			Credit 1.2	Regional Priority: SSc6.1	1
1			Credit 1.3	Regional Priority: SSc7.2	1
		1	Credit 1.4	Regional Priority: Specific Credit	1

Y	?	N			
53	14	43	**Total**		Possible Points: 110

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

4.2.2 Drought Conditions

Under a 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. Aeration fixtures and appliances will be chosen for water conservation qualities, conserving potable water supplies.

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 modeling for the Project has not yet been completed; however, the Project includes improvements to the existing structure and mechanical improvements that will improve the energy efficiency of the building. In addition, operable windows will be included to allow for natural ventilation of the residential units.

[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.

Chapter 5.0

Urban Design

5.0 URBAN DESIGN

The Project includes the internal renovation of the existing 1960s office building located on the site, as well as the replacement of the façade to a modern design that will complement The Lancaster development being built to the north of the site, and the existing residential buildings to the east of the site.

The existing building is separated from its neighbors by both proximity and scale, which allows for a design that complements, but also brings a slight departure from, the neighboring urban fabric. The Project's location, up the hill from the proposed development on the Brighton Marine Health Center campus and The Lancaster development, provides an opportunity to continue the revitalization this area of Commonwealth Avenue into an aesthetically pleasing and desirable location to live.

The proposed new façade treatment is intended to address the particular qualities—and challenges—of the existing building. These include the building's height and uniquely grand scale, its central tower element, as well as its dramatic location. These unique qualities are well-suited to a clean contemporary style. The design incorporates bays and change of materials to articulate the façade, providing a signature building when viewed from Commonwealth Avenue (see Figure 5-1). The restrained but undeniably vertical elements added to the façade fit well with the monumental scale of the building, particularly where the building meets Commonwealth Avenue. In embracing the verticality, a cohesive elevation can be refined more elegantly, but still divide the volume of the building into base, body and cornice elements (a design concept embraced by many nearby buildings).

The proposed design will retain the existing vehicle and pedestrian access from the Commonwealth Avenue Carriage Road, as well as the existing open parking area to the rear of the building. The existing parking area entry is a simple storefront under a low roof directly off the drive lane leading to just elevator doors. The Project redesigns this entry from the parking area with adjacent landscaped space and a clear canopy to define the entrance to the lobby. Combined with the entry from the parking spaces along the driveway beneath the building, this new area is designed to encourage interaction between residents.

Pedestrians will enter the building through an improved entry plaza along the Commonwealth Avenue Carriage Road that will be transformed from a lifeless concrete plaza to an inviting gathering place (see Figures 5-2 and 5-3). A new canopy over the entry will serve as an identifier for the building and protection from the elements. Once inside the building, residents will have access to bicycle storage and a residents' lounge.

The sides of the building are presently straight slabs with tall narrow windows which accentuate the height of the building. By closing in the parking deck on the north side and providing residential units with private outdoor terraces, this unattractive side of the

building as viewed from Commonwealth Avenue will be turned into a building amenity (see Figure 5-4). On the south side, a deck will cover parking to provide additional outdoor space for those units (see Figure 5-5). The balance of the façade will have new window bays giving the façade depth that is lacking in its existing state.

1505 Commonwealth Avenue Boston, Massachusetts

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Figure 5-1
Perspective Looking West

1505 Commonwealth Avenue Boston, Massachusetts

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Figure 5-2
Entry Level Plaza

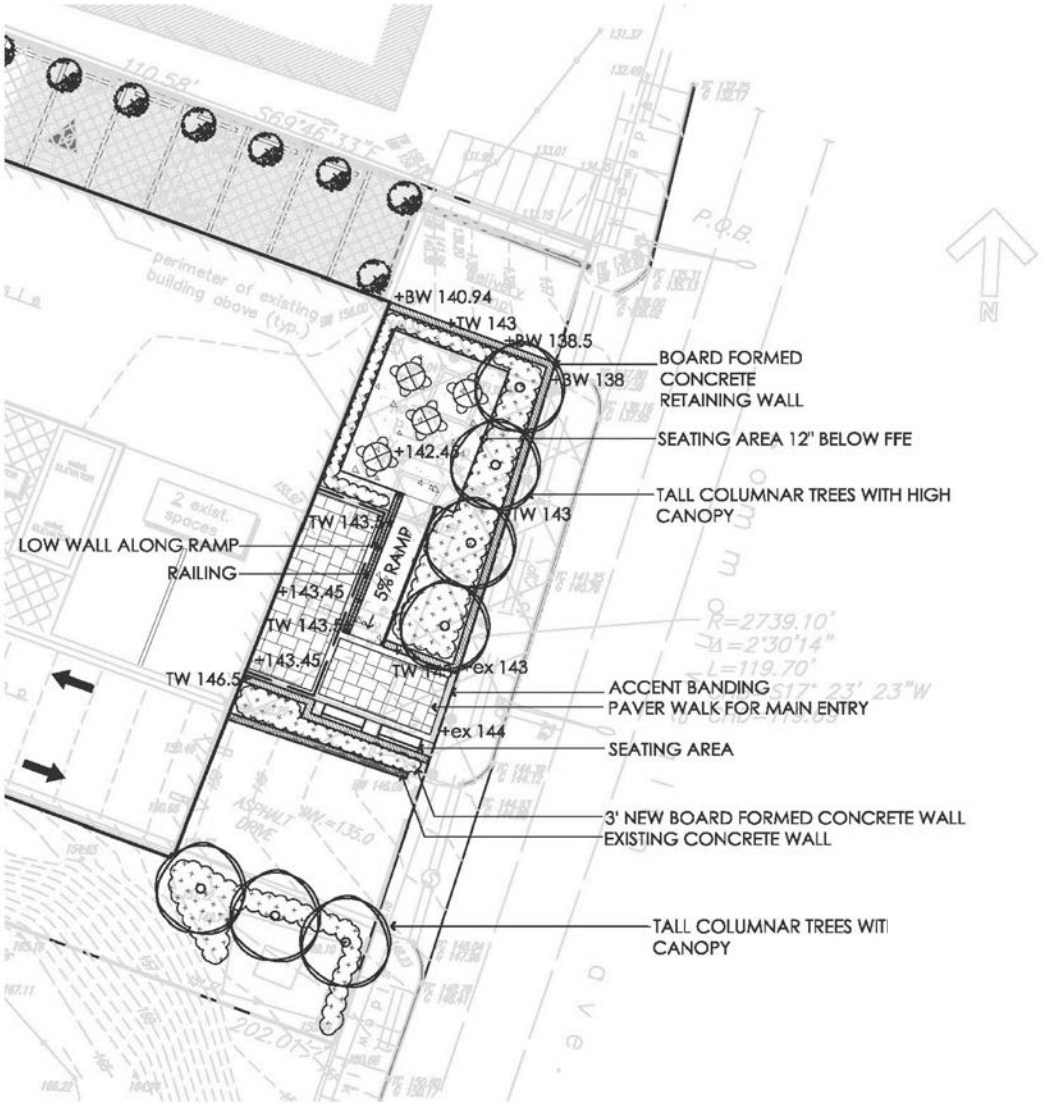

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Figure 5-3
Entry Plaza Landscape Plan

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Figure 5-4
Perspective Looking South

1505 Commonwealth Avenue Boston, Massachusetts

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Figure 5-5
Perspective Looking Northeast

Chapter 6.0

Historic and Archaeological Resources

6.0 HISTORIC AND ARCHAEOLOGICAL RESOURCES

This section describes the historic and archaeological resources within and in the vicinity of the Project site.

6.1 Historic Resources Within the Project Site

The Project site is an approximately 49,140 sf parcel of land on Commonwealth Avenue. The rear parking lot is located within the Washington-Warren Streets Institution Area, an area included in the Inventory of Historic and Archaeological Assets of the Commonwealth (Inventory). Figure 1-2 includes photographs of the existing condition of the building within the Project site.

6.2 Historic Resources Within the Vicinity of the Project Site

The Project site is located within and in the vicinity of several historic resources listed in the State Register of Historic Places or included in the Inventory. Table 6-1 identifies these resources and corresponds to resources depicted in Figure 6-1 at the end of this chapter.

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

Map No.	Resource Name	Address	Designation
A	Saint Gabriel's Monastery Roman Catholic Church	159 Washington Street	State Register/ Local Landmark
1	Allston Heights Area		MHC Inventory
2	Glenville – Commonwealth Avenues Area		MHC Inventory
3	Summit Avenue – Kelton Road Area		MHC Inventory
4	Washington-Warren Streets Institutional Area		MHC Inventory
5	19 Bellvista Street	19 Bellvista Street	MHC Inventory
6	11-15 Carol Avenue	11-15 Carol Avenue	MHC Inventory
7	1387-1395 Commonwealth Avenue	1387-1395 Commonwealth Avenue	MHC Inventory
8	1409-1427 Commonwealth Avenue	1409-1427 Commonwealth Avenue	MHC Inventory
9	14-16 Ridgemont Street	14-16 Ridgemont Street	MHC Inventory
10	41 Ridgemont Street	41 Ridgemont Street	MHC Inventory
11	Afcin Lobel Apartment Building	12-22 Bellvista Street	MHC Inventory
12	Brighton High School	25 Warren Street	MHC Inventory
13	Brighton High School (William Howard Taft Middle School)	20 Warren Street	MHC Inventory
14	Fannie Morrison Apartment Houses	1375-1383 Commonwealth Avenue	MHC Inventory

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

Map No.	Resource Name	Address	Designation
15	Gideon Davidson Apartment Building	1534-1546 Commonwealth Avenue	MHC Inventory
16	Henry W. Longfellow Apartment Building	5-6 Bellvista Street	MHC Inventory
17	Henry W. Longfellow Apartment House	11-15 Bellvista Street	MHC Inventory
18	Kennedy Memorial Hospital Administration Building	30 Warren Street	MHC Inventory
19	Riley G. Crosby Apartment Building	1464-1478 Commonwealth Avenue	MHC Inventory
20	Sunny Meade Apartments	1480-1486 Commonwealth Avenue	MHC Inventory
21	T.F. Frobisher House	309 Summit Avenue	MHC Inventory
22	The Emerson	1426 Commonwealth Avenue	MHC Inventory
23	Thomas Flynn House	156 Kelton Street	MHC Inventory
24	Thomas McDermott House	152 Kelton Street	MHC Inventory
25	Three Fields Apartments	1364-1384 Commonwealth Avenue	MHC Inventory
26	U.S. Public Health Service Administration Building	77 Warren Street	MHC Inventory
27	Saint Gabriel's Roman Catholic Church School	139 Washington Street	MHC Inventory
28	Commonwealth Avenue – Ransom Road Area		MHC Inventory
29	96-98 Washington Street	96-98 Washington Street	MHC Inventory
30	1607 Commonwealth Avenue	1607 Commonwealth Avenue	MHC Inventory
31	1615 Commonwealth Avenue	1615 Commonwealth Avenue	MHC Inventory

6.3 Archaeological Resources Within the Project Site

There are no known archaeological resources within the Project site. The Project site is located on previously developed land, therefore, no impacts to archaeological resources are anticipated.

6.4 Potential Impacts to Historic Resources

6.4.1 Renovation of Existing Building and Site

The existing six-story office building was constructed in 1965. The building was designed by architect Ralph Rankin of Ralph Lee Rankin & Associates of Pembroke, MA for William J. O'Brien. The building was designed with a first floor parking garage and five upper levels of office space. Although there were likely many buildings designed by Rankin, the MHC's Inventory identifies only one building, the Cohasset Knoll Nursing Home in Cohasset, MA constructed in 1966. He is also associated with a nursing home constructed in 1965 known

as the Edgewater Nursing Home (now heavily altered by additions) in Codman Square. The existing building is a typical example of mid-twentieth century speculative office building development. The building is banked into the hillside and is supported by concrete piers. The only vegetation on the site is two large trees in wooden boxes within the front plaza.

The east (primary) yellow brick elevation is set back from the Commonwealth Avenue carriage road behind a concrete plaza and two paved asphalt driveways, the northern drive accessing a loading dock, and the southern drive providing access to the first floor parking garage and rear parking lot. The building's first story parking deck extends out beyond the north elevation extending to the property line. Concrete retaining walls and privacy walls surround the rear at-grade parking lot. Modern aluminum storefronts are located at grade between the two driveways, and the first–story open air parking level is visible along this and all other elevations. The vertically oriented building features a central metal panel and glass projecting bay that rises above the roof. The center bay is flanked by four vertical bays of metal panels and tall ribbon windows. The north and south elevation feature the same vertical pattern with three sections of four vertical bays of metal panels and tall ribbon windows. The west (rear) of the building is set on concrete piers above the parking level and features evenly spaced punched window openings. The building has a flat roof with a large rooftop penthouse that is integral to the central projecting bay. Several cellular communication antennae are located on the buildings north and south elevations along the roofline.

The building lacks significant architectural character or historical association that would make it significant under the City of Boston Demolition Delay Ordinance or under the criteria for listing on the National Register of Historic Places. As such, the removal of the exterior masonry, metal and glass elevations will result in no significant impacts to historic resources. The building will have minimal expansion beyond its current footprint, and parking, which is located within the Washington-Warren Streets Institutional Area, will be maintained and improved, resulting in no significant impacts to the character of that Area.

6.4.2 Visual Impacts to Historic Resources

The proposed Project is located adjacent to resources included in the Washington-Warren Streets Institutional Area. The proposed Project involves recladding the existing building, replacing windows and new construction on an existing parking deck on the building's north elevation, as well as a potential expansion of the rooftop penthouse. The building's footprint will be only minimally expanded, and minor changes are proposed to the building's massing, therefore the Project will have minimal new visual impacts on resources within the area.

The proposed cladding will include red brick for the majority of the exterior, cast stone and metal panels. Windows will be new low-e insulated glass windows. Along the north elevation at an existing parking level, a one-story addition will be constructed for residential unit space with a flat roof housing decks for the units above. Existing parking will be

decked over along the south elevation. An entry portico will be added to the east elevation scaling down the building to street level, while maintaining a sense of depth from the sidewalk. The existing parking garage entry and exit will be maintained. The mechanical penthouse will be recladded.

The proposed alterations are in keeping with the architectural character of the surrounding neighborhood. The Project site is surrounded by a variety of uses including hospitals, residential apartment buildings, and commercial uses. The nearby properties consist of low to mid-rise buildings with surface parking lots and landscaped areas. To the north of the Project site, a new five-story masonry residence is being constructed, to the south the circa 1950 Kindred Hospital Boston is a four-story red brick building, to the east across Commonwealth Avenue are circa 1910 four-story red brick apartment blocks, and to the west are Fidelis Park and adjacent circa 1950 four-story red brick apartment blocks.

The proposed alterations will upgrade the architectural character of the building from the present yellow brick building with a ground level parking garage and flat elevations to a red brick building with changes in plane and materials. The Project will result in the building having the addition of architectural features seen in nearby properties including cornices, parapet, and overhanding eaves creating greater definition and breaking up the building's mass. A substantial benefit will be the removal of parking from view of Commonwealth Avenue. The Project will result in a building that will be consistent with the architectural character of the surrounding neighborhood.

6.4.3 Shadow Impacts to Historic Resources

The Project will have minimal expansion of the existing building. As such, shadow impacts to historic resources are expected to be unchanged from the current condition.

6.4.4 Wind Impacts to Historic Resources

The Project will have minimal expansion of the existing building. As such, wind impacts to historic resources are expected to be unchanged from the current condition.

6.5 Consistency with Other Historic Reviews

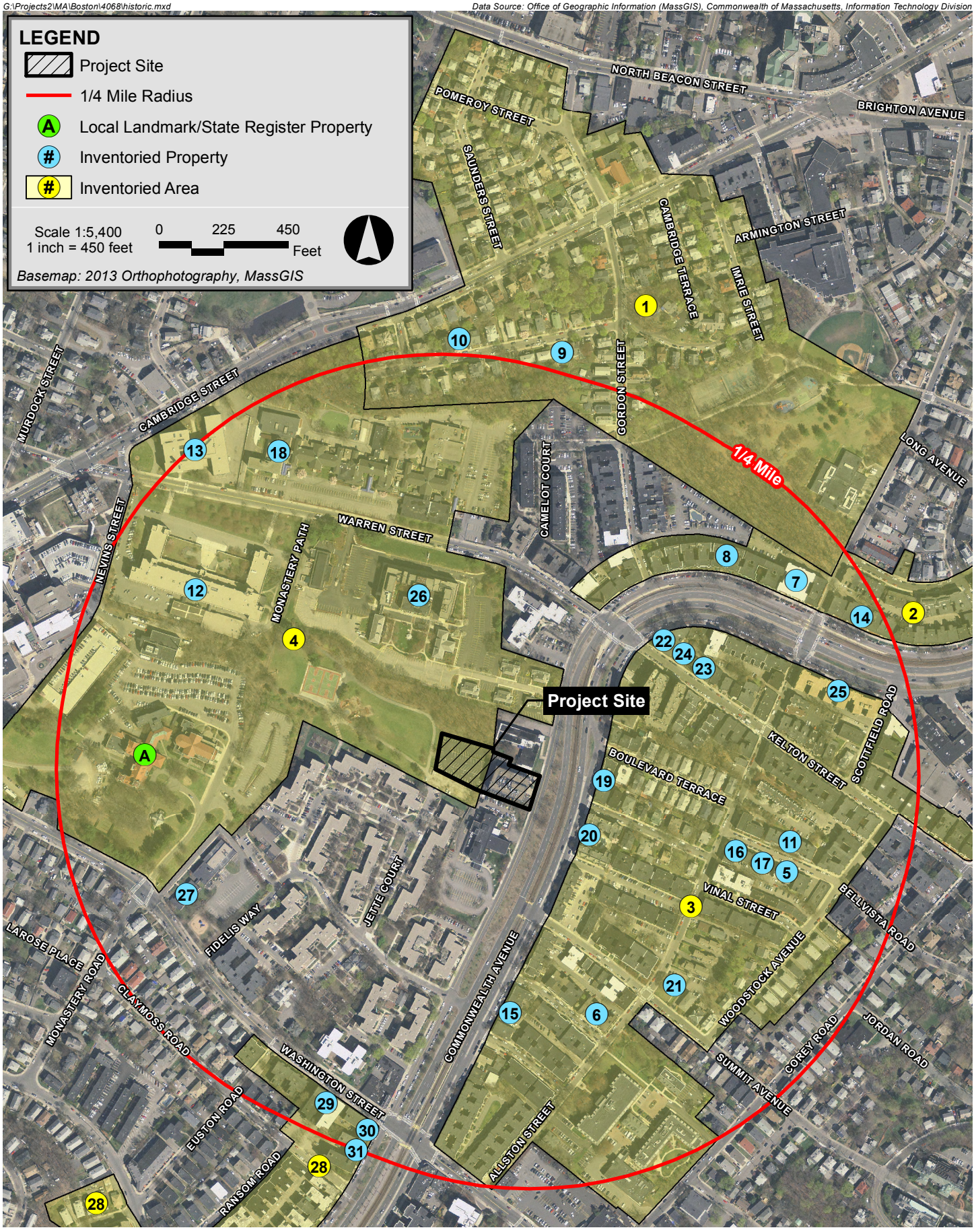
6.5.1 Article 85

The existing building on the site is over 50 years of age; therefore, the proposed substantial alteration of the exterior of the building is subject to review by the Boston Landmarks Commission under Article 85 of the Boston Zoning Code. An application for Article 85 Review will be filed for the proposed exterior demolition.

6.5.2 Massachusetts Historical Commission

At this time, no state or federal funding, licensing, permits and/or approvals requiring review by the Massachusetts Historical Commission (MHC) are anticipated. However, if a state or federal action is identified as required for the Project, a MHC Project Notification Form will be filed for the Project in compliance with State Register Review (950 CMR 71.00) and/or Section 106 of the National Historic Preservation Act (36 CFR 800).

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



1505 Commonwealth Avenue Boston, Massachusetts

Epsilon Associates Inc.

Figure 6-1
Historic Resources Map

Chapter 7.0

Infrastructure

7.0 INFRASTRUCTURE

The Infrastructure Systems Component outlines the existing utilities surrounding the Project site, the connections required to provide service to the Project, and anticipated impacts on the existing utility systems that may result from the construction of the Project.

As shown on Figures 7-1 through 7-3, there are existing utilities in Commonwealth Avenue. Specifically, there is existing sanitary sewer, separated storm drainage, water, gas, electric, and telecommunications lines.

Approval of Site Plans and a General Service Application are required from 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.

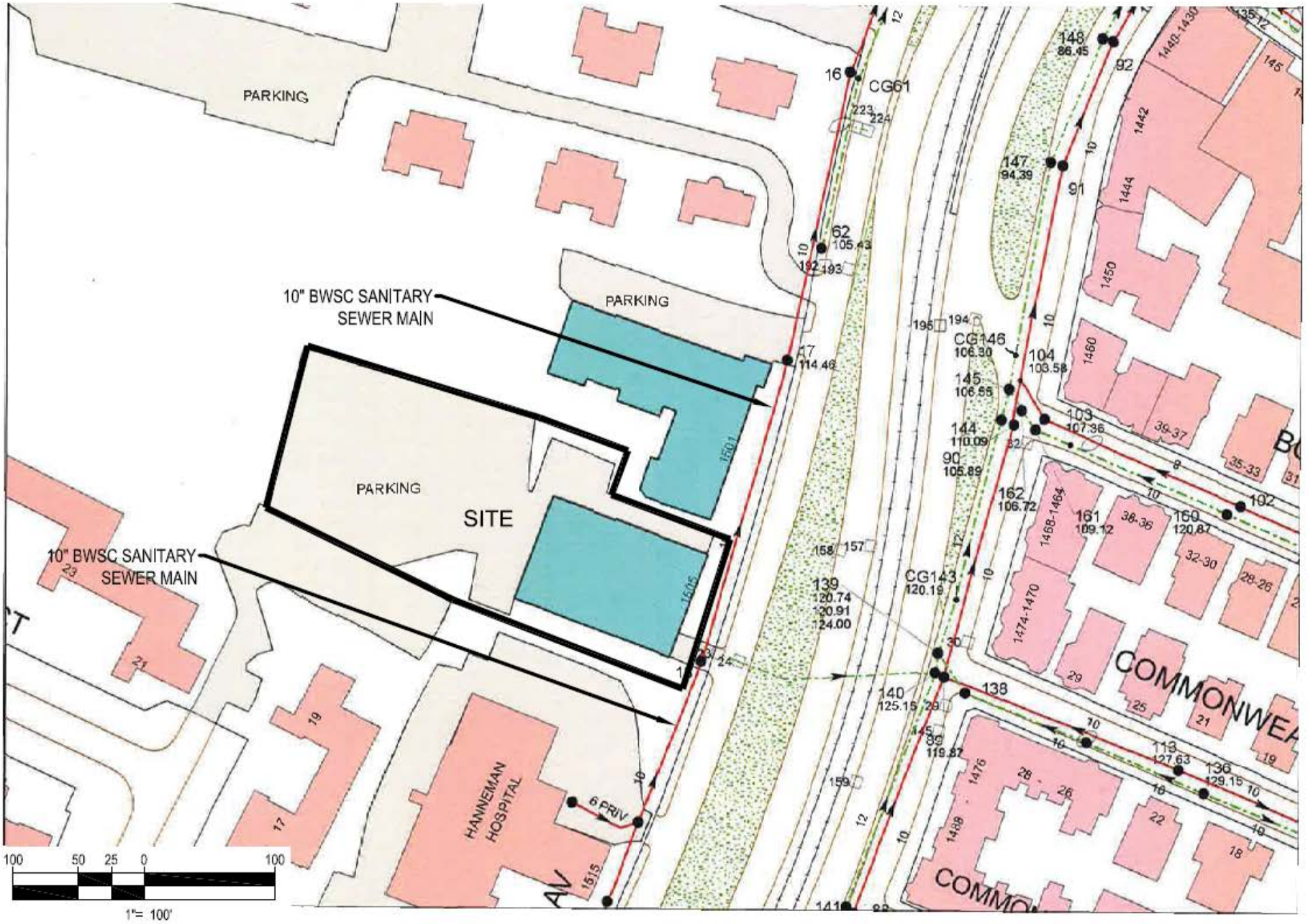
7.1 Wastewater

7.1.1 Existing Sewer System

BWSC owns, operates, and maintains the sanitary sewer mains in the vicinity of the Project site. Based on available record information from BWSC, there is a separated sewer main in Commonwealth Avenue adjacent to the Project site. The sewer in Commonwealth Avenue is a 10-inch main that flows to the northeast along the frontage of the site. The existing sanitary sewer system 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. The existing sewer system capacity calculations are presented in Table 7-1, and the wastewater generation from the existing uses on the site is presented in Table 7-2. Based on the existing building use, using generation rates from the State Environmental Code Title V (Title V), 310 CMR 15.203 from which the Massachusetts Department of Environmental Protection (MassDEP) establishes sewer generation rates, the existing site generates approximately 3,969 gallons per day (gpd) of sewer flow.

Table7-1 Existing Sewer Flow Capacity (Commonwealth Avenue – 12-inch main)

MH (BWSC)	Dist (ft)	Invert El. (up)	Invert El. (down)	Slope (%)	Dia (in.)	Manning's Number	Flow Capacity (cfs)	Flow Capacity (MGD)
18 to 17	240	141.46	114.46	0.113	10	0.013	**7.38**	**4.77**



1505 Commonwealth Avenue Boston, Massachusetts

BOHLER ENGINEERING

Figure 7-1

Existing Sanitary Sewer System

Table 7-2 Existing Wastewater Generation

Unit Type	Approximate Program	Sewer Generation Rate	Sewer Flow (gpd)
Office	52,920 sq. ft.	75 gallons/day/1,000 sq. ft.	3,969
Total Existing Sewer Generation			**3,969**
Total Existing Sewer Generation (MGD)			**0.006**

7.1.2 Project Generated Sanitary Sewer Flow

Based on an estimate of the Project's building program, Table 7-3 gives the estimated proposed total and net sanitary sewer flows anticipated to be generated by the Project. Based on these Title V sewer generation rates, the Project is expected to generate approximately 11,880 gpd of sewer flow.

Table 7-3 Proposed Sewer Generation

Unit Type	Program	Sewer Generation Rate	Sewer Flow (gpd)
Residential	108 bedrooms	110 gallons/day/bedroom	11,880
Total Proposed Sewer Generation (gpd)			**11,880**
Total Proposed Sewer Generation (MGD)			**0.018**
Net Sewer Generation (gpd)			**7,911**
Net Sewer Generation (MGD)			**0.012**

Since the Project's total proposed sewer generation does not exceed 15,000 gpd, it is anticipated that the Project will not be subject to BWSC inflow and infiltration (I/I) requirements. Therefore, no offsite improvements to the existing BWSC sewer infrastructure are anticipated.

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.

7.1.3 Sanitary Sewer Connection

Given the size of the Project, it is initially estimated that an 8-inch sewer service connection to the existing 10-inch BWSC sanitary sewer main in Commonwealth Avenue will be

constructed to service the proposed Project. 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.

7.2 Water Supply

7.2.1 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 cast iron (CI) southern high pressure water main in Commonwealth Avenue fronting the Project site on the near side of the street that was built in 1899 with maintenance performed on the line in 2000. There are two existing fire hydrants adjacent to the Project site; both are connected to the 12-inch main within Commonwealth Avenue. One is located along the Project site frontage, and the other is located along the frontage of the property to the north. The existing water distribution in the vicinity of the Project site is shown on Figure 7-2.

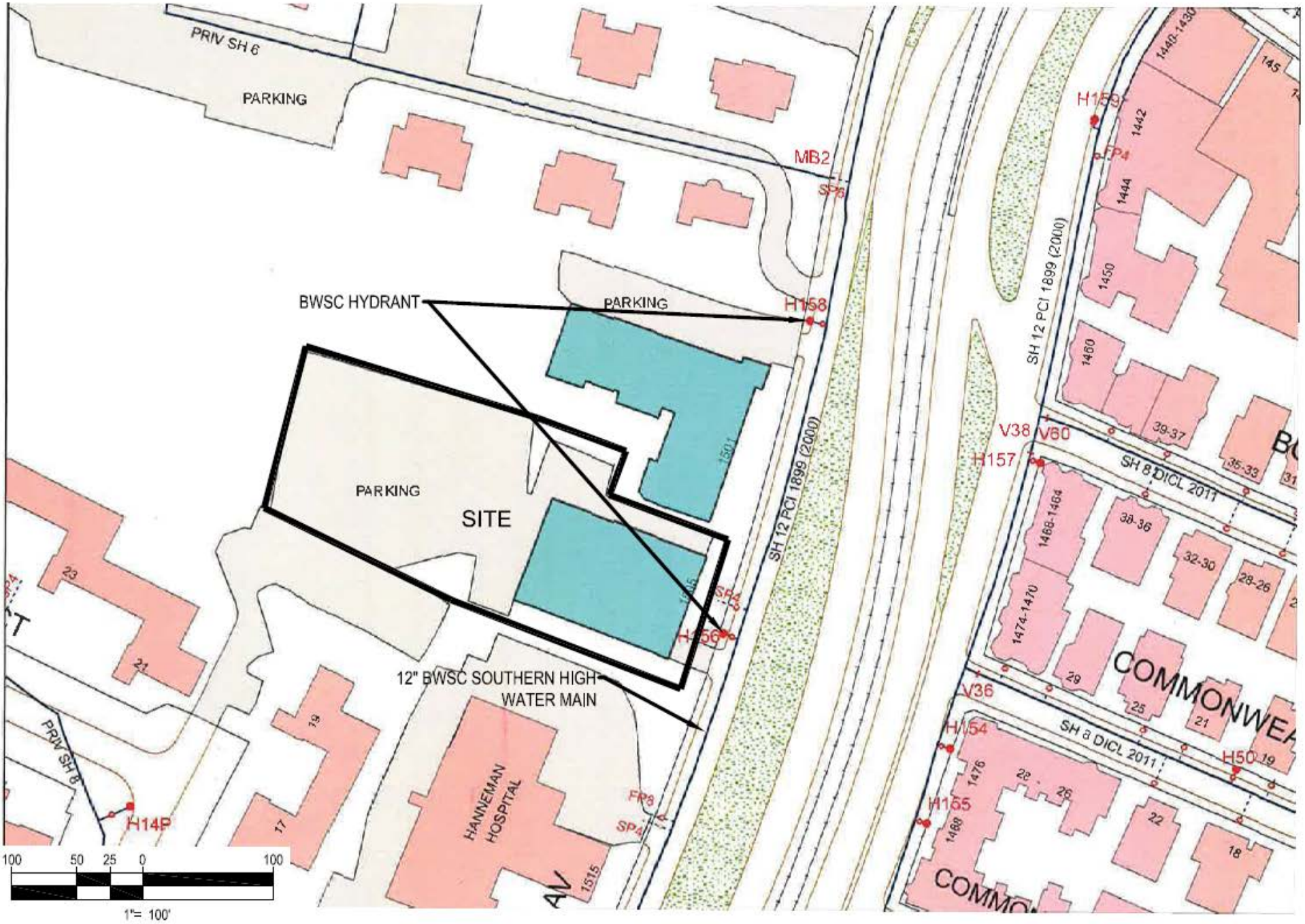
7.2.2 Anticipated Water Consumption

The estimated proposed water demand for the Project is based on the estimated sanitary sewer flow (see Table 7-3), 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 uses is 13,068 gallons per day. The 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 by 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's needs are met while maintaining adequate water flows to the surrounding neighborhood.

7.2.3 Proposed Water Service

It is anticipated that the Project will be served by a new domestic service connection from the 12-inch main in Commonwealth Avenue. This domestic connection 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.



1505 Commonwealth Avenue Boston, Massachusetts

BOHLER ENGINEERING

Figure 7-2

Existing Water Supply System

The Project is also expected to include a separate fire protection service connection, also from the 12-inch main in Commonwealth Avenue. The size and location of this service connection will be coordinated between the Project's engineer and the BWSC. Appropriate gate valves and backflow prevention devices will also be installed on the fire protection service. If required, the Project will include internal booster pumps to ensure adequate water pressure to all standpipes and sprinkler systems. The vicinity of the site is well served by existing fire hydrants.

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.

7.2.3.1 Water Supply Conservation and Mitigation

It is anticipated that 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, restricted flow faucets, and sensor operated sinks, toilets, and urinals will likely be incorporated in order to meet the LEED water conservation credits. Specific water conservation and wastewater reduction measures to be included in the Project will be more fully defined as the building design develops.

7.3 Storm Drainage System

7.3.1 Existing Storm Drainage System

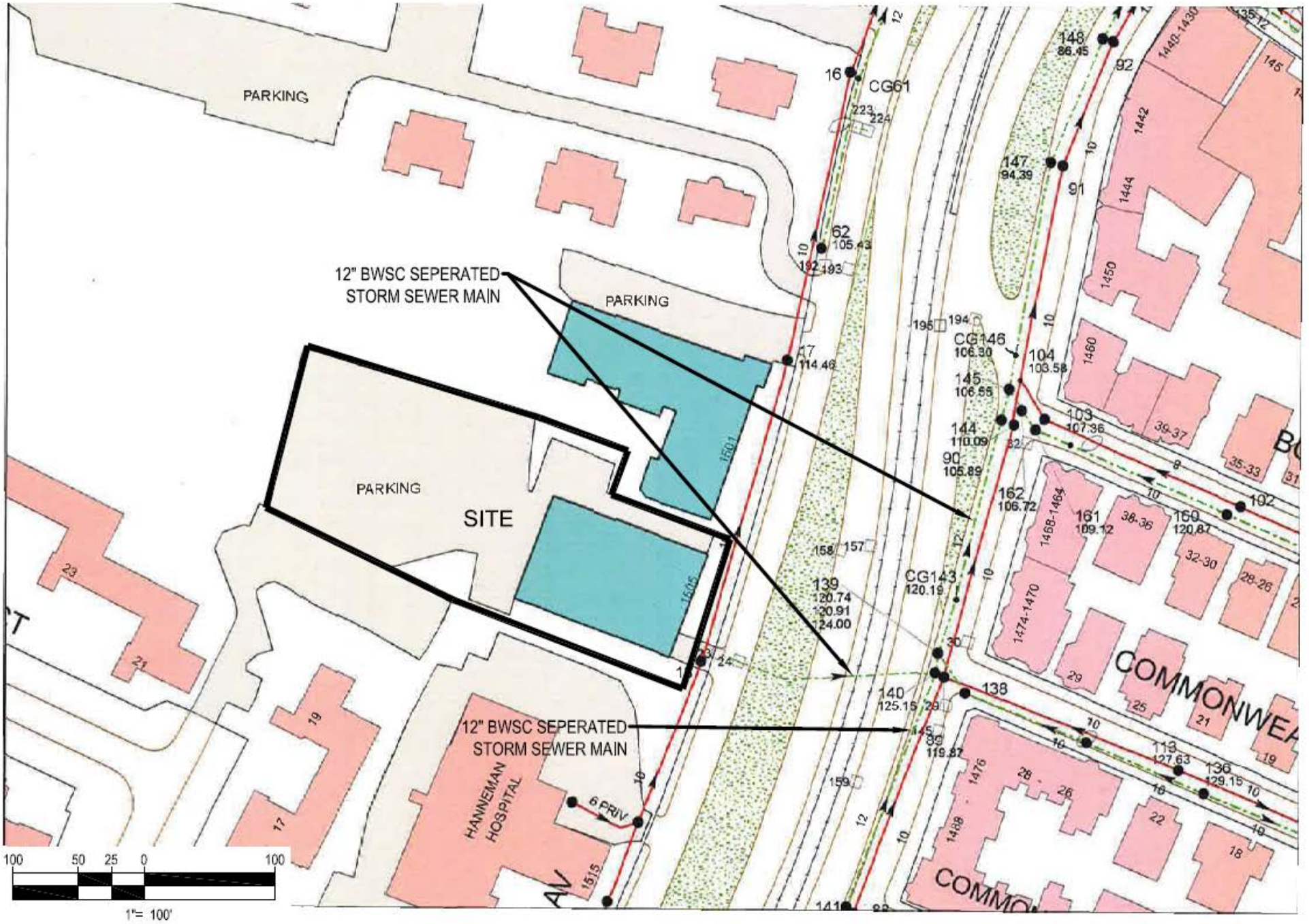
BWSC owns, operates, and maintains the storm sewer mains in the vicinity of the Project site. Available records show a 12-inch main flowing east across Commonwealth Avenue connecting to BWSC MH #140 where a 12-inch main flows northeast along the opposite side of Commonwealth Avenue (see Figure 7-3). Ultimately, the storm drainage system discharges to the Charles River.

The existing Project site is nearly 100% impervious, covered by a combination of paved parking lots, an office building and some perimeter vegetation along the northern property line.

Currently, the rear parking lot flows overland, untreated, and discharges into the existing wooded area to the northwest.

7.3.2 Proposed Storm Drainage System

Typically, BWSC requires projects to provide an infiltration system with a volume equal to one-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



1505 Commonwealth Avenue Boston, Massachusetts

BOHLER ENGINEERING

Figure 7-3

Existing Storm Sewer System

practicable in an effort to reduce the impact on the surrounding drainage system. This site contains significant amounts of visible and shallow ledge areas and additional subsurface geotechnical information will be required to determine the extent of infiltration feasibility.

Appropriate stormwater best management practices (BMPs) 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.

It is anticipated that any underground storage or infiltration system will be designed with an overflow connection to appropriately direct flows resulting from larger, less frequent storm events. These may be directed to the BWSC drain system or overland, similar to existing conditions. Any overland flow will be designed to outlet at a lesser frequency and rate than existing conditions. Specific BMPs and underground systems proposed for the Project will be described in more detail in the Site Plan application to BWSC.

7.3.3 Groundwater Conservation Overlay District

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.

7.3.4 State Stormwater Standards

Specific details of the proposed storm water management for the Project and its compliance with the MassDEP'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 Project is covered predominantly by a parking lot and building roof. 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)

The Project is not 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 MassDEP's Massachusetts Stormwater Handbook.

Standard 7 – Redevelopment Project

This Project is considered a redevelopment project as defined by MassDEP's Massachusetts Stormwater Handbook since there is not an increase in impervious area. Therefore the standards are required to be met to the maximum extent practicable.

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.

7.4 Electrical Service

NSTAR electrical record plans show underground electric distribution lines adjacent to the Project site in Commonwealth Avenue. The Proponent will work with NSTAR to confirm the system has adequate capacity to support the proposed building demands as the design advances.

7.5 Telecommunication Systems

Comcast, Verizon and RCN each have telecommunications systems in the vicinity of the Project site. The Proponent will work with each of these providers to determine the appropriate services and connection locations to support the proposed development.

7.6 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.

7.7 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 incoveniences.

Chapter 8.0

Coordination with other Governmental Agencies

8.0 COORDINATION WITH OTHER GOVERNMENTAL AGENCIES

8.1 Architectural Access Board Requirements

The Project will comply with the requirements of the Massachusetts Architectural Access Board, except for a requested variance to the van height requirements which cannot be met by the existing entrance, and will be designated to comply with the standards of the Americans with Disabilities Act. Appendix F includes the Accessibility Checklist as required by the BRA.

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

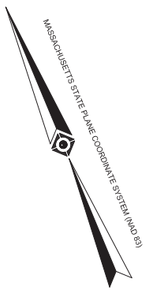
The Proponent does not anticipate that the Project will require any state or federal licenses, permits or approvals, and does not anticipate utilizing any state or federal funds. Therefore, review by the Massachusetts Historical Commission (MHC) is not anticipated at this time. In the event that state or federal licenses, permits, approvals or funding is involved, the Proponent will file an MHC Project Notification Form to initiate review of the Project.

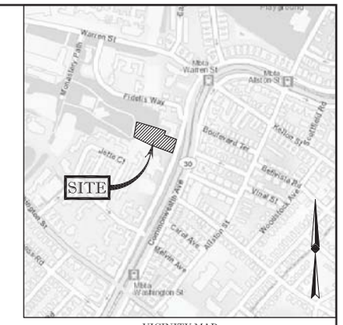
8.4 Boston Civic Design Commission

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

Appendix A

Survey





VICINITY MAP
©2013 ESRI, World Street Map

LEGEND

124 / 125	EXISTING CONTOUR
× 123.45	EXISTING SPOT ELEVATION
× TC 123.45	EXISTING TOP OF CURB ELEVATION
× G 122.95	EXISTING GUTTER ELEVATION
× TW 123.45	EXISTING TOP OF WALL ELEVATION
× BW 122.95	EXISTING BOTTOM OF WALL ELEVATION
× FF 123.45	EXISTING FINISHED FLOOR ELEVATION
	HYDRANT
GV	GAS VALVE
WV	WATER VALVE
W	APPROX. LOC. UNDERGROUND WATER LINE PER REF. #8
G	APPROX. LOC. UNDERGROUND GAS LINE PER REF. #10
	STREET LIGHT
	MAIL BOX
	BOLLARD
	METAL GUIDE RAIL
	SIGN
	AREA LIGHT
	PAINTED ARROWS
C.L.F.	CHAIN LINK FENCE
E.O.P.	EDGE OF PAVEMENT
(TYP.)	TYPICAL
S MH	SANITARY/SEWER MANHOLE
10	PARKING SPACE COUNT
S.W.L.	SOLID WHITE LINE
S.Y.L.	SOLID YELLOW LINE
HT.	HEIGHT
BLDG.	BUILDING
TRAN.	TRANSFORMER
CIP	CAST IRON PIPE
CONC.	CONCRETE
INV.	INVERT
E.O.C.	EDGE OF CONCRETE
POB	POINT OF BEGINNING
D.I.	DUCTILE IRON
	DECIDUOUS TREE

NOTES:

1. PROPERTY KNOWN AS PARCEL 2101830005 ON THE CITY OF BOSTON, SUFFOLK COUNTY, COMMONWEALTH OF MASSACHUSETTS, THE GIS DATABASE FOR THE CITY OF BOSTON.
2. AREA = 49,141 SQUARE FEET OR 1.128 ACRES
3. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE. LOCATIONS AND SIZES ARE BASED ON UTILITY MARK-OUTS, ABOVE GROUND STRUCTURES THAT WERE VISIBLE & ACCESSIBLE IN THE FIELD, AND THE MAPS AS LISTED IN THE REFERENCES AVAILABLE AT THE TIME OF THE SURVEY. AVAILABLE AS-BUILT PLANS AND UTILITY MARKOUT DOES NOT ENSURE MAPPING OF ALL UNDERGROUND UTILITIES AND STRUCTURES. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES. CONTROL POINT ASSOCIATES, INC. DOES NOT GUARANTEE THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA EITHER IN SERVICE OR ABANDONED.
4. THIS PLAN IS BASED ON INFORMATION PROVIDED BY A SURVEY PREPARED IN THE FIELD BY CONTROL POINT ASSOCIATES, INC., AND OTHER REFERENCE MATERIAL AS LISTED HEREON.
5. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO THE RESTRICTIONS, COVENANTS AND/OR EASEMENTS THAT MAY BE CONTAINED THEREIN.
6. BY GRAPHIC PLOTTING ONLY PROPERTY IS LOCATED IN FLOOD HAZARD ZONE X (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) PER REF. 2.
7. ELEVATIONS ARE BASED UPON NAVD 88 OBTAINED WITH GPS EQUIPMENT UTILIZING THE KEYSTONE KEYNET NETWORK.
8. THE OFFSETS SHOWN ARE NOT TO BE USED FOR THE CONSTRUCTION OF ANY STRUCTURE, FENCE, PERMANENT ADDITION, ETC.
9. THE EXISTENCE OF UNDERGROUND STORAGE TANKS, IF ANY, WAS NOT KNOWN AT THE TIME OF THE FIELD SURVEY.

REFERENCES:

1. THE GIS DATABASE FOR THE CITY OF BOSTON, SUFFOLK COUNTY, COMMONWEALTH OF MASSACHUSETTS.
2. MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, SUFFOLK COUNTY, MASSACHUSETTS (ALL JURISDICTIONS), PANEL 57 OF 151," MAP NUMBER 25025C0057G, EFFECTIVE DATE: SEPTEMBER 25, 2009.
3. MAP ENTITLED "SUBDIVISION PLAN OF LAND BOSTON (BRIGHTON), MASS," PREPARED BY HARRY R. FELDMAN, INC., DATED MARCH 1, 1963, FILED WITH THE SUFFOLK COUNTY REGISTRY OF DEEDS AS PLAN BOOK 7741, PAGE 57.
4. MAP ENTITLED "SUBDIVISION PLAN OF LAND BOSTON (BRIGHTON), MASS," PREPARED BY HARRY R. FELDMAN, INC., DATED JUNE 24, 1965, FILED WITH THE SUFFOLK COUNTY REGISTRY OF DEEDS AS PLAN BOOK 8131, PAGE 378.
5. MAP ENTITLED "SUBDIVISION PLAN OF LAND IN BOSTON (BRIGHTON), MASS," PREPARED BY HARRY R. FELDMAN, INC., DATED NOVEMBER 30, 1967, FILED WITH THE SUFFOLK COUNTY REGISTRY OF DEEDS AS PLAN BOOK 8168, PAGE 378.
6. MAP ENTITLED "PLAN OF LAND IN BOSTON (BRIGHTON), MASS., OWNED BY 1501 COMMONWEALTH AVE. - BRIGHTON CORP.," PREPARED BY BAY COLONY SURVEYING COMPANY, DATED FEBRUARY 26, 1984, FILED WITH THE SUFFOLK COUNTY REGISTRY OF DEEDS AS PLAN BOOK 10797, PAGE 129.
7. MAP ENTITLED "PLAN OF LAND OF HAHNEMANN HOSPITAL, BOSTON - MASS. (BRIGHTON DISTRICT)," DATED JANUARY 31, 1940, PREPARED BY WILLIAM S. CROCKER. FILED WITH THE SUFFOLK COUNTY REGISTRY OF DEEDS AS PLAN BOOK 5846, PAGE 229.
8. MAP ENTITLED " ALTA/ACSM LAND TITLE SURVEY, 1505 COMMONWEALTH AVENUE, BOSTON (BRIGHTON), MASS." PREPARED BY HARRY R. FELDMAN, INC., DATED FEBRUARY 12, 1997.
9. MAP ENTITLED "BOSTON WATER AND SEWER COMMISSION CONTRACT NO. 98-308-006, AS-BUILT PLAN #A61-70," DATED: JANUARY 10, 2003, SHEET 1 OF 1.
10. MAP ENTITLED "RECORD, COMMONWEALTH AVENUE, BRIGHTON, FROM WARREN ST. TO CHESTNUT HILL AVE, SHEET2," PREPARED BY CITY OF BOSTON STREET DEPT., DATED: MARCH 1899.
11. GAS FACILITY MAPPING PROVIDED BY NATIONAL GRID.

MAP 21, BLOCK 1830
N/F LANDS OF
1501 COMMONWEALTH AVE. - BRIGHTON CORP.
BK. 8918, PG. 151

MAP 21, BLOCK 1830, LOT 100
N/F LANDS OF
CITY OF BOSTON
(PER TAX RECORDS -
DEED NOT FOUND)

MAP 21, BLOCK 1830, LOT 5
N/F LANDS OF
COMMEX LLC
BK. 20865, PG 51,

MAP 21, BLOCK 183I, LOT 400
N/F LANDS OF
HAHNEMANN HOSPITAL, INC.
BK. 19225, PG. 65

(A.K.A. HOSPITAL ROAD)
(PRIVATE - 50' WIDE)

COMMONWEALTH AVENUE
(PUBLIC - 200' WIDE)
(ASPHALT ROADWAY)

2 STORY BRICK BUILDING

6 STORY BRICK BUILDING

UTILITIES:

THE FOLLOWING COMPANIES WERE NOTIFIED BY MASSACHUSETTS ONE-CALL SYSTEM (1-888-344-7233) AND REQUESTED TO MARK OUT UNDERGROUND FACILITIES AFFECTING AND SERVICING THIS SITE. THE UNDERGROUND UTILITY INFORMATION SHOWN HEREON IS BASED UPON THE UTILITY COMPANIES RESPONSE TO THIS REQUEST.
SERIAL NUMBER(S): 20140800907

UTILITY COMPANY	PHONE NUMBER
VERIZON	617-295-3213
COMCAST - PEMBROKE	617-787-6616
CROWN CASTLE NG NETWORKS	201-236-9078
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	617-222-5070
RCN	781-316-8800
NSTAR ELECTRIC	888-633-3797
NATIONAL GRID GAS - BOSTON	800-233-5325
ON TARGET LOCATING	508-429-1022
INNOVATIVE DATA MANAGEMENT	888-604-5577

THE COMMONWEALTH OF MASSACHUSETTS REQUIRES NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE COMMONWEALTH.

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 Inch = 20 ft.

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No.	DESCRIPTION OF REVISION	FIELD CREW	DRAWN:	APPROVED:	DATE
1	REVISED TO SHOW ADDITIONAL TOPOGRAPHY	T.M.	INDO	A.J.L.	4-18-2014

THIS SURVEY HAS BEEN PERFORMED IN THE FIELD UNDER MY SUPERVISION, AND TO THE BEST OF MY KNOWLEDGE, BELIEF, AND INFORMATION, THIS SURVEY HAS BEEN PERFORMED IN ACCORDANCE WITH CURRENTLY ACCEPTED ACCURACY STANDARDS.

NOT A VALID ORIGINAL DOCUMENT UNLESS EMBOSSED WITH RAISED IMPRESSION OR STAMPED WITH A BLUE INK SEAL.

A. JOHN LLOYD — DATE
MASSACHUSETTS PROFESSIONAL LAND SURVEYOR #38385

BOUNDARY & TOPOGRAPHIC SURVEY
BOHLER ENGINEERING
1505 COMMONWEALTH AVENUE
PARCEL 2101830005
CITY OF BOSTON (BRIGHTON DISTRICT), SUFFOLK COUNTY
COMMONWEALTH OF MASSACHUSETTS

CONTROL POINT ASSOCIATES, INC.
352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
508.948.3000 - 508.948.3003 FAX
WARREN, NJ 908.668.0099
CHALFONT, PA 215.712.9800

FIELD DATE	FIELD BOOK NO.	FIELD BOOK PG.	FIELD CREW	DRAWN:	REVIEWED:	APPROVED:	DATE	SCALE	FILE NO.	DWG. NO.
02-18-14	13-24	154-155	T.M.	IDV	J.J.L.	A.J.L.	02-27-14	1"=20'	CM14005	1 OF 1

Appendix B

Floor Plans

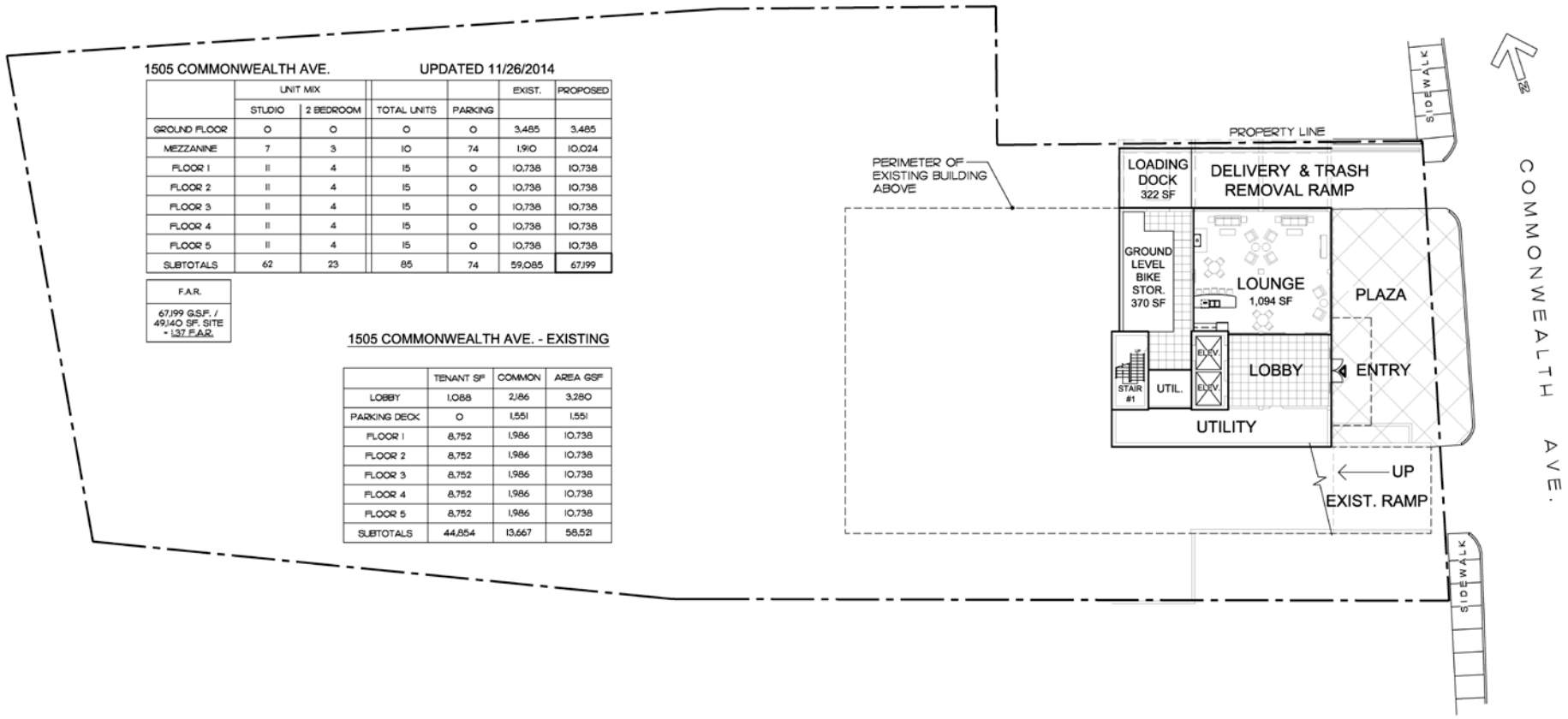
1505 COMMONWEALTH AVE. UPDATED 11/26/2014

	UNIT MIX				EXIST.	PROPOSED
	STUDIO	2 BEDROOM	TOTAL UNITS	PARKING		
GROUND FLOOR	0	0	0	0	3,485	3,485
MEZZANINE	7	3	10	74	1,910	10,024
FLOOR 1	11	4	15	0	10,738	10,738
FLOOR 2	11	4	15	0	10,738	10,738
FLOOR 3	11	4	15	0	10,738	10,738
FLOOR 4	11	4	15	0	10,738	10,738
FLOOR 5	11	4	15	0	10,738	10,738
SUBTOTALS	62	23	85	74	59,085	67,199

F.A.R.
67,199 G.S.F. / 49,140 SF. SITE = 1.37 F.A.R.

1505 COMMONWEALTH AVE. - EXISTING

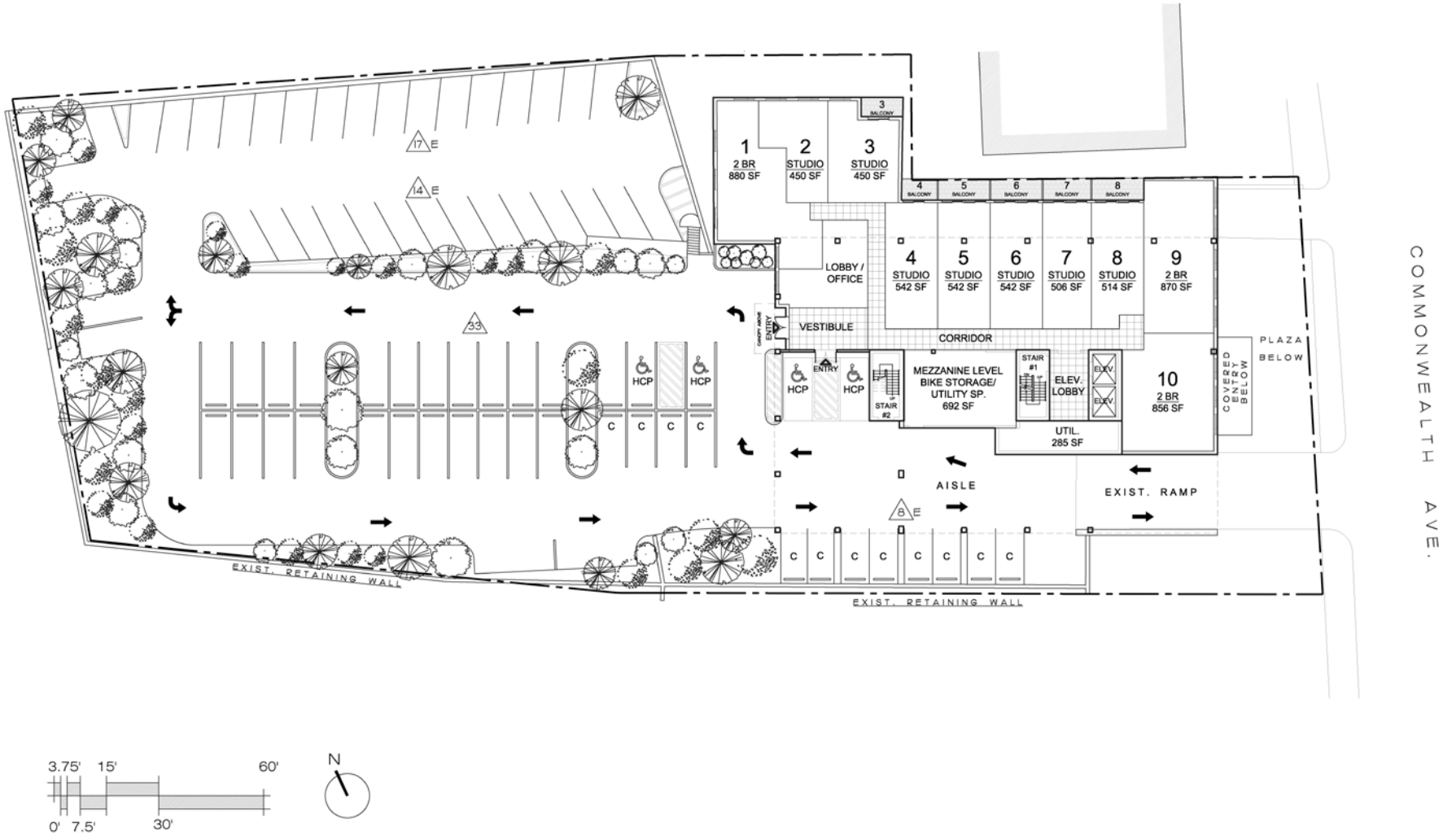
	TENANT SF	COMMON	AREA GSF
LOBBY	1,088	2,186	3,280
PARKING DECK	0	1,551	1,551
FLOOR 1	8,752	1,986	10,738
FLOOR 2	8,752	1,986	10,738
FLOOR 3	8,752	1,986	10,738
FLOOR 4	8,752	1,986	10,738
FLOOR 5	8,752	1,986	10,738
SUBTOTALS	44,854	13,667	58,521



1505 Commonwealth Avenue Boston, Massachusetts

O'SULLIVAN ARCHITECTS, INC.
ARCHITECTURE • DESIGN • PLANNING

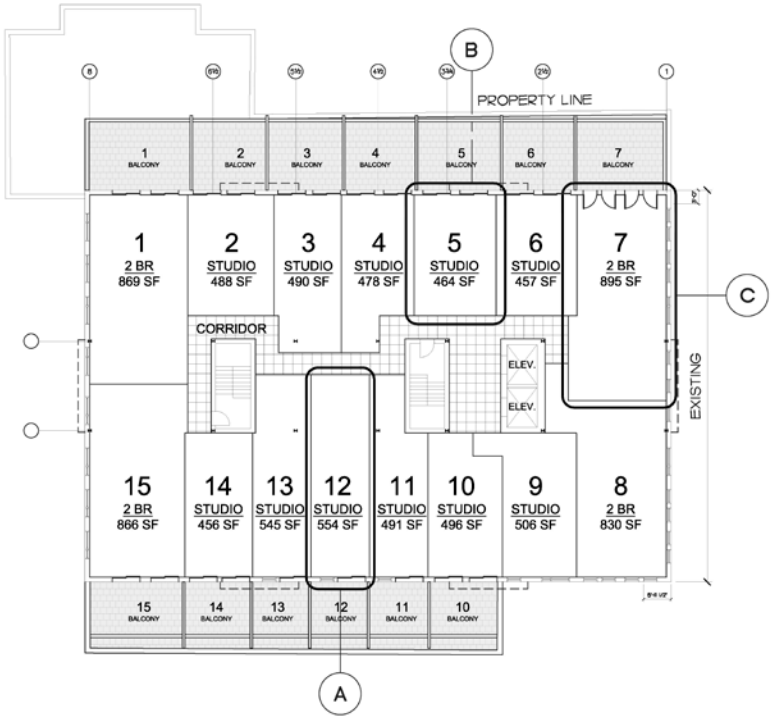
Ground Level Plan



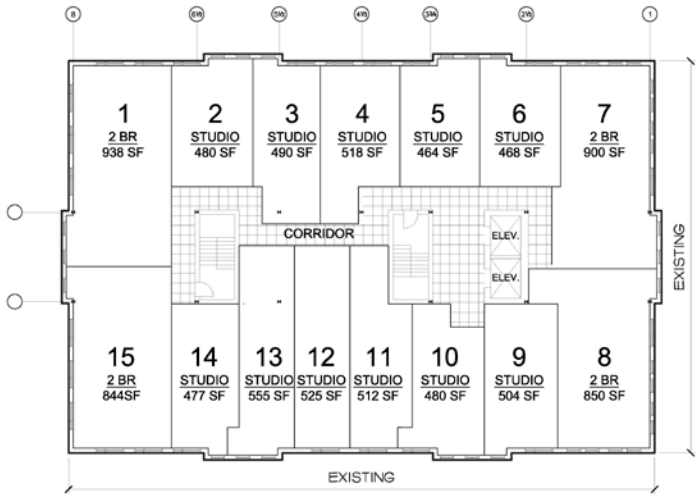
1505 Commonwealth Avenue Boston, Massachusetts

O'SULLIVAN ARCHITECTS, INC.
ARCHITECTURE • DESIGN • PLANNING

Site Plan and Mezzanine Level

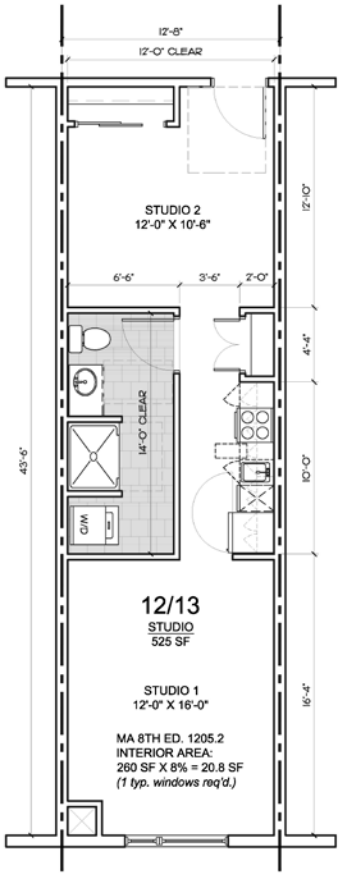


3 SCHEMATIC PLANS - SECOND LEVEL
Scale: 1 to 30

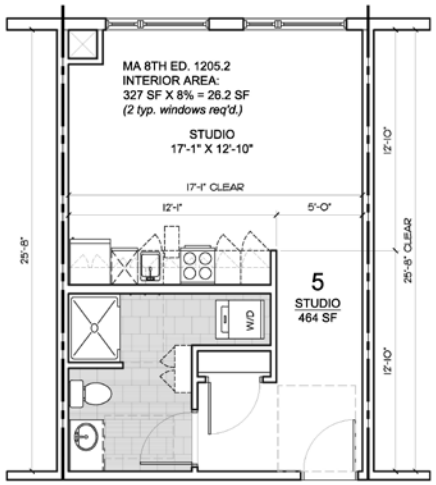


4 SCHEMATIC PLANS - TYPICAL LEVEL (3-5)
Scale: 1 to 30

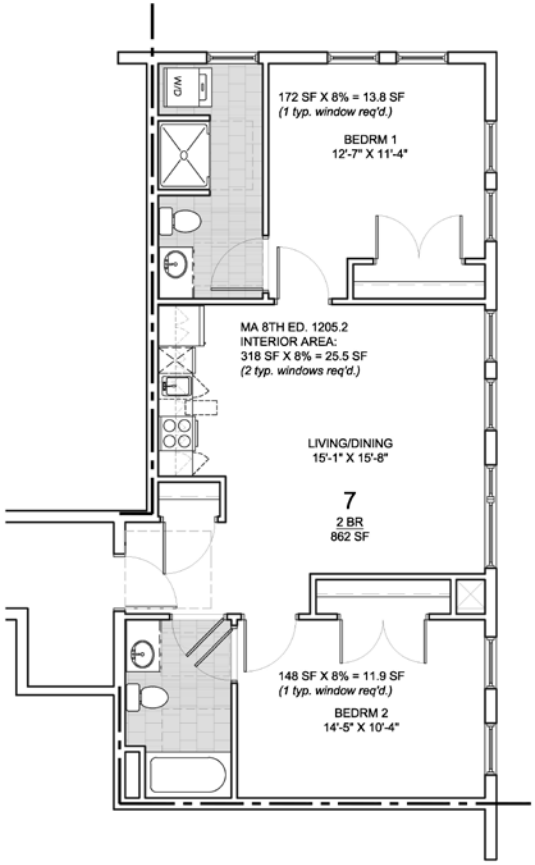
1505 Commonwealth Avenue Boston, Massachusetts



A SHORT STUDIO
Scale: 1/8" = 1'-0"



B LONG STUDIO
Scale: 1/8" = 1'-0"



C 2 BED ROOM
Scale: 1/8" = 1'-0"

1505 Commonwealth Avenue Boston, Massachusetts

Appendix C

Transportation

Available Upon Request

Appendix D

Air Quality

APPENDIX D

Introduction

This Air Quality Appendix provides modeling assumptions and backup for results presented in Section 3.2 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 2014 and 2021 for speed limits of 0, 9, 15, and 30 mph for use in the microscale analyses.

CAL3QHC

For the intersections studied, the CAL3QHC model was applied to calculate CO concentrations at sensitive receptor locations using emission rates derived in MOVES2014. 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. Idle emission rates for queue links were based on 0 mph emission rates derived in MOVES. Emission rates for speeds of 9, 15, and 30 mph were used for right turn, left turn, and free flow links, respectively.

1505 Commonwealth Avenue - Boston, MA
Background Concentrations

Background Concentrations										
POLLUTANT	AVERAGING TIME	Form	2011	2012	2013	Units	ppm to $\mu g/m^3$ Conversion Factor	Background Concentration ($\mu g/m^3$)	Standard ($\mu g/m^3$)	Location
SO_2 [1][7]	1-Hour	99th %	19.3	13.2	12	ppb	2.62	50.6	196	Kenmore Sq., Boston
	3-Hour [8]	H2H	24.6	13.8	16	ppb	2.62	64.5	1300	Kenmore Sq., Boston
	24-Hour	H2H	9.4	5.4	6	ppb	2.62	24.6	365	Kenmore Sq., Boston
	Annual	H	2.36	1.87	1	ppb	2.62	6.2	80	Kenmore Sq., Boston
PM-10	24-Hour	H2H	38	28	50	$\mu g/m^3$	1	50.0	150	Kenmore Sq., Boston
	Annual	H	16.8	15.7	19	$\mu g/m^3$	1	19.0	50	Kenmore Sq., Boston
PM-2.5	24-Hour [4]	98th %	21.2	22.1	18	$\mu g/m^3$	1	20.4	35	Kenmore Sq., Boston
	Annual [5]	H	9.37	9.03	8	$\mu g/m^3$	1	8.8	12	Kenmore Sq., Boston
NO_2 [3]	1-Hour [6]	98th %	52.9	49	48	ppb	1.88	93.9	188	Kenmore Sq., Boston
	Annual	H	20.36	19.1	17.78	ppb	1.88	38.3	100	Kenmore Sq., Boston
CO [2]	1-Hour	H2H	1.5	1.3	1.3	ppm	1140	1710	40000	Kenmore Sq., Boston
	8-Hour	H2H	1.2	0.9	0.9	ppm	1140	1368	10000	Kenmore Sq., Boston
O_3	8-Hr [9]	H4H	0.060	0.078	0.059	ppm	1963	128.904	147	Harrison Ave, Boston
Pb	3-Mo	H	0.017	0.014	0.007	$\mu g/m^3$	1	0.017	0.15	Harrison Ave, Boston

From 2010-2013 MassDEP Annual Data Summaries

[1] SO_2 reported in ppb. Converted to $\mu g/m^3$ using factor of 1 ppb = 2.62 $\mu g/m^3$.

[2] CO reported in ppm or ppb. Converted to $\mu g/m^3$ using factor of 1 ppm = 1140 $\mu g/m^3$.

[3] NO_2 reported in ppb. Converted to $\mu g/m^3$ using factor of 1 ppb = 1.88 $\mu g/m^3$.

[4] Background level for 24-hour PM-2.5 is the average concentration of the 98^{th} percentile for three years.

[5] Background level for annual PM-2.5 is the average for three years.

[6] Background level for 1-hour NO2 is the average of the 98th percentile of the daily maximum 1-hour values a over three years.

[7] The 24-hour and Annual standards were revoked by EPA on June 22, 2010, Federal Register 75-119, p. 35520.

[8] The 2011 - 2013 SO_2 3-hr value is no longer reported by MassDEP. 1-hr H2H used instead. 2013 24-hr value also no longer reported. Obtained from EPA AirData website.

[9] Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years

1505 Commonwealth Avenue - Boston, MA
Calculation of Microscale Modeling Emission Factors
Summary of MOVES2014 Output

Carbon Monoxide Only

Queues	Idle
Free Flow	30 mph
Right Turns	10 mph
Left Turns	15 mph

Winter	**2014**	**2021**	**Units**
Idle	17.030	5.032	g/hr
9 mph	5.894	3.478	g/mile
15 mph	5.010	3.039	g/mile
30 mph	3.486	2.165	g/mile

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

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

Appendix E

Climate Change Checklist

Climate Change Preparedness and Resiliency Checklist for New Construction

In November 2013, in conformance with the Mayor's 2011 Climate Action Leadership Committee's recommendations, the Boston Redevelopment Authority adopted policy for all development projects subject to Boston Zoning Article 80 Small and Large Project Review, including all Institutional Master Plan modifications and updates, are to complete the following checklist and provide any necessary responses regarding project resiliency, preparedness, and to mitigate any identified adverse impacts that might arise under future climate conditions.

For more information about the City of Boston's climate policies and practices, and the 2011 update of the climate action plan, *A Climate of Progress*, please see the City's climate action web pages at http://www.cityofboston.gov/climate

In advance we thank you for your time and assistance in advancing best practices in Boston.

Climate Change Analysis and Information Sources:

1. Northeast Climate Impacts Assessment (www.climatechoices.org/ne/)
2. USGCRP 2009 (http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts/)
3. Army Corps of Engineers guidance on sea level rise (http://planning.usace.army.mil/toolbox/library/ECs/EC11652212Nov2011.pdf)
4. Proceeding of the National Academy of Science, "Global sea level rise linked to global temperature", Vermeer and Rahmstorf, 2009 (http://www.pnas.org/content/early/2009/12/04/0907765106.full.pdf)
5. "Hotspot of accelerated sea-level rise on the Atlantic coast of North America", Asbury H. Sallenger Jr*, Kara S. Doran and Peter A. Howd, 2012 (http://www.bostonredevelopmentauthority.org/planning/Hotspot of Accelerated Sea-level Rise 2012.pdf)
6. "Building Resilience in Boston": Best Practices for Climate Change Adaptation and Resilience for Existing Buildings, Linnean Solutions, The Built Environment Coalition, The Resilient Design Institute, 2103 (http://www.greenribboncommission.org/downloads/Building_Resilience_in_Boston_SML.pdf)

Checklist

Please respond to all of the checklist questions to the fullest extent possible. For projects that respond "Yes" to any of the D.1 – Sea-Level Rise and Storms, Location Description and Classification questions, please respond to all of the remaining Section D questions.

Checklist responses are due at the time of initial project filing or Notice of Project Change and final filings just prior seeking Final BRA Approval. A PDF of your response to the Checklist should be submitted to the Boston Redevelopment Authority via your project manager.

Please Note: When initiating a new project, please visit the BRA web site for the most current Climate Change Preparedness & Resiliency Checklist.

A.1 - Project Information

Project Name:	**1505 Commonwealth Avenue**
Project Address Primary:	**1505 Commonwealth Avenue**
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	

A.2 - Team Description

Owner / Developer:	**Partners Properties LLC**
Architect:	**O'Sullivan Architects**
Engineer (building systems):	
Sustainability / LEED:	**O'Sullivan Architects**
Permitting:	**Epsilon Associates**
Construction Management:	
Climate Change Expert:	**Epsilon Associates, Inc**

A.3 - Project Permitting and Phase

At what phase is the project – most recent completed submission at the time of this response?

☑ PNF / Expanded PNF Submission	☐ Draft / Final Project Impact Report Submission	☐ BRA Board Approved	☐ Notice of Project Change
☐ Planned Development Area	☐ BRA Final Design Approved	☐ Under Construction	☐ Construction just completed:

A.4 - Building Classification and Description

List the principal Building Uses:	Residential
List the First Floor Uses:	*Residential, Amenity Space*

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

☐ Wood Frame	☐ Masonry	☑ Steel Frame	☑ Concrete

Describe the building?

Site Area:	*49,140 SF*	Building Area:	*SF*
Building Height:	*64 Ft.*	Number of Stories:	*5-6 Flrs.*
First Floor Elevation (reference Boston City Base):	*120 Elev.*	Are there below grade spaces/levels, if yes how many:	*No*

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:	*No*	Certified:	*No*

A.6 - Building Energy-

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

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

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

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

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

Electrical Generation:	*Existing*		Fuel Source:	
System Type and Number of Units:	☐ Combustion Engine	☐ Gas Turbine	☐ Combine Heat and Power	*(Units)*

B - Extreme Weather and Heat Events

Climate change will result in more extreme weather events including higher year round average temperatures, higher peak temperatures, and more periods of extended peak temperatures. The section explores how a project responds to higher temperatures and heat waves.

B.1 - Analysis

What is the full expected life of the project?

Select most appropriate:	☐ 10 Years	☐ 25 Years	☑ 50 Years	☐ 75 Years

What is the full expected operational life of key building systems (e.g. heating, cooling, ventilation)?

Select most appropriate:	☐ 10 Years	☑ 25 Years	☐ 50 Years	☐ 75 Years

What time span of future Climate Conditions was considered?

Select most appropriate:	☐ 10 Years	☐ 25 Years	☑ 50 Years	☐ 75 Years

Analysis Conditions - What range of temperatures will be used for project planning – Low/High?

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

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

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

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

30-90 Days	*0.2 Events / yr.*

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

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

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

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

B.2 - Mitigation Strategies

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

Building energy use below code:	*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 = 38*	Walls / Curtain Wall Assembly:	*R = 21*
Foundation:	*N/A*	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:				

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

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

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

	Yes / No	If yes, for how long:	*Days*
If Yes, is building "Islandable?			
If Yes, describe strategies:	The life safety and safe room will be powered for as long as fuel is available for the emergency generator.		

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

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

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

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

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

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

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

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

C - Sea-Level Rise and Storms

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

C.1 - Location Description and Classification:

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

Yes / **No**

Describe site conditions?

Site Elevation – Low/High Points:	*109/122 Boston City Base Elev.(Ft.)*
Building Proximity to Water:	*520 Ft.*

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

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

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

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

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

>5000 Ft.

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

C - Sea-Level Rise and Storms

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

C.2 - Analysis

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

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

C.3 - Building Flood Proofing

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

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

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

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

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

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

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

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

Yes / No

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

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

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

Yes / No

If Yes, describe:

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

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

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

C.4 - Building Resilience and Adaptability

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

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

Select appropriate:	*Yes / No*	☐ Hardened / Resilient Ground Floor Construction	☐ Temporary shutters and or barricades	☐ Resilient site design, materials and construction

Can the site and building be reasonably modified to increase Building Flood Proof Elevation?

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

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

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

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

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

Appendix F

Accessibility Checklist

Accessibility Checklist

(to be added to the BRA Development Review Guidelines)

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

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

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

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

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

Accessibility Analysis Information Sources:

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

Article 80 | ACCESSIBILTY CHECKLIST

Project Information

Project Name:	1505 Commonwealth Avenue
Project Address Primary:	1505 Commonwealth Avenue
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	Margarita Kvacheva, Partners Properties, LLC, ritochka98@gmail.com, (516) 592-1620

Team Description

Owner / Developer:	Partners Properties, LLC
Architect:	O'Sullivan Architects, Inc.
Engineer (building systems):	
Sustainability / LEED:	O'Sullivan Architects, Inc.
Permitting:	Epsilon Associates
Construction Management:	

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:

Article 80 | ACCESSIBILTY CHECKLIST

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)	*Lobby*			

What is the Construction Type – select most appropriate type? N/A

	Wood Frame	Masonry	**Steel Frame**	Concrete

Describe the building?

Site Area:	*49,140 SF*	Building Area:	*67,000 SF*
Building Height:	*64 Ft.*	Number of Stories:	*5-6 Flrs.*
First Floor Elevation (BCB):	*120 Elev.*	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 Project site is located in the Brighton neighborhood of Boston and is surrounded by a variety of uses. Residential, commercial and hospital uses are located to the north. To the west is Fidelis Way Park. To the southwest is the Commonwealth housing development. To the south is the Kindred Hospital Boston. To the east is a residential neighborhood with four to five-story multi-family residential buildings.
List the surrounding ADA compliant MBTA transit lines and the proximity to the development site: Commuter	The nearest ADA compliant MBTA transit station is the Washington Street station on the Green Line B Branch, approximately 0.3 miles from the Project site.

rail, subway, bus, etc.	
List the surrounding institutions: hospitals, public housing and elderly and disabled housing developments, educational facilities, etc.	Within a ½ mile radius of the Project site, nearby hospitals include St. Elizabeth's Medical Center and Kindred Hospital. Nearby schools include the Michael Driscoll School, Mt St Joseph Academy, Jackson Mann School, Horace Mann School, Horace Mann School for the Deaf, Baldwin Early Learning Center, Kennedy Hope Academy, Brighton High School, Boston Community Leadership Academy, Kennedy Day School and the Bryman Institute. There are also several long term care facilities, which are the Providence House, Corey Hill Nursing Home, Wingate at Brighton Rehab, St Elizabeth's Medical Center TCU, and the Brighton House Rehab and Nursing Center.
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 located near several parks, including Corey Hill Park, Coolidge Playground, Joyce Playground, Cunningham Park, Fidelis Way Park, Ringer Playground and the Penniman Road Play Area. Also within a ½ mile are a Police and Fire Department, and the Jackson Mann Community Center.

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.	Good 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.	Yes No
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 new sidewalks proposed.
If yes above, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, Boulevard.	
What is the total width of the proposed sidewalk? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone.	
List the proposed materials for each Zone. Will the proposed materials be on private property or will the proposed materials be on the City of Boston pedestrian right-of-way?	
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?	
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?	74
What is the total number of accessible spaces provided at the development site?	4 (2 covered, 2 outdoor)
Will any on street accessible parking spaces be required? **If yes,** has the proponent contacted the Commission for Persons with Disabilities and City of Boston Transportation Department regarding this need?	No
Where is accessible visitor parking located?	On site / Street at Warren
Has a drop-off area been identified? **If yes,** will it be accessible?	No
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 Site Plan

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.	
Describe accessibility at each entryway: Flush Condition, Stairs, Ramp Elevator.	Flush entry from sidewalk to entry plaza and into building. Flush from parking to building.
Are the accessible entrance and the standard entrance integrated?	Same
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.	No common roof deck. Front entry courtyard will be entered from street and community lounge.
Has an accessible routes way-finding and signage package been developed? If yes, please describe.	No

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?	85
How many units are for sale; how many are for rent? What is the market value vs. affordable breakdown?	Rental 15% of market rate will be affordable

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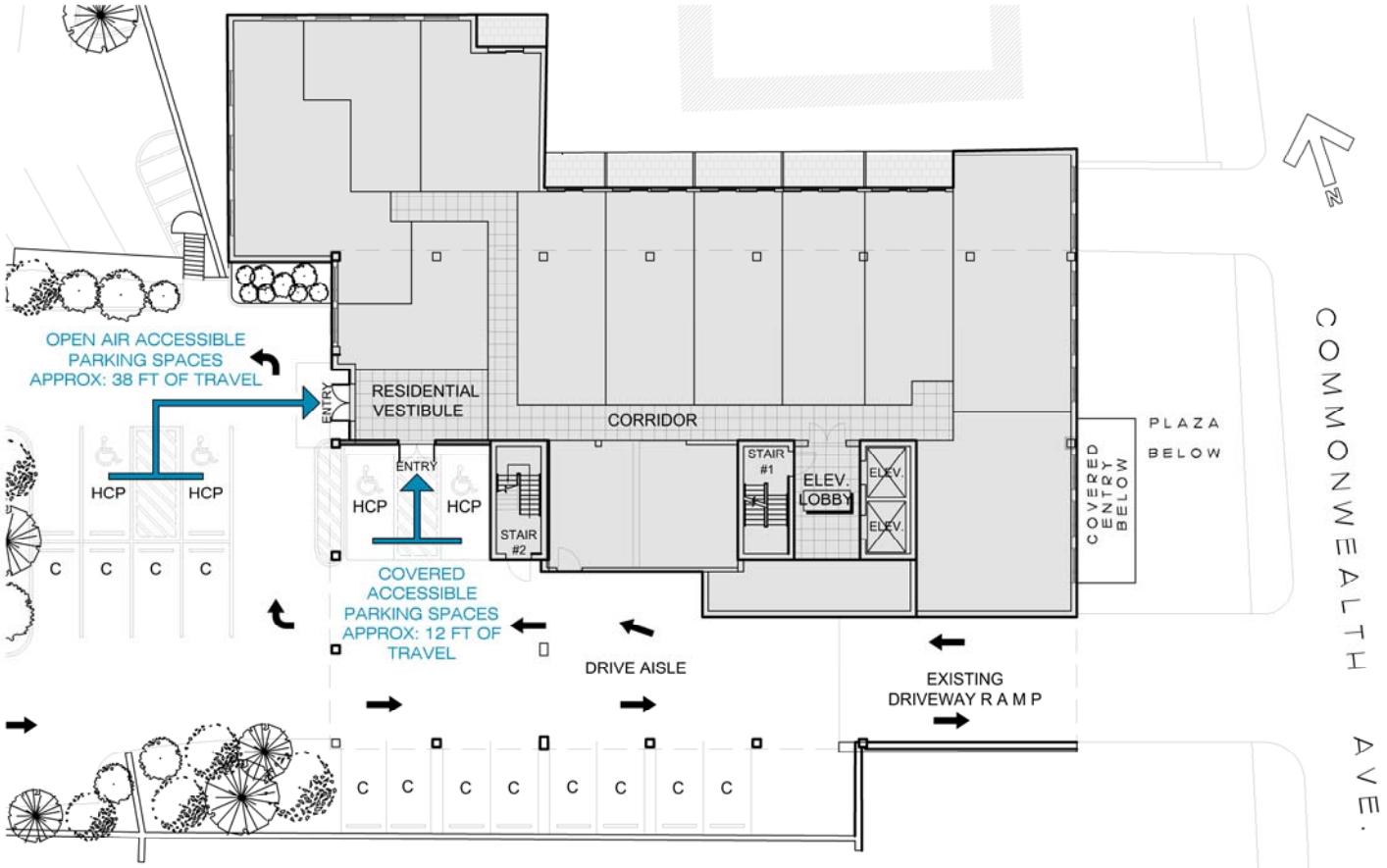
How many accessible units are being proposed?	5
Please provide plan and diagram of the accessible units.	In process
How many accessible units will also be affordable? If none, please describe reason.	TBD
Do standard units have architectural barriers that would prevent entry or use of common space for 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!

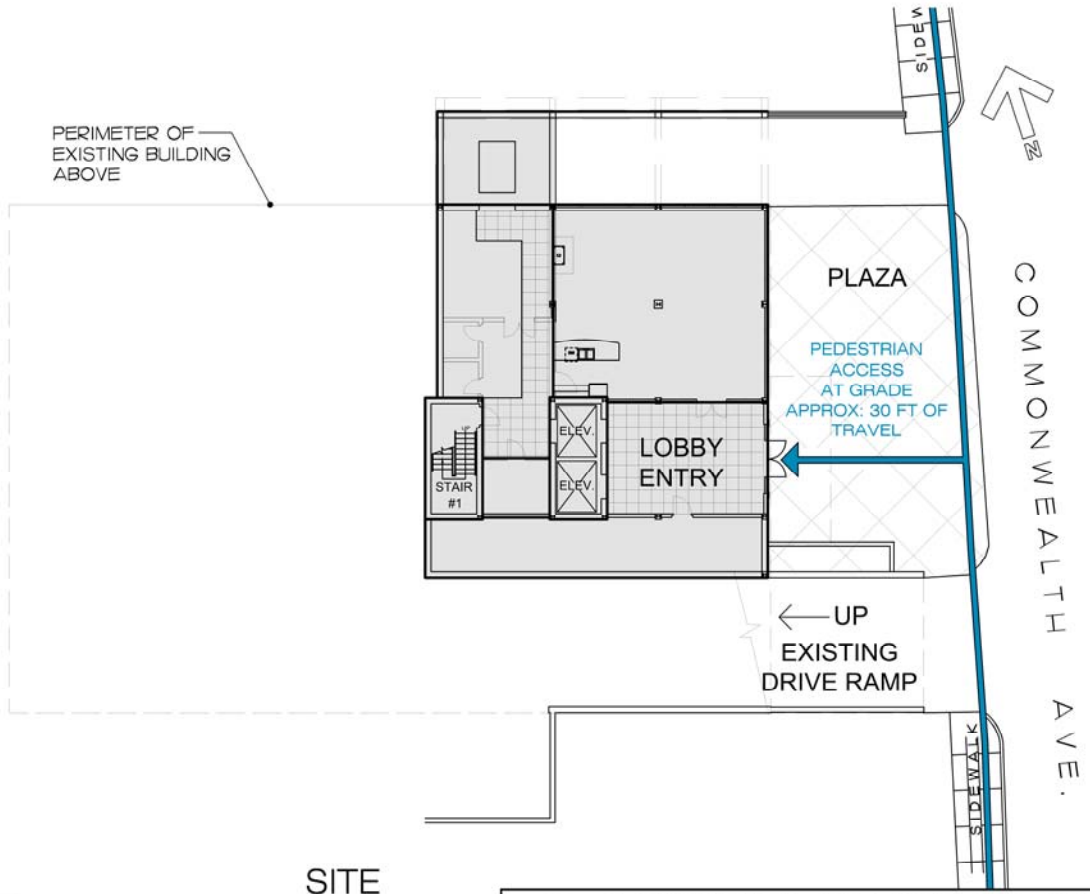
For questions or comments about this checklist or accessibility practices, please contact:

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



2 MEZZANINE LEVEL

Scale: 1/32" = 1'-0"



1 GROUND LEVEL

Scale: 1/32" = 1'-0"

SITE ACCESSIBILTY DIAGRAM

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